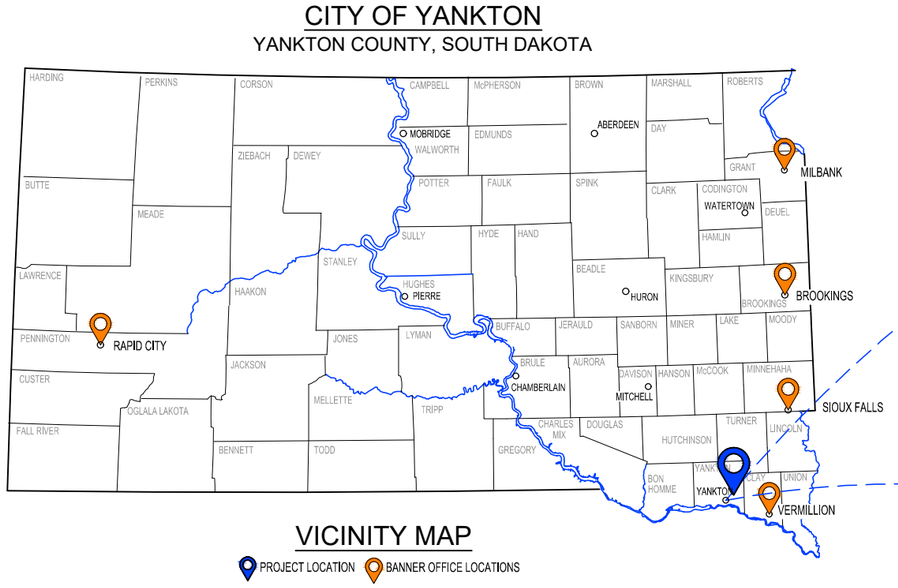
PLANS FOR

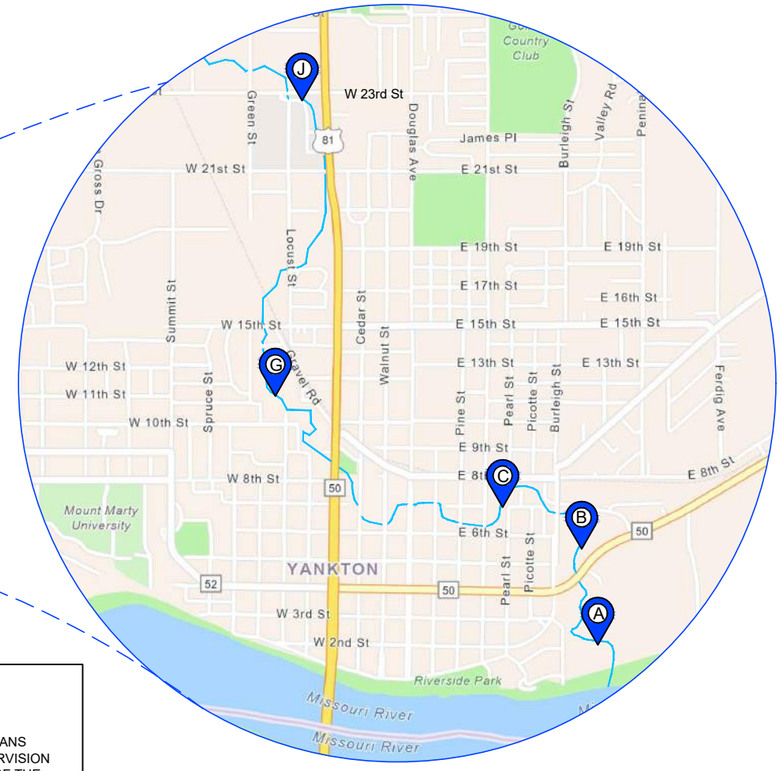
CITY OF YANKTON
MARNE CREEK BANK STABILIZATION

CITY PROJECT #2020-014

OCTOBER 2022



VICINITY MAP



LOCATION MAP

AREA INDEX

SECTION INDEX

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

PRIME PROFESSIONAL IN RESPONSIBLE CHARGE

I, KENT R. JOHNSON, HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME, OR UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED UNDER THE LAWS OF THE STATE OF SOUTH DAKOTA.

DIGITAL SIGNATURE AUTHENTICATION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

SUBCONSULTANT

I, MATTHEW W. JOHNSON, HEREBY CERTIFY THAT **REACH A AND B** OF THESE PLANS WERE PREPARED BY ME, OR UNDER MY DIRECT SUPERVISION AND THAT I AM DULY REGISTERED UNDER THE LAWS OF THE STATE OF SOUTH DAKOTA.

DIGITAL SIGNATURE AUTHENTICATION

RESPEC

BANNER
engineering a better community

JOB No. 23371.00

FRONT END SECTIONS AND PROJECT DETAILS

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REACH A SECTIONS

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(B)H-2	EXISTING CONDITIONS - REACH B
(B)G-1	EROSION CONTROL - REACH B
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(C)C-1	TYPICAL SECTIONS REACH C
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(C)M-9	C-UR1 CROSS SECTIONS - REACH C
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REACH G SECTIONS

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(G)C-1	TYPICAL SECTIONS - REACH G
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REACH J SECTIONS

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(J)A-1	BOUNDARY MAP - REACH J
(J)A-2	OVERVIEW MAP - REACH J
(J)C-1	TYPICAL SECTION - REACH J
(J)G-1	EROSION CONTROL LAYOUT - REACH J
(J)H-1	EXISTING SITE CONDITIONS AND REMOVALS - REACH J
(J)J-1	J-UL1, J-UR1 PLAN & PROFILE GRADING - REACH J
(J)M-1	J-UL1 CROSS SECTIONS - REACH J
(J)M-2	J-UL1 CROSS SECTIONS - REACH J
(J)M-3	J-UR1 CROSS SECTIONS - REACH J

LEGEND OF SYMBOLS

EXISTING

- MONUMENT (SET THIS SURVEY 5/8" REBAR WITH STAMPED PLASTIC CAP\
- MONUMENT (FOUND)
- EXISTING WATER LINE
- EXISTING SANITARY SEWER EXISTING
- STORM SEWER
- EXISTING GAS LINE
- EXISTING UNDERGROUND ELECTRIC
- EXISTING CABLE TV
- EXISTING TELEPHONE LINE
- EXISTING FIBER OPTIC LINE
- OVERHEAD ELECTRIC LINE
- PROPERTY LINE
- SECTION LINE
- EASEMENT LINE
- EDGE OF ROADWAY
- HIGHWAY CENTER LINE
- BARBWIRE FENCE
- CHAINLINK FENCE
- WOOD FENCE
- WOVENWIRE FENCE
- EXISTING CONTOURS
- SOIL BORING
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- WATER MANHOLE
- ELECTRIC MANHOLE
- DROP INLET
- AREA INLET
- STREET SIGN
- WATER VALVE
- CURB STOP
- FIRE HYDRANT
- POWER POLE
- POWER POLE W/LIGHT
- STREET LIGHT
- FIBER OPTIC VAULT
- TELEPHONE PEDESTAL
- GAS VALVE
- GAS METER
- ELECTRICAL TRANSFORMER
- CONTROL POINT
- BENCHMARK
- DECIDUOUS TREE
- CONIFEROUS TREE

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/TOPSOIL, NO CONTANERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
- RIPRAP COVERED W/TOPSOIL, CONTAINER PLANTINGS AND REVEGETATED W/EROSION CONTROL BLANKET
- PERMANENT TURF REINFORCING MAT
- GABIONS
- 6" REINFORCED CONCRETE SIDEWALK

EROSION CONTROL LEGEND

- REVEGETATED TOPSOIL W/EROSION CONTROL BLANKET
- RIPRAP COVERED W/TOPSOIL AND REVEGETATED W/EROSION CONTROL BLANKET
- STRAW WATTLE
- SILT FENCE
- ORANGE CONSTRUCTION FENCE

REMOVAL LEGEND

- CLEAR AND GRUB EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING GABION BASKETS AND ROCK
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
INDEX OF SHEETS AND LEGEND
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
A-2

HORIZONTAL DATUM:
- NAD 83
- PROJECTION: SOUTH DAKOTA STATE PLANE COORDINATES SOUTH ZONE

VERTICAL DATUM:
- NAVD 88
- GEOID 18

BASIS OF BEARING: GEODETIC NORTH

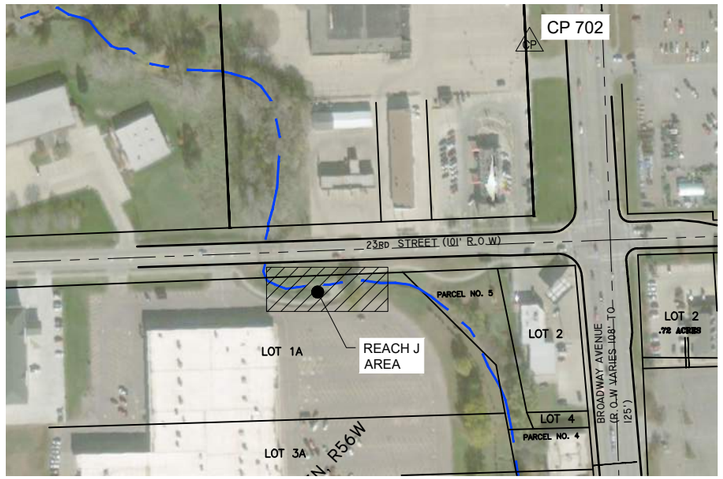
ALL DIMENSIONS SHOWN ARE IN TERMS OF U.S. SURVEY FEET

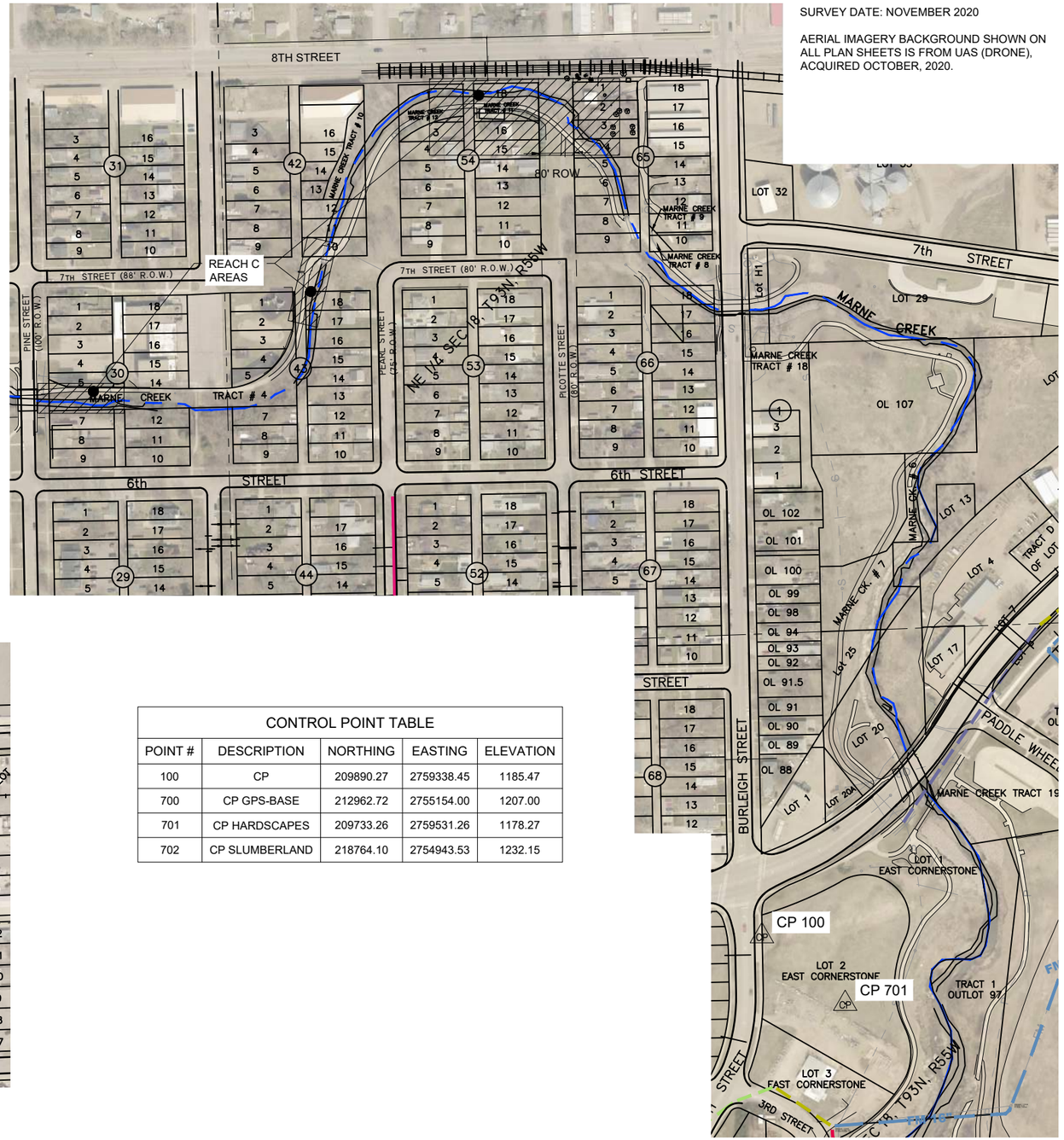
SURVEY DATE: NOVEMBER 2020

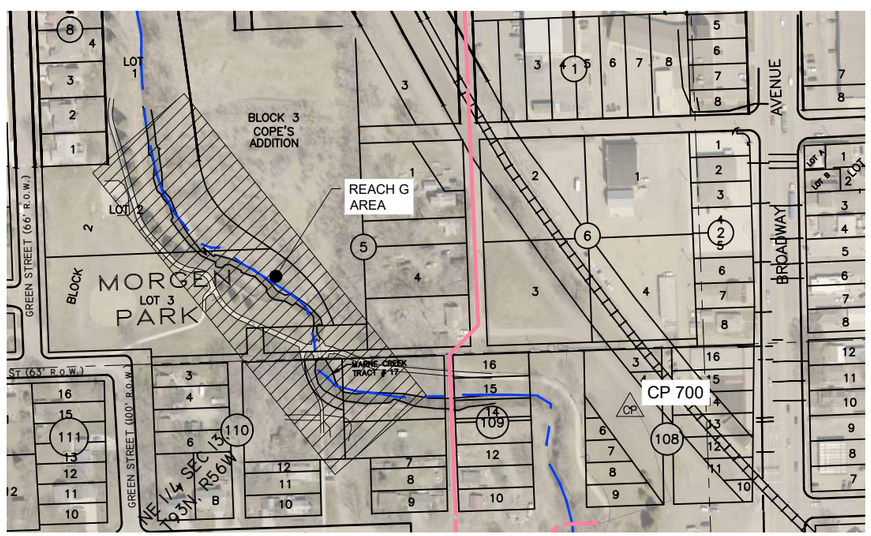
AERIAL IMAGERY BACKGROUND SHOWN ON ALL PLAN SHEETS IS FROM UAS (DRONE), ACQUIRED OCTOBER, 2020.

N

0 150 300 FT







CONTROL POINT TABLE

POINT #	DESCRIPTION	NORTHING	EASTING	ELEVATION
100	CP	209890.27	2759338.45	1185.47
700	CP GPS-BASE	212962.72	2755154.00	1207.00
701	CP HARDSCAPES	209733.26	2759531.26	1178.27
702	CP SLUMBERLAND	218764.10	2754943.53	1232.15

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
CONTROL DATA
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
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0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
A-3

QUANTITIES

No.	Std. Bid No.	Description	Units	Reach A					Reach B				Reach C						Reach G						Reach J			TOTAL
				A-UL1	A-UL2	A-UL3	A-UR1-3	A Reach Total	B-UL1-3	B-UR1	B-UR2	B Reach Total	C-UL1	C-UL2	C-UR1	C-UR2	C-UR3	C Reach Total	G-UR1	G-UL1	G-UL2	G-UL3	G-UL4	G Reach Total	J-UL1	J-UR1	J Reach Total	
1	009E0010	Mobilization	LS																									**1**
2	100E0010	Clear and Grub Stump	Ea				1	1				1						1						1			1	**5**
3	100E0020	Clear and Grub Tree 6" to 12"	Ea					19				45						59						30				**153**
4	100E0020	Clear and Grub Tree 13" to 24"	Ea					3				6						37						18				**64**
5	100E0020	Clear and Grub Tree 25" to 36"	Ea					2				1						15						5				**23**
6	100E0020	Clear and Grub Tree 37" to 48"	Ea					9										4						3				**16**
7	100E0100	Clearing	Ac	0.03		0.49	2.18	2.7	1.46	0.03	0.38	1.87	0.05	0.2	0.24	0.04	0.07	0.6	0.11	0.14	0.21	0.05	0.1	0.61	0.04	0.01	0.05	**5.83**
8	110E1100	Remove Concrete Sidewalk	SqYd	159		361	497	1017	1817			1817		196				196		62		124		186	16	24	40	**3256**
9	110E1700	Remove Silt Fence	Ft				170	170	100			100			100			100			100			100		50	50	**520**
10	110E5451	Salvage Riprap	Ton				2740	2740				-						-				69		-	33		33	**2773**
11	250E0020	Incidental Work, Grading	LS					1				1						1						1			1	**1**
12	260E0010	Subbase	Ton			98.1	408.4	506.5	425		73.7	498.7		80.5	63	6.5	24.3	174.3	17	59.1	26.6			102.7			-	**1282.2**
13	634E0110	Traffic Control Signs	SqFt					35				46						17						23			10	**131**
14	634E0120	Traffic Control, Miscellaneous	LS					1				1						1						1			1	**1**
15	634E0275	Type 3 Barricade	Ea					4				2						7						4			2	**19**
16	651E0160	6" Reinforced Concrete Sidewalk	SqFt	1336		3899	4033	9268	17590			17590		1762		450	1433	3645		1440	383	612		2435	144	366	510	**33448**
17	700E0210	Class B Riprap	Ton						741.0			741.0				212	600	812			662.4			662.4	238.7	56	294.7	**2510.1**
18	700E0310	Class C Riprap	Ton						3605.0	200.0	167.0	3972.0		1665.1				1665.1	336	836				1172			-	**6809.1**
19	700E0410	Class D Riprap	Ton						959.0		1155.0	2114.0			1731.2			1731.2									-	**3845.2**
20	700E1010	Special Riprap - Class B	Ton			395.0	530.0	925.0																				**925.0**
21	700E1010	Special Riprap - Class C	Ton			747.0	3989.0	4736.0																				**4736.0**
22	700E1010	Special Riprap - Class D	Ton				1102.0	1102.0																				**1102.0**
23	700E2010	Place Riprap	Ton				2740	2740				-						-				69		69	33		33	**2842**
24	720E1015	Bank and Channel Protection Gabions	CuYd					-				-						-				80	142	222			-	**222**
25	730E0251	Special Permanent Seed Mixture 1	Lb			2	7	9	8		1	9	1.5	1.5	4.7	0.1	1.3	9.1	2.4	1.7	2.7	0.5	0.2	7.5	0.3	0.2	0.5	**35.1**
26	730E0252	Special Permanent Seed Mixture 2	Lb			144	724	868	262	5	129	396	7	13	39	2	4	65	12	20	45.3	8.7	20	106	7		7	**1442**
27	730E1200	Hydroseeding	SqYd			1694	8396	10090	3418	56	1509	4983	247	313	941	37	187	1725	394	411	800	143	243	1991	110	18	128	**18917**
28	731E0100	Fertilizing	Lb			472	2375	2847	803	17	422	1242	22.5	44.1	126.3	8.2	13	214.1	38.9	66.9	148.6	28.4	67.2	350	23.2		23.2	**4676.3**
29	734E0101	Type 1 Erosion Control Blanket	SqYd			1694	8396	10090	3418	56	1509	4983		312	861	36	188	1397	379	403	780	138	239	1939	89	11	100	**18509**
30	734E0132	Type 2 Turf Reinforcement Mat	SqYd					-				-	250					250						-			-	**250**
31	734E0154	12" Diameter Erosion Control Wattle	Ft	185		290	1880	2355	100	280	1460	1840		442	194	98	167	901	86	175	148	51	92	552	60	20	80	**5728**
32	734E0604	High Flow Silt Fence	Ft				170	170	100			100																**270**
33	734E0610	Mucking Silt Fence	CuYd					20				20																**40**
34	734E0620	Repair Silt Fence	Ft					50				50																**100**
35	734E0845	Sediment Control at Inlet with Frame and Grate	Ea					-	1		2	3																**3**
36	734E5010	Sweeping	Hour					2				4						2						1			1	**10**

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MARNE CREEK BANK STABILIZATION
ESTIMATE OF QUANTITIES
YANKTON, SOUTH DAKOTA

PROJECT / SHEET TITLE :

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA

10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	KAD
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
B-1

F:\23371-00\design phase\CADD\sheet file\B - ESTIMATE OF QUANTITIES.dwg;10/11/2022 12:47 PM

QUANTITIES

37	831E0110	Type B Drainage Fabric	SqYd			661	3661	4322	3540	124	742	4406		1010	1110	235	232	2587	190	535	626	166	429	1946	148	32	180	**13441**
38	900E1080	Orange Plastic Safety Fence	Ft				280	280		200		200															**480**
39	900E1310	Concrete Washout Facility	Ea					1				2						1						1				**5**
40	900E1320	Construction Entrance	Ea			1		1	1	1	1	3						1						1				**6**
41	31 2000-4.2	Unclassified Excavation	CuYd			1941	13739	15680	7337	228	2575	10140	100	1184	2485	216	419	4404	47	770	857	206	317	2197	167	45		**32421**
42	31 2000-4.3	Scarify and Recompact	CuYd				78	78	342			342	100					100				13		13			-	**533**
43	31 2000-4.4	Imported Topsoil	CuYd			442	2329	2771	638	9	424	1071			187		39	226		15	68			-			-	**4068**
44	31 2000-4.5	Strip and Stopckpipe Topsoil	CuYd	16		264	1170	1450	786	15	205	1006		91	86	20	34	231	5	58	58	15	30	166	15	5	20	**2873**
45	31 2000-4.6	Topsoil Placement	CuYd			706	3499	4205	1424	24	629	2077		81	273	15	73		3	73	126							**6282**
46	Special	Riparian Pole Planting	Ea			795	5658	6453	4276	222	750	5248		439	1369	572	585	2965	529	946	921			2396	320	114	434	**17496**
47	Special	Containerized Upland Plantings	Ea			370	1750	2120	1250	55	390	1695			342			342		141	116	16	27	300			-	**4457**

Containerized Plantings Quantities

Common Name	Botanical Name	Site																		
		A-UL1	A-UL3	A-UR1-3	B-UR1	B-UR2	B-UR 1-3	C-UL1	C-UL2	C-UR1	C-UR2	C-UR3	G-UR1	G-UL1	G-UL2	G-UL3	G-UL4	J-UL1	J-UR1	Total
Hackberry Tree	*Celtis*	0	110	670	25	110	500	0	0	94	0	0	0	57	58	8	13	0	0	1645
Chokecherry	*Prunus virginiana*	0	50	80	0	70	50	0	0	62	0	0	0	0	0	0	0	0	0	312
American Plum	*Prunus americana*	0	70	300	10	70	200	0	0	62	0	0	0	28	0	0	0	0	0	740
Smooth Sumac	*Rhus glabra*	0	70	350	10	70	250	0	0	62	0	0	0	28	29	4	7	0	0	880
Fragrant Sumac	*Rhus aromatica*	0	70	350	10	70	250	0	0	62	0	0	0	28	29	4	7	0	0	880
Total	**Total plantings**	0	370	1750	55	390	1250	0	0	342	0	0	0	141	116	16	27	0	0	**4457**

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MARNE CREEK BANK STABILIZATION
ESTIMATE OF QUANTITIES
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

PROJECT / SHEET TITLE :

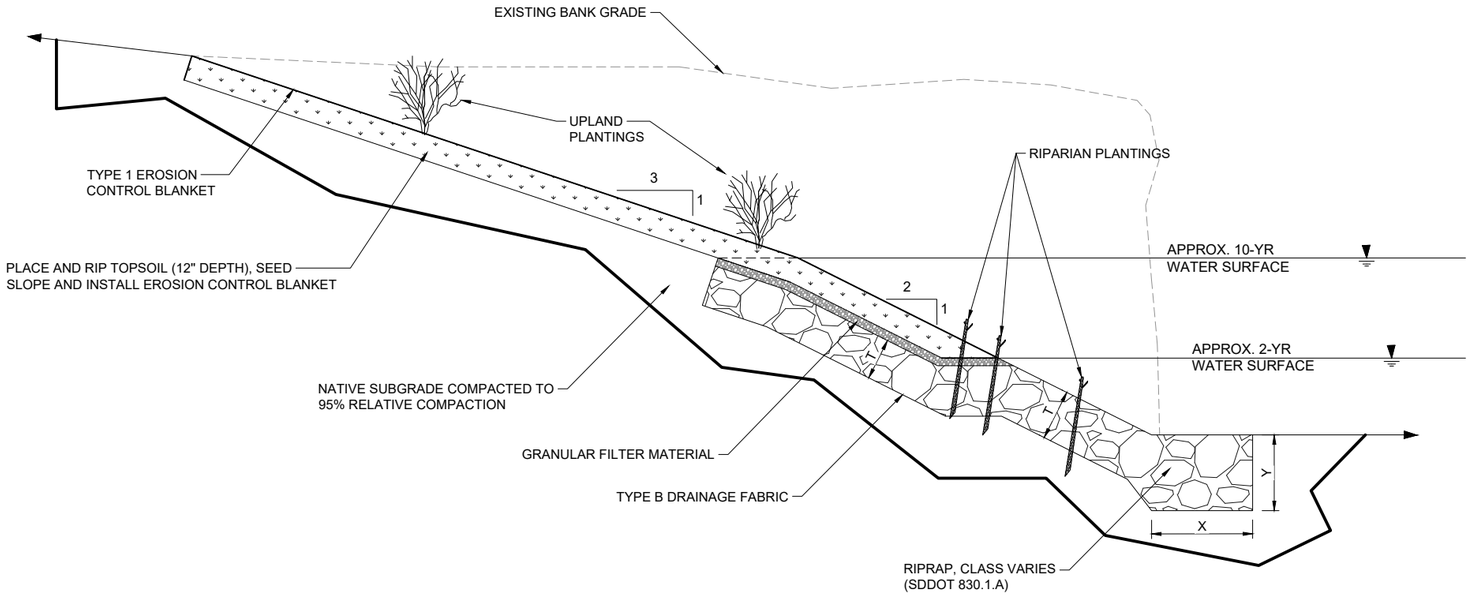
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	KAD
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
B-2

F:\23371-00\design phase\CADD\sheet file\B - ESTIMATE OF QUANTITIES.dwg:10/11/2022 12:47 PM



RIPRAP SPECIALIZED TOE DIMENSIONS

SCALE: NONE

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

STREAM BANK TREATMENT TYPICAL SECTION

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

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C-1

GENERAL NOTES

PROJECT SCOPE

THIS PROJECT CONSISTS OF REGRADING THE EXISTING STREAM BANKS, INSTALLATION OF RIPRAP, SOIL COVERED RIPRAP, GABIONS, TURF REINFORCEMENT MAT, AND CONCRETE MAINTENANCE TRAIL. THIS WORK WILL TAKE PLACE ON SEVERAL SITES ON MARNE CREEK WITHIN THE YANKTON CITY LIMITS.

PROJECT LOCATION

CITY OF YANKTON, SD (YANKTON COUNTY)

REACH A, B, & C - SECTION 18, TOWNSHIP 93N, RANGE 55W
REACH G - SECTION 12 & 13, TOWNSHIP 93N, RANGE 56W
REACH J - SECTION 1, TOWNSHIP 93N, RANGE 56W

SPECIFICATIONS TO BE USED

THE PROJECT SPECIFICATIONS INCLUDED IN THE PROJECT MANUAL TOGETHER WITH DIVISION II AND DIVISION III OF THE MOST CURRENT EDITION OF THE SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES WITH SUPPLEMENTAL SPECIFICATIONS AND ERRATA, CITY AND DOT STANDARD PLATES AND REQUIRED PROVISIONS, SUPPLEMENTAL SPECIFICATIONS, AND/OR SPECIAL PROVISIONS AS INCLUDED IN THE PROJECT MANUAL ARE HEREBY MADE A PART OF THESE SPECIFICATIONS IN ITS ENTIRETY UNLESS OTHERWISE REVISED, DELETED, OR SUPPLEMENTED HEREIN.**THE** SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES WITH SUPPLEMENTAL SPECIFICATIONS AND ERRATA CAN BE DOWNLOADED FROM THE SDDOT'S WEBSITE AT HTTPS://WWW.DOT..SD.GOV/.

ELECTRONIC DESIGN FILES

ELECTRONIC DESIGN FILES WILL BE AVAILABLE TO THE CONTRACTOR PRIOR TO THE BID LETTING IF REQUESTED, SUBJECT TO THE FOLLOWING CONDITIONS:

A. A SIGNED DISCLAIMER AGREEMENT SHALL BE REQUIRED FROM EACH CONTRACTOR REQUESTING THE ELECTRONIC DESIGN FILES PRIOR TO DISTRIBUTION.
B. ELECTRONIC DESIGN FILES WILL BE DISTRIBUTED AS DWG FILES. THE CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE SOFTWARE TO OPEN, ANALYZE, AND/OR CONVERT THESE FILE FORMATS FOR THEIR OWN USE, AND UNDERSTAND THE RISKS AND LIMITATIONS ASSOCIATED WITH THAT SOFTWARE.
C. THE ELECTRONIC DESIGN FILES FOR DISTRIBUTION MAY BE LIMITED TO THE FOLLOWING: EXISTING SURVEY LINE WORK, EXISTING GROUND SURFACE MODEL, PROPOSED DESIGN UTILITY AND SURFACING LINE WORK, AND FINISHED GROUND SURFACE MODEL. ADDITIONAL INFORMATION MAY BE DISTRIBUTED AT THE ENGINEER'S DISCRETION.
D. THE ELECTRONIC DESIGN FILES WILL NOT INCLUDE ANY MODIFICATIONS DUE TO ADDENDUM UNLESS SPECIFICALLY NOTED IN AN ADDENDUM.
E. THE ELECTRONIC DESIGN FILES ARE PROVIDED FOR REFERENCE ONLY. IN THE EVENT OF A DISCREPANCY BETWEEN THE ELECTRONIC DESIGN FILES AND THE CONTRACT DOCUMENTS, THE CONTRACT DOCUMENTS SHALL PREVAIL.

REQUESTS FOR THE ELECTRONIC DESIGN FILES SHOULD BE MADE TO THE ENGINEER. ELECTRONIC DESIGN FILES WILL BE FURNISHED TO THE CONTRACTOR WITHIN TWO (2) BUSINESS DAYS FROM RECEIPT OF THE SIGNED DISCLAIMER AGREEMENT.

CONSTRUCTION LIMITS

THE CONSTRUCTION LIMITS SHALL BE WITHIN THE RIGHT-OF-WAY AND EASEMENT AREAS. MATERIAL STORAGE AND VEHICLE AND EQUIPMENT TRAFFIC SHALL BE LIMITED TO THE CONSTRUCTION LIMITS. ALL PAVED STREETS ADJACENT TO THE PROJECT ARE TO BE CLEANED AT THE END OF EACH WORKING DAY.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE PROPERTY OWNERS RELATING TO ACCESS TO THEIR PROPERTY AND ANY SUBSEQUENT DAMAGES.

THE CONTRACTOR WILL NOT BE ALLOWED TO STORE MATERIALS, EQUIPMENT, ETC. ON STRUCTURES OR USE STRUCTURES AS A STAGING AREA.

PROPERTY PIN AND SECTION CORNER MONUMENTATION

PROPERTY CORNERS OR SECTION CORNER MONUMENTS WITHIN THE WORK LIMITS SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR. IN NO CASE SHALL EXCAVATION BE MADE WITHIN FIVE FEET (5') OF SUCH MONUMENT UNTIL IT HAS BEEN ACCURATELY LOCATED, WITNESSED, OR OTHERWISE CARED FOR BY THE ENGINEER, AND PERMISSION IS GIVEN TO PROCEED WITH THE WORK. IF THE CONTRACTOR DISCOVERS MONUMENTS THAT HAVE NOT BEEN PREVIOUSLY LOCATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER SO EFFORTS CAN BE MADE TO PROTECT, PRESERVE, OR RESET THEM.

PROPERTY CORNER OR SECTION CORNER MONUMENTS DISTURBED OR REMOVED THROUGH THE CARELESSNESS OF THE CONTRACTOR, OR WITHOUT PROPER PERMISSION, WILL BE RESET BY THE ENGINEER OR THE CITY AND MAY RESULT IN A PRICE ADJUSTMENT TO THE CONTRACT.

CONSTRUCTION STAKES AND BENCHMARKS

REFERENCE POINTS, LINES, GRADE STAKES, AND BENCHMARKS SET BY THE ENGINEER IN CONNECTION WITH THE WORK SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR AND SHALL NOT BE DISTURBED OR MOVED FROM THE EXACT POSITION AND ELEVATION AS SET BY THE ENGINEER. NO EXCAVATED MATERIAL SHALL BE PLACED OVER OR AGAINST SAID STAKES AND, EXCEPT WHERE NECESSARY TO REMOVE THE STAKES AS THE WORK PROGRESSES, STAKES SHALL BE CAREFULLY PRESERVED IN THE ORIGINAL POSITION AND ELEVATION UNTIL THE WORK HAS BEEN ACCEPTED. STAKES WHICH MUST BE REMOVED AS THE WORK PROGRESSES SHALL BE REMOVED ONLY UPON CONCURRENCE BY THE ENGINEER.

STAKING REQUIRED TO COMPLETE THE WORK WILL BE COMPLETED BY THE ENGINEER UNLESS OTHERWISE NOTED. STAKING WILL BE COMPLETED ONE TIME FOR EACH WORK ITEM. STAKES DISTURBED OR REMOVED THROUGH THE CARELESSNESS OF THE CONTRACTOR WILL BE RESTAKED BY THE ENGINEER AND MAY RESULT IN A PRICE ADJUSTMENT TO THE CONTRACT.

WORKING HOURS

WORKING HOURS ON THE PROJECT SHALL BE **BETWEEN 7AM TO 7PM**. PRIOR APPROVAL IS NEEDED FROM THE CITY AND ENGINEER TO WORK OUTSIDE THE SPECIFIED HOURS OF EXPECTED CONSTRUCTION.

CONSTRUCTION SCHEDULE

THE CONTRACTOR SHALL PREPARE A CONSTRUCTION SCHEDULE FOR APPROVAL BY THE ENGINEER THAT WILL ENSURE THE COMPLETION OF THE PROJECT WITHIN THE TIME FRAME SPECIFIED. THIS SCHEDULE MUST BE PROVIDED TO THE ENGINEER FOR REVIEW A MINIMUM OF 3 DAYS PRIOR TO THE PRECONSTRUCTION MEETING. THE NOTICE TO PROCEED WILL NOT BE ISSUED UNTIL THE SCHEDULE HAS BEEN APPROVED BY THE CITY. THE CONSTRUCTION SCHEDULE SHALL BE IN BAR OR NETWORK DIAGRAM FORM AND SHOW THE START AND COMPLETION DATES FOR SIGNIFICANT ITEMS OF WORK IN THEIR RESPECTIVE PHASES. SIGNIFICANT ITEMS OF WORK INCLUDES BUT IS NOT LIMITED TO: EROSION CONTROL, REMOVALS, GRADING, THE INSTALLATION OF WATERMAIN, SANITARY SEWER, STORM SEWER, STREET LIGHTING, BASE COURSE, CURB AND GUTTER, PAVING, SIDEWALK, AND PAVEMENT MARKINGS. THE CONSTRUCTION SCHEDULE SHALL BE UPDATED BY THE CONTRACTOR AS THE PROJECT PROGRESSES.

COORDINATION MEETINGS

THE CONTRACTOR SHALL CONDUCT COORDINATION MEETINGS WITH THE SUBCONTRACTORS, UTILITIES, THE ENGINEER. THESE MEETINGS SHALL BE HELD BI-WEEKLY AT A LOCATION ON OR NEAR THE PROJECT. THE CONTRACTOR SHALL DETERMINE THE TIME AND LOCATION AND AS APPROVED BY THE ENGINEER.

ALL COSTS TO CONDUCT THE COORDINATION MEETINGS SHALL BE INCIDENTAL TO THE PROJECT.

CONTRACTOR SAFETY REQUIREMENTS

THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS REGARDING CONFINED SPACE ENTRY AND TRENCH AND EXCAVATION SAFETY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY FROM THE ISSUANCE OF THE NOTICE TO PROCEED UNTIL FINAL ACCEPTANCE. THE CITY SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO FOLLOW ALL APPLICABLE RULES AND REGULATIONS.

PORTABLE TOILET FACILITIES

THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING PORTABLE TOILET FACILITIES FOR THE PROJECT AT NO COST TO THE CITY.

DRAINAGE

DRAINAGE IS THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR SHALL BE AWARE OF EXISTING DRAINAGE CONDITIONS AND FACILITIES AND SHALL PROVIDE FOR DRAINAGE DURING ALL PHASES OF CONSTRUCTION. DAMAGE CAUSED BY IMPROPER TEMPORARY DRAINAGE FACILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.

UTILITIES

ALL UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO STARTING WORK. ANY TIME EXISTING UTILITIES IMPEDE THE PROGRESS OF WORK, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

ALL UTILITIES, WHETHER PRIVATELY OR PUBLICLY OWNED, SHALL BE MOVED, RELOCATED, AND/OR REPLACED AS NECESSARY, BY THE RESPECTIVE UTILITY COMPANY OR COMPANIES EXCEPT AS NOTED IN THE PLANS. THESE MODIFICATIONS SHALL TAKE PLACE IN ADVANCE OF CONSTRUCTION WHEN APPLICABLE OR WHEN ADVISED BY THE ENGINEER. NO PAYMENT SHALL BE MADE TO THE CONTRACTOR UNLESS SPECIFIED IN THE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL SAFEGUARD ALL UTILITIES AND COORDINATE HIS EFFORTS TO COINCIDE WITH UTILITY WORK BY OTHERS IN ORDER TO MINIMIZE INCONVENIENCE TO THE PUBLIC AND UTILITY COMPANIES. WHEN PIPE UTILITY INSTALLATION CROSSES EXISTING UTILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPORTING THE UTILITIES IN A MANNER THAT IS ACCEPTABLE TO THE OWNER OF THE UTILITY. ANY DAMAGE CAUSED TO THE UTILITIES DUE TO CONTRACTOR CARELESSNESS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE UTILITY OWNER.

ABANDONED UTILITIES (GAS LINES, TELEPHONE LINES, ETC.) ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. COSTS ASSOCIATED WITH THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS BID ITEMS ASSOCIATED WITH WORK ADJACENT TO THE ABANDONED UTILITY.

EXISTING UTILITY LOCATIONS SHOWN ON DRAWINGS ARE APPROXIMATE. THERE IS NO GUARANTEE THAT THE UTILITIES SHOWN INCLUDE ALL SUCH UTILITIES OR THAT THE LOCATIONS INDICATED ARE EXACT. THE CONTRACTOR SHALL CONTACT SOUTH DAKOTA ONE CALL SYSTEM, UTILITY COMPANIES, AND THE CITY OF MADISON TO VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING SOUTH DAKOTA ONE CALL 1-800-781-7474 TO HAVE UTILITIES FIELD LOCATED.

THE FOLLOWING UTILITY COMPANIES ARE KNOWN TO HAVE FACILITIES ON THE PROJECT:

CITY OF YANKTON

UTILITY - WATER, SANITARY, STORM
315 WEST RIVERSIDE DRIVE
PO BOX 176
YANKTON, SD 57078
PHONE: (605) 668-5272

LUMEN (CENTURY LINK)

UTILITY – PHONE, CABLE, AND INTERNET
125 SOUTH DAKOTA AVENUE
SIOUX FALLS, SD 57104
PHONE: (605) 691-2052

MIDAMERICAN ENERGY COMPANY

UTILITY - GAS
1200 S BLAUVELT AVENUE
SIOUX FALLS, SD 57105
PHONE: (605) 373-6081

MIDCO COMMUNICATIONS

UTILITY - PHONE, CABLE & INTERNET
1305 N TERRY AVENUE
SIOUX FALLS, SD 57107
PHONE: (605) 231-0388

NORTHWESTERN ENERGY

UTILITY - ELECTRIC
3210 DOUGLAS AVENUE
YANKTON, SD 57078
PHONE: (800) 245-6977

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
GENERAL NOTES

REV	DATE	DESCRIPTION
XX	XX	XX
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REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
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D-1

NUSTAR ENERGY

UTILITY – GAS PIPELINE
2608 EAST HIGHWAY 50
YANKTON, SD 57078
PHONE: (712) 330-1742

SDN COMMUNICATIONS

UTILITY - INTERNET
2900 W 10TH STREET
SIOUX FALLS, SD 57104
PHONE: (605) 978-7119

BLUEPEAK BROADBAND

UTILITY - PHONE, CABLE & INTERNET
5100 s BROADBAND LANE
SIOUX FALLS, SD 57108
PHONE: (605) 366-3762

TRANSCANADA ENERGY

UTILITY - OIL PIPELINE
315 E 4th ST
YANKTON, SD 57078
PHONE: (402) 649-5307

THE CONTRACTOR SHALL COOPERATE WITH AND COORDINATE HIS EFFORTS TO WORK WITH THE UTILITY COMPANIES AND THEIR CONTRACTORS. EACH BIDDER SHALL BE RESPONSIBLE PRIOR TO BID LETTING, FOR DETERMINING THE EFFECTS OF UTILITY WORK ON THE PROJECT WORK SCOPE AND SCHEDULE AND SHALL ACCOUNT FOR ALL SUCH EFFECTS IN HIS BID. NO CONSIDERATION WILL BE GIVEN TO THE CONTRACTOR AFTER THE BID LETTING ON ACCOUNT OF UTILITY WORK DONE BY OTHERS.

CONTRACTOR INSTALLED UTILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSISTING WITH LOCATING THE CITY UTILITIES INSTALLED WITH THE PROJECT UNTIL FINAL ACCEPTANCE IS GRANTED. NO ADDITIONAL PAYMENT WILL BE MADE FOR LOCATING UTILITIES.

PROTECTION OF EXISTING WATER MAIN, SANITARY SEWER, AND STORM SEWER SYSTEMS

FOR THE PROTECTION OF EXISTING PUBLIC UNDERGROUND UTILITIES AND THE SURROUNDING WORK AREA, CONSIDERATION SHALL BE GIVEN TO ISOLATING PORTIONS OF THE EXISTING WATER DISTRIBUTION SYSTEM WITHIN THE CONSTRUCTION LIMITS WHILE MAINTAINING FIRE PROTECTION. DURING UNDERGROUND UTILITY INSTALLATION SUCH AS, BUT NOT LIMITED TO, SANITARY SEWER, WATER MAIN, STORM SEWER, SUMP PUMP DRAIN, ETC., IN THE PROXIMITY OF EXISTING WATER MAIN AND/OR WATER SERVICES, THE EXISTING WATER MAIN DISTRIBUTION SHALL BE ISOLATED WITHIN THE WORK AREA. UPON RECEIVING NOTICE FROM THE CONTRACTOR 24 HOURS IN ADVANCE OF ANY WORK, CITY STAFF WILL OPERATE DESIGNATED WATER VALVES, WHERE APPROPRIATE, TO ISOLATE THE WORK AREA AS MUCH AS REASONABLY POSSIBLE. THE CONTRACTOR SHALL BECOME AWARE OF THE LOCATION AND STATUS (OPEN/CLOSED) OF ANY DESIGNATED ISOLATION VALVE(S).
YANKTON WATER MAINTENANCE STAFF SHALL BE NOTIFIED IMMEDIATELY IN THE EVENT OF A WATER SERVICE EMERGENCY OR INTERRUPTION. IT WILL BE PERMISSIBLE FOR THE CONTRACTOR TO OPERATE THE DESIGNATED VALVE(S) IN THE EVENT OF A WATER MAIN OR WATER SERVICE FAILURE WITHIN THE CONSTRUCTION AREA. THE CONTRACTOR IS REQUIRED TO HAVE A VALVE OPERATING KEY ON SITE IN THE EVENT OF SUCH A FAILURE. YANKTON WATER MAINTENANCE (605) 668-5273 SHALL BE NOTIFIED IMMEDIATELY AFTER THE SHUTDOWN. CITY CREWS WILL OPERATE THE VALVES AFTER REPAIRS HAVE BEEN MADE AND INSPECTIONS HAVE BEEN COMPLETED.
EXISTING SANITARY SEWER LINES AND MANHOLES WITHIN THE CONSTRUCTION LIMITS SHALL BE PROTECTED AT ALL TIMES DURING CONSTRUCTION. THE UPSTREAM ENDS OF EXISTING SANITARY SEWER LINES DOWNSTREAM FROM NEW SANITARY SEWER CONSTRUCTION SHALL BE PLUGGED AT LOCATIONS TO BE APPROVED BY THE ENGINEER. WATER, STONE, DIRT, GRAVEL, ASPHALT, CONCRETE OR ANY OTHER DEBRIS SHALL NOT BE ALLOWED TO ENTER THE CITY'S SANITARY SEWER SYSTEM DURING FLUSHING OPERATIONS OR AT ANY OTHER TIME. CONSTRUCTION TAKING PLACE IN THE VICINITY OF ANY EXISTING CITY SANITARY SEWER LINES OR MANHOLES SHALL NOT CAUSE ANY INFLOW OF SURFACE WATER, GROUND WATER, WATER FROM DAMAGED WATER LINES, OR DEBRIS TO ENTER THE CITY'S SANITARY SEWER SYSTEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES OR COSTS INCURRED TO THE CITY'S SANITARY SEWER SYSTEM, WATER RECLAMATION DIVISION, AND/OR PRIVATE PROPERTY, AND ANY ACTIONS IMPOSED BY SDDENR DUE TO SPILLS, OVERFLOWS, INFLOWS, LIFT STATION SURCHARGES, CITY WATER DISCHARGE, SANITARY SEWER DISCHARGES TO SURFACE WATERS, SANITARY SEWER BACKUPS INTO HOMES, ETC.

EXISTING STORM SEWER INLETS AND PIPES WITHIN THE CONSTRUCTION LIMITS SHALL BE PROTECTED FROM THE ENTRANCE OF STONE, DIRT, GRAVEL, ASPHALT, CONCRETE OR ANY OTHER DEBRIS DURING CONSTRUCTION. THE SWPPP MUST BE FOLLOWED AT ALL TIMES.

VERIFY UTILITY

THIS WORK CONSISTS OF EXCAVATING MATERIAL TO VERIFY THE DEPTH OF AN EXISTING UTILITY LINE, (PRIVATE OR PUBLIC), TO AVOID POSSIBLE CONFLICTS, WHEN DIRECTED BY THE ENGINEER. PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE PER EACH.

THE VERIFY LOCATION - UTILITY LOCATIONS ARE INCLUDED IN THE VERIFY UTILITY WORKSHEET.

AFTER VERIFICATION, THE CONTRACTOR SHALL COORDINATE INFORMATION WITH THE ENGINEER.

ADJUSTMENT OF MANHOLE CASTINGS AND VALVE BOXES

UNDER THESE ITEMS OF WORK, THE SANITARY SEWER MANHOLES AND CASTINGS, STORM SEWER JUNCTION BOX CASTINGS, AND WATER MAIN VALVE BOXES ARE TO BE ADJUSTED IN ACCORDANCE WITH THE APPLICABLE STANDARD PLATE. THE CONTRACTOR SHALL FURNISH THE NEW MANHOLE OR JUNCTION BOX FRAMES AND COVERS AND WATER VALVE BOXES IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, WHERE SHOWN ON THE PLAN SHEETS.

EXISTING FRAMES AND/OR LIDS CRACKED OR BROKEN THROUGH THE CARELESSNESS OF THE CONTRACTOR'S FORCES SHALL BE REPLACED WITH NEW FRAMES AND/OR LIDS AT THE CONTRACTOR'S EXPENSE.

WASTE DISPOSAL SITE

ALL MATERIAL GENERATED FROM THIS PROJECT FOR DISPOSAL MUST BE DISPOSED OF AT A STATE-PERMITTED SOLID WASTE DISPOSAL SITE. DEPENDING ON WHAT MATERIAL IS GENERATED AND WHETHER IT IS CONTAMINATED OR UNCONTAMINATED WILL DETERMINE WHICH PERMITTED FACILITY CAN ACCEPT IT. PERMITTED FACILITIES INCLUDE CONSTRUCTION AND DEMOLITION DEBRIS SITES, RESTRICTED USE SITES, AND REGIONAL LANDFILLS.
ALL COSTS ASSOCIATED WITH DISPOSING OF WASTE SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

DEWATERING

IT IS ANTICIPATED THAT GROUNDWATER MAY BE ENCOUNTERED DURING EXCAVATION. DEWATERING MAY BE NEEDED TO PERFORM THE CONTRACT WORK. THERE IS NO SEPARATE BID ITEM FOR DEWATERING AND ALL COSTS ASSOCIATED SHALL BE INCIDENTAL TO THE VARIOUS RELATED BID ITEMS.

IF NECESSARY, THE CONTRACTOR WILL OBTAIN A DEWATERING PERMIT FROM THE DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES.

REMOVALS

REMOVAL OF EXISTING CONCRETE SIDEWALK

PAYMENT FOR CONCRETE PAVEMENT REMOVAL IS INCLUDED IN THE CONTRACT UNIT PRICE PER SQUARE YARD FOR “REMOVE CONCRETE SIDEWALK”. PAYMENT SHALL BE AT THE CONTRACT UNIT PRICE PER SQUARE YARD, REGARDLESS OF VARIATIONS IN THICKNESS.

CLEARING

Tree removal to occur in a time frame from November 1st to April 14th, outside the active maternity and pup- rearing season of the northern long-eared bat.

CLEARING OF TREES/BUSHES LESS THAN EIGHT (6) INCHES IN DIAMETER SHALL BE PAID FOR AS “CLEARING” AT THE CONTRACT UNIT PRICE PER ACRE AND SHALL INCLUDE ALL REMOVAL AND DISPOSAL OF TREES LESS THAN SIX (6) INCHES IN DIAMETER, STUMPS, ROOTS, AND OTHER VEGETATION DESIGNATED FOR REMOVAL AND MOWING AS REQUIRED. THE ENGINEER WILL ESTABLISH RIGHT-OF-WAY LINES AND CONSTRUCTION LIMIT LINES PRIOR TO THE START OF CLEARING OPERATIONS. THE ENGINEER, AT THE START OF THE PROJECT, WILL MARK THE CLEARING LIMITS.

ORGANIC MATERIAL SHALL NOT BE USED AS FILL IN TRENCHES OR EMBANKMENT. THE CONTRACTOR SHALL DISPOSE OF ALL TREES, BRUSH, STUMPS, ROOTS AND OTHER REMAINS IN A LEGAL MANNER. BURYING OR BURNING OF DEBRIS ON OR ADJACENT TO THE PROJECT SHALL BE PROHIBITED.

EROSION CONTROL MEASURES SHALL BE INSTALLED AND FUNCTIONING PRIOR TO CLEARING AND EXCAVATION. SEE EROSION CONTROL PLANS AND NOTES.

CLEAR AND GRUB TREE

Tree removal to occur in a time frame from November 1st to April 14th, outside the active maternity and pup- rearing season of the northern long-eared bat.

CLEARING OF TREES GREATER THAN SIX (6) INCES IN DIAMETER WILL BE PAID AT THE CONTRACT UNIT PRICE PER EACH FOR “CLEAR AND GRUB TREE” WITH SIZES AS SHOWN IN THE PLANS (TREE COUNT FOR EACH REACH).

SOME TREES MAY REQUIRE THE CONTRACTOR TO HAVE THE TREE TOPPED BY A LICENSED ARBORIST, PRIOR TO CLEARING AND GRUBBING THE TREE, DUE TO THE CLOSE PROXIMITY OF PHYSICAL FEATURES TO REMAIN. ALL COSTS ASSOCIATED WITH THIS WORK IS CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR “CLEAR AND GRUB TREE”.
SOME TREES TO BE REMOVED ARE LOCATED NEAR DRIVEWAY PAVEMENTS, FENCES OR OTHER ITEMS NOT BEING REMOVED WITH THIS PROJECT. THE CONTRACTOR SHALL CUT THESE TREES LEVEL WITH THE GROUND AND GRIND THE STUMP 8” BELOW GROUND LINE. ALL COSTS ASSOCIATED WITH THIS WORK IS CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE FOR “CLEAR AND GRUB TREE”. REMOVAL OF TREES ARE IDENTIFIED ON THE H SHEETS. ALL SMALLER TREES AND SHRUBS (LESS THAN SIX (6) INCHES IN DIAMETER) WILL BE REMOVED AND PAID UNDER THE BID ITEM “CLEARING”.

SALVAGE RIPRAP

IN PLACE RIPRAP SHALL BE SALVAGED AND USED ELSEWHERE WITHIN THE REACH IT IS SALVAGED FROM AT LOCATIONS INDICATED IN THE PLANS. FOR ESTIMATING PURPOSES, CLASS C RIPRAP AT 2.5' THICK WAS ASSUMED FOR CALCULATING THE SALVAGE RIPRAP QUANTITIES. QUANTITY ADJUSTMENTS MAY BE MADE ON CONSTRUCTION AT THE ENGINEER'S DISCRETION. THE ASSUMED DEPTH AND CLASS HAS BEEN DEDUCTED FROM THE CORRESPONDING QUANTITY FOR CLASS C RIPRAP. ADJUSTMENTS WILL BE MADE BASED ON ACTUAL QUANTITIES DELIVERED TO THE PROJECT.

PLACE RIPRAP

SALVAGED RIPRAP SHALL BE PLACED IN THE PLANS SHOWN LOCATIONS WITHIN THE REACH IT WAS SALVAGED FROM. RIPRAP QUANTITIES HAVE BEEN REDUCED BY THE ASSUMED AMOUNT TO BE SALVAGED. ADJUSTMENTS TO THE QUANTITIES MAY BE MADE ON CONSTRUCTION AS DETERMINED BY THE ENGINEER.

SPECIAL RIPRAP

ALL VISIBLE RIPRAP IN REACH A IS TO BE LIMESTONE OR FIELD STONE WITH TWO FRACTURED FACES. SALVAGED RIPRAP NOT MEETING THIS REQUIREMENT MAY BE USED IN THE RIPRAP AREA ABOVE THE 2-YR WATER SURFACE FILLED WITH GRANULAR FILTER MATERIAL AND COVERED WITH 12 INCHES OF TOPSOIL.

GRANULAR FILTER MATERIAL

GRANULAR FILTER MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 882 FOR SUBBASE.

PAYMENT FOR "GRANULAR FILTER MATERIAL" WILL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, TOOLS, EQUIPMENT, AND APPURTENANCES NECESSARY TO PLACE THE FILTER MATERIAL WITHIN THE VOID REGIONS OF THE RIPRAP. THE BASIS OF PAYMENT FOR "GRANULAR FILTER MATERIAL" WILL BE PLANS QUANTITY. NO SEPARATE MEASUREMENT WILL BE MADE UNLESS SO DIRECTED BY THE ENGINEER.

GRADING

TABLE OF EARTHWORK QUANTITIES

IMPORTED TOPSOIL	4,068 CY
SCARIFY AND RECOMPACT	533 CY
STRIP AND STOCKPILE TOPSOIL	2,873 CY
TOPSOIL PLACEMENT	6.282 CY
TOTAL UNCLASSIFIED EXCAVATION	32,421 CY

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THE ESTIMATED QUANTITY OF STRIPPED TOPSOIL HAS BEEN ADDED TO THE UNCLASSIFIED EXCAVATION QUANTITY. BY DOING THIS, THE QUANTITY OF TOPSOIL FROM THE CUTS WILL BE PAID FOR TWICE AS UNCLASSIFIED EXCAVATION. THIS WILL BE FULL COMPENSATION FOR EXCAVATION, WHICH INCLUDES NECESSARY UNDERCUTTING TO PROVIDE SPACE FOR PLACEMENT OF TOPSOIL.

SOIL BORINGS

SOIL BORING INFORMATION TAKEN FOR THE PROJECT IS AVAILABLE ON THE PROJECT WEBSITE WHERE PLANS ARE OBTAINED. THERE IS NO EXPRESSED OR IMPLIED AGREEMENT THAT DEPTHS OR CHARACTER OF MATERIALS SHOWN ARE CORRECT OR COMPLETE. CONDITIONS AFFECTING WORK MAY ACTUALLY DIFFER FROM THOSE SHOWN IN THE BORING LOGS. BIDDERS ARE EXPECTED TO EXAMINE THE SITE, INTERPRET OR DISREGARD SOIL BORING LOGS AS THEY SEE FIT, AND ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE CHARACTER AND LOCATIONS OF MATERIALS TO BE ENCOUNTERED. ALL CONTRACTORS DESIRING TO TAKE ADDITIONAL SOIL BORINGS ON THIS PROJECT MUST OBTAIN PERMISSION FROM THE PROPERTY OWNERS INVOLVED AND FROM THE ENGINEER.

UNCLASSIFIED EXCAVATION

EXCAVATE THE EXISTING SUBGRADE TO PROVIDE FOR THE REQUIRED DEPTH OF GRAVEL CUSION AND CONCRETE SURFACING. EARTHWORK SHALL BE PERFORMED AS SHOWN ON APPROPRIATE CROSS SECTIONS.

DUE TO THE DIFFICULTY IN MAKING FIELD MEASUREMENTS ON THIS PROJECT AND TO EXPEDITE FINAL PAYMENT, THE COMPUTED QUANTITY OF UNCLASSIFIED EXCAVATION SHALL BE THE BASIS OF PAYMENT FOR THIS ITEM. NO FIELD MEASUREMENTS WILL BE MADE FOR PAYMENTS EXCEPT WHEN CHANGES FROM THE PLAN SHOWN CONSTRUCTION LIMITS ARE ORDERED BY THE ENGINEER.

ALL EXCAVATIONS MADE FOR UNDERGROUND UTILITIES IS INCIDENTAL TO THE INSTALLATION OF THAT UTILITY. ALL SPOIL MATERIAL REMOVED FOR PIPE INSTALLATION IS THE PROPERTY OF THE CONTRACTOR AND IS TO BE REMOVED FROM THE PROJECT BY THE CONTRACTOR. ALL SPOIL MATERIAL AND COSTS FOR REMOVING IT ARE INCIDENTAL TO PIPE INSTALLATION COSTS.

THE EXCESS SOIL RESULTING FROM EARTHWORK ACTIVITIES, IF ANY, SHALL BECOME THE PROPERTY OF THE CONTRACTOR WHO SHALL BE RESPONSIBLE FOR ITS REMOVAL FROM THE SITE. THE WORK AREAS ARE WITHIN A FEMA SPECIAL FLOOD HAZARD AREAS INCLUDING FLOODWAY, AND AS SUCH, NO FILL MATERIAL SHALL BE PLACED IN AN AREA NOT DESIGNATED ON THE PLANS UNLESS APPROVED BY THE ENGINEER AND COMMUNITY FLOOPLAIN ADMINISTRATOR.

WATER FOR COMPACTION OF SUBGRADE AND EMBANKMENTS SHALL BE PROVIDED BY THE CONTRACTOR AND USED TO MAINTAIN SOIL AT OR NEAR OPTIMUM MOISTURE CONTENT TO OBTAIN REQUIRED DENSITY. COMPACTION OF SUBGRADE AND EMBANKMENTS SHALL BE GOVERNED BY THE SPECIFIED DENSITY METHOD. COMPACTION OF EMBANKMENT SHALL BE NO LESS THAN 95% OF STANDARD PROCTOR DENSITY. SEPARATE PAYMENT WILL BE MADE FOR WATER USED FOR COMPACTION OF SUBGRADE. THE ESTIMATED QUANTITY OF WATER FOR EMBANKMENT IS BASED ON 10 GALLONS PER CUBIC YARD OF UNCLASSIFIED EXCAVATION.

SCARIFY AND RECOMPACT SUBGRADE

THE DEPTH OF SCARIFICATION OF THE SUBGRADE SHALL BE NO LESS THAN 8 INCHES. THE SUBGRADE SOIL SHALL BE LOOSENED AND MANIPULATED IN SUCH A WAY AS TO ALLOW THE SUBGRADE MATERIAL TO ACHIEVE OPTIMUM MOISTURE CONTENT. AFTER SCARIFICATION, THE CONTRACTOR SHALL ALLOW SUFFICIENT TIME FOR THE SUBGRADE MATERIAL TO ACHIEVE OPTIMUM MOISTURE CONTENT PRIOR TO RECOMPACTING THE SUBGRADE. ALLOWABLE VARIANCE FROM OPTIMUM MOISTURE CONTENT SHALL BE WITHIN 3% (+/-). THE SUBGRADE SHALL BE RECOMPACTED TO NO LESS THAN 95% OF STANDARD PROCTOR DENSITY. AFTER RECOMPACTION OF THE SUBGRADE, THE CONTRACTOR SHALL SHAPE THE SUBGRADE TO THE CROSS SLOPES AND ELEVATIONS SPECIFIED IN THE PLANS AND ADD OR REMOVE MATERIAL AS NECESSARY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE "UNCLASSIFIED EXCAVATION" BID ITEM.

"SCARIFY AND RECOMPACT SUBGRADE" WILL BE PAID FOR ONCE PER PROJECT. ANY ADDITIONAL WORK TO RESCARIFY AND RECOMPACT THE SUBGRADE DUE TO THE CONTRACTOR NOT ALLOWING ENOUGH TIME FOR DRYING, OR NOT WORKING THE MATERIAL SUFFICIENTLY TO ACHIEVE OPTIMUM MOISTURE CONTENT, WILL BE COMPLETED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE SUBGRADE IN ACCEPTABLE CONDITION AFTER THE SCARIFICATION AND RECOMPACTION PROCESS. ANY ADDITIONAL WORK REQUIRED TO MAINTAIN THE SUBGRADE AFTER THE SCARIFICATION AND RECOMPACTION PROCESS IS COMPLETE SHALL BE COMPLETED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CITY.

PAYMENT FOR "SCARIFY AND RECOMPACT SUBGRADE" WILL BE FULL COMPENSATION FOR ALL MATERIALS, LABOR, TOOLS, EQUIPMENT, AND APPURTENANCES NECESSARY TO SCARIFY THE SUBGRADE, WORK THE SUBGRADE MATERIALS TO ACHIEVE OPTIMUM MOISTURE CONTENT, TRIM OR BRING IN ADDITIONAL MATERIAL AS NECESSARY, AND RECOMPACT THE SUBGRADE TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY. THE BASIS OF PAYMENT FOR "SCARIFY & RECOMPACT SUBGRADE" WILL BE PLAN QUANTITY. NO SEPARATE MEASUREMENT WILL BE MADE UNLESS SO DIRECTED AND AUTHORIZED BY THE ENGINEER.

IF SUBGRADE STABILIZATION IS NOT NECESSARY, THE ENGINEER MAY REMOVE THE SCARIFY AND RECOMPACT BID ITEM FOR THOSE AREAS.

SEE SECTION F FOR TRAFFIC CONTROL NOTES SEE SECTION G FOR EROSION CONTROL NOTES

INCIDNETAL WORK GRADING

Sheet (A) J-1, STA. 2+00 +/- 78' RIGHT "REMOVE BENCH WITHIN GRADING LIMITS. CONTRACTOR TO SALVAGE BENCH."
SHEET (C) J-2, STA. 1+52 +/- 25' RIGHT "PROTECT EXISTING STORM OUTFALL."
SHEET (C) J-3, STA. 0+33 +/- 12' RIGHT "PROTECT EXISTING STORM OUTFALL."

STREET SWEEPING

VEHICLE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE WILL BE MINIMIZED. STREET SWEEPING WILL BE USED IF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET. THE CONTRACTOR WILL USE A PICKUP BROOM HAVING INTEGRAL SELF-CONTAINED STORAGE TO CLEAN THE ROADWAY. THE PICKUP BROOM USED WILL BE A MINIMUM OF 6 FEET WIDE AND HAVE WORKING GUTTER BROOMS. ALL COSTS FOR THE ROADWAY WITH A PICKUP BROOM WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER HOUR FOR "SWEEPING."

SURFACING

GRAVEL CUSION

GRAVEL CUSION SHALL BE IN ACCORDANCE WITH SDDOT STANDARD SPECIFICATIONS SECTION 260. MATERIAL FOR GRAVEL CUSION SHALL MEET REQUIREMENTS SET FORTH IN SDDOT STANDARD SPECIFICATIONS SECTION 882.
GRAVEL CUSION SHALL BE COMPACTED WITH PNEUMATIC ROLLERS AND SHALL CONTINUE ON EACH LIFT OF THE GRAVEL CUSION UNTIL THE SURFACE IS FIRM AND UNYIELDING AND ATTAINS A DENSITY OF 97% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY SD 104, METHOD 4 AND SD 105 OR SD 114.

WATER FOR COMPACTION IS ESTIMATED AT 12 GALLONS PER TON AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER MGAL FOR BID ITEM "WATER FOR GRANULAR MATERIAL".

PAYMENT FOR GRAVEL CUSION SHALL BE INCIDENTAL TO THE CONTERACT UNIT PRICE PER SQFT FOR 6" REINFORCED CONCRETE SIDEWALK.

CONCRETE CURING

A. ALL CONCRETE SHALL BE CURED IN ACCORDANCE WITH SECTION 380.3.M.2 OF THE SDDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES EXCEPT AS MODIFIED IN THIS NOTE. ALL CONCRETE SHALL BE CURED WITH A WHITE PIGMENTED LINSEED OIL BASE EMULSION COMPOUND WHEN CURED USING THE IMPERVIOUS MEMBRANE METHOD. CURING COMPOUND MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 821.1.C.
B. APPLY LIQUID CURING COMPOUND IN A FINE SPRAY TO FORM A CONTINUOUS, UNIFORM SOLID WHITE OPAQUE COVERAGE (EQUAL TO A WHITE SHEET OF TYPING PAPER) ON THE HORIZONTAL SURFACE AND VERTICAL EDGES OF PAVEMENT, CURBS AND BACK OF CURBS IMMEDIATELY AFTER SURFACE MOISTURE HAS DISAPPEARED, BUT NO LATER THAN 30 MINUTES AFTER FINISHING. CONCRETE EDGES EXPOSED BY THE REMOVAL OF FORMS SHALL ALSO BE CURED. APPLY THE CURING COMPOUND IN 2 EQUAL APPLICATIONS, IN OPPOSING DIRECTIONS, TO ENSURE A UNIFORM COVERAGE. WITH THE APPROVAL OF THE ENGINEER, THE TIMING OF CURE APPLICATION MAY BE ADJUSTED DUE TO VARYING WEATHER CONDITIONS AND CONCRETE MIX PROPERTIES TO ENSURE ACCEPTABLE MACROTEXTURE IS ACHIEVED.

EROSION & SEDIMENT CONTROL

REMOVE AND REPLACE TOPSOIL

TOPSOIL WILL ALSO BE SALVAGED AND STOCKPILED PRIOR TO CONSTRUCTION. LIMITS OF THIS WORK, DEPTH OF SALVAGE, AND STOCKPILE LOCATION WILL BE DIRECTED BY THE ENGINEER. FOLLOWING COMPLETION OF CONSTRUCTION, TOPSOIL WILL BE SPREAD EVENLY OVER THE DISTURBED AREAS.

THE ESTIMATED AMOUNT OF TOPSOIL TO BE STRIPPED AND STOCKPILED IS 6,282 CUYD.

ALL COSTS ASSOCIATED WITH REMOVING AND REPLACING THE TOPSOIL ALONG AREAS TO BE RESURFACED WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE FOR "STRIP AND STOCKPILE TOPSOIL."

MYCORRHIZAL INOCULUM

MYCORRHIZAL INOCULUM WILL CONSIST OF MYCORRHIZAL FUNGI SPORES AND MYCORRHIZAL FUNGI-INFECTED ROOT FRAGMENTS IN A SOLID CARRIER. THE CARRIER MAY INCLUDE ORGANIC MATERIALS, CALCINATED CLAY, OR OTHER MATERIALS CONSISTENT WITH APPLICATION AND GOOD PLANT GROWTH. THE SUPPLIER WILL PROVIDE CERTIFICATION OF THE FUNGAL SPECIES CLAIMED AND THE LIVE PROPAGULE COUNT. THE INOCULUM WILL INCLUDE THE FOLLOWING FUNGAL SPECIES:

25%	*GLOMUS INTRARADICES*
25%	*GLOMUS AGGREGATUM OR DESERTICOLA*
25%	*GLOMUS MOSSEAE*
25%	*GLOMUS ETUNICATUM*

ALL SEED WILL BE INOCULATED BY THE SEED SUPPLIER WITH A MINIMUM OF 20,000 LIVE PROPAGULES OF MYCORRHIZAL FUNGI PER 1,000 SQUARE FEET. ALL COSTS OF INOCULATING THE SEED WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER POUND FOR THE CORRESPONDING PERMANENT SEED MIXTURE.

THE MYCORRHIZAL INOCULUM WILL BE AS SHOWN BELOW OR AN APPROVED EQUAL:

PRODUCT	MANUFACTURER
MYCOAPPLY	MYCORRHIZAL APPLICATIONS, INC. GRANTS PASS, OR PHONE: 1-866-476-7800 WWW.MYCORRHIZAE.COM
AM 120 MULTI SPECIES BLEND	REFORESTATION TECHNOLOGIES INT. GILROY, CA PHONE: 1-800-784-4769 WWW.REFOREST.COM

FERTILIZING (SPECIAL PERMANENT SEED MIXTURE 2 ONLY)

THE CONTRACTOR WILL APPLY AN ALL-NATURAL SLOW RELEASE FERTILIZER PRIOR TO SEEDING OR PLACING SOD. THE ALL-NATURAL FERTILIZER WILL HAVE A MINIMUM GUARANTEED ANALYSIS OF 4-4-4 AND BE USDA CERTIFIED BIOBASED. IT SHOULD PROVIDE A MINIMUM OF 4% (N) NITROGEN WITH A MINIMUM WATER INSOLUBLE NITROGEN (WIN) FRACTION OF 2.07%, A MINIMUM OF 4% (P2O5) AVAILABLE PHOSPHATE, A MINIMUM OF 4% (K2O) SOLUBLE POTASH, AND A MAXIMUM CARBON TO NITROGEN RATIO (C:N RATIO) OF 5:1. THE ALL-NATURAL FERTILIZER WILL BE FREE OF WEED-SEED AND PATHOGENS ACCOMPLISHED THROUGH THERMOPHILIC COMPOSTING, AND NOT MECHANICAL OR CHEMICAL STERILIZATION, TO ASSURE PRESENCE OF BENEFICIAL SOIL MICROBIOLOGY. THE FERTILIZER WILL HAVE A NEAR NEUTRAL PH, A LOW SALT INDEX, A LOW BIOLOGICAL OXYGEN DEMAND, CONTAIN ORGANIC HUMIC AND FULVIC ACIDS, AND HAVE HIGH AEROBIC ORGANISM COUNTS. THE FERTILIZER WILL ALSO BE STABLE, FREE OF BAD ODORS, AND BE UNATTRACTIVE AS A FOOD SOURCE FOR ANIMALS. IT SHOULD ALSO BE IN A GRANULAR FORM THAT IS EASILY SPREAD.

THE FERTILIZER WILL BE APPLIED AT A RATE OF 1,500 POUNDS PER ACRE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED METHOD OF APPLICATION.

THE ALL-NATURAL SLOW RELEASE FERTILIZER WILL BE AS SHOWN BELOW OR AN APPROVED EQUAL:

PRODUCT	MANUFACTURER
SUSTANE	SUSTANE CORPORATE HEADQUARTERS

BANNER
engineering a better community
www.bannerassociates.com - Toll Free: 1.855.323.6342

PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
GENERAL NOTES

REV	DATE	DESCRIPTION
XX	XX	XX
XX	XX	XX

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
DESIGNED BY:	KRJ
CHECKED BY:	TMS
DRAWN BY:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
D-3

CANNON FALLS, MINNESOTA
PHONE: 1-800-352-9245
WWW.SUSTANE.COM

PERFECT BLEND — PERFECT BLEND, LLC
BELLEVUE, WA
PHONE: 1-866-456-8890
WWW.PERFECT-BLEND.COM

NATURE SAFE — NATURE SAFE FERTILIZERS
IRVING, TX
PHONE: 1-605-759-5622
WWW.NATURESAFE.COM

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

PERMANENT SEEDING

THE AREAS TO BE SEEDED CONSIST OF ALL NEWLY GRADED AREAS WITHIN THE PROJECT LIMITS EXCEPT FOR THE TOP OF TRAILS, BARE RIPRAP, AND EASEMENT AREAS ON PRIVATE PROPERTY.

