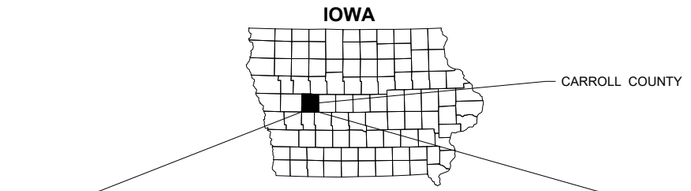
NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A
JEO PROJECT NO. 210779.18

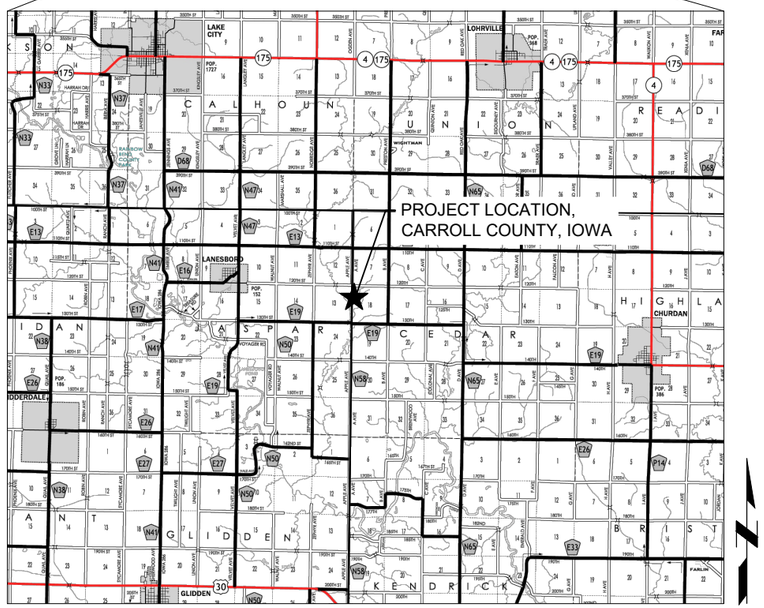
ENGINEER CONTACTS:

PROJECT CONTACT
JUAN A. ARELLANES, PE
JEO CONSULTING GROUP, INC.
1615 SW MAIN ST., STE. 205, ANKENY, IA 50023
515.964.5310
JARELLANES@JEO.COM

COORDINATING PROFESSIONAL
JACOB T. MIRIOVSKY, PE
JEO CONSULTING GROUP, INC.
1937 N. CHESTNUT ST., WAHOO, NE 68066
402.443.4661
JMIRIOVSKY@JEO.COM

INDEX OF SHEETS:





LOCATION MAP

ALL SITE PLAN INFORMATION IS BASED UPON **US SURVEY FEET (sFT)**

THE CURRENT NRCS STANDARD SPECIFICATIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

NRCS ENGINEER JOB CLASS IV

LICENSED PROFESSIONAL ENGINEER — JUAN ALEJANDRO ARELLANES GALLARZO JR — 28990 — IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. To the best of my professional knowledge, judgement and belief, these plans meet applicable NRCS standards.

04/15/2025
(signature) (date)

Printed or typed name: Juan Alejandro Arellanes Gallarzo Jr.

License Number: 28990

My license renewal date is December 31, 2025.

Pages or sheets covered by this seal:
ALL SHEETS IN THIS PLAN SET

I HAVE REVIEWED AND AGREE WITH THE CONTENT OF THE PLAN AND SPECIFICATIONS AS PREPARED:

CLIENT REPRESENTATIVE: _____
NAME DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.:

IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, ALL WORK SHALL HALT, AND THE NRCS ARCHEOLOGIST SHALL BE NOTIFIED IMMEDIATELY. 515.323.2253

PROJECT SPONSOR:

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

IOWA ONE CALL 1-800-292-8989 811 www.iowaonecall.com

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL 1-800-292-8989 AT LEAST 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION OR WORK.

NOTE:
NEITHER THE OWNER (CLIENT) NOR JEO CONSULTING GROUP, INC. ASSUMES ANY RESPONSIBILITY FOR UTILITY LOCATIONS BEING ACCURATELY SHOWN OR NOT SHOWN ON THE PLANS. A REQUEST FOR UTILITY LOCATES WAS MADE FOR THIS LOCATION AS PER THE ONE-CALL NOTIFICATION SYSTEM ACT.
(DATE: 03/09/23 TICKET NO.: 552301402).

UTILITIES SHOWN ARE FROM FIELD MARKINGS PROVIDED IN THE FIELD BY THE UTILITY PROVIDERS.

THE EXACT LOCATION AND/OR SIZE OF UNDERGROUND FEATURES MAY NOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. FIELD VERIFICATION OF UTILITIES MAY BE REQUIRED. CONTRACTOR(S) SHALL NOTIFY THE RESPECTIVE UTILITY COMPANIES BEFORE COMMENCING ANY WORK.

JEO CONSULTING GROUP 1-800-723-9967

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

COVER SHEET & LOCATION MAP

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-A.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	△ △

SHEET A.1

J:\Projects\210779.18 - IDALS Cardinal County Breakpoint Nutrient Reduction Wetlands - CAR853313A\7 Design\2 Drawings\Sheets\S-210779.18-A.dwg, on 4/15/2025 9:15 AM

LINESTYLES

ITEM	SYMBOL
BREAK LINE	
CABLE TELEVISION	UTV
CABLE TV (NS)	<UTV>
CENTERLINE OF ROAD	
CONTOUR MINOR (EX)	1202
CONTOUR MAJOR (EX)	1200
CONTOUR MINOR (EX,SCREENED)	1202
CONTOUR MAJOR (EX,SCREENED)	1200
CONTOUR MINOR (PR)	1202
CONTOUR MAJOR (PR)	1200
LIMITS OF CONSTRUCTION	LOC
CULVERT	
ELECTRIC (OVHD)	OHE
ELECTRIC (OVHD, NS)	<OHE>
ELECTRIC (UGND)	UGE
ELECTRIC (UGND, NS)	<UGE>
FENCE (WOODEN)	
FENCE (WIRE OR UNKNOWN)	
FENCE (CHAINLINK)	
FENCE (SECURITY)	
FIBER OPTIC LINE	FO
FIBER OPTIC LINE (NS)	<FO>
FLOWLINE (BREAKLINE)	
GAS LINE	G
GAS LINE (NS)	<G>
GUARDRAIL	
PROPERTY BOUNDARY	
PROPERTY LOT LINES (PR)	
PROPERTY LINES (EX,NS)	
RIGHT-OF-WAY LINE	ROW
RAILROAD RIGHT-OF-WAY	RR ROW
RAILROAD TRACKS	
RETAINING WALL	
SANITARY SEWER (EX)	8" SAN
SANITARY SEWER (NS)	<SAN>
SANITARY SEWER (PR)	8" SAN
SAN SEWER FORCE MAIN (EX)	8" FM
SAN SEWER FORCE MAIN (PR)	6" FM
STORM SEWER (EX)	12"ST (OFFSET TO PIPE SIZE)
STORM SEWER (NS)	<ST>
STORM SEWER (PR)	12" ST (OFFSET TO PIPE SIZE)
TELEPHONE LINE (UGND)	UGT
TELEPHONE LINE (UGND,NS)	<UGT>
TELEPHONE LINE (OVHD)	OHT
TELEPHONE LINE (OVHD,NS)	OHT
TERRACE	
CROPLINE	
TRAVELED WAY	
WATER (EX)	6" W
WATER (NS)	<W>
WATER (PR)	6" W
FIRE SERVICE	6" F
EXISTING	EX
EXISTING, NOT-SURVEYED	NS
PROPOSED	PR
OVERHEAD	OVHD
UNDERGROUND	UGND

COMMON HATCHING

ITEM	HATCH
ASPHALT PAVEMENT (EX.)	
CONCRETE PAVEMENT (EX.)	
GRAVEL (EX.)	
BRICK PAVEMENT (EX.)	
ASPHALT PAVEMENT (PR.)	
CONCRETE PAVEMENT (PR.)	
CONCRETE SIDEWALK (PR)	
GRAVEL (PR.)	
BRICK PAVEMENT (PR.)	
RIP RAP	
SEEDING	
MATTING	
UNDISTURBED EARTH	
EARTH	
GRANULAR FILL	
SAND MORTAR, PLASTER	
CONCRETE	
BRICK	
CONCRETE BLOCK	
METAL	
WOOD FRAMING	
WOOD FRAMING INTERRUPTED MEMBER	
BATT INSULATION	
RIGID INSULATION	

UTILITIES

ITEM	SYMBOL
STORM SEWER	
CURB INLET	
GRATE INLET	
CATCH BASIN	D
STORM SEWER MANHOLE	Ⓓ
SANITARY	
CLEANOUT	Ⓒ
SEPTIC TANK	(S)
SANITARY MANHOLE	
POWER, ELECTRICAL, LIGHT, AND TRAFFIC	
AIR CONDITIONING UNIT	A
ANTENNA	
ANCHOR POLE/POST	
GUY POLE	
GUY WIRE ANCHOR	
ELECTRICAL HIGHLINE TOWER (METAL OR CONCRETE)	
POWER POLE (EXISTING)	
POWER POLE (PROPOSED)	
POWER (ELEC) PEDESTAL	P
POWER (ELEC) PULL BOX OR MANHOLE	Ⓟ
POWER (ELEC) METER	
LIGHT POLE	
TRAFFIC SIGNAL	
TRAFFIC SIGNAL BOX	SB
TELEVISION PEDESTAL	TV
TELEVISION MANHOLE	Ⓣⓥ
WATER	
WATER MANHOLE	Ⓦ
WATER VALVE	
WATER SHUT OFF OR CURB STOP	
WELL	
WATER METER	W
WATER METER PIT	WP
YARD HYDRANT	
WATER ELEVATION	
WATER TOWER	
FIRE HYDRANT (EXISTING)	
FIRE HYDRANT (PROPOSED)	
FIRE HYDRANT IN PROFILE	
WATER FITTINGS	
11- 1/4°	
22- 1/2°	
45°	
90°	
CROSS	
PLUG	
REDUCER	
TEE	
GAS	
GAS METER	G
GAS MANHOLE	Ⓖ
GAS FILL PIPE	
GAS PUMP	
GAS VALVE	
GAS VENT	Ⓥ
TELEPHONE	
FIBER OPTICS PULL BOX	FO
TELEPHONE POLE	
TELEPHONE PULL BOX OR MANHOLE	Ⓣ
TELEPHONE PEDESTAL	T
MANHOLE (NON-SPECIFIC)	Ⓜ
UNDERGRND STORAGE TANK	UST
VALVE (NON-SPECIFIC)	

SITE & SIGNAGE

ITEM	SYMBOL
SIGN	
BARRICADE	
ROAD SIGNS	
COUNTY ROAD	0
INTERSTATE HIGHWAY	0
STATE HIGHWAY	0
U.S. HIGHWAY	0
MILE MARKER POST	M
RIGHT OF WAY MARKER	R
RAILROAD CROSSING SIGNAL	
RAILROAD SWITCH	
FLAG POLE	
MAILBOX	
PROPANE TANK	
SATELLITE TV DISH	
WINDMILL	

CONTROL & ELEVATION

ITEM	SYMBOL
BENCHMARK	BM
CONTROL POINT (NON-PROPERTY)	
MONUMENT FOUND (PROPERTY)	
MONUMENT SET	
TEMPORARY POINT	
TEST BORING	
POINT ELEVATION (EXISTING)	× 0.00
POINT ELEVATION (PROPOSED)	0000.00 TC / 1000.00 TC
TOP OF PAVEMENT	TP
TOP OF CURB	TC
GROUND	GR
TOP OF WALL	TW
BOTTOM OF WALL	BW
FLOWLINE	FL
GRID TICK	

MISC FEATURES

ITEM	SYMBOL
CENTER PIVOT	
CEMETERY	
GRAVE	
CHURCH	
CAVE	
CISTERN	
LATRINE	
OIL WELL	
GUARD POST	

PAVING FEATURES

ITEM	SYMBOL
EXISTING PAVEMENT JOINT	
TRANSVERSE JOINT	
LONGITUDINAL JOINT	
EXPANSION/KEYED JOINT	
PAVEMENT MARKING	
PAVEMENT REBAR	
HANDICAP SYMBOL	

VEGETATION

ITEM	SYMBOL
BUSH	
CONIFEROUS TREE	
DECIDUOUS TREE	
MARSH/WETLAND	
TREE MASS LINE	
TREE STUMP	

SWPPP

ITEM	SYMBOL
SILT FENCE	SF
INLET PROTECTION	
STRAW WATTLE CHECK	
STRAW BALE CHECK	
FLOW ARROW (PLAN)	
AREA INLET FILTER PROTECTION	

GENERAL

ITEM	SYMBOL
PLAN REVISION	1
NORTH ARROW	
GRAPHIC SCALE PLAN	GRAPHIC SCALE 0 10 20 40 UNIT OF MEASURE IS FEET
GRAPHIC SCALE PROFILE/ CROSS SECTION	HORIZ.= 0 0 00 VERT.= 0 0 00
KEYNOTE OR TABULAR NOTE	101
REFERENCED NOTE	4
ELEVATION	0000.00'
SECTION	1/101 1/101
ENLARGED DETAIL	0/D0.0

JEO CONSULTING GROUP
1-800-728-8567

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

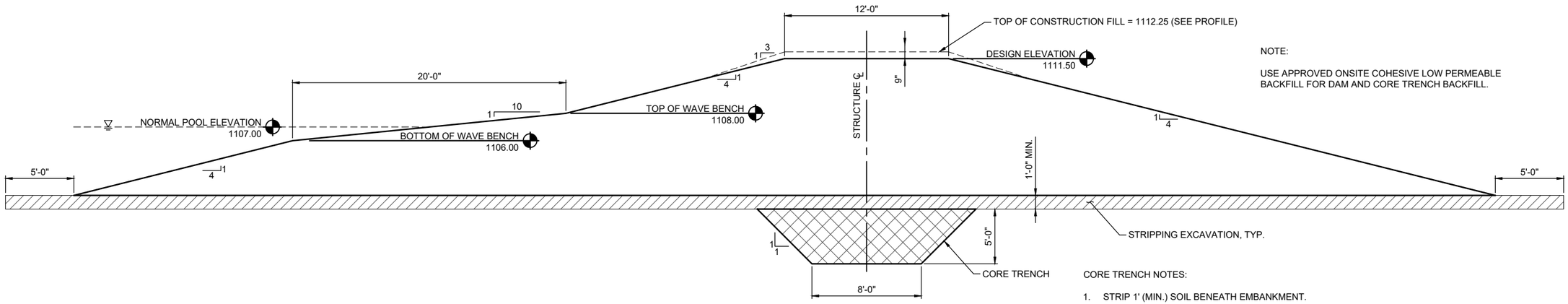
SYMBOLS SHEET

JEO PROJECT NO. 210779.18
FILE NAME S-210779.18-A.dwg
FIELD CREW JR & DHM
FIELD BOOK MIS29

DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?