SEED SHALL BE DELIVERED TO THE PROJECT IN BAGS WITH SEED TAGS ATTACHED. THE TAGS WILL BE COLLECTED FROM THE BAGS BY THE ENGINEER DURING SEEDING. SEE PLAN NOTES ON LABELING. SEED SHALL BE APPLIED USING A PRESS DRILL OR SLIT SEEDER IN ALL AREAS WHERE POSSIBLE. HAND SEEDING WILL BE KEPT TO A MINIMUM AND ONLY DONE WHEN SITE CONDITIONS PROHIBIT THE USE OF A DRILL OR SLIT SEEDER.

THESE RATES SHALL BE DOUBLED IF SEED IS BROADCAST AND SHALL BE INCREASED BY 50 PERCENT IF THE SEEDING IS APPLIED THROUGH HYDRAULIC SEEDING. HYDRAULIC SEEDING MAY BE SUBSTITUTED FOR DRILLING ONLY WHERE SLOPES ARE STEEPER THAN 3:1. IF HYDRAULIC SEEDING IS USED, HYDRAULIC MULCHING SHALL BE DONE AS A SEPARATE OPERATION. ALL SEED SHALL BE DRILLED IN WITH AN APPROVED DRILL AND INCORPORATED TO THE TOP ¼" +/- OF TOPSOIL. SMALL AREAS NOT ACCESSIBLE WITH A DRILL MAY BE BROADCAST AND DRAGGED OR RAKED IN.

THE SEED SUPPLIER WILL BE AS SHOWN BELOW OR AN APPROVED EQUAL:

PRODUCT	MANUFACTURER
SEED MIX 1 - WET PRAIRIE MIX SEED MIX 2 - EZ LAWN	MILBORN SEEDS BROOKINGS, SD PHONE: 1-888-498-7333 www.millbornseeds.com

SPECIAL PERMANENT SEED MIXTURE 1 (BELOW 10YR, WET PRAIRIE MIX) WILL CONSIST OF THE FOLLOWING:

Grass Species	Mix Ratio
Wool grass	10%
Big Bluestem	9%
Indiangrass	8%
Fowl Bluegrass	7%
Switchgrass	7%
Virginia Wildrye	7%
Canada Bluejoint	6%
American Mannagrass	5%
Fowl Mannagrass	5%
Dark Green Bulrush	5%
Seedbox	3%
Fringed Brome	3%
Other (see note below)	25%
	100%

NONE OF THE FOLLOWING EXCEED 2% OF THE TOTAL MIXTURE WEIGHT FOR "OTHER": BLUE VERVAIN, BONESET, BRISTLY SEDGE, GREAT ST. JOHN'S WORT, HARDSTEM BULRUSH, SNEEZEWEED, PORCUPINE SEDGE, SPOTTED JOE PYE WEED, RIVER BULRUSH, SWEETFLAG, SOFTSTEM BULRUSH, PRAIRIE CORDGRASS, WHEAT SEGE, VIRGINIA WILDRYE, AND YELLOW FRUIT SEGE.

AMOUNTS ARE BASED ON PERCENTAGE OF FULL SEEDING RATE. THE SEED SHALL BE APPLIED AT **30 POUNDS PER ACRE** INCLUDING A CARRIER SEED. CARRIER SEED SHALL BE APPROXIMATELY 15 POUNDS PER ACRE.

COVER CROP SEEDING (ACCOMPANYING SEED MIX 1 ONLY):
A COVER CROP SEED MIXTURE SHALL BE APPLIED AT RATES LISTED IN THE FOLLOWING TABLE. COVER CROP SEED SHALL HAVE A MINIMUM 75% GERMINATION RATE. ALL COSTS OF COVER CROP SEED AND SEEDING WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER POUND FOR SEED MIX 1.

Table 12.2
Minimum Drill Seeding Rates for Annual Grasses[a]

Species	Growth Season	Pounds of Pure Live Seed (PLS)/acre[b]
Annual ryegrass	Cool	20
Cereal rye	Cool	30
Winter wheat/barley	Cool	30
Spring wheat/barley	Cool	30
Millet	Warm	20
Oats		60

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead plant material residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching shall be done as a separate operation to prevent the seeds from being encapsulated in the mulch.

[b] Seeding rates shall be increased by 50 percent if seeding is done by hydraulic seeding or using a Brillion Drill; or doubled if seed is broadcast.

If irrigation water is available and applied in an appropriate manner, seeding dates for annual grasses can be extended throughout most of the growing season.

SPECIAL PERMANENT SEED MIXTURE 2 (ABOVE 10YR, EZ LAWN) WILL CONSIST OF THE FOLLOWING:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 SqFt)
Chewings Fescue	Ambrose, K2, Zodiac, Shadow III	1.75
Hard Fescue		1.75
Sheeps Fescue		1.75
Creeping Red Fescue	Epic, Boreal, Chantilly	1.75
	Total:	7.0

THE SPECIAL PERMANENT SEED MIXTURE 2 WILL BE TESTED WITHIN 12 MONTHS PRIOR TO PLANTING, EXCLUSIVE OF THE CALENDAR MONTH IN WHICH THE TEST WAS COMPLETED.

CONTAINERIZED UPLAND PLANTINGS

CONTAINERIZED UPLAND PLANTINGS WILL BE PLANTED ABOVE THE APPROXIMATE 10-YEAR WATER SURFACE ELEVATION, PER THE STREAM BANK TREATMENT TYPICAL SECTION, IN NEWLY GRADED AREAS. PLANTINGS SHALL EXTEND TO A MAXIMUM OF 20' PAST THE 10-YEAR WATER SURFACE ELEVATION GRADE BREAK. PLANTINGS SHALL NOT BE PLACED WITHIN 5' OF PROPOSED AND EXISTING TRAILS. TREES AND SHRUBS WILL BE PLANTED IN SMALL CLUSTERS OR GROUPS TO PATTERN A NATURAL COMMUNITY ASSOCIATION. PLANTS SHALL BE KEPT MOIST AND COOL IN THE SHADE PRIOR TO PLANTING ON SITE. CONTRACTOR TO PLANT DURING SPRING OR FALL UNLESS OTHERWISE APPROVED BY ENGINEER. PLANTING HOLES SHALL BE DUG LARGE ENOUGH FOR ROOT SYSTEM. CONTRACTOR TO WATER EACH PLANTING IMMEDIATELY AFTER HOLE IS BACKFILLED. PLANTING DENSITIES (SEE TABLE BELOW) CORRELATE TO THE CLASS B, C OR D RIPRAP EXTENTS THAT ARE SHOWN IN THE DESIGN PLAN SHEETS. PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE PER EACH OF CONTAINERIZED UPLAND PLANTINGS AND INCLUDES ALL COSTS ASSOCIATED WITH PROCUREMENT AND INSTALLATION PER THE PROJECT SPECIFICATIONS.

Common Name	Botanical Name	Quantity*	Container Size
Class D Riprap Area (Plantings 2' on center)			
Hackberry Tree	*Celtis*	75	2 GAL
Chokecherry	*Prunus virginiana*	50	1 GAL
American Plum	*Prunus americana*	50	1 GAL
Smooth Sumac	*Rhus glabra*	50	1 GAL
Fragrant Sumac	*Rhus aromatica*	50	1 GAL
Class C Riprap Area (Plantings 4' on center)			
Hackberry Tree	*Celtis*	50	2 GAL
American Plum	*Prunus americana*	25	1 GAL
Smooth Sumac	*Rhus glabra*	25	1 GAL
Fragrant Sumac	*Rhus aromatica*	25	1 GAL
Class B Riprap Area (Plantings 5' on center)			
Hackberry Tree	*Celtis*	50	2 GAL
Smooth Sumac	*Rhus glabra*	25	1 GAL
Fragrant Sumac	*Rhus aromatica*	25	1 GAL
*Quantities are per 150 L.F. of proposed bank treatment			

RIPARIAN PLANTINGS (WILLOW STAKES)

WILLOW STAKES WILL BE PLANTED NEAR THE APPROXIMATE 2-YEAR WATER SURFACE ELEVATION, PER THE STREAM BANK TREATMENT TYPICAL SECTION, IN NEWLY GRADED AREAS. 3 STAKES WILL BE PLANTED PER LINEAR FOOT OF BANK TREATMENT. WILLOW STAKES SHALL BE 24"-30" LONG. WILLOW STAKES CAN BE PURCHASED DIRECTLY FROM THE YANKTON CONSERVATION DISTRICT OR HARVESTED ON-SITE. WILLOWS THAT ARE HARVESTED BY THE CONTRACTOR SHALL BE CUT CLEAN, WITHOUT STRIPPING THE BARK, AT AN ANGLE. WILLOWS SHALL BE SOAKED IN WATER PRIOR TO PLANTING ON-SITE. CONTRACTOR TO PLANT DURING SPRING OR FALL UNLESS OTHERWISE APPROVED BY ENGINEER. PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE PER WILLOW STAKE AND INCLUDES ALL ASSOCIATED COSTS WITH PROCUREMENT AND INSTALLATION PER THE PROJECT SPECIFICATIONS.

12" EROSION CONTROL WATTLE

EROSION CONTROL WATTLES FOR RESTRAINING THE FLOW OF RUNOFF AND SEDIMENT WILL BE INSTALLED AT LOCATIONS NOTED IN THE TABLE AND AT LOCATIONS DETERMINED BY THE ENGINEER DURING CONSTRUCTION. REFER TO STANDARD PLATE 734.06 FOR DETAILS.

THE CONTRACTOR WILL PROVIDE CERTIFICATION THAT THE EROSION CONTROL WATTLES DO NOT CONTAIN NOXIOUS WEED SEEDS.

EROSION CONTROL WATTLES WILL REMAIN ON THE PROJECT TO DECOMPOSE.

THE EROSION CONTROL WATTLE PROVIDED WILL BE FROM THE APPROVED PRODUCT LIST. THE APPROVED PRODUCT LIST FOR EROSION CONTROL WATTLE MAY BE VIEWED AT THE FOLLOWING INTERNET SITE:

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PROJECT / SHEET TITLE :
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REV	DATE	DESCRIPTION
XX	XX	XX
XX	XX	XX

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 23371.00
DATE: OCTOBER 2022
DESIGNED BY: KRJ
CHECKED BY: TMS
DRAWN BY: CKM
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
D-4

HTTP://APPS.SD.GOV/HC60APPROVEDPRODUCTS/MAIN.ASPX

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

HIGH FLOW SILT FENCE

THE HIGH FLOW SILT FENCE FABRIC PROVIDED WILL BE FROM THE APPROVED PRODUCT LIST. THE APPROVED PRODUCT LIST FOR HIGH FLOW SILT FENCE MAY BE VIEWED AT THE FOLLOWING INTERNET SITE:
HTTP://APPS.SD.GOV/HC60APPROVEDPRODUCTS/MAIN.ASPX

HIGH FLOW SILT FENCE WILL BE PLACED AT THE LOCATIONS NOTED IN THE TABLE AND AT LOCATIONS THAT WILL MINIMIZE SILTATION OF ADJACENT STREAMS, LAKES, DAMS, OR DRAINAGE AREAS AS DETERMINED BY THE ENGINEER DURING CONSTRUCTION. REFER TO STANDARD PLATE 734.05 FOR DETAILS.

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS. MUCKING SILT FENCE, REPAIR SILT FENCE, AND REMOVE SILT FENCE WILL BE PAID FOR AT THEIR CONTRACT UNIT PRICES.

TURF REINFORCEMENT MAT

TYPE 2 TURF REINFORCEMENT MAT WILL BE INSTALLED AT LOCATIONS SHOWN IN THE PLANS AND AT LOCATIONS DETERMINED BY ENGINEERING DURING CONSTRUCTION. THE CONTRACTOR WILL USE A TURF REINFORCEMENT MAT FROM THE APPROVED PRODUCTS LIST. THE APPROVED PRODUCT LIST FOR TYPE 2 TURF REINFORCEMENT MAT MAY BE VIEWED AT THE FOLLOWING INTERNET SITE:
HTTP://APPS.SD.GOV/HC60APPROVEDPRODUCTS/MAIN.ASPX

TYPE 2 TURF REINFORCEMENT MAT WILL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURES INSTALLATION INSTRUCTIONS.

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

EROSION CONTROL BLANKET

EROSION CONTROL BLANKET WILL BE INSTALLED 10 FEET WIDE AT LOCATIONS DETERMINED BY THE ENGINEER DURING CONSTRUCTION.

THE EROSION CONTROL BLANKET PROVIDED WILL BE FROM THE APPROVED PRODUCT LIST. THE APPROVED PRODUCT LIST FOR EROSION CONTROL BLANKET MAY BE VIEWED AT THE FOLLOWING INTERNET SITE:
HTTP://APPS.SD.GOV/HC60APPROVEDPRODUCTS/MAIN.ASPX

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

TYPE B DRAINAGE FABRIC

TYPE B DRAINAGE FABRIC WILL BE INSTALLED AT ALL LOCATIONS WHERE RIPRAP IS TO BE INSTALLED. TYPE B DRAINAGE FABRIC WILL BE INSTALLED DIRECTLY UNDER THE RIPRAP.

ALL COSTS ASSOCIATED WITH INSTALLING TYPE B DRAINAGE FABRIC INCLUDING EQUIPMENT, LABOR, AND MATERIALS WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER SQYD FOR "TYPE B DRAINAGE FABRIC."

THE TYPE B DRAINAGE FABRIC WILL BE HELD IN PLACE WITH SANDBAGS OR OTHER WEIGHTS DETERMINED BY THE ENGINEER DURING CONSTRUCTION UNTIL RIPRAP IS PLACED.

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

THIS TYPE OF SEDIMENT CONTROL DEVICE SHOULD BE USED WHERE THERE IS PAVEMENT IN THE VICINITY OF THE DROP INLETS AND STORM WATER OR SEDIMENT COULD POSSIBLY ENTER THE FRAME AND GRATE. SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE WILL BE INSTALLED PRIOR TO WORKING IN THE VICINITY OF THE DROP INLETS.
THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING AND REPAIRING THE SEDIMENT CONTROL DEVICES FOR THE DURATION OF THE PROJECT FOR WHICH SEDIMENT CONTROL MEASURES ARE REQUIRED. MAINTENANCE WILL BE SCHEDULED TO PREVENT STORM WATER FROM BACKING UP INTO THE DRIVING LANE.
"SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE" WILL BE PAID FOR ONE TIME AT EACH LOCATION, REGARDLESS OF THE NUMBER OF TIMES THE SEDIMENT CONTROL DEVICES ARE INSTALLED, INSPECTED, CLEANED, REMOVED, REPAIRED, OR REPLACED. ALL COSTS ASSOCIATED WITH FURNISHING, INSTALLING, INSPECTING, MAINTAINING, CLEANING, SEDIMENT REMOVAL, AND REPAIRING SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER EACH FOR "SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE".

SEDIMENT COLLECTION DEVICES WILL BE: A COMMERCIAL MADE SEDIMENT COLLECTION DEVICE FROM THE "SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE" LIST OR AN APPROVED EQUAL. THE DEVICE WILL BE INSTALLED IN REINFORCED CONCRETE DROP INLETS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE APPROVED LIST:

PRODUCT	MANUFACTURER
INFRASAFE DEBRIS COLLECTION DEVICE WITH FILTER SOCK	ROYAL ENVIRONMENTAL SYSTEMS, INC. STACY, MN PHONE: 1-800-817-3240 WWW.ROYALENTERPRISES.NET
DANDY CURB SACK AND DANDY CURB BAG FOR CURB INLETS. DANDY BAG, DANDY SACK, AND DANDY POP FOR MEDIAN DRAINS.	DANDY PRODUCTS INC. POWELL, OH PHONE: 1-800-591-2284 WWW.DANDYPRODUCTS.COM
SILT TRAPPER	STORM WATER SOLUTIONS LAKEVILLE, MN PHONE: 1-952-461-4376 WWW.SILTTRAPPER.COM
DIP BASKET	SKYVIEW CONSTRUCTION CO., LLC SUMMIT, SD PHONE: 1-605-520-0555
FLEXSTORM INLET FILTERS	INLET AND PIPE PROTECTION, INC. NAPERVILLE, IL PHONE: 1-866-287-8655 WWW.INLETFILTERS.COM
GR-8 GUARD OR COMBO GUARD	ERTEC ENVIRONMENTAL SYSTEMS LLC ALAMEDA, CA PHONE: 1-866-521-0724 WWW.ERTECSYSTEMS.COM
BX INLET SEDIMENT BOXES	BX CIVIL AND CONSTRUCTION DELL RAPIDS, SD PHONE: 1-605-428-5483 HTTP://WWW.BX-CC.COM
EZ-FLO AND EZ-CATCH	FLO-WATER, LLC WEST DES MOINES, IA PHONE: 1-515-577-6763 WWW.FLO-WATER.NET
BASIN BAG	CSI GEOTURF HIGHLAND, MI PHONE: 1-248-887-0855 HTTPS://GEOTURF.COM/

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

DEWATERING AND SEDIMENT COLLECTING

DEWATERING AND SEDIMENT COLLECTION IS EXPECTED TO BE NECESSARY ON THIS PROJECT DUE TO UNDERGROUND CONSTRUCTION OF STORM SEWERS AND OTHER UNDERGROUND UTILITIES.

SEPARATE PAYMENT WILL NOT BE MADE FOR ANY DEWATERING AND SEDIMENT COLLECTION EFFORTS. ALL COSTS INVOLVED WITH NECESSARY DEWATERING AND SEDIMENT COLLECTION EFFORTS WILL BE INCIDENTAL TO OTHER CONTRACT ITEMS.

STREET SWEEPING

VEHICLE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE WILL BE MINIMIZED. STREET SWEEPING WILL BE USED IF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET.

THE CONTRACTOR WILL USE A PICKUP BROOM HAVING INTEGRAL SELF-CONTAINED STORAGE TO CLEAN THE ROADWAY. THE PICKUP BROOM USED WILL BE A MINIMUM OF 6 FEET WIDE AND HAVE WORKING GUTTER BROOMS.

AT A MINIMUM, SWEEPING WILL BE REQUIRED: PRIOR TO OPENING ANY SEGMENT OR ROADWAY TO TRAFFIC.

ALL COSTS FOR CLEANING THE ROADWAY WITH A PICKUP BROOM WILL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER HOUR FOR "SWEEPING".

CONSTRUCTION ENTRANCE

THE CONTRACTOR WILL INSTALL A CONSTRUCTION ENTRANCE AT LOCATIONS WHERE THERE IS A POTENTIAL FOR MUD TRACKING AND SEDIMENT FLOW FROM THE CONSTRUCTION SITE AND WORK AREA ONTO A PAVED PUBLIC ROADWAY.

IT IS THE CONTRACTOR'S OPTION TO USE THE SDDOT CONSTRUCTION ENTRANCE (SEE SDDOT CONSTRUCTION ENTRANCE NOTES AND DETAILS), A PRODUCT FROM THE LIST PROVIDED IN THESE NOTES, OR OTHER PRODUCTS OR PROCESSES AS APPROVED BY THE ENGINEER DURING CONSTRUCTION.
IF THE CONTRACTOR ELECTS TO USE ONE OF THE PRODUCTS LISTED IN THE TABLE, THEN THE CONTRACTOR WILL INSTALL THE CONSTRUCTION ENTRANCE PRODUCT IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS OR AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR WILL MAINTAIN THE CONSTRUCTION ENTRANCE SUCH THAT MUD TRACKING AND SEDIMENT FLOW WILL NOT ENTER THE ROADWAY OR ADJACENT DRAINAGE AREAS. THE CONSTRUCTION ENTRANCE WILL BE ROUTINELY INSPECTED, AND THE CONTRACTOR WILL REPAIR OR REPLACE MATERIAL AS DEEMED NECESSARY BY THE ENGINEER.

ALL COSTS FOR FURNISHING, INSTALLING, MAINTAINING, AND REMOVAL OF THE CONSTRUCTION ENTRANCE INCLUDING EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS WILL BE INCLUDED IN THE CONTRACT UNIT PRICE PER EACH FOR "CONSTRUCTION ENTRANCE".

THE FOLLOWING TABLE IS A LIST OF KNOWN CONSTRUCTION ENTRANCE PRODUCTS AVAILABLE FOR USE:

PRODUCT	MANUFACTURER
GRIZZLY RUMBLE GRATE T (10' WIDTH AND 24' LENGTH REQUIRED)	RACKOUT CONTROL, LLC TEMPE, AZ PHONE: 1-800-761-0056 WWW.TRACKOUTCONTROL.COM
PRO GRID (12' WIDTH AND 24' LENGTH INCLUDING COMBINATION OF GRIDS AND RAMPS REQUIRED)	PRO-TEC EQUIPMENT, INC. CHARLOTTE, MI PHONE: 1-800-292-1225 WWW.PRO-TECEQUIPMENT.COM
TRACKING PAD (12' WIDTH AND 24' LENGTH (2 – 12'X12' PADS) AND 2 – 4'X4' TURNING FLARES)	TRACKING PADS LLC COMMERCE CITY, CO PHONE: 1-303-501-5640 WWW.TRACKINGPADS.COM
FODS TRACKOUT CONTROL MAT (12' WIDTH AND 5 MATS TO GET A 35' LENGTH)	FODS, LLC DENVER, CO PHONE: 1-844-200-3637 HTTP://WWW.GETFODS.COM
DURADECK AND MEGADECK AN ADEQUATE QUANTITY IS NEEDED TO PREVENT TIRES FROM BECOMING MUDDY (DOES NOT REMOVE MUD)	HD SIGNATURE SYSTEMS GROUP, LLC FLOWER MOUND, TX PHONE: 1-800-931-7301 HTTPS://WWW.SIGNATURE-SYSTEMS.COM/

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
GENERAL NOTES

REV	DATE	DESCRIPTION
XX	XX	XX
XX	XX	XX

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
DESIGNED BY:	KRJ
CHECKED BY:	TMS
DRAWN BY:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
D-5

SDDOT CONSTRUCTION ENTRANCE

IF THE SDDOT CONSTRUCTION ENTRANCE IS UTILIZED, THEN THE CONTRACTOR WILL INSTALL THE SDDOT CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THESE NOTES AND THE DETAIL DRAWINGS.

PIT RUN MATERIAL WILL BE OBTAINED FROM A GRANULAR SOURCE AND WILL CONFORM TO THE FOLLOWING GRADATION:

IEVE SIZE	PERCENT PASSING
6"	100%
#4	0-60%
#200	0-20%

THE PIT RUN MATERIAL WILL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER.

THE AGGREGATE FOR THE GRANULAR MATERIAL WILL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	PERCENT PASSING
3"	100%
2 ½"	90-100%
1 ½"	25-60%
¾"	0-10%
½"	0-5%

THE GRANULAR MATERIAL WILL BE PLACED IN 6" MAXIMUM LIFTS.

IT IS ANTICIPATED THAT THE GRANULAR MATERIAL WILL NEED TO BE PERIODICALLY REMOVED AND REPLACED AS IT BECOMES INUNDATED WITH MUD AND SEDIMENT.

THE REINFORCEMENT FABRIC (MSE) WILL BE IN CONFORMANCE WITH SECTION 831 OF THE SPECIFICATIONS. THE REINFORCEMENT FABRIC (MSE) WILL BE ON THE APPROVED

PRODUCTS LIST FOR THIS MATERIAL OR WILL BE CERTIFIED BY THE SUPPLIER TO MEET THIS SPECIFICATION PRIOR TO INSTALLATION.

THE REINFORCEMENT FABRIC (MSE) SHOULD BE KEPT AS TAUT AS POSSIBLE PRIOR TO PLACING.

EQUIPMENT WILL NOT BE ALLOWED ON THE REINFORCEMENT FABRIC (MSE) UNTIL THE FIRST LIFT OF GRANULAR MATERIAL IS IN PLACE.

ALL SEAMS IN THE REINFORCEMENT FABRIC (MSE) WILL BE OVERLAPPED AT LEAST 2' AND SHINGLED.

CONCRETE WASHOUT AREA

A CONCRETE WASHOUT AREA WILL BE INSTALLED ON THE PROJECT SITE AT A LOCATION APPROVED BY THE ENGINEER IF CONCRETE TRUCKS DELIVER CONCRETE TO THE SITE. NO WASHOUT AREA IS NECESSARY IF ALL CONCRETE TRUCKS WILL WASH OUT AT APPROVED SITE CONSTRUCTED BY THE CONCRETE SUPPLIER.

PAYMENT FOR THIS ITEM WILL BE AT THE CONTRACT UNIT PRICE AND INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION PER THE PROJECT SPECIFICATIONS.

ENVIRONMENTAL COMMITMENTS

STORMWATER DISCHARGE

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received. The Contractor must adhere to the "Special Provision Regarding Storm Water Discharges to Waters of the State."

The Contractor will complete the DANR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project.

Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at:
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppendixCCA2018Fillable.pdf >

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly, and sediment is not tracked off the site.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT: < https://dot.sd.gov/doing-business/environmental/stormwater>

DANR: < https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx >

EPA: < https://www.epa.gov/npdes>

SECTION 404 PERMIT

Yankton has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project. The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

THREATENED AND ENDANGERED SPECIES

Piping Plover
The piping plover is a bird that resides along the Missouri River. Piping plovers are sandy grayish brown birds with white underparts. They have yellowish orange legs, with an orange bill, black tip, black collar and black line on the forehead. Project activities operating on the shorelines or banks of the Missouri River must remain a minimum of 0.5 mile from occupied piping plover nesting habitat from April 1 through August 31. No blasting may occur within one mile of occupied piping plover nesting habitat.

Pallid Sturgeon
The pallid sturgeon is a fish located in the Missouri River. The following are considerations for this species when working in the Missouri River or Reach A:

- Above-ground fuel storage tanks repaired, replaced, or installed in the floodplains of rivers that may be inhabited by pallid sturgeon shall be diked, curbed or other suitable means provided to prevent the spread of liquids in case of leaking in the tanks or piping. Such dike, curbed area or device shall have a capacity at least equal in volume to that of the tanks plus 10 percent.
- Construction activities within the Missouri River must be completely separated from the active channel by use of a temporary water barrier or cofferdam.
- Within Reach A, sheet pile for temporary water barriers and cofferdams shall be installed using vibratory technology and in-place/initially de-watered prior to ice up if winter work is planned.
- Dewatering of the workspace (within the temporary water barrier/cofferdam must be accomplished as follows:
  - Water in the chamber will be gradually released to allow visual inspection to determine if fish have been stranded in the workspace. In the unlikely event that a pallid sturgeon or other fish are present, the downstream sheet pile should be removed to allow the pallid sturgeon and/or other to escape naturally, without handling. The sheet pile may be reinstalled (vibrated back into place) once the chamber has been flushed and cleared.
- Unrestricted fish passage in the active channel of the Missouri River must be always provided around the workspaces.
- Intake screens with a mesh opening of ¼ inch or less shall be installed, inspected annually, and maintained.
- Johnson intake screens: the maximum width between wires shall not exceed 1/8 in.
- Water velocity at the intake screen shall not exceed ½ foot per second.
- Only submerged intakes shall be used in all other river segment that may be inhabited by adult and juvenile pallid sturgeon. Submerged intakes shall be installed in accordance with the following criteria.
  - At the beginning of the irrigation season, the intake shall be placed at least 20 vertical feet below the existing water level.
  - The intake shall be elevated 2 to 4 feet off the bottom.
  - If the 20-foot depth is not attainable, then the intake velocity shall be limited to ¼ foot per second, with intake placed at maximum practicable attainable depth.
- Pumping plant sound levels shall not exceed 75 DB at 50 feet.
- Stream bottoms impacted by construction activities should be restored to pre-project, it should not be conducted during fish spawning periods. Most spawning occurs April, May, and June.

False Map Turtles
- False Map Turtles nest May and June, with eggs hatching two months later. To avoid impacts to False Map Turtles, recommend completing portion of the project that is immediately adjacent to the Missouri River confluence outside of the nesting season, which typically runs May through August.

Migratory Birds
- Schedule vegetation removal, trimming, and grading of areas that are potential habitat for migratory birds outside of the peak bird breeding season to the maximum extent practicable. Cutting or clearing of trees or shrubs should occur between August 16th and April 30th to remove potential nesting surfaces prior to project commencement. If the construction timeframe changes and construction would be proposed within the nesting season of migratory birds, surveys for migratory birds would occur in suitable areas that have not been mowed or cleared prior to April 30th to determine if there are active nests. If active migratory bird nests are found, construction would cease until the birds hatch and fledge.

Eagles
- A survey for eagles and their nests should be conducted within 660 feet of the work zone approximately one month before construction is scheduled to start. If an eagle nest is identified, appropriate conservation measures based on the National Bald Eagle Management Guidelines would be implemented.

Table 1. Timeline of Restrictions for Threatened and Endangered Species

Timeline	J	F	M	A	M	J	J	A	S	O	N	D
Piping Plover				■	■	■	■	■				
Pallid Sturgeon (spawning)				■	■	■						
False Map Turtle					■	■						
Migratory Birds				■	■	■	■	■				
Eagles	■	■	■	■	■	■	■	■	■	■	■	■

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
GENERAL NOTES

REV	DATE	DESCRIPTION
XX	XX	XX
XX	XX	XX

JOB No.: 23371.00
DATE: OCTOBER 2022
DESIGNED BY: KRJ
CHECKED BY: TMS
DRAWN BY: CKM
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
D-6

HAZARDOUS MATERIALS

- Unusable equipment, debris, and materials shall be disposed of in an approved manner and location.
- Hazardous materials must be appropriately separated and disposed of in an approved disposal site or landfill.
- Any petroleum products or hazardous materials discovered, generated, or used during implementation of the Project shall be disposed of and handled by the Project applicant in accordance with applicable local, state and federal regulations.

SECTION 404 PERMIT STIPULATION

- This project is awaiting approval on a 404 permit which is expected around October 19, 2022.
- If other environmental commitments are required, they will be identified by addendum.

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PROJECT / SHEET TITLE :

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GENERAL NOTES

REV	DATE	DESCRIPTION
XX	XX	XX
XX	XX	XX

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
DESIGNED BY:	KRJ
CHECKED BY:	TMS
DRAWN BY:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
D-7

TRAFFIC CONTROL

SEQUENCE OF OPERATIONS

The following Sequence of Operation shall be followed by the Contractor unless an alternate Sequence of Operations is submitted in writing and approved by the Engineer.

Phase 1 – REACH A

1. *Install traffic control as shown in plans*
2. *Install erosion control devices as shown in plans*
3. *Complete removals and grading*
4. *Install bank protection and necessary plantings*
5. *Place topsoil*
6. *Perform dormant seeding and erosion control blanket*
7. *Sweep and clean roadways, curb and gutter, pavement, sidewalk, and maintenance trails*
8. *Remove erosion control devices from project area*
9. *Remove traffic control as construction allows*

Phase 2 – REACH B

1. *Install traffic control as shown in plans*
2. *Install erosion control devices as shown in plans*
3. *Complete removals and grading*
4. *Install bank protection and necessary plantings*
5. *Place topsoil*
6. *Perform dormant seeding and erosion control blanket*
7. *Sweep and clean roadways, curb and gutter, pavement, sidewalk, and maintenance trails*
8. *Remove erosion control devices from project area*
9. *Remove traffic control as construction allows*

Phase 3 – REACH C

1. *Install traffic control as shown in plans*
2. *Install erosion control devices as shown in plans*
3. *Complete removals and grading*
4. *Install bank protection and necessary plantings*
5. *Place topsoil*
6. *Perform dormant seeding and erosion control blanket*
7. *Sweep and clean roadways, curb and gutter, pavement, sidewalk, and maintenance trails*
8. *Remove erosion control devices from project area*
9. *Remove traffic control as construction allows*

Phase 4 – REACH G

1. *Install traffic control as shown in plans*
2. *Install erosion control devices as shown in plans*
3. *Complete removals and grading*
4. *Install bank protection and necessary plantings*
5. *Place topsoil*
6. *Perform dormant seeding and erosion control blanket*
7. *Sweep and clean roadways, curb and gutter, pavement, sidewalk, and maintenance trails*
8. *Remove erosion control devices from project area*
9. *Remove traffic control as construction allows*

Phase 5 – REACH J

1. *Install traffic control as shown in plans*
2. *Install erosion control devices as shown in plans*
3. *Complete removals and grading*
4. *Install bank protection and necessary plantings*
5. *Place topsoil*
6. *Perform dormant seeding and erosion control blanket*
7. *Sweep and clean roadways, curb and gutter, pavement, sidewalk, and maintenance trails*
8. *Remove erosion control devices from project area*
9. *Remove traffic control as construction allows*

Special Conditions

1. Replace this paragraph with a description of the special condition to the sequence of operations. Examples of special conditions to cover are: can phases be constructed concurrently or must they be constructed in order, are there any special conditions for intersection closures, are there any special items which need to be completed before continuing with the next phase, are there any special conditions for maintaining traffic to businesses or residences. Each special condition should be listed under a separate bullet. Repeat as needed.

TIME PROVISIONS

The contractor will commence work under this contract and shall be substantially complete by March 15, 2023. Substantial completion includes all grading work, bank protection, plantings, topsoil, and seeding. All work within all phases shall be fully completed by April 7, 2023. Fully complete is defined as all work under the contract completed.

Contractor further agrees to pay as liquidated damages the amount specified in Agreement for each working day thereafter that the work remains uncompleted.

GENERAL MAINTENANCE OF TRAFFIC

1. Installation of traffic control shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition unless otherwise modified in the plans.

2. The Contractor shall notify the engineer 7 days prior to the start of construction, and before any substantial traffic control change so a press release can be issued. The Contractor shall notify the engineer 48 hours in advance of all other traffic control changes. Installation of traffic control shall not be made before 8:30 AM on the day of the closure.

3. Removing, relocating, salvaging, and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Any delineators or signs damaged or lost shall be replaced by the Contractor at no cost to the City. Payment for removing, salvaging, installing, and/or resetting of signs shall be made using the applicable bid items. If no applicable bid items are included in the estimate of quantities, payment for removing, salvaging, installing, and/or resetting of signs shall be incidental to the lump sum price bid for "Traffic Control, Miscellaneous".

4. Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

5. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the City, and to the satisfaction of the Engineer.

6. All breakaway sign supports shall comply with FHWA NCHRP 350 crash-worthy requirements. The Contractor shall provide post installation details at the preconstruction meeting for all steel post breakaway sign support assemblies.

7. Installation, maintenance, relocation and removal of Type I and II barricades, cones, vertical panels, drums, barricade warning lights, watchmen, tubular markers and flags shall be included in the lump sum price bid for "Traffic Control Miscellaneous".

8. The Contractor or designated traffic control subcontractor shall ensure the adequacy, legibility, and reflectivity of each sign and device. Sign washing shall be considered incidental to Traffic Control and required as directed by the Engineer.

9. The Contractor shall provide temporary access routes for residences and businesses located in the construction area unless otherwise noted in the plans. Temporary routes and drives shall be considered incidental to all items of the project and therefore no separate measurement and payment shall be made.

10. Flagger warning signs shall be installed when using flaggers to direct traffic. Flaggers shall wear appropriate safety clothing and shall use a Stop/Slow paddle. Payment for flagging will be at the contract unit price per hour if a bid item has been included. If no bid item is included, flagging shall be incidental to "Traffic Control, Miscellaneous".

11. The Contractor is responsible for maintaining all traffic control devices throughout the project at all times in accordance with the plans and the latest edition of the MUTCD. The Contractor shall immediately take appropriate measures to remedy any traffic control devices that need to removed, replaced, etc. due to changes in phasing, sequencing, weather, or any other reason upon notification from the Engineer. Failure to correct any traffic control devices that are not in compliance with the plans or the latest edition of the MUTCD upon notification from the Engineer will result in a price adjustment to the contract. The minimum price adjustment to the contract will be $100 per day per occurrence. The Engineer may delay the issuance of the price adjustment(s) if the Engineer has determined all the following apply:

   a. The Contractor has made a good faith effort to bring the items into compliance with the plans and latest edition of the MUTCD.
   b. Compliance was not achieved due to weather conditions outside the Contractor's control and the conditions were severe enough to prevent the Contractor from bringing the item into compliance.
   c. The Contractor brought the item into compliance as soon as possible after the weather and site conditions permit.

PEDESTRIAN TRAFFIC

Construction phasing shall follow the Traffic Control Sequence of Operations. Pedestrian access shall be maintained to all businesses and residences during all phases of the project.

The Contractor shall protect and restrict all pedestrians from work areas. Safety fence shall be installed around all work areas that are adjacent to pedestrian walkways and at other locations as designated by the Engineer. Payment for all work and associated materials shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

TEMPORARY CONSTRUCTION SIGNS

Installation of temporary traffic control shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition, Section 6F.03 Sign Placement, unless otherwise modified in the plans. Signs mounted on portable sign supports shall meet minimal requirements provided in Paragraphs 4 through 6 of Section 6F.03 Sign Placement if used for duration greater than 30 days.

The R9-8 through R9-11a series, R11 series, W1-6 through W1-8 series, M4-10, E5-1, or other similar type signs may be used on portable sign supports that do not meet the minimum mounting heights provided in Paragraphs 4 through 6 up to 30 days. All other signs must meet the minimum height requirements if used longer than 3 days.

Signs mounted on Type 3 Barricades should not cover more than 50 percent of the top two rails or 33 percent of the total area of the three rails.

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TRAFFIC CONTROL NOTES

REV	DATE	DESCRIPTION
XX	XX	XX
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REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
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JOB No.:	23371.00
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0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
F-1

ITEMIZED LIST FOR TRAFFIC CONTROL

REACH A

SIGN CODE		SIGN SIZE		DESCRIPTION	SQ FT PER SIGN	MAX REQUIRED	TOTAL SQ FT
R9-9	24"	x	18"	SIDEWALK CLOSED AHEAD	3	3	9
R9-11	24"	x	12"	SIDEWALK CLOSED	2	4	8
SPECIAL	36"	x	36"	TRUCKS ENTERING ROADWAY	9	2	18
						SUB TOTAL =	35

SIGN CODE		SIGN SIZE		DESCRIPTION	MAX REQUIRED	TOTAL
*****		*****		TYPE III BARRICADE - 8 FT. DOUBLE SIDED	4	4

REACH B

SIGN CODE		SIGN SIZE		DESCRIPTION	SQ FT PER SIGN	MAX REQUIRED	TOTAL SQ FT
R9-9	24"	x	18"	SIDEWALK CLOSED AHEAD	3	2	6
R9-11	24"	x	12"	SIDEWALK CLOSED	2	2	4
SPECIAL	36"	x	36"	TRUCKS ENTERING ROADWAY	9	4	36
						SUB TOTAL =	46

SIGN CODE		SIGN SIZE		DESCRIPTION	MAX REQUIRED	TOTAL
*****		*****		TYPE III BARRICADE - 8 FT. DOUBLE SIDED	2	2

REACH C

SIGN CODE		SIGN SIZE		DESCRIPTION	SQ FT PER SIGN	MAX REQUIRED	TOTAL SQ FT
R9-9	24"	x	18"	SIDEWALK CLOSED AHEAD	3	3	9
R9-11	24"	x	12"	SIDEWALK CLOSED	2	4	8
SPECIAL	36"	x	36"	TRUCKS ENTERING ROADWAY	9	0	0
						SUB TOTAL =	17

SIGN CODE		SIGN SIZE		DESCRIPTION	MAX REQUIRED	TOTAL
*****		*****		TYPE III BARRICADE - 8 FT. DOUBLE SIDED	7	7

REACH G

SIGN CODE		SIGN SIZE		DESCRIPTION	SQ FT PER SIGN	MAX REQUIRED	TOTAL SQ FT
R9-9	24"	x	18"	SIDEWALK CLOSED AHEAD	3	5	15
R9-11	24"	x	12"	SIDEWALK CLOSED	2	4	8
SPECIAL	36"	x	36"	TRUCKS ENTERING ROADWAY	9	0	0
						SUB TOTAL =	23

SIGN CODE		SIGN SIZE		DESCRIPTION	MAX REQUIRED	TOTAL
*****		*****		TYPE III BARRICADE - 8 FT. DOUBLE SIDED	4	4

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
TRAFFIC CONTROL NOTES

REV.	DATE	DESCRIPTION
XX	XX	XX
XX	XX	XX

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KEVIN R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
DESIGNED BY:	KRJ
CHECKED BY:	TMS
DRAWN BY:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
F-2

W42-7
30"x30"
(A)

TYPE 3 BARRICADE - 8'
(D)

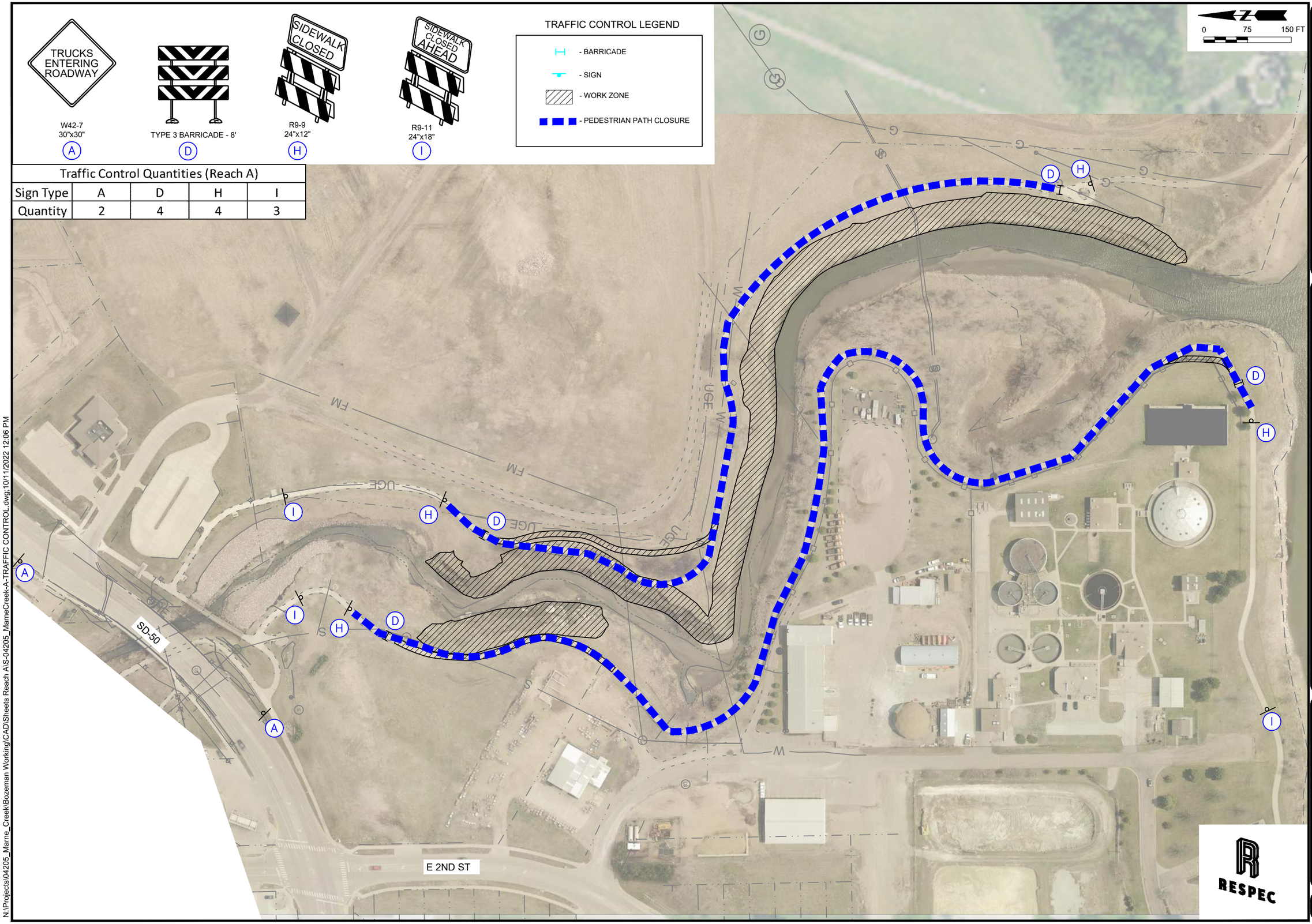
R9-9
24"x12"
(H)

R9-11
24"x18"
(I)

TRAFFIC CONTROL LEGEND

- BARRICADE
- SIGN
- WORK ZONE
- PEDESTRIAN PATH CLOSURE

Traffic Control Quantities (Reach A)				
Sign Type	A	D	H	I
Quantity	2	4	4	3



RESPEC

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
TRAFFIC CONTROL - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No.: F-3

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach A\S-04205_MarneCreek-A-TRAFFIC CONTROL.dwg;10/11/2022 12:06 PM

W42-7
30"x30"
(A)

TYPE 3 BARRICADE - 8'
(D)

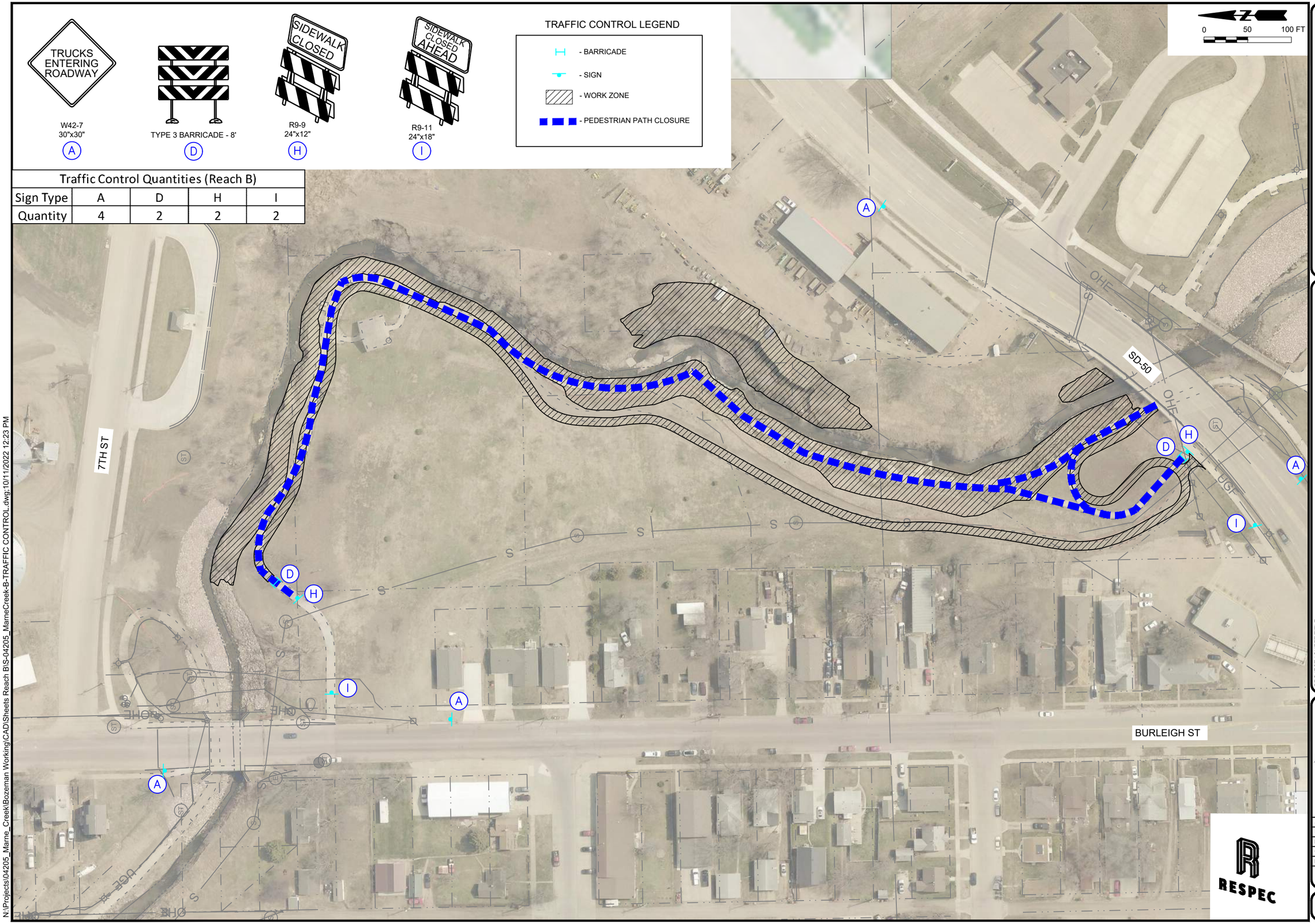
R9-9
24"x12"
(H)

R9-11
24"x18"
(I)

TRAFFIC CONTROL LEGEND

- BARRICADE
- SIGN
- WORK ZONE
- PEDESTRIAN PATH CLOSURE

Traffic Control Quantities (Reach B)				
Sign Type	A	D	H	I
Quantity	4	2	2	2



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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
TRAFFIC CONTROL - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

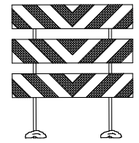
JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0" 1/2" 1"
SCALE REDUCTION BAR

RESPEC

SHEET No.: F-4

Traffic Control Quantities (Reach C)			
Sign Type	D	H	I
Quantity	7	4	3



TYPE III BARRICADE - 8'

D

R9-9
24"x12"

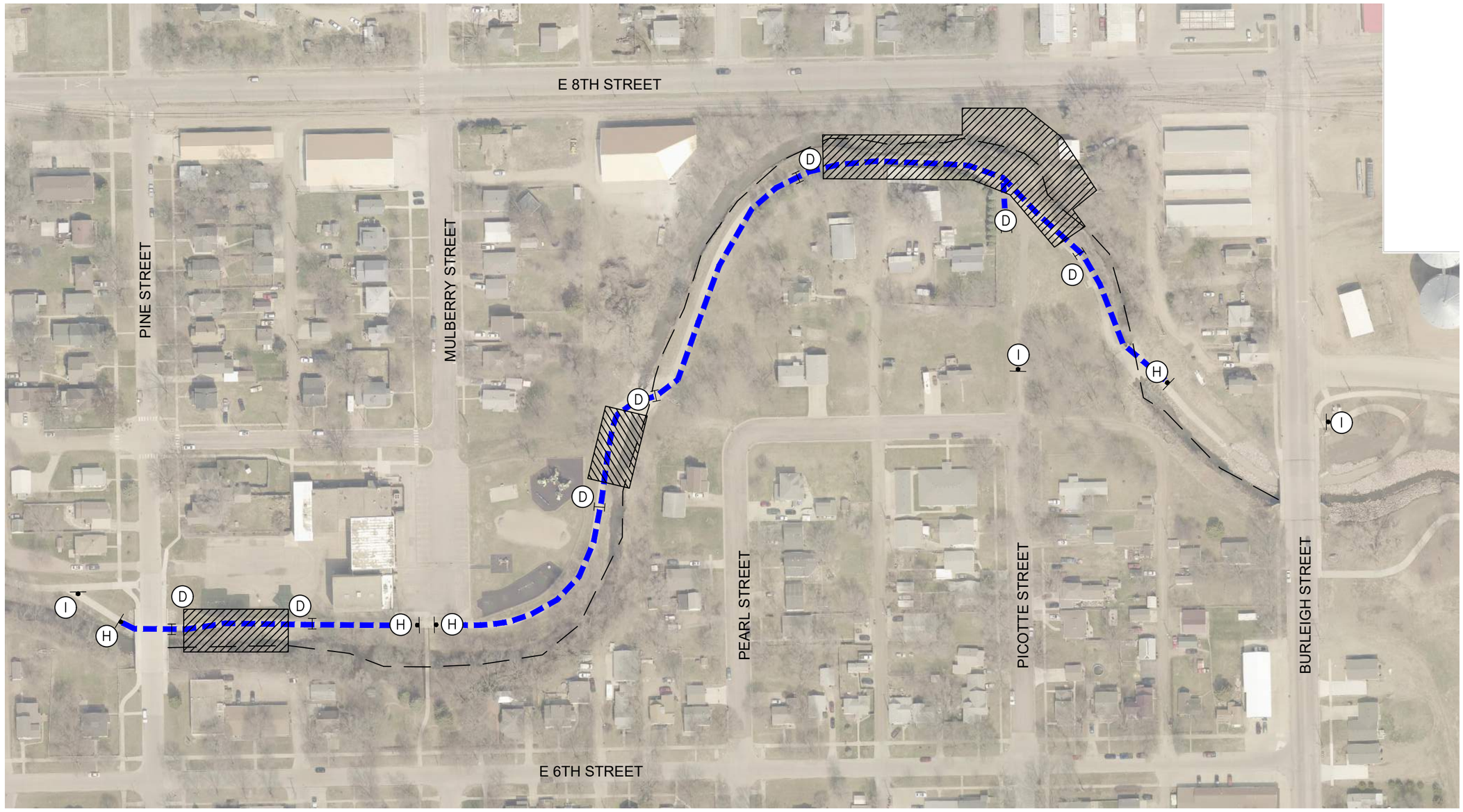
H

R9-11
24"x18"

I

TRAFFIC CONTROL LEGEND

- BARRICADE
- SIGN
- WORK ZONE
- PEDESTRIAN PATH CLOSURE
- MARNE CREEK FLOWPATH



0 75 150 FT

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

TEMPORARY PEDESTRIAN CLOSURE PLAN - REACH C

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	KRJ
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
F-5

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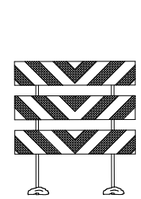
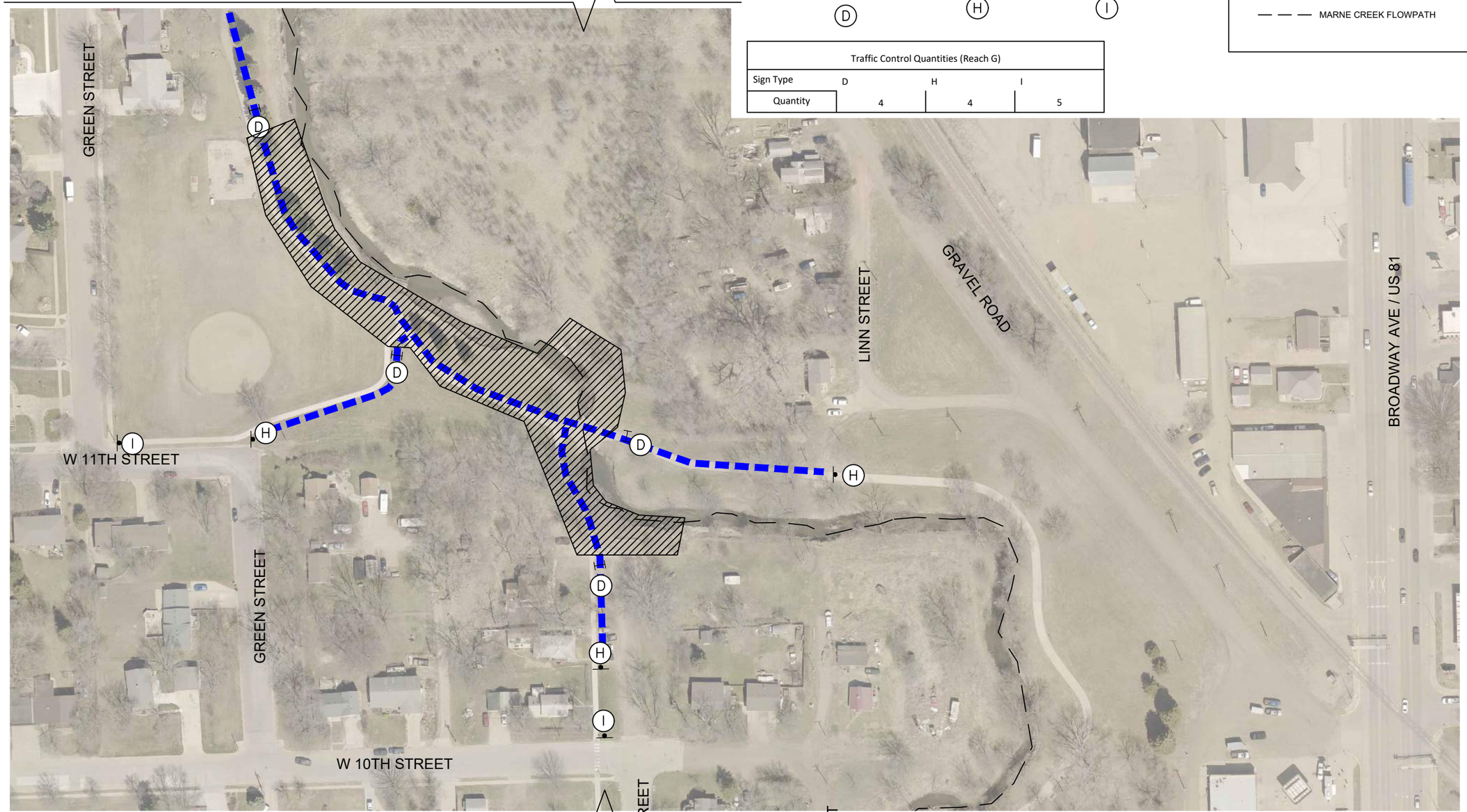


Traffic Control Quantities (Reach G)			
Sign Type	D	H	I
Quantity	4	4	5

TRAFFIC CONTROL LEGEND

- BARRICADE
- SIGN
- WORK ZONE
- PEDESTRIAN PATH CLOSURE
- MARNE CREEK FLOWPATH



120 FT
60
0

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

TEMPORARY PEDESTRIAN CLOSURE PLAN - REACH G

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	KRJ
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
F-6

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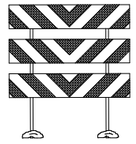
Traffic Control Quantities (Reach J)			
Sign Type	D	H	I
Quantity	2	2	2



TYPE III BARRICADE - 8'

(D)

R9-9
24"x12"

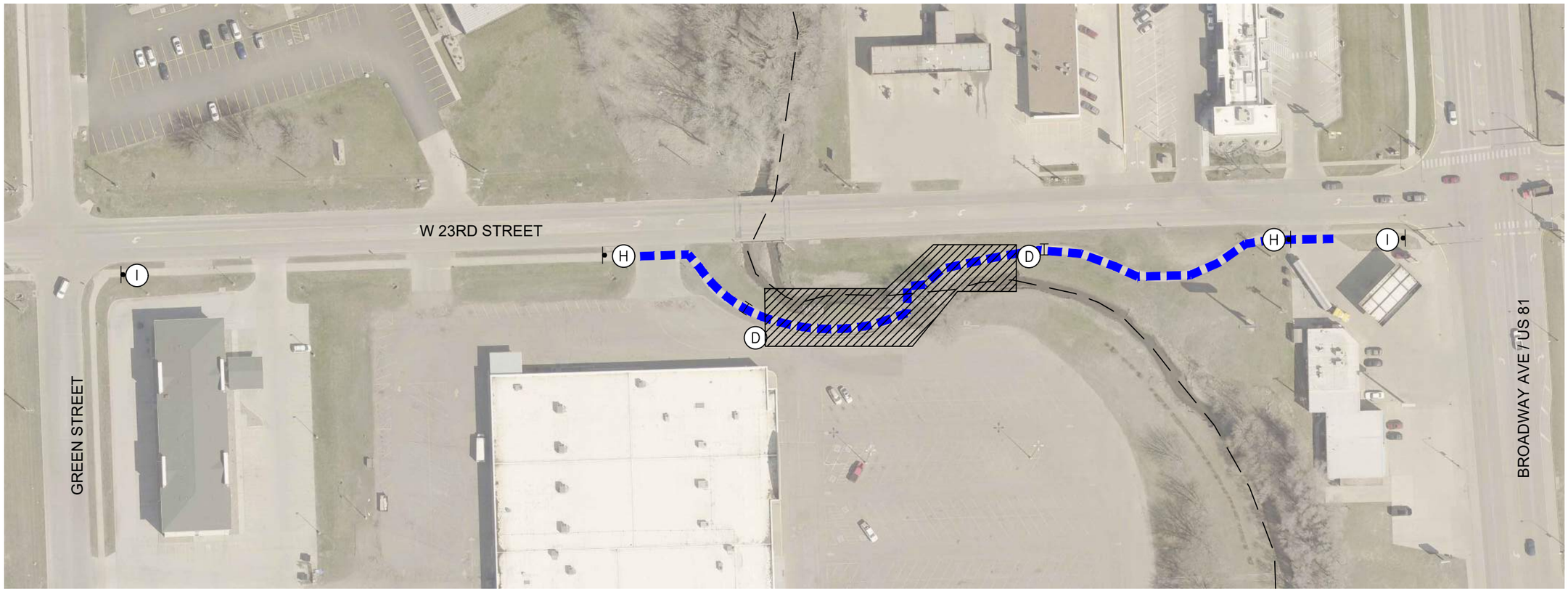
(H)

R9-11
24"x18"

(I)

TRAFFIC CONTROL LEGEND

- BARRICADE
- SIGN
- WORK ZONE
- PEDESTRIAN PATH CLOSURE
- MARNE CREEK FLOWPATH



0 50 100 FT

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PROJECT / SHEET TITLE:

MARNE CREEK BANK STABILIZATION

TEMPORARY PEDESTRIAN CLOSURE PLAN - REACH J

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	KRJ
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
F-7

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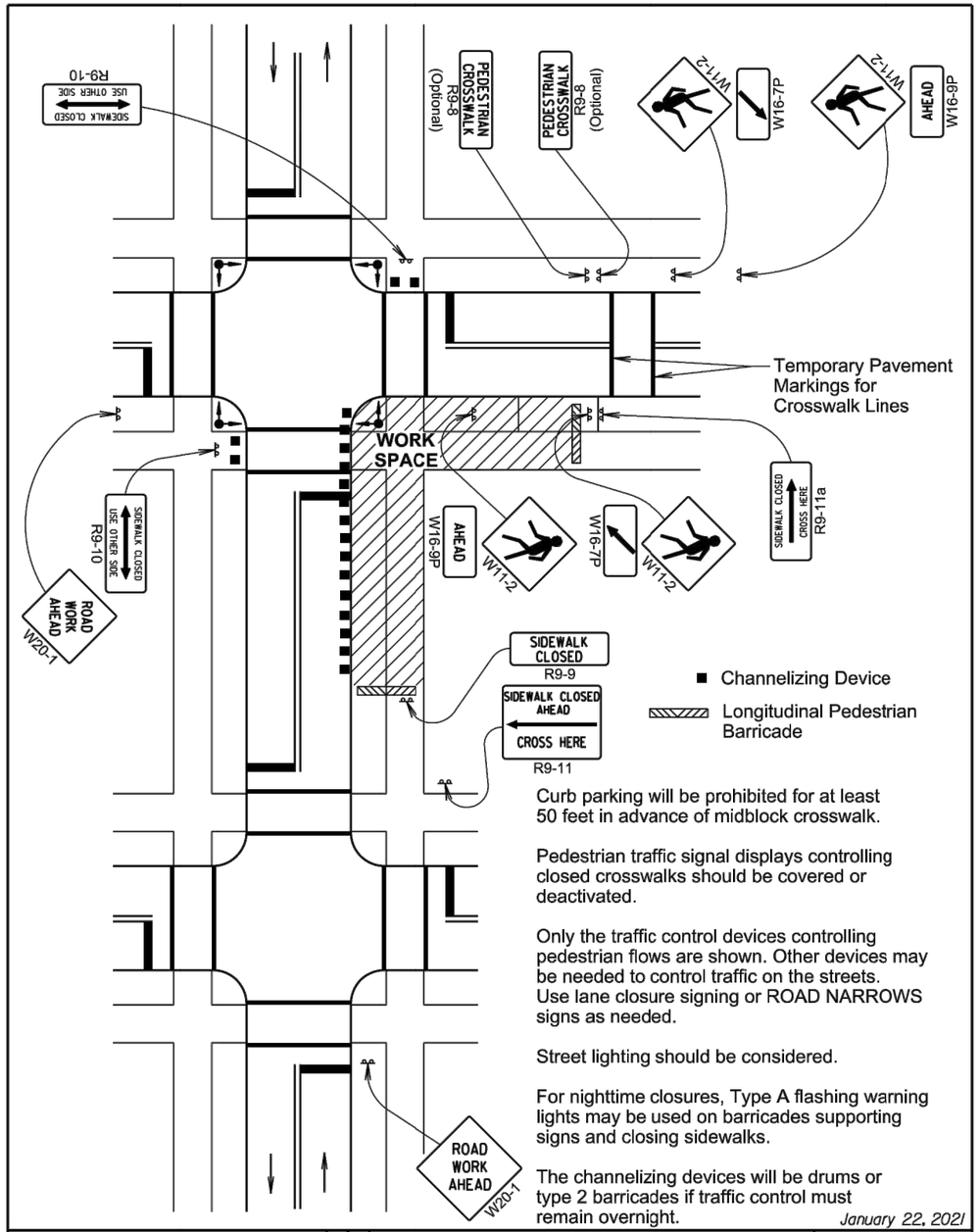


Curb parking will be prohibited for at least 50 feet in advance of midblock crosswalk.

Pedestrian traffic signal displays controlling closed crosswalks should be covered or deactivated.

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs as needed.

Street lighting should be considered.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks.

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.

January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	***SIDEWALK CLOSURES AND PEDESTRIAN DETOURS***	*PLATE NUMBER* 634.33 *Sheet 1 of 1*

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs, as needed.

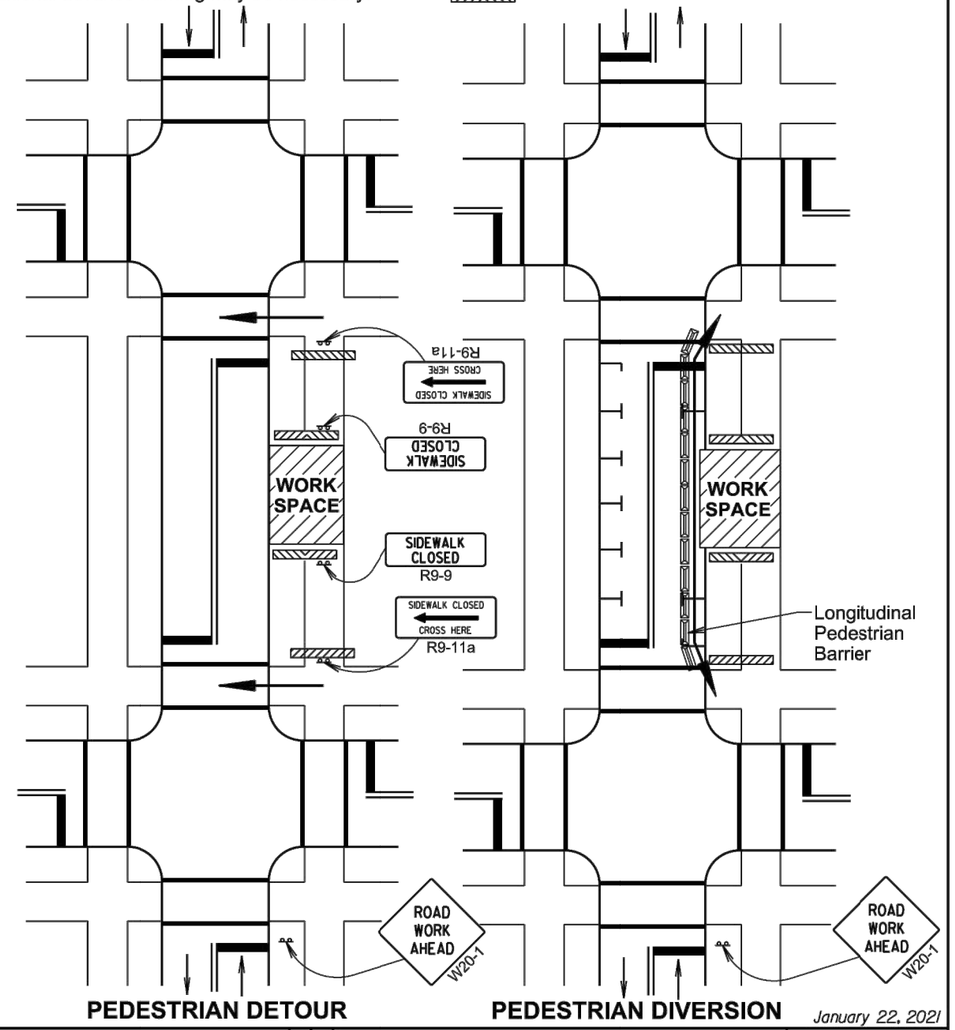
Signs may be placed along a temporary diversion to guide or direct pedestrians. Examples include KEEP RIGHT and KEEP LEFT signs.

Additional advance warning may be necessary.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks. Type C steady-burn lights may be used on channelizing devices separating the temporary pedestrian diversion from vehicular traffic.

Street lighting should be considered.

and Longitudinal Pedestrian Barricade



January 22, 2021

Published Date: 1st Qtr. 2022	SDDOT	***PEDESTRIAN DETOUR AND PEDESTRIAN DIVERSION***	*PLATE NUMBER* 634.34 *Sheet 1 of 1*

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
TRAFFIC CONTROL STANDARD PLATES
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
F-8

Quantities (Reach A)			
	A-UL1	A-UL3	A-UR1-3
Riparian Pole Planting (EA)	0	795	5,658
6" Reinforced Concrete Sidewalk (SF)	1,336	3,899	4,033
Riprap Class B (2' Depth) (Ton)	0	0	530
Riprap Class C (3' Depth) (Ton)	0	395	3,989
Riprap Class D (3.5' Depth) (Ton)	0	747	1,102
Granular Filter Material (Ton)	0	117	431
Type B Drainage Fabric (SY)	0	661	3,661
Unclassified Excavation (CY)	0	1,941	13,739
Topsoil Placement (CY)	0	706	3,499
Strip and Stockpile 4" Topsoil (CY)	16	264	1,170
Clearing (AC)	0	0	2
Scarify and Recompact (CY)	0	0	78

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/ TOPSOIL, CONTAINERIZED PLANTINGS, AND REVEGETATED WITH SEED AND EROSION CONTROL BLANKET
- 6" REINFORCED CONCRETE SIDEWALK

0 75 150 FT

Containerized Plantings Quantities				
		Site		
Common Name	Botanical Name	A-UL1	A-UL3	A-UR1-3
Hackberry Tree	*Celtis*	0	110	670
Chokecherry	*Prunus virginiana*	0	50	80
American Plum	*Prunus americana*	0	70	300
Smooth Sumac	*Rhus glabra*	0	70	350
Fragrant Sumac	*Rhus aromatica*	0	70	350

BANK STABILIZATION AREA A-UR 1-3

BANK STABILIZATION AREA A-UL 3

AREA A-UL 2
(NO WORK TO BE COMPLETED)

AREA A-UL 1

24+00 22+00 20+00 12+00 10+00 8+00 6+00 4+00 2+00 0+00 -2+00

RESPEC

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
SITE OVERVIEW - REACH A
YANKTON, SOUTH DAKOTA

REV.	DESCRIPTION	DATE

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No.: (A)A-1

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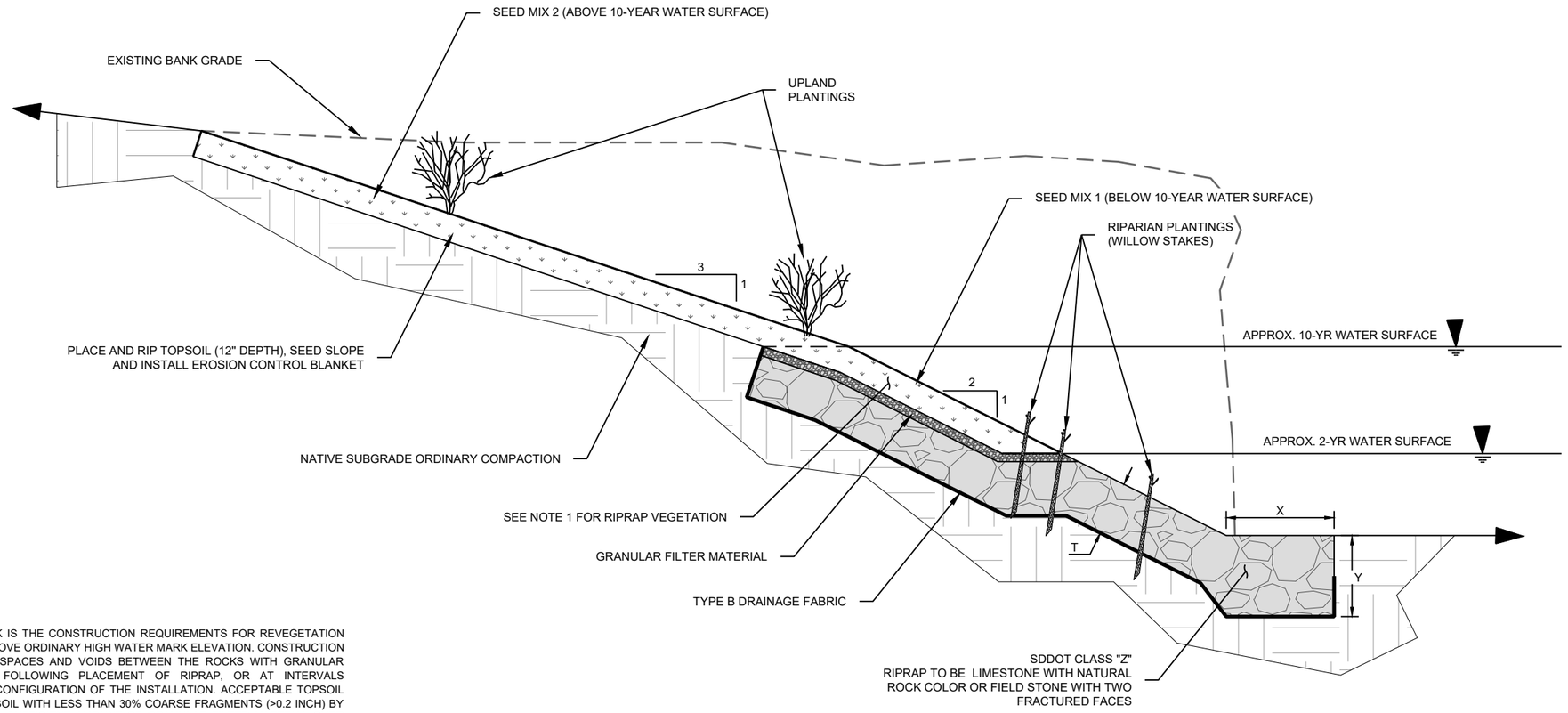

NOTE:

1. RIPRAP REVEGETATION: THIS WORK IS THE CONSTRUCTION REQUIREMENTS FOR REVEGETATION MATERIAL ON RIPRAP SURFACES ABOVE ORDINARY HIGH WATER MARK ELEVATION. CONSTRUCTION REQUIREMENTS ARE TO FILL THE SPACES AND VOIDS BETWEEN THE ROCKS WITH GRANULAR FILTER MATERIAL AND TOPSOIL FOLLOWING PLACEMENT OF RIPRAP, OR AT INTERVALS APPROPRIATE FOR THE SIZE AND CONFIGURATION OF THE INSTALLATION. ACCEPTABLE TOPSOIL INCLUDES LOCALLY OBTAINED TOPSOIL WITH LESS THAN 30% COARSE FRAGMENTS (>0.2 INCH) BY WEIGHT. CONTRACTOR TO PLACE A SUFFICIENT AMOUNT OF GRANULAR FILTER MATERIAL OVER THE RIPRAP, SO THAT AFTER SETTLING, THE LEVEL OF GRANULAR FILTER MATERIAL COMES TO THE VERY TOP OF THE ROCK. PLACE THE TOPSOIL TO A 12-INCH DEPTH OVER THE GRANULAR FILTER MATERIAL. PLACE MATERIAL IN A MANNER THAT CREATES A SMOOTH, UNIFORM SURFACE FOR SEEDING AND PLACEMENT OF THE EROSION CONTROL BLANKET/MULCH. CONTRACTOR TO HAND BROADCAST SEED THE SOIL IMMEDIATELY AFTER PLACEMENT, REGARDLESS OF TIME OF YEAR, WITH THE SEED MIXTURE AND RATES SPECIFIED BY THE ENGINEER. SCARIFY THE SOIL IMMEDIATELY PRIOR TO AND FOLLOWING SEEDING TO INCORPORATE SEED TO A DEPTH OF ½ INCH INTO THE SOIL.

STREAM BANK TREATMENT TYPICAL

NOT TO SCALE

Reach A							
Riprap Design							
Site	Location	Station Start	Station End	SPECIAL SDDOT RIPRAP CLASS "Z"	"T" Thickness (ft)	"X" Thickness (ft)	"Y" Thickness (ft)
A-UR 1-3	Outside Bend	0+00.00	5+00.00	C	3	3.5	3.5
A-UR 1-3	Outside Bend	5+00.00	7+50.00	D	3.5	5	5
A-UR 1-3	Straight	7+50.00	9+50.00	C	3	3.5	3.5
A-UR 1-3	Inside Bend	9+50.00	12+50.00	B	2	2	2
A-UR 1-3	Inside Bend	12+50.00	15+00.00	C	3	3.5	3.5
A-UR 1-3	Outside Bend	15+00.00	17+50.00	C	3	3.5	3.5
A-UR 1-3	Inside Bend	17+50.00	19+75.00	C	3	3.5	3.5
A-UL3	Straight	15+50.00	16+50.00	C	3	3.5	3.5
A-UL3	Outside Bend	16+50.00	19+00.00	D	3.5	5	5

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
STREAM BANK TREAMENT SPECIAL
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (A)C-1

RESPEC

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Erosion Control Quantities (Reach A)			
	A-UL1	A-UL3	A-UR1-3
Seed Mix 1 (lbs)	0	2	7
Seed Mix 2 (lbs)	0	144	724
Fertilizer (lbs)	0	472	2375
Erosion Control Blanket (SY)	0	1694	8396
12" Erosion Control Wattle (LF)	185	290	1880
Silt Fence (LF)	0	0	170
Concrete Washout Facility (EA)	0	0	1
Construction Entrance (EA)	0	0	1
Stabilized Staging Area (SY)	0	0	1560
Orange Plastic Safety Fence (LF)	0	0	280

NOTE:

1. EROSION CONTROL BLANKET TO BE CURLEX I FIBRENET OR ENGINEER APPROVED EQUAL.

EROSION CONTROL LEGEND

- EROSION CONTROL BLANKET W/ SEED MIX 1
- EROSION CONTROL BLANKET W/ SEED MIX 2
- 12" EROSION CONTROL WATTLE (AS DIRECTED BY ENGINEER)
- SILT FENCE
- ORANGE PLASTIC SAFETY FENCE

0 75 150 FT

LIMITS OF CONSTRUCTION
SEED MIX 2
12" EROSION CONTROL WATTLE
ORANGE PLASTIC SAFETY FENCE. NO CONSTRUCTION EQUIPMENT OVER GAS LINE. CONTRACTOR TO COORDINATE WITH NUSTAR ENERGY.
SEED MIX 1
ORANGE PLASTIC SAFETY FENCE. NO CONSTRUCTION EQUIPMENT OVER GAS LINE. CONTRACTOR TO COORDINATE WITH NUSTAR ENERGY.
CONSTRUCTION ENTRANCE
STABILIZED STAGING AREA AND PROJECT WIDE RIPRAP STOCKPILE AREA
CONCRETE WASHOUT FACILITY
SILT FENCE
SEED MIX 1
SEED MIX 2
12" EROSION CONTROL WATTLE
LIMITS OF CONSTRUCTION
LIMITS OF CONSTRUCTION
12" EROSION CONTROL WATTLE
MISSOURI RIVER
SD-50
E 2ND ST

RESPEC

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
EROSION CONTROL - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (A)G-1

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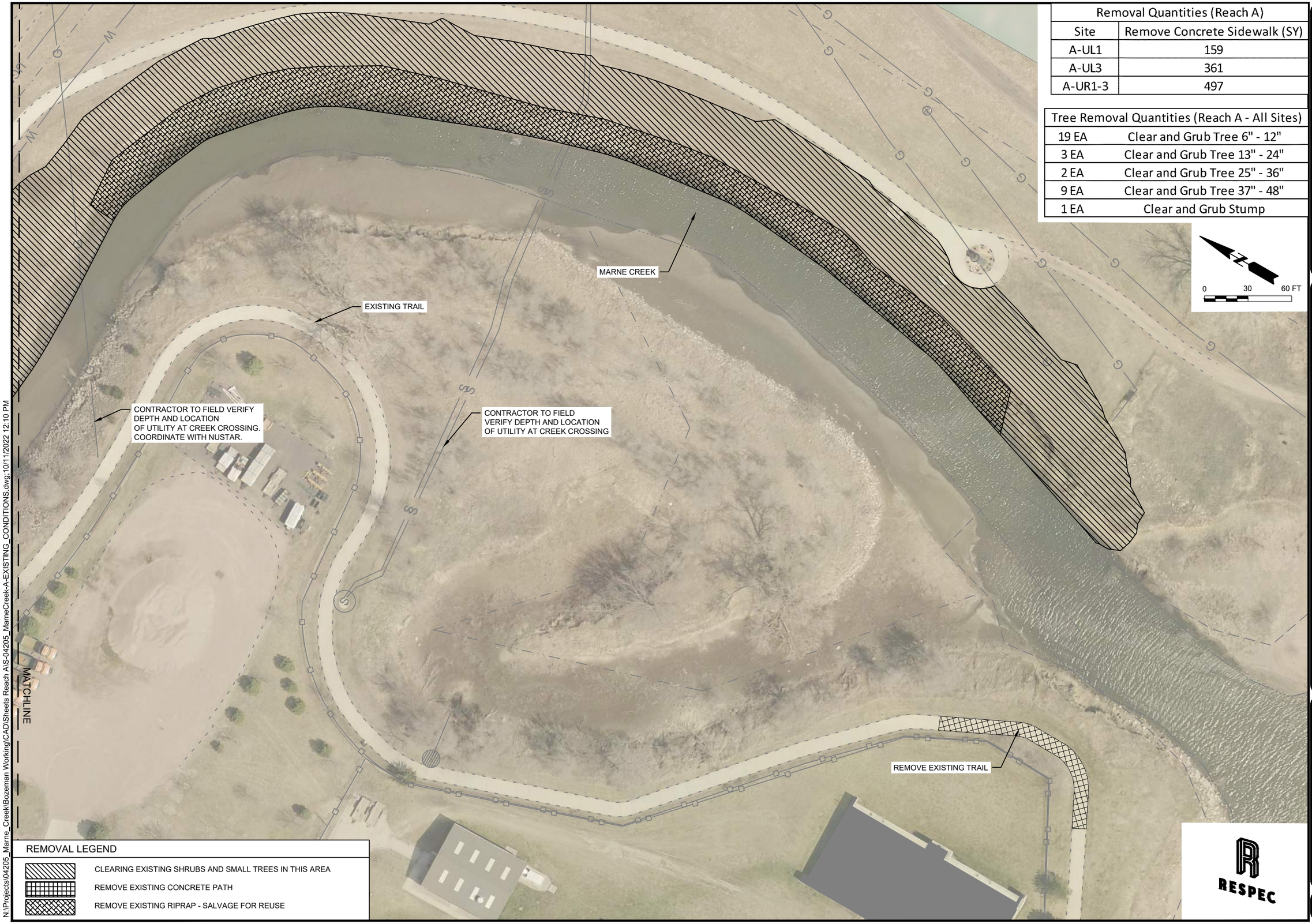

Removal Quantities (Reach A)	
Site	Remove Concrete Sidewalk (SY)
A-UL1	159
A-UL3	361
A-UR1-3	497

Tree Removal Quantities (Reach A - All Sites)	
19 EA	Clear and Grub Tree 6" - 12"
3 EA	Clear and Grub Tree 13" - 24"
2 EA	Clear and Grub Tree 25" - 36"
9 EA	Clear and Grub Tree 37" - 48"
1 EA	Clear and Grub Stump

REMOVAL LEGEND

- CLEARING EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

RESPEC

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
EXISTING CONDITIONS - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (A)H-1

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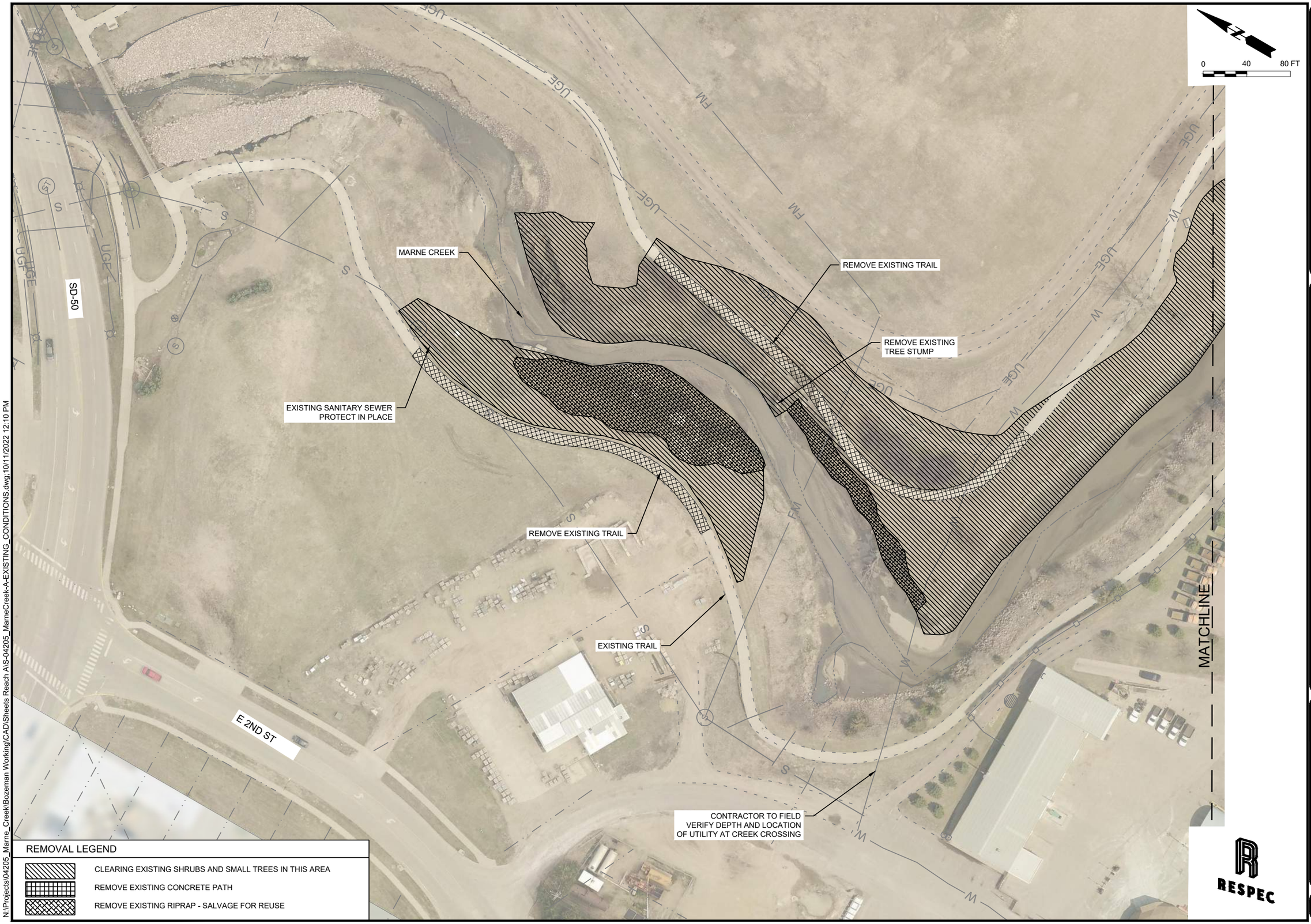

REMOVAL LEGEND

- CLEARING EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

RESPEC

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
EXISTING CONDITIONS - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (A)H-2

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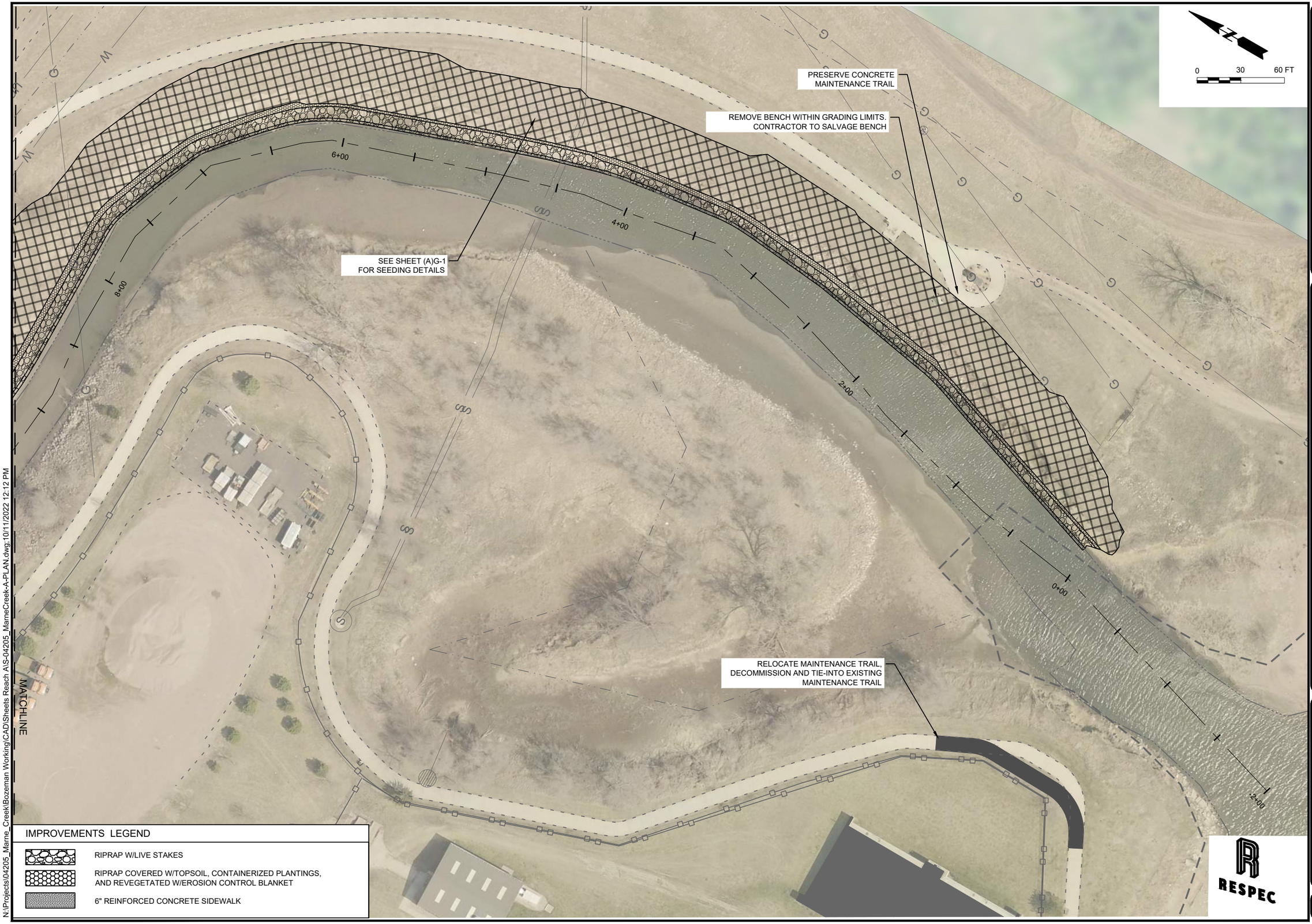

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/TOPSOIL, CONTAINERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
- 6" REINFORCED CONCRETE SIDEWALK

RESPEC

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
DESIGN PLAN - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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REG No. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
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SHEET No. : (A)J-1

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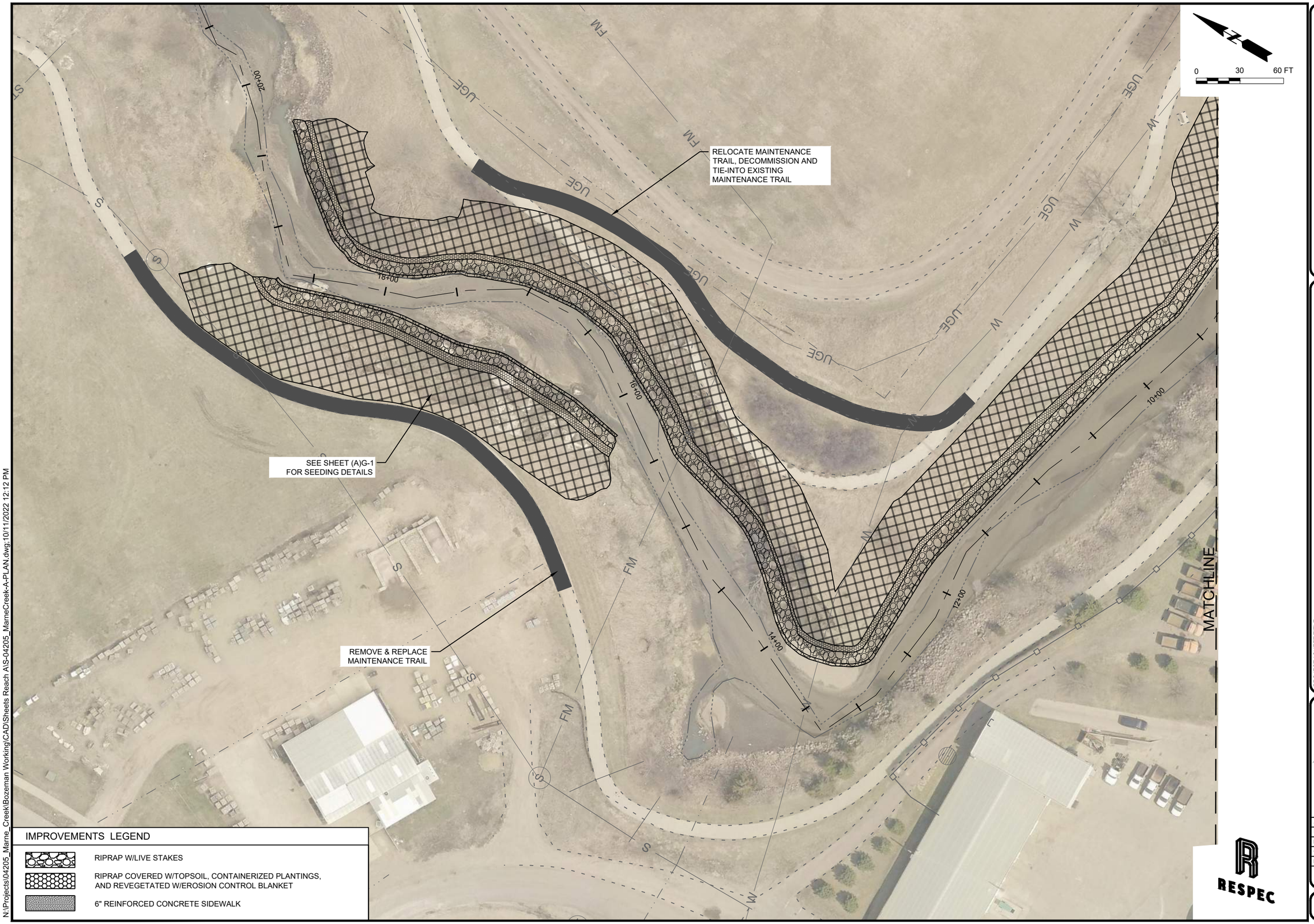

IMPROVEMENTS LEGEND

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SCALE REDUCTION BAR

SHEET No. : (A)J-2

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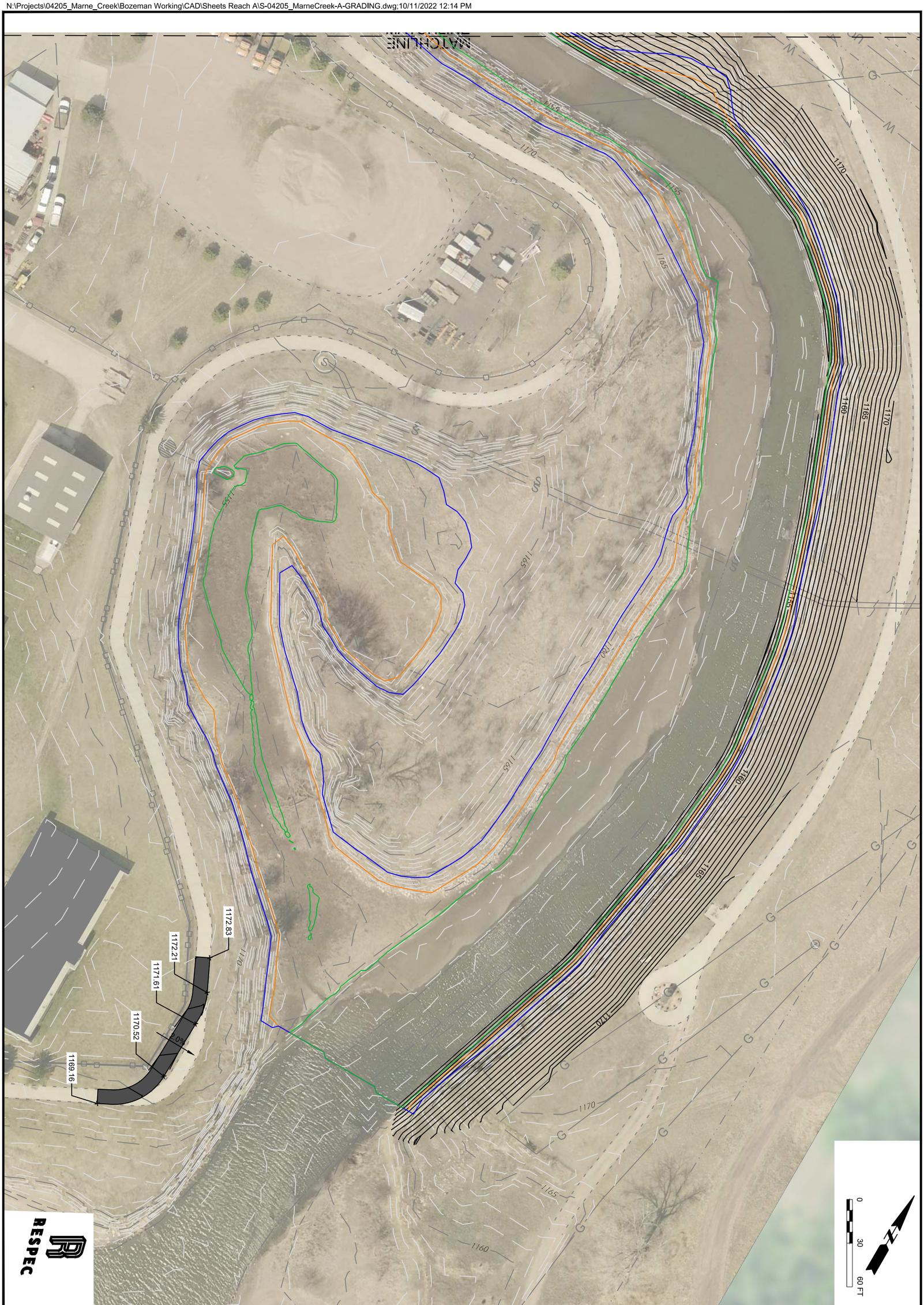

RESPEC

SHEET No.: (A)J-3

SCALE REDUCTION BAR 0 1/2" 1"

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
DRAWN BY: TW
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REGISTERED PROFESSIONAL ENGINEER
MATTHEW W. JOHNSON
REG. No. 15324
SOUTH DAKOTA
10-11-2022

PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

GRADING - REACH A

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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SCALE REDUCTION BAR

SHEET No.: (A)J-4

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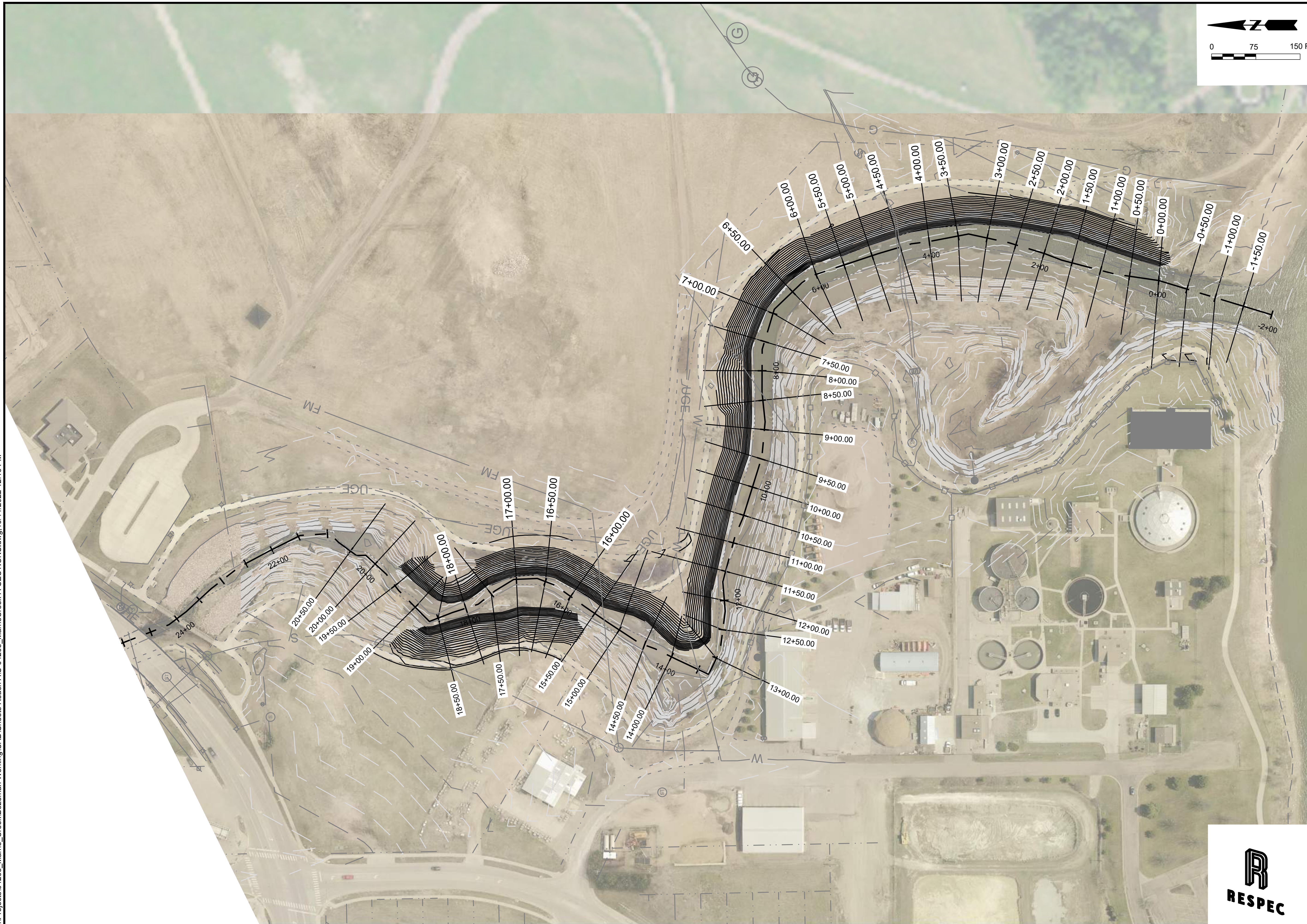

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PROJECT / SHEET TITLE:

MARNE CREEK BANK STABILIZATION PROJECT

SECTIONS OVERVIEW - REACH A

YANKTON, SOUTH DAKOTA

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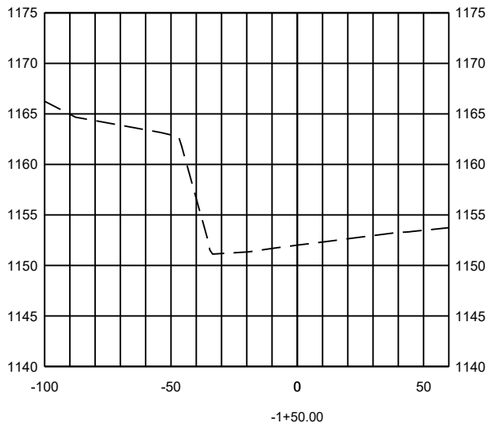
SHEET No.: (A)M-1



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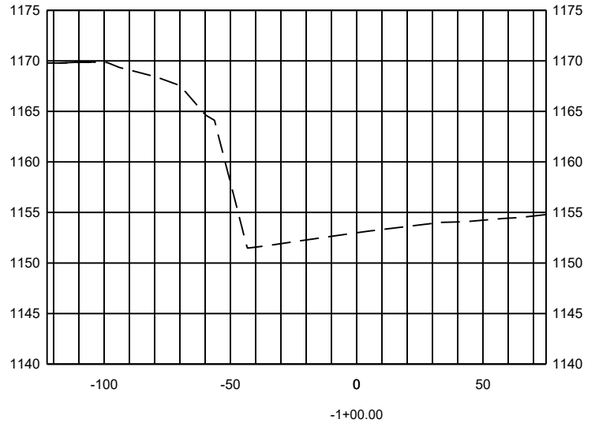

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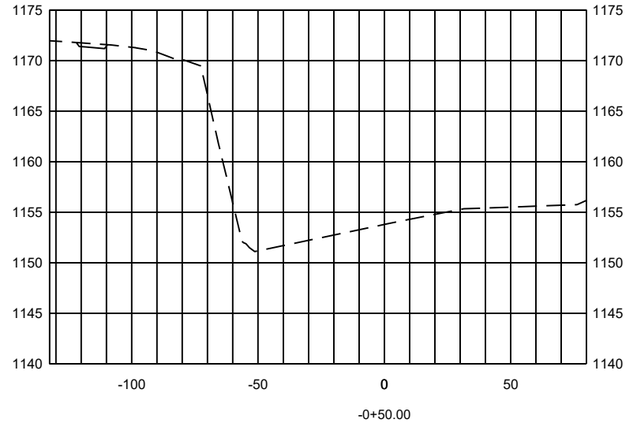

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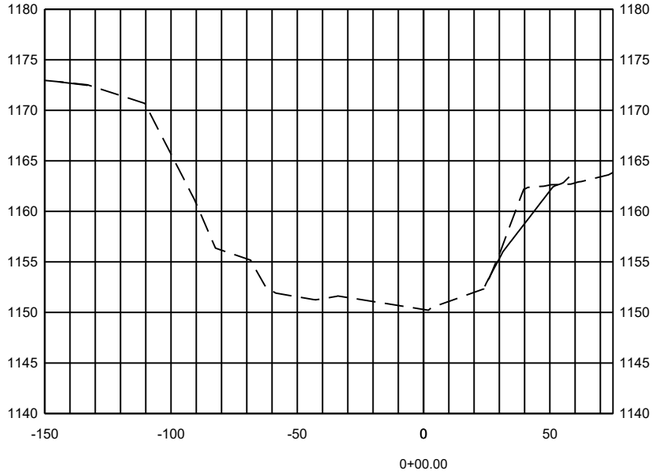

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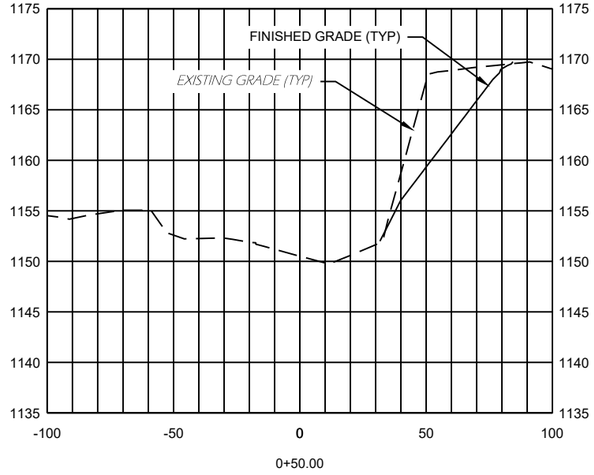

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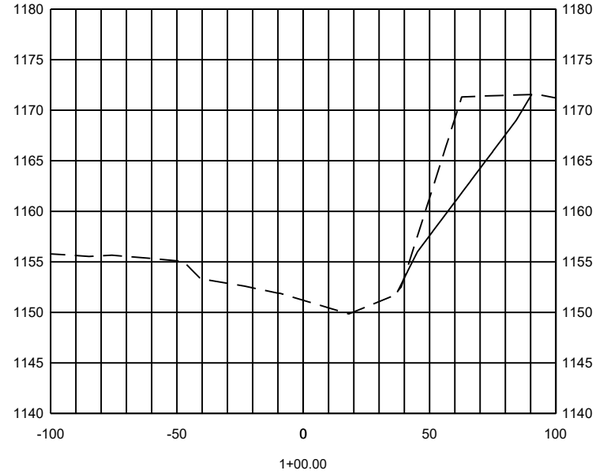

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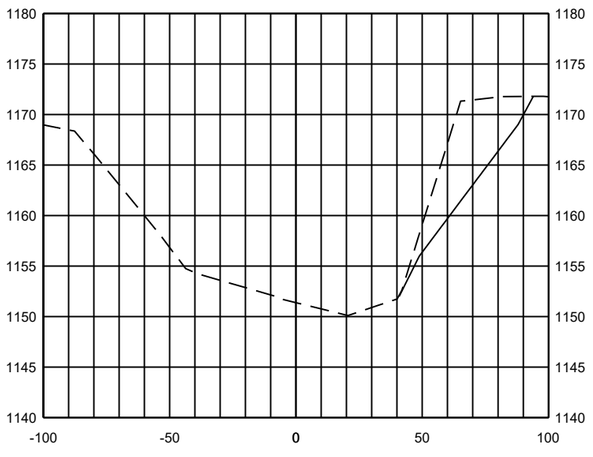

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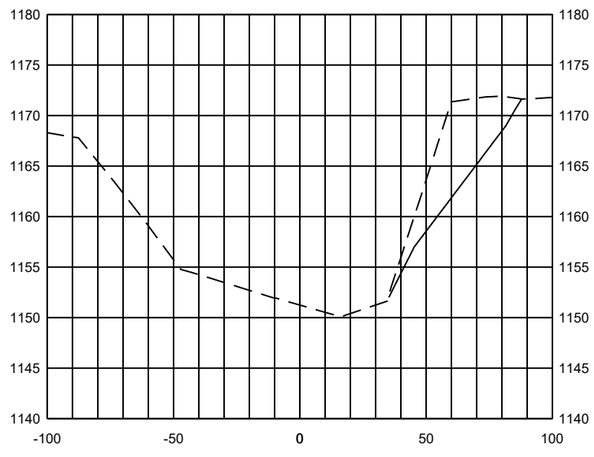

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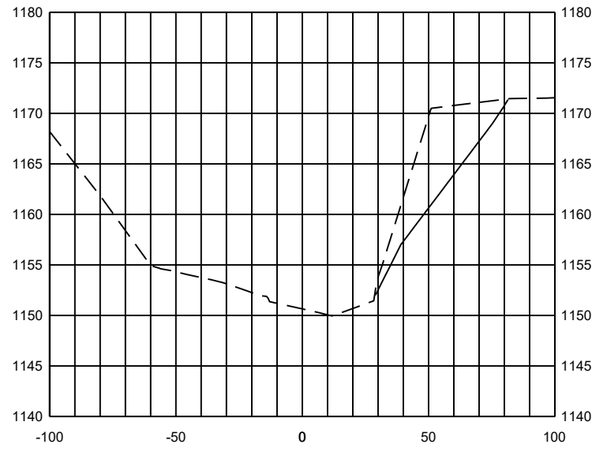

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MARNE CREEK BANK STABILIZATION PROJECT
SECTIONS - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
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DESIGNED BY:	MJ
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0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (A)M-2

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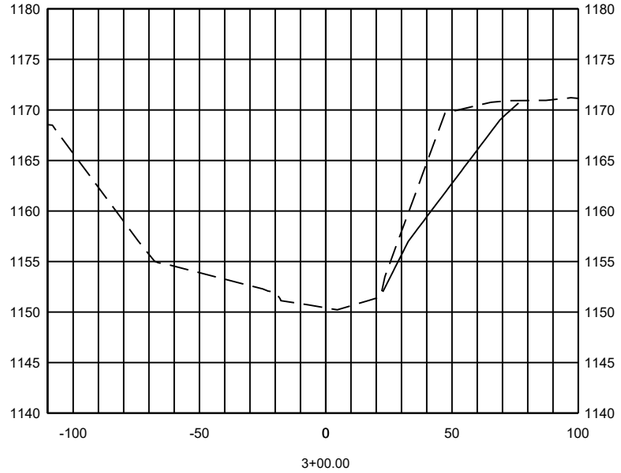

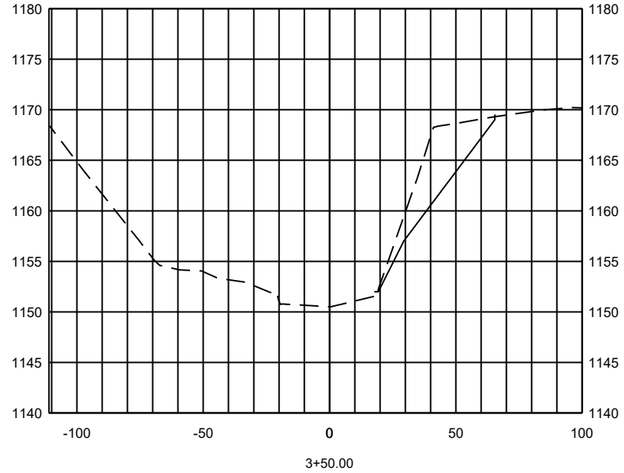

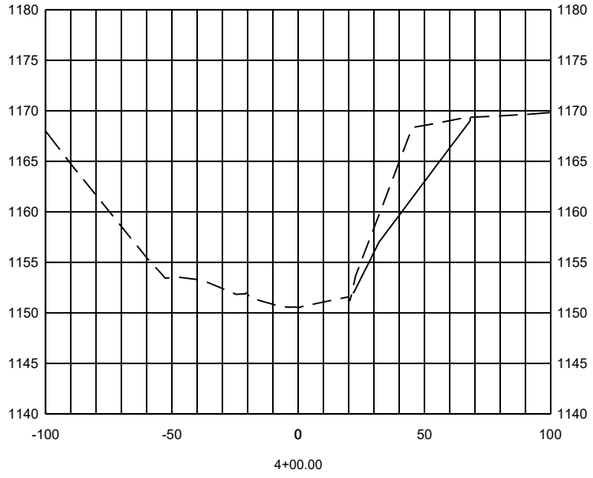

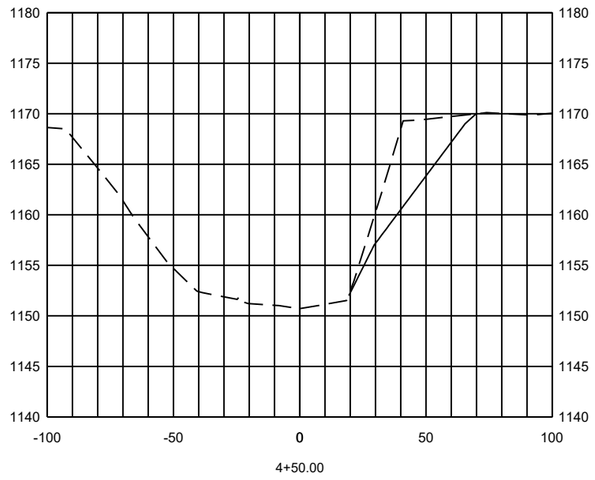

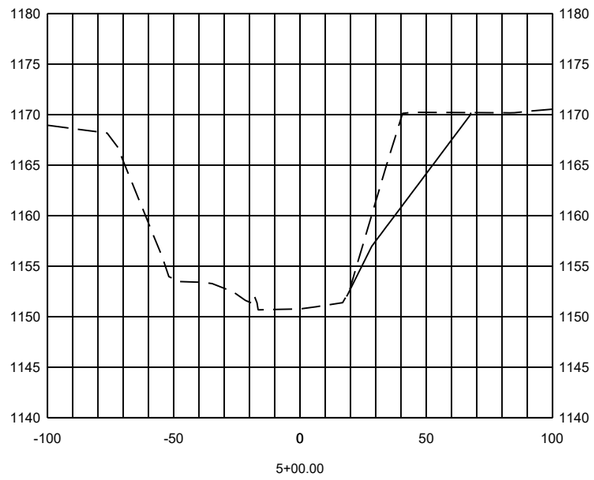

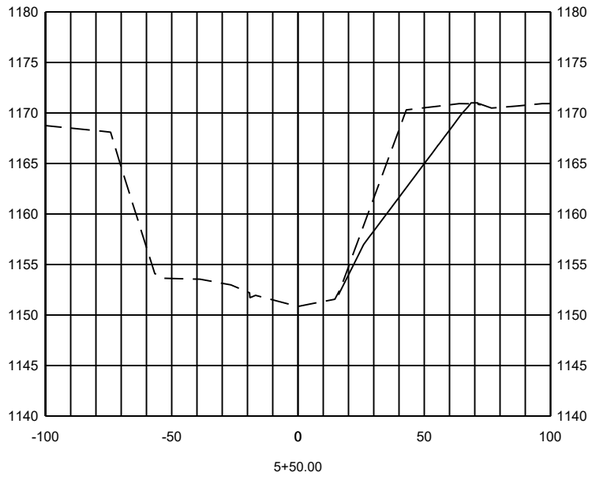

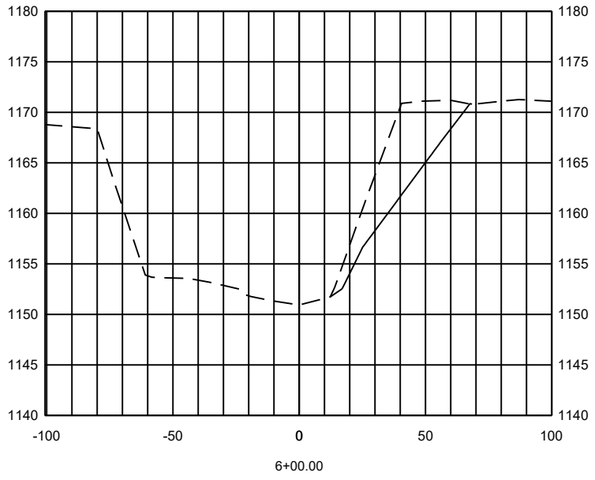

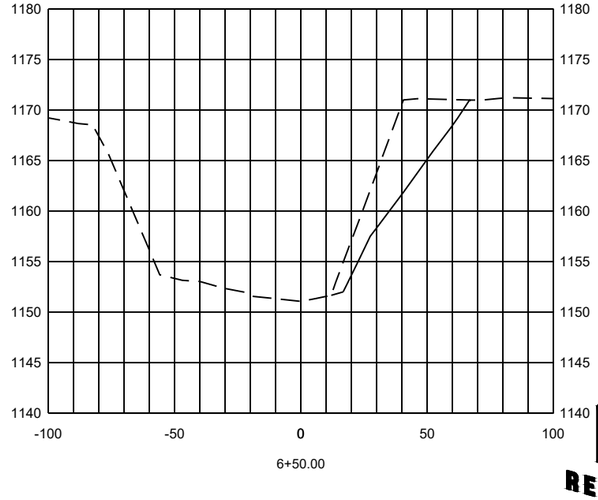

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
SECTIONS - REACH A
YANKTON, SOUTH DAKOTA

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MATTHEW W. JOHNSON
SOUTH DAKOTA
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0 1/2" 1"
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SHEET No. : (A)M-3

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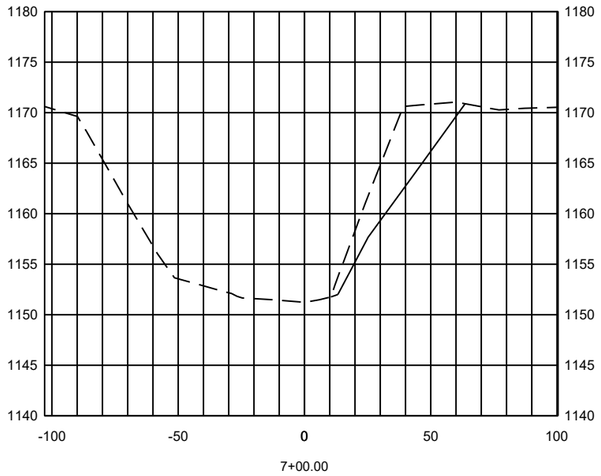

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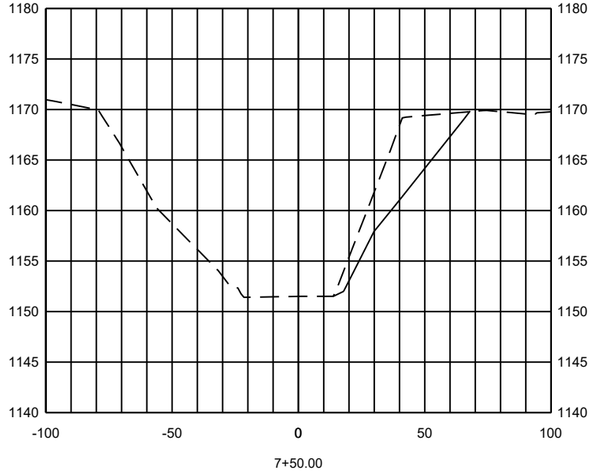

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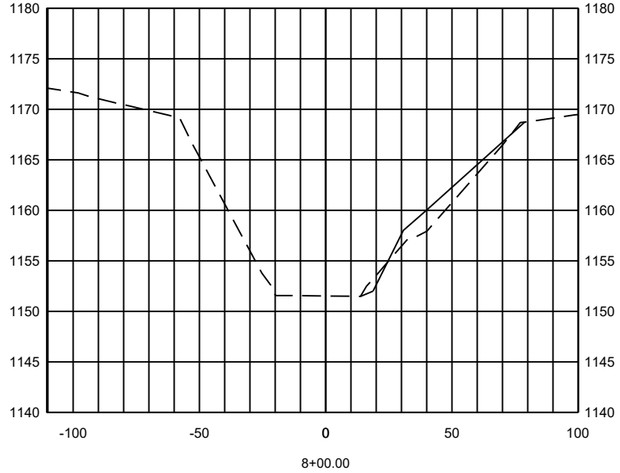

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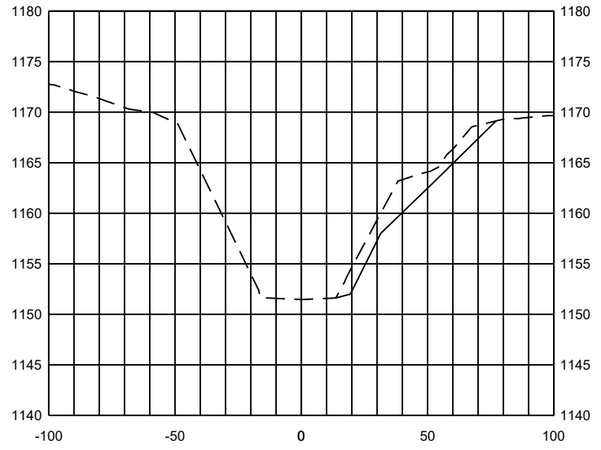

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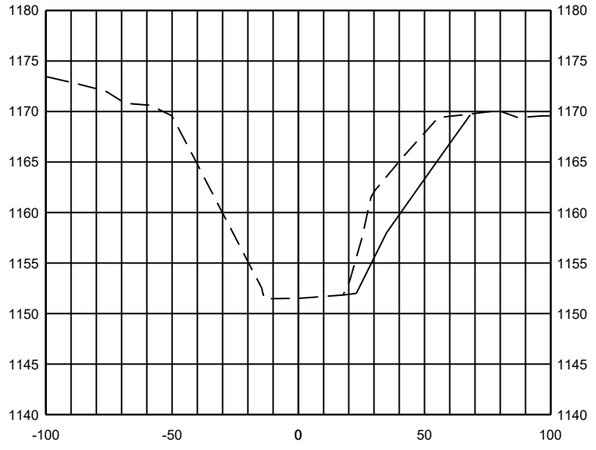

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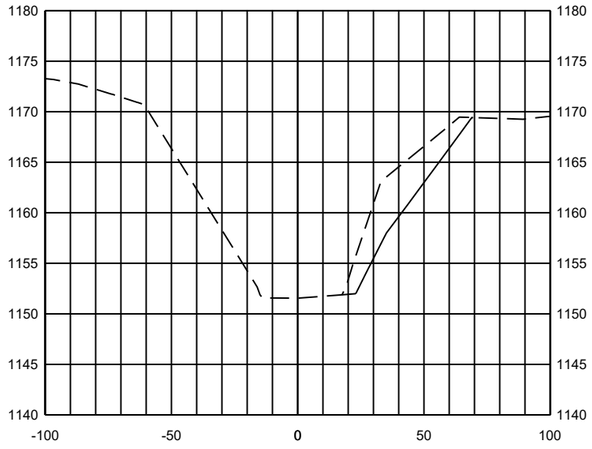

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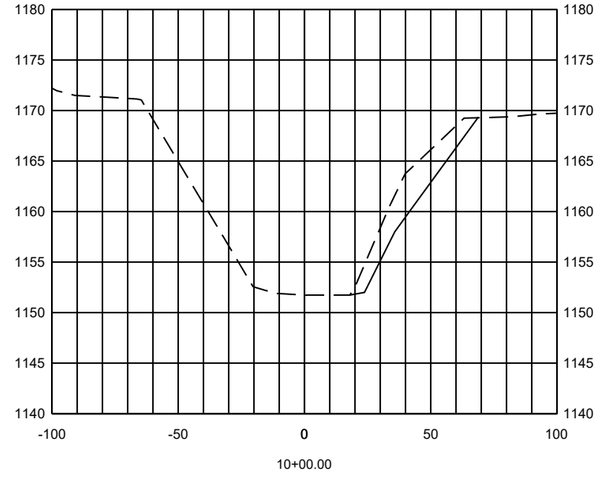

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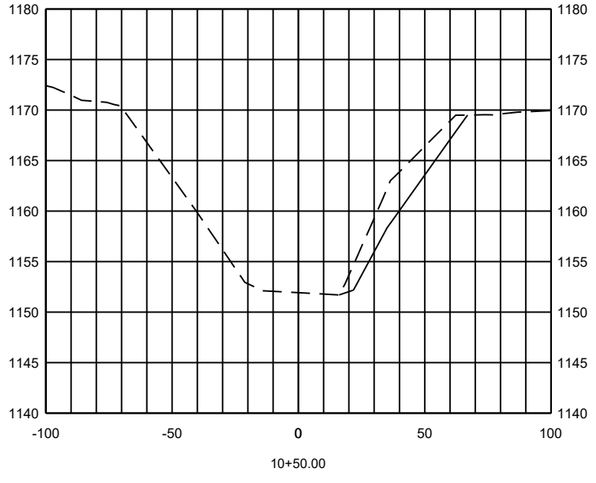

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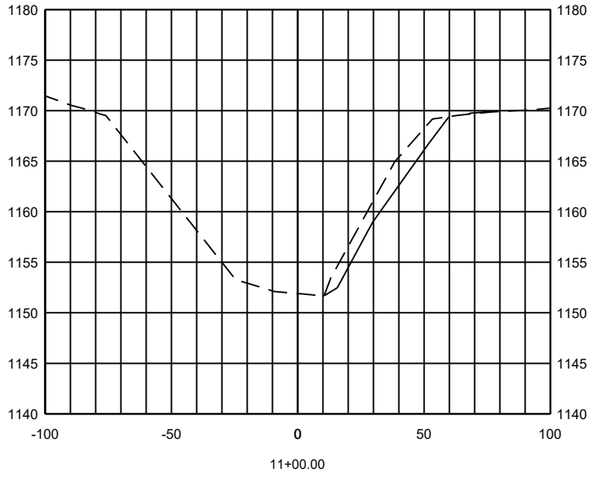

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

SECTIONS - REACH A

YANKTON, SOUTH DAKOTA

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SHEET No. :
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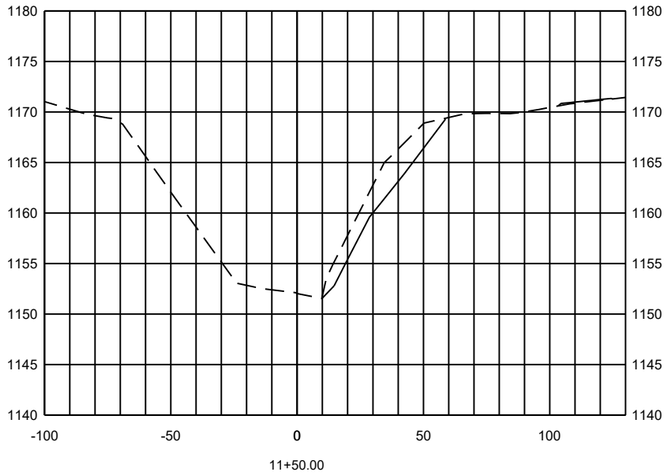

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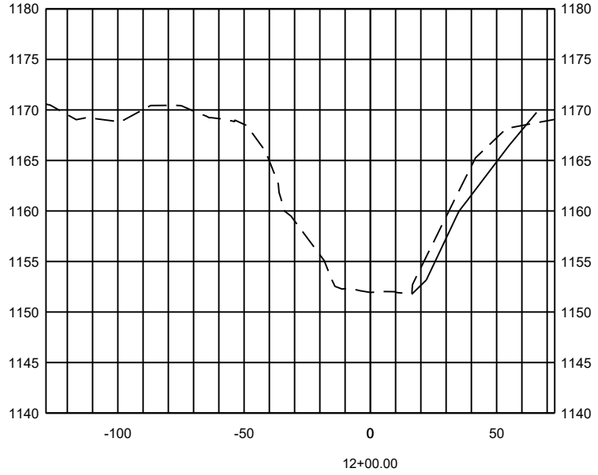

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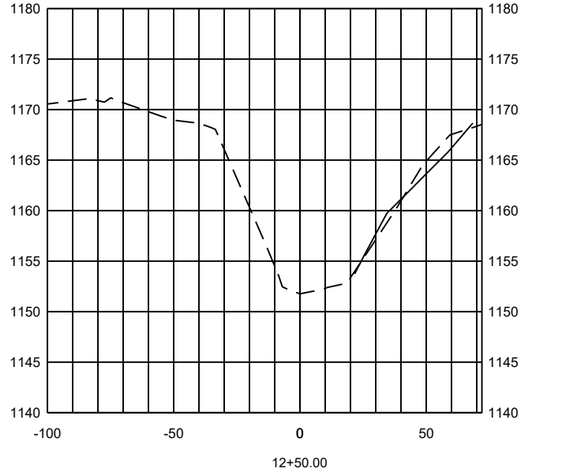

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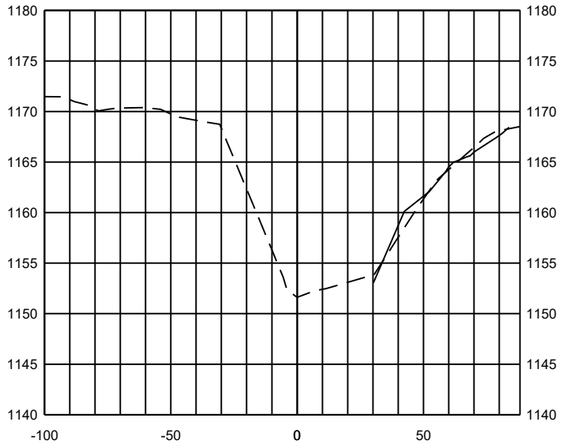

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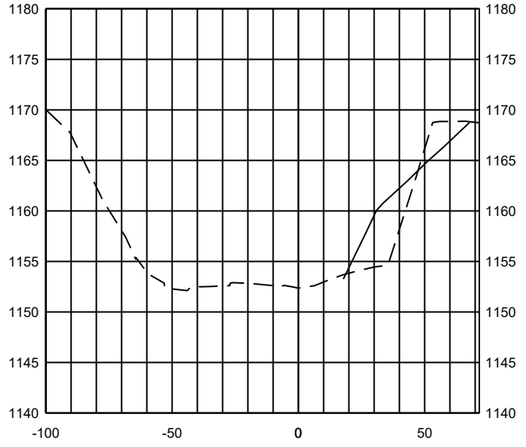

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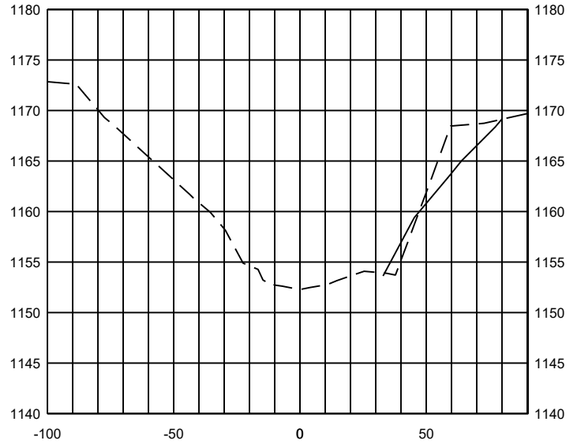

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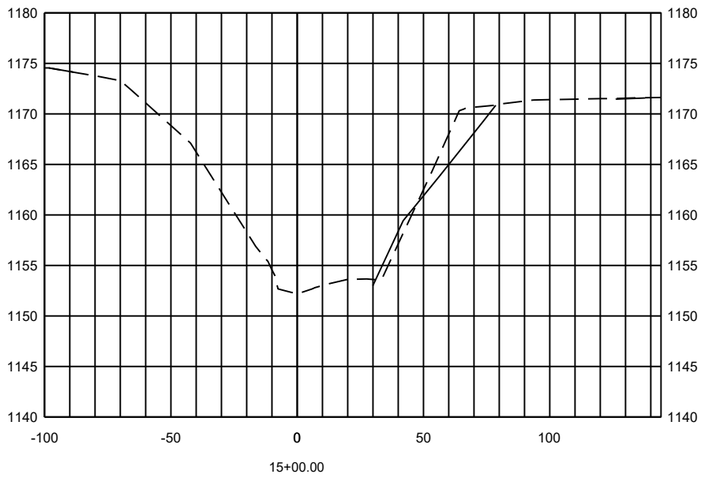

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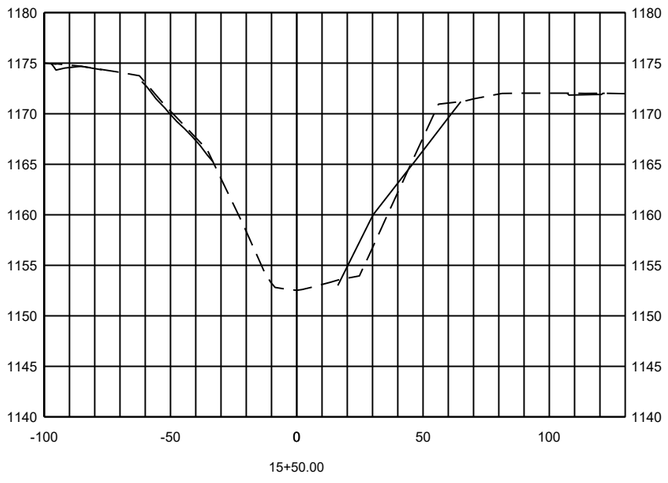

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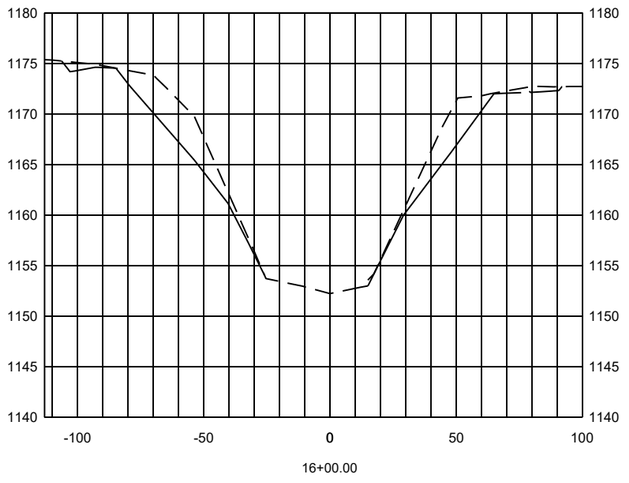

16+00.00

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SHEET No.: (A)M-5

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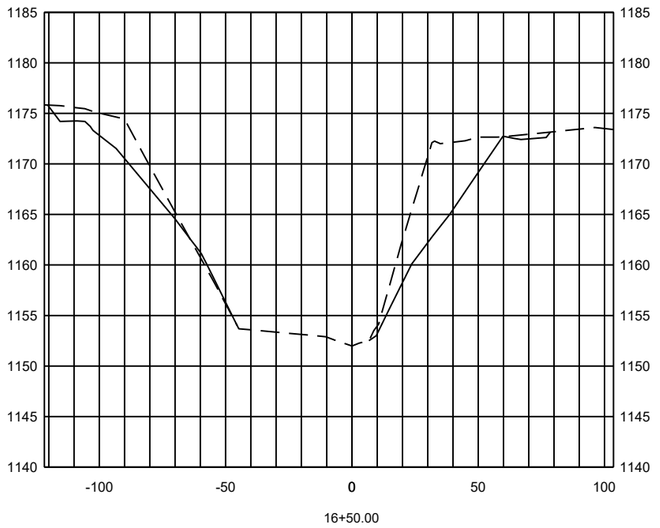

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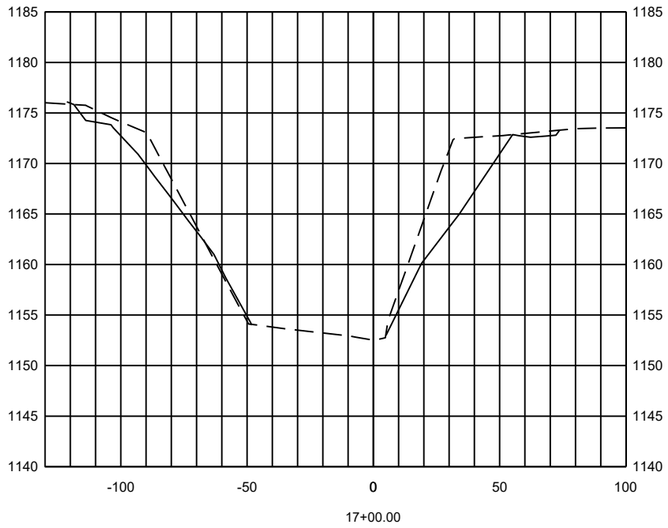

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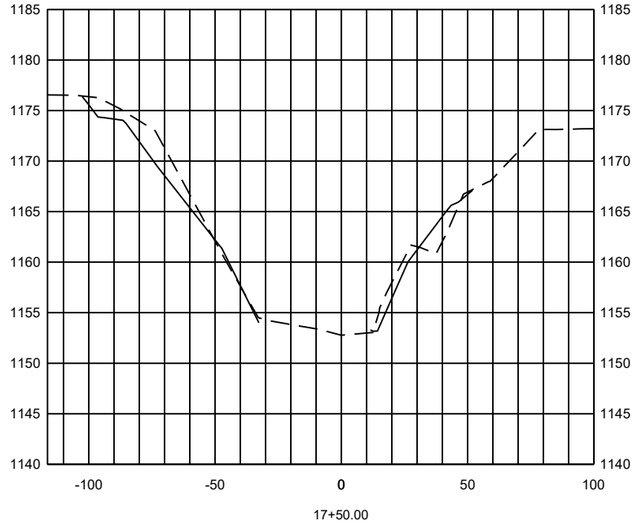

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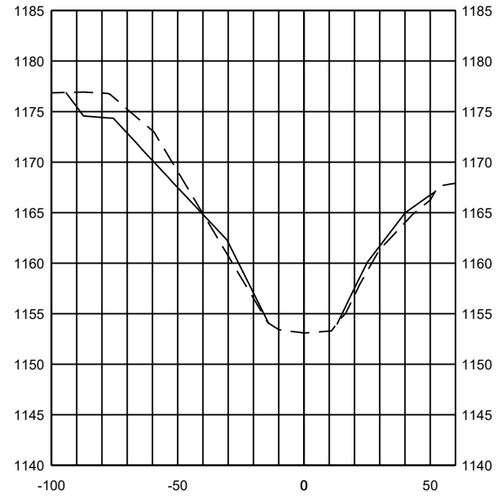

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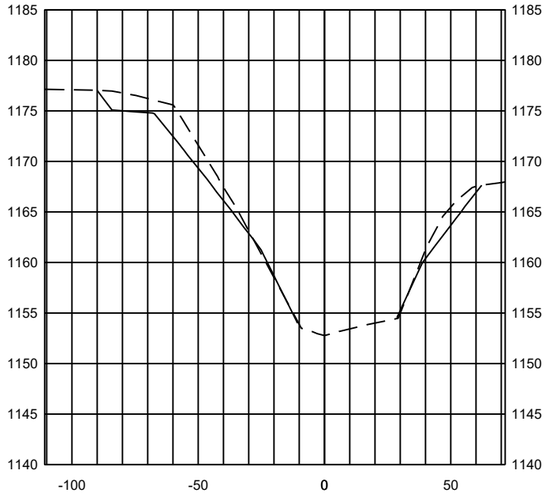

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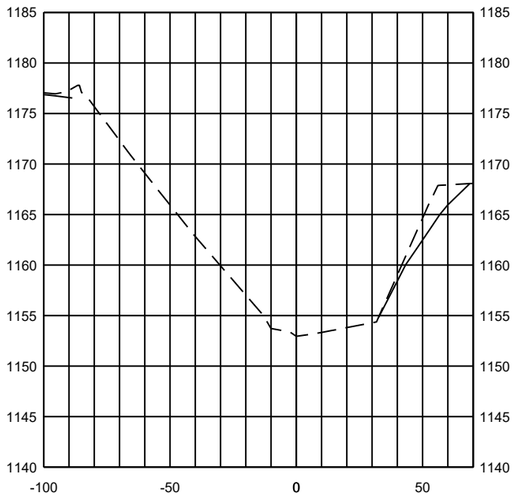

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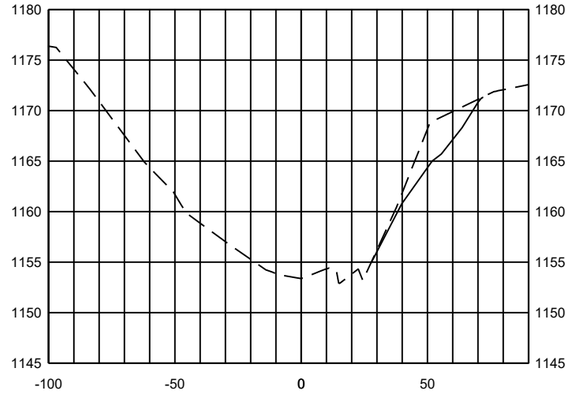

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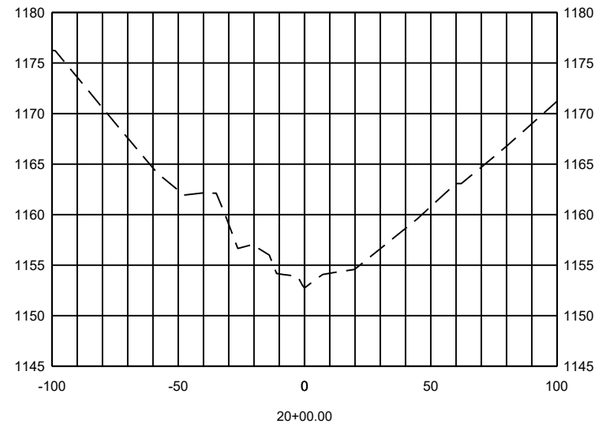

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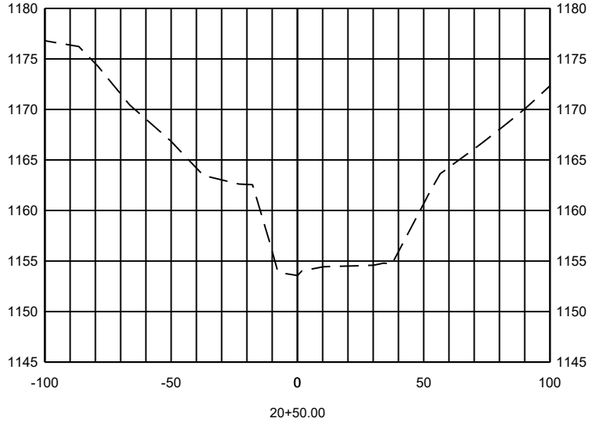

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
SECTIONS - REACH A
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0" 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (A)M-6

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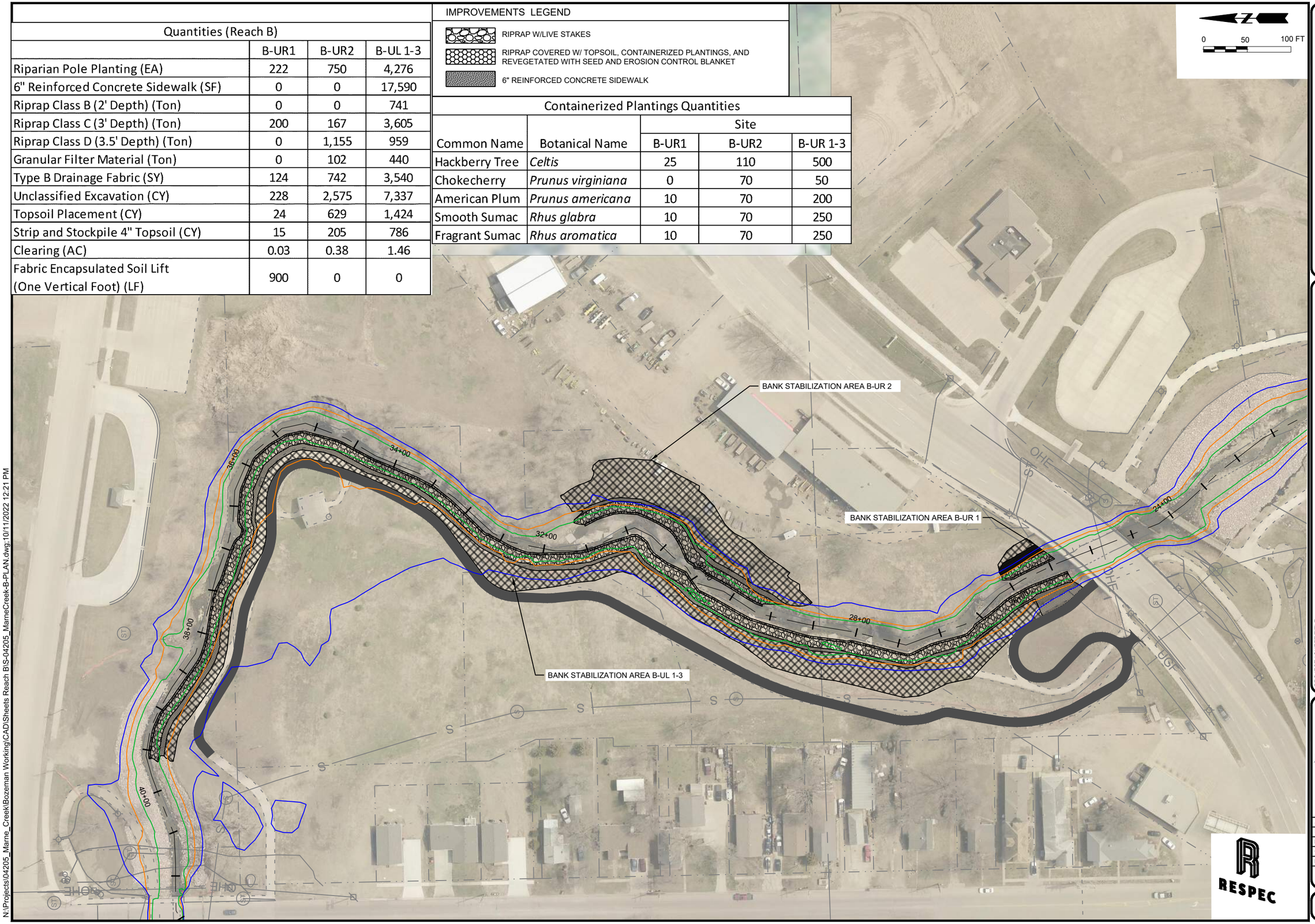
Quantities (Reach B)			
	B-UR1	B-UR2	B-UL 1-3
Riparian Pole Planting (EA)	222	750	4,276
6" Reinforced Concrete Sidewalk (SF)	0	0	17,590
Riprap Class B (2' Depth) (Ton)	0	0	741
Riprap Class C (3' Depth) (Ton)	200	167	3,605
Riprap Class D (3.5' Depth) (Ton)	0	1,155	959
Granular Filter Material (Ton)	0	102	440
Type B Drainage Fabric (SY)	124	742	3,540
Unclassified Excavation (CY)	228	2,575	7,337
Topsoil Placement (CY)	24	629	1,424
Strip and Stockpile 4" Topsoil (CY)	15	205	786
Clearing (AC)	0.03	0.38	1.46
Fabric Encapsulated Soil Lift (One Vertical Foot) (LF)	900	0	0

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/ TOPSOIL, CONTAINERIZED PLANTINGS, AND REVEGETATED WITH SEED AND EROSION CONTROL BLANKET
- 6" REINFORCED CONCRETE SIDEWALK

Containerized Plantings Quantities				
		Site		
Common Name	Botanical Name	B-UR1	B-UR2	B-UR 1-3
Hackberry Tree	*Celtis*	25	110	500
Chokecherry	*Prunus virginiana*	0	70	50
American Plum	*Prunus americana*	10	70	200
Smooth Sumac	*Rhus glabra*	10	70	250
Fragrant Sumac	*Rhus aromatica*	10	70	250



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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
SITE OVERVIEW - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)A-1

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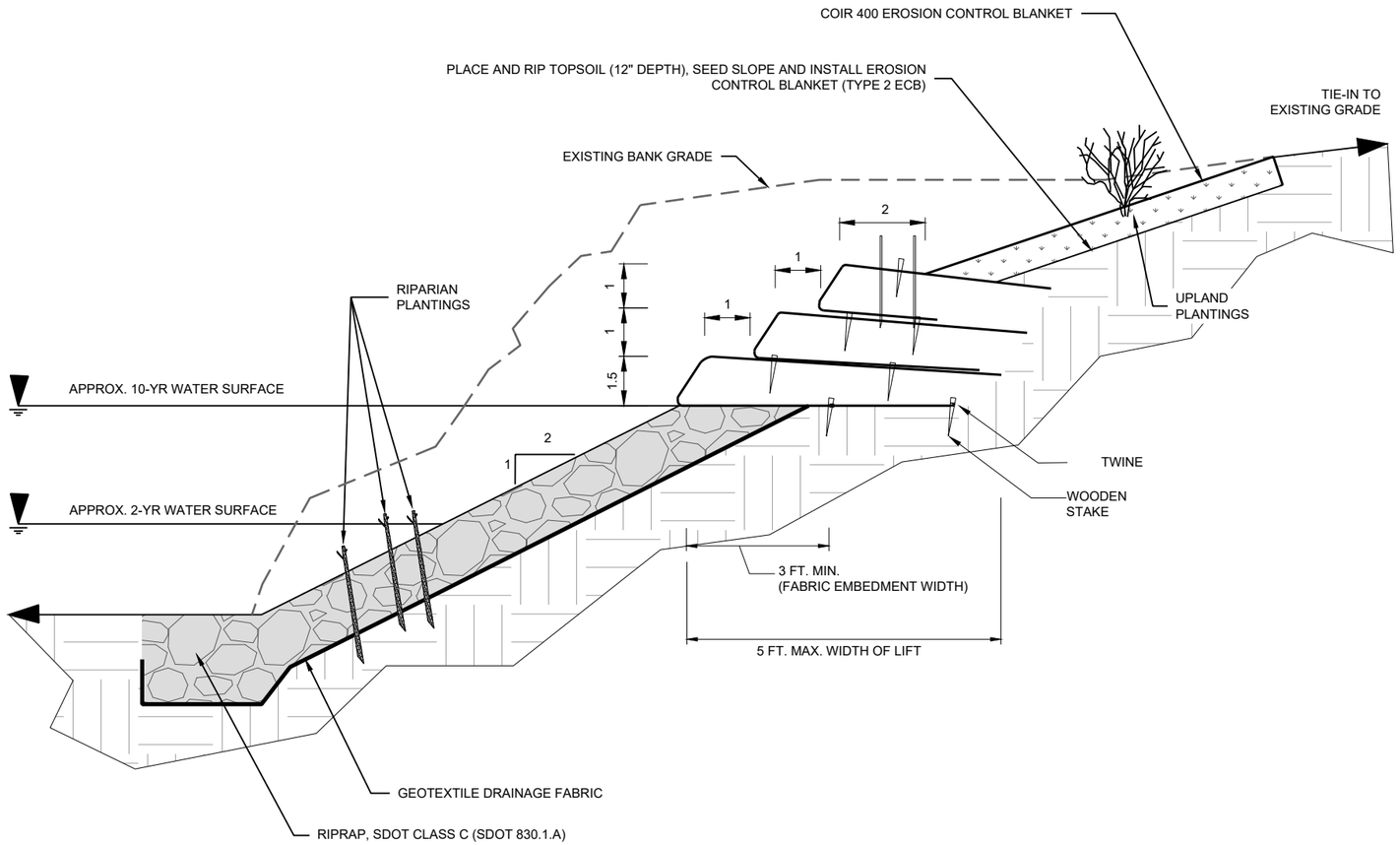
NOTES:
1. EROSION CONTROL BLANKET, ABOVE FES, TO BE WESTERN EXCELSIOR 'EXCEL SS2 ALL NATURAL' BLANKET OR ENGINEER APPROVED EQUAL TYPE 2 BLANKET FROM THE SDDOT APPROVED LIST OF PRODUCTS.