REVISIONS

SHEET **A.2**



1 TYPICAL DAM SECTION

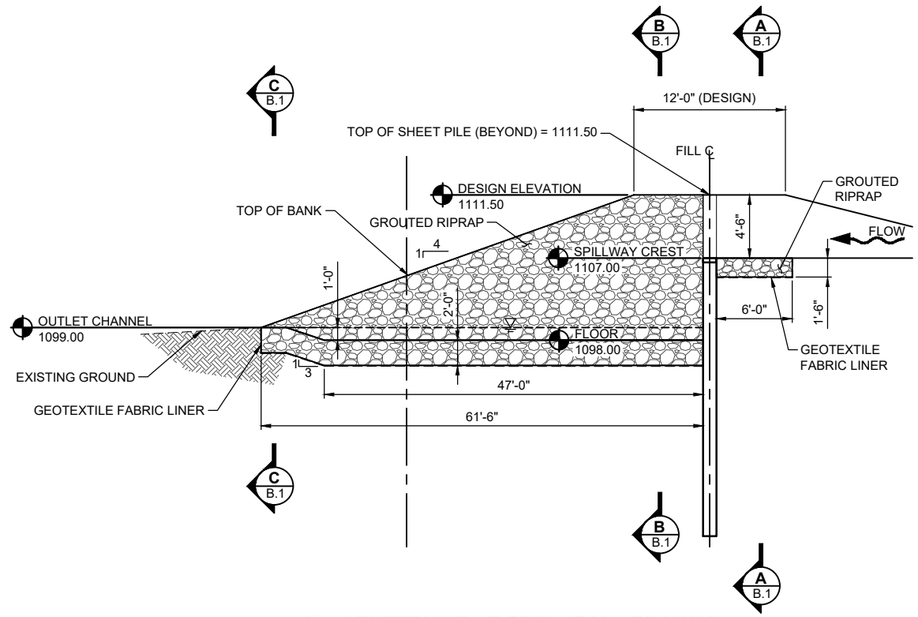
SCALE: N.T.S.

NOTE:

USE APPROVED ONSITE COHESIVE LOW PERMEABLE BACKFILL FOR DAM AND CORE TRENCH BACKFILL.

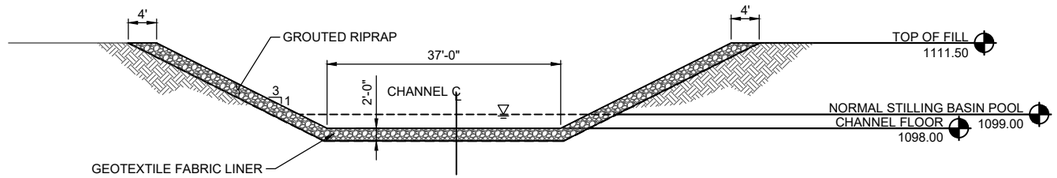
CORE TRENCH NOTES:

1. STRIP 1' (MIN.) SOIL BENEATH EMBANKMENT.
2. EXCAVATE MINIMUM 4' DEEP CORE TRENCH.
3. BACKFILL WITH COHESIVE, LOW PERMEABLE MATERIAL AND COMPACT PER EMBANKMENT SPECIFICATIONS.



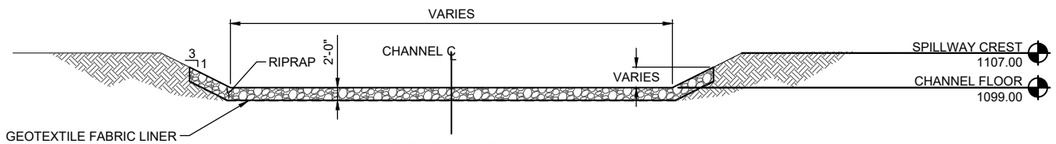
2 CENTERLINE OF PRINCIPAL SPILLWAY

SCALE: N.T.S.



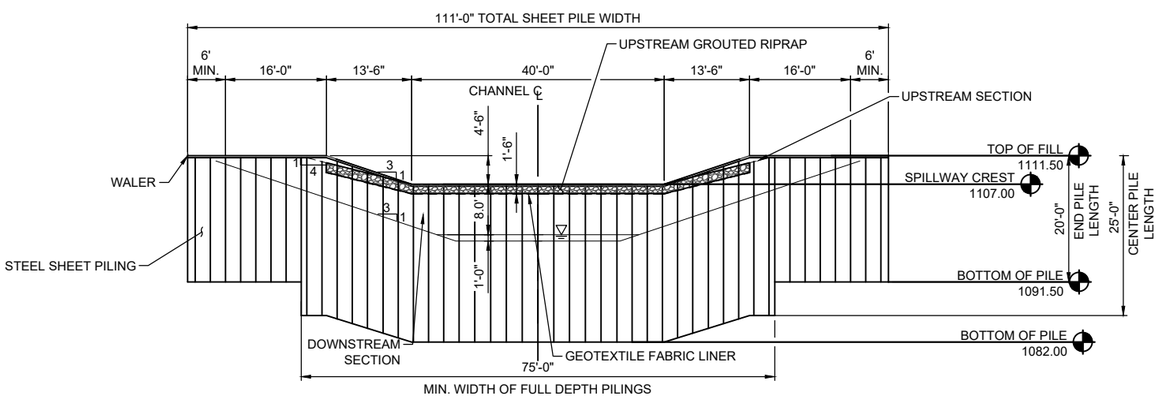
SECTION B-B

SCALE: N.T.S.



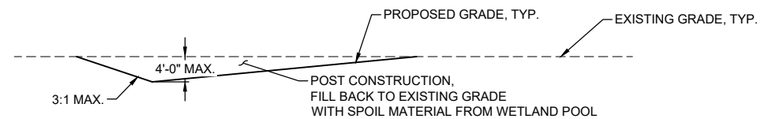
SECTION C-C

SCALE: N.T.S.



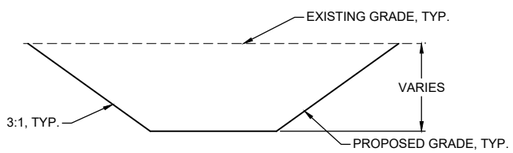
SECTION A-A

SCALE: N.T.S.



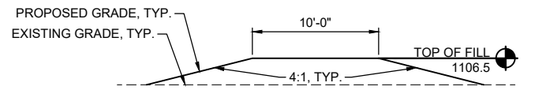
3 BORROW EXCAVATION - TYPICAL SECTION

SCALE: N.T.S.



4 SWALE - TYPICAL SECTION

SCALE: N.T.S.



5 SUBMERGED BERM - TYPICAL SECTION

SCALE: N.T.S.

JBO CONSULTING GROUP
1-888-728-8867

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

TYPICAL CROSS SECTION DETAILS

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-B.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
B.1

GENERAL NOTES:

1. THIS PROJECT SHALL BE CONSTRUCTED TO THE IOWA NRCS CONSTRUCTION SPECIFICATIONS AND ALL SUBSEQUENT REVISIONS. "https://efotg.sc.egov.usda.gov/#/state/IA/documents/section=4&folder=-843"
2. OWNER AND ENGINEER SHALL BE CONTACTED A MINIMUM OF 72 HOURS PRIOR TO COMMENCING WORK ON THE PROJECT.
3. NOTIFY UTILITIES AT LEAST 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES. CONTRACTOR IS RESPONSIBLE FOR DETERMINING EXISTENCE AND EXACT LOCATION OF ALL UTILITIES AND AVOIDING DAMAGE TO UTILITIES AND SERVICES DURING CONSTRUCTION. ANY DAMAGE DUE TO THE CONTRACTOR'S NEGLIGENCE SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE. COORDINATE AND COOPERATE WITH UTILITY COMPANIES DURING CONSTRUCTION. UTILITY ONE CALL: 1-800-292-8989.
4. CONTRACTOR SHALL SUBMIT A SCHEDULE FOR PERFORMANCE OF WORK ITEMS. THIS SCHEDULE SHALL BE PROVIDED AT THE PRE-CONSTRUCTION CONFERENCE. NO WORK SHALL BEGIN UNTIL A SCHEDULE HAS BEEN SUBMITTED AND ACCEPTED BY THE ENGINEER.
5. CONTRACTOR SHALL REMAIN WITHIN LIMITS OF CONSTRUCTION FOR ALL WORK UNLESS AUTHORIZATION IS GIVEN BY OWNER AND ENGINEER PRIOR TO COMMENCING SUCH WORK.
6. PROTECT ALL TREES, SHRUBS, AND OTHER VEGETATION UNLESS NOTED IN THE PLANS. ANY TREES OR SHRUBS DAMAGED SHALL BE REPLACED AT THE CONTRACTOR'S OWN EXPENSE.
7. CONTRACTOR IS LIABLE FOR DAMAGES TO PUBLIC AND PRIVATE PROPERTY CAUSED BY THEIR ACTION OR INACTION IN PROVIDING FOR HANDLING OF STORM WATER FLOW DURING CONSTRUCTION.
8. BID QUANTITIES SHALL NOT BE EXCEEDED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM OWNER AND ENGINEER. ANY ITEM OR WORK NECESSARY TO COMPLETE THE PROJECT NOT DIRECTLY CALLED FOR AS A BID ITEM SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS FOR WHICH PAYMENT IS MADE.
9. ELEVATION OF PIPES REFER TO FLOWLINES.
10. ANY ADDITIONAL EXCAVATION REQUIRED FOR RESHAPING OF ADJACENT AREAS TO PROVIDE DRAINAGE IS CONSIDERED INCIDENTAL TO THE PROJECT.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAUL EXCESS MATERIAL TO DESIGNATED WASTE AREAS NOTED ON THE PLANS, INCLUDING SOILS WHICH ARE NOT APPROVED FOR INCORPORATION INTO THE WORK INVOLVED ON THIS PROJECT. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. ADDITIONAL WASTE AREAS FOR EXCESS SOIL WILL BE DESIGNATED BY THE ENGINEER ON SITE AFTER CONSTRUCTION COMMENCES.
12. OVERHAUL ON THIS PROJECT SHALL BE CONSIDERED INCIDENTAL AND NO ADDITIONAL PAYMENT WILL BE MADE.
13. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY FIELD TILE ENCOUNTERED DURING CONSTRUCTION. CONTRACTOR TO ROUTE DISTURBED TILE TO CLOSEST DRAINAGE OUTLET, DITCH, OR POND.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY AND ALL NRCS STANDARD DETAIL DRAWINGS AND SPECIFICATIONS NECESSARY FOR THE PROJECT THAT ARE NOT DIRECTLY GIVEN WITH THIS PROJECT.
15. COMPLETELY REMOVE AND DISPOSE OF TREES, SHRUBS AND VEGETATION DESIGNATED FOR REMOVAL ON THE PLANS. DISPOSE OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.
16. CONTRACTOR SHALL SATISFY THEMSELVES PRIOR TO SUBMISSION OF BIDS AS TO THE SOIL CONDITIONS.
17. PROTECT AND SAVE ALL PROPERTY CORNER MONUMENTS. CONTRACTOR TO REPLACE IF REMOVED OR DAMAGED AT THEIR OWN EXPENSE.
18. STRIP, SALVAGE, AND RESPREAD TOP SIX INCHES OF TOPSOIL IN ALL AREAS WITHIN THE CONSTRUCTION LIMITS AS PER SPECIFICATIONS, EXCEPT AREAS NOT DISTURBED BY CONSTRUCTION AND USED TO STOCKPILE SOIL AND MATERIALS. MECHANICALLY LOOSEN THE TOP 18 INCHES OF SOIL ON ALL HAUL ROADS AND OVERLY COMPACTED AREAS PRIOR TO RE-SPREADING OF TOPSOIL.
19. CONTRACTOR SHALL KEEP UP TO DATE RECORDS ON ALL MEASUREMENTS, MATERIALS DELIVERIES AND PLACEMENTS, AND AS-BUILT DRAWINGS.
20. CONTRACTOR SHALL ATTEND PROGRESS MEETINGS AS REQUESTED BY THE ENGINEER AND OWNER.
21. DIMENSIONS, UTILITIES, AND GRADING ARE BASED ON AVAILABLE INFORMATION AT THE TIME OF DESIGN. DEVIATIONS MAY BE NECESSARY IN THE FIELD. REPORT ANY SUCH CHANGES OR CONFLICTS BETWEEN THE PLAN AND FIELD CONDITIONS TO ENGINEER IMMEDIATELY AND PRIOR TO CONTINUING OF WORK.

UTILITY WARNING:

1. THE UTILITIES HAVE SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND/OR RECORDS OBTAINED. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN COMPRISE ALL SUCH ITEMS IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN ARE IN THE EXACT LOCATION INDICATED EXCEPT WHERE NOTED.

PROJECT DATA TABLE

CONSULTANT	JEO CONSULTING GROUP, INC.	
PROJECT ID	CAR853313A	
LANDOWNER(S)	DAVID REMSBURG, DOZIER TRUST, AND VG LEGACY FARMS, LLC	
PRELIMINARY OR FINAL DESIGN	FINAL	
DRAINAGE AREA	317	ACRES
WETLAND POOL AREA	2.09	ACRES
DEEP WATER AREA (>3 FT DEEP)	0.36	ACRES
NORMAL POOL ELEVATION / PRIMARY SPILLWAY ELEVATION	1107	FEET
AVERAGE POOL DEPTH	2.26	FEET
MAXIMUM POOL DEPTH	7.0	FEET
POOL STORAGE	4.70	ACRE-FEET
BERM ELEVATION	1111.5	FEET
BERM STORAGE	17.98	ACRE-FEET
LENGTH OF BERM	307	FEET
WEIR WIDTH	40	FEET
DROP HEIGHT (PRIMARY SPILLWAY ELEVATION – STILLING BASIN LOWEST ELEVATION)	9	FEET
HEIGHT OF DAM (BERM ELEVATION – STILLING BASIN LOWEST ELEVATION)	13.5	FEET
STILLING BASIN LENGTH	50	FEET
TIME OF CONCENTRATION	1.24	HOURS
WEIGHTED RUNOFF CURVE NUMBER	79.67	-----
25-YEAR STORM DESIGN FLOW	387.74	CFS
100-YEAR STORM DESIGN FLOW	871.17	CFS
100-YEAR FLOOD SURF. ELEVATION	1109.93	FEET
ESTIMATED SEDIMENT STORAGE	59	YEARS
TOTAL EASEMENT AREA	8.13	ACRES

WETLAND STORAGE TABLE

CONTOUR ELEVATION (FT)	CONTOUR AREA (AC)	CUMULATIVE VOLUME, AVG, END (AC-FT)
1100	0.05	0
1101	0.12	0.09
1102	0.20	0.25
1103	0.27	0.49
1104	0.36	0.81
1105	0.95	1.46
1106	1.72	2.80
1107	2.09	4.70
1108	2.43	6.96
1109	2.81	9.59
1110	3.24	12.61
1111	3.69	16.08
1111.50	3.76	17.98

QUANTITY TABULATIONS

ITEM	DESCRIPTION	SPEC. ITEM	UNIT	QUANTITY	AS-BUILT
1	SITE STRIPPING & PREPARATION	IA CS-001	LS	1	
2	CROP DAMAGES***	IA CS-001	ACRE	0	
3	FENCE REMOVAL & REPLACEMENT	IA CS-001	LF	344	
4	POLLUTION CONTROL	IA CS-005	LS	1	
5	STRAW WATTLE, 9" DIA.	IA CS-005	LF	2,175	
6	STRUCTURE SEEDING	IA CS-006	ACRE	0.3	
7	WATERWAY SEEDING ***	IA CS-006	ACRE	0.3	
8	BUFFER SEEDING	IA CS-006	ACRE	12.1	
9	MOBILIZATION & DEMOBILIZATION*	CS-008	LS	1	
10	TILE INVESTIGATION	IA CS-009	LS	1	
11	STEEL SHEET PILING	IA CS-013	SF	2,595	
12	EXCAVATION (SWALE)	IA CS-021	CY	533	
13	EXCAVATION (WETLAND EXTENSION)	IA CS-021	CY	3,379	
14	EXCAVATION (CORE TRENCH)	IA CS-021	CY	588	
15	EXCAVATION (BORROW)	IA CS-021	CY	3,057	
16	EARTHFILL (DAM)	IA CS-023	CY	2,075	
17	EARTHFILL (DAM AS CONSTRUCTED)**	IA CS-023	CY	118	
18	EARTHFILL (POOL)**	IA CS-023	CY	1,404	
19	EARTHFILL (DAM CORE)**	IA CS-023	CY	588	
20	EARTHFILL (BORROW)**	IA CS-023	CY	3,057	
21	DRAINFILL, FINE	IA CS-024	CY	25	
22	TOPSOIL PLACEMENT	IA CS-026	CY	3,205	
23	CMP WATER CONTROL STRUCTURE	IA CS-051	LS	1	
24	CMP RISER INLET STRUCTURE	IA CS-051	EA	1	
25	CMP DRAWDOWN WETLAND OUTLET PIPE (15" DIA.)	IA CS-051	LF	136	
26	CMP FLARED END SECTION W/ BAR GUARD	IA CS-051	EA	1	
27	24" ANIMAL GUARD	IA CS-051	EA	1	
28	RIPRAP	IA CS-061	TON	812	
29	CONCRETE GROUT	IA CS-062	CY	98	
30	GEOTEXTILE FABRIC	IA CS-095	SY	653	

QUANTITY NOTES:

* INCLUDES SHAPING AND MAINTENANCE ON THE INGRESS/EGRESS.
** EARTHFILL (EMBANKMENT) ASSUMES NO COMPACTION FACTOR.
*** QUANTIFIED AREAS ARE APPROXIMATE AND SHALL BE DETERMINED BY CONTRACTOR, ENGINEER, AND OWNER.