UPPER BANK:

IMPLEMENT FABRIC ENCAPSULATED SOIL (FES) LIFTS AT APPROX. 10-YR WATER SURFACE ELEV. FES LIFTS TO BE COMPOSED OF A 50/50 BLEND OF COARSE STREAMBED MATERIAL AND TOPSOIL. MATERIAL TO BE WRAPPED IN COCONUT (COIR) WOVEN EROSION CONTROL BLANKET OUTSIDE LAYER, AND NON-WOVEN COIR FABRIC INSIDE LAYER. AT ELEVATIONS ABOVE FES GRADE SLOPE TO TIE INTO EXISTING GRADE AT TOP OF BANK. ENTIRE UPPER BANK CAPPED WITH MIN 6" TOPSOIL, SEEDED WITH NATIVE UPLAND SEED MIXTURE (SEE SPECIFICATIONS), AND COVERED WITH NON-WOVEN STRAW FABRIC. SEED AND FABRIC ALL OTHER DISTURBED AREAS.

NOTE: OUTSIDE LAYER FABRIC TO BE GEOCOIR/DEKOWE 700 OR 900 OR ENGINEER APPROVED EQUIVALENT. INNER FABRIC TO BE NA GREEN C125BN OR ENGINEER APPROVED EQUAL.

ROCK TOE AND LOWER BANK:

FOR TOE SCOUR PROTECTION REFER TO STREAM BANK TREATMENT TYPICAL. IMPLEMENT RIPRAP, SDOT CLASS C (SDOT 830.1.A) AT 2:1 (H:V) GRADED SLOPE FROM TOE ELEV. TO APPROX. 10-YR WATER SURFACE ELEV. AT THICKNESS OF 3 FEET.

FABRIC ENCAPSULATED SOIL LIFT DETAIL

N.T.S

NOTES:
1. BANK TREATMENT DEPENDENT ON ELEVATION ON BANK COMPARED TO HYDRAULIC MODELING RESULTS:
   a) IMPLEMENT FABRIC ENCAPSULATED SOIL (FES) LIFTS AT APPROXIMATE 10-YR WATER SURFACE ELEVATION. AT ELEVATIONS ABOVE FES LIFTS, GRADE SLOPE TO TIE INTO EXISTING GRADE AT TOP OF BANK.
   b) FOR TOE SCOUR PROTECTION REFER TO STREAM BANK TREATMENT TYPICAL. IMPLEMENT RIPRAP, SDOT CLASS C (SDOT 830.1.A) AT 2:1 (H:V) GRADED SLOPE FROM TOE ELEVATION TO APPROXIMATE 10-YR WATER SURFACE ELEVATION AT THICKNESS OF 3 FEET.
2. CONTRACTOR TO CONSTRUCT ENTIRE BANK WITH EXCEPTION OF ALL WILLOW MATERIALS
3. WOVEN COIR FABRIC MATERIAL TO BE 20 OZ/SY IN 9 FT WIDE ROLLS
4. NON-WOVEN COIR FABRIC MATERIAL TO BE 9.8 OZ/SY IN 8 FT WIDE ROLLS
5. NON-WOVEN STRAW FABRIC MATERIAL TO BE 8.7 OZ/SY IN 15.5 FT WIDE ROLLS
6. WOODEN STAKE MIN 18" WITH WIDER HEAD AT TOP, NORTH AMERICAN GREEN ECOSTAKE OR APPROVED EQUAL
7. CONTRACTOR TO FURNISH ALL SEED AS NOTED IN THE SPECIFICATIONS.

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STREAM BANK TREATMENT SPECIAL
YANKTON, SOUTH DAKOTA

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SCALE REDUCTION BAR

SHEET No.: (B)C-1

RESPEC

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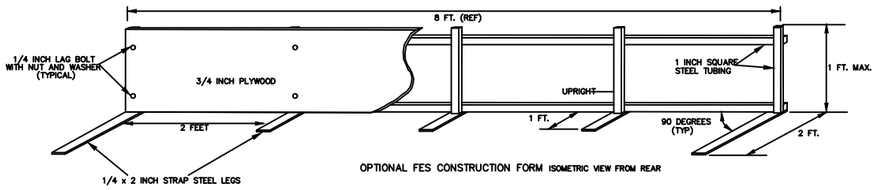
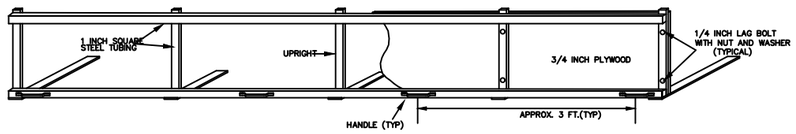
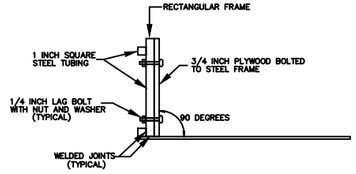


OPTIONAL FES CONSTRUCTION FORM ISOMETRIC VIEW FROM REAR



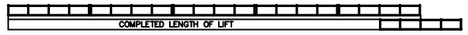
OPTIONAL FES CONSTRUCTION FORM ISOMETRIC VIEW FROM FRONT

NOTE: CONSTRUCTION FORMS MAY BE SUBSTITUTED WITH REBAR AND 2" x 12" LUMBER

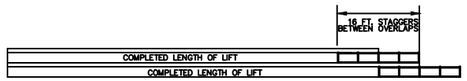


OPTIONAL FES BANK CONSTRUCTION FORM END VIEW

1. PLACE A ROW OF CONSTRUCTION FORMS ALONG DESIRED BANK ALIGNMENT FOR FIRST LIFT.

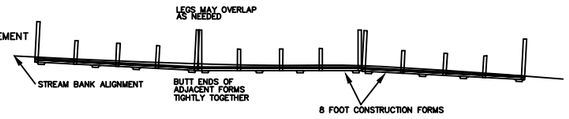


2. CONSTRUCT FABRIC ENCAPSULATED LIFTS ALONG LENGTH OF FIRST SET OF FORMS AND THEN BEGIN PLACEMENT FORMS AND CONSTRUCTION OF SECOND LIFT.



3. STAGGER FABRIC OVERLAPS A MINIMUM OF 16 FEET BETWEEN LIFTS.

SEQUENCE FOR PLACEMENT OF FORMS PROFILE VIEW LOOKING INTO BANK



FABRIC ENCAPSULATED SOIL CONSTRUCTION FORM PLACEMENT
PLAN VIEW

GENERAL NOTES ON FABRICATION OF OPTIONAL FORMS FOR FABRIC ENCAPSULATED SOIL LIFT CONSTRUCTION

1. FABRICATE FORMS BY WELDING 1 INCH TUBULAR STEEL TOGETHER TO CREATE A 1x8 FOOT RECTANGULAR FRAMEWORK.
2. WELD LENGTHS OF 1/4x2 INCH STEEL STRAP AT 90 DEGREES TO THE FRAME EVERY 2 FEET.
3. ATTACH A PIECE OF 3/4 INCH PLYWOOD TO THE FRAME USING 1/4 INCH DIAMETER LAG BOLTS OR EQUIVALENT.
4. REMOVAL AND TRANSPORT OF THE FORMS IS FACILITATED IF HEAVY DUTY HANDLES ARE ATTACHED TO THE FRAME AS SHOWN.

CONSTRUCTION SEQUENCE FOR FABRIC ENCAPSULATED SOIL LIFT

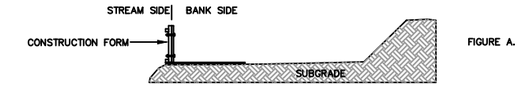


FIGURE A.

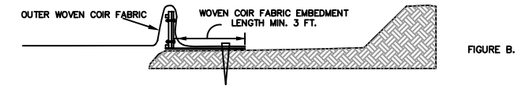


FIGURE B.

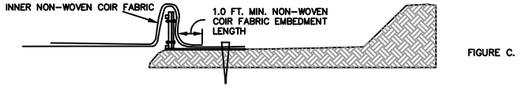


FIGURE C.

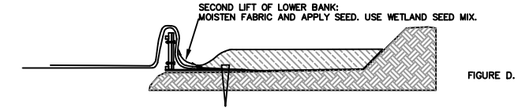


FIGURE D.

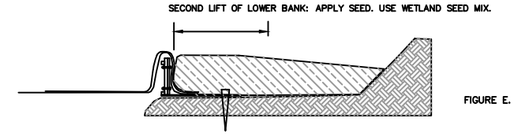


FIGURE E.

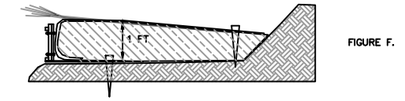
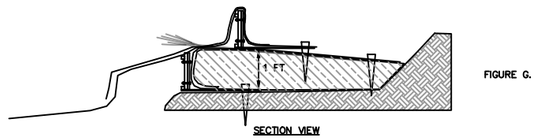


FIGURE F.



SECTION VIEW

FIGURE G.

NOTES:

1. BANKS MAY BE CONSTRUCTED IN EITHER AN UPSTREAM OR DOWNSTREAM DIRECTION, AS LONG AS THE FABRIC IS OVERLAPPED IN THE UPSTREAM TO DOWNSTREAM DIRECTION.
2. PLACE A SERIES OF THREE OR MORE FORMS ON THE SUBGRADE SO THAT THE FORMS FOLLOW THE PROPOSED STREAM BANK ALIGNMENT (FIGURE A). BUTT THE ENDS OF THE FORMS TIGHTLY TOGETHER.
3. UNROLL THE OUTER WOVEN COIR FABRIC, PARALLEL TO THE CHANNEL AND POSITION IT SO THAT 3 FT. EXTENDS FOR EMBEDMENT ON THE BANK SIDE OF THE FORMS (FIG B). DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE (FIG B).
4. UNROLL THE INNER NON-WOVEN COIR FABRIC, OVER THE TOP OF THE OUTER FABRIC AND POSITION IT SO THAT AT LEAST 1 FT. OF THE INNER FABRIC EXTENDS AS AN EMBEDMENT LENGTH ON THE BANK SIDE OF THE FORMS (FIG C). DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE AND ALIGN THE LONG EDGES OF THE INNER AND OUTER FABRICS. STRETCH AND PULL THE FABRIC LAYERS TO REMOVE WRINKLES.
5. PLACE TOPSOIL OVER THE FABRIC ON THE BANK SIDE OF THE FORMS THEN COMPACT. MOISTEN FABRIC AND SPRINKLE SEED ON FABRIC IN AREA INDICATED IN FIGURE D (TOP LIFT OF LOWER BANK ONLY). LEVEL THE TOPSOIL AND COMPACT TO 75 PERCENT STANDARD PROCTOR DRY DENSITY (SPDD) (FIG E).
6. FOLD THE LOOSE ENDS OF THE TWO FABRIC LAYERS BACK OVER THE COMPACTED TOPSOIL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG F). SECURE WITH WOODEN STAKES AT A SPACING OF 3 FT.
7. PLACE WILLOW CUTTINGS IN 3" LAYER OF TOPSOIL ATOP PREVIOUS LIFT AND REPEAT STEPS 1 THROUGH 6 FOR ADDITIONAL LIFTS (FIGURE G).

CONSTRUCTION AND USE OF FORMS FOR FES CONSTRUCTION

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STREAM BANK TREATMENT SPECIAL
YANKTON, SOUTH DAKOTA

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REGISTERED PROFESSIONAL ENGINEER
REG NO 15324
MATTHEW W. JOHNSON
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0 1/2" 1"
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SHEET No.: (B)C-2

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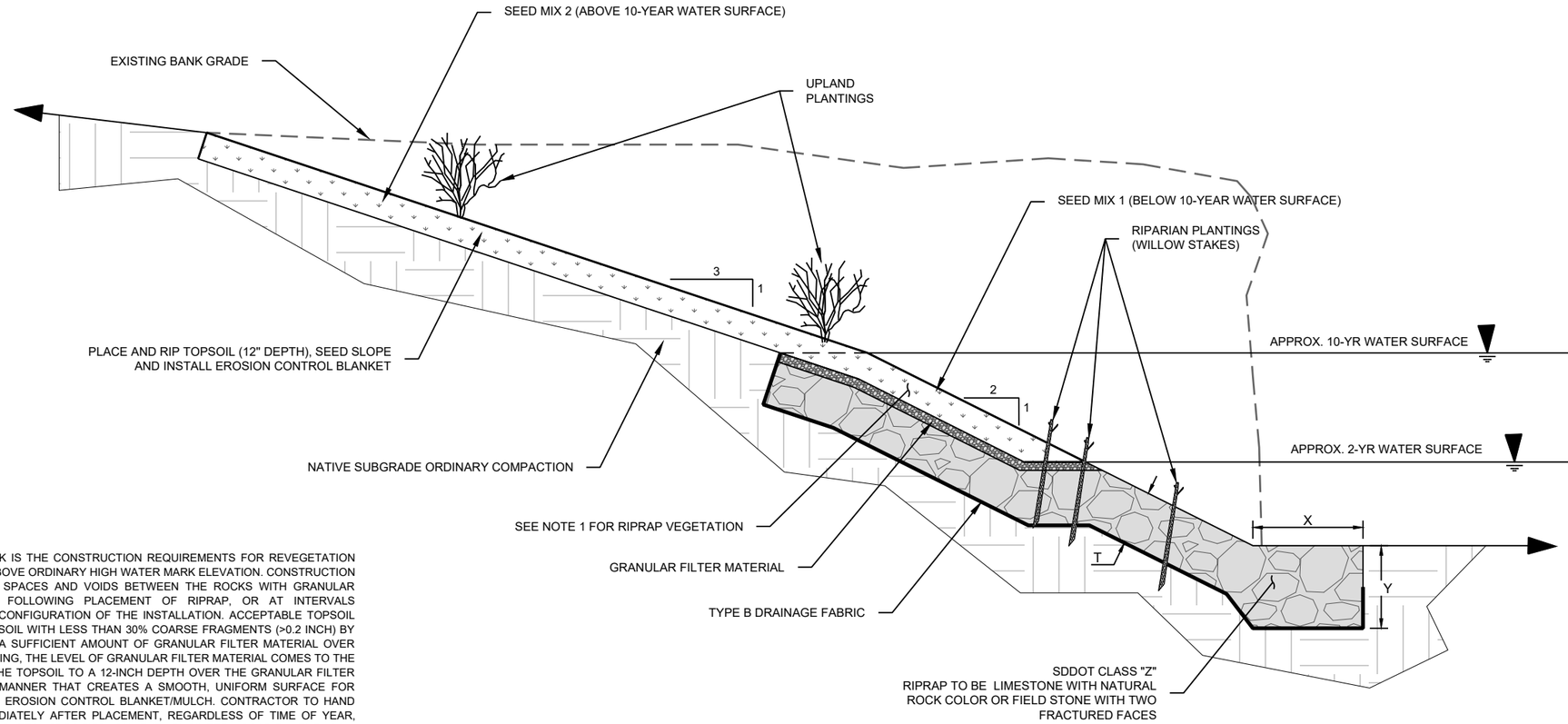

STREAM BANK TREATMENT TYPICAL

NOT TO SCALE

NOTE:

1. RIPRAP REVEGETATION: THIS WORK IS THE CONSTRUCTION REQUIREMENTS FOR REVEGETATION MATERIAL ON RIPRAP SURFACES ABOVE ORDINARY HIGH WATER MARK ELEVATION. CONSTRUCTION REQUIREMENTS ARE TO FILL THE SPACES AND VOIDS BETWEEN THE ROCKS WITH GRANULAR FILTER MATERIAL AND TOPSOIL FOLLOWING PLACEMENT OF RIPRAP, OR AT INTERVALS APPROPRIATE FOR THE SIZE AND CONFIGURATION OF THE INSTALLATION. ACCEPTABLE TOPSOIL INCLUDES LOCALLY OBTAINED TOPSOIL WITH LESS THAN 30% COARSE FRAGMENTS (>0.2 INCH) BY WEIGHT. CONTRACTOR TO PLACE A SUFFICIENT AMOUNT OF GRANULAR FILTER MATERIAL OVER THE RIPRAP, SO THAT AFTER SETTLING, THE LEVEL OF GRANULAR FILTER MATERIAL COMES TO THE VERY TOP OF THE ROCK. PLACE THE TOPSOIL TO A 12-INCH DEPTH OVER THE GRANULAR FILTER MATERIAL. PLACE MATERIAL IN A MANNER THAT CREATES A SMOOTH, UNIFORM SURFACE FOR SEEDING AND PLACEMENT OF THE EROSION CONTROL BLANKET/MULCH. CONTRACTOR TO HAND BROADCAST SEED THE SOIL IMMEDIATELY AFTER PLACEMENT, REGARDLESS OF TIME OF YEAR, WITH THE SEED MIXTURE AND RATES SPECIFIED BY THE ENGINEER. SCARIFY THE SOIL IMMEDIATELY PRIOR TO AND FOLLOWING SEEDING TO INCORPORATE SEED TO A DEPTH OF ½ INCH INTO THE SOIL.

Reach B

Riprap Design

Site	Location	Station Start	Station End	SPECIAL SDDOT RIPRAP CLASS "Z"	"T" Thickness (ft)	"X" Thickness (ft)	"Y" Thickness (ft)
B-UR1	Straight	25+00.00	26+00.00	C	3	3.5	3.5
B-UL 1-3	Straight	25+00.00	31+25.00	C	3	3.5	3.5
B-UR2	Inside Bend	28+50.00	29+50.00	C	3	3.5	3.5
B-UR2	Outside Bend	29+50.00	31+50.00	D	3.5	5	5
B-UL 1-3	Outside Bend	31+25.00	33+00.00	D	3.5	5	5
B-UL 1-3	Straight	33+00.00	34+50.00	C	3	3.5	3.5
B-UL 1-3	Inside Bend	34+50.00	39+50.00	B	2	2	2

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0 1/2" 1"
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SHEET No. : (B)C-3

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach B\S-04205_MarneCreek-B-DETAILS.dwg;10/11/2022 12:22 PM

0 50 100 FT

NOTE:

1. EROSION CONTROL BLANKET TO BE CURLEX I FIBRENET OR ENGINEER APPROVED EQUAL.

EROSION CONTROL LEGEND

- EROSION CONTROL BLANKET W/ SEED MIX 1
- EROSION CONTROL BLANKET W/ SEED MIX 2
- 12" EROSION CONTROL WATTLE (AS DIRECTED BY ENGINEER)
- SILT FENCE

Erosion Control Quantities (Reach B)

	B-UR1	B-UR2	B-UR 1-3
Seed Mix 1 (lbs)	0	1	8
Seed Mix 2 (lbs)	5	129	262
Fertilizer (lbs)	17	422	803
Erosion Control Blanket (SY)	56	1509	3418
12" Erosion Control Wattle (LF)	100	280	1460
Silt Fence (LF)	0	0	100
Concrete Washout Facility (EA)	0	0	2
Construction Entrance (EA)	1	0	2
Stabilized Staging Area (SY)	0	0	218
Orange Plastic Safety Fence (LF)	0	0	0
Inlet Protection (EA)	1	0	2

12" EROSION CONTROL WATTLE
LIMITS OF CONSTRUCTION
12" EROSION CONTROL WATTLE
SEED MIX 2
SEED MIX 1
CONSTRUCTION ENTRANCE
INLET PROTECTION
TEMP. ACCESS EASEMENT
SD-50
LIMITS OF CONSTRUCTION
7TH ST
12" EROSION CONTROL WATTLE
SEED MIX 1
SEED MIX 2
SILT FENCE
STABILIZED STAGING AREA
CONSTRUCTION ENTRANCE
CONCRETE WASHOUT FACILITY
CONTRACTOR TO COORDINATE WITH POWER COMPANY IN VICINITY OF OVERHEAD POWER LINES
CONCRETE WASHOUT FACILITY
CONSTRUCTION ENTRANCE
INLET PROTECTION
BURLEIGH ST

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION PROJECT
EROSION CONTROL - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)G-1

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach B\S-04205_MarneCreek-B-EROSION CONTROL.dwg;10/11/2022 12:29 PM

Tree Removal Quantities (Reach B - All Sites)	
45 EA	Clear and Grub Tree 6" - 12"
6 EA	Clear and Grub Tree 13" - 24"
1 EA	Clear and Grub Tree 25" - 36"
0 EA	Clear and Grub Tree 37" - 48"

Removal Quantities (Reach B)	
Site	Remove Concrete Sidewalk (SY)
B-UR1	0
B-UR2	0
B-UL1-3	1817

REMOVAL LEGEND

- CLEARING EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

N

0 30 60 FT

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PROJECT / SHEET TITLE:

MARNE CREEK BANK STABILIZATION PROJECT

EXISTING CONDITIONS - REACH B

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)H-1

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach B\S-04205_MarneCreek-B-EXISTING_CONDITIONS.dwg;10/11/2022 12:31 PM

REMOVAL LEGEND

- CLEARING EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

0 30 60 FT

CONTRACTOR TO REMOVE
CONCRETE DEBRIS FROM CHANNEL

EXISTING TRAIL
PROTECT IN PLACE

REMOVE EXISTING TRAIL
COORDINATE LOCATION OF LIGHT POLES
AND BURIED ELECTRIC LINE ALONG OLD TRAIL

MARNE CREEK

MATCHLINE

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
EXISTING CONDITIONS - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)H-2

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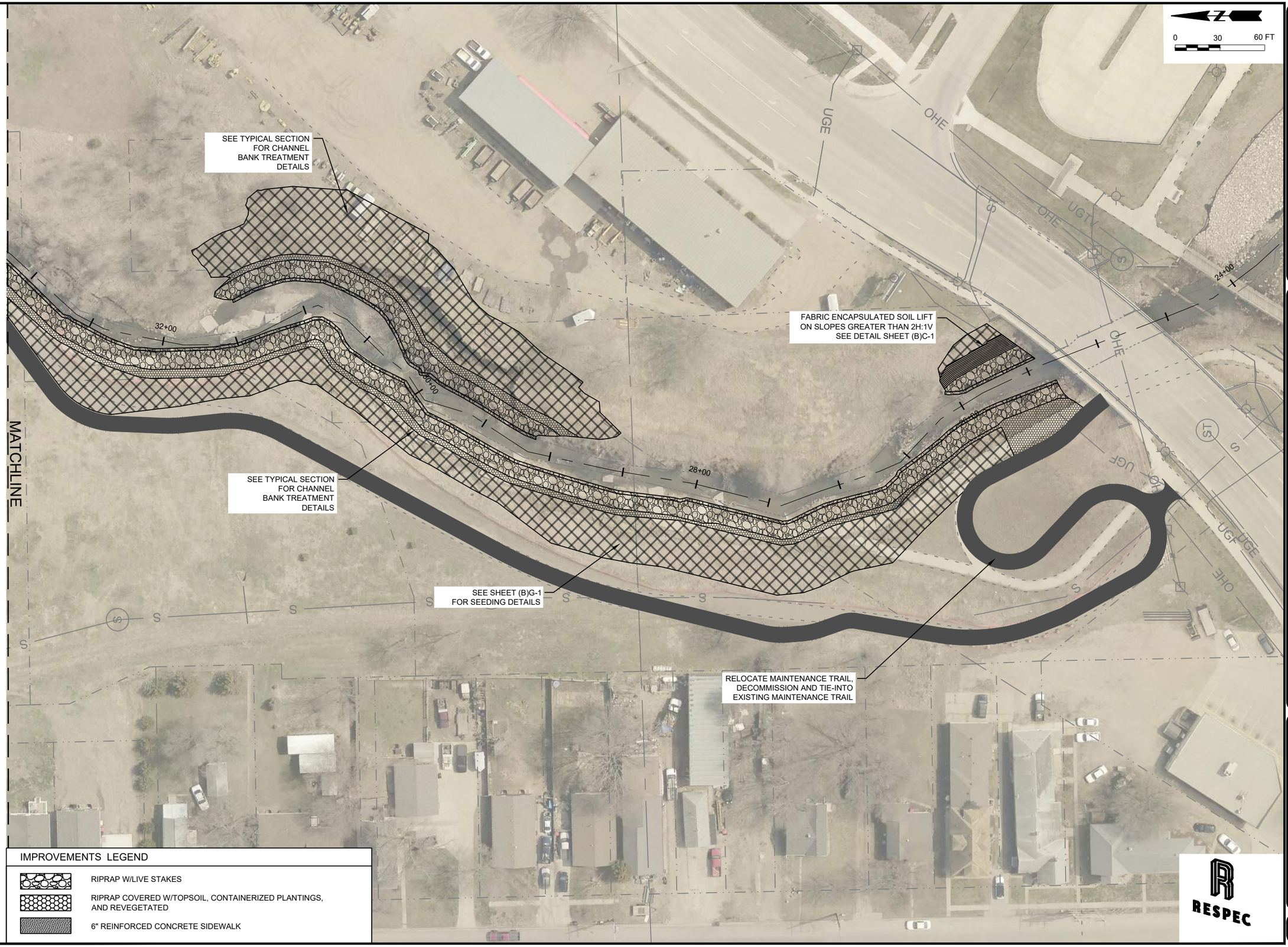

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/TOPSOIL, CONTAINERIZED PLANTINGS, AND REVEGETATED
- 6" REINFORCED CONCRETE SIDEWALK

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

DESIGN PLAN - REACH B

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG No. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	1/11/22
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)J-1

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

DESIGN PLAN - REACH B

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER REG NO. 15324 MATTHEW W. JOHNSON SOUTH DAKOTA 10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)J-2

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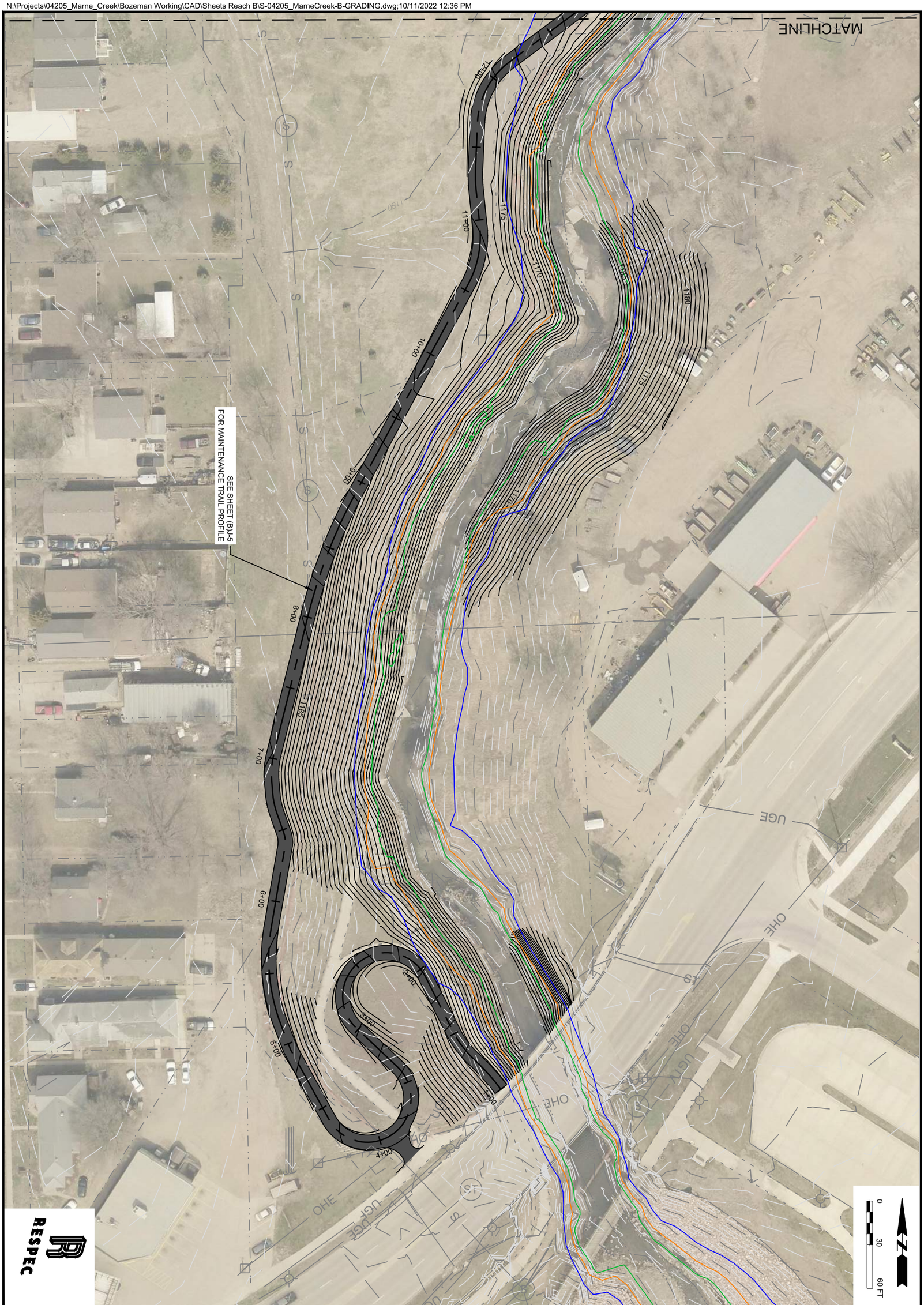

RESPEC

SHEET No.: (B)J-3

SCALE REDUCTION BAR: 0 1/2" 1"

DRAWN BY: TW
CHECKED BY: PR
DESIGNED BY: MJ
DATE: 10/11/2022
JOB No.: 04205 - MARNE CREEK

REGISTERED PROFESSIONAL ENGINEER
MATTHEW W. JOHNSON
REG. NO. 15324
SOUTH DAKOTA
10-11-2022

PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

GRADING - REACH B

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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PROJECT / SHEET TITLE:
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GRADING - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

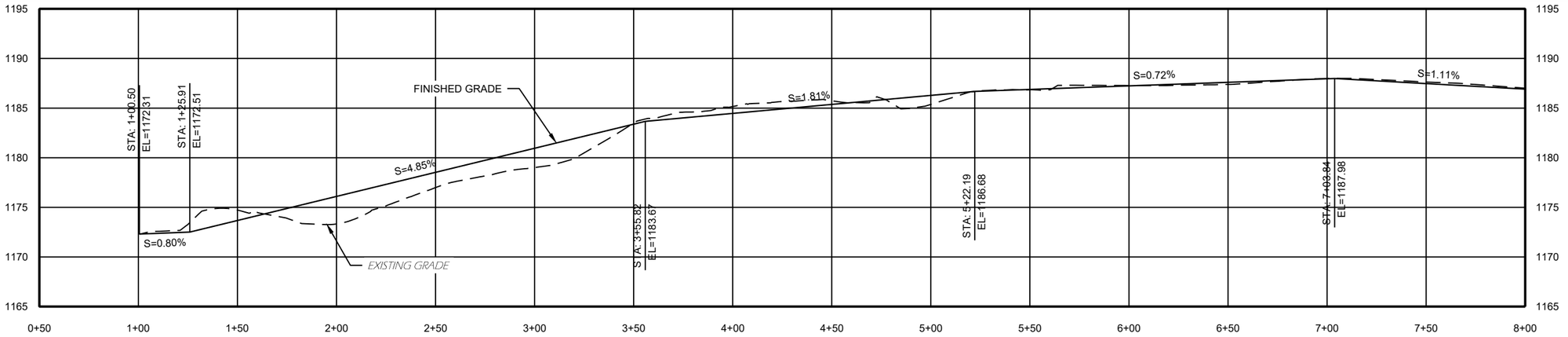
REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

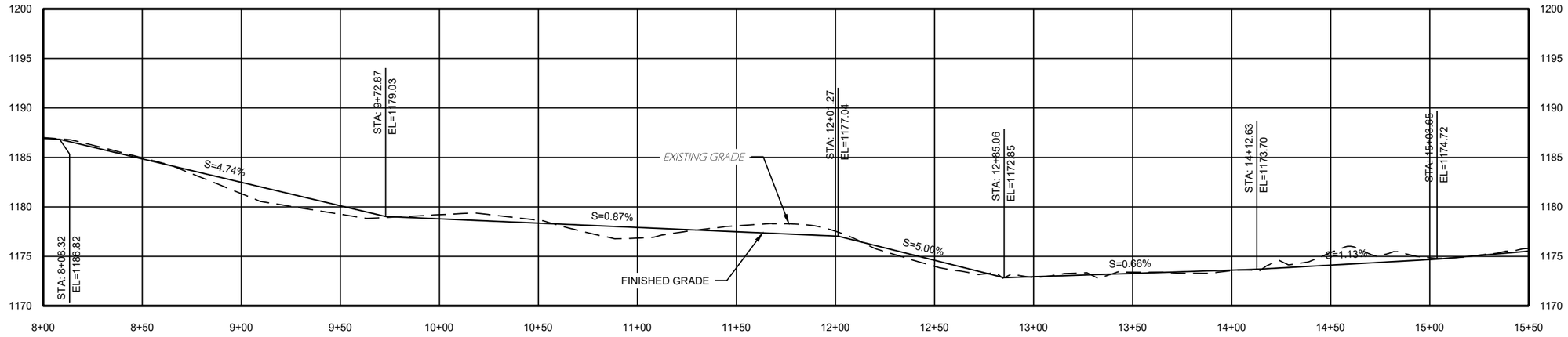
JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

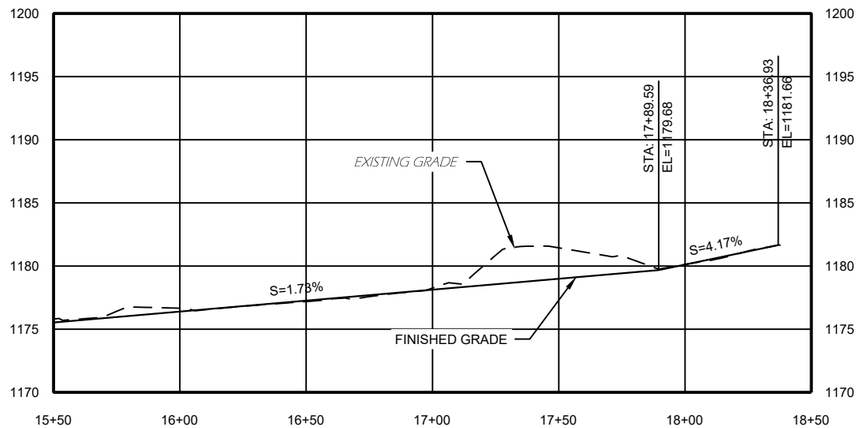
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)J-4

RESPEC







RESPEC

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
MAINTENANCE TRAIL PROFILE - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)J-5

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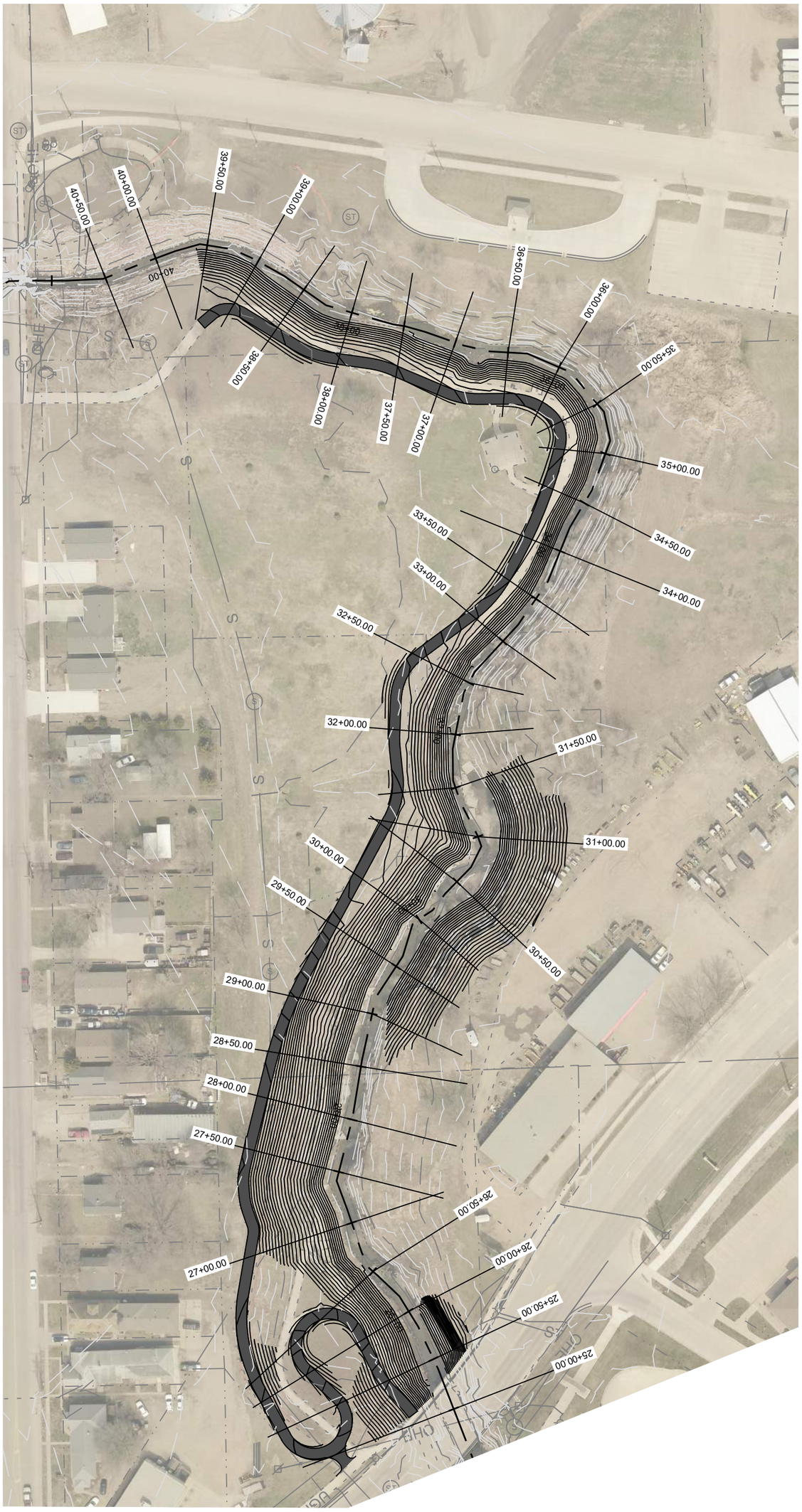

0 50 100 FT

RESPEC

SHEET No.:	(B)M-1
SCALE REDUCTION BAR	0 1/2" 1"
DRAWN BY:	TW
CHECKED BY:	PR
DESIGNED BY:	MJ
DATE:	10/11/2022
JOB No.:	04205 - MARNE CREEK

REGISTERED PROFESSIONAL ENGINEER
REG. No. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

SECTIONS OVERVIEW - REACH B

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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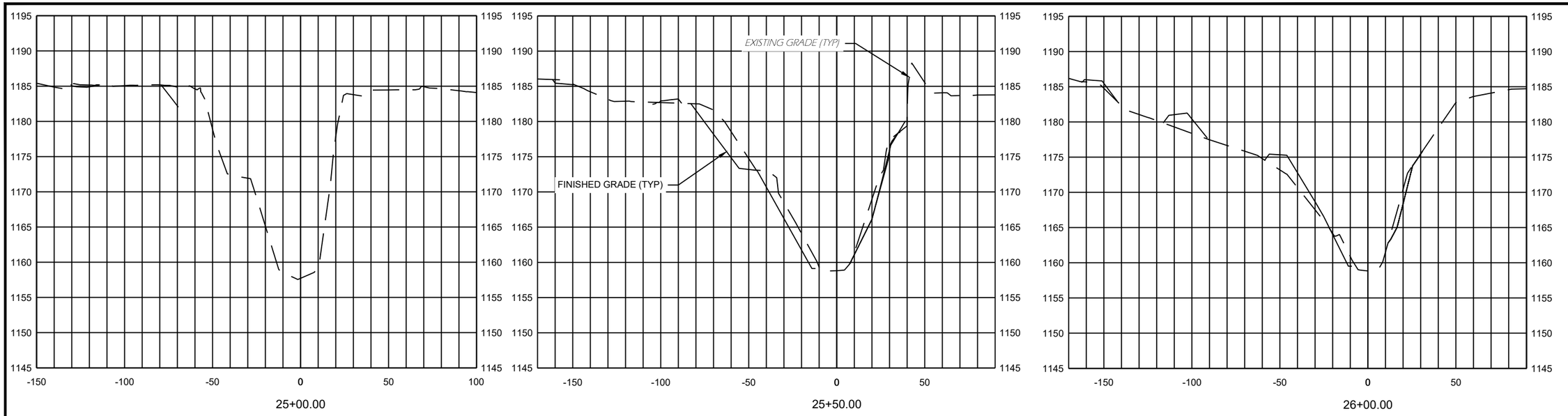

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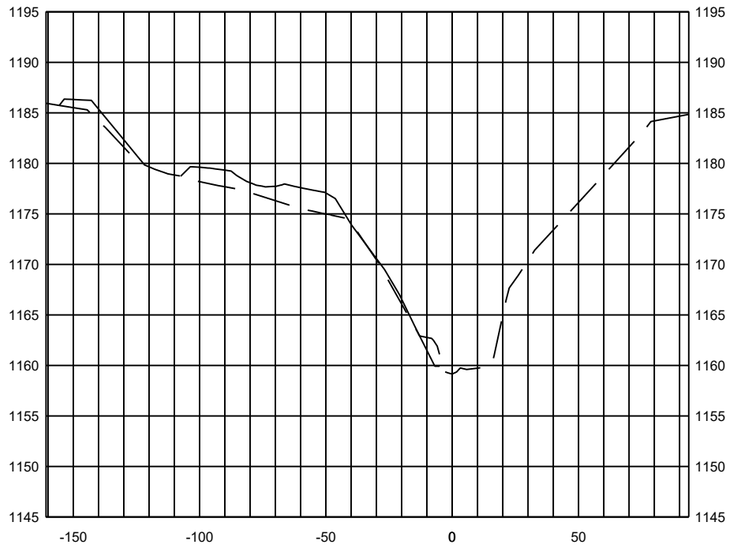

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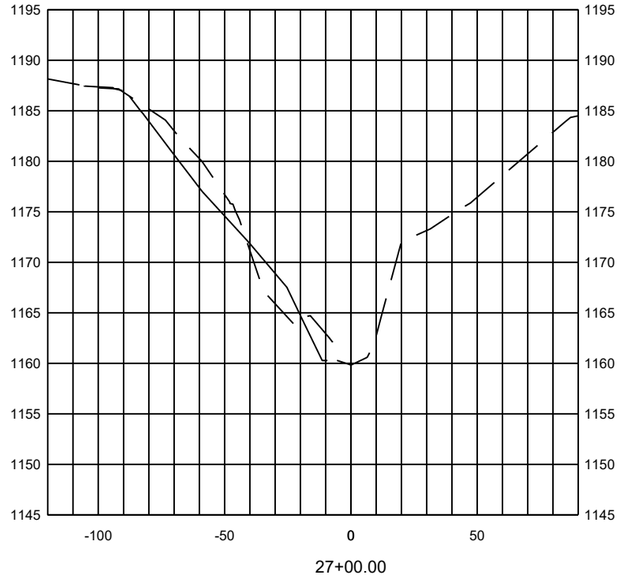

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
SECTIONS - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
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0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)M-2

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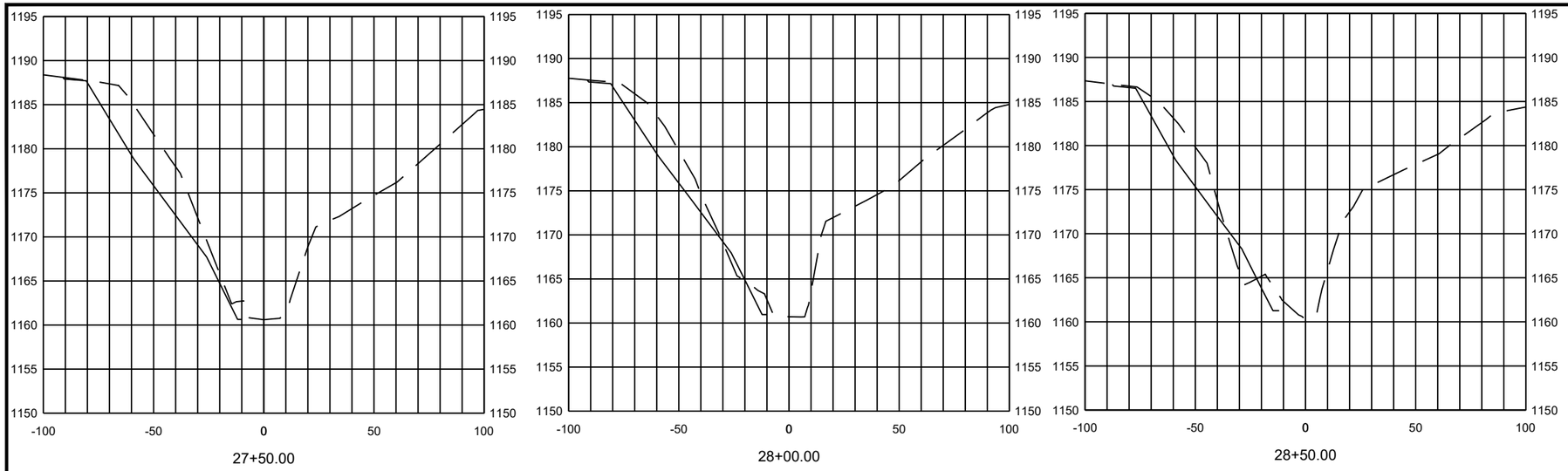

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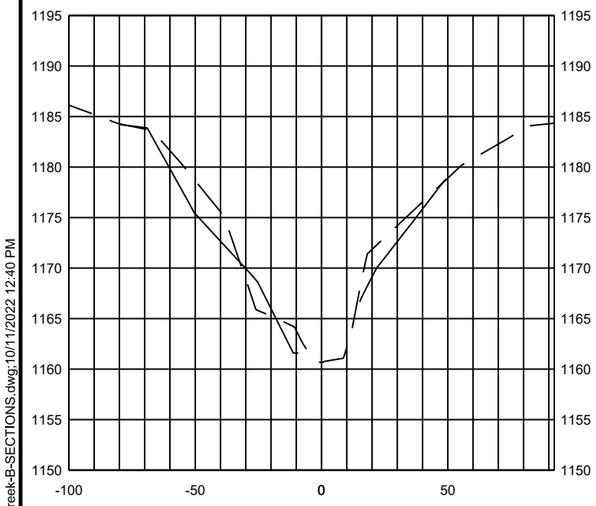

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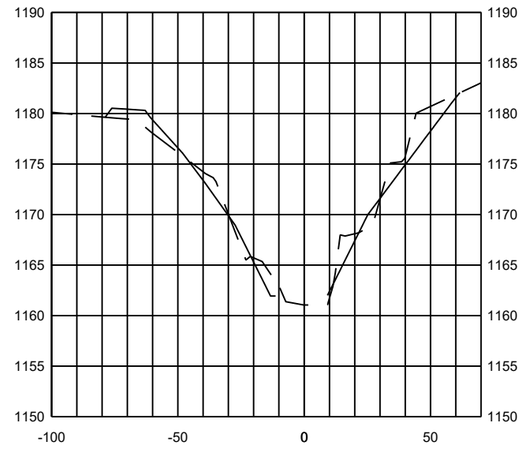

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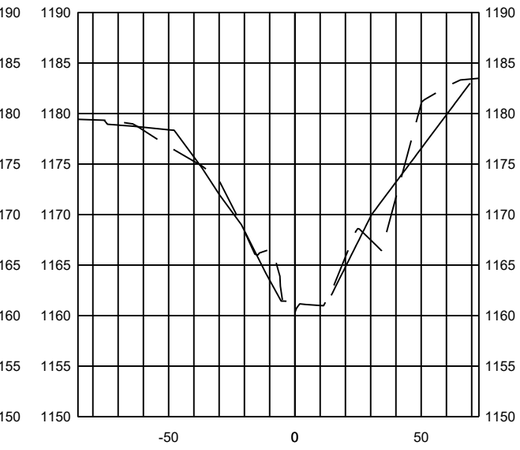

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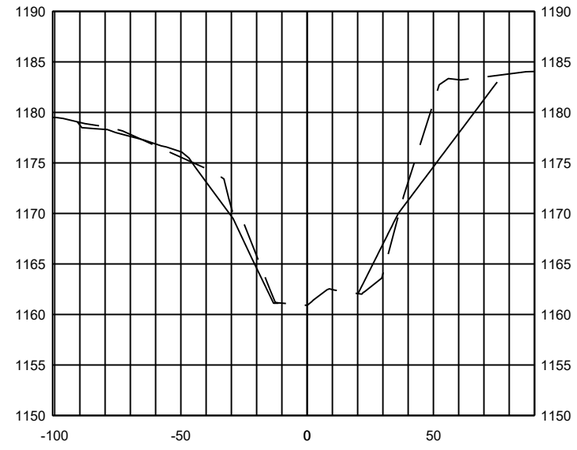

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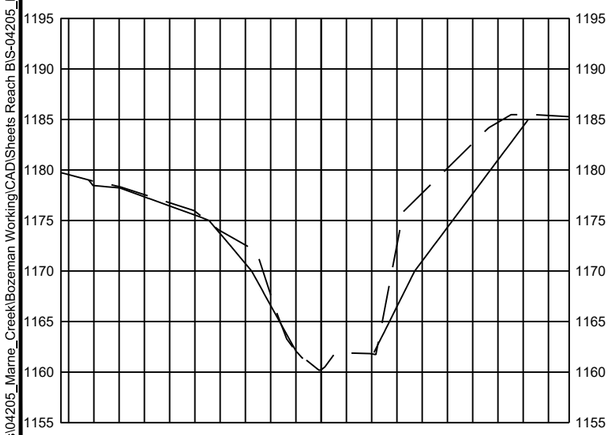

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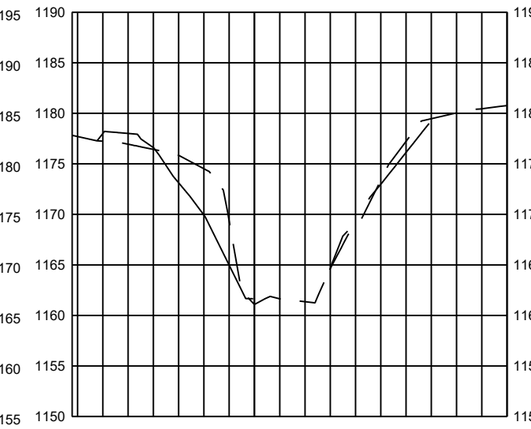

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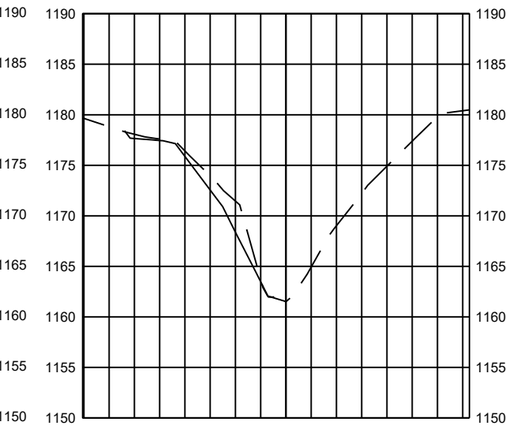

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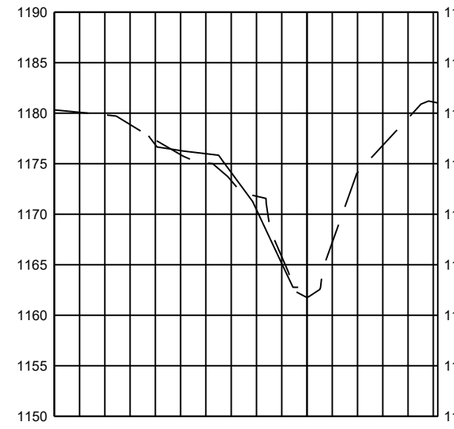

32+50.00

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION PROJECT

SECTIONS - REACH B

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)M-3

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach B\S-04205_MarneCreek-B-SECTIONS.dwg:10/11/2022 12:40 PM

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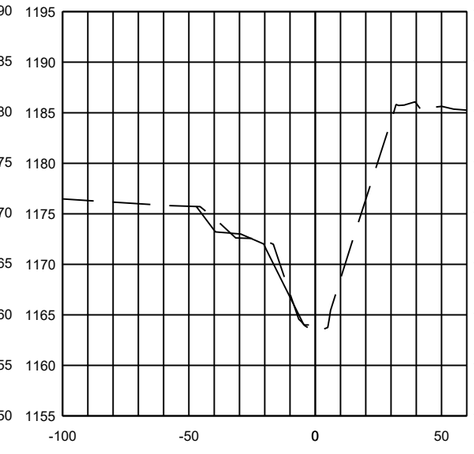

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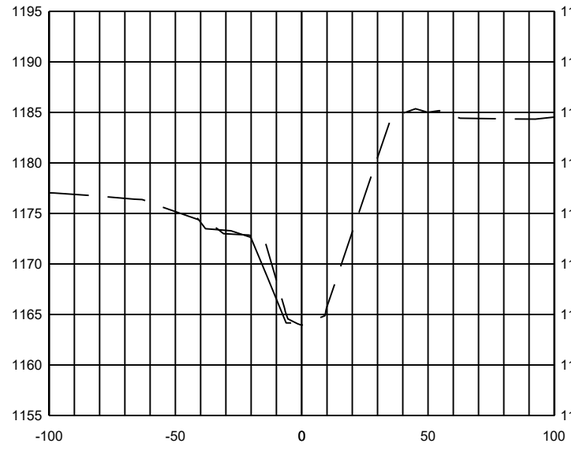

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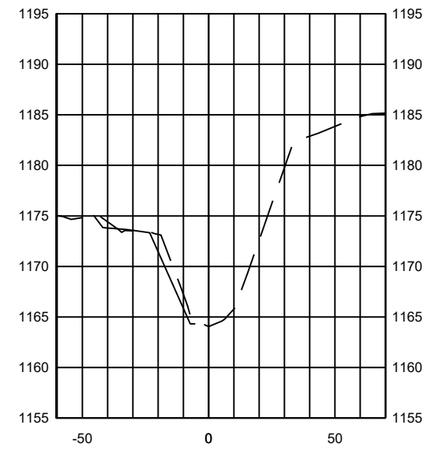

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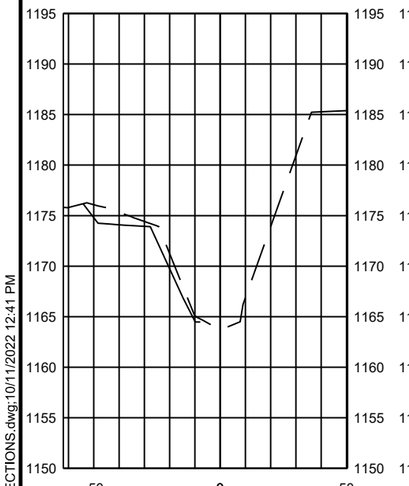

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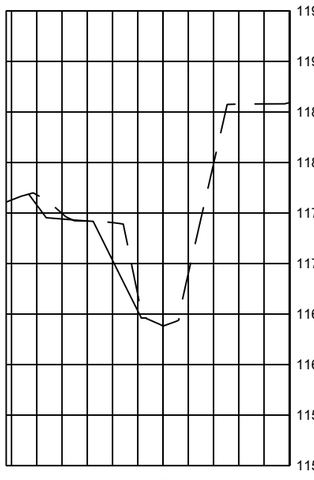

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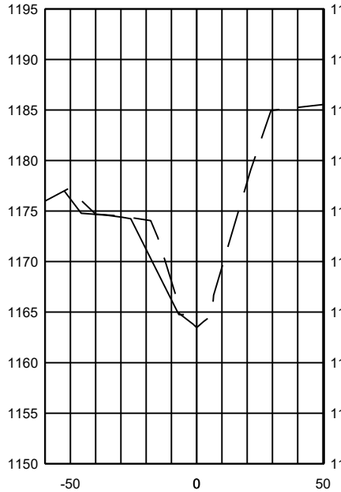

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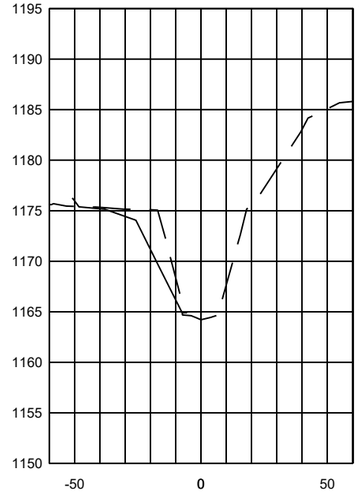

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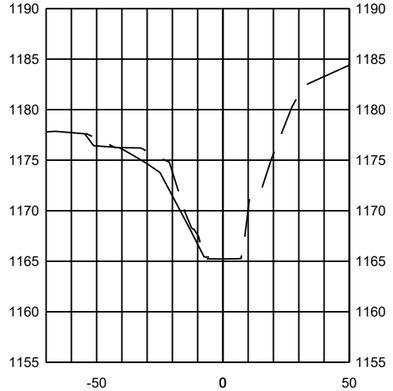

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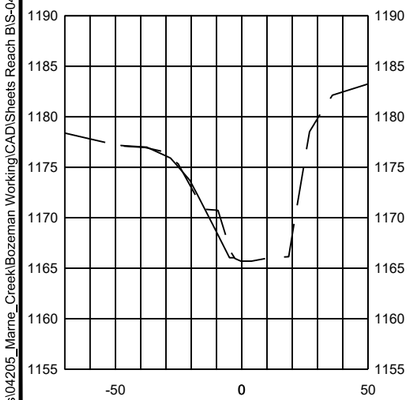

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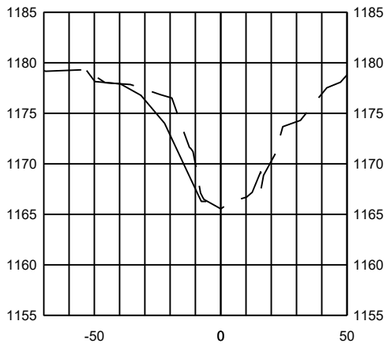

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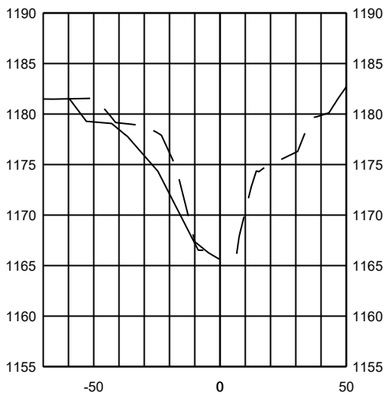

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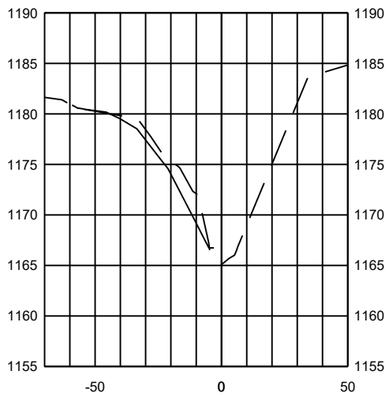

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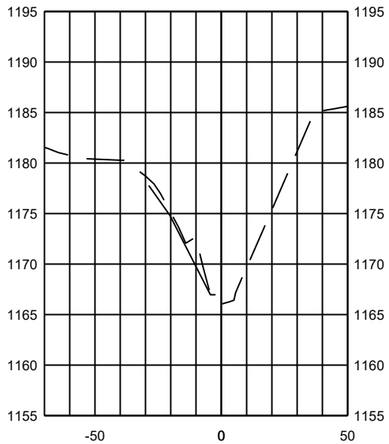

39+50.00

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT
SECTIONS - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

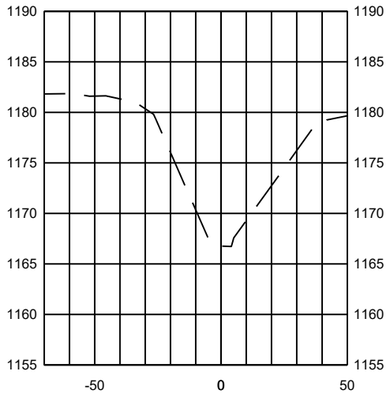
REGISTERED PROFESSIONAL ENGINEER
REG NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	04205 - MARNE CREEK
DATE:	10/11/2022
DESIGNED BY:	MJ
CHECKED BY:	PR
DRAWN BY:	TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. : (B)M-4

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach B\S-04205_MarneCreek-B-SECTIONS.dwg:10/11/2022 12:41 PM



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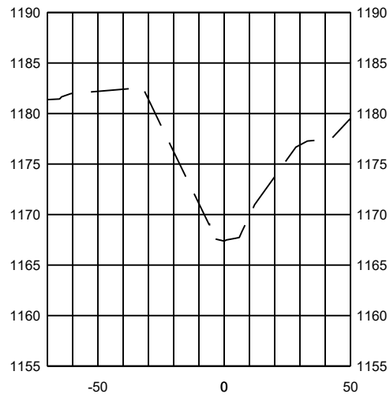

40+50.00

RESPEC

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION PROJECT

SECTIONS - REACH B
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 15324
MATTHEW W. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.: 04205 - MARNE CREEK
DATE: 10/11/2022
DESIGNED BY: MJ
CHECKED BY: PR
DRAWN BY: TW

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(B)M-5

N:\Projects\04205_Marne_Creek\Bozeman Working\CAD\Sheets Reach B\S-04205_MarneCreek-B-SECTIONS.dwg;10/11/2022 12:41 PM

HORIZONTAL DATUM:
- NAD 83
- PROJECTION: SOUTH DAKOTA STATE PLANE COORDINATES SOUTH ZONE

VERTICAL DATUM:
- NAVD 88
- GEOID 18

BASIS OF BEARING: GEODETIC NORTH

ALL DIMENSIONS SHOWN ARE IN TERMS OF U.S. SURVEY FEET

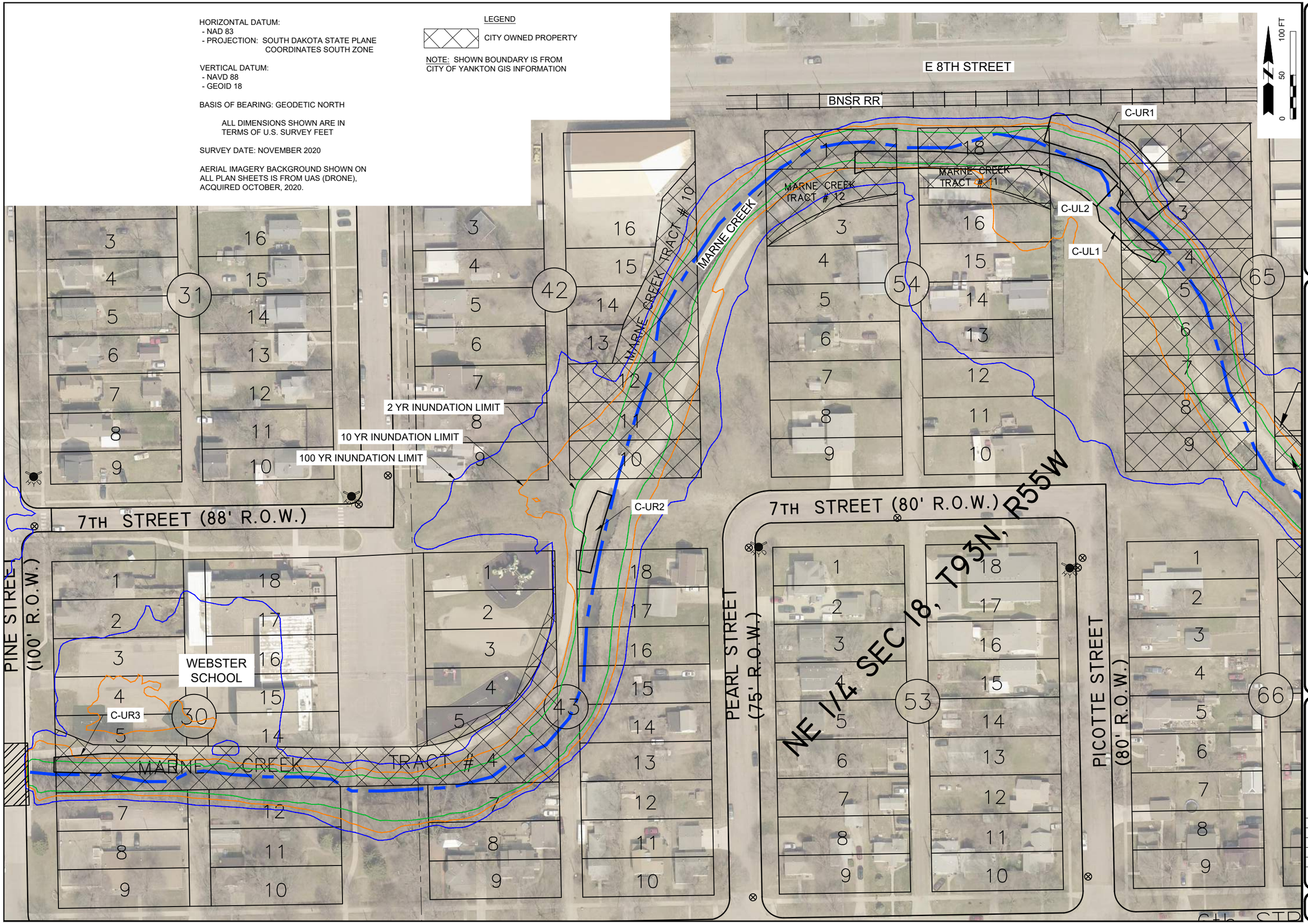
SURVEY DATE: NOVEMBER 2020

AERIAL IMAGERY BACKGROUND SHOWN ON ALL PLAN SHEETS IS FROM UAS (DRONE), ACQUIRED OCTOBER, 2020.