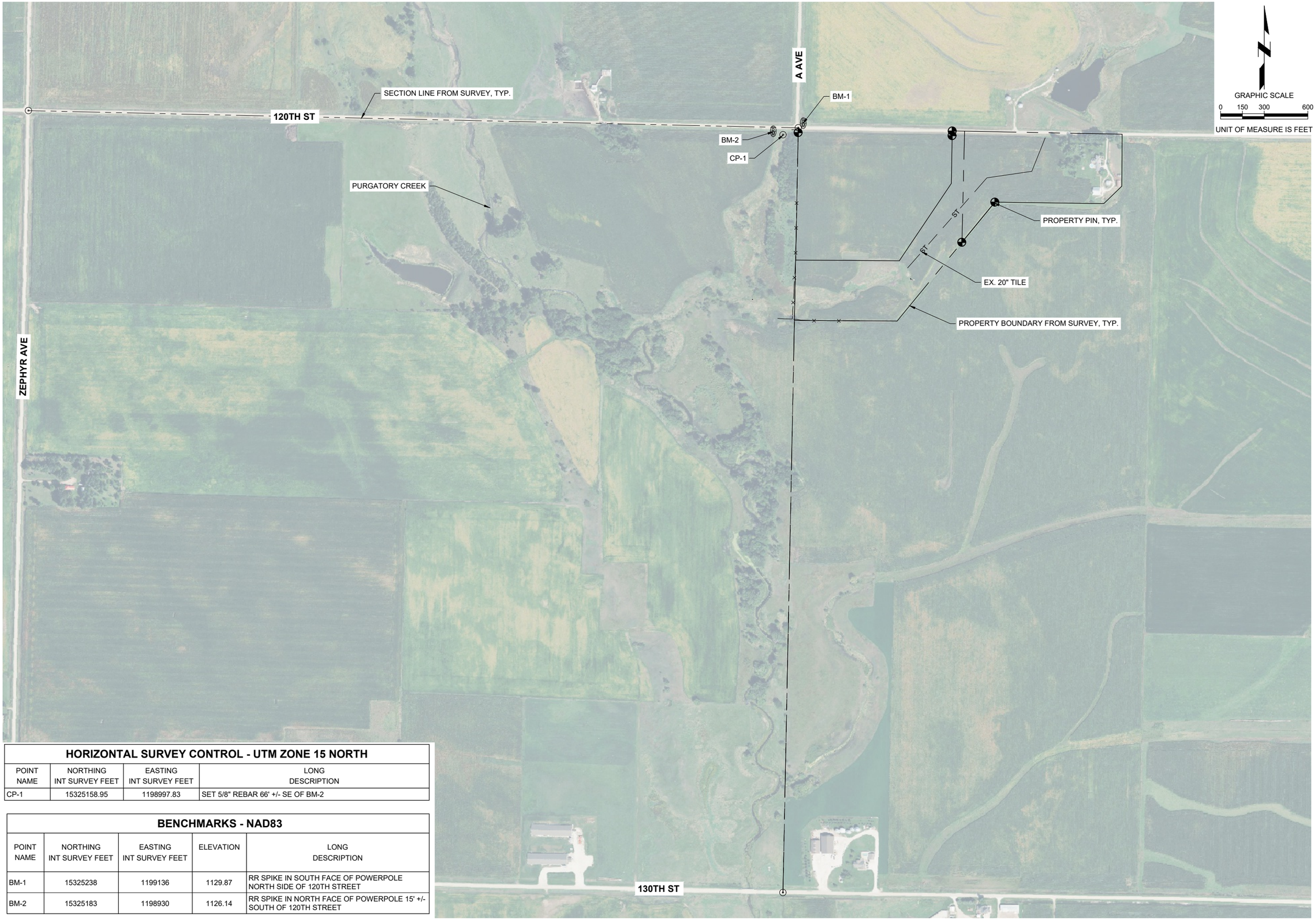
JEO CONSULTING GROUP
1-800-292-8989

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

CONSTRUCTION NOTES & TABULATIONS

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-C.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
C.1



GRAPHIC SCALE

0 150 300 600

UNIT OF MEASURE IS FEET

JEO CONSULTING GROUP 1-800-728-8567

HORIZONTAL SURVEY CONTROL - UTM ZONE 15 NORTH

POINT NAME	NORTHING INT SURVEY FEET	EASTING INT SURVEY FEET	LONG DESCRIPTION
CP-1	15325158.95	1198997.83	SET 5/8" REBAR 66' +/- SE OF BM-2

BENCHMARKS - NAD83

POINT NAME	NORTHING INT SURVEY FEET	EASTING INT SURVEY FEET	ELEVATION	LONG DESCRIPTION
BM-1	15325238	1199136	1129.87	RR SPIKE IN SOUTH FACE OF POWERPOLE NORTH SIDE OF 120TH STREET
BM-2	15325183	1198930	1126.14	RR SPIKE IN NORTH FACE OF POWERPOLE 15' +/- SOUTH OF 120TH STREET

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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

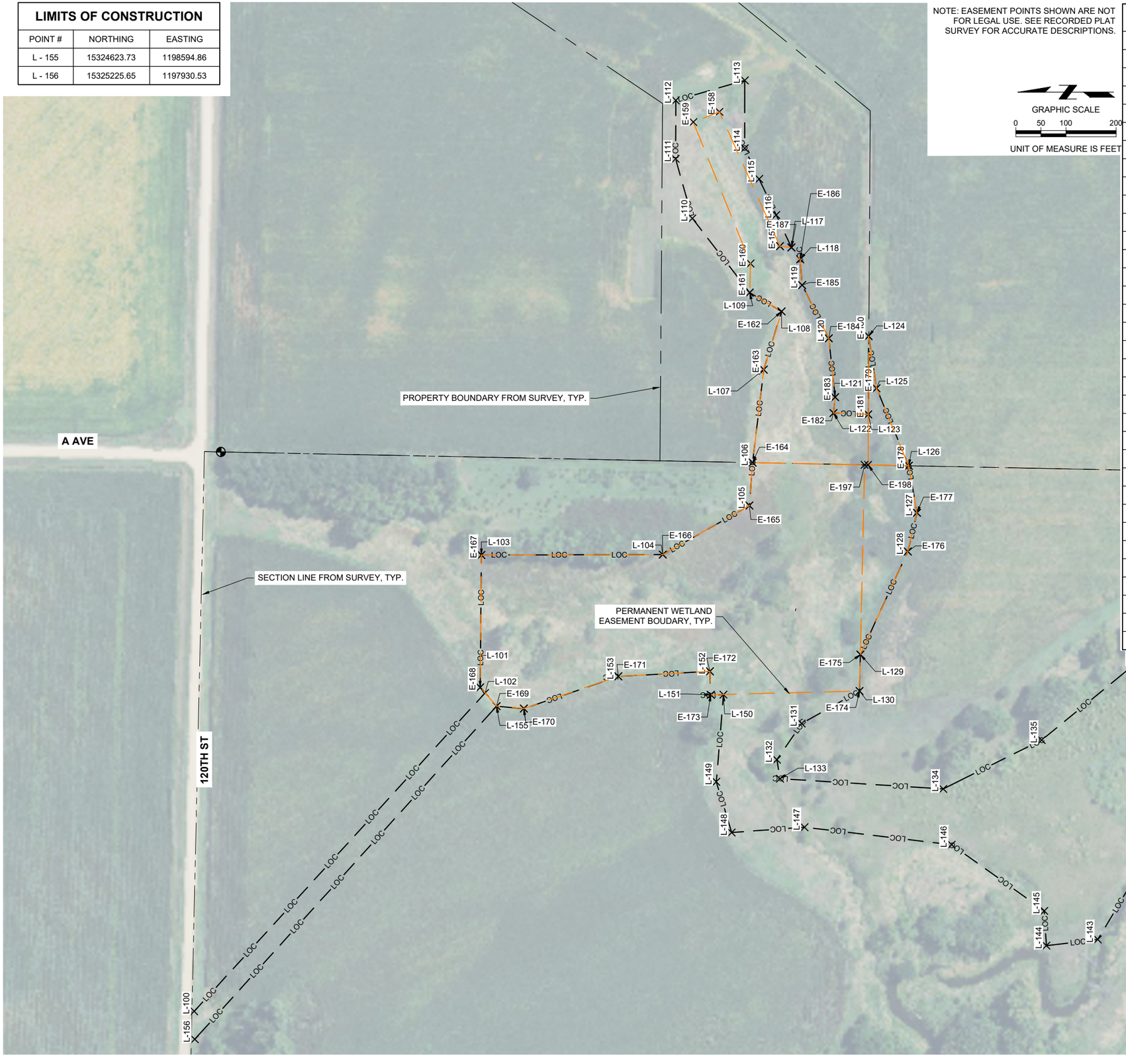
SURVEY CONTROL

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-CG.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET CG.1

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
L - 100	15325226.72	1197986.34
L - 101	15324656.52	1198632.32
L - 102	15324646.78	1198621.19
L - 103	15324654.04	1198896.26
L - 104	15324292.49	1198897.10
L - 105	15324119.72	1198994.87
L - 106	15324113.32	1199080.56
L - 107	15324091.20	1199265.91
L - 108	15324055.64	1199381.95
L - 109	15324119.16	1199419.46
L - 110	15324233.55	1199567.66
L - 111	15324266.84	1199686.27
L - 112	15324266.43	1199802.85
L - 113	15324128.97	1199842.76
L - 114	15324129.21	1199707.39
L - 115	15324100.26	1199646.14
L - 116	15324066.32	1199574.30
L - 117	15324035.83	1199509.78
L - 118	15324018.54	1199485.95
L - 119	15324014.61	1199434.55
L - 120	15323961.44	1199328.37
L - 121	15323948.70	1199211.10
L - 122	15323952.05	1199179.40
L - 123	15323882.72	1199176.73
L - 124	15323882.05	1199332.82
L - 125	15323866.54	1199228.74
L - 126	15323802.02	1199074.22
L - 127	15323785.62	1198980.44
L - 128	15323803.89	1198903.25
L - 129	15323898.48	1198697.81
L - 130	15323900.10	1198625.01
L - 131	15324015.52	1198560.22
L - 132	15324064.91	1198488.15
L - 133	15324058.59	1198450.24
L - 134	15323733.26	1198429.83
L - 135	15323536.89	1198527.18
L - 136	15323345.68	1198683.23
L - 137	15323185.44	1198705.94
L - 138	15323131.97	1198649.19
L - 139	15323117.39	1198491.52
L - 140	15323168.03	1198380.46
L - 141	15323253.90	1198379.65
L - 142	15323292.31	1198351.39
L - 143	15323425.08	1198129.63
L - 144	15323527.58	1198117.20
L - 145	15323531.73	1198186.61
L - 146	15323716.51	1198318.60
L - 147	15324009.92	1198353.42
L - 148	15324155.18	1198342.88
L - 149	15324185.70	1198443.99
L - 150	15324171.40	1198617.80
L - 151	15324196.66	1198617.49
L - 152	15324198.43	1198664.23
L - 153	15324381.19	1198654.31
L - 154	15324569.52	1198590.15

LIMITS OF CONSTRUCTION		
POINT #	NORTHING	EASTING
L - 155	15324623.73	1198594.86
L - 156	15325225.65	1197930.53



NOTE: EASEMENT POINTS SHOWN ARE NOT FOR LEGAL USE. SEE RECORDED PLAT SURVEY FOR ACCURATE DESCRIPTIONS.

GRAPHIC SCALE

0 50 100 200

UNIT OF MEASURE IS FEET

EASEMENT		
POINT #	NORTHING	EASTING
E - 157	15324058.87	1199512.12
E - 158	15324179.61	1199779.92
E - 159	15324231.49	1199759.71
E - 160	15324117.55	1199477.43
E - 161	15324119.16	1199419.46
E - 162	15324055.64	1199381.95
E - 163	15324091.20	1199265.91
E - 164	15324113.37	1199080.51
E - 165	15324119.72	1198994.87
E - 166	15324292.49	1198897.10
E - 167	15324654.04	1198896.26
E - 168	15324656.52	1198632.32
E - 169	15324623.73	1198594.86
E - 170	15324569.52	1198590.15
E - 171	15324381.19	1198654.31
E - 172	15324198.43	1198664.23
E - 173	15324196.66	1198617.49
E - 174	15324171.40	1198617.80
E - 175	15324185.70	1198443.99
E - 176	15324155.18	1198342.88
E - 177	15324009.92	1198353.42
E - 178	15323716.51	1198318.60
E - 179	15323531.73	1198186.61
E - 180	15323527.58	1198117.20
E - 181	15323425.08	1198129.63
E - 182	15323292.31	1198351.39
E - 183	15323253.90	1198379.65
E - 184	15323168.03	1198380.46
E - 185	15323117.39	1198491.52
E - 186	15323131.97	1198649.19
E - 187	15323185.44	1198705.94
E - 197	15323890.10	1199075.99
E - 198	15323883.16	1199075.89

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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

SURVEY CONTROL
LIMITS OF CONSTRUCTION

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-CG.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
CG.2

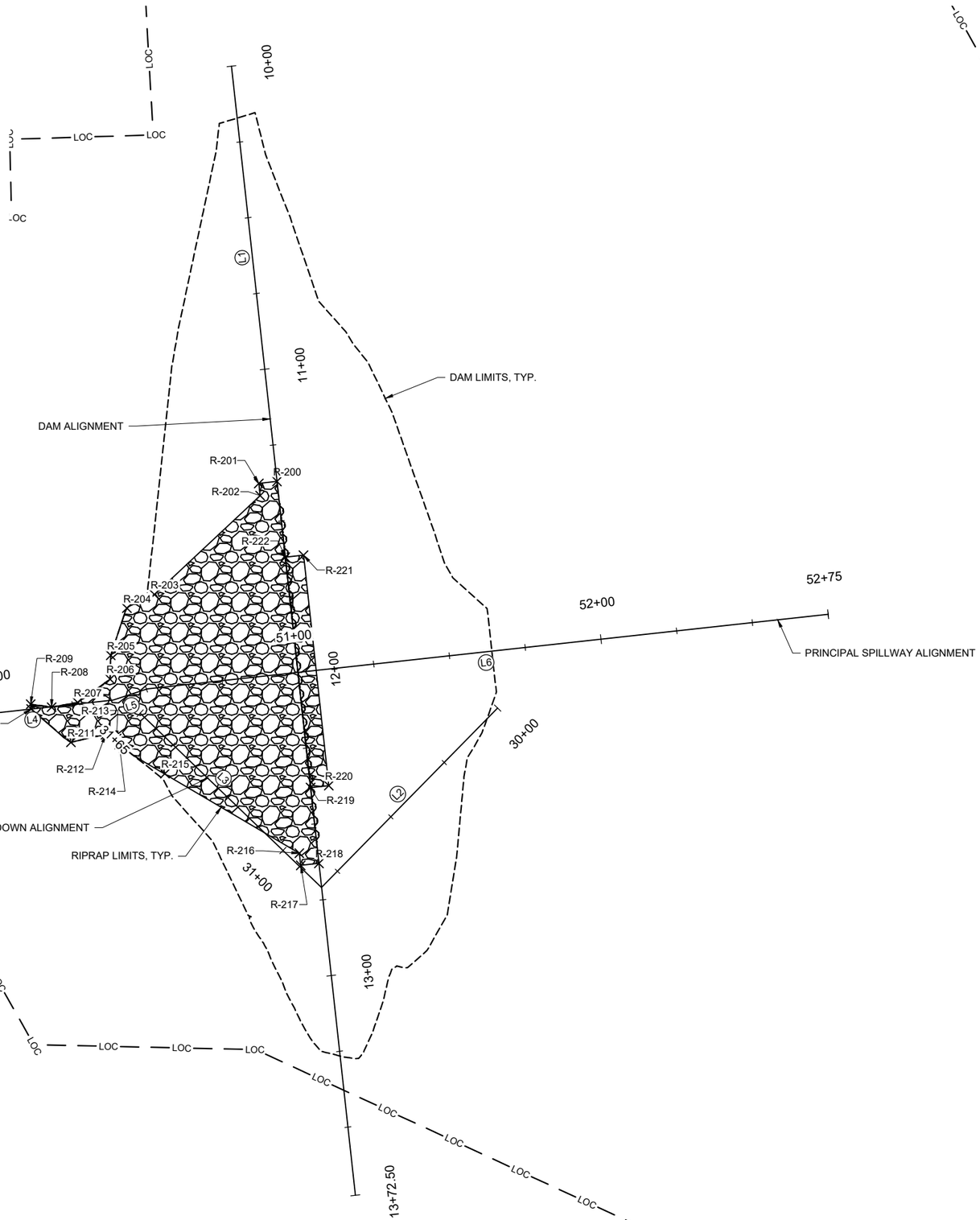
PRELIMINARY

DAM ALIGNMENT				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L1	372.50	S06°15'47"E	10+00.00, 15324220.97, 1198689.91	13+72.50, 15323850.69, 1198730.55

DRAWDOWN ALIGNMENT				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L2	82.48	S44°28'36"W	30+00.00, 15324010.47, 1198777.26	30+82.48, 15323951.62, 1198719.47
L3	82.52	N46°08'46"W	30+82.48, 15323951.62, 1198719.47	31+65.00, 15324008.79, 1198659.96

PRINCIPAL SPILLWAY ALIGNMENT				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L4	38.50	N83°43'33"E	50+00.00, 15324008.90, 1198612.83	50+38.50, 15324013.11, 1198651.10
L5	11.76	N71°59'46"E	50+38.50, 15324013.11, 1198651.10	50+50.26, 15324016.74, 1198662.29
L6	224.74	N83°44'33"E	50+50.26, 15324016.74, 1198662.29	52+75.00, 15324041.24, 1198885.69

RIPRAP LIMITS		
POINT #	NORTHING	EASTING
R - 200	15324084.79	1198704.86
R - 201	15324084.13	1198698.88
R - 202	15324080.15	1198699.32
R - 203	15324047.68	1198664.65
R - 204	15324043.21	1198655.62
R - 205	15324027.74	1198650.32
R - 206	15324019.93	1198650.09
R - 207	15324012.31	1198639.45
R - 208	15324010.76	1198630.91
R - 209	15324011.72	1198624.03
R - 210	15324010.16	1198624.20
R - 211	15323999.23	1198637.26
R - 212	15324001.70	1198648.60
R - 213	15324000.51	1198652.23
R - 214	15323998.51	1198653.15
R - 215	15323988.95	1198668.08
R - 216	15323962.86	1198712.19
R - 217	15323958.88	1198712.63
R - 218	15323959.54	1198718.60
R - 219	15323984.39	1198715.87
R - 220	15323985.04	1198721.84
R - 221	15324060.59	1198713.55
R - 222	15324059.94	1198707.58



GRAPHIC SCALE
0 10 20 40
UNIT OF MEASURE IS FEET

JEO CONSULTING GROUP
1-800-728-8567

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

SURVEY CONTROL
ALIGNMENTS AND RIPRAP LIMITS

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-CG.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
CG.3

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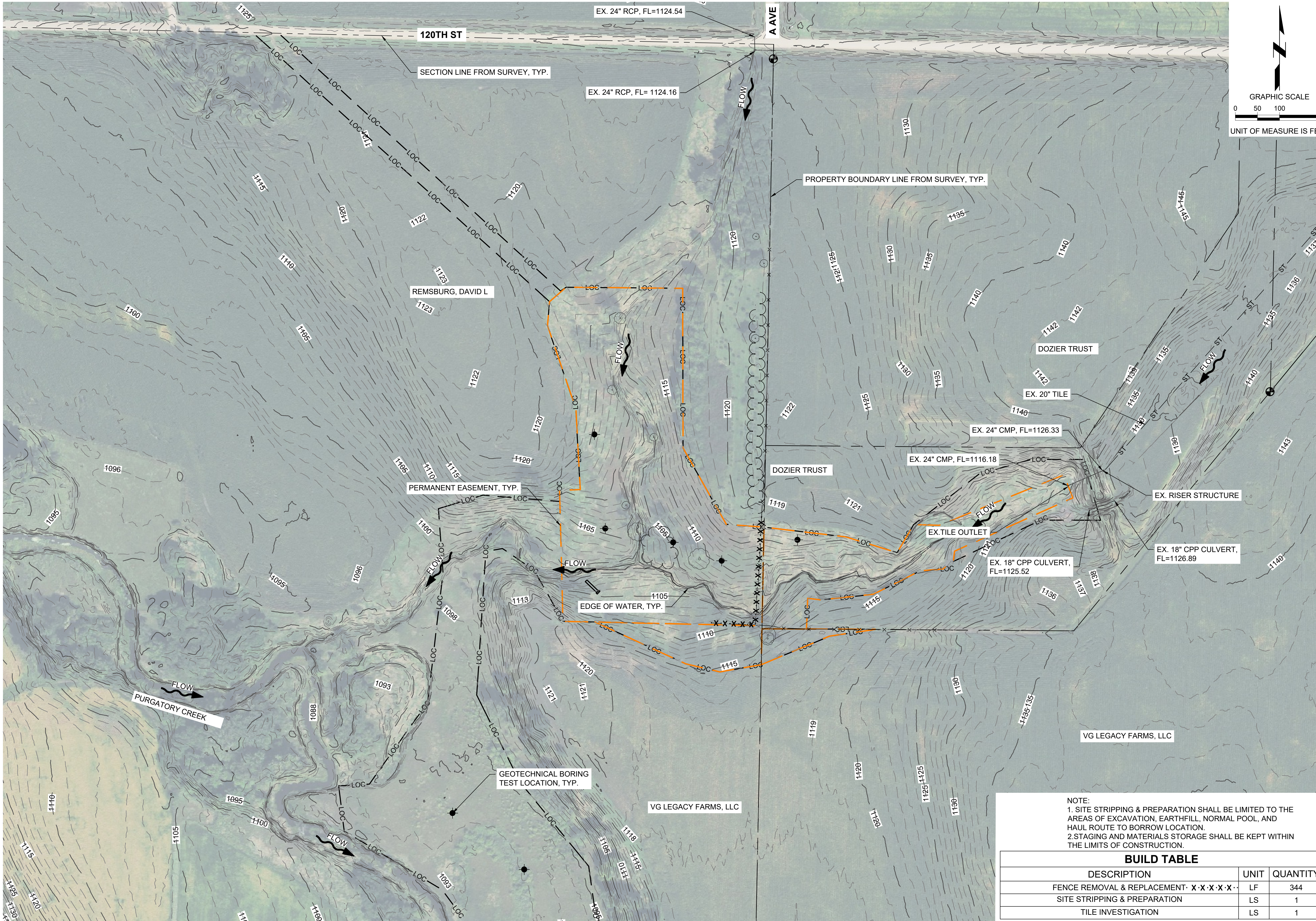


GRAPHIC SCALE

0 50 100 200

UNIT OF MEASURE IS FEET

JEO CONSULTING GROUP
1-800-723-8567

NOTE:
1. SITE STRIPPING & PREPARATION SHALL BE LIMITED TO THE AREAS OF EXCAVATION, EARTHFILL, NORMAL POOL, AND HAUL ROUTE TO BORROW LOCATION.
2.STAGING AND MATERIALS STORAGE SHALL BE KEPT WITHIN THE LIMITS OF CONSTRUCTION.

BUILD TABLE

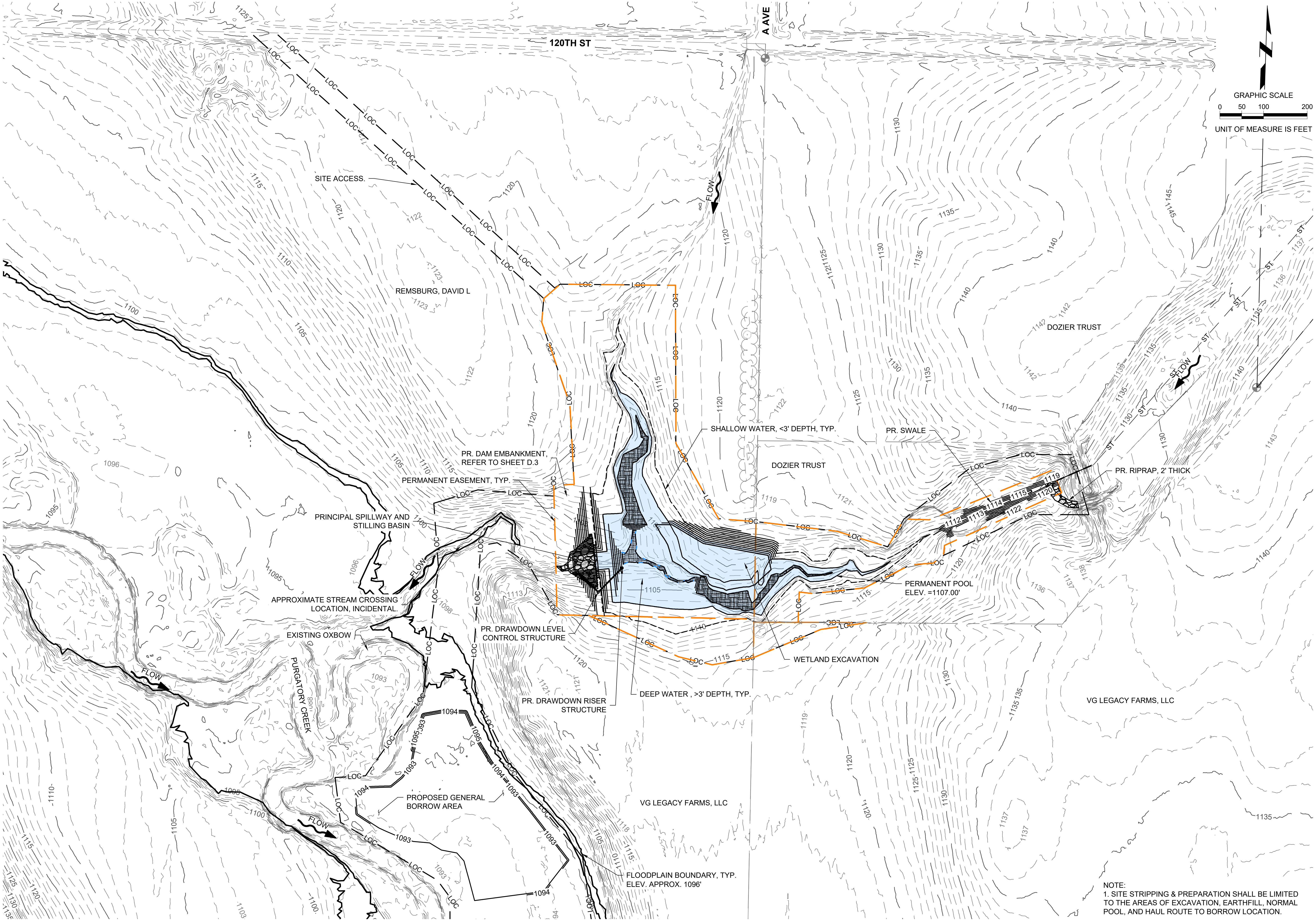
DESCRIPTION	UNIT	QUANTITY
FENCE REMOVAL & REPLACEMENT· X·X·X·X·X··	LF	344
SITE STRIPPING & PREPARATION	LS	1
TILE INVESTIGATION	LS	1

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

EXISTING SITE & REMOVALS PLAN

JEO PROJECT NO. 210779.18
FILE NAME S-210779.18-D.dwg
FIELD CREW JR & DHM
FIELD BOOK MIS29
DESIGNED BY JAA DATE 06-17-2024
DRAWN BY GTL DATE 07-31-2024
CHECKED BY JSS DATE 06-21-2024
APPROVED BY JTM DATE
REVISIONS

SHEET **D.1**



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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

OVERALL PROPOSED SITE PLAN

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-D.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	
REVISIONS	

SHEET
D.2

CUT & FILL TABLE		
DESCRIPTION	CUT (CU. YDS.)	FILL (CU. YDS.)
EXCAVATION (SWALE)	533	-
EXCAVATION (WETLAND EXTENSION)	3,379	-
EXCAVATION (CORE TRENCH)	588	-
EARTHFILL (DAM)	-	2,075
EARTHFILL (DAM AS CONSTRUCTED)	-	118
EARTHFILL (POOL)	-	1,404
EARTHFILL (DAM CORE)	-	588
DRAINFILL, FINE	-	25
TOPSOIL PLACEMENT	-	1,237

GRAPHIC SCALE

0 20 40 80

UNIT OF MEASURE IS FEET

JEO CONSULTING GROUP 1-800-728-8567

REMSBURG, DAVID L

DOZIER TRUST

DOZIER TRUST

VG LEGACY FARMS, LLC

VG LEGACY FARMS, LLC

100-YR FLOOD EVENT
ELEV. = 1109.93
(APPROX. 3.15 ACRES)

TOP OF DAM
ELEV. = 1111.50 (SETTLED)
(APPROX. 3.76 ACRES)

PERMANENT POOL
ELEV. =1107.00
(APPROX. 2.09 ARES)

PERMANENT EASEMENT, TYP.

TOP OF DAM
ELEV. = 1112.25 (CONSTRUCTED)
ELEV. = 1111.50 (SETTLED)

WARP RIPRAP TO MATCH EXISTING SURFACE

FILTER OUTLET COURSE DRAINFILL PROTECTION

DRAWDOWN STRUCTURES AND PIPE, SEE SHEET M.3

DEEP POOL AREA
ELEV. 1104.00 AND BELOW

1104.00

DEEP POOL FILL, TYP.