LEGEND

CITY OWNED PROPERTY

NOTE: SHOWN BOUNDARY IS FROM CITY OF YANKTON GIS INFORMATION



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MARNE CREEK BANK STABILIZATION
BOUNDARY MAP - REACH C
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

PROJECT / SHEET TITLE:

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

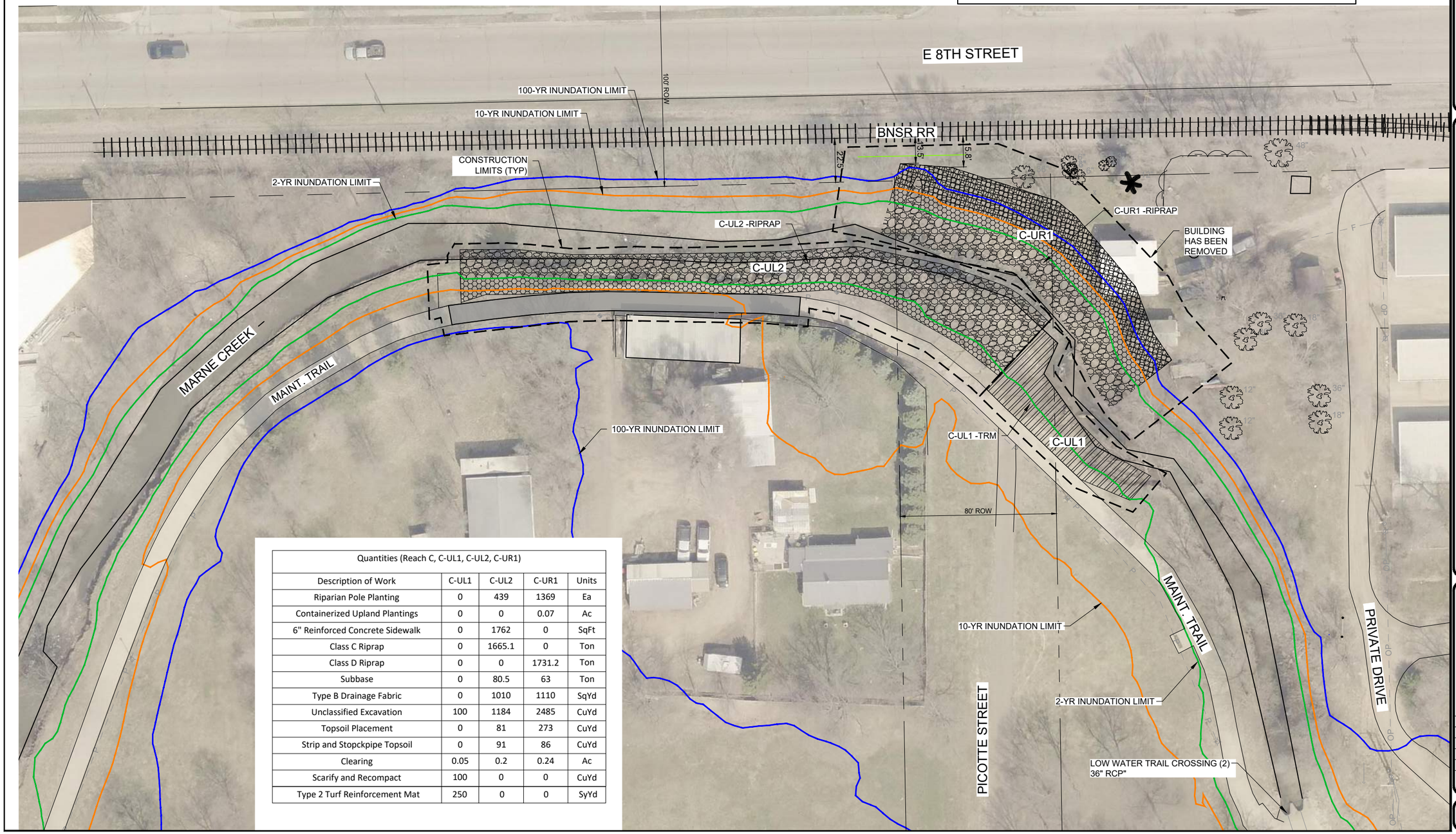
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)A-1

IMPROVEMENTS LEGEND	
	RIPRAP W/LIVE STAKES
	RIPRAP COVERED W/TOPSOIL, NO CONTANERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
	RIPRAP COVERED W/TOPSOIL, CONTAINER PLANTINGS AND REVEGETATED W/EROSION CONTROL BLANKET
	PERMANENT TURF REINFORCING MAT
	GABIONS
	6" REINFORCED CONCRETE SIDEWALK

N

0 25 50 FT



Quantities (Reach C, C-UL1, C-UL2, C-UR1)				
Description of Work	C-UL1	C-UL2	C-UR1	Units
Riparian Pole Planting	0	439	1369	Ea
Containerized Upland Plantings	0	0	0.07	Ac
6" Reinforced Concrete Sidewalk	0	1762	0	SqFt
Class C Riprap	0	1665.1	0	Ton
Class D Riprap	0	0	1731.2	Ton
Subbase	0	80.5	63	Ton
Type B Drainage Fabric	0	1010	1110	SqYd
Unclassified Excavation	100	1184	2485	CuYd
Topsoil Placement	0	81	273	CuYd
Strip and Stopckpipe Topsoil	0	91	86	CuYd
Clearing	0.05	0.2	0.24	Ac
Scarify and Recompact	100	0	0	CuYd
Type 2 Turf Reinforcement Mat	250	0	0	SyYd

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

SITE OVERVIEW EAST - REACH C

YANKTON, SOUTH DAKOTA

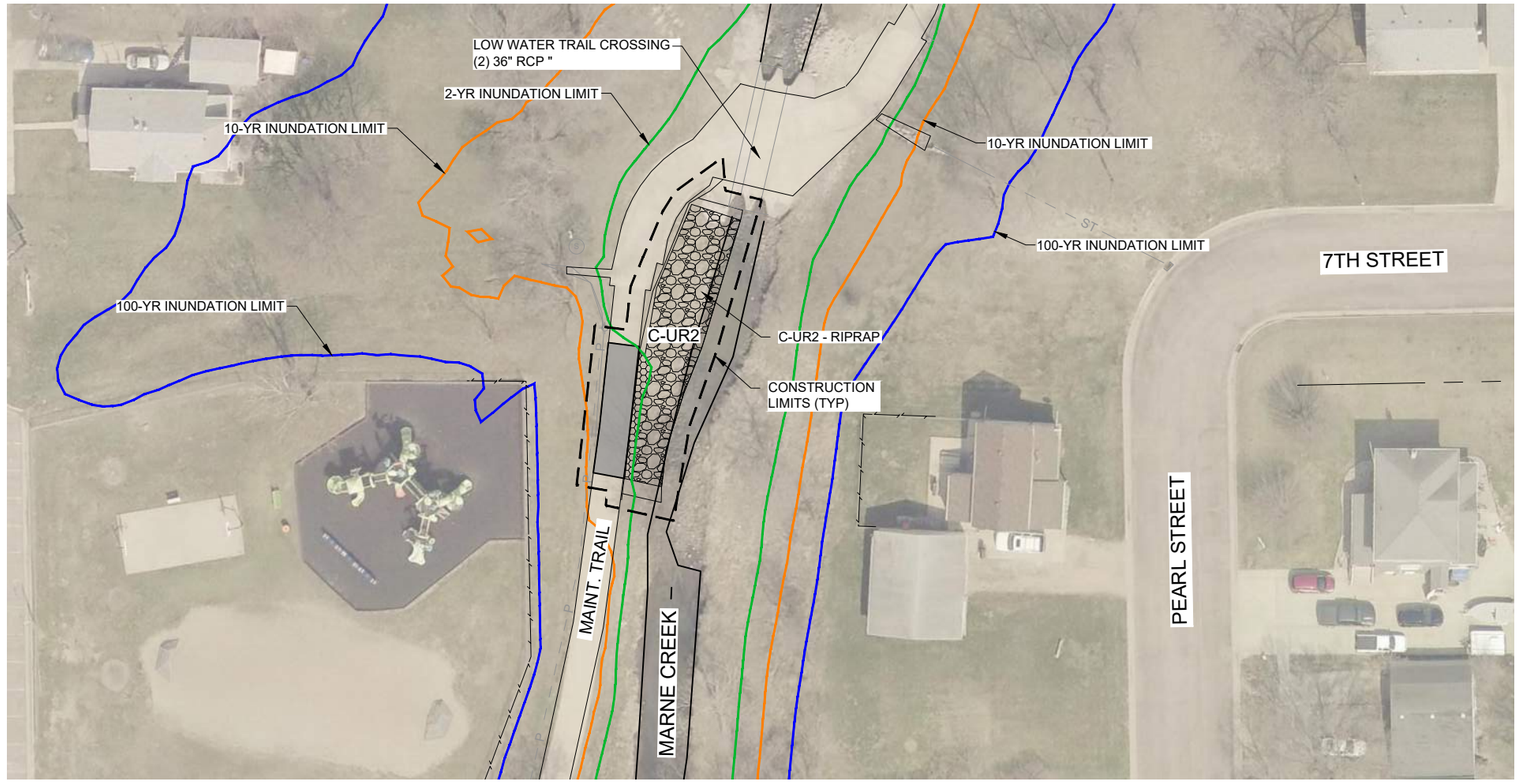
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

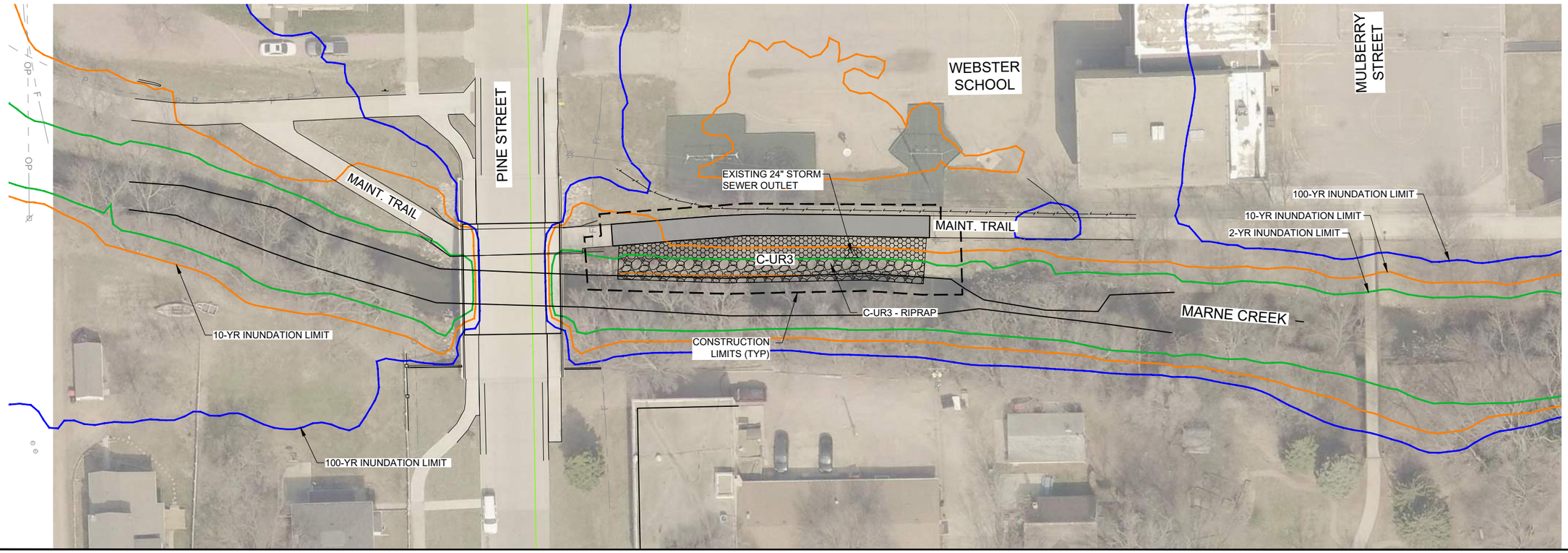
SHEET No. :
(C)A-2



Quantities (Reach C, C-UR2, C-UR3)			
Description of Work	C-UR2	C-UR3	Units
Riparian Pole Planting	572	585	Ea
6" Reinforced Concrete Sidewalk	450	1433	SqFt
Class B Riprap	212	600	Ton
Subbase	6.5	24.3	Ton
Type B Drainage Fabric	235	232	SqYd
Unclassified Excavation	216	419	CuYd
Topsoil Placement	15	73	CuYd
Strip and Stopckpipe Topsoil	20	34	CuYd
Clearing	0.04	0.07	Ac

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/TOPSOIL, NO CONTANERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
- PERMANENT TURF REINFORCING MAT
- GABIONS
- 6" REINFORCED CONCRETE SIDEWALK



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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
SITE OVERVIEW WEST - REACH C
YANKTON, SOUTH DAKOTA

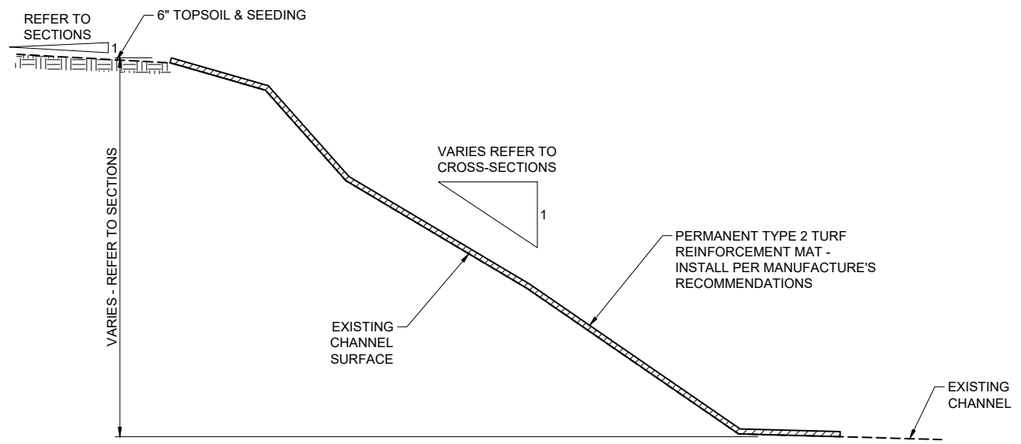
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

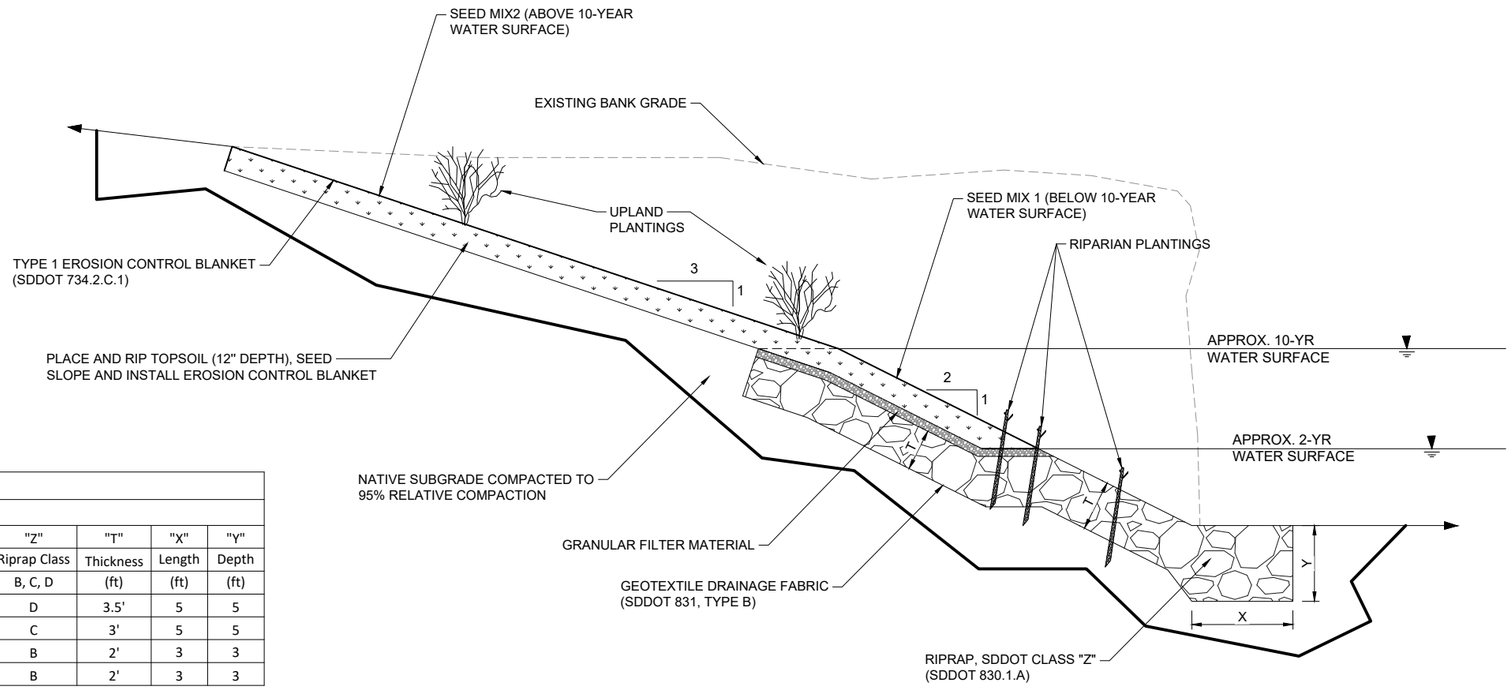
SHEET No. :
(C)A-3



NOTE: REFER TO OVERVIEW DRAWINGS FOR LOCATION OF PERMANENT TRM

TYPICAL TURF REINFORCEMENT MAT SECTION

SCALE: NONE



Reach C
Riprap Design

Site	Location	Station Start	Station End	"Z" Riprap Class B, C, D	"T" Thickness (ft)	"X" Length (ft)	"Y" Depth (ft)
C-UR1	Outside Bend	0+00	1+63	D	3.5'	5	5
C-UL2	Inside Bend	0+00	3+07	C	3'	5	5
C-UR2	straight	0+00	0+92	B	2'	3	3
C-UR3	straight	0+00	1+40	B	2'	3	3

STREAM BANK TREATMENT TYPICAL SECTION

SCALE: NONE

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
TYPICAL SECTIONS REACH C
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)C-1

EROSION CONTROL QUANTITIES	
1,173 SY	EROSION CONTROL BLANKET
636 LF	STRAW WATTLE
8 LB	SEED MIX 1
59 LB	SEED MIX 2

EROSION CONTROL LEGEND

- EROSION CONTROL BLANKET W/SEED MIX 1
- EROSION CONTROL BLANKET 2/SEED MIX 2
- STRAW WATTLE
- SILT FENCE
- ORANGE CONSTRUCTION FENCE

N 0 25 50 FT

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

EROSION CONTROL LAYOUT EAST - REACH C

YANKTON, SOUTH DAKOTA

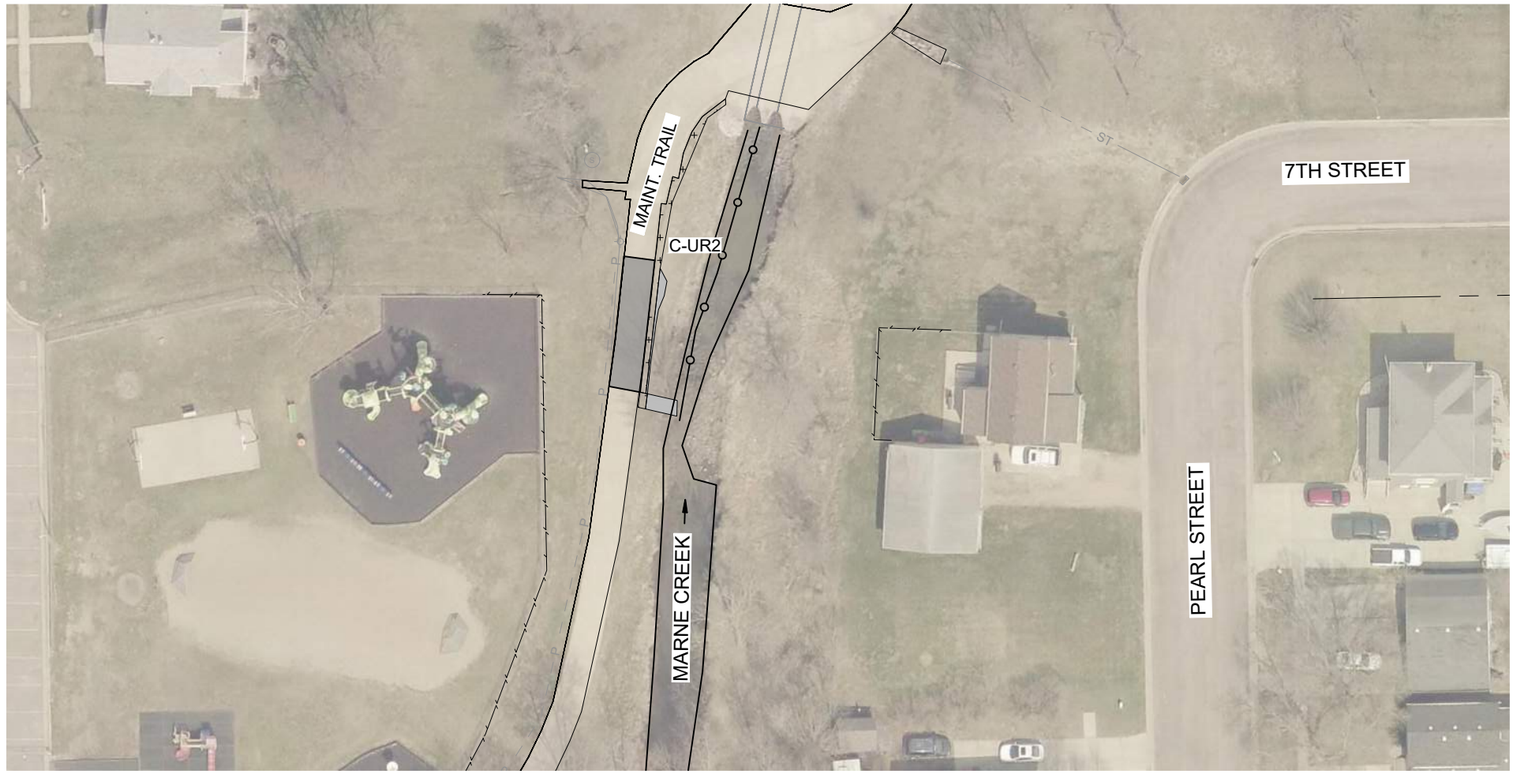
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)G-1



EROSION CONTROL LEGEND

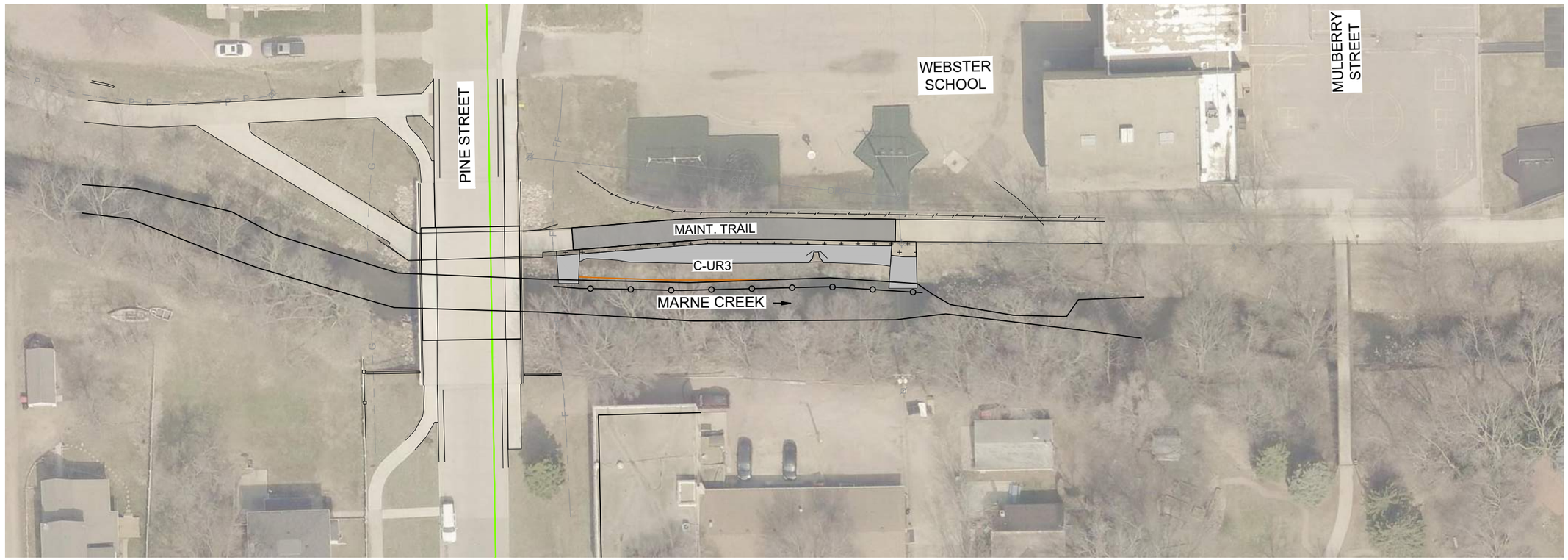
- EROSION CONTROL BLANKET W/SEED MIX 1
- EROSION CONTROL BLANKET 2/SEED MIX 2
- STRAW WATTLE
- SILT FENCE
- ORANGE CONSTRUCTION FENCE

N

0 25 50 FT

EROSION CONTROL QUANTITIES

224 SY	EROSION CONTROL BLANKET
265 LF	STRAW WATTLE
2 LB	SEED MIX 1
6 LB	SEED MIX 2



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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

EROSION CONTROL LAYOUT WEST - REACH C

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)G-2

REMOVAL QUANTITIES	
196 SY	REMOVE CONCRETE PATH

TREE REMOVAL QUANTITIES REACH C ALL SITES	
59 EA	CLEAR & GRUB TREE 6" - 12"
39 EA	CLEAR & GRUB TREE 13" - 24"
15 EA	CLEAR & GRUB TREE 25" - 36"
4 EA	CLEAR & GRUB TREE 37" - 48"

REMOVAL LEGEND

- CLEAR AND GRUB EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING GABION BASKETS AND ROCK
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

N

0 25 50 FT

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PROJECT / SHEET TITLE:

MARNE CREEK BANK STABILIZATION

EXISTING SITE CONDITIONS AND REMOVALS EAST - REACH C

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

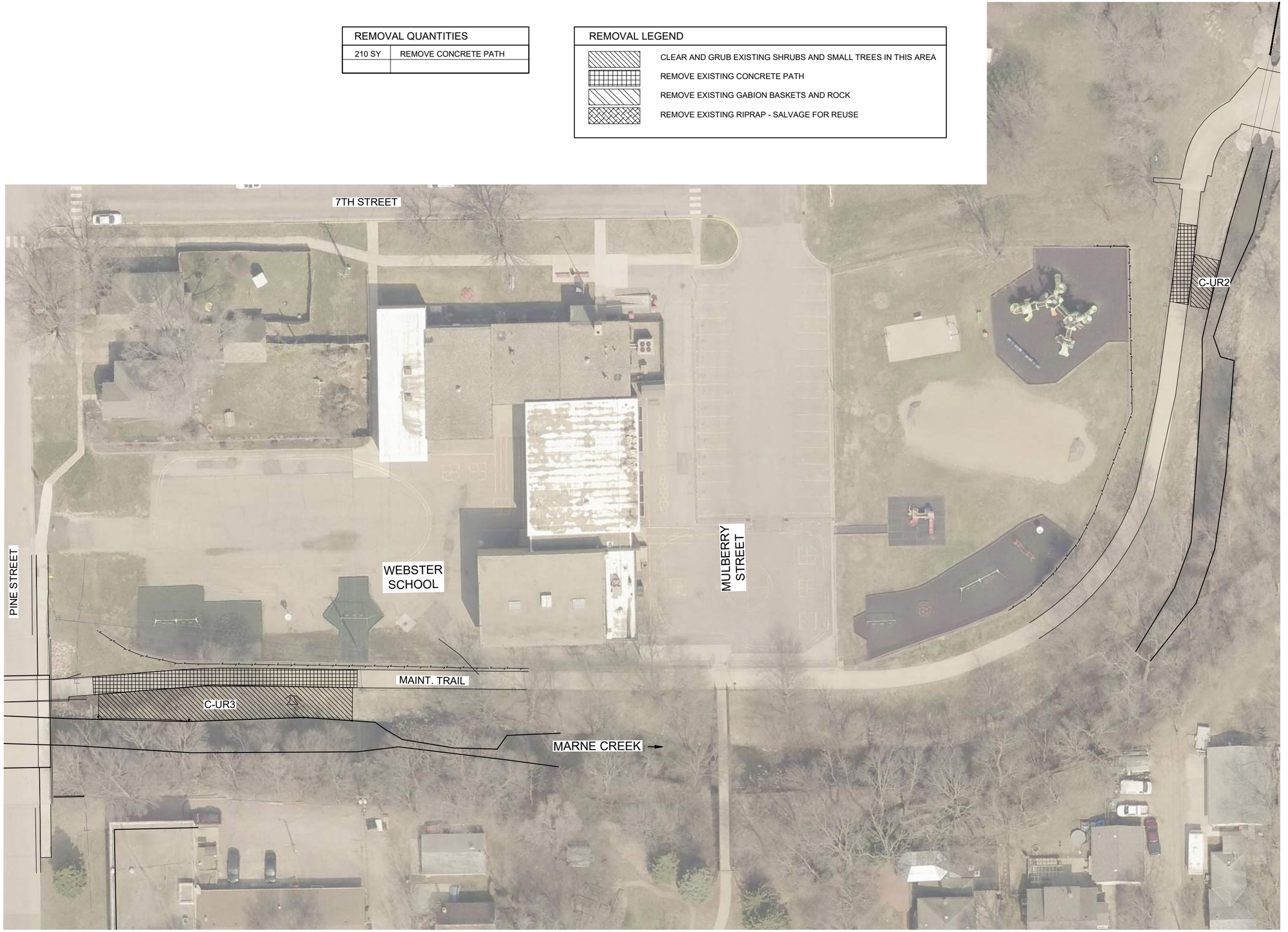
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)H-1

REMOVAL QUANTITIES	
210 SY	REMOVE CONCRETE PATH

REMOVAL LEGEND

- CLEAR AND GRUB EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING GABION BASKETS AND ROCK
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE



0 25 50 FT

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PROJECT / SHEET TITLE:

MARNE CREEK BANK STABILIZATION

EXISTING SITE CONDITIONS AND REMOVALS WEST - REACH C

YANKTON, SOUTH DAKOTA

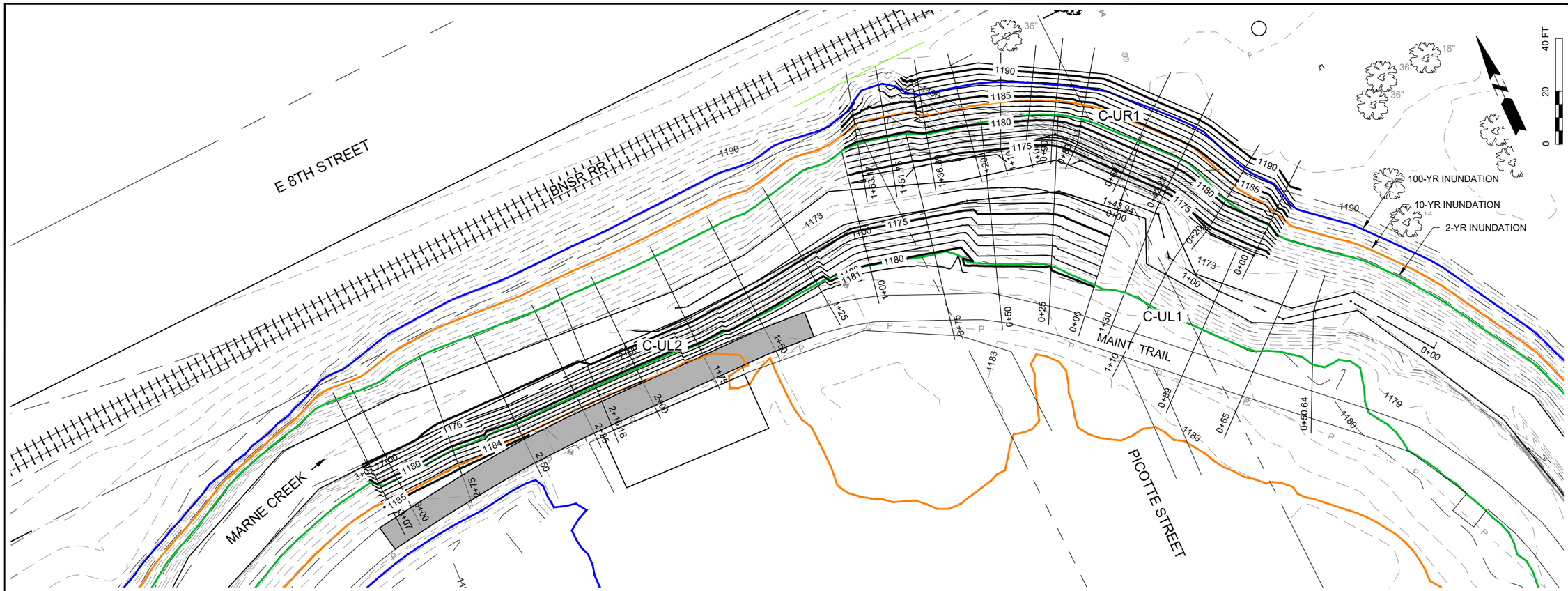
REV.	DATE	DESCRIPTION

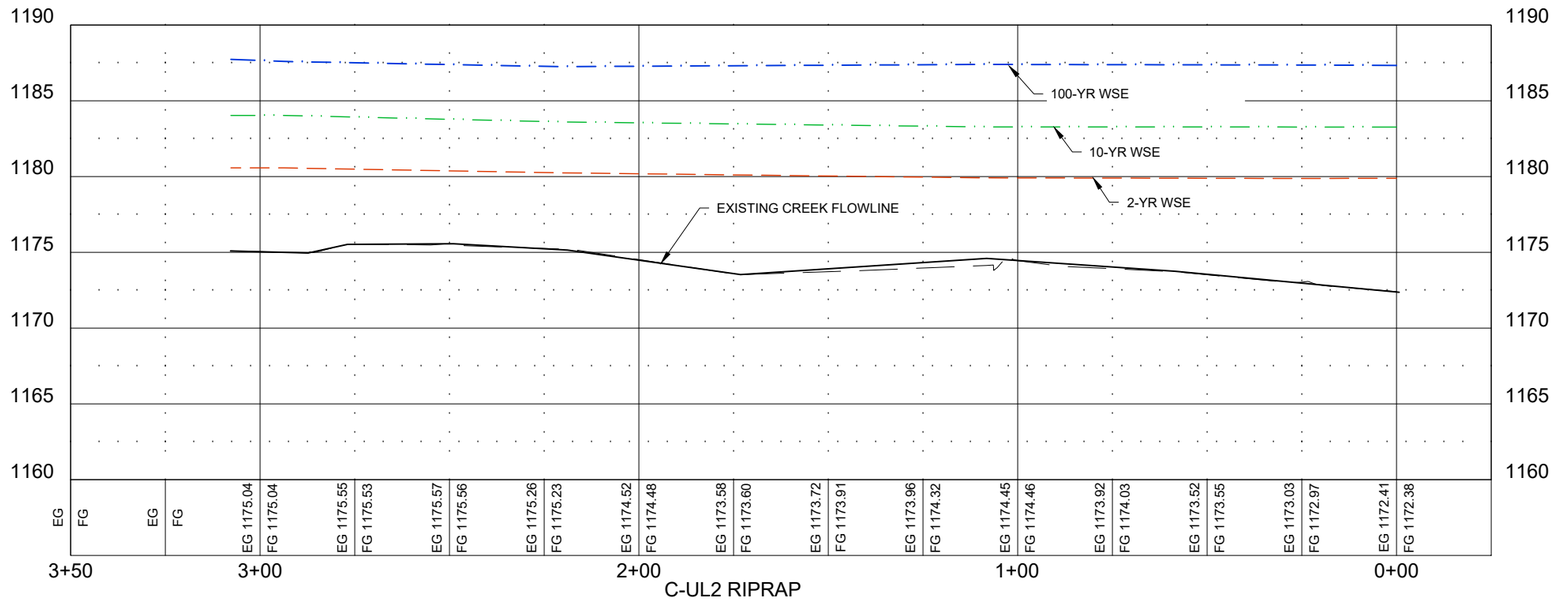
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)H-2





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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
C-UL2, C-UL1 PLAN & PROFILE GRADING - REACH C
YANKTON, SOUTH DAKOTA

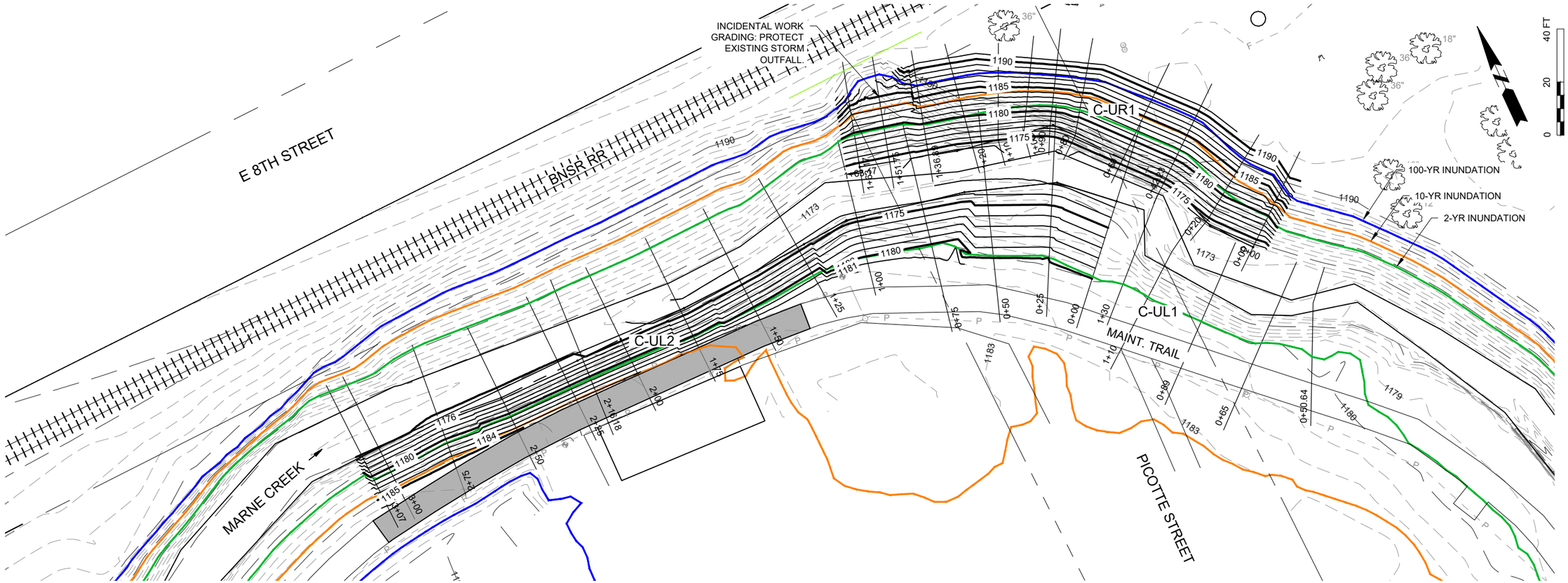
REV.	DATE	DESCRIPTION

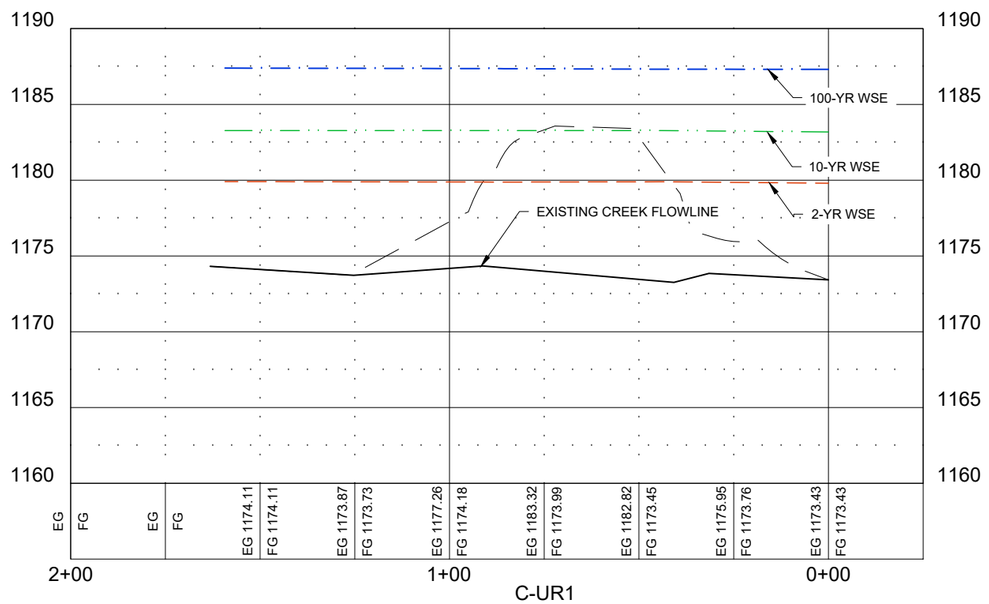
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)J-1





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MARNE CREEK BANK STABILIZATION
C-UR1 PLAN & PROFILE GRADING - REACH C
YANKTON, SOUTH DAKOTA

PROJECT / SHEET TITLE :

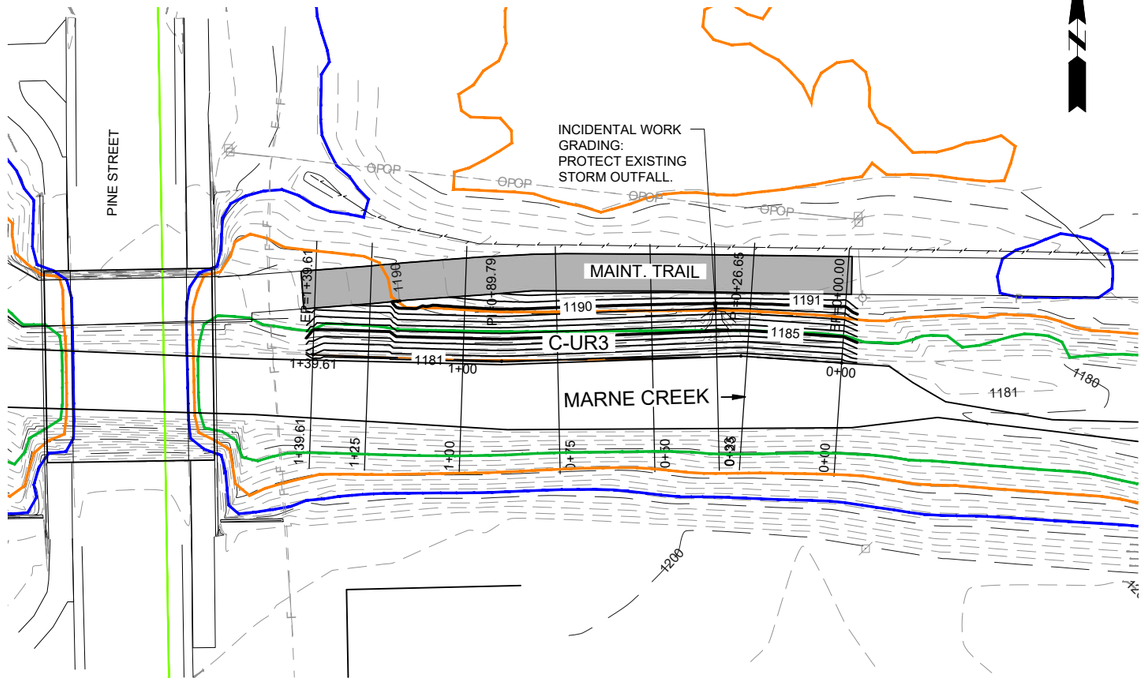
REV.	DATE	DESCRIPTION

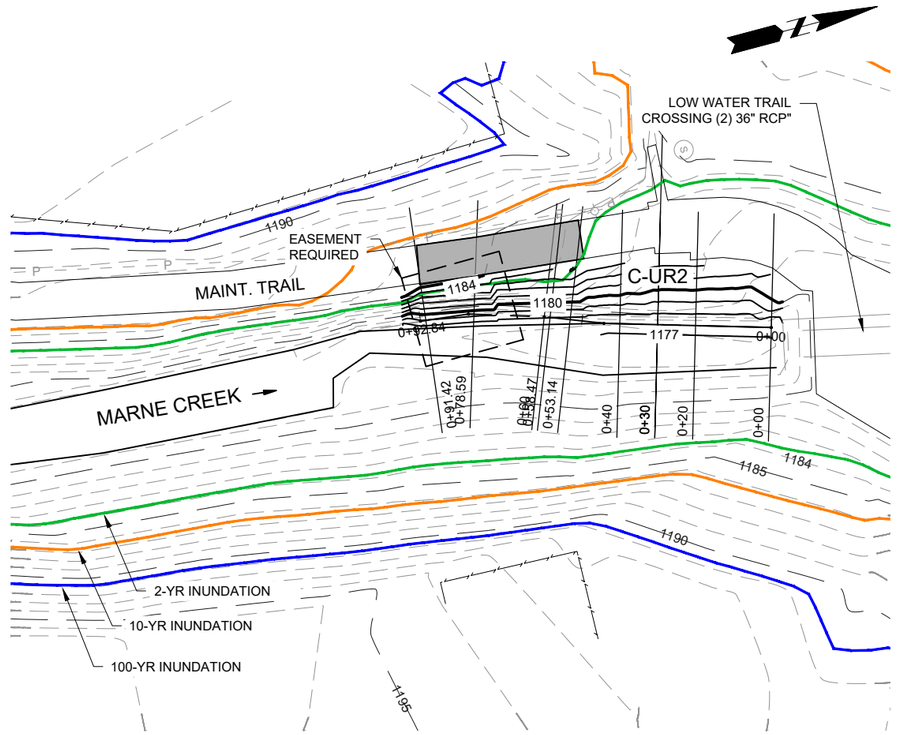
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

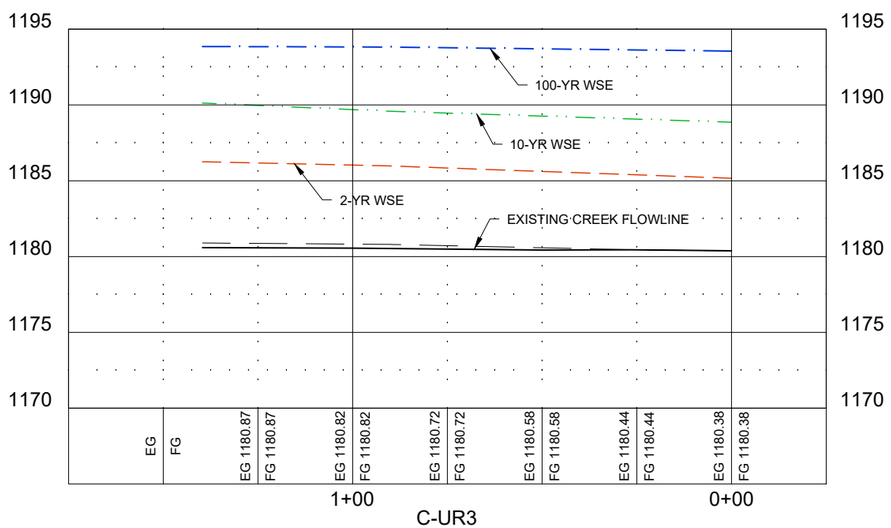
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

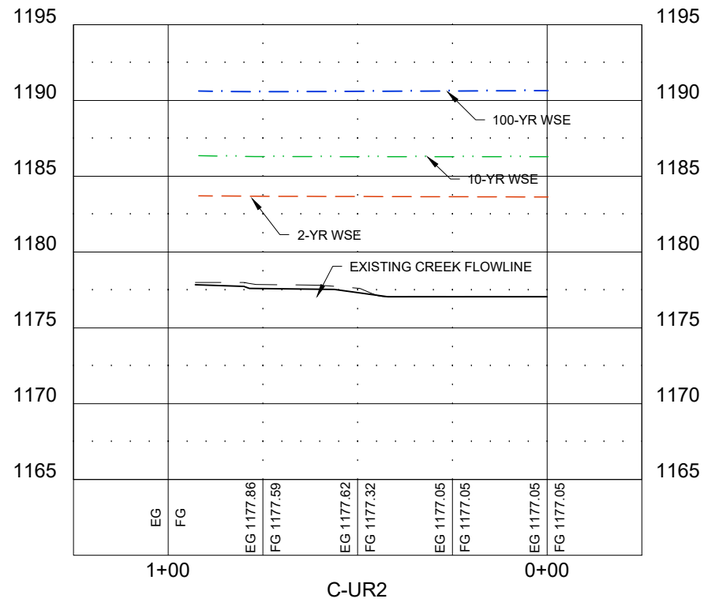
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)J-2









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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
C-UR3, C-UR2 PLAN & PROFILE GRADING - REACH C
YANKTON, SOUTH DAKOTA

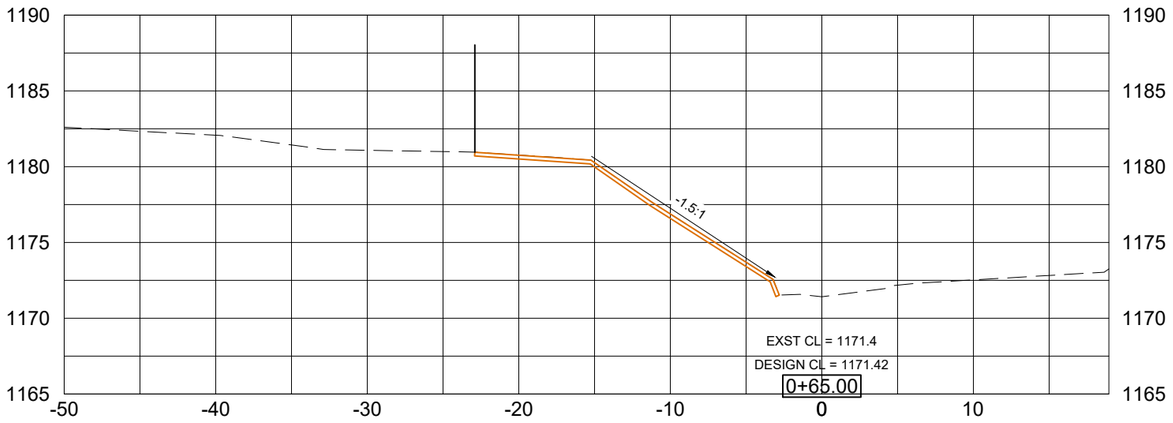
REV.	DATE	DESCRIPTION

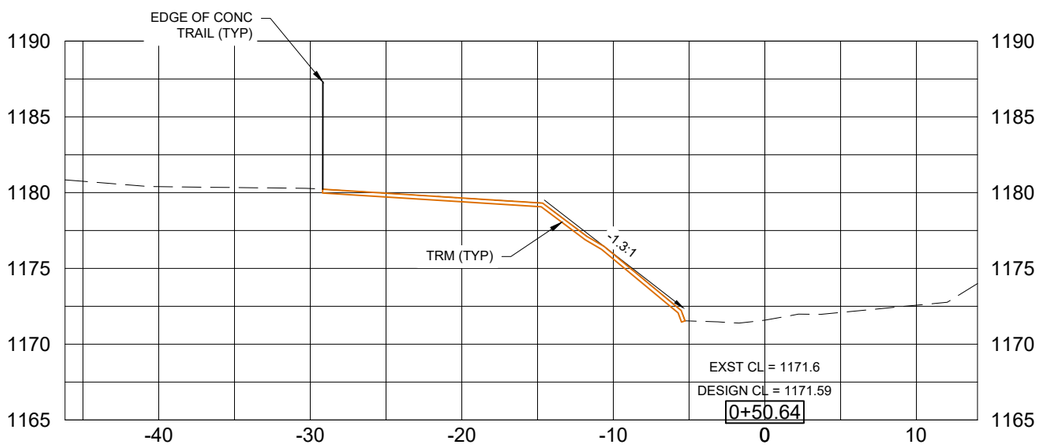
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)J-3





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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
C-UL1 CROSS SECTIONS - REACH C
YANKTON, SOUTH DAKOTA

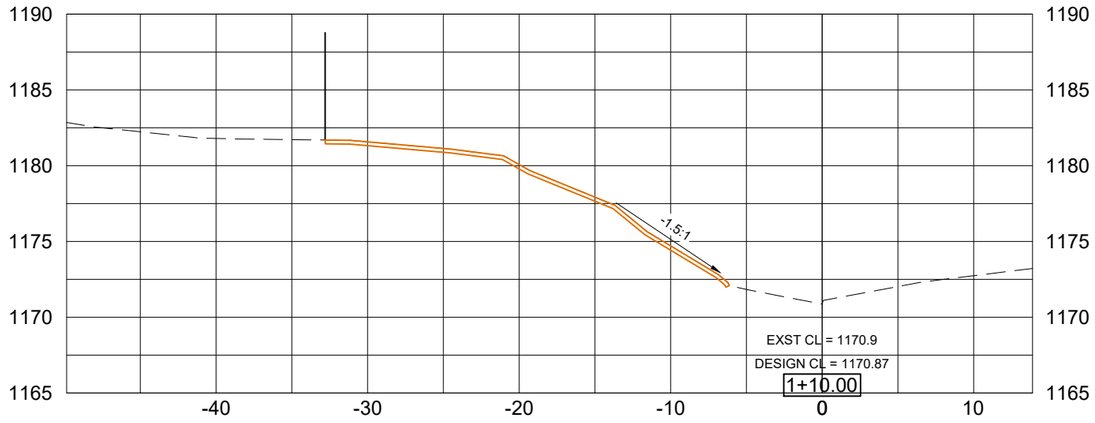
REV.	DATE	DESCRIPTION

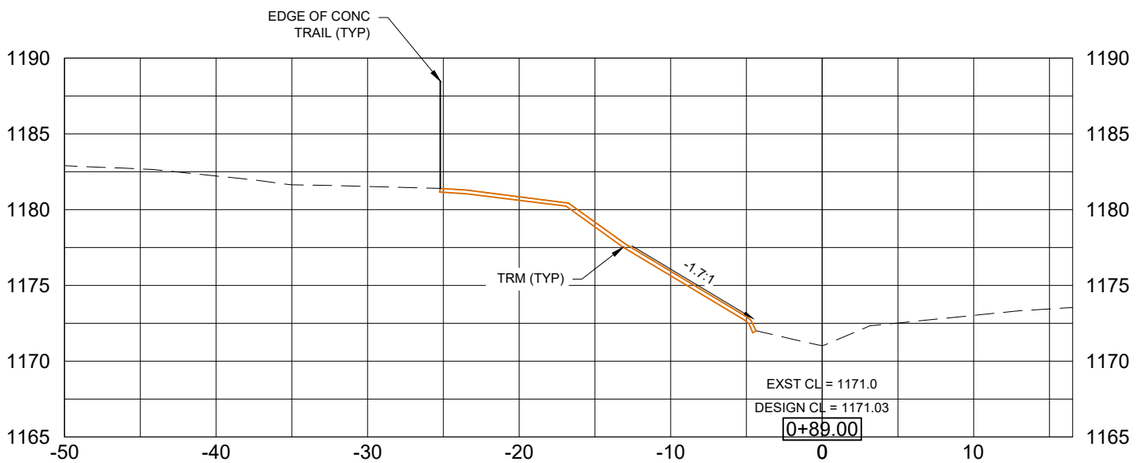
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No,:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-1





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UL1 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

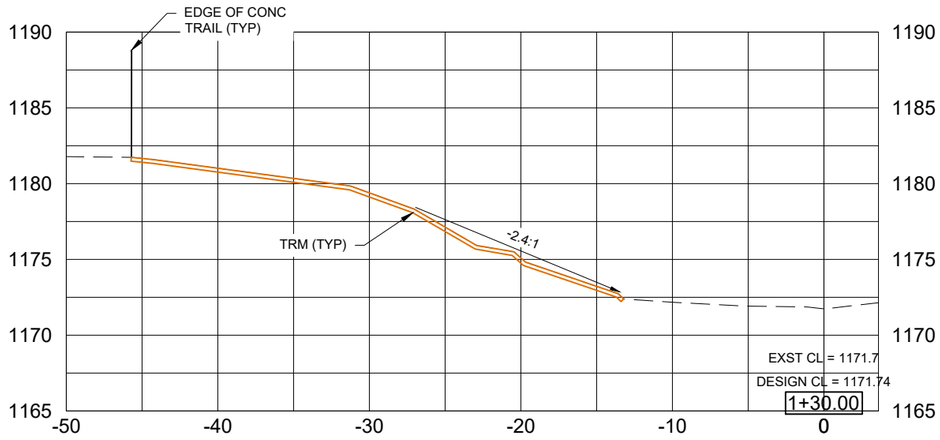
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No,:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-2



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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UL1 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
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DESIGNER:	TMS
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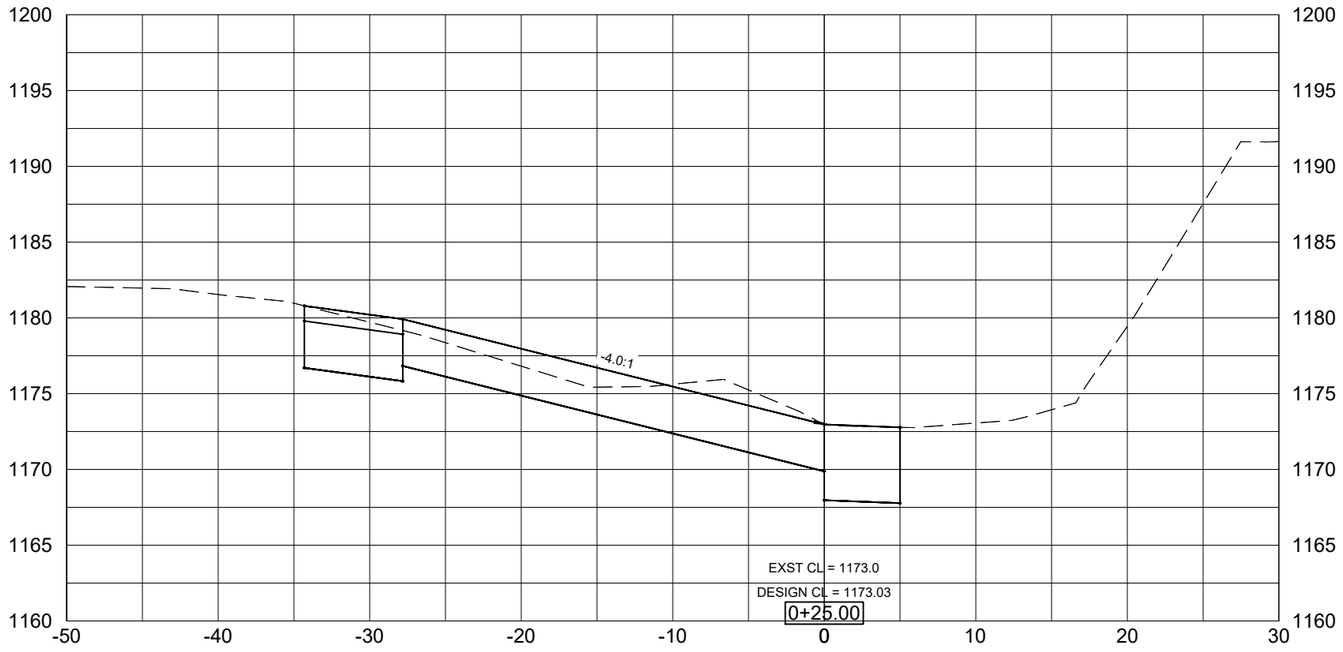
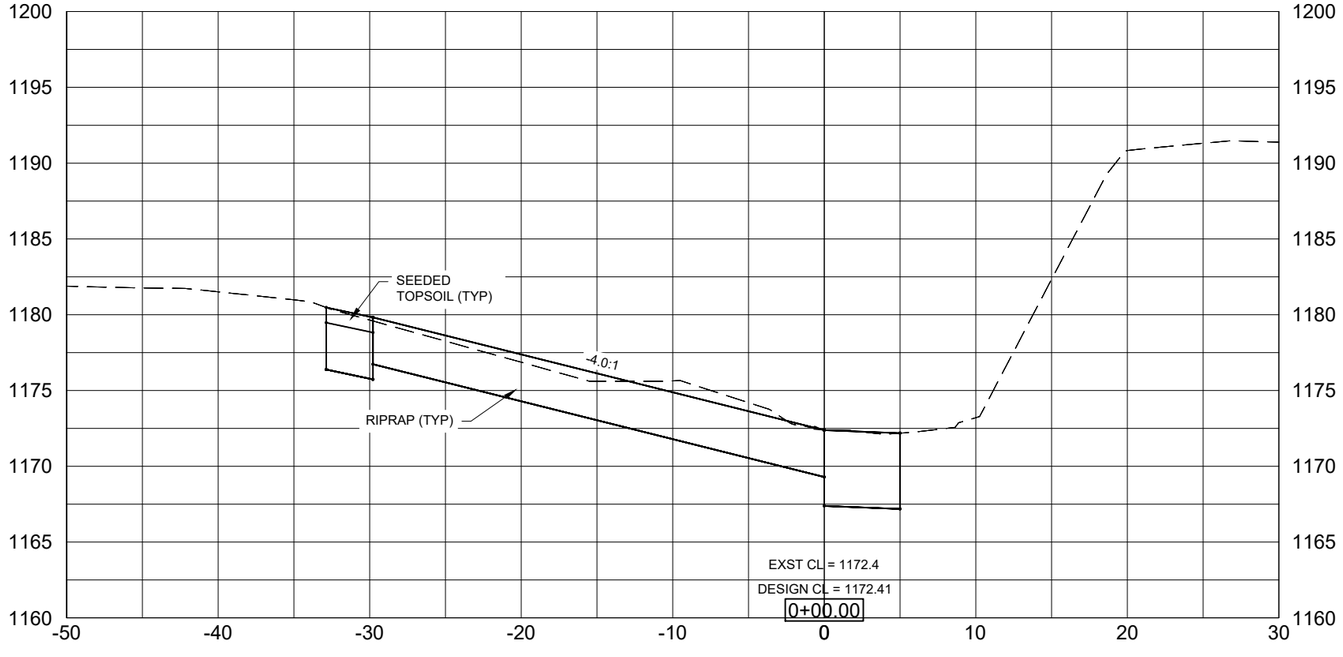
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-3





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UL2 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

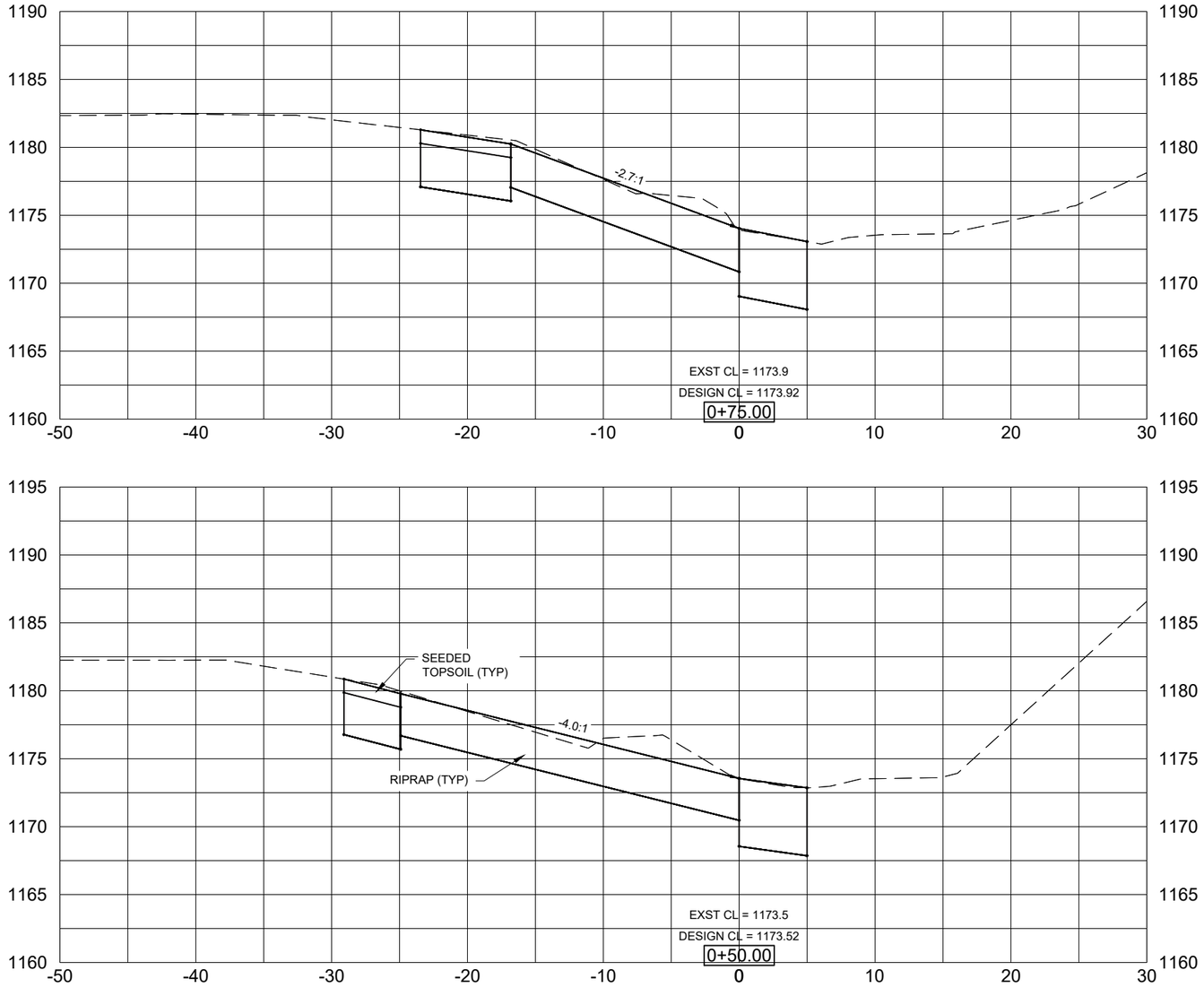
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-4



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MARNE CREEK BANK STABILIZATION

C-UL2 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

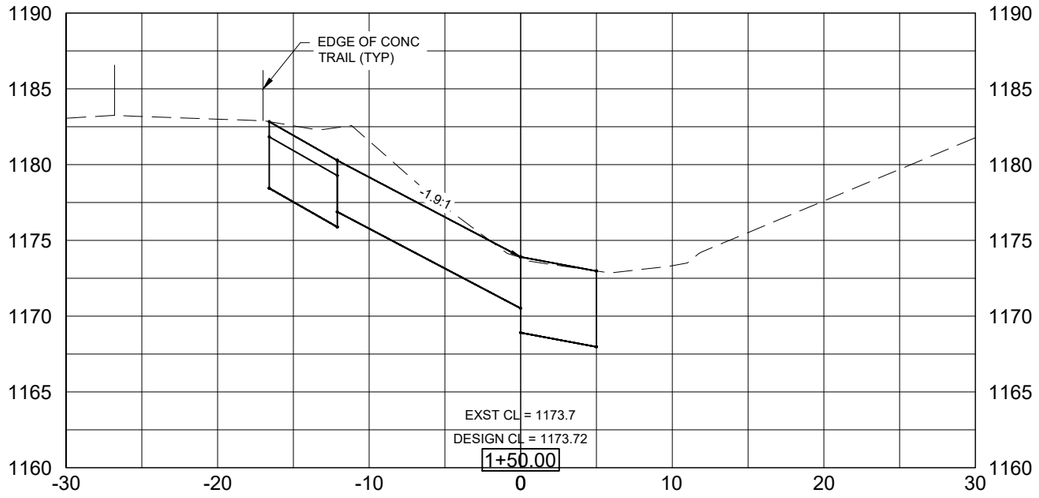
REV.	DATE	DESCRIPTION

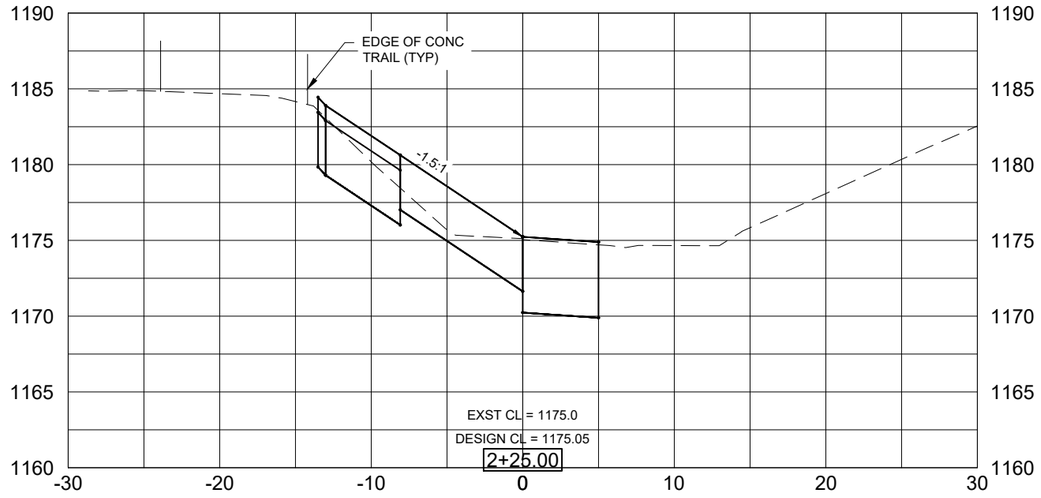
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8160
KENT R. KOHLHAAS
SOUTH DAKOTA
10-11-2022

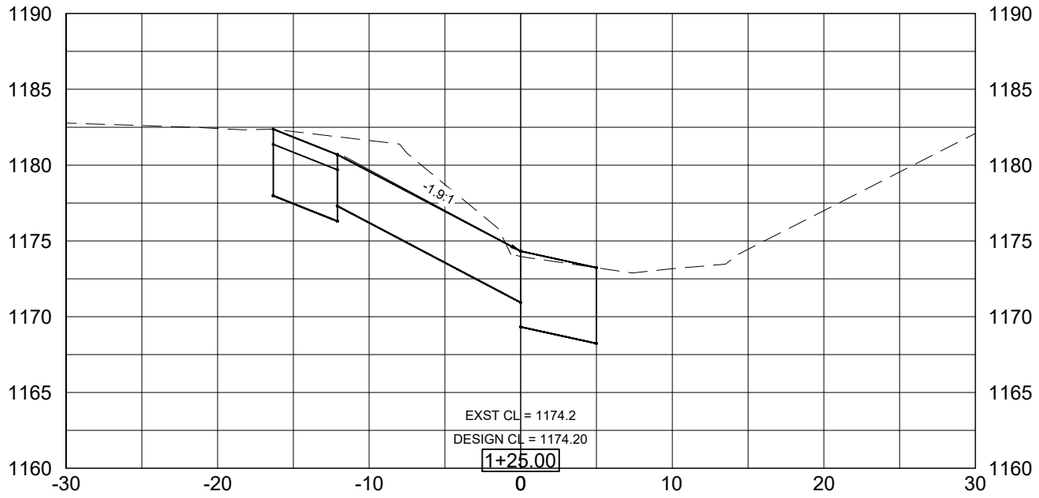
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

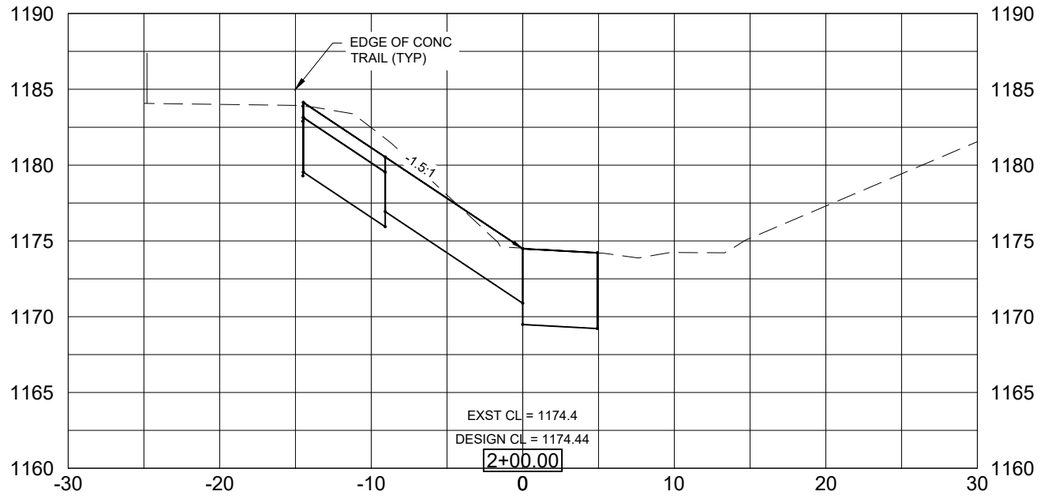
0 1/2" 1"
SCALE REDUCTION BAR

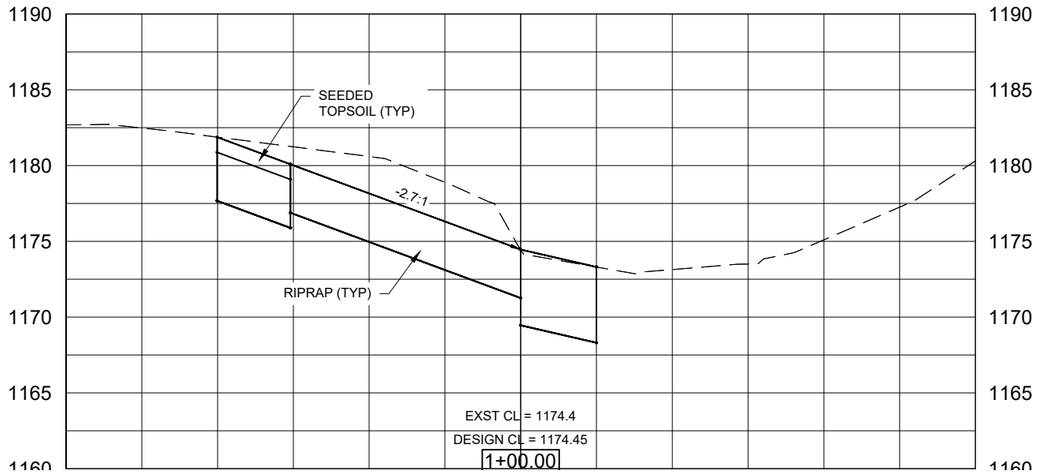
SHEET No. :
(C)M-5

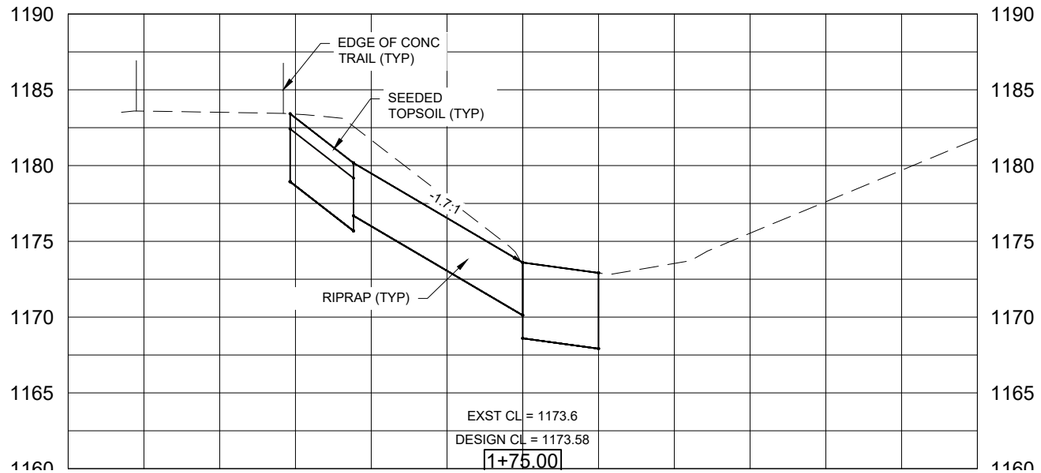












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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UL2 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

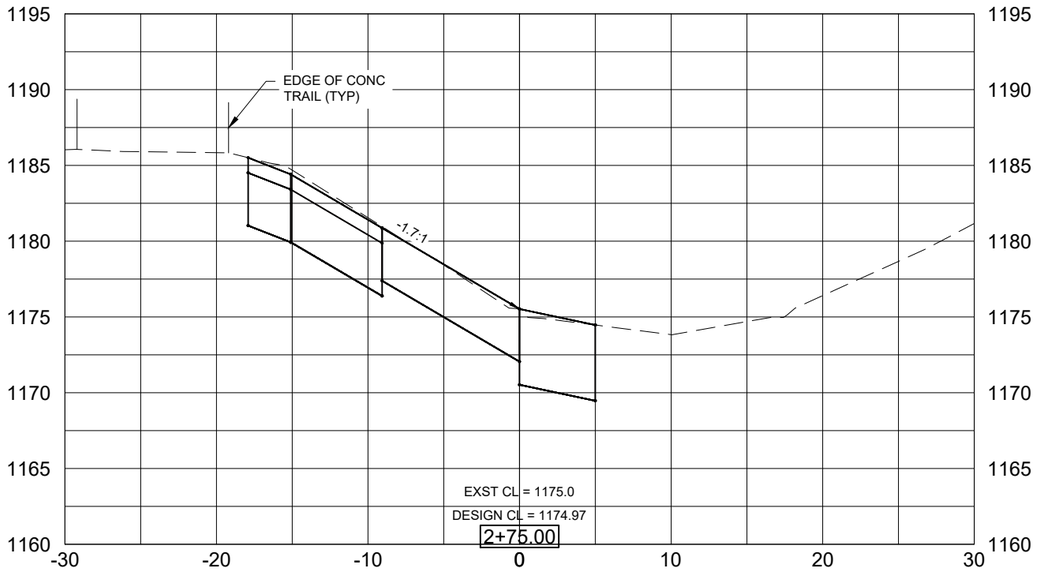
REV.	DATE	DESCRIPTION

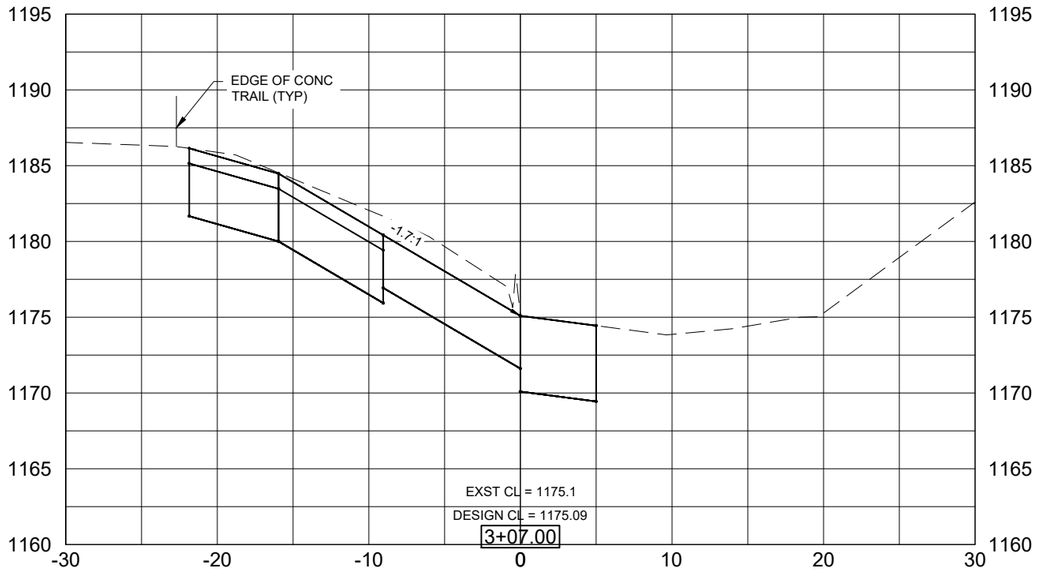
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

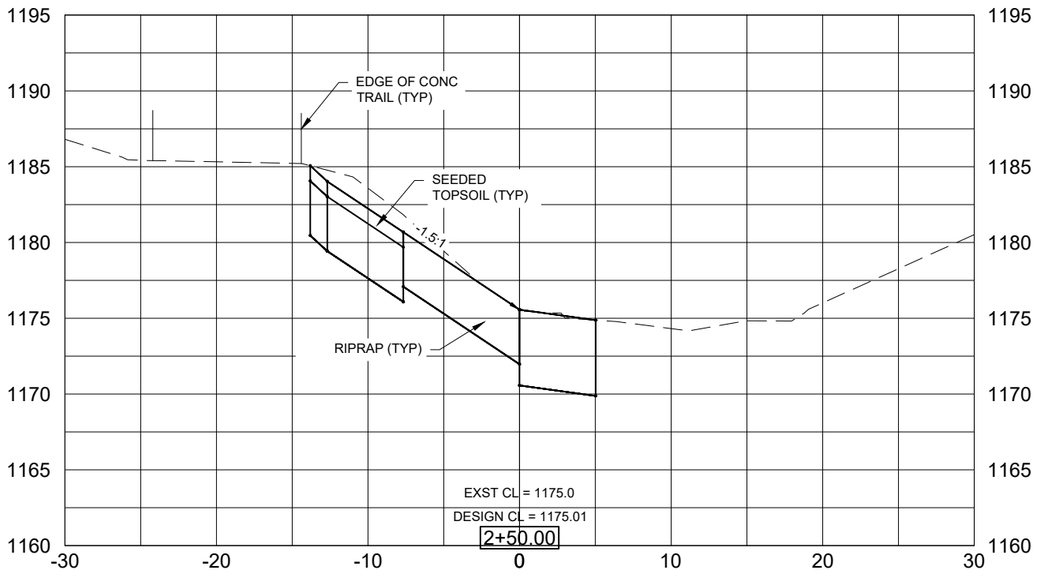
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

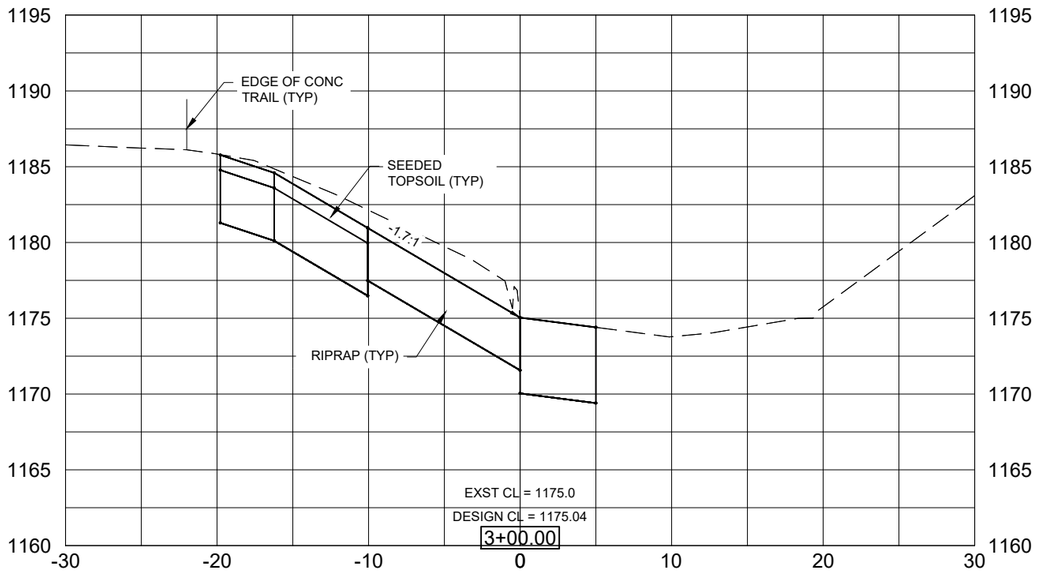
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-6









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MARNE CREEK BANK STABILIZATION

C-UL2 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

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SOUTH DAKOTA
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JOB No.:	23371.00
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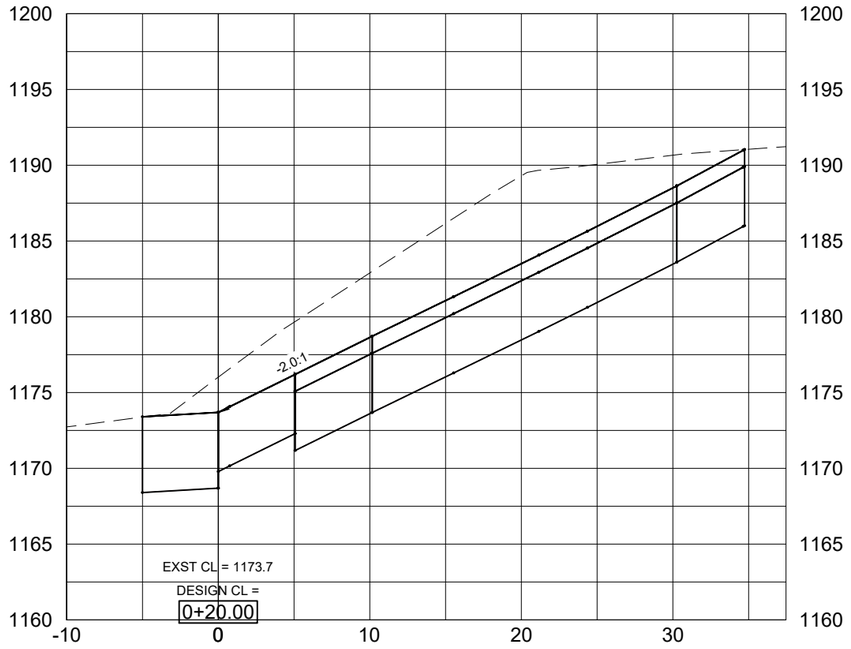
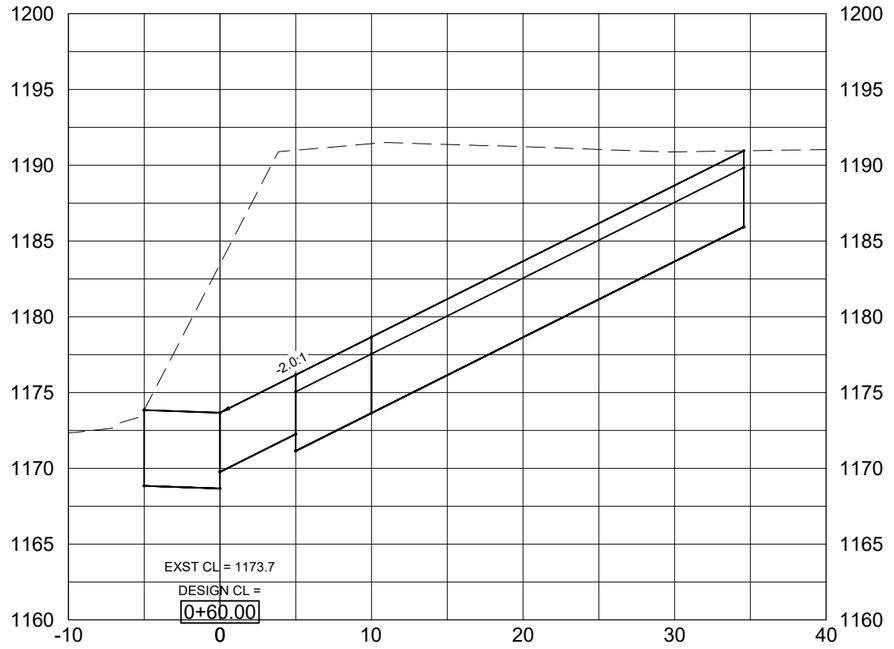
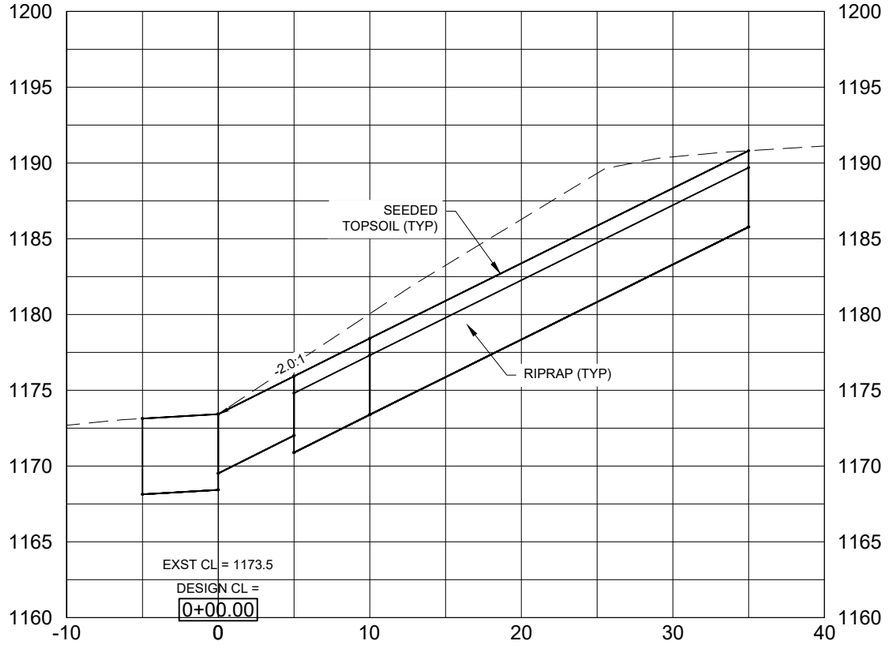
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

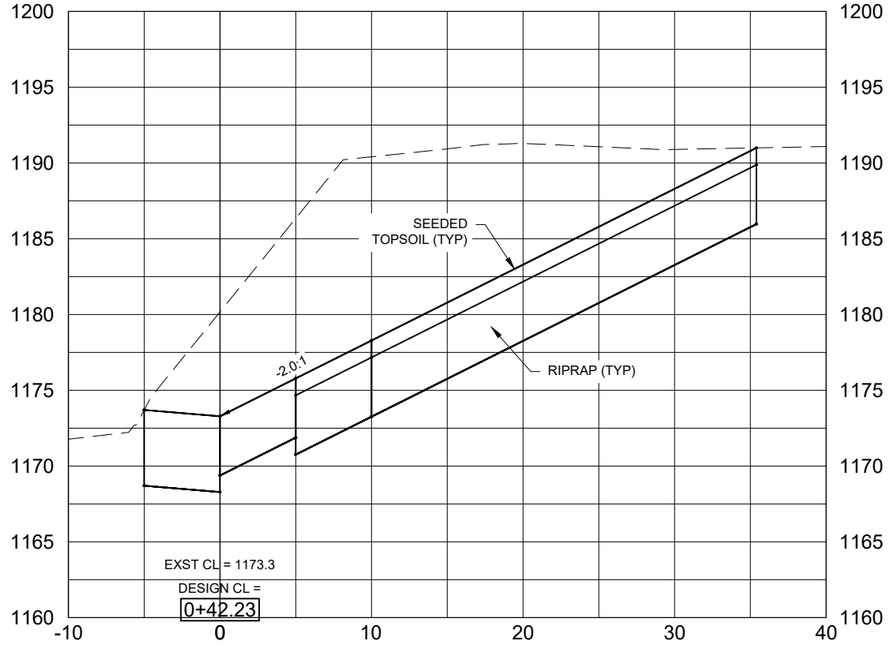
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-7









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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UR1 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

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REG NO. 8160
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SOUTH DAKOTA
10-11-2022

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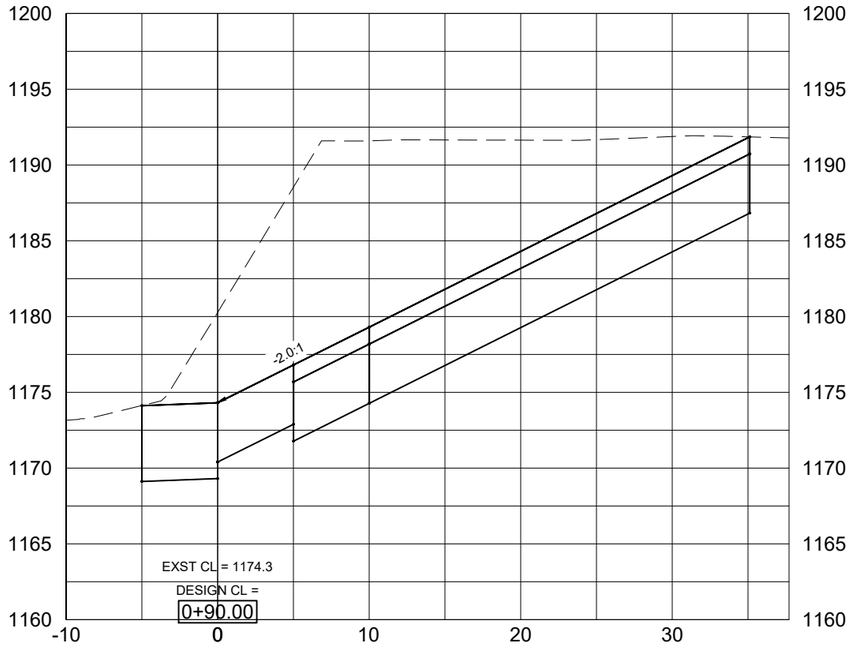
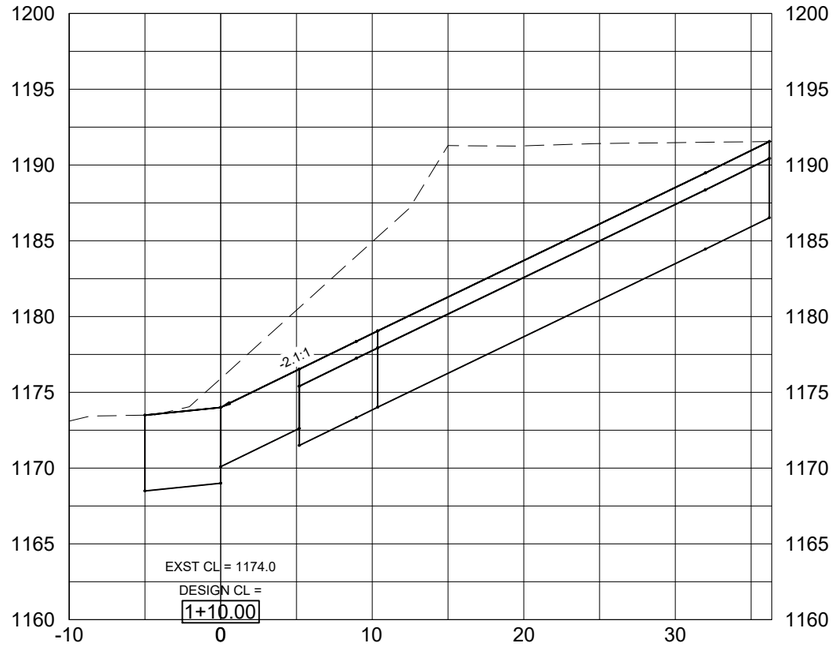
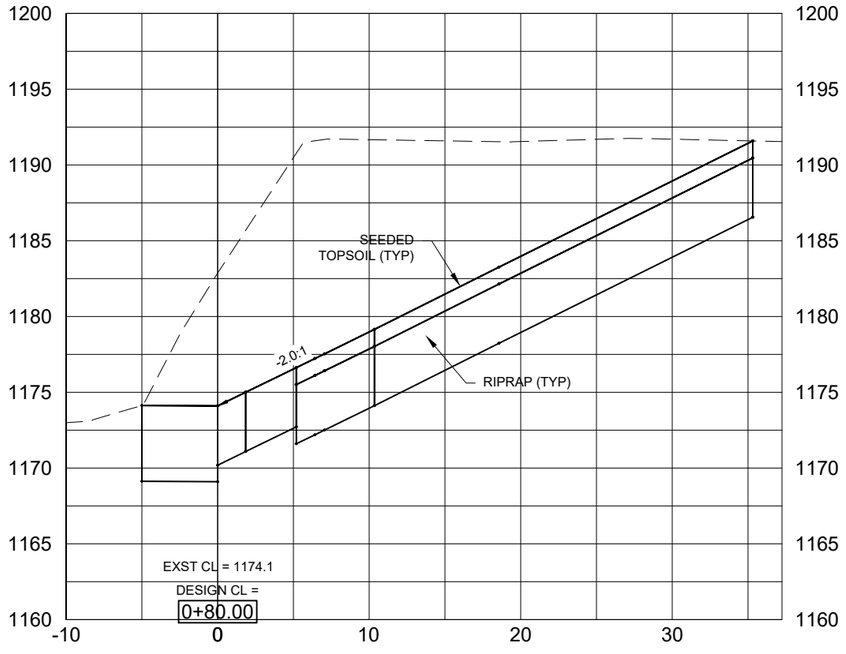
DESIGNER:	TMS
TECHNICIAN:	CKM

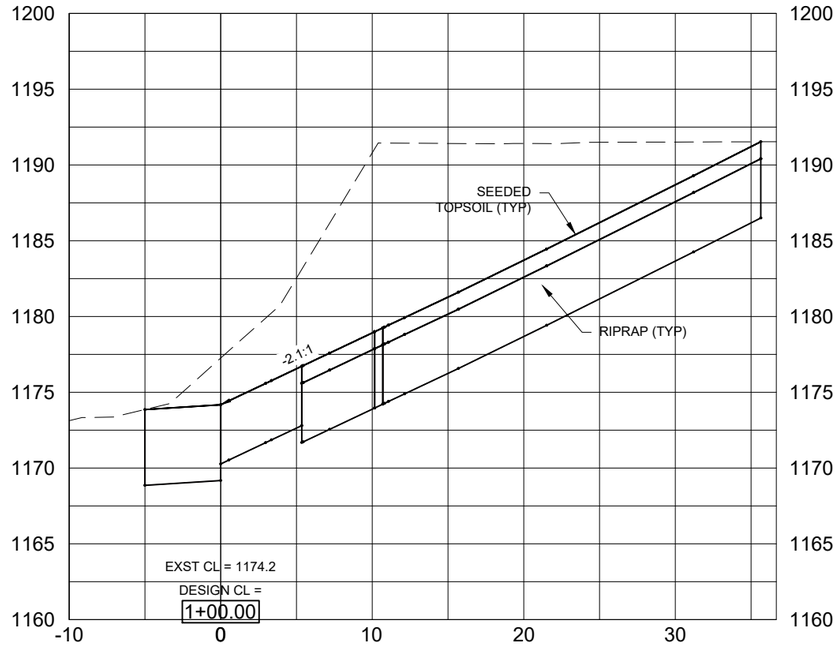
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-8









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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UR1 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

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10-11-2022

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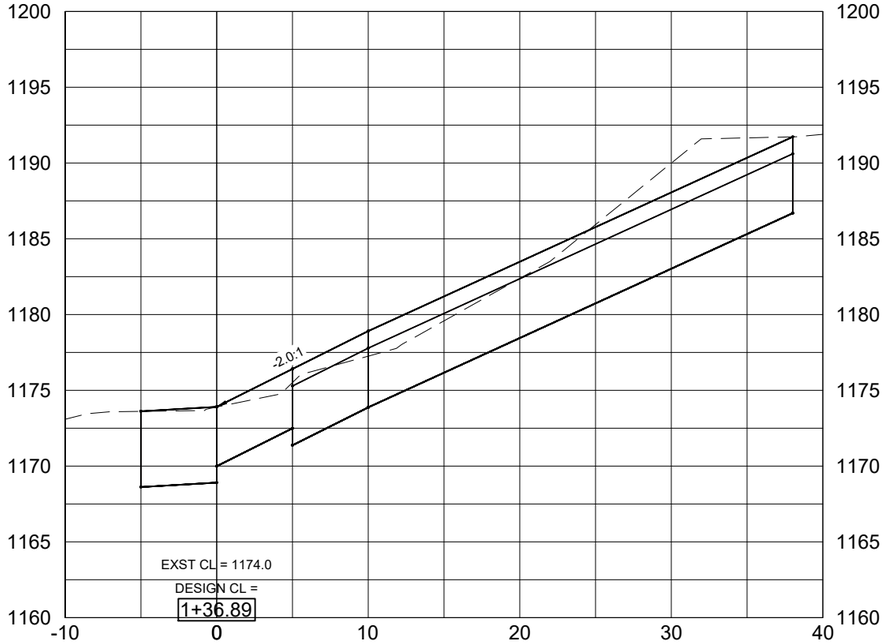
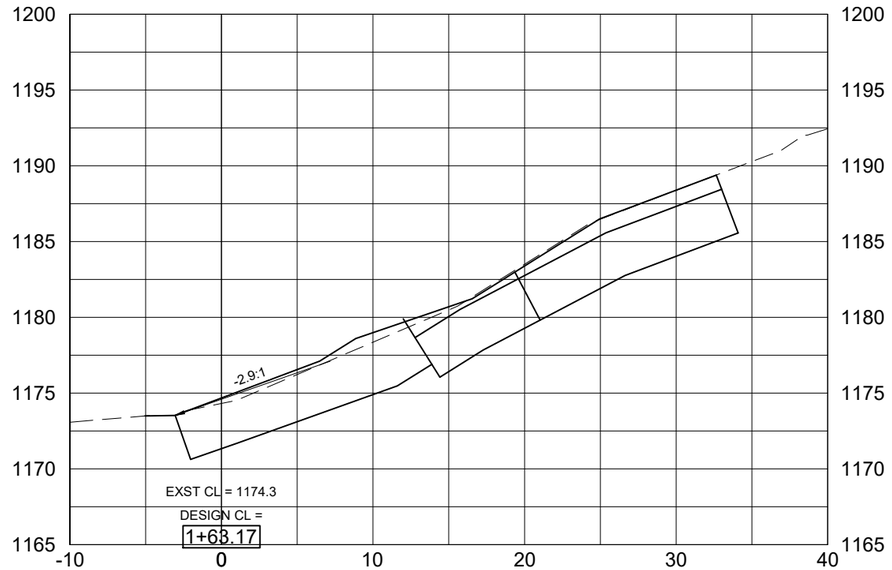
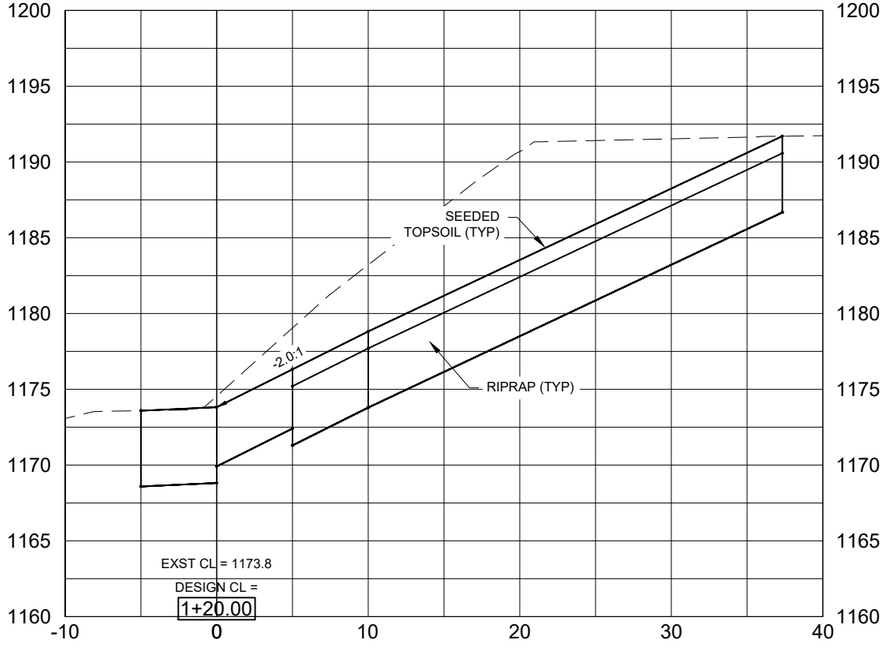
DESIGNER:	TMS
TECHNICIAN:	CKM

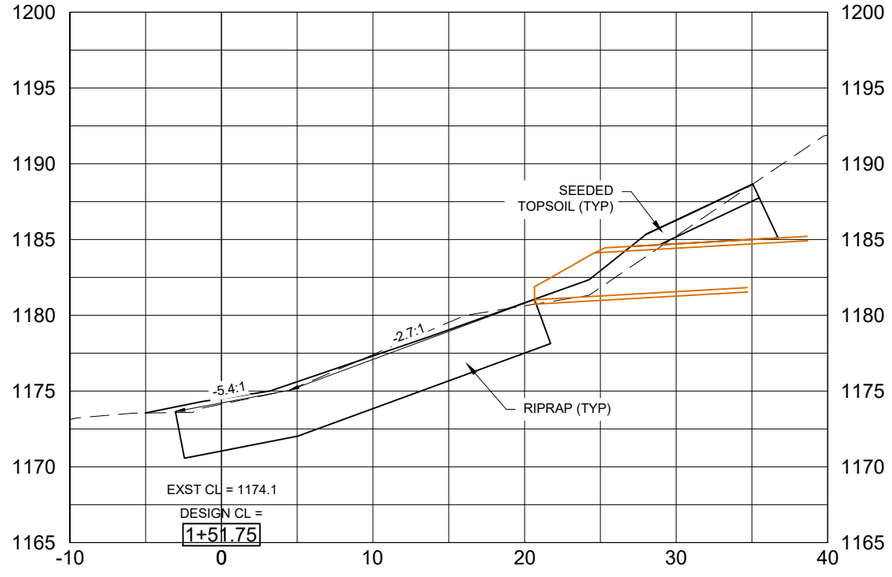
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-9









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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UR1 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

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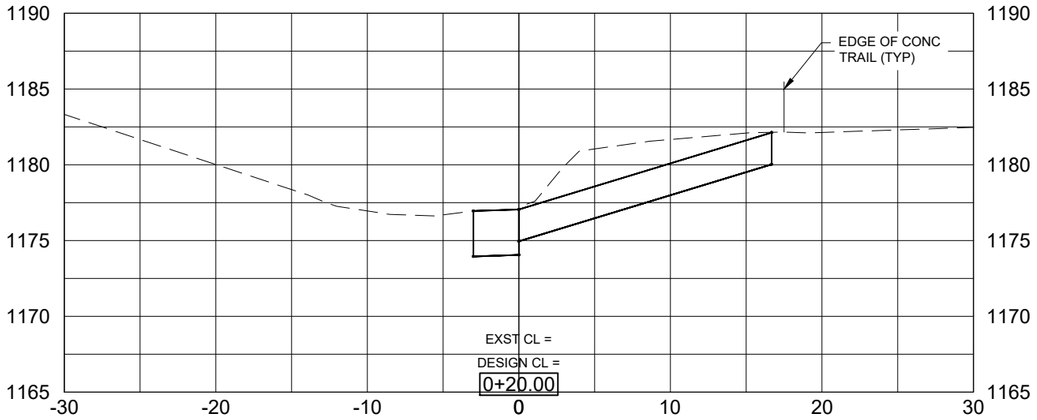
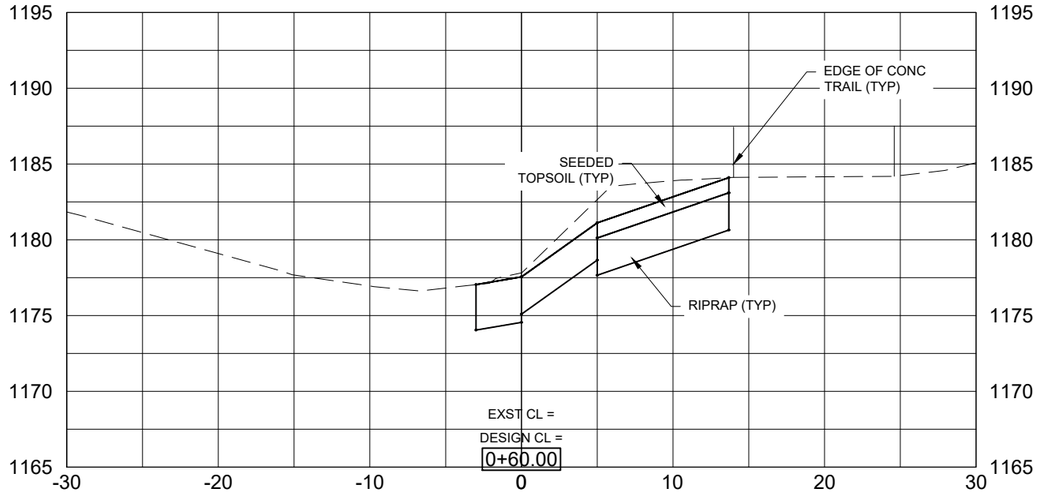
SOUTH DAKOTA
10-11-2022

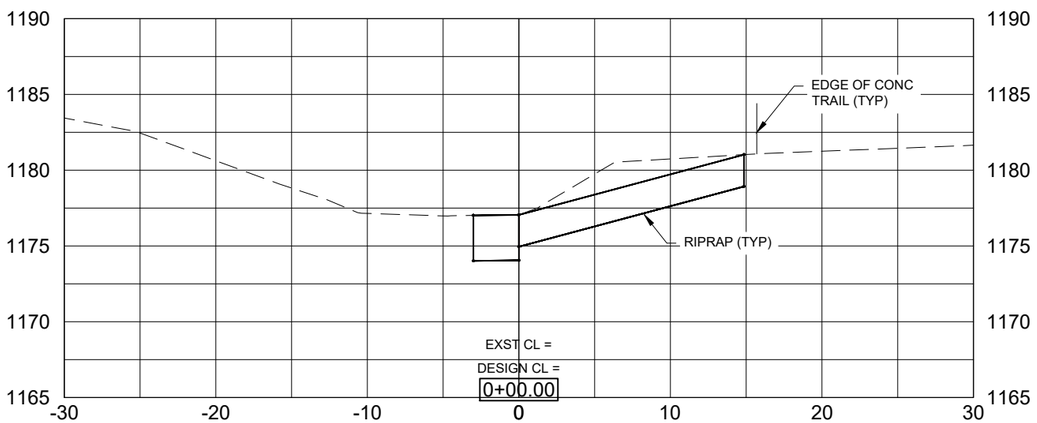
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

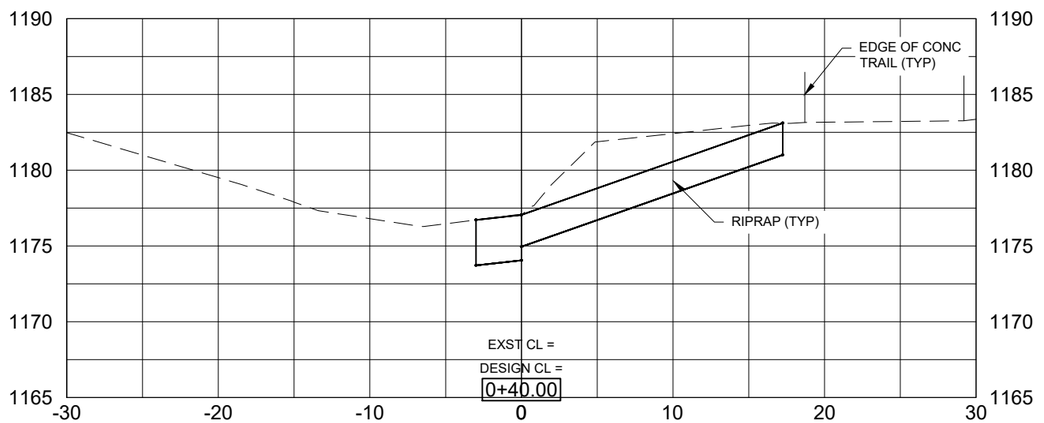
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-10









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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
C-UR2 CROSS SECTIONS - REACH C
YANKTON, SOUTH DAKOTA

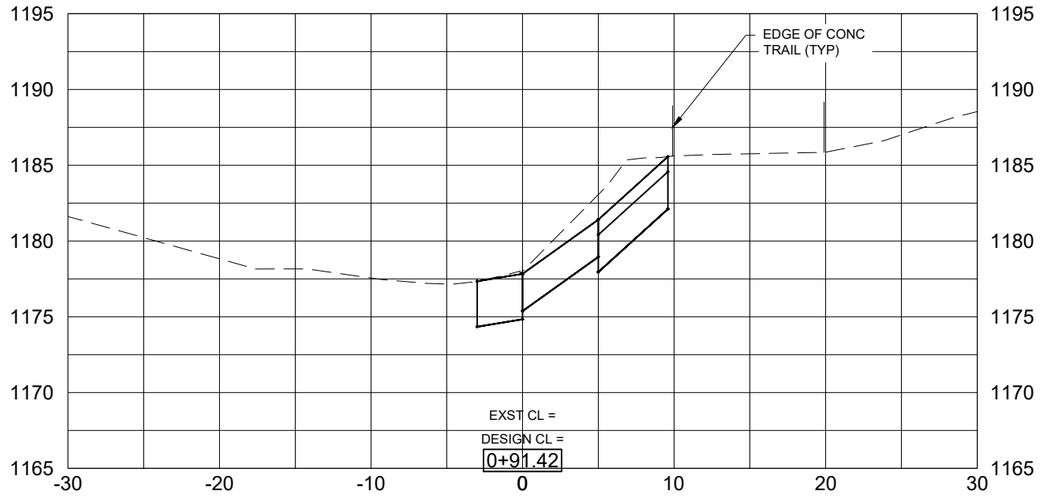
REV.	DATE	DESCRIPTION

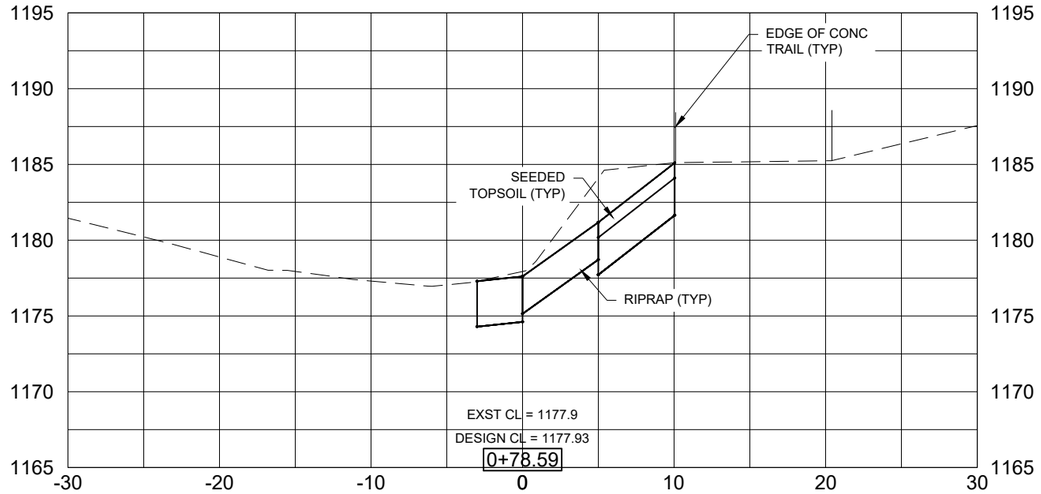
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-11





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION
C-UR2 CROSS SECTIONS - REACH C
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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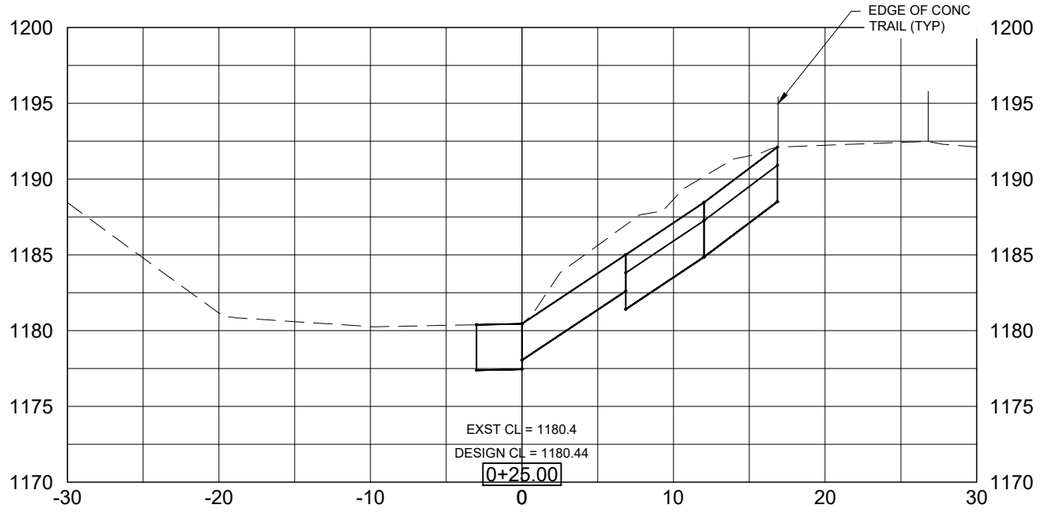
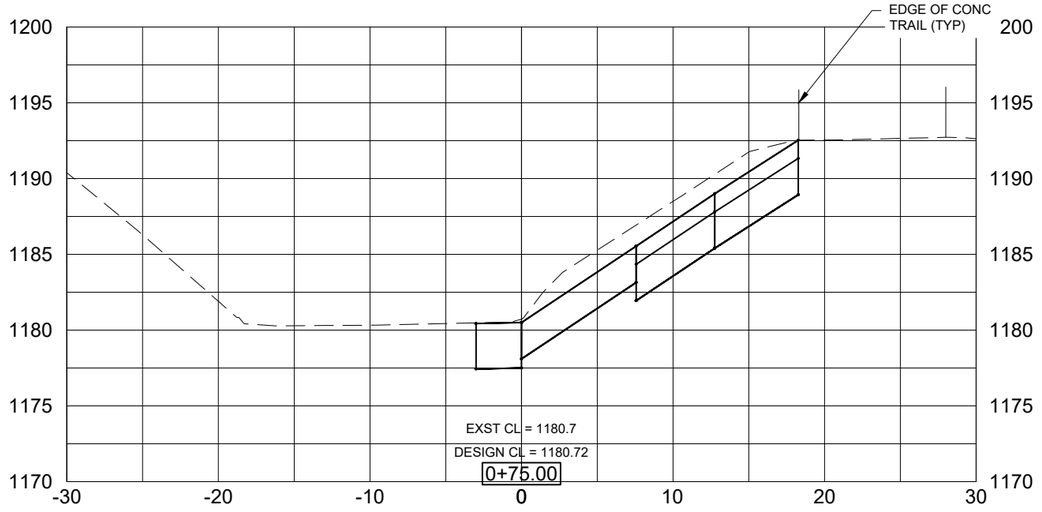
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

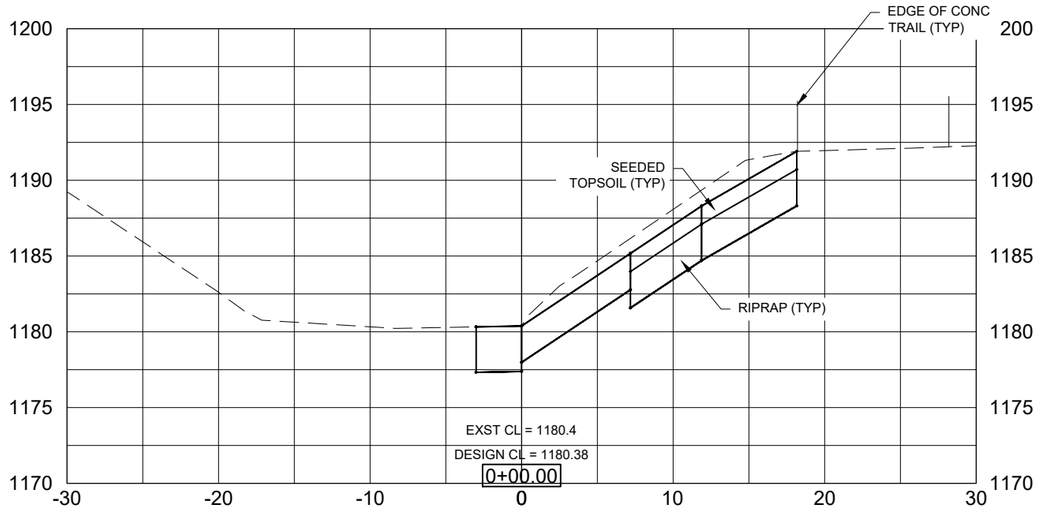
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

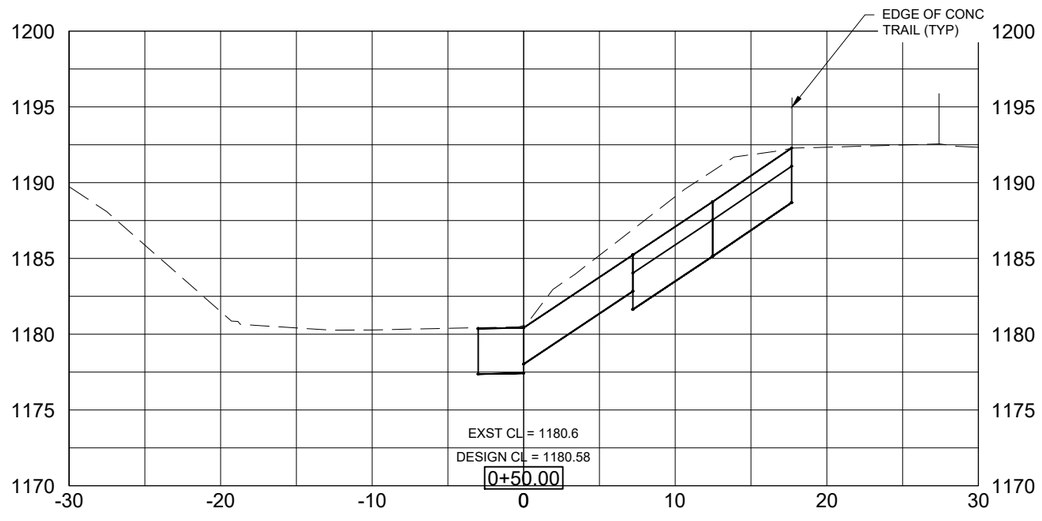
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-12









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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

C-UR3 CROSS SECTIONS - REACH C

YANKTON, SOUTH DAKOTA

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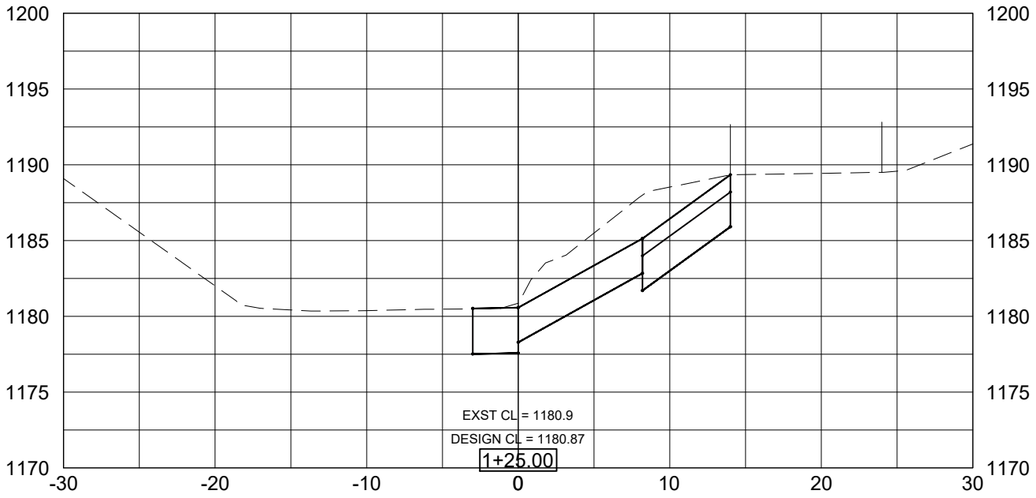
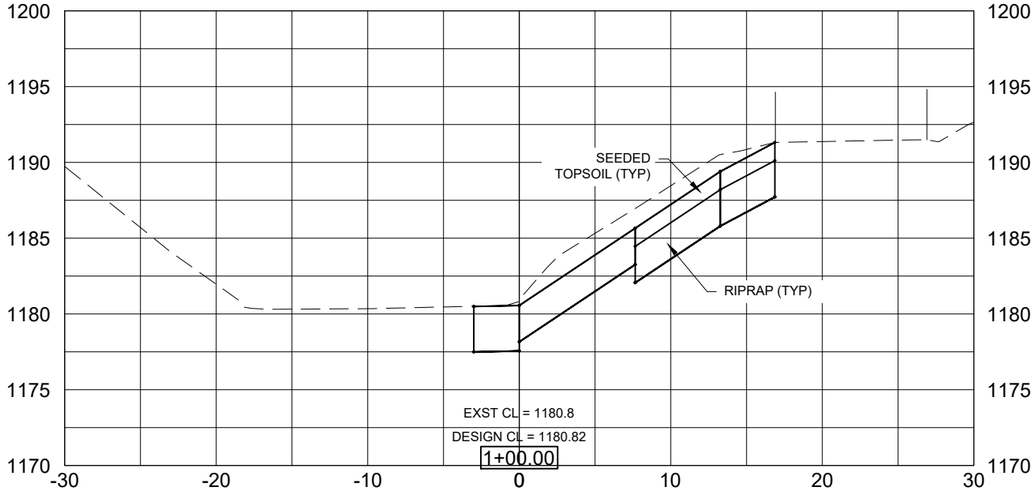
SOUTH DAKOTA
10-11-2022

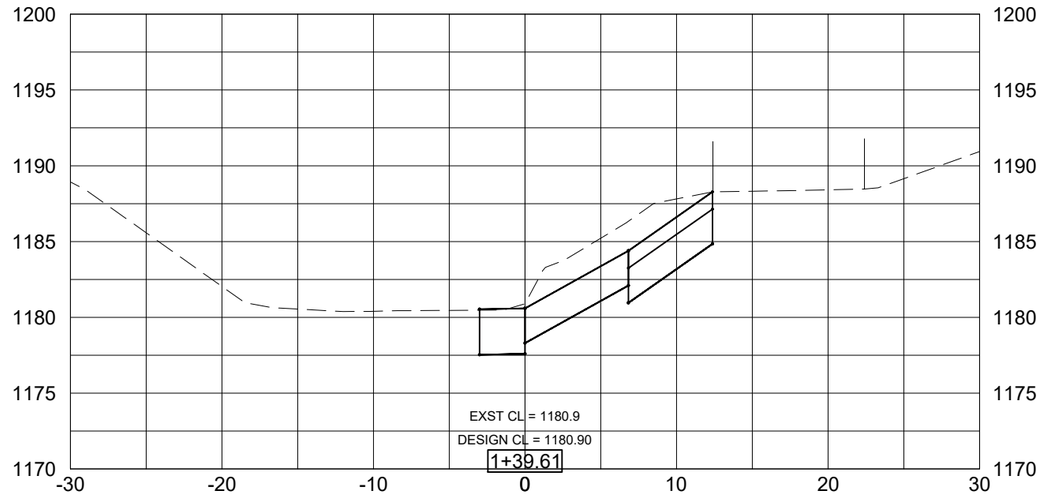
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-13







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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
C-UR3 CROSS SECTIONS - REACH C
YANKTON, SOUTH DAKOTA

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DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(C)M-14

HORIZONTAL DATUM:
- NAD 83
- PROJECTION: SOUTH DAKOTA STATE PLANE COORDINATES SOUTH ZONE

VERTICAL DATUM:
- NAVD 88
- GEOID 18

BASIS OF BEARING: GEODETIC NORTH

ALL DIMENSIONS SHOWN ARE IN TERMS OF U.S. SURVEY FEET

SURVEY DATE: NOVEMBER 2020

AERIAL IMAGERY BACKGROUND SHOWN ON ALL PLAN SHEETS IS FROM UAS (DRONE), ACQUIRED OCTOBER, 2020.

LEGEND

CITY OWNED PROPERTY

NOTE: SHOWN BOUNDARY IS FROM CITY OF YANKTON GIS INFORMATION

0 50 100 FT

G-UL4
G-UL3
G-UL2
G-UR1
G-UL1

2 YR INUNDATION LIMIT
10 YR INUNDATION LIMIT
100 YR INUNDATION LIMIT

BLOCK 3 COPE'S ADDITION
LOT 2
BLOCK 2 MORGEN PARK
LOT 3
MARNE CREEK TRACT # 17
NE 1/4 SEC 13, T93N, R56W

GREEN STREET (66' R.O.W.)
MAPLE ST (66' R.O.W.)
11TH ST (63' R.O.W.)
GREEN STREET (100' R.O.W.)
10TH STREET (80' R.O.W.)
PRV

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
BOUNDARY MAP - REACH G
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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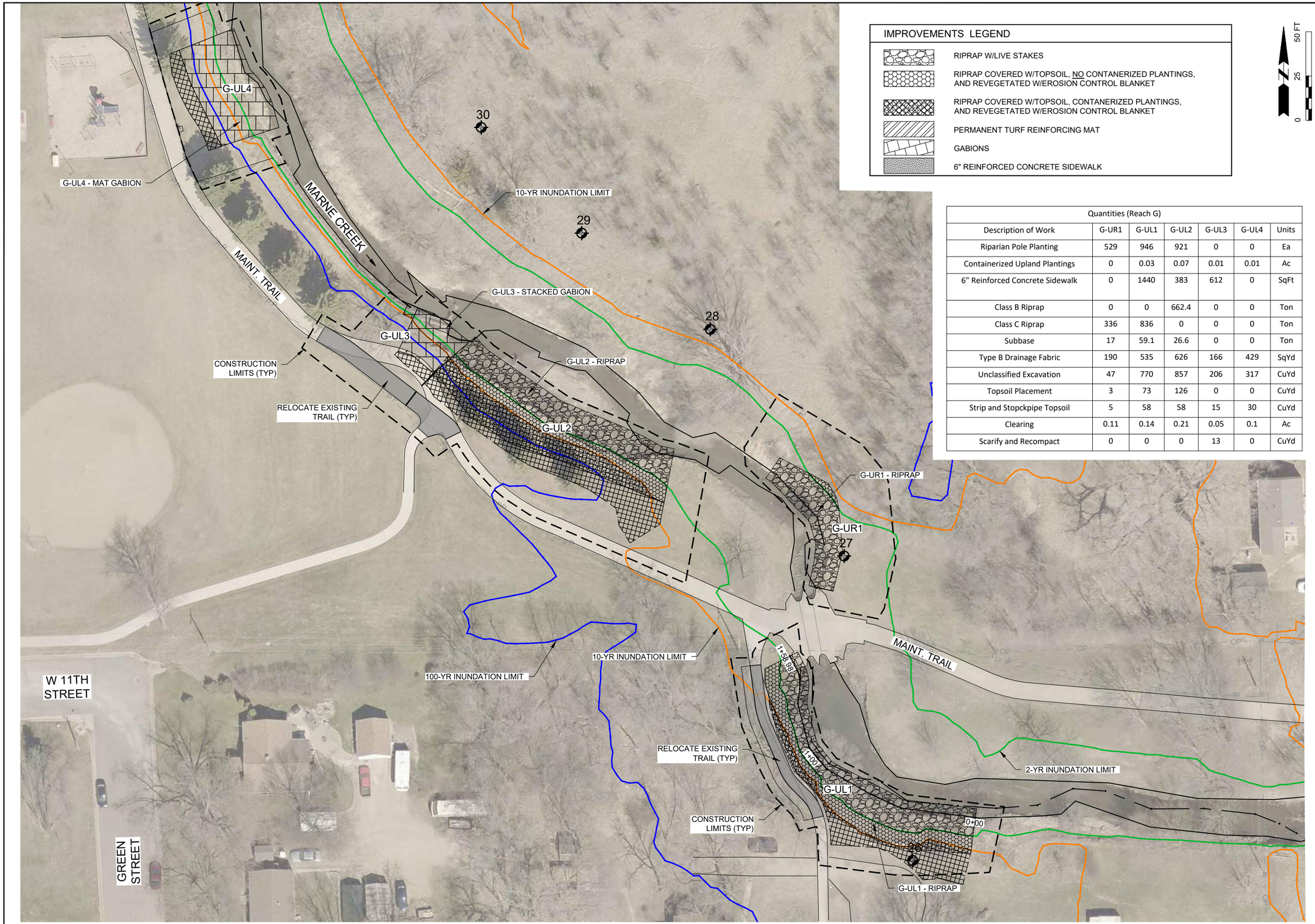
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)A-1



IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/TOPSOIL, NO CONTANERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
- RIPRAP COVERED W/TOPSOIL, CONTANERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
- PERMANENT TURF REINFORCING MAT
- GABIONS
- 6" REINFORCED CONCRETE SIDEWALK

N

0 25 50 FT

Quantities (Reach G)

Description of Work	G-UR1	G-UL1	G-UL2	G-UL3	G-UL4	Units
Riparian Pole Planting	529	946	921	0	0	Ea
Containerized Upland Plantings	0	0.03	0.07	0.01	0.01	Ac
6" Reinforced Concrete Sidewalk	0	1440	383	612	0	SqFt
Class B Riprap	0	0	662.4	0	0	Ton
Class C Riprap	336	836	0	0	0	Ton
Subbase	17	59.1	26.6	0	0	Ton
Type B Drainage Fabric	190	535	626	166	429	SqYd
Unclassified Excavation	47	770	857	206	317	CuYd
Topsoil Placement	3	73	126	0	0	CuYd
Strip and Stopckpipe Topsoil	5	58	58	15	30	CuYd
Clearing	0.11	0.14	0.21	0.05	0.1	Ac
Scarify and Recompact	0	0	0	13	0	CuYd

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MARNE CREEK BANK STABILIZATION

OVERVIEW MAP - REACH G

YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

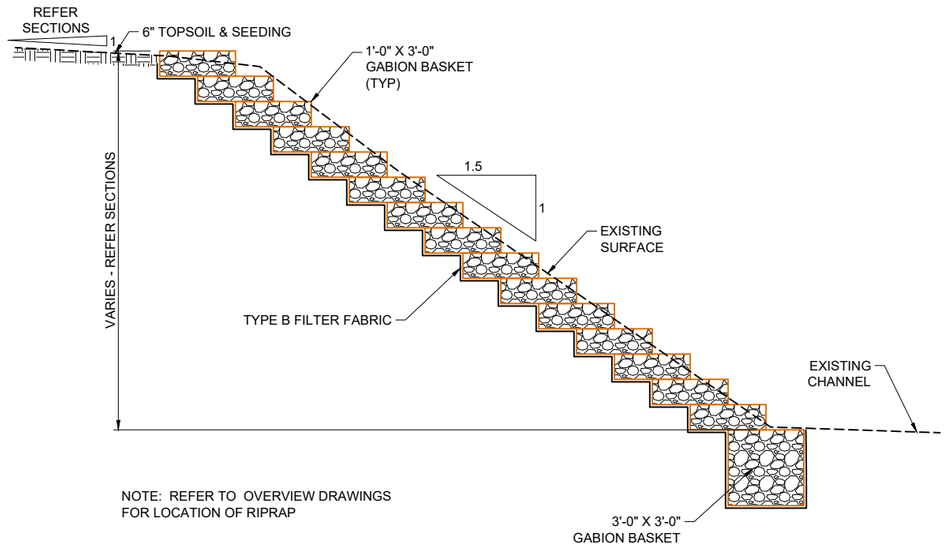
PROJECT / SHEET TITLE :

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

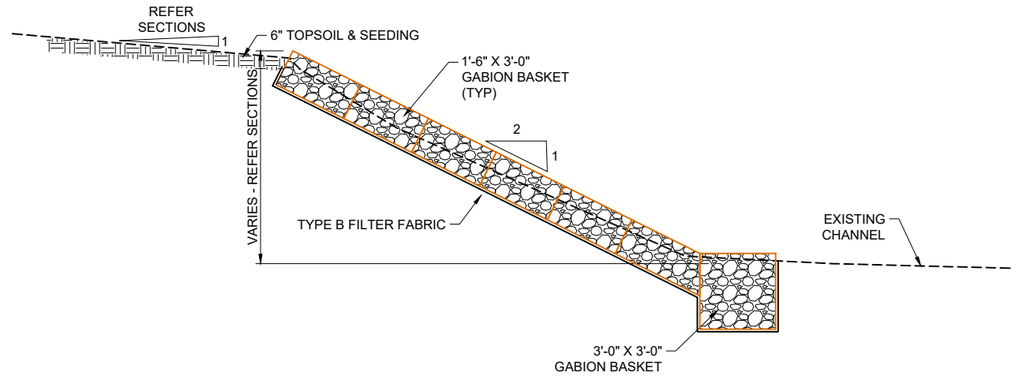
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)A-2



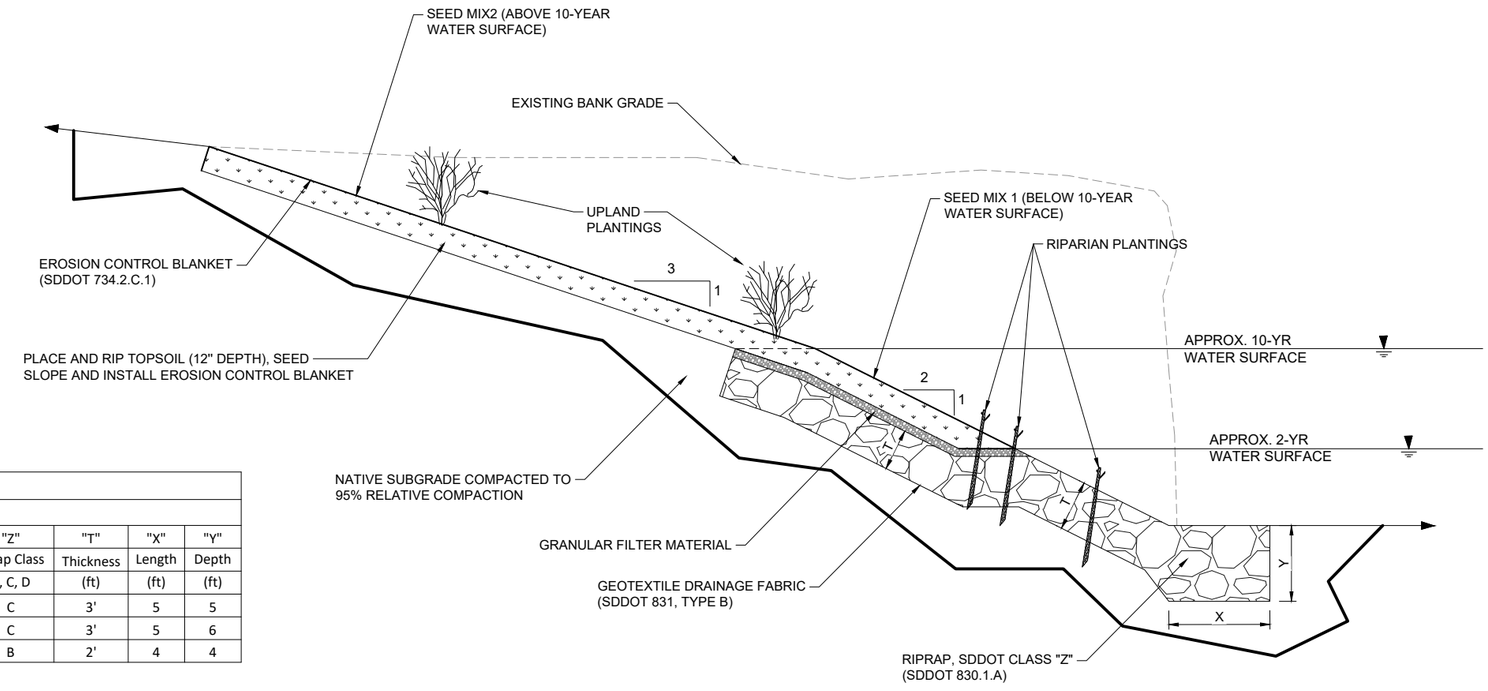
TYPICAL STACKED GABION SECTION

SCALE: NONE



TYPICAL GABION MAT CHANNEL SECTION

SCALE: NONE



STREAM BANK TREATMENT TYPICAL SECTION

SCALE: NONE

Reach G

Riprap Design

				"Z"	"T"	"X"	"Y"
Site	Location	Station Start	Station End	Riprap Class	Thickness	Length	Depth
				B, C, D	(ft)	(ft)	(ft)
G-UL1	Outside Bend	0+00	1+59	C	3'	5	5
G-UR1	Outside Bend	0+00	0+78	C	3'	5	6
G-UL2	Outside Bend	0+00	1+33	B	2'	4	4

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MARNE CREEK BANK STABILIZATION
TYPICAL SECTIONS - REACH G
YANKTON, SOUTH DAKOTA

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KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

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DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)C-1

EROSION CONTROL QUANTITIES	
1939 SY	EROSION CONTROL BLANKET
552 LF	STRAW WATTLE
8 LB	SEED MIX 1
106 LB	SEED MIX 2

EROSION CONTROL LEGEND

- EROSION CONTROL BLANKET W/SEED MIX 1
- EROSION CONTROL BLANKET 2/SEED MIX 2
- STRAW WATTLE
- SILT FENCE
- ORANGE CONSTRUCTION FENCE

N

0 25 50 FT

G-UL4

G-UL4 - MAT GABION

MARNE CREEK

MAINT. TRAIL

G-UL3 - STACKED GABION

G-UL3

G-UL2 - RIPRAP

RELOCATED TRAIL

G-UL2

G-UR1

G-UR1 - RIPRAP

MAINT. TRAIL

W 11TH STREET

GREEN STREET

RELOCATED TRAIL

MAINT. TRAIL

G-UL1

MARNE CREEK

G-UL1 - RIPRAP CHANNEL

MAINT. TRAIL

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION
EROSION CONTROL LAYOUT - REACH G
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No,:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)G-1

REMOVAL QUANTITIES	
284 SY	REMOVE CONCRETE PATH

TREE REMOVAL QUANTITIES REACH C ALL SITES	
30 EA	CLEAR & GRUB TREE 6" - 12"
18 EA	CLEAR & GRUB TREE 13" - 24"
5 EA	CLEAR & GRUB TREE 25" - 36"
3 EA	CLEAR & GRUB TREE 37" - 48"

REMOVAL LEGEND

- CLEAR AND GRUB EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING GABION BASKETS AND ROCK
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

N

0 25 50 FT

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PROJECT / SHEET TITLE:

MARNE CREEK BANK STABILIZATION

EXISTING SITE CONDITIONS AND REMOVALS - REACH G

YANKTON, SOUTH DAKOTA

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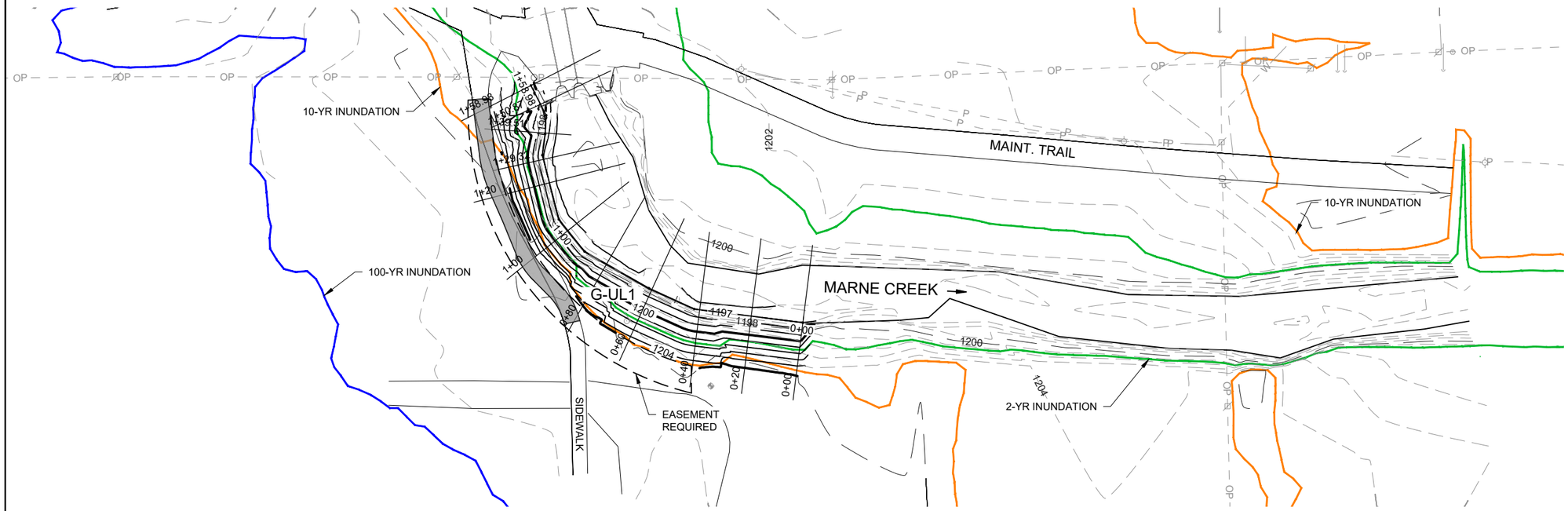
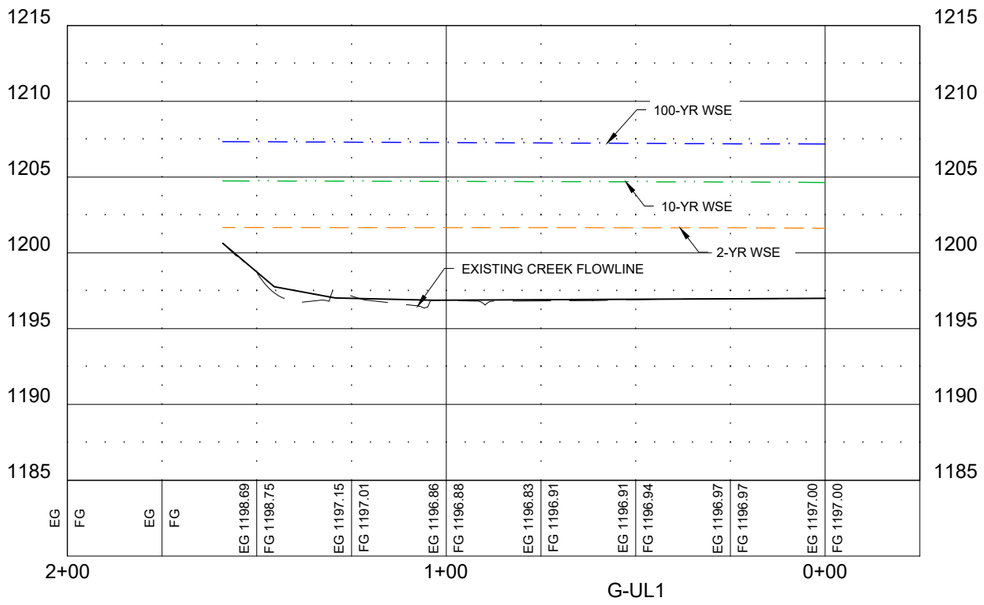
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
DESIGNED BY:	KRJ
CHECKED BY:	TMS
DRAWN BY:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)H-1





0 20 40 FT

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
G-UL1 PLAN & PROFILE GRADING - REACH G
YANKTON, SOUTH DAKOTA

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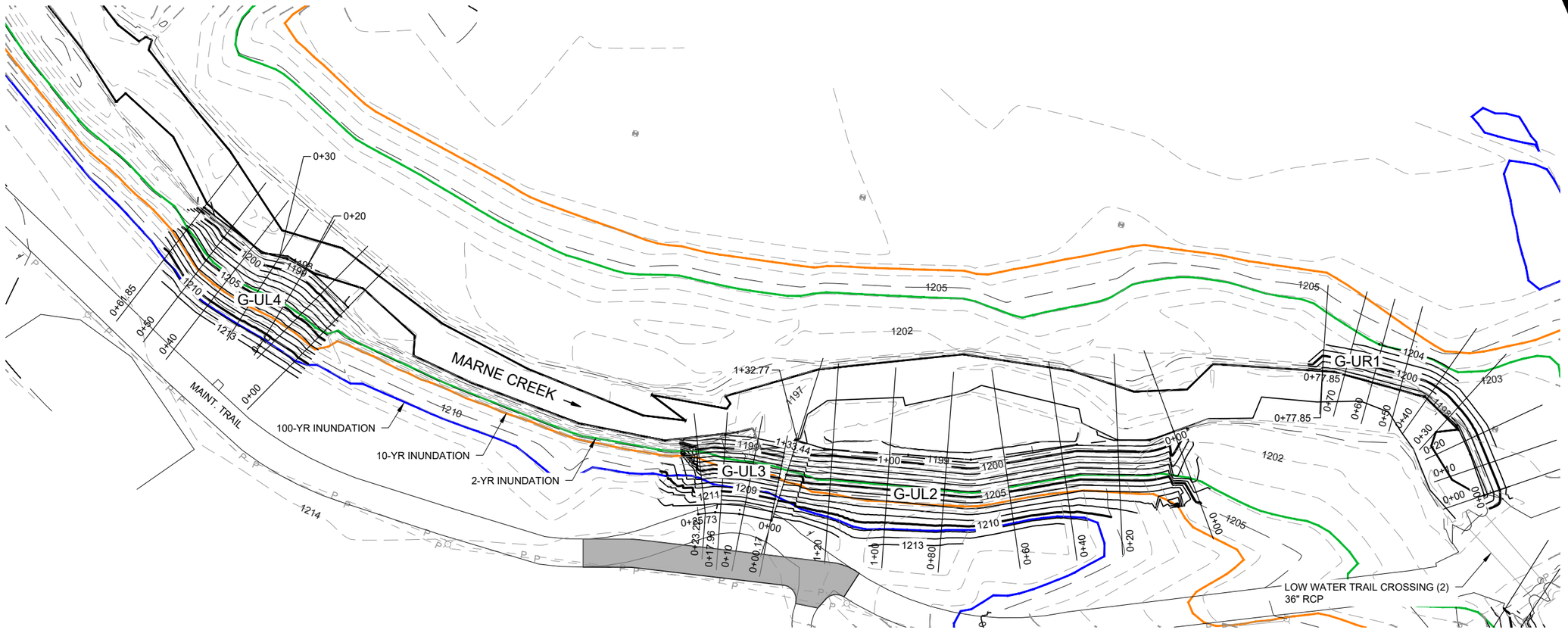
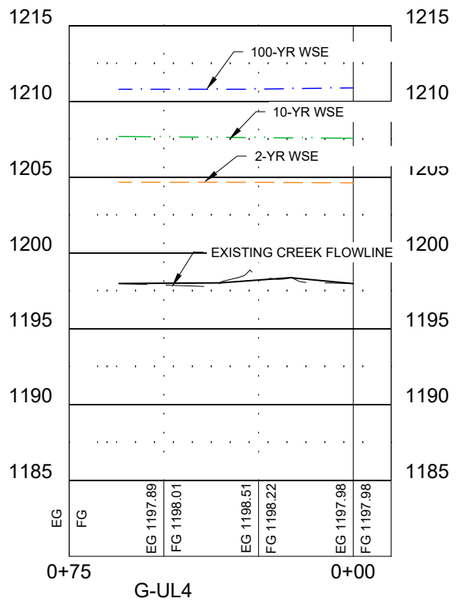
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

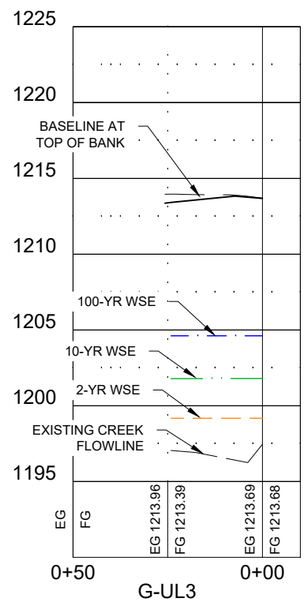
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

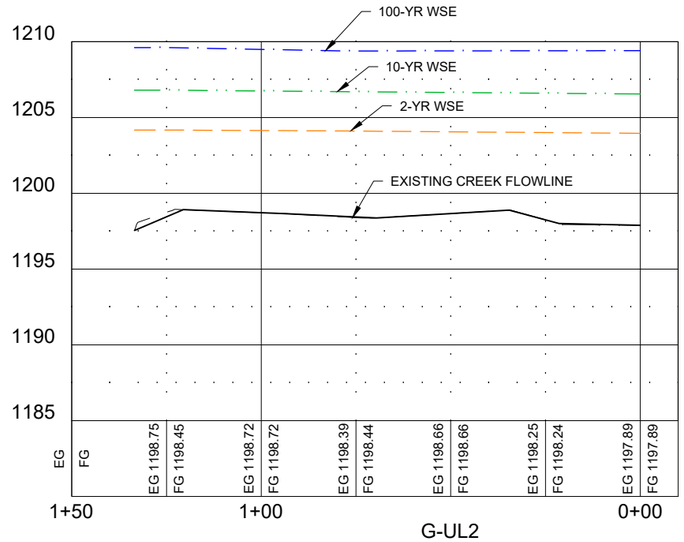
0 1/2" 1"
SCALE REDUCTION BAR

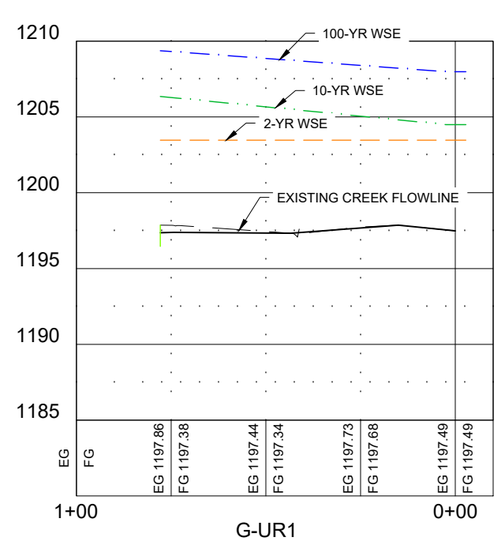
SHEET No. :
(G)J-1











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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
G-UL4, G-UL3, G-UL2, G-UR1 PLAN & PROFILE GRADING - REACH G
YANKTON, SOUTH DAKOTA

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10-11-2022

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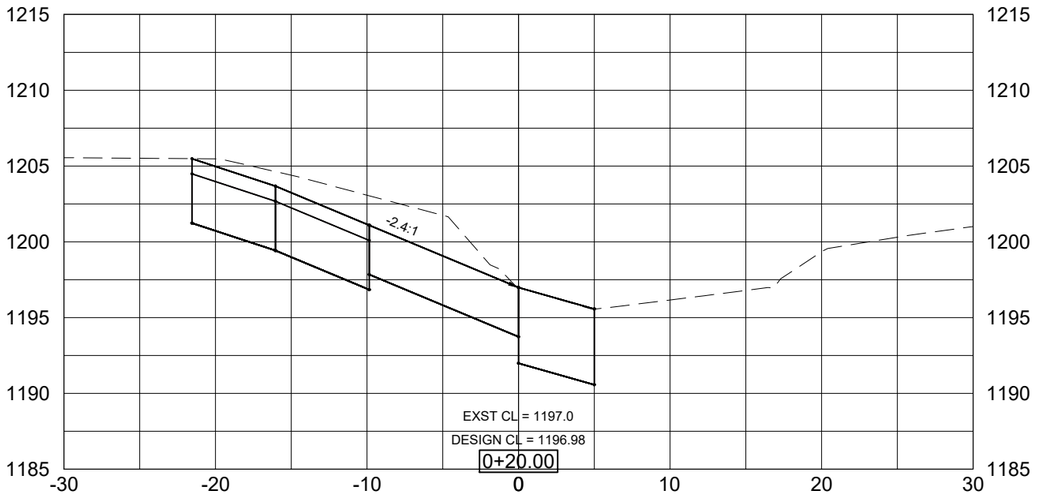
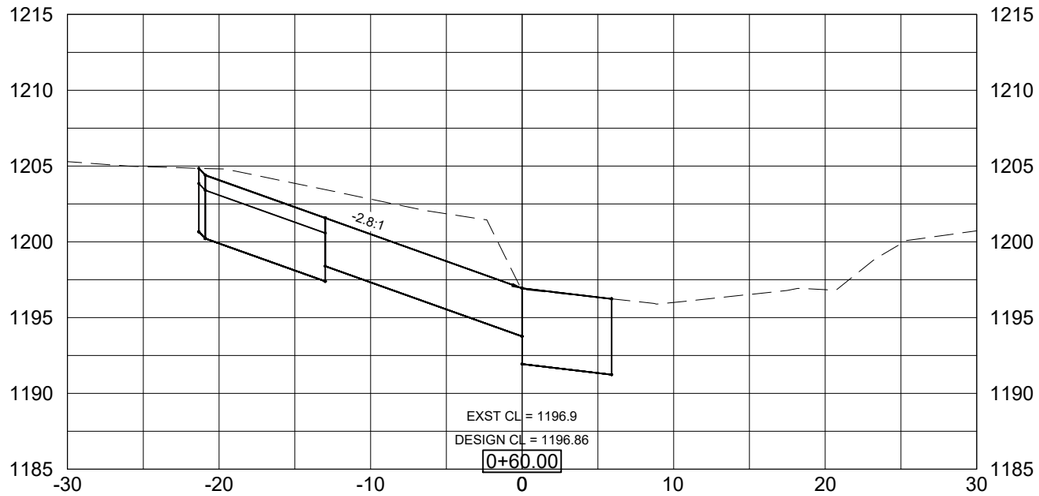
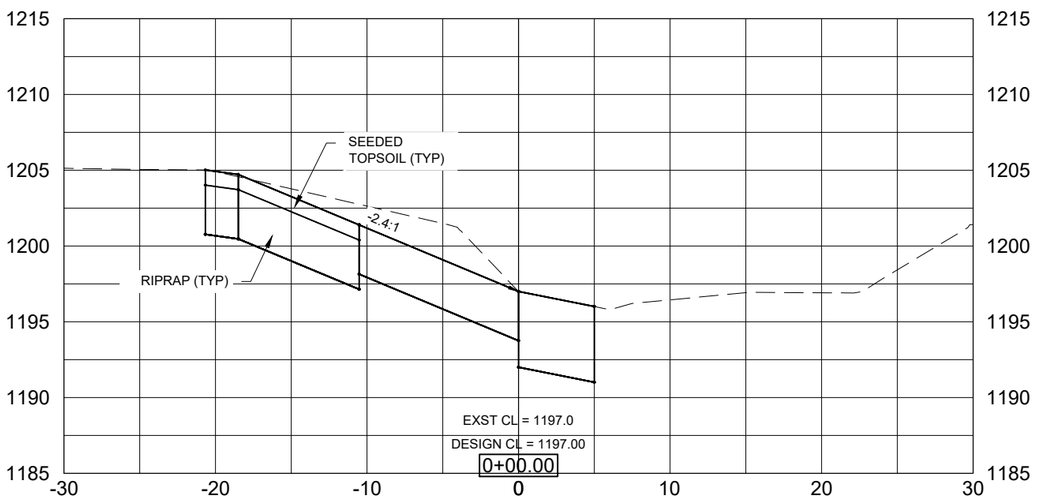
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

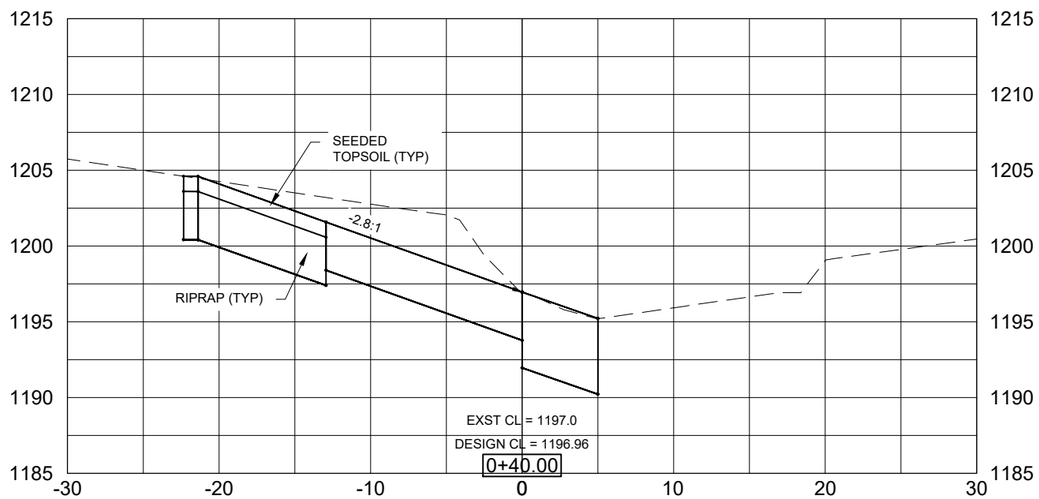
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)J-2









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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
G-UL1 CROSS SECTIONS - REACH G
YANKTON, SOUTH DAKOTA

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SOUTH DAKOTA
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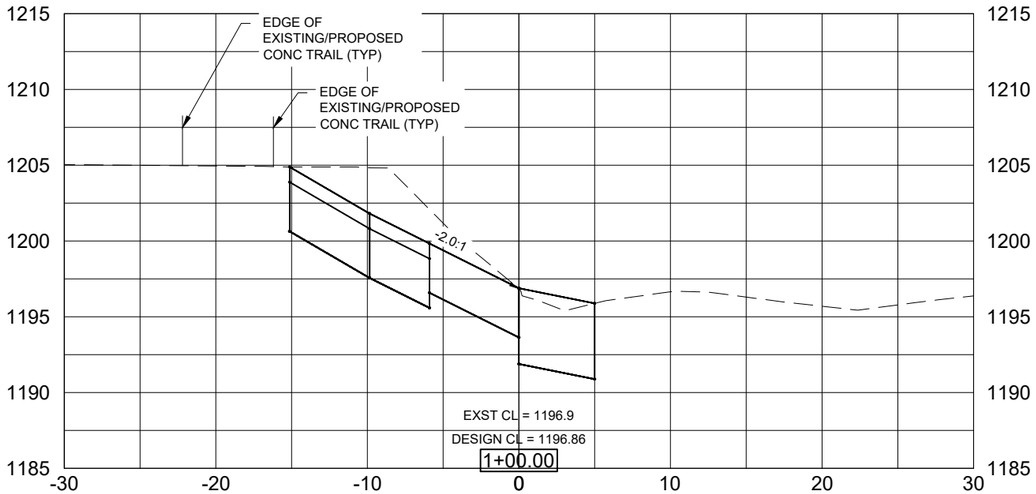
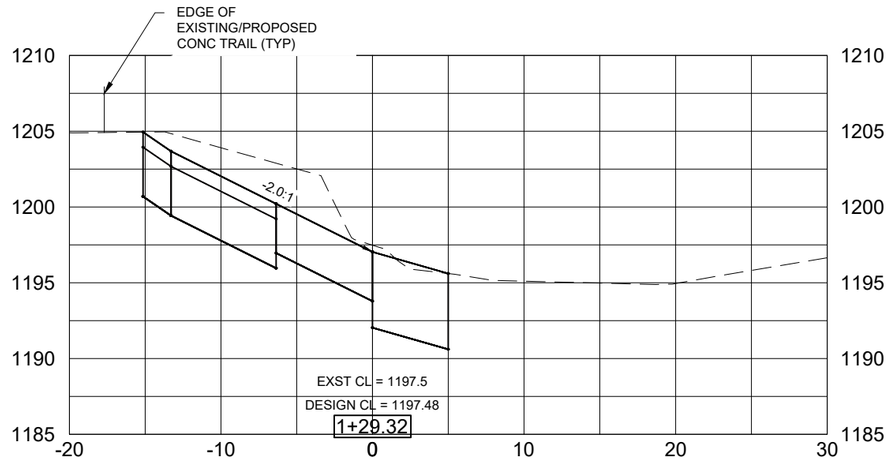
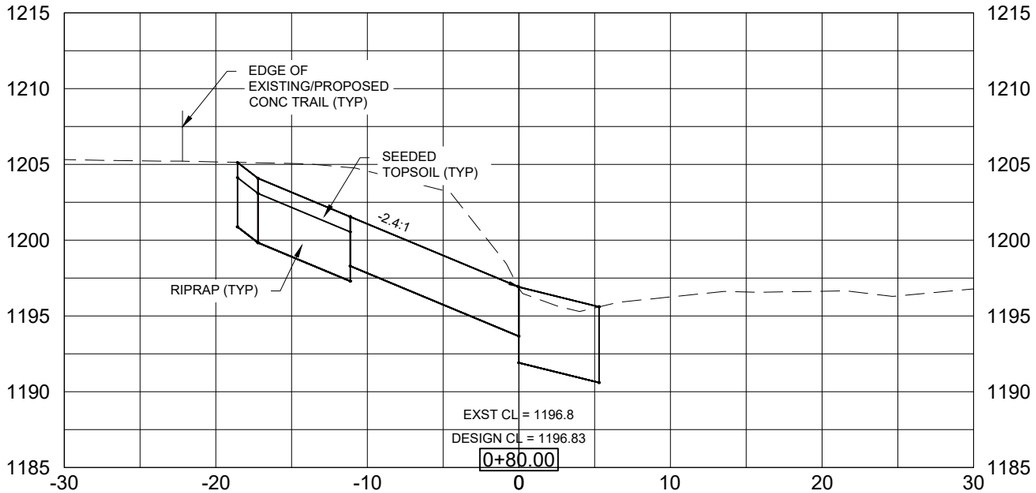
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

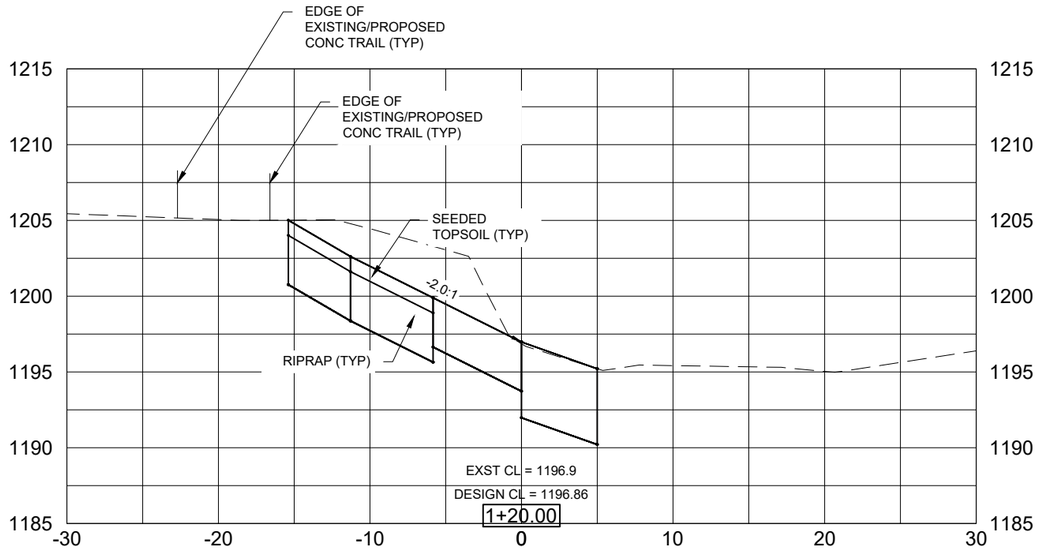
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-1









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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL1 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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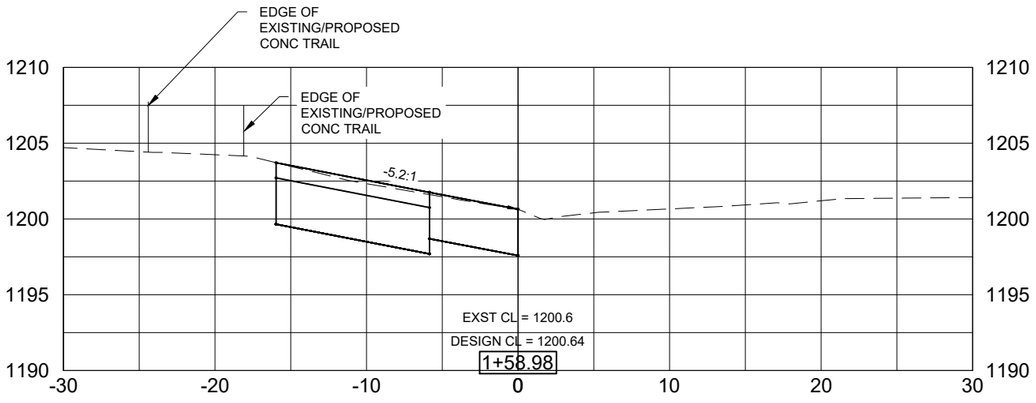
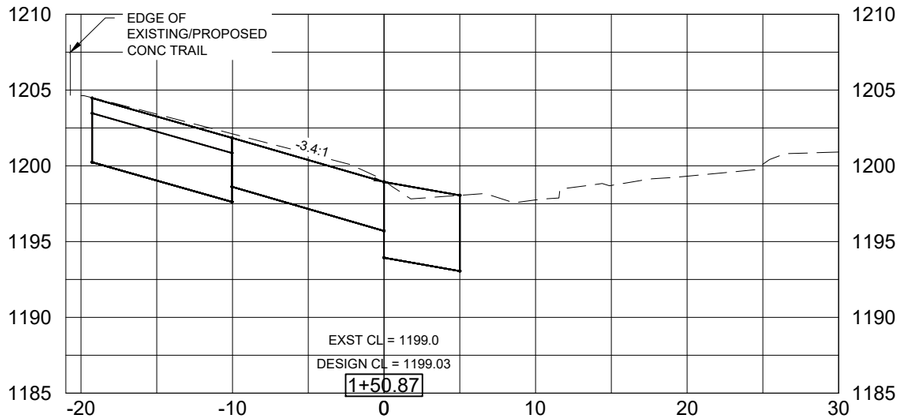
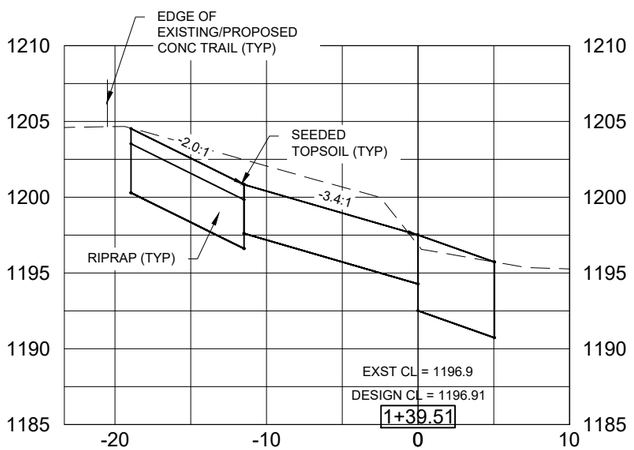
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-2







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MARNE CREEK BANK STABILIZATION

G-UL1 CROSS SECTIONS - REACH G

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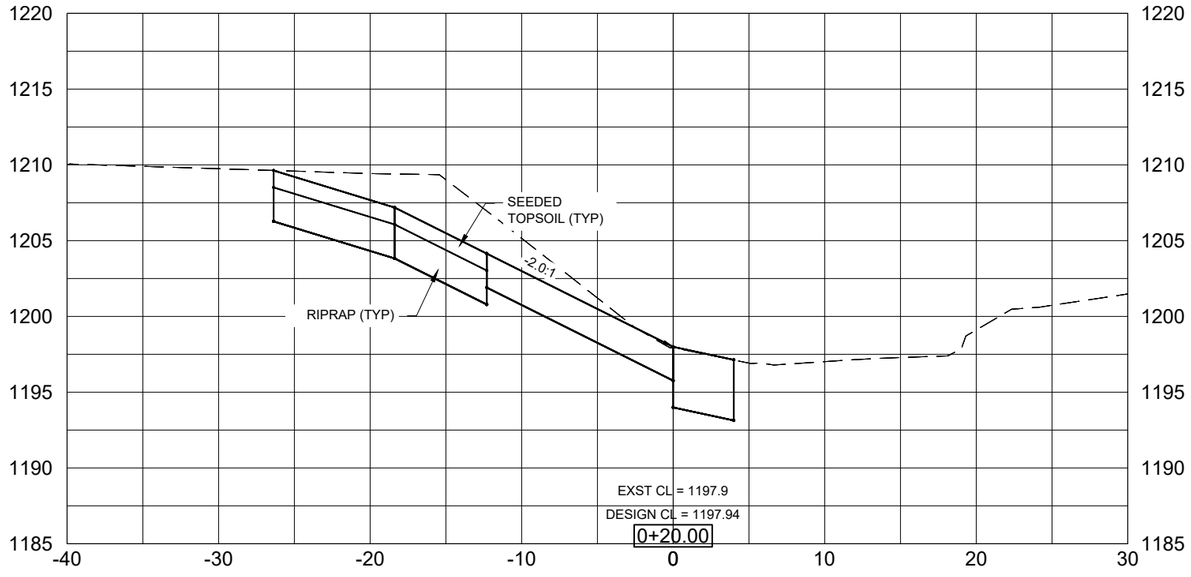
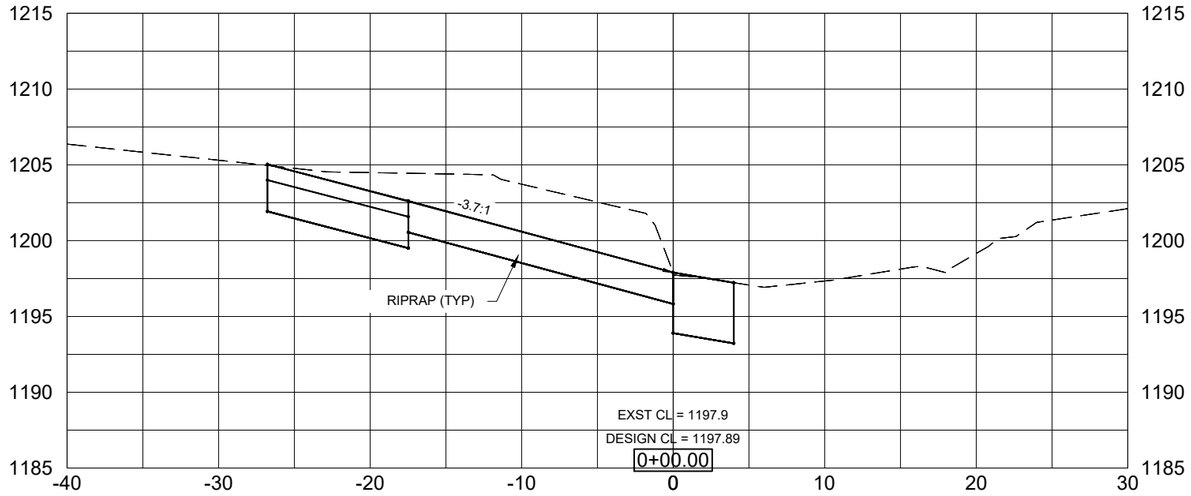
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-3





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL2 CROSS SECTIONS - REACH G

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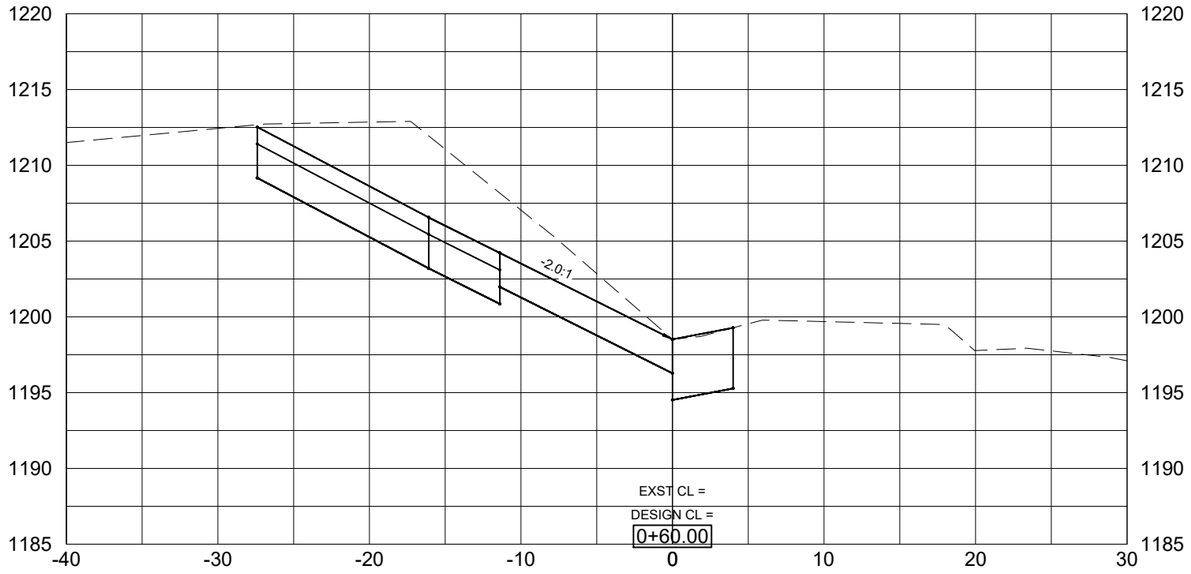
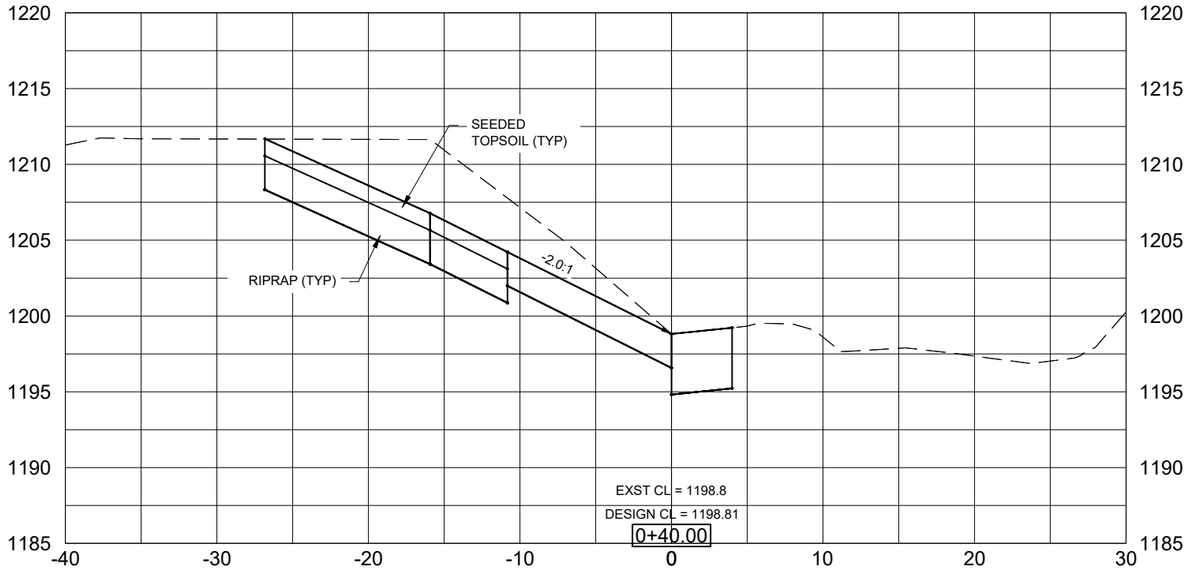
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-4





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL2 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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10-11-2022

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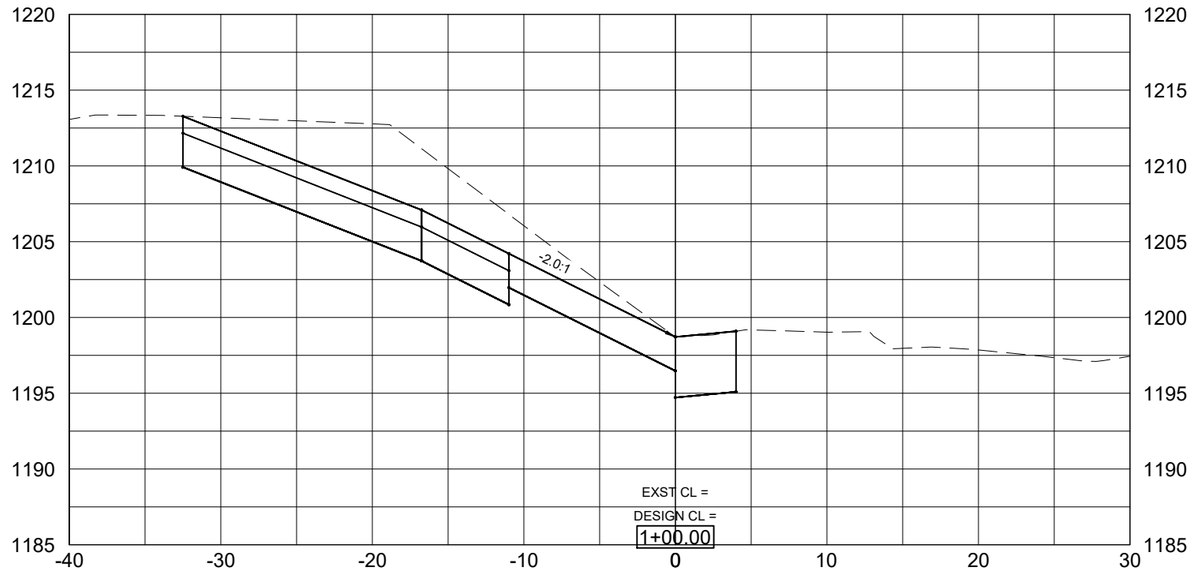
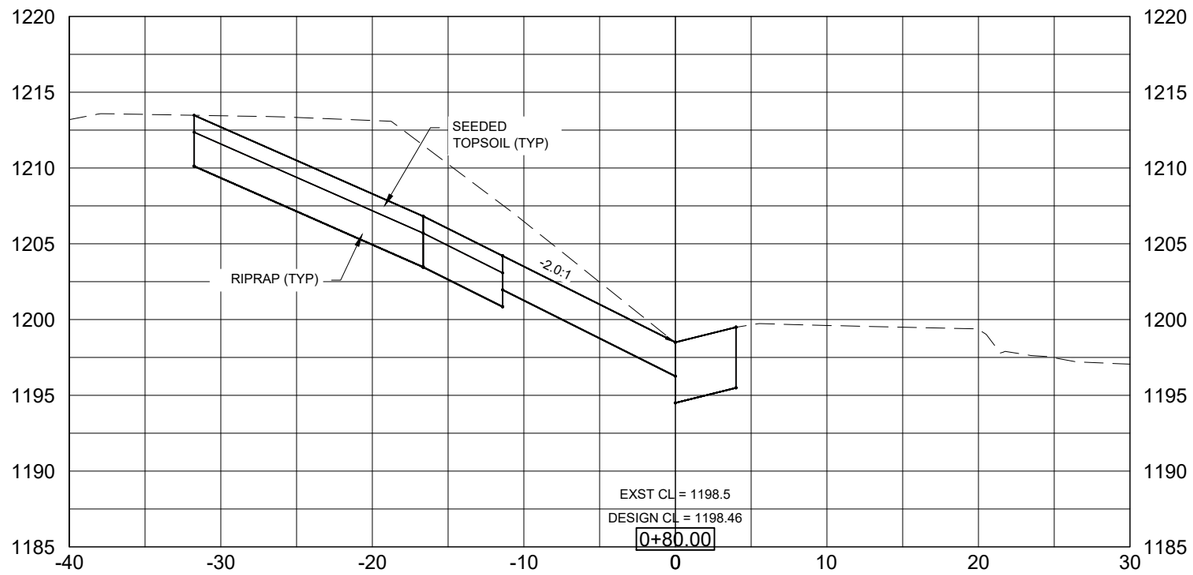
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-5





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL2 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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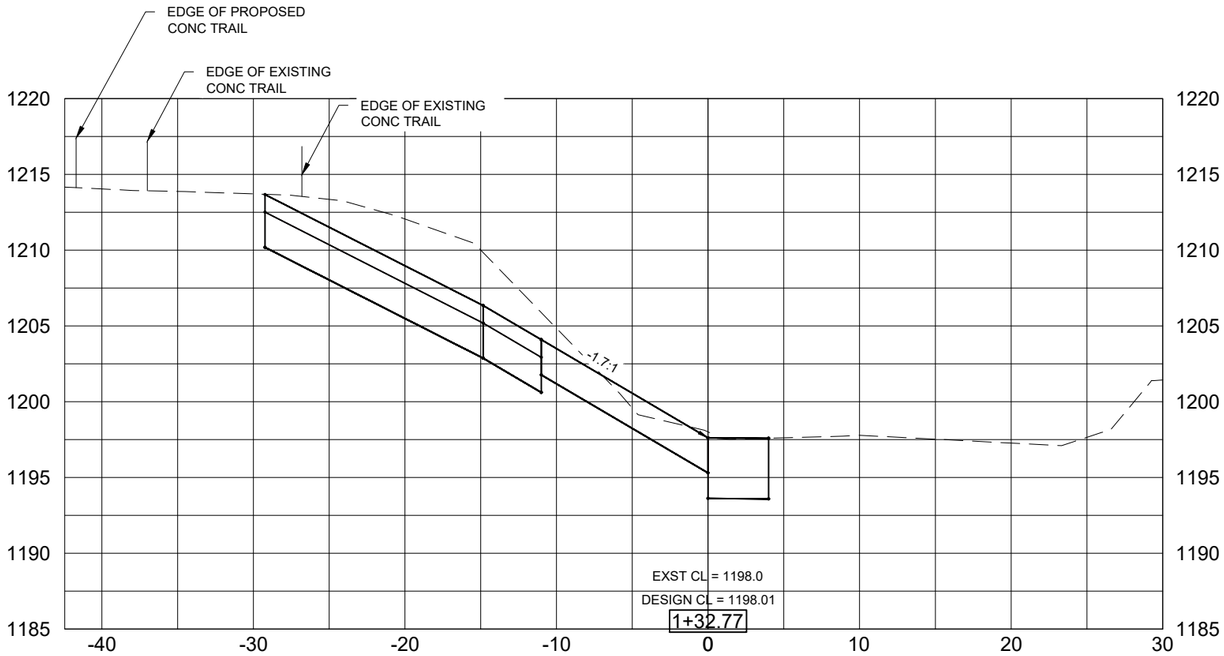
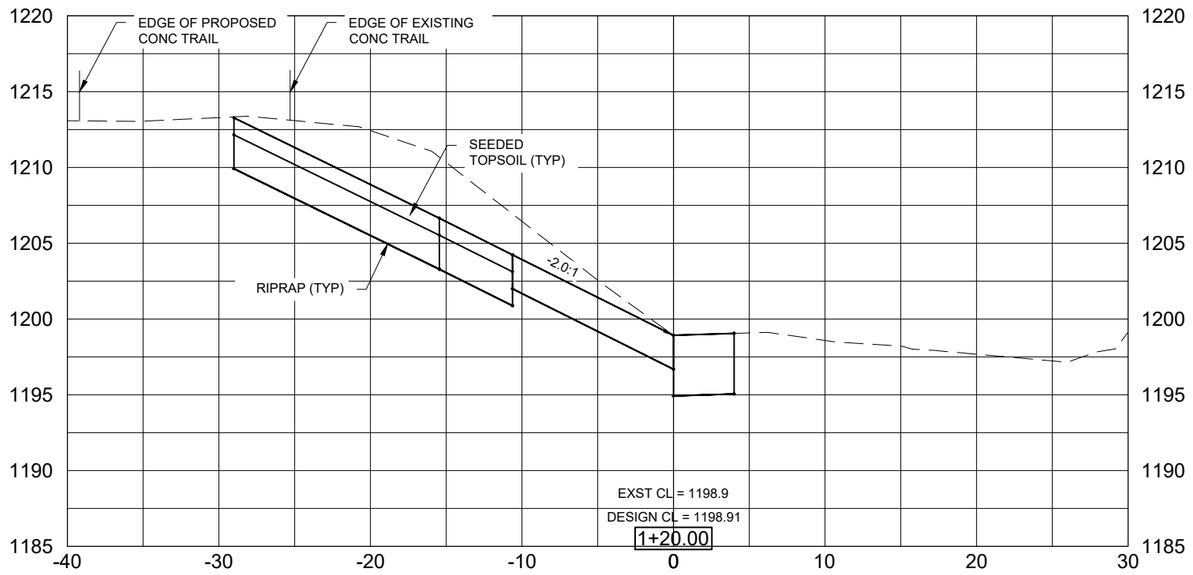
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-6





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL2 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
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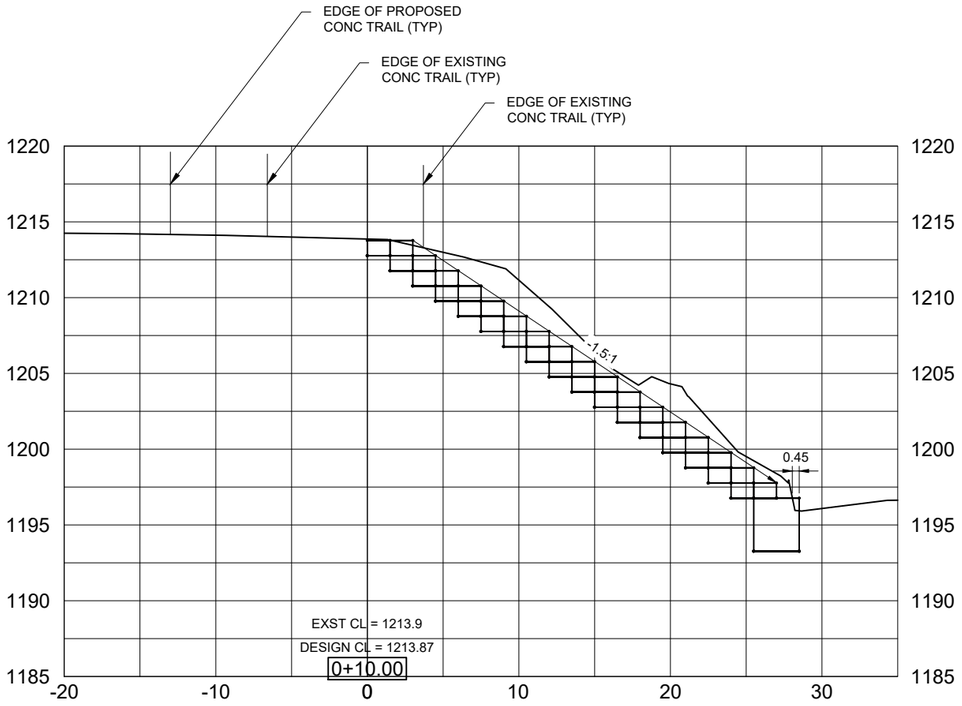
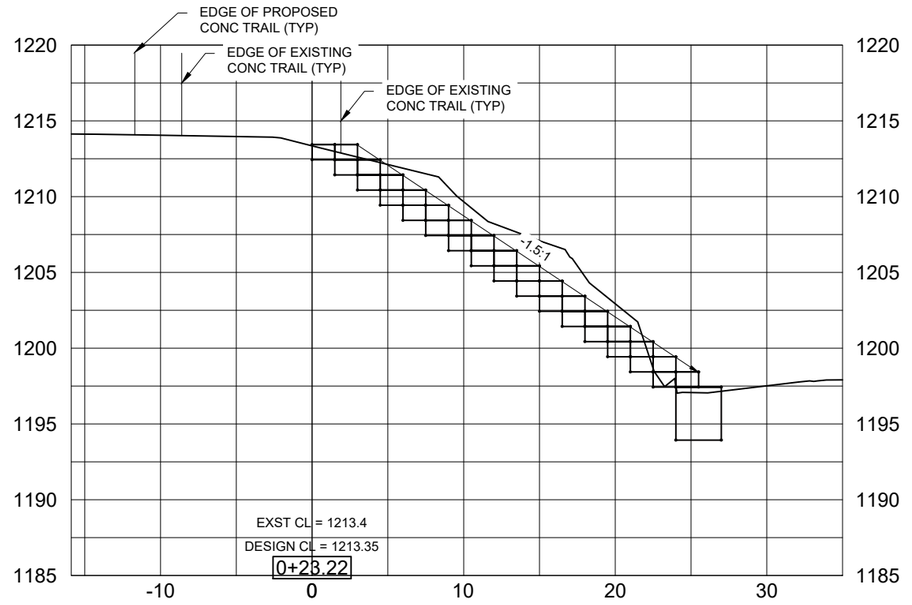
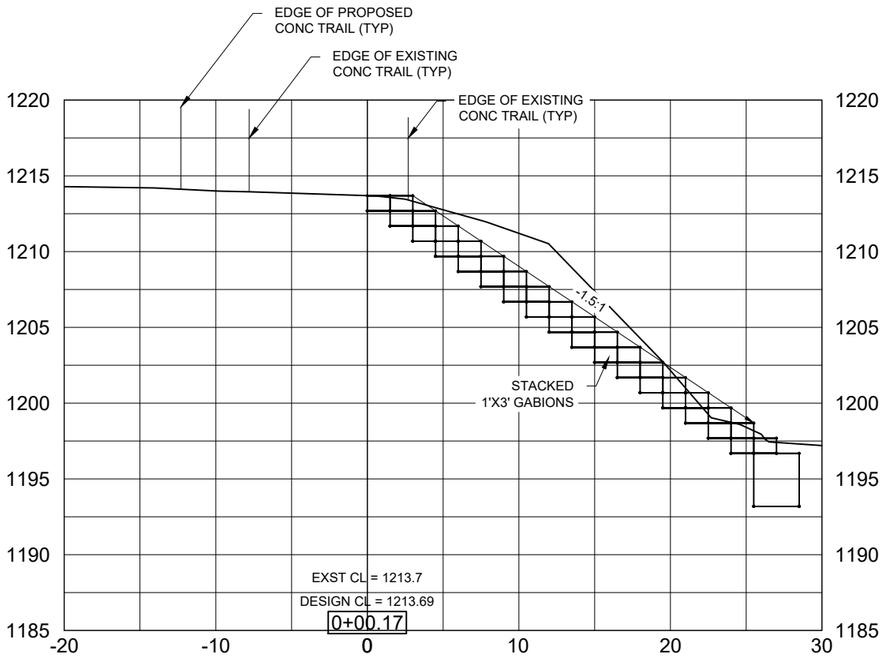
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

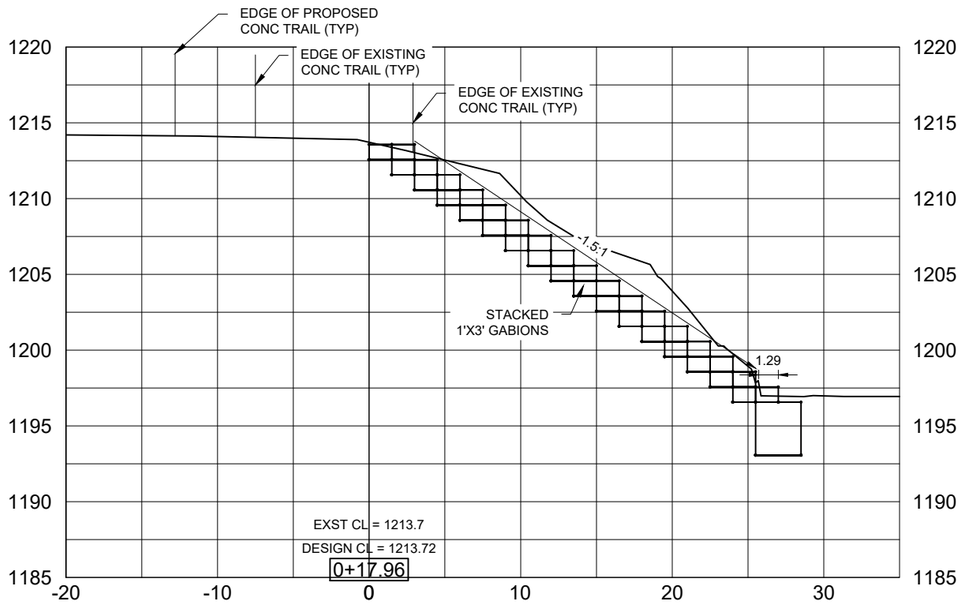
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-7









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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
G-UL3 CROSS SECTIONS - REACH G
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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10-11-2022

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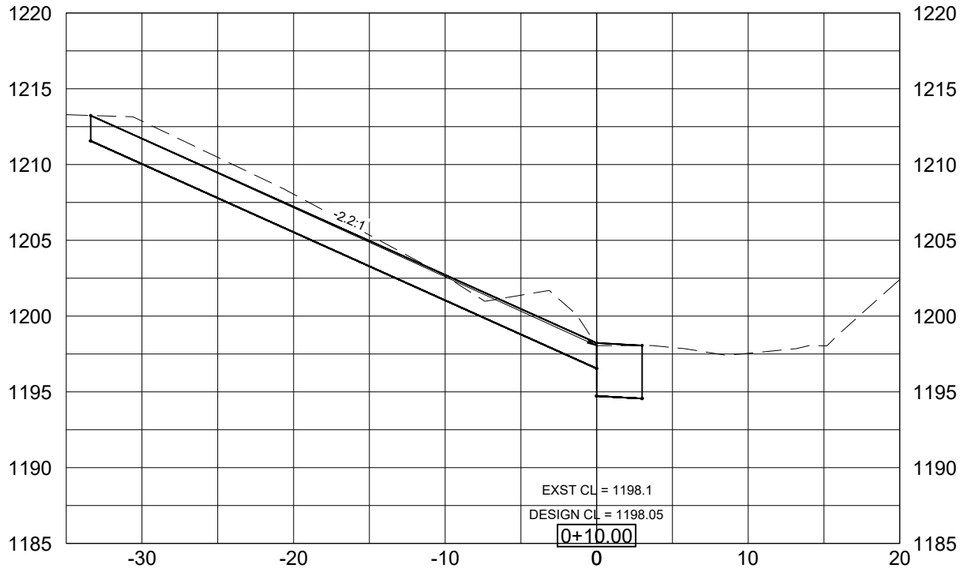
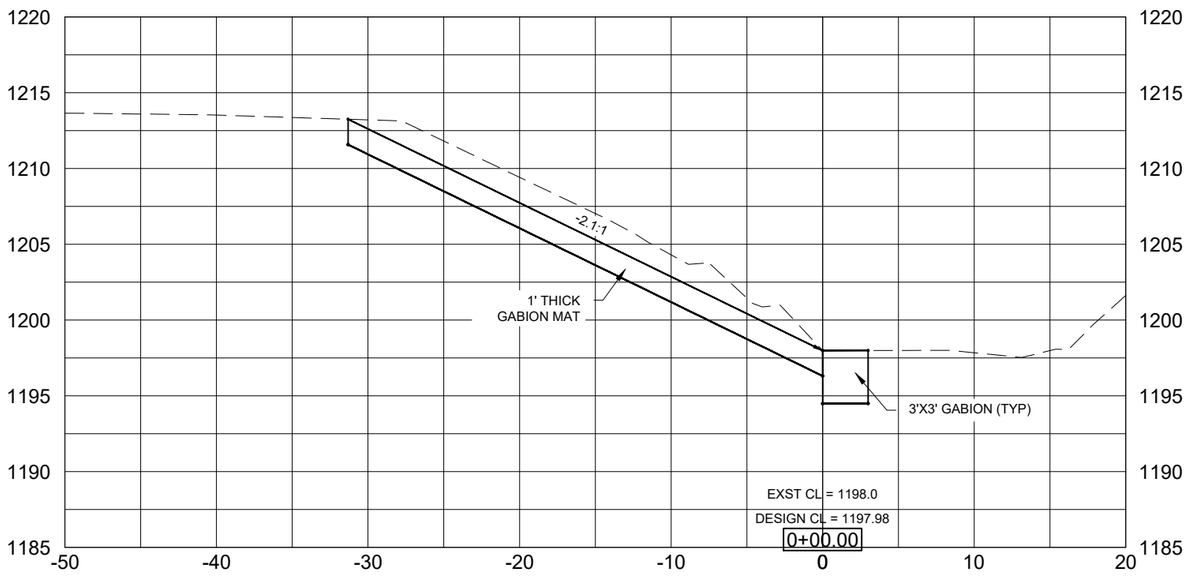
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-8





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL4 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

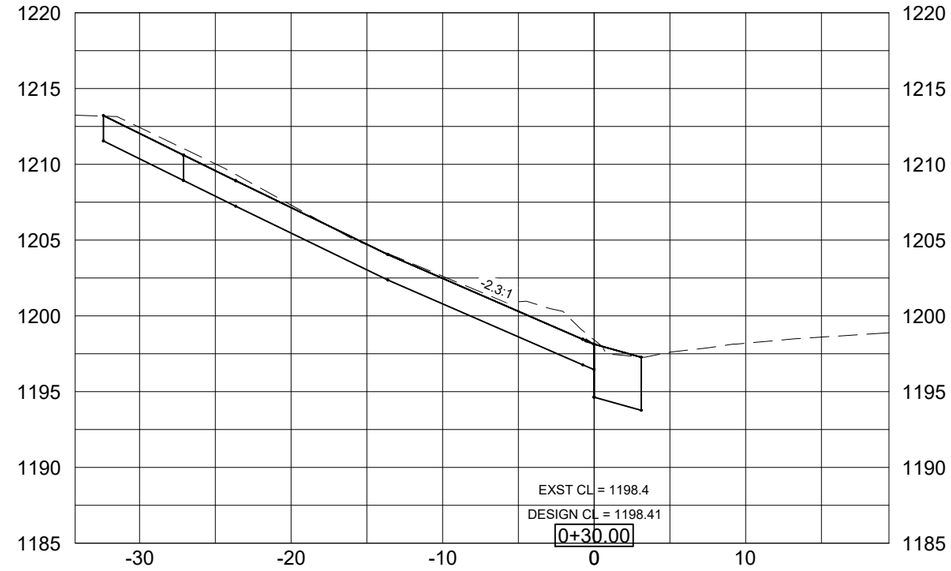
REV.	DATE	DESCRIPTION

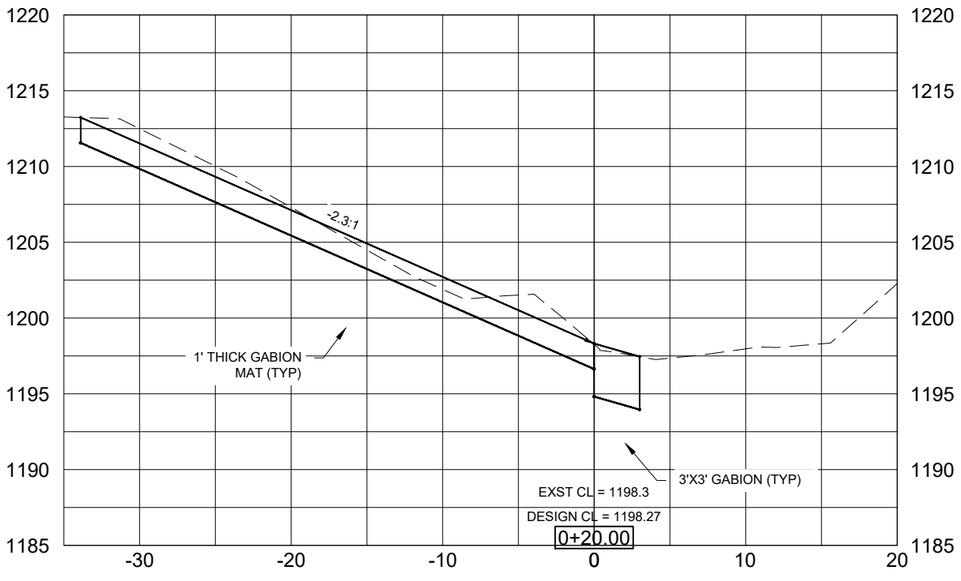
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No,:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-9





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL4 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

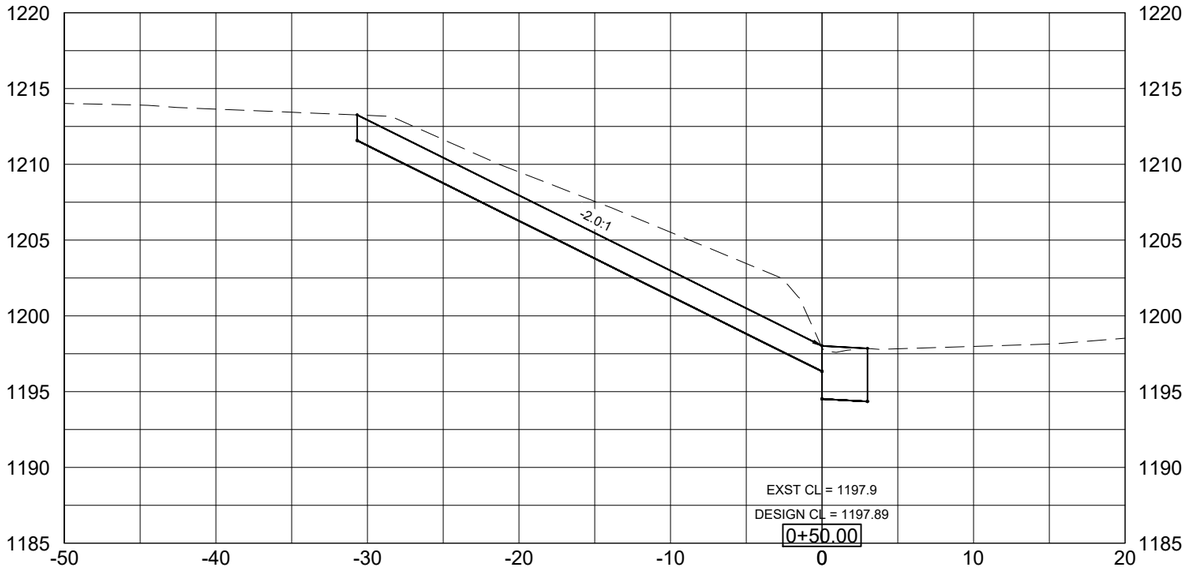
REV.	DATE	DESCRIPTION

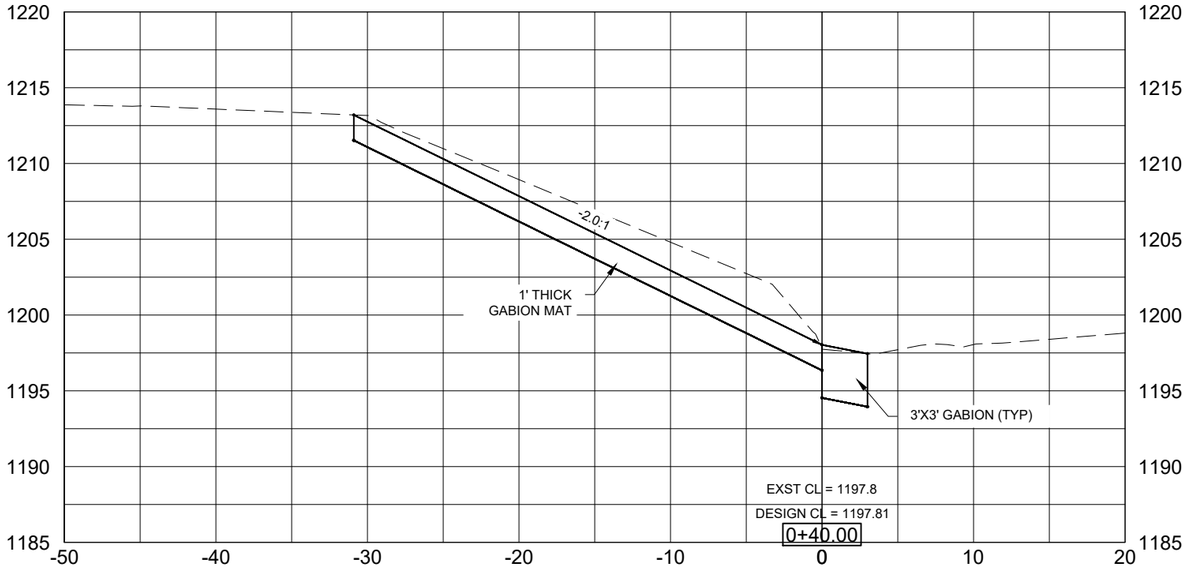
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8160
KENT R. KOHLHAAS
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-10





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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL4 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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KENT R. KOHLHAAS
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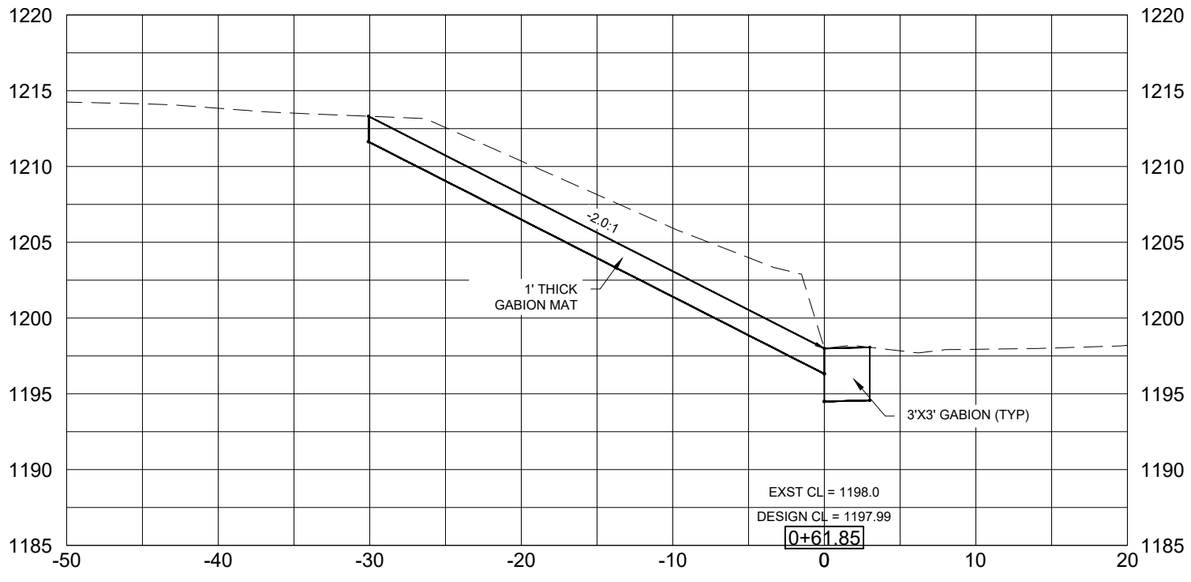
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-11



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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UL4 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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DATE:	OCTOBER 2022
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DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
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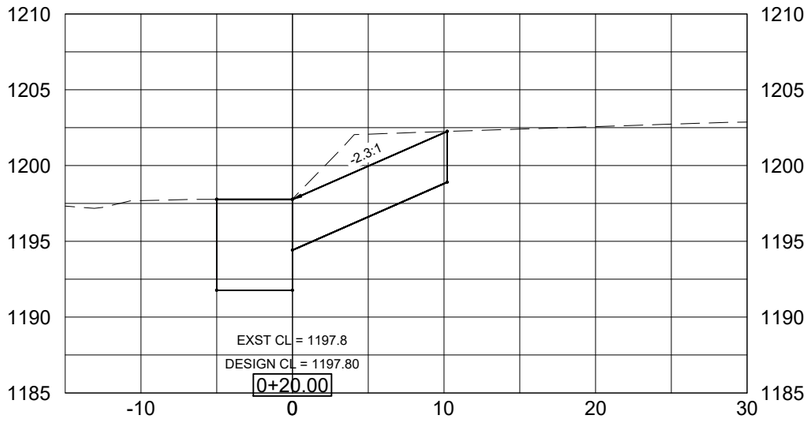

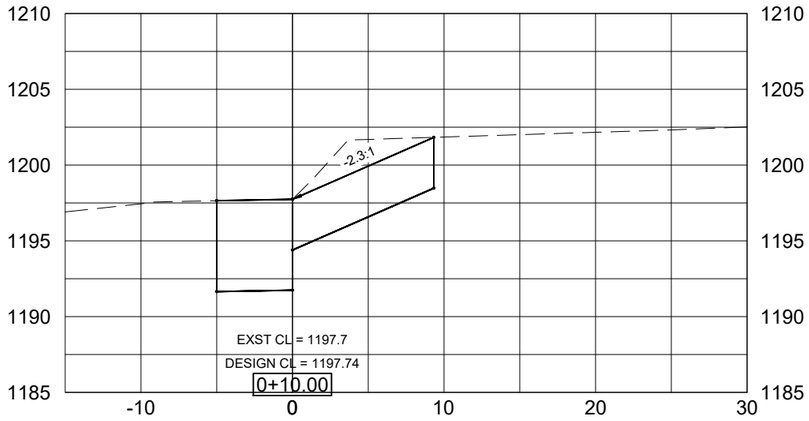

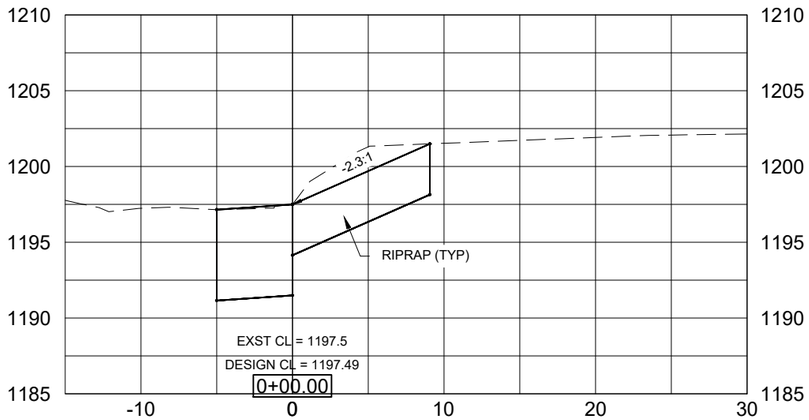

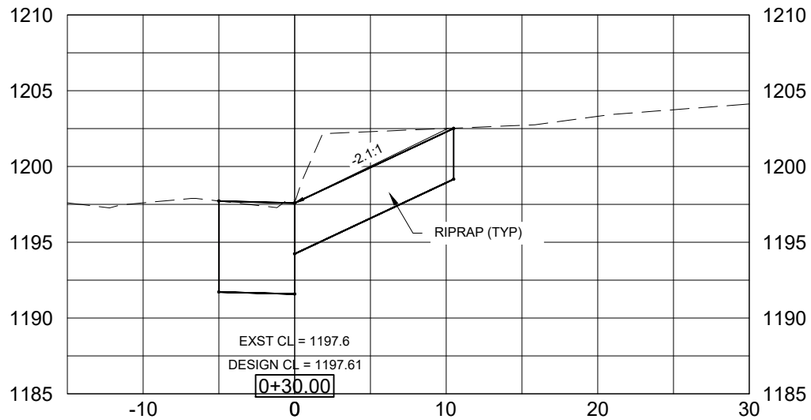

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UR1 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

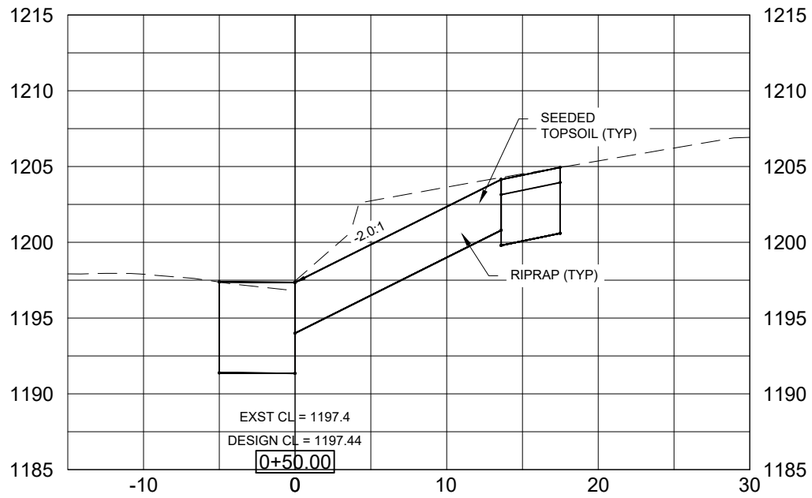
REV.	DATE	DESCRIPTION

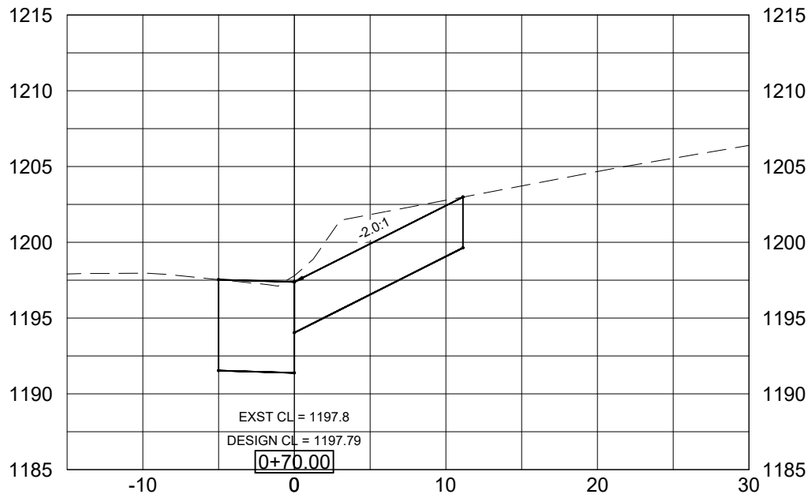
REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

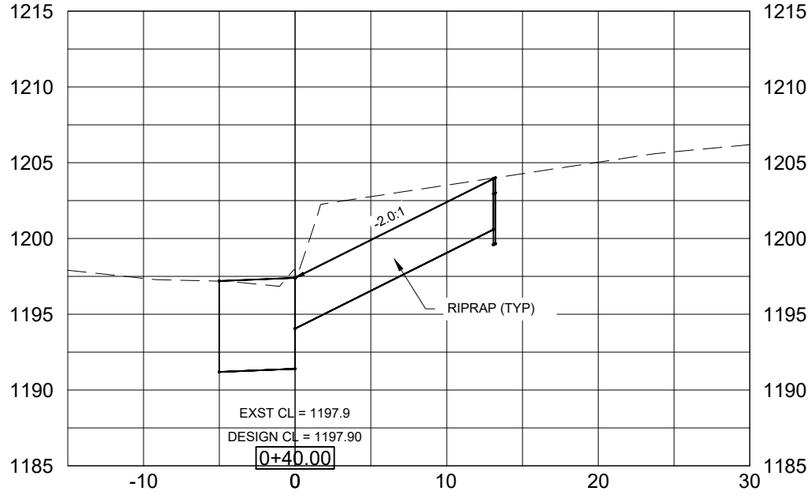
JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

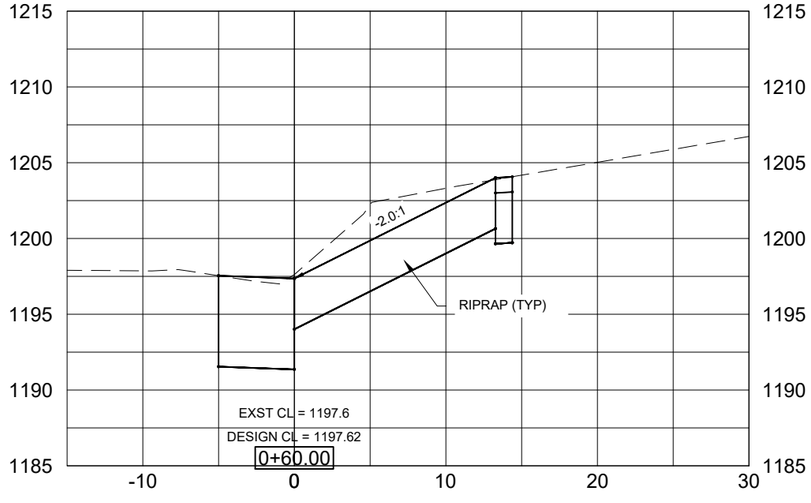
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-13









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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION
G-UR1 CROSS SECTIONS - REACH G
YANKTON, SOUTH DAKOTA

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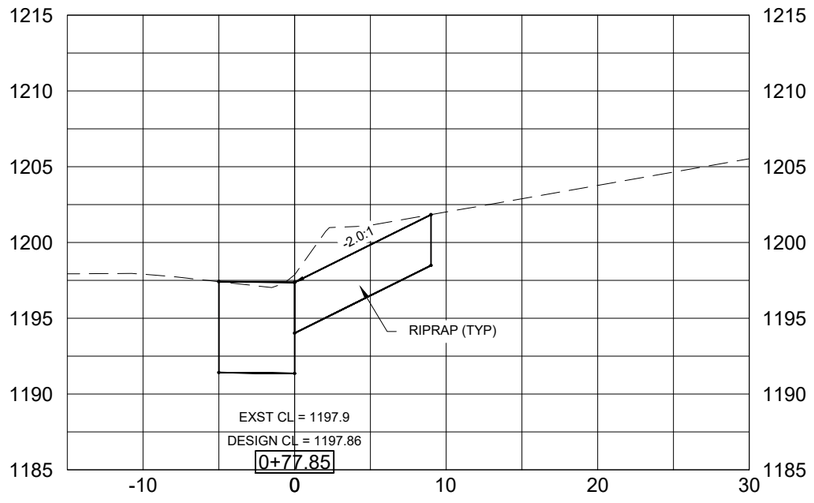
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-14



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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

G-UR1 CROSS SECTIONS - REACH G

YANKTON, SOUTH DAKOTA

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JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0" 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(G)M-15

LEGEND

CITY OWNED PROPERTY

NOTES:
1. SHOWN BOUNDARY IS FROM CITY OF YANKTON GIS INFORMATION
2. NO CITY OWNED PROPERTY IS PRESENT IN REACH J

HORIZONTAL DATUM:
- NAD 83
- PROJECTION: SOUTH DAKOTA STATE PLANE COORDINATES SOUTH ZONE

VERTICAL DATUM:
- NAVD 88
- GEOID 18

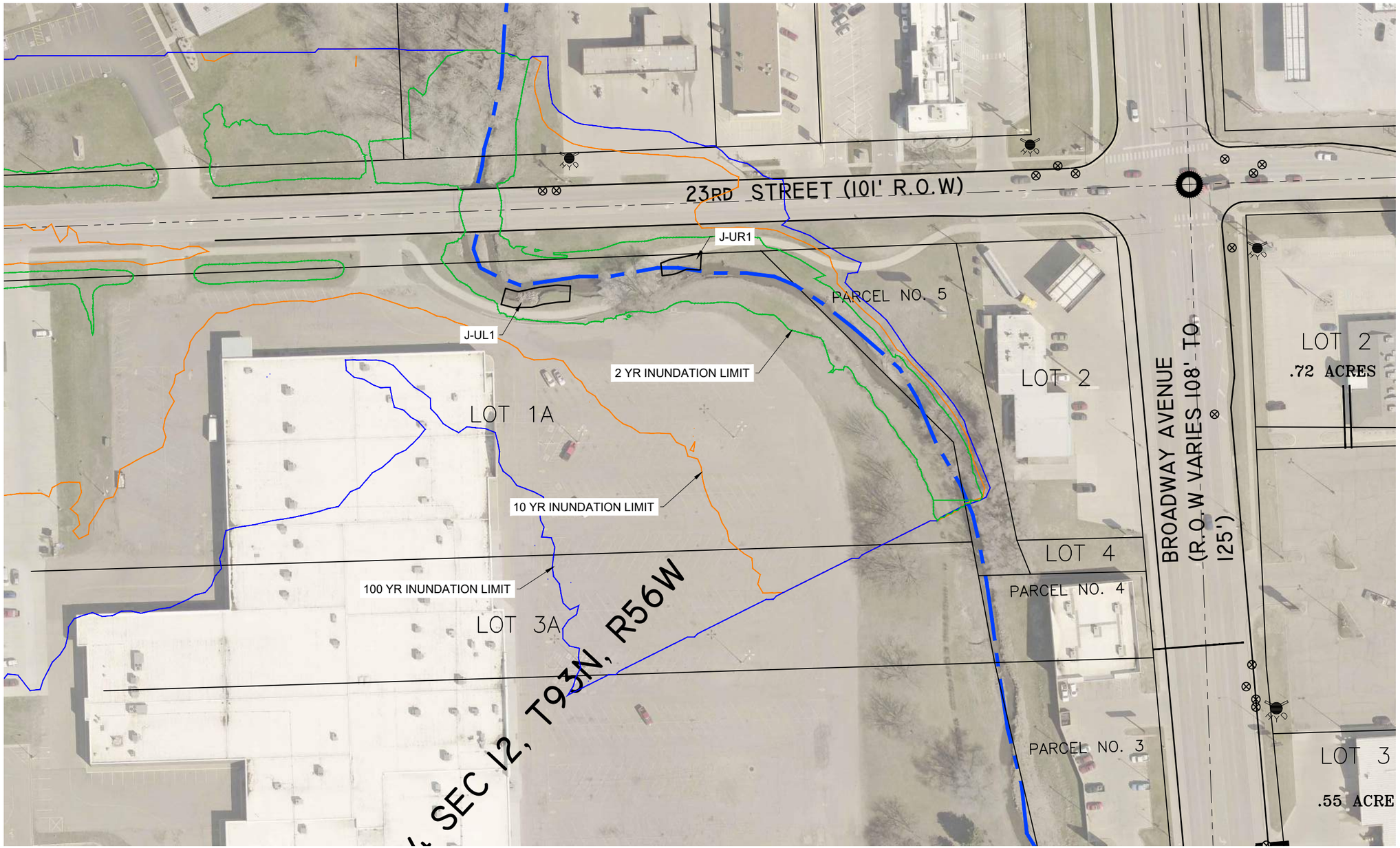
BASIS OF BEARING: GEODETIC NORTH

ALL DIMENSIONS SHOWN ARE IN TERMS OF U.S. SURVEY FEET

SURVEY DATE: NOVEMBER 2020

AERIAL IMAGERY BACKGROUND SHOWN ON ALL PLAN SHEETS IS FROM UAS (DRONE), ACQUIRED OCTOBER, 2020.