1105.00

1100.00

1104.00

EARTHFILL (POOL), DEEP POOL FILL,TYP.

PR. WETLAND EXCAVATION GRADING

EARTHFILL (POOL), SUBMERGED BERM-1 ALIGNMENT, SEE DETAIL 5 SHEET B.1

EARTHFILL (POOL), SUBMERGED BERM-2 ALIGNMENT, SEE DETAIL 5 SHEET B.1

DEEP POOL FILL, TYP.

REFER TO SHEET B.1 & M.4 FOR SWALE TYPICAL CROSS SECTION AND PROFILE.

4:1 3:1

71+00 71+25 70+00 61+00 60+00

NOTES:
1. TOPSOIL ALL DISTURBED AREAS ABOVE ELEVATION 1105.0 WITH 6" TOPSOIL.
2. ADD 6" TOPSOIL IN SHALLOW GRADED POOL (AREAS LESS THAN 3 FEET DEEP) IF DISTURBED DURING CONSTRUCTION ACTIVITIES.
3. STRIP 12" OF TOPSOIL BENEATH DAM.
4. STRIP 6" ALL DISTURBED AREAS.

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

PROPOSED GRADING PLAN WETLAND

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-D.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	
REVISIONS	

SHEET

D.3

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REMSBURG, DAVID L

VG LEGACY FARMS, LLC

VG LEGACY FARMS, LLC

PR. GRADING, SEE SHEET D.3

PERMANENT EASEMENT, TYP.

SEE SHEET D.3

DOZIER TRUST

BORROW BOTTOM ELEV. =1093.00, REFER TO DETAIL 3/B.1

FLOODPLAIN BOUNDARY, TYP. ELEV. APPROX. 1096'

3:1

GRAPHIC SCALE

0 20 40 80

UNIT OF MEASURE IS FEET

NOTES:

1. TOPSOIL ALL DISTURBED AREAS.
2. CONTRACTOR SHALL CONSTRUCT A TEMPORARY STREAM CROSSING TO ACCESS BORROW AREA,INCIDENTAL.

ESTIMATED EARTHWORK

DESCRIPTION	CUT (CU. YDS.)	FILL (CU. YDS.)
EXCAVATION (BORROW)	3,057	-
EARTHFILL (BORROW)	-	3,057
TOPSOIL PLACEMENT	-	1,968

JEO CONSULTING GROUP
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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

PROPOSED GRADING PLAN
BORROW

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-D.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	
REVISIONS	

SHEET
D.4

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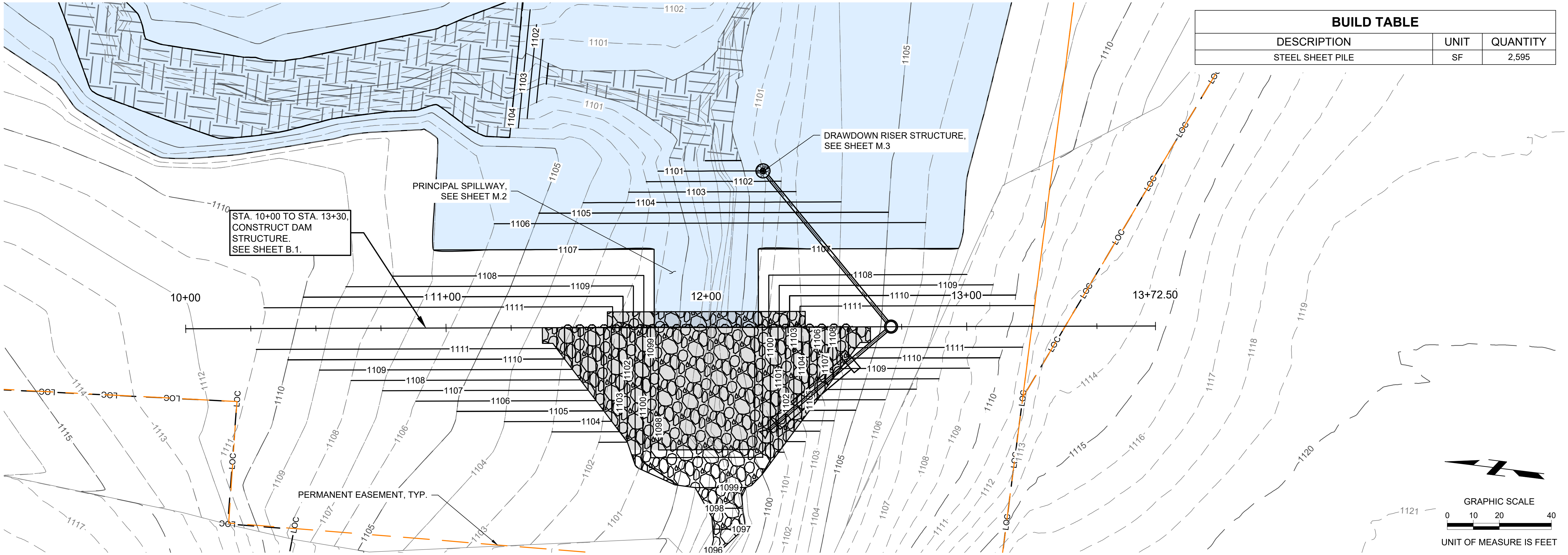
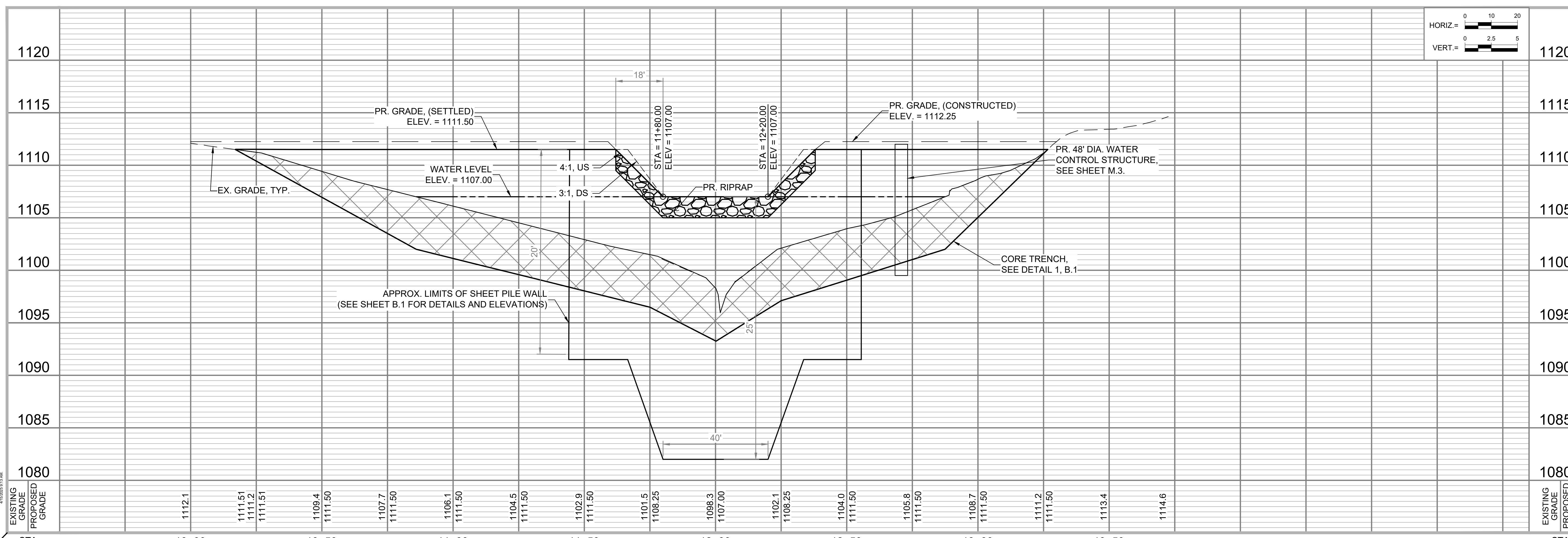
BUILD TABLE

DESCRIPTION	UNIT	QUANTITY
STEEL SHEET PILE	SF	2,595





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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR85313A

PLAN & PROFILE - DAM STRUCTURE

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-M.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY JAA	DATE 06-17-2024
DRAWN BY GTL	DATE 07-31-2024
CHECKED BY JSS	DATE 06-21-2024
APPROVED BY JTM	DATE 03-03-0003
REVISIONS	

SHEET M.1

BUILD TABLE		
DESCRIPTION	UNIT	QUANTITY
RIPRAP	TON	606
CONCRETE GROUT	CY	98
GEOTEXTILE FABRIC LINER	SY	653

CONSTRUCT STILLING BASIN. SEE SHEET B.1.

20.0' WAVE BENCH

STA. 50+50 TO STA. 51+06, INSTALL GROUT. SEE SHEET B.1.

STA. 50+10 TO STA. 51+00, INSTALL RIPRAP, 2' THICK. SEE SHEET B.1.

STA. 51+00 TO STA. 51+06, INSTALL RIPRAP, 1.5' THICK. SEE SHEET B.1.

50+00 51+00 52+00 52+75

37.0' 47.0'

GRAPHIC SCALE
0 5 10 20
UNIT OF MEASURE IS FEET

HORIZ.= 0 5 10
VERT.= 0 2.5 5

STA = 50+09.93
ELEV = 1095.47

STA = 50+38.48
ELEV = 1099.01

STA = 50+49.97
ELEV = 1099.01

STA = 50+52.97
ELEV = 1098.01

STA = 51+00.00
ELEV = 1107.00

STA = 51+29.98
ELEV = 1106.99

STA = 51+39.97
ELEV = 1106.00

STA = 51+63.99
ELEV = 1100.00

8:1 4:1

2.0' 2.0'

6.0'

FLOW

GROUTED ROCK RIPRAP

LOOSE ROCK RIPRAP

PR. SHEET PILE

PR. GRADE, TYP.

EX. GRADE, TYP.

PERMANENT POOL
WSE = 1107.00

	STA. 50+00	50+25	50+50	50+75	51+00	51+25	51+50	51+75	52+00	52+25	52+50	52+75
EXISTING GRADE		1095.65	1097.3	1097.34	1098.3	1099.00	1097.0	1098.00	1098.3	1107.00	1099.1	1106.99
PROPOSED GRADE												

EXISTING GRADE	1097.8	1103.50	1100.00	1098.0	1100.00	1099.9	1100.00	1102.2	1103.5	1105.1		
PROPOSED GRADE												

STA. 51+00 51+25 51+50 51+75 52+00 52+25 52+50 52+75

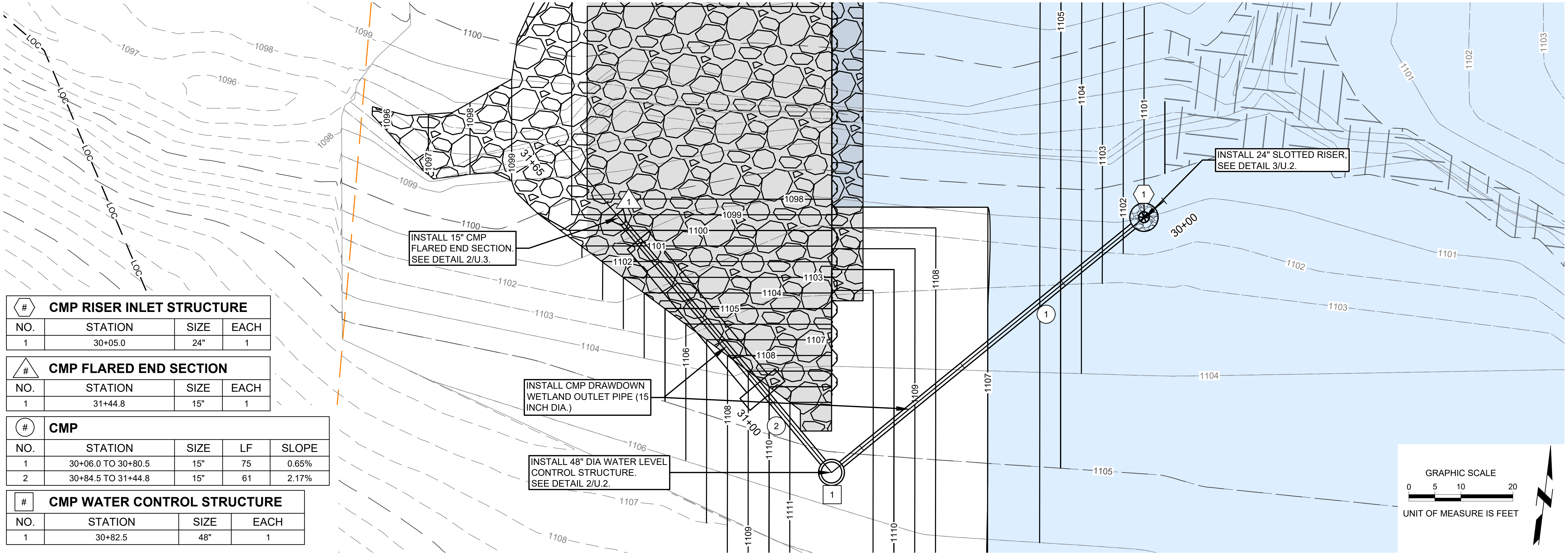
NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

PLAN & PROFILE - PRINCIPAL SPILLWAY

JEO PROJECT NO. 210779.18
FILE NAME S-210779.18-M.dwg
FIELD CREW JR & DHM
FIELD BOOK MIS29
DESIGNED BY JAA DATE 06-17-2024
DRAWN BY GTL DATE 07-31-2024
CHECKED BY JSS DATE 06-21-2024
APPROVED BY JTM DATE 03-03-0003
REVISIONS

SHEET **M.2**

J:\Projects\210779.18 - IDALS Carroll County Breakport Nutrient Reduction Wetlands - CAR853313A\7 Design\2 Drawings\Sheets\9-2-10779_M-M.dwg, sh