N 0 50 100 FT



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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
BOUNDARY MAP - REACH J
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)A-1

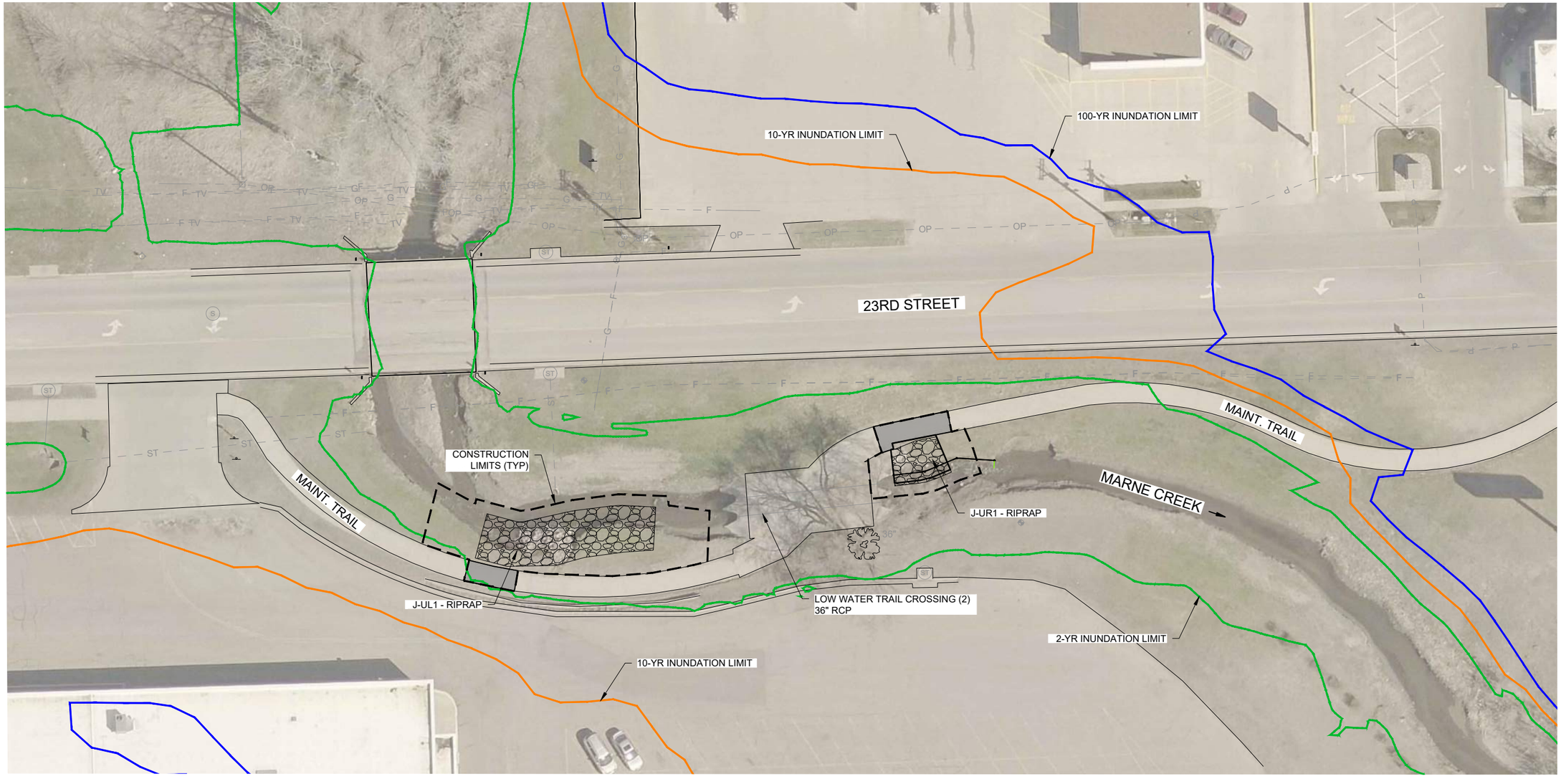
Quantities (Reach J)			
Description of Work	J-UL1	J-UR1	Units
Riparian Pole Planting	320	114	Ea
6" Reinforced Concrete Sidewalk	144	366	SqFt
Class B Riprap	238.7	56	Ton
Type B Drainage Fabric	148	32	SqYd
Unclassified Excavation	167	45	CuYd
Strip and Stopckpipe Topsoil	15	5	CuYd
Clearing	0.04	0.01	Ac

IMPROVEMENTS LEGEND

- RIPRAP W/LIVE STAKES
- RIPRAP COVERED W/TOPSOIL, CONTANERIZED PLANTINGS, AND REVEGETATED W/EROSION CONTROL BLANKET
- PERMANENT TURF REINFORCING MAT
- GABIONS
- 6" REINFORCED CONCRETE SIDEWALK

N

0 20 40 FT



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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION
OVERVIEW MAP - REACH J
YANKTON, SOUTH DAKOTA

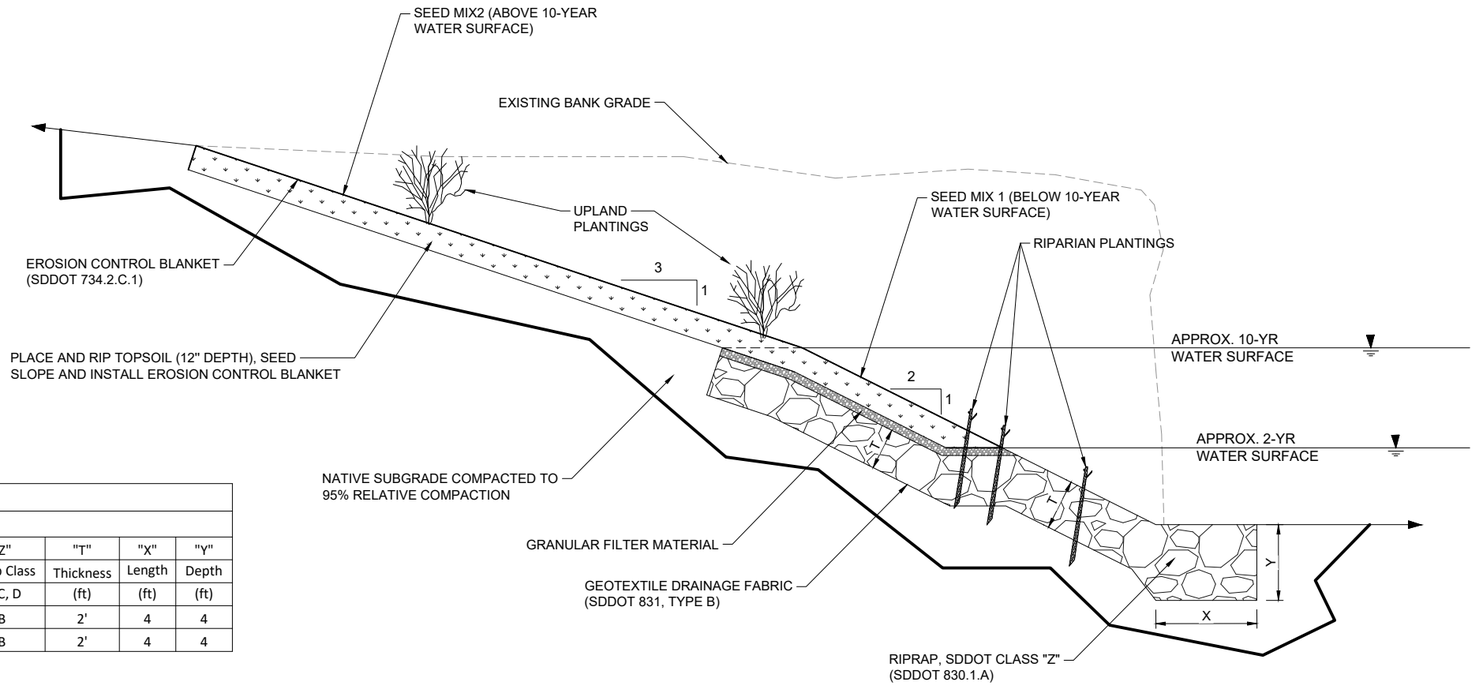
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)A-2



Reach J							
Riprap Design							
				"Z"	"T"	"X"	"Y"
Site	Location	Station Start	Station End	Riprap Class	Thickness	Length	Depth
				B, C, D	(ft)	(ft)	(ft)
J-UL1	Outside Bend	0+00	0+64	B	2'	4	4
J-UL2	Straight	0+18	0+38	B	2'	4	4

STREAM BANK TREATMENT TYPICAL SECTION

SCALE: NONE

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
TYPICAL SECTION - REACH J
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)C-1

EROSION CONTROL QUANTITIES	
100 SY	EROSION CONTROL BLANKET
80 LF	STRAW WATTLE
1 LB	SEED MIX 1
7 LB	SEED MIX 2

EROSION CONTROL LEGEND

- EROSION CONTROL BLANKET W/SEED MIX 1
- EROSION CONTROL BLANKET 2/SEED MIX 2
- STRAW WATTLE
- SILT FENCE
- ORANGE CONSTRUCTION FENCE

N

0 20 40 FT

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PROJECT / SHEET TITLE:
MARNE CREEK BANK STABILIZATION
EROSION CONTROL LAYOUT - REACH J
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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SOUTH DAKOTA
10-11-2022

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0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)G-1

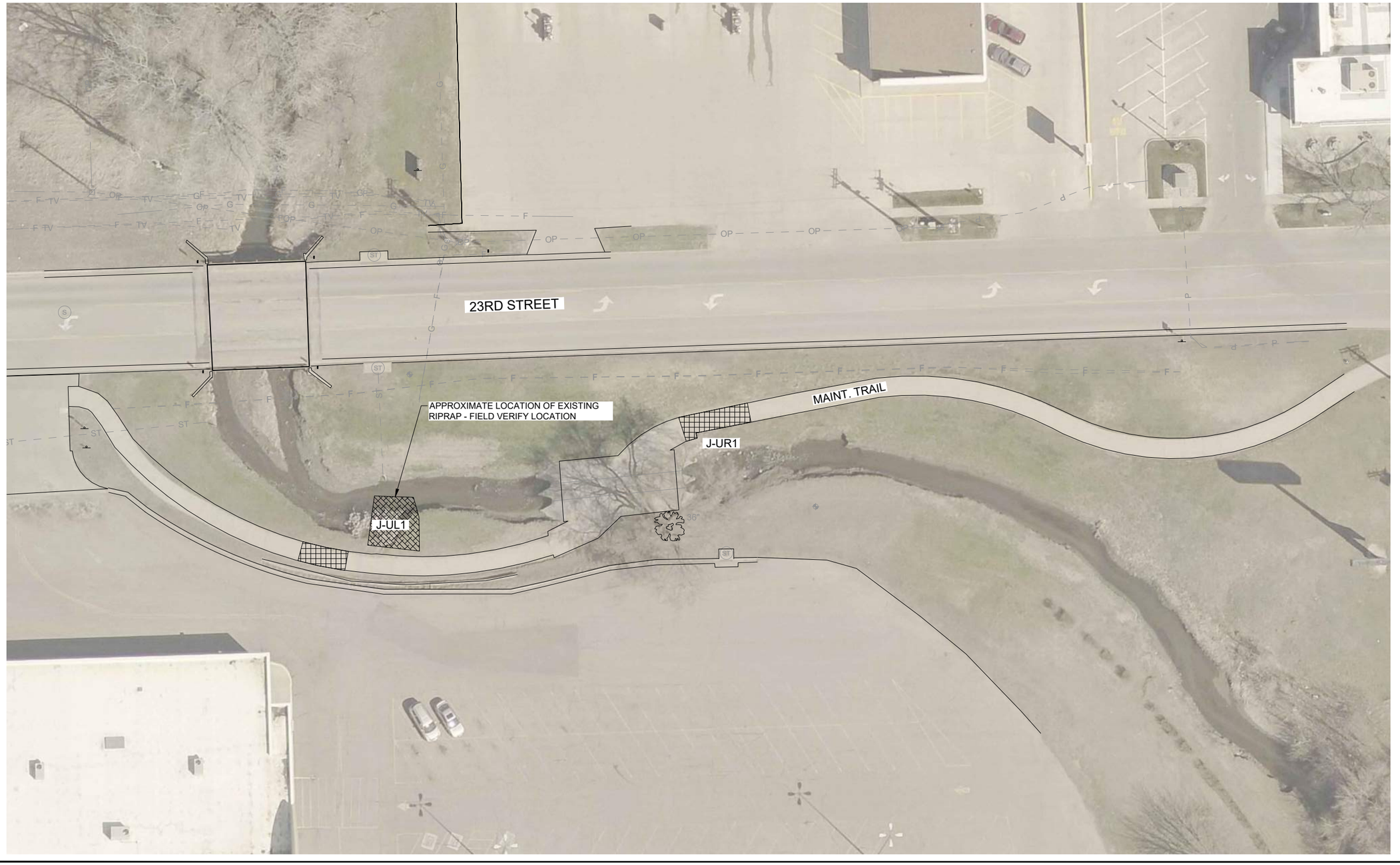
REMOVAL QUANTITIES	
57 SY	REMOVE CONCRETE PATH
43 SY	REMOVE & SALVAGE RIPRAP

TREE REMOVAL QUANTITIES REACH C ALL SITES	
0 EA	CLEAR & GRUB TREE 6" - 12"
0 EA	CLEAR & GRUB TREE 13" - 24"
0 EA	CLEAR & GRUB TREE 25" - 36"
0 EA	CLEAR & GRUB TREE 37" - 48"

REMOVAL LEGEND

- CLEAR AND GRUB EXISTING SHRUBS AND SMALL TREES IN THIS AREA
- REMOVE EXISTING CONCRETE PATH
- REMOVE EXISTING GABION BASKETS AND ROCK
- REMOVE EXISTING RIPRAP - SALVAGE FOR REUSE

N 0 20 40 FT



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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
EXISTING SITE CONDITIONS AND REMOVALS - REACH J
YANKTON, SOUTH DAKOTA

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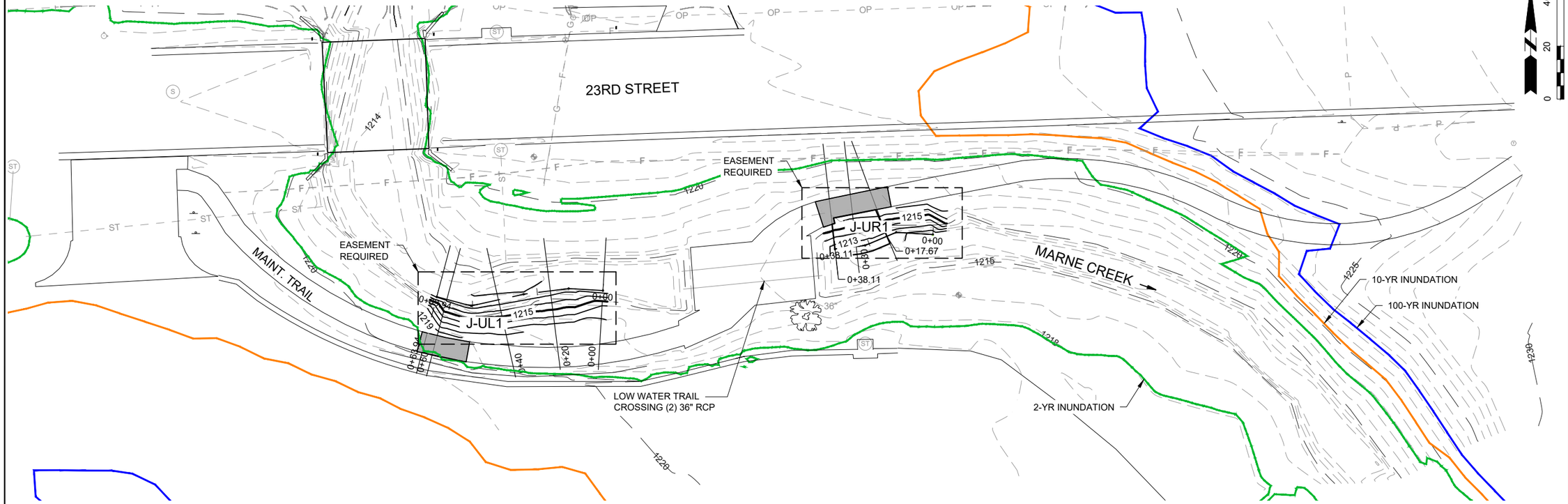
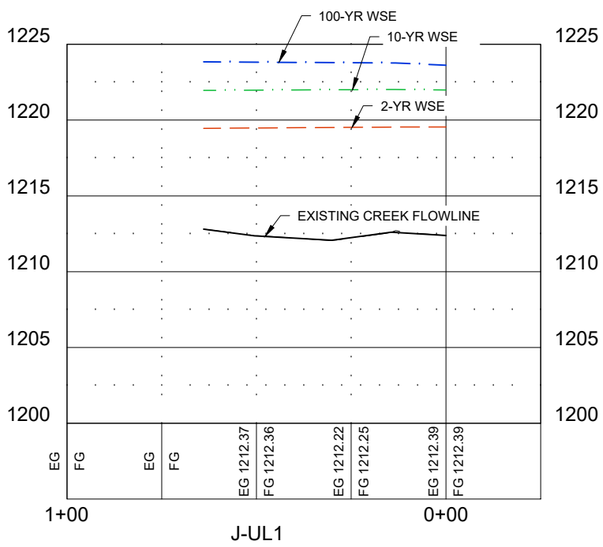
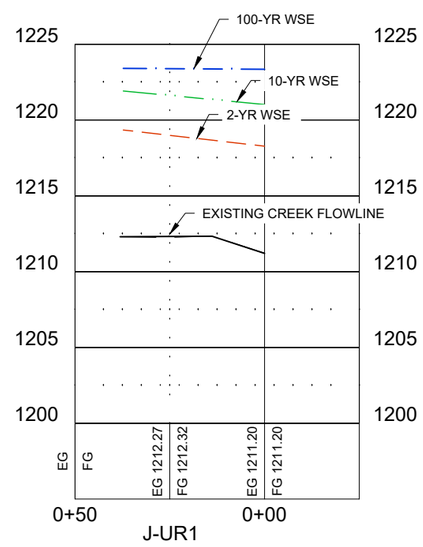
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)H-1







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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

J-UL1, J-UR1 PLAN & PROFILE GRADING - REACH J

YANKTON, SOUTH DAKOTA

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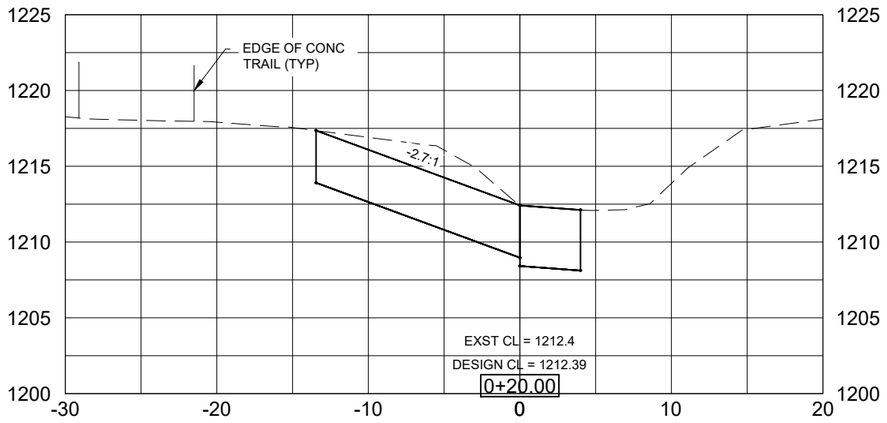
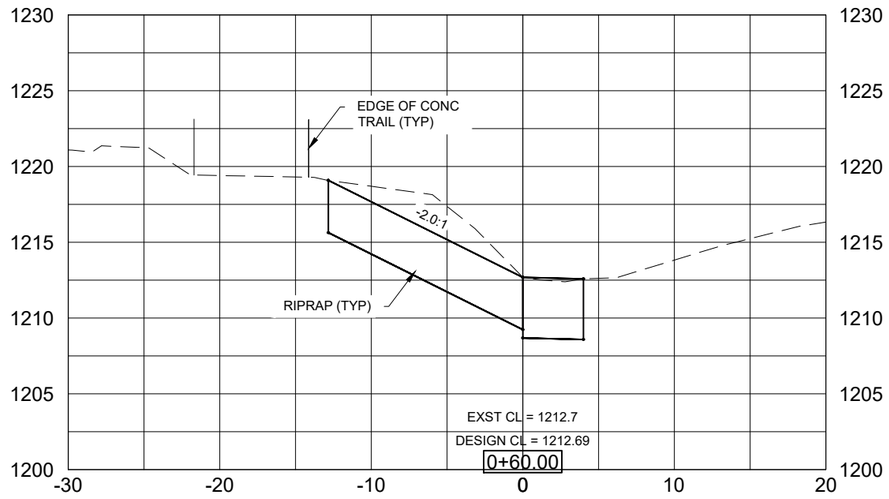
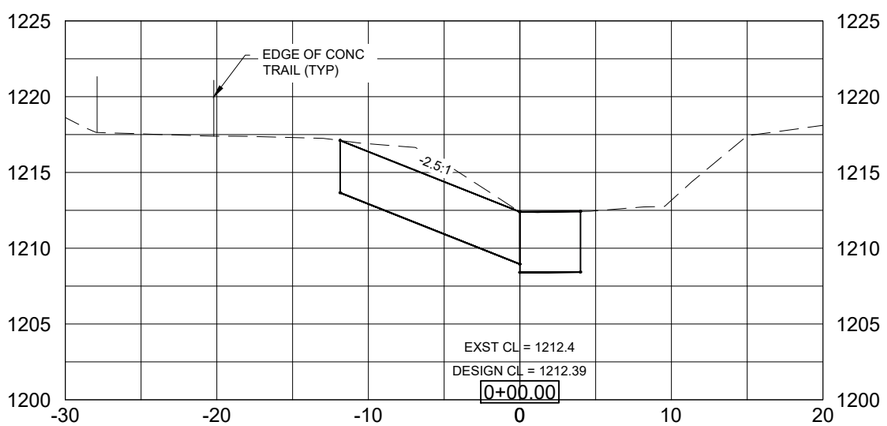
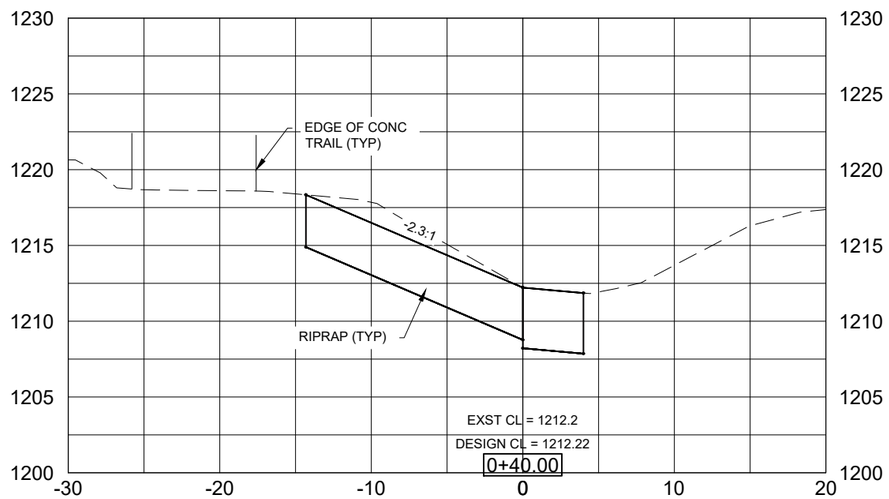
SCALE REDUCTION BAR

SHEET No. :
(J)J-1









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MARNE CREEK BANK STABILIZATION

J-UL1 CROSS SECTIONS - REACH J

YANKTON, SOUTH DAKOTA

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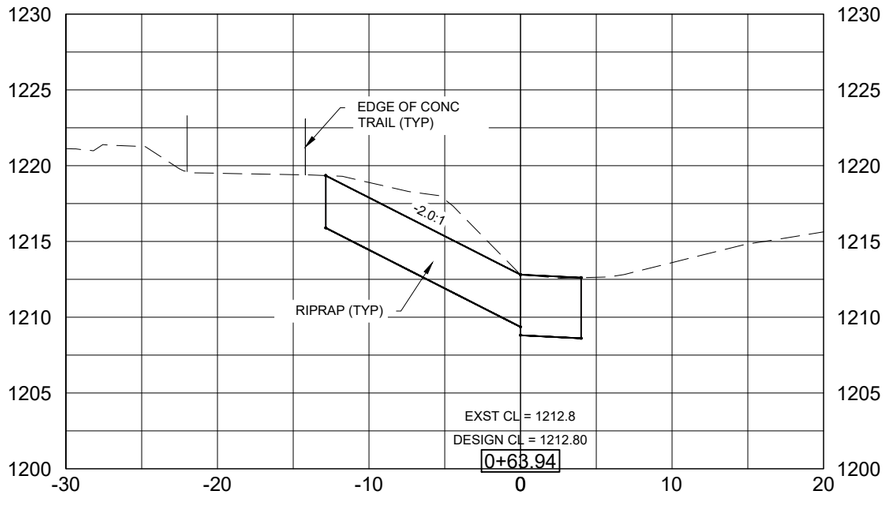
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)M-1



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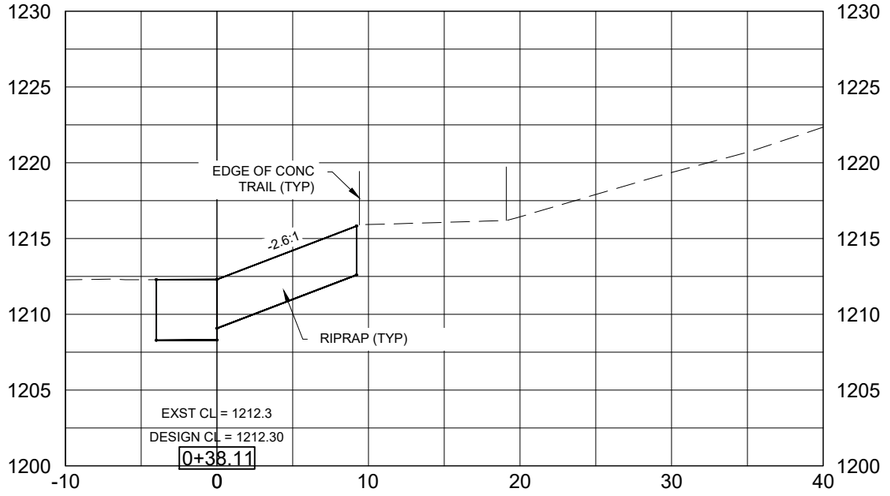
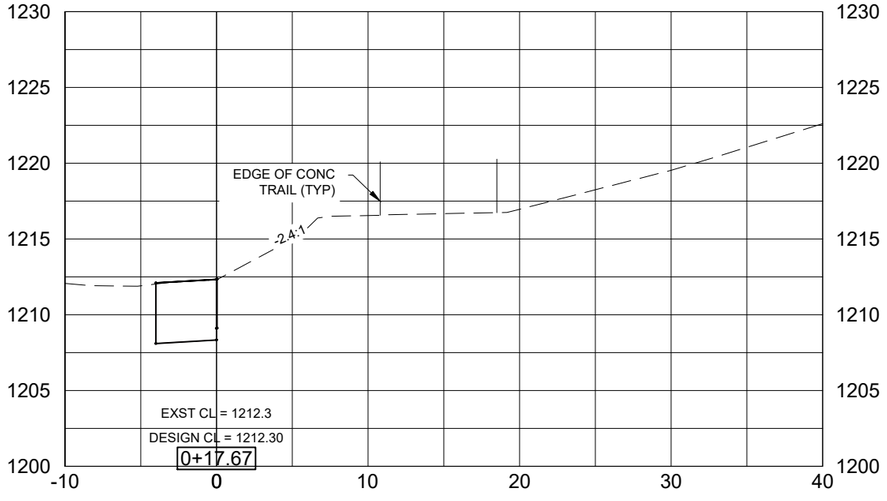
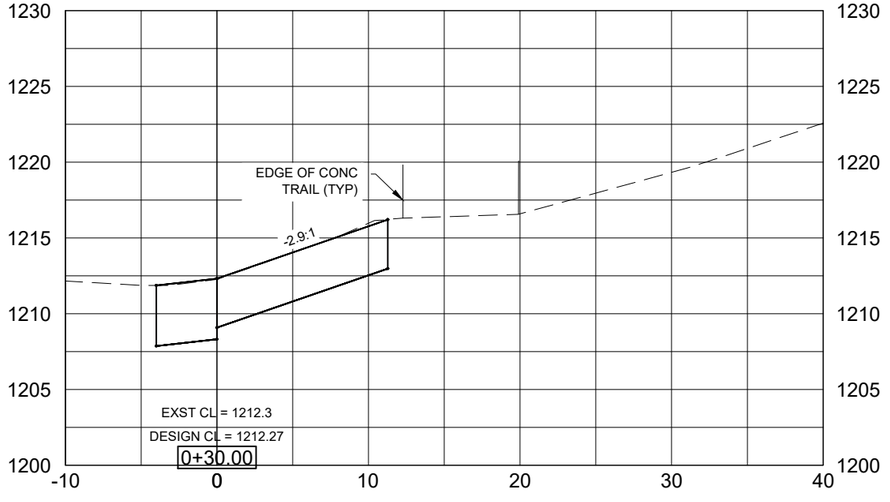
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)M-2







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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

J-UR1 CROSS SECTIONS - REACH J

YANKTON, SOUTH DAKOTA

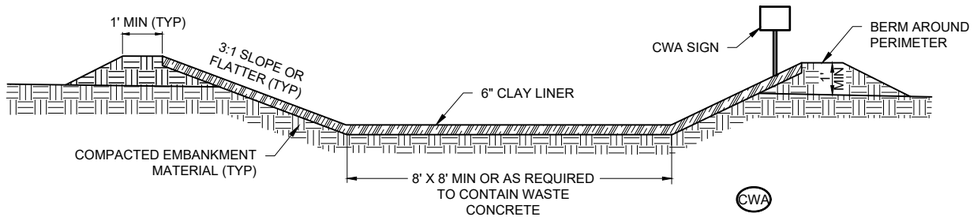
REV.	DATE	DESCRIPTION

REGISTERED PROFESSIONAL ENGINEER
REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

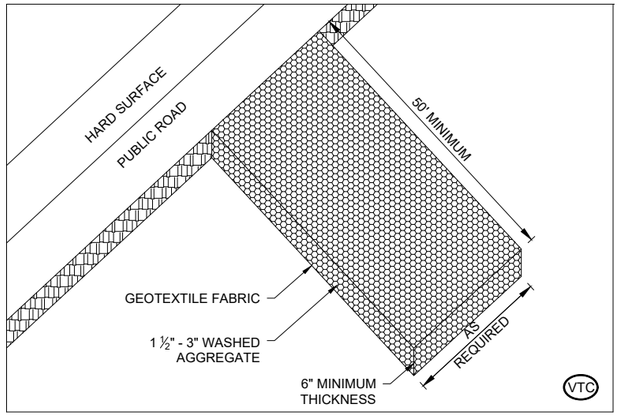
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
(J)M-3



CONCRETE WASHOUT AREA

SCALE: NONE



TEMPORARY VEHICLE TRACKING CONTROL

SCALE: NONE

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PROJECT / SHEET TITLE :

MARNE CREEK BANK STABILIZATION

PROJECT DETAILS

YANKTON, SOUTH DAKOTA

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REG NO. 8160
KENT R. JOHNSON
SOUTH DAKOTA
10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-1

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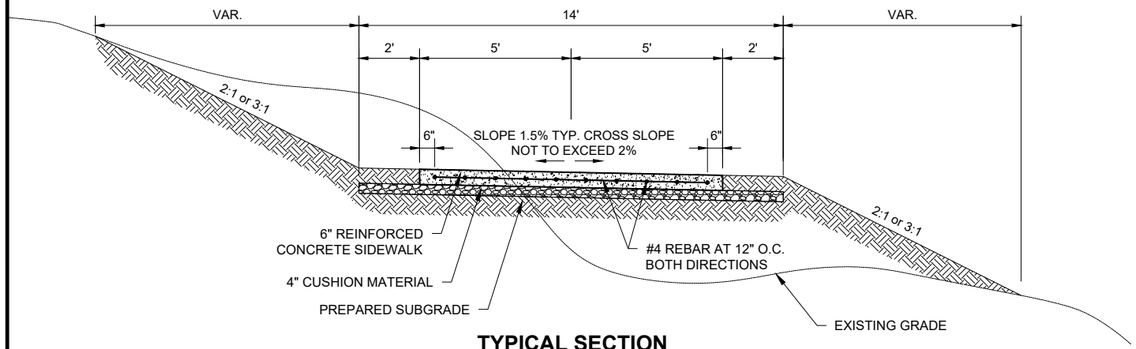
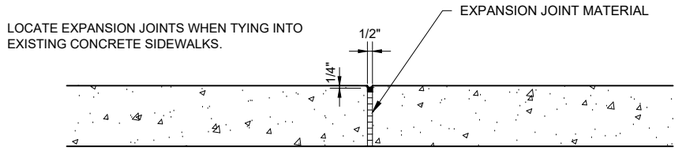
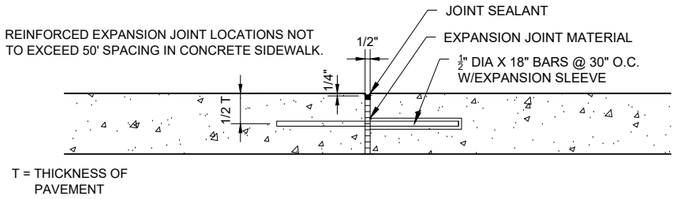


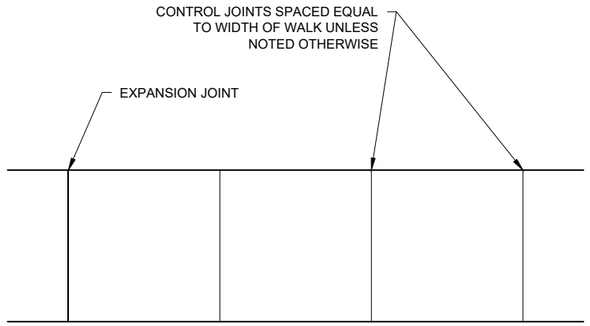
TYPICAL SECTION
MAINTENENCE TRAIL
NOT TO SCALE



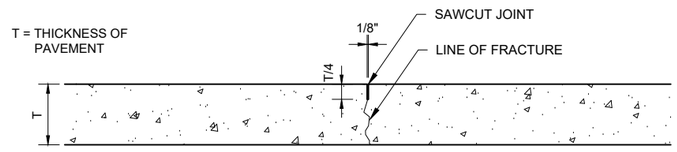
EXPANSION JOINT
NOT TO SCALE



REINFORCED EXPANSION JOINT
NOT TO SCALE

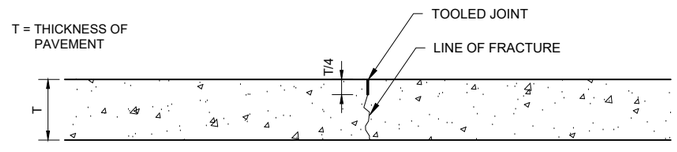


6" CONCRETE WALK
NOT TO SCALE



SAWCUT CONTROL JOINT

SAWCUT JOINTS IN SIDEWALK NOT TO EXCEED 10', SEAL AND FILL JOINTS.



TOOLED CONTROL JOINT

TOOLED JOINTS SHALL BE CONSTRUCTED AT A MINIMUM DEPTH OF ONE INCH BY SCORING WITH A TOOL WHICH WILL LEAVE THE CORNERS ROUNDED AND INSURE A FREE MOVEMENT OF CONCRETE AT THE JOINT.

CONTROL JOINT
NOT TO SCALE

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MARNE CREEK BANK STABILIZATION
PROJECT DETAILS
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

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KENT R. JOHNSON
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10-11-2022

JOB No.:	23371.00
DATE:	OCTOBER 2022
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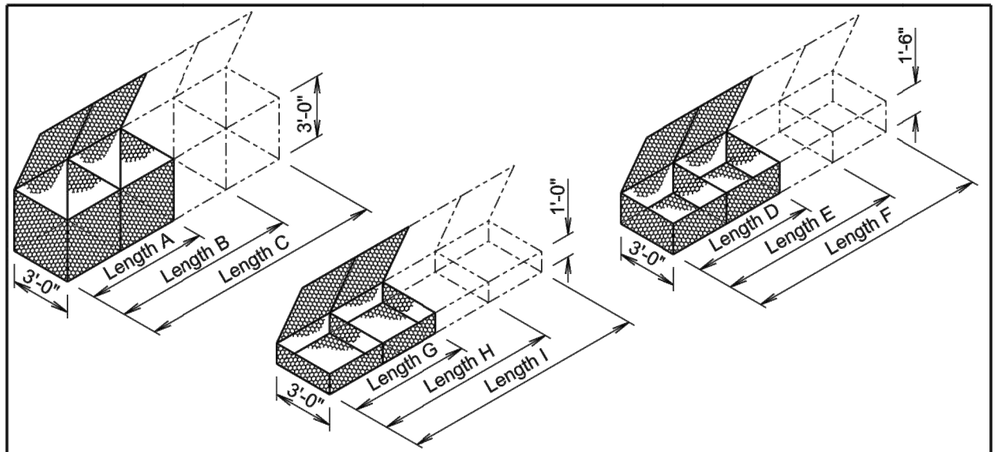
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-2

F:\23371-00\design phase\CADD\sheet file\N - DETAILS.dwg;10/11/2022 12:49 PM



GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

GENERAL NOTES: Above dimensions subject to mill tolerances.

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

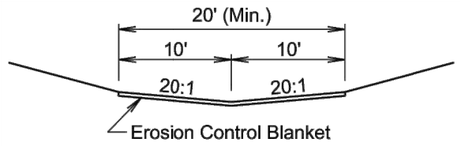
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

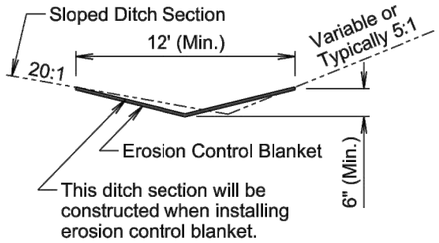
All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

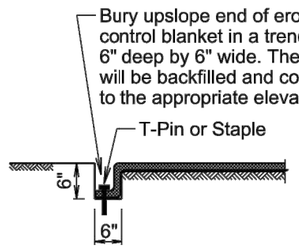
Published Date: 1st Qtr. 2022	SDDOT	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
			Sheet 1 of 1



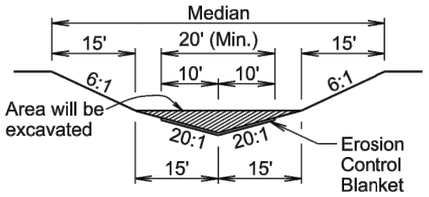
STANDARD DITCH SECTION



SLOPED DITCH SECTION

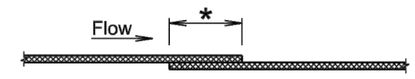


TRENCH DETAIL



The median will be shaped to the limits shown in this detail where the erosion control blanket will be placed.

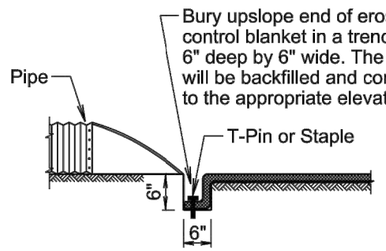
MEDIAN SECTION



* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



PIPE END DETAIL

GENERAL NOTES:

Prior to placement of the erosion control blanket, the areas will be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket will be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket will be buried in a trench 6" wide by 6" deep. There will be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor will fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections will be shaped when installing the erosion control blanket. All costs for shaping the ditches will be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
STANDARD PLATES
YANKTON, SOUTH DAKOTA

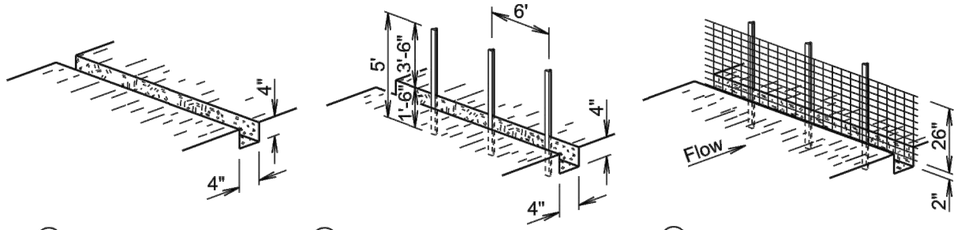
REV.	DATE	DESCRIPTION

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

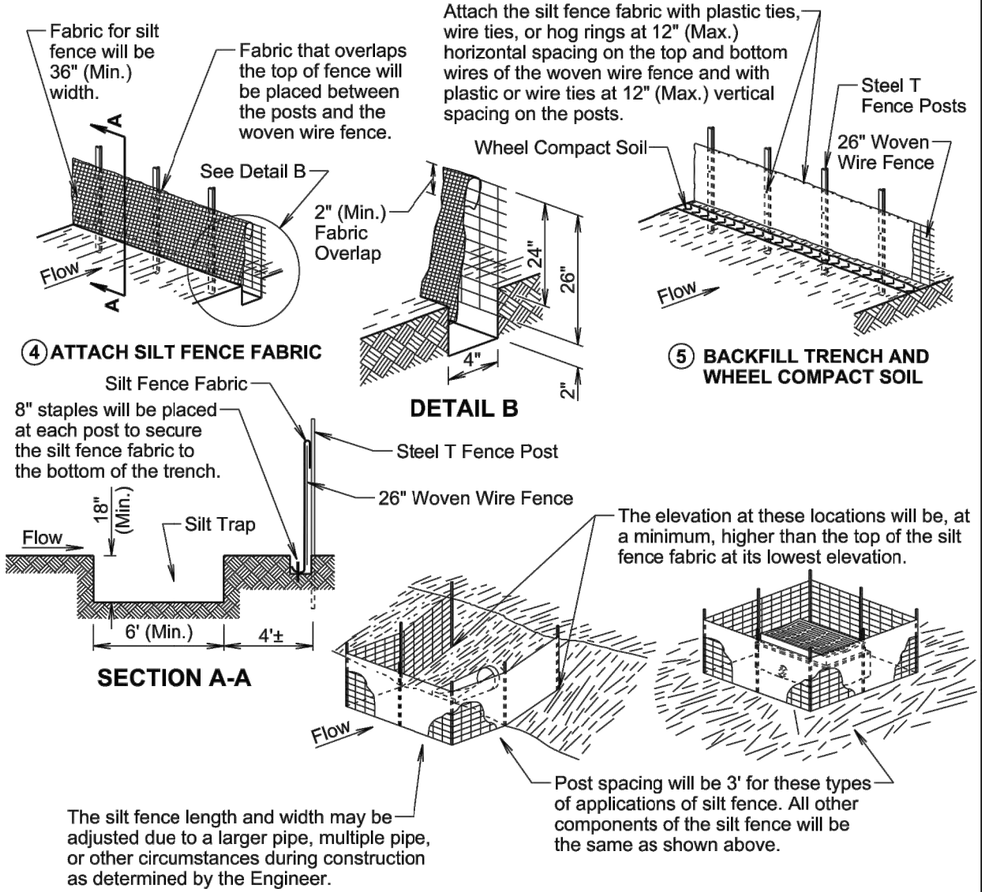
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-3

MANUAL LOW FLOW SILT FENCE INSTALLATION



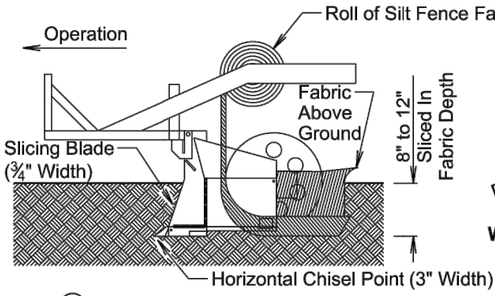
① EXCAVATE TRENCH ② DRIVE STEEL T FENCE POSTS ③ ATTACH 26" WOVEN WIRE FENCE TO POSTS



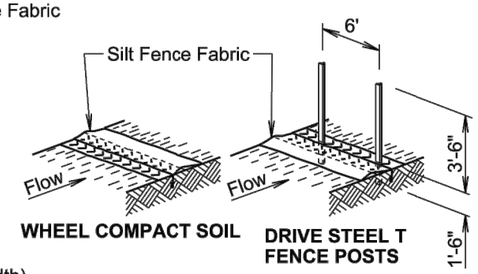
February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

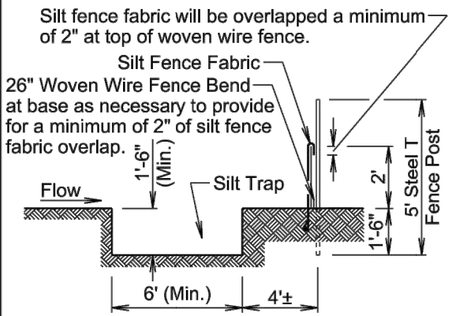
MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION

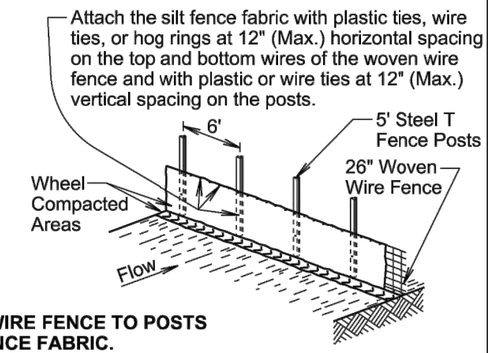


① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

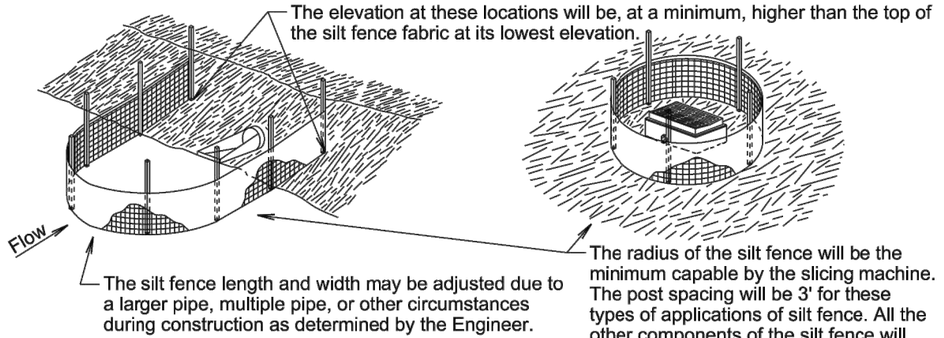


② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.





③ ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.



GENERAL NOTES:

A silt trap will be provided when specified by a plan note. All costs for constructing the silt trap will be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end will be provided on top of the extra length of silt fence fabric to prevent underflow.

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 2 of 2

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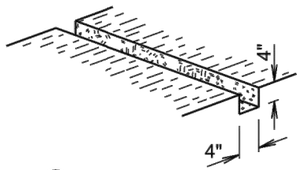
PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
STANDARD PLATES
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

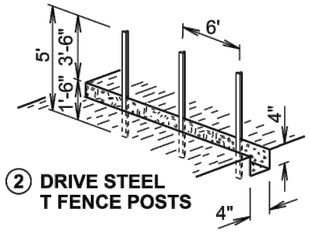
JOB No.: 23371.00
DATE: OCTOBER 2022
ENG / ARCH: KRJ
DESIGNER: TMS
TECHNICIAN: CKM
0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-4

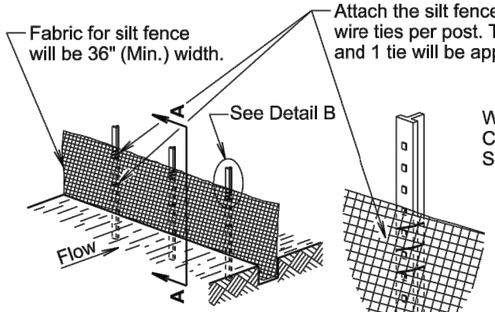
MANUAL HIGH FLOW SILT FENCE INSTALLATION



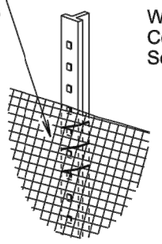
① EXCAVATE TRENCH



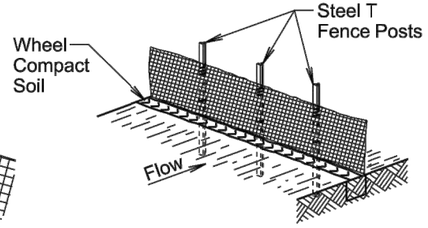
② DRIVE STEEL T FENCE POSTS



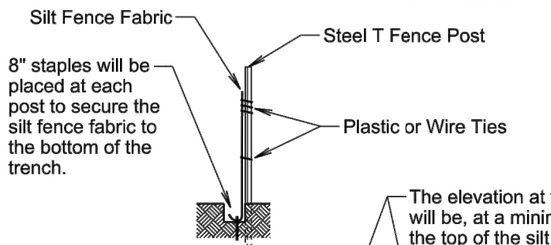
③ ATTACH SILT FENCE FABRIC



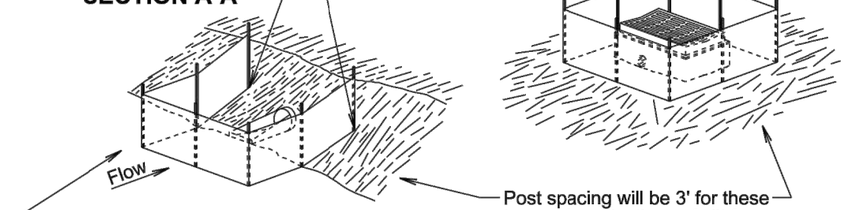
DETAIL B



④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



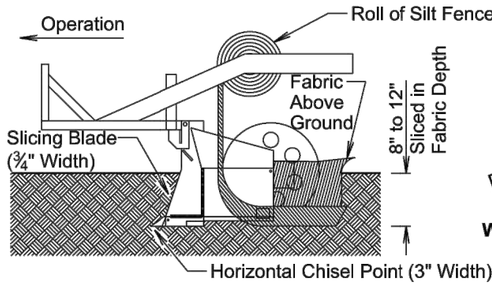
SECTION A-A



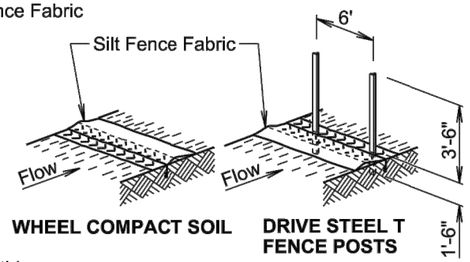
February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION

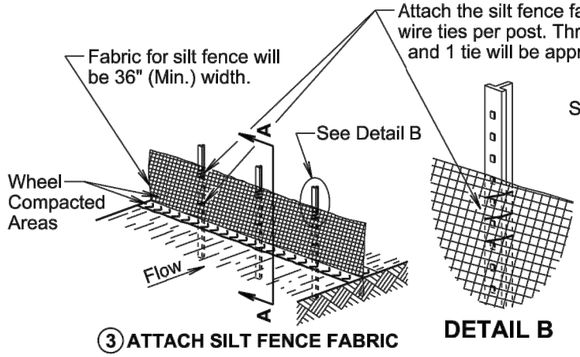


① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



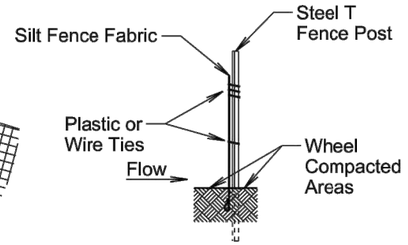
WHEEL COMPACT SOIL — DRIVE STEEL T FENCE POSTS

② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.

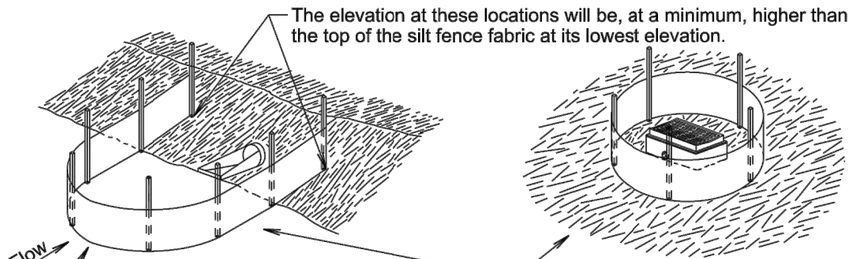


③ ATTACH SILT FENCE FABRIC

DETAIL B



SECTION A-A



GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end will be provided on top of the extra length of silt fence fabric to prevent underflow.

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Published Date: 1st Qtr. 2022	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

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YANKTON, SOUTH DAKOTA

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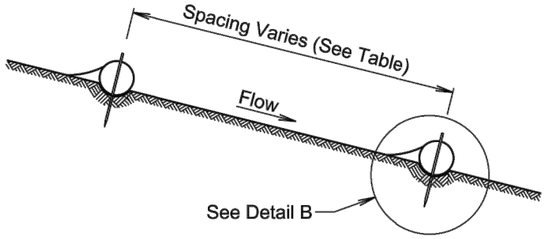
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

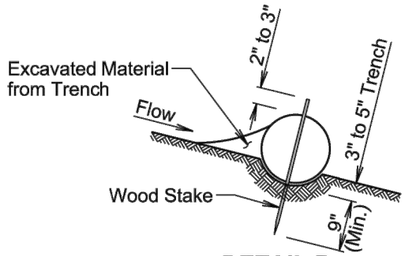
SHEET No. :
N-5

F:\23371-00\design phase\CADD\sheet file\N - DETAILS.dwg;10/11/2022 12:49 PM

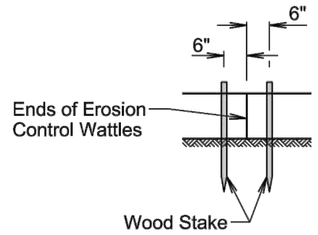


ELEVATION VIEW
(Cut or Fill Slope Installation)

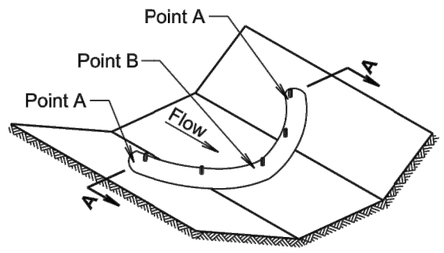
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



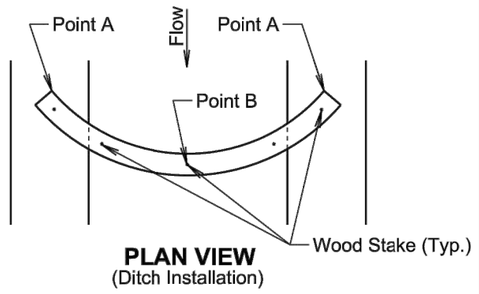
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

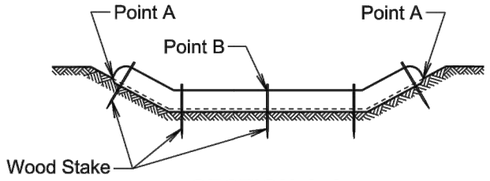


ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)

DITCH INSTALLATION	
Grade	Spacing (Ft.)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

At cut or fill slope installations, wattles will be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor will dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes will be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

Where installing running lengths of wattles, the Contractor will butt the second wattle tightly against the first and will not overlap the ends. See Detail C.

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
STANDARD PLATES
YANKTON, SOUTH DAKOTA

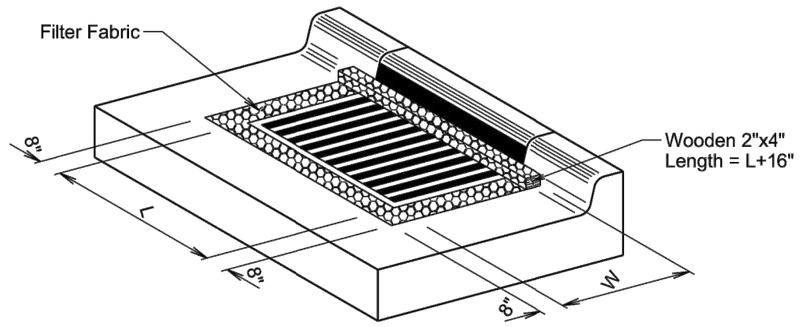
REV.	DATE	DESCRIPTION

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-6

L = Length of Grate
W = Width of Grate



ISOMETRIC VIEW

GENERAL NOTES:

The grate and curb and gutter shown are for illustrative purposes only.

The sediment control at inlet with frame and grate will be placed at locations stated in the plans or at locations determined by the Engineer.

The filter fabric will be the type specified in the plans.

The filter fabric will be placed in the inlet opening prior to placing the grate. Approximately 18 inches of excess filter fabric will be wrapped around the 2"x4" and stapled securely to the 2"x4" after the grate has been placed.

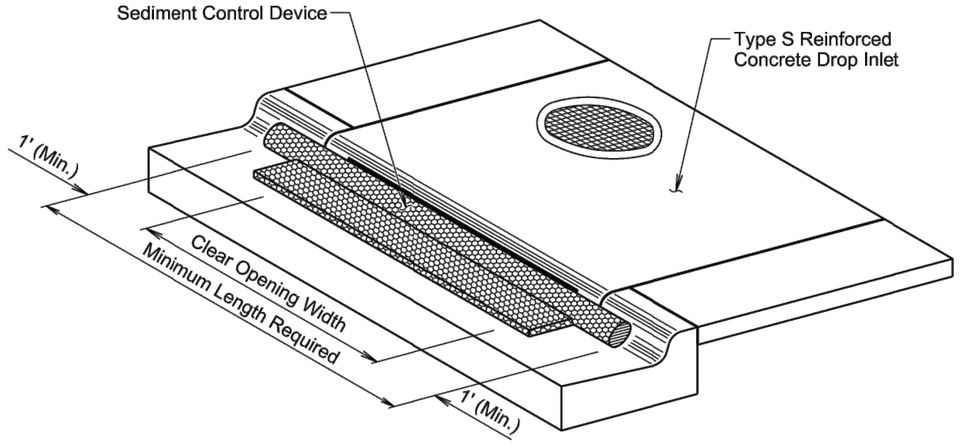
The Contractor and Engineer will inspect the sediment control device in accordance with the storm water permit. The Contractor will maintain the sediment control device by removing accumulated sediment and replacing torn filter fabric with new filter fabric.

The removed sediment will be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

All costs for furnishing, installing, inspecting, maintaining, removing, and replacing the sediment control device at the inlet including labor, equipment, and materials will be incidental to the contract unit price per each for "Sediment Control at Inlet with Frame and Grate".

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES	PLATE NUMBER 734.10 Sheet 1 of 1



ISOMETRIC VIEW

GENERAL NOTES:

The type of sediment control device shown is for illustrative purposes only.

The type of sediment control device used will be one of the types as specified in the plans.

The sediment control device will be placed at the drop inlets according to the manufacturer's installation instructions.

The sediment control at inlet for type S reinforced concrete drop inlet will be placed at locations stated in the plans or at locations determined by the Engineer.

The Contractor and Engineer will inspect the sediment control device in accordance with the storm water permit. The Contractor will maintain the sediment control device by removing the device, removing accumulated sediment, and resetting the device.

The removed sediment will be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

Payment for the "Sediment Control at Type S Drop Inlet" will be based on the minimum length required at the drop inlets. Some of the sediment control devices specified in the plans will have to be longer due to available length.

All costs for furnishing, installing, inspecting, maintaining, removing, and resetting the sediment control device at the drop inlet including labor, equipment, and materials will be incidental to the contract unit price per foot for "Sediment Control at Type S Reinforced Concrete Drop Inlet".

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	SEDIMENT CONTROL AT INLETS FOR TYPE S REINFORCED CONCRETE DROP INLETS	PLATE NUMBER 734.11 Sheet 1 of 1

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
STANDARD PLATES
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

JOB No.:	23371.00
DATE:	OCTOBER 2022
ENG / ARCH:	KRJ
DESIGNER:	TMS
TECHNICIAN:	CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-7

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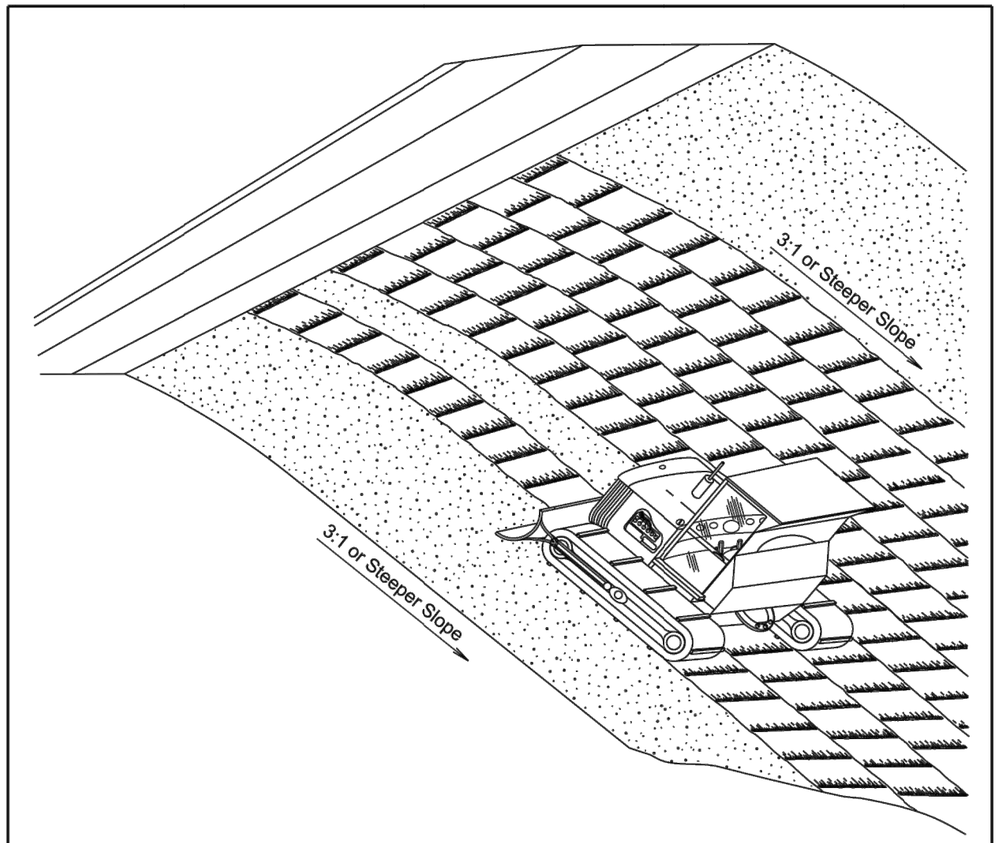

GENERAL NOTES:

Where practical, surface roughening will be done on slopes 3:1 and steeper and on slopes deemed necessary by the Engineer.

The equipment used for surface roughening will be equipped with tracks that are capable of creating ridges in the soil that are perpendicular to the slope. The final condition of the surface roughening will be approved by the Engineer.

Measurement for surface roughening will be to the nearest tenth of an acre.

All costs associated with surface roughening including labor, equipment, and materials will be incidental to the contract unit price per acre for "Surface Roughening".

February 14, 2020

Published Date: 1st Qtr. 2022	SDDOT	***SURFACE ROUGHENING***	***PLATE NUMBER*** *734.25*
			Sheet 1 of 1

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PROJECT / SHEET TITLE :
MARNE CREEK BANK STABILIZATION
STANDARD PLATES
YANKTON, SOUTH DAKOTA

REV.	DATE	DESCRIPTION

JOB No.: 23371.00
DATE: OCTOBER 2022
ENG / ARCH: KRJ
DESIGNER: TMS
TECHNICIAN: CKM

0 1/2" 1"
SCALE REDUCTION BAR

SHEET No. :
N-8