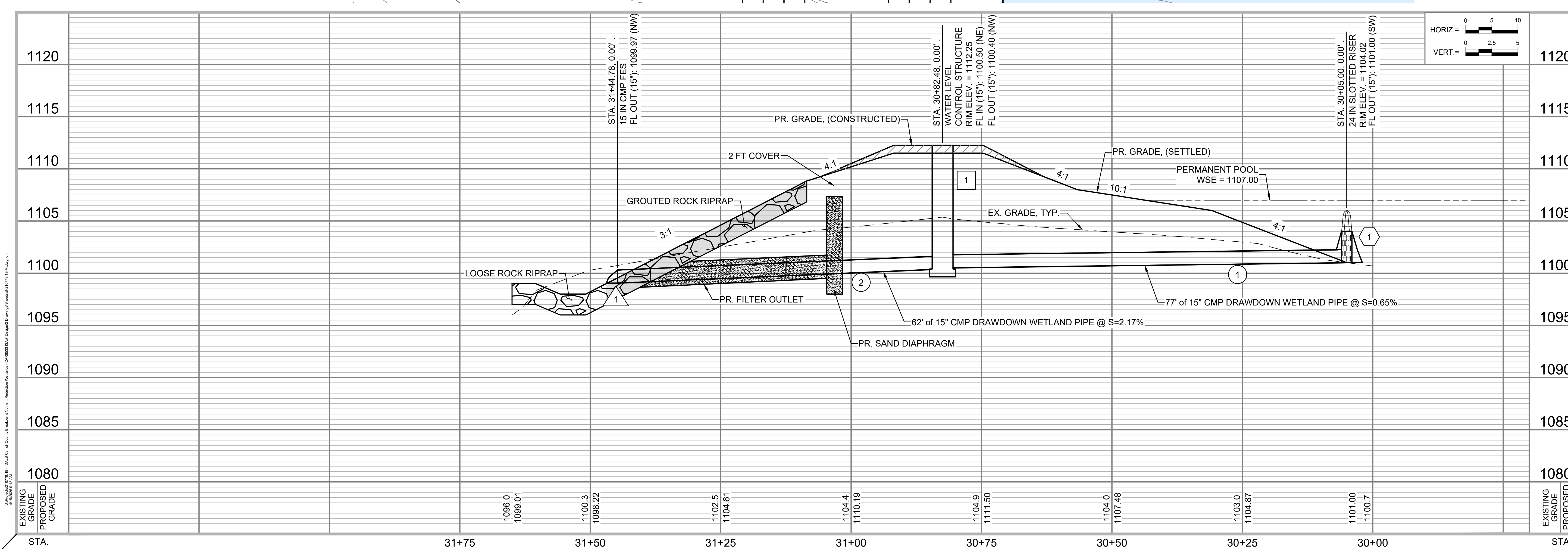


# CMP RISER INLET STRUCTURE			
NO.	STATION	SIZE	EACH
1	30+05.0	24"	1

# CMP FLARED END SECTION			
NO.	STATION	SIZE	EACH
1	31+44.8	15"	1

# CMP				
NO.	STATION	SIZE	LF	SLOPE
1	30+06.0 TO 30+80.5	15"	75	0.65%
2	30+84.5 TO 31+44.8	15"	61	2.17%

# CMP WATER CONTROL STRUCTURE			
NO.	STATION	SIZE	EACH
1	30+82.5	48"	1



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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

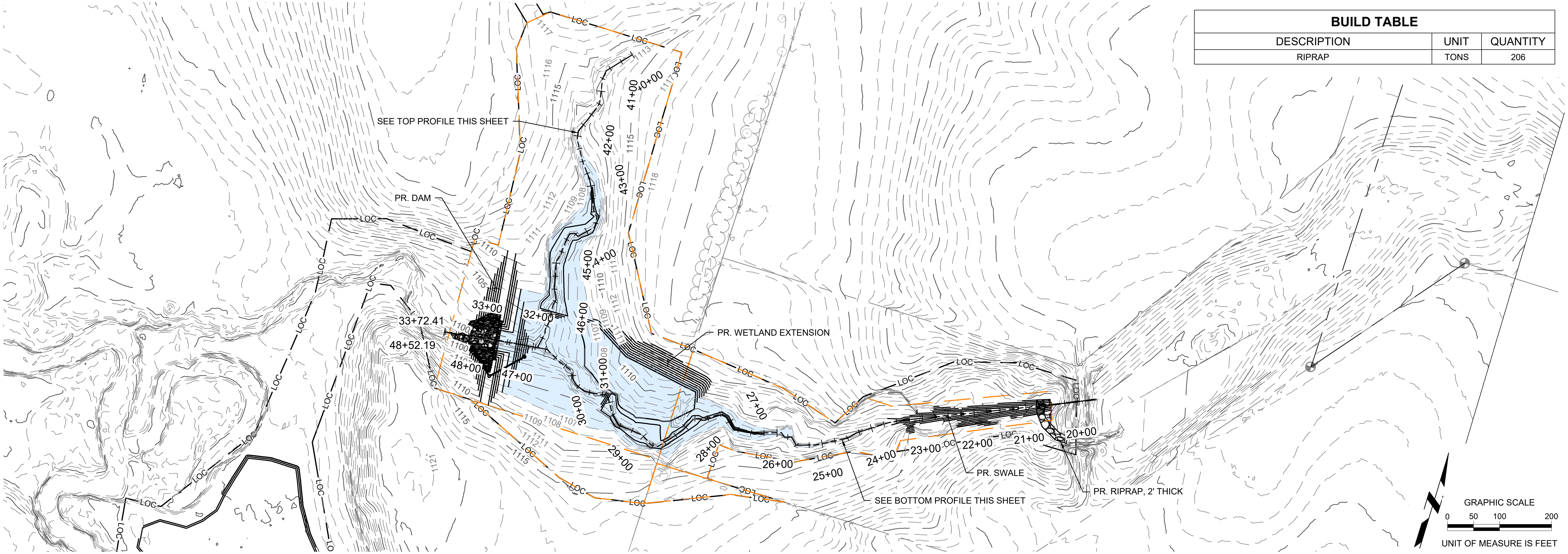
PLAN & PROFILE - DRAWDOWN STRUCTURE

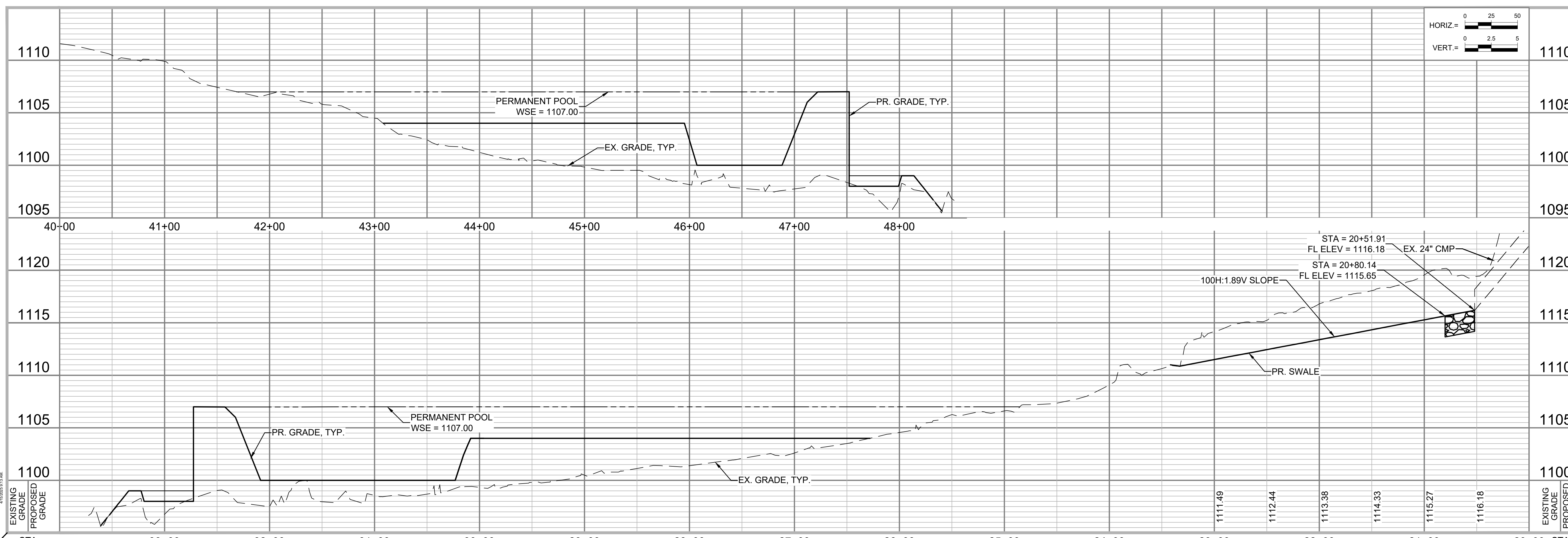
JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-M.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY JAA	DATE 06-17-2024
DRAWN BY GTL	DATE 07-31-2024
CHECKED BY JSS	DATE 06-21-2024
APPROVED BY JTM	DATE 03-03-0003
REVISIONS	

SHEET
M.3

BUILD TABLE

DESCRIPTION	UNIT	QUANTITY
RIPRAP	TONS	206





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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

PLAN & PROFILE - LONGITUDINAL WETLAND

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-M.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY JAA	DATE 06-17-2024
DRAWN BY GTL	DATE 07-31-2024
CHECKED BY JSS	DATE 06-21-2024
APPROVED BY JTM	DATE 03-03-0003
REVISIONS	

SHEET
M.4

NOTES:

1. STRUCTURE SEEDING TO BE INSTALLED ABOVE THE 1107.00 ELEVATION ON THE POOL SIDE OF THE STRUCTURE. INSTALL SEEDING AND MULCH ON ENTIRE TOP AND DOWNSTREAM SIDE AND EXTEND TO 5' OUTSIDE TOE AS NECESSARY.
2. BUFFER SEEDING AND MULCH TO BE INSTALLED IN ALL OTHER AREAS WITHIN THE LIMITS OF CONSTRUCTION, EXCLUDING BELOW THE 1107.00 ELEVATION WITHIN THE POOL. SEEDING AND MULCHING TO EXTEND 5' INSIDE THE NORMAL POOL ELEVATION. MULCH FOR NATIVE SEEDING TO BE PROVIDED ON ALL SLOPES STEEPER THAN 4:1.
3. RESEED DISTURBED WATERWAY WITH BROME SEEDING.
4. RESEED DISTURBED CROP GROUND WITH OAT COVER CROP.
5. REFER TO IOWA DOT SRP EC-204 FOR STRAW WATTLE DETAIL.

ANTICIPATED CROP DAMAGES: 0.0 ACRES

GRAPHIC SCALE

0 50 100 200

UNIT OF MEASURE IS FEET

EROSION CONTROL QUANTITIES			
SEEDING TYPE	HATCH	UNIT	QUANTITY
STRUCTURE		ACRES	0.3
BUFFER		ACRES	12.1
WATERWAY		ACRES	0.3

STRAW WATTLE	
UNIT	QUANTITY
LF	2,175
NOTE: STRAW WATTLE CHECK LENGTH SHALL BE 30 FEET	

STRAW WATTLE CHECK, 50 FT SPACING, TYP.

DOZIER TRUST

A AVE

120TH ST

VG LEGACY FARMS, LLC

PERMANENT POOL ELEV. = 1107.00

PR. DAM

PERMANENT EASEMENT, TYP.

STRAW WATTLE, TYP.

REMSBURG, DAVID L

SEEDING LIMITS, TYP.

PR. BORROW SITE

PURGATORY CREEK

LOC

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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

SEEDING & EROSION CONTROL PLAN

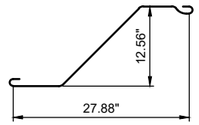
JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-R.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	
REVISIONS	

SHEET

R.1

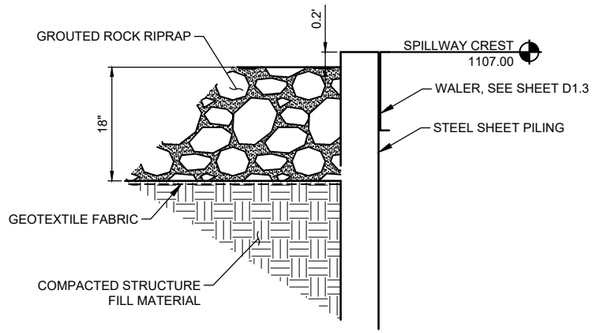
NOTES:

1. DESIGN SHEET PILE AREA = 1,940 SF
2. SHEET PILE:
   - MINIMUM SECTION MODULUS = 24.2 CU.IN. PER FT. OF WALL
   - MINIMUM THICKNESS = 0.375 IN.
   - MINIMUM STEEL GRADE = 36 KSI
   - MEET ASTM A-328, A-572, OR A-690 MATERIAL SPECIFICATION
   - MINIMUM MOMENT OF INERTIA OF 152 IN. PER FOOT OF WALL
3. PILING TO BE INSTALLED STARTING FROM THE CENTER OF THE WEIR SECTION AND PROGRESSING AWAY FROM CENTERLINE.
4. ALTERNATE SHEET PILE SECTIONS THAT MEET THE MINIMUM REQUIREMENTS NOTED ABOVE MUST BE PRE-APPROVED BY THE ENGINEER PRIOR TO THE BID. ALTERNATES MUST BE SUBMITTED PRIOR TO THE PRE-BID MEETING. APPROVED ALTERNATES WILL BE PUBLISHED IN AN ADENDUM.



PZC 13 SHEET PILE CROSS-SECTION
SCALE: N.T.S.

1 **SHEET PILING DETAIL**
SCALE: N.T.S.



NOTES:

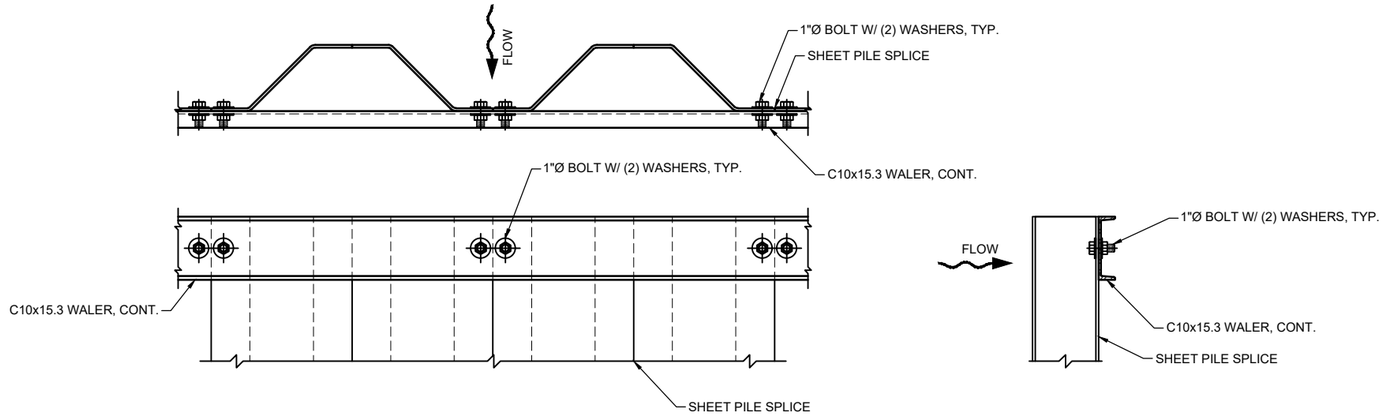
AN AREA 4' WIDE ADJACENT TO THE SHEET PILE, EXTENDING THE LENGTH OF THE WEIR SHALL BE CONSTRUCTED FROM EXCESS GROUT TO HAVE A FLAT, LEVEL SURFACE WITH FLOAT FINISH. NO PORTION OF THIS AREA OR THE RIPRAP UPSTREAM SHALL EXCEED ELEVATION 972.80.

FINISH GROUP / RIPRAP SHALL BE 0.2 FEET BELOW TOP OF SHEET PILING.

2 **GROUTED ROCK RIPRAP (UPSTREAM SECTION)**
SCALE: N.T.S.

NOTES:

1. ALL BOLTS WILL BE 1" DIA. WITH 2 WASHERS, BOLT SHALL BE EXTENDED A MINIMUM OF 1/2" BEYOND THE NUT.
2. ALL HOLES SHELL BE DRILLED 1/16" DIA LARGER THAN THE BOLT.
3. IT IS RECOMMENDED THAT THE WALER SHALL BE PLACED ON THE DOWNSTREAM SIDE OF THE WEIR.
4. ANY HOLES LEFT IN THE SHEET PILE (LIFTING HOOKS, ETC.) SHALL BE CLOSED OFF TO NOT ALLOW WATER TO FLOW THROUGH SHEET PILE.
5. AFTER SHEETING AND WALER INSTALLATION ALL SHEETING IS TO BE CUT TO CONFORM WITH 3:1 SLOPE.
6. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATION AISC. FABRICATOR SHALL SUBMIT SHOP DRAWINGS. FABRICATE AFTER ENGINEER'S REVIEW.
7. DEFLECTION SHALL BE MADE IN FABRICATED PIECES AND STILL CONFORM TO THE DIMENSIONS.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LIVE LOADS.
9. PROVIDE ALL NECESSARY TEMPORARY BRACING, SHORING, GUYING OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
10. IF CONTRACTOR WISHES TO WELD WALER TO SHEET PILE INSTEAD OF BOLTING, CONTRACTOR MUST PRODIVDE ENGINEER THE DESIGN AND SPECIFICATIONS THEY INTEND TO FOLLOW.



3 **WALER DETAIL**
SCALE: N.T.S.

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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

SHEET PILE DETAILS

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FILE NAME	S-210779.18-U.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
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JAA	06-17-2024
DRAWN BY	DATE
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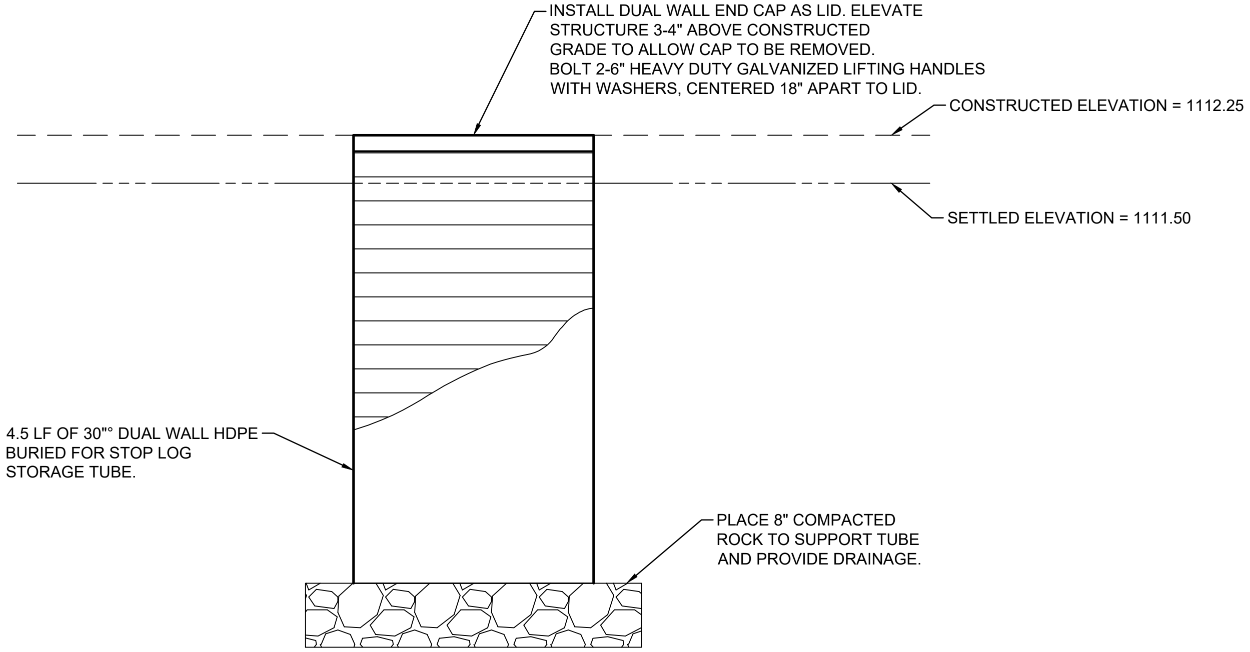
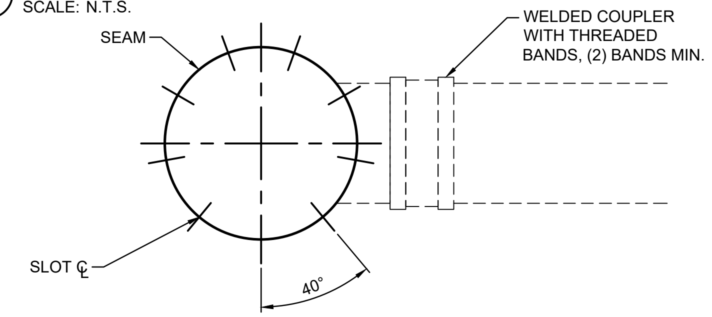
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
U.1



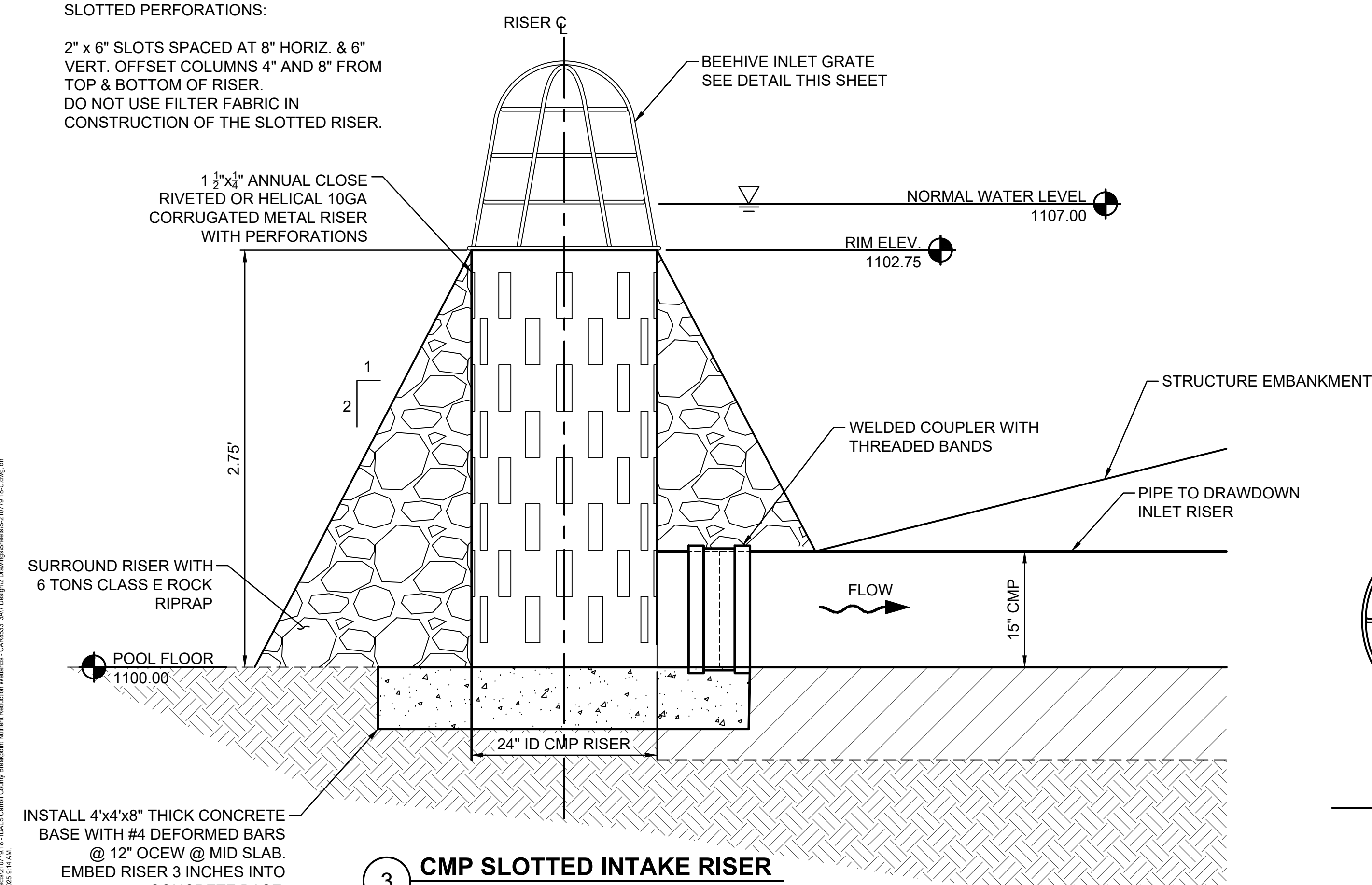
1 COVER & STOP LOG STORAGE STRUCTURE

SCALE: N.T.S.



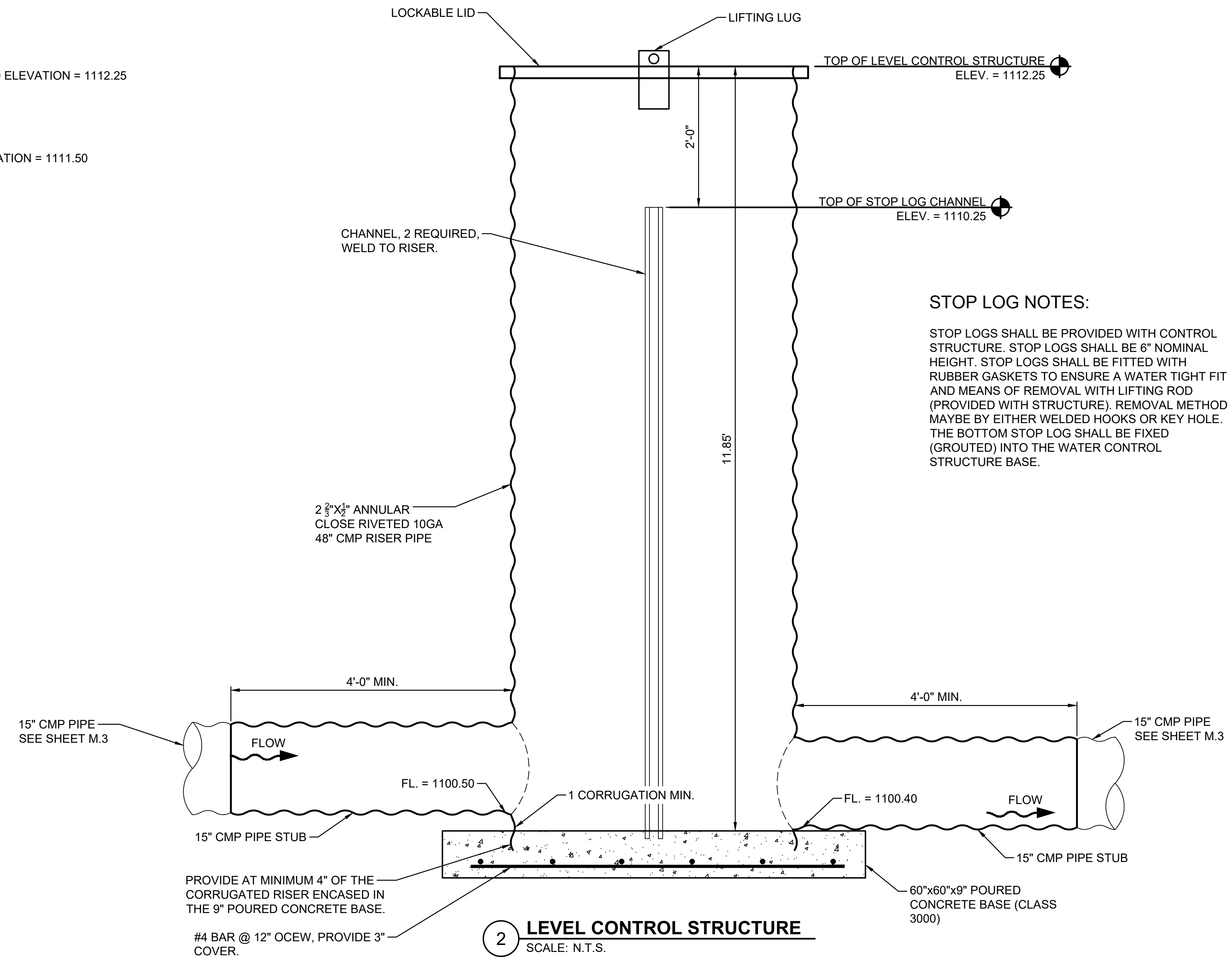
NOTE:
SLOTTED PERFORATIONS:

2" x 6" SLOTS SPACED AT 8" HORIZ. & 6" VERT. OFFSET COLUMNS 4" AND 8" FROM TOP & BOTTOM OF RISER.
DO NOT USE FILTER FABRIC IN CONSTRUCTION OF THE SLOTTED RISER.



3 CMP SLOTTED INTAKE RISER

SCALE: N.T.S.



2 LEVEL CONTROL STRUCTURE

SCALE: N.T.S.

STOP LOG NOTES:

STOP LOGS SHALL BE PROVIDED WITH CONTROL STRUCTURE. STOP LOGS SHALL BE 6" NOMINAL HEIGHT. STOP LOGS SHALL BE FITTED WITH RUBBER GASKETS TO ENSURE A WATER TIGHT FIT AND MEANS OF REMOVAL WITH LIFTING ROD (PROVIDED WITH STRUCTURE). REMOVAL METHOD MAYBE BY EITHER WELDED HOOKS OR KEY HOLE. THE BOTTOM STOP LOG SHALL BE FIXED (GROUTED) INTO THE WATER CONTROL STRUCTURE BASE.

NOTE:
THE FOLLOWING DESIGNATION FOR PIPE CLASSIFICATION, CORRUGATIONS AND COATINGS WHEN REFERRED TO ON THE DRAWINGS ARE IN ACCORDANCE WITH CURRENT ASTM'S:

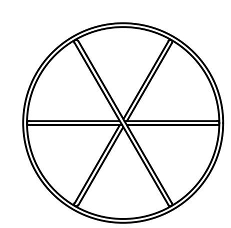
A760 STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE, METALLIC-COATED.

A761 STANDARD SPECIFICATION FOR STEEL, GALVANIZED CORRUGATED STRUCTURAL PLATES AND FASTENERS.

A849 STANDARD SPECIFICATION FOR POST-COATED AND LINED CORRUGATED STEEL SEWER AND DRAINAGE PIPE (BITUMINOUS OR CONCRETE)

A885 STANDARD SPECIFICATION OF STEEL SHEET,ZINC AND ARIMID FIBER COMPOSITE-COATED FOR CORRUGATED STEEL SEWER, CULVERT AND UNDERDRAIN PIPE.

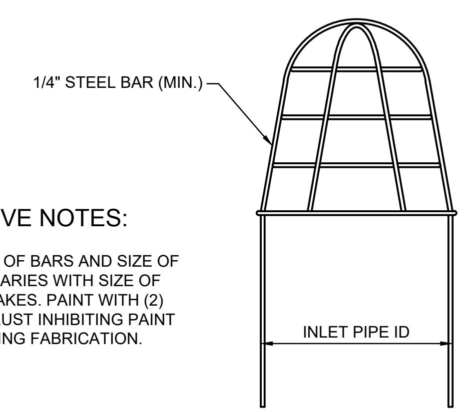
NOTE:
TAR MASTIC ON ALL JOINTS FOR RISER AND PIPE TEE'S.



PLAN

BEEHIVE NOTES:

NUMBER OF BARS AND SIZE OF GRATE VARIES WITH SIZE OF TILE INTAKES. PAINT WITH (2) COATS RUST INHIBITING PAINT FOLLOWING FABRICATION.



SECTION

4 BEEHIVE INLET GRATE (STEEL BARS)

SCALE: N.T.S.

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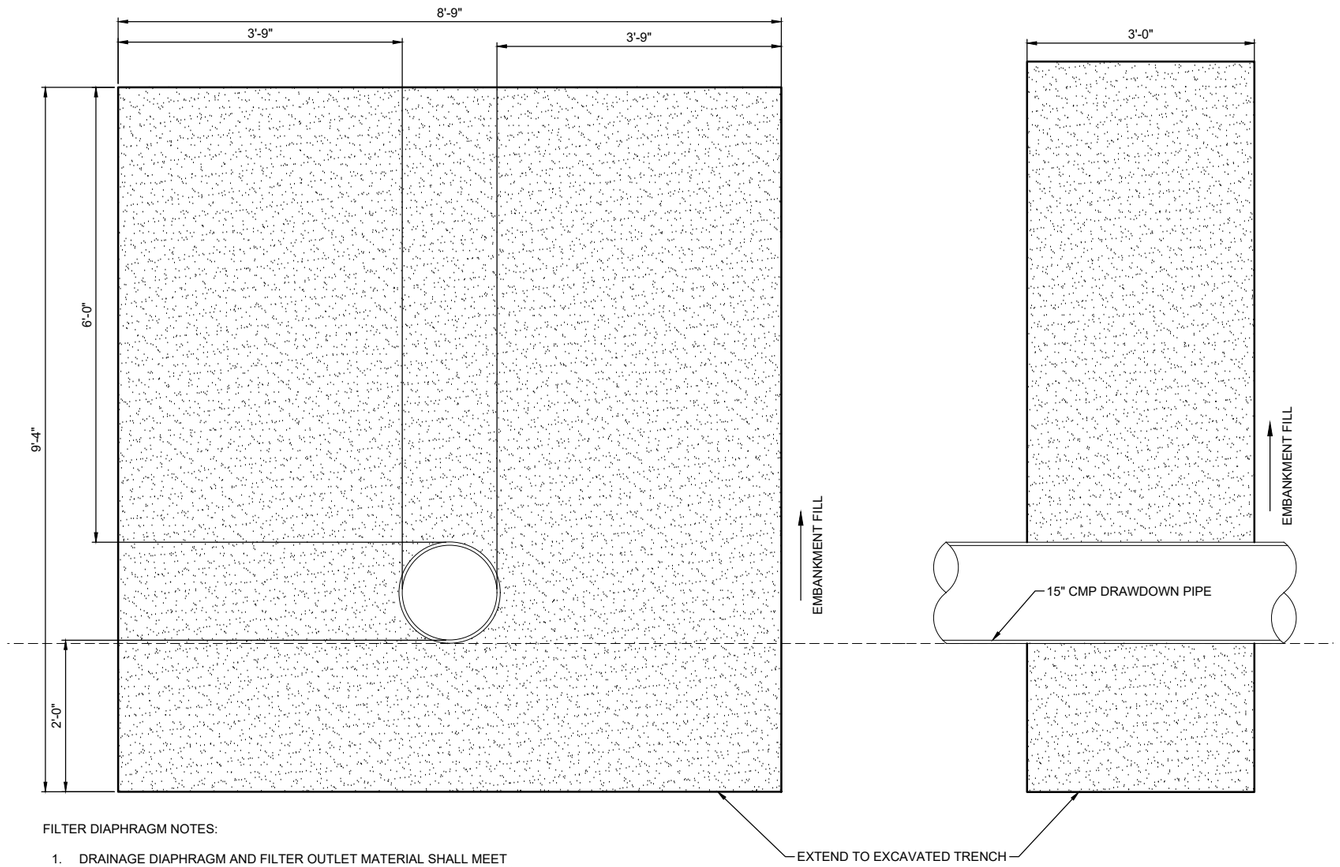
NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

DRAWDOWN STRUCTURE DETAILS

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-U.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
U.2

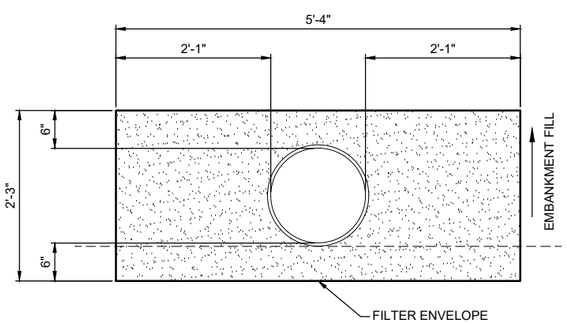


FILTER DIAPHRAGM NOTES:

1. DRAINAGE DIAPHRAGM AND FILTER OUTLET MATERIAL SHALL MEET THE FINE DRAINFILL GRADATION OF IA-24, DRAINFILL SPECIFICATION.
2. FILTER MATERIAL SHALL BE PLACED IN 8" LIFTS MAXIMUM.
3. SEE PROFILE VIEW FOR LOCATION.

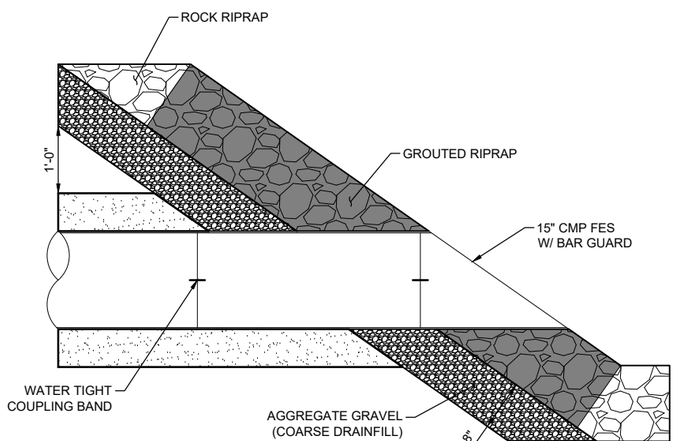
1 FILTER DIAPHRAGM OUTLET

SCALE: N.T.S.



FILTER OUTLET NOTES:

1. THE FILTER ENVELOPE SHALL FULLY SURROUND THE OUTLET PIPE FROM THE FILTER DIAPHRAGM TO OUTLET.
2. EXTEND GRAVEL LAYER 1' BEYOND FILTER FACE IN ALL DIRECTION.
3. DO NOT PLACE GEOTEXTILE FABRIC BETWEEN GRAVEL LAYER AND ROCK RIPRAP.



2 FILTER OUTLET

SCALE: N.T.S.

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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A
--- ---

FILTER OUTLET DETAILS

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-U.dwg
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FIELD BOOK	MIS29
DESIGNED BY	DATE
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GTL	07-31-2024
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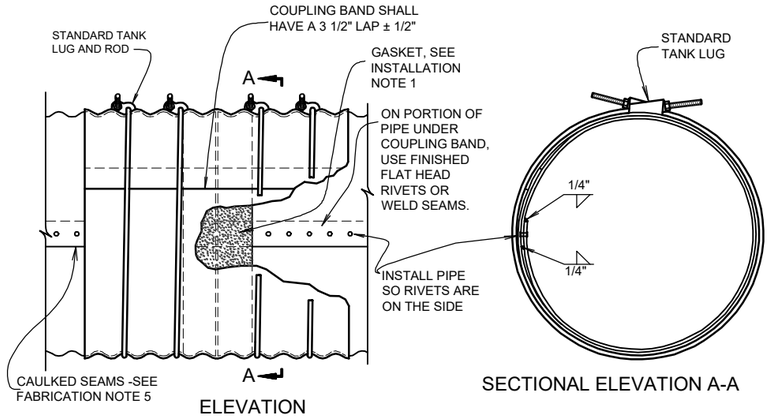
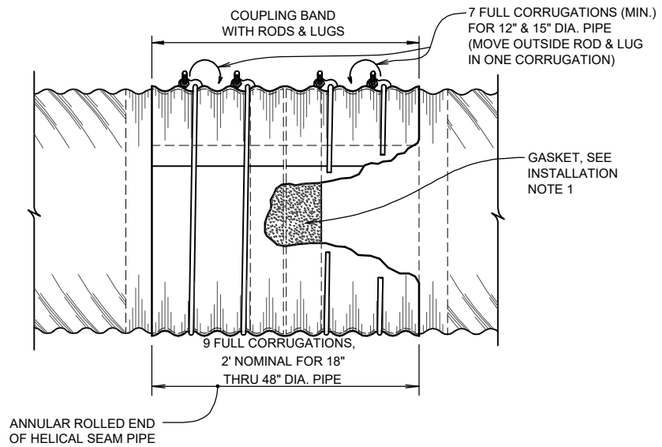
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
U.3



1 **WATERTIGHT COUPLING BAND FOR ANNULAR PIPE**
SCALE: N.T.S.



1 **WATERTIGHT COUPLING BAND FOR HELICAL PIPE**
SCALE: N.T.S.

FABRICATION NOTES:

1) WHEN SEVERAL DIFFERENT COATINGS OR CORRUGATIONS ARE CHECKED IN THE COLUMN BOXES, EACH TYPE IS ACCEPTABLE, BUT ONLY ONE TYPE SHALL BE USED IN EACH INSTALLATION.

2) COUPLING BANDS PER DETAIL "A" SHALL HAVE THE SAME CORRUGATION REQUIREMENT AND THE SAME COATING AS THE DESIGNATED PIPE.

3) ALL WELDS AND ALL HEAT AFFECTED AREAS ON COATED STEEL SHALL BE THOROUGHLY CLEANED AND TREATED IN ACCORDANCE WITH ASTM'S.

4) FOR PIPE LARGER THAN 15" DIAMETER, THE ROD SHALL BE 1/2" DIAMETER. DIAMETER HOLES IN THE LUGS SHALL BE 1/8" LARGER THAN THE DIAMETER OF THE ROD USED.

5) DURING FABRICATION, WHEN ASPHALT COATING IS NOT USED, RIVETED SEAMS SHALL BE CAULKED WITH AS ASPHALT OR TAR BASED MATERIAL MEETING ASTM A849 TO PROVIDE A WATERTIGHT SEAM. ALL CIRCUMFERENTIAL AND LONGITUDINAL SEAMS SHALL BE CAULKED BEFORE RIVETING. THIS SHALL BE ACCOMPLISHED BY APPLYING A UNIFORM BEAD OF THE ASPHALT OR TAR BASED COMPOUND TO THE INNER LAP SURFACE BEFORE RIVETING SUCH THAT WHEN THE RIVETS ARE IN PLACE ALL VOIDS ARE FILLED.

6) CLOSE RIVETED PIPE SHALL BE FABRICATED SO THAT THE RIVET SPACING IN THE CIRCUMFERENTIAL SEAMS SHALL NOT EXCEED 3 INCHES.

INSTALLATION NOTES:

1) THE SLEEVE TYPE NEOPRENE GASKET SIZE SHALL BE 3/8" THICK WITH A MINIMUM WIDTH OF 7" CENTERED ON THE PIPE JOINT AND FASTENED AT ENDS TO FORM A FULL CIRCLE. IN LIEU OF A NEOPRENE GASKET, ASPHALT OR TAR BASED MASTIC MAY BE USED FOR DETAIL "A" AND "B". (SEE NOTE 5)

2) IN CONNECTING THE PIPE SECTIONS, THE COUPLING BANDS WILL BE CENTERED ON THE PIPE JOINT AND ALIGNED FOR COMPLETE AND TIGHT NESTING OF CORRUGATIONS BETWEEN COUPLING BAND AND EACH PIPE SECTION. RODS AND LUGS ON COUPLING BANDS WILL BE INSTALLED ACCORDING TO THE DRAWINGS. THE NUTS ON THE RODS WILL BE TIGHTENED WITHOUT OVER STRESS AND WILL BE RETIGHTENED AT LEAST TWICE AFTER INITIAL INSTALLATION, AT INTERVALS OF APPROXIMATELY 1/2 HOUR. THE FINAL TENSION ON THE RODS SHALL BE DETERMINED BY THE ENGINEER. BACKFILLING AROUND THE PIPE, EXCEPT AT COUPLING BANDS, MAY PROCEED DURING THE INTERVALS REQUIRED FOR TIGHTENING BANDS.

3) BEFORE COUPLING BANDS ARE INSTALLED ON RIVETED PIPE, THE PIPE SECTIONS THAT ARE TO BE CONNECTED SHALL BE ROTATED SO RIVETS ON THE PIPE ARE ON THE SIDE OF THE PIPE (SEE DETAIL "A") AND THE INSIDE LAPS ARE POINTED DOWNSTREAM.

4) ON BITUMINOUS COATED PIPE, REMOVE EXCESS BITUMINOUS COATING FROM CORRUGATIONS WHERE BANDS AND PIPE JOIN.

5) THE ENDS OF THE TWO PIPE SECTIONS AND THE LAP SEAM WILL BE COATED WITH 1/4" OF ASPHALT OR TAR BASED MASTIC (ASTM A849, TROWEL GRADE) FOR DETAIL "A" COUPLING BANDS. THE MASTIC COATED AREAS SHOULD BE KEPT FREE OF ALL DIRT, GRAVEL, AND OTHER FOREIGN MATERIAL UNTIL BANDS ARE IN PLACE AND TIGHTENED. WHEN AIR TEMPERATURE IN 50°F OR LOWER, HEAT WILL BE APPLIED TO SOFTEN, BUT NOT BURN OR MELT, THE MASTIC.

6) FLANGE COUPLING BANDS SHALL BE ALIGNED WITH THE MATCHING SLOTS, AND NUTS ON THE BOLTS TIGHTENED SECURELY. NEOPRENE GASKET OR MASTIC SHALL BE USED BETWEEN FLANGES, AND NUTS WILL BE RETIGHTENED AFTER COMPLETE ASSEMBLY.

METAL PIPE REQUIREMENTS:

NOTE: THE FOLLOWING DESIGNATIONS FOR PIPE CLASSIFICATIONS, CORRUGATIONS AND COATINGS WHEN REFERRED TO ON THE DRAWINGS ARE IN ACCORDANCE WITH CURRENT ASTM'S:

A760 STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE, METALLIC-COATED FOR SEWERS AND DRAINS.

A761 STANDARD SPECIFICATION FOR CORRUGATED STEEL STRUCTURAL PLATE, ZINC-COATED, FOR FIELD BOLTED PIPE, PIPE ANCHORS, AND ARCHES.

A762 STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE, POLYMER PRECOATED FOR SEWERS AND DRAINS.

A849 STANDARD SPECIFICATION FOR POST APPLIED COATINGS, PAVINGS, AND LININGS FOR CORRUGATED STEEL SEWER AND DRAINAGE PIPE.

A885 STANDARD SPECIFICATION FOR STEEL SHEET, ZINC AND ARAMID FIBER COMPOSITE-COATED FOR CORRUGATED STEEL SEWER, CULVERT AND UNDERDRAIN PIPE.

PIPE CLASSIFICATION:

[X] TYPE I FULL CIRCULAR CROSS-SECTION

[ ] TYPE II, THIS IS TYPE I PIPE WHICH HAS BEEN REFORMED INTO A PIPE ARCH HAVING APPROXIMATELY A FLAT BOTTOM

CORRUGATION REQUIREMENTS FOR TYPE I AND II PIPE:

NOMINAL SIZE (INCH):

[ ] 1 1/2 x 1/4 (AVAILABLE ONLY IN HELICALLY CORRUGATED PIPE)
[X] 2 2/3 x 1/2
[ ] 3 x 1

COATINGS - SEE FABRICATION NOTE No.1:

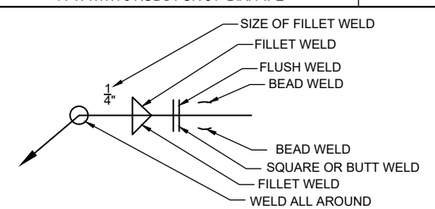
[ ] ALUMINUM COATED STEEL - SEE FABRICATION NOTE NO. 5
[X] ZINC COATED STEEL - SEE FABRICATION NOTE NO. 5
[ ] POLYMER PRECOATED - SEE FABRICATION NOTE NO. 5
[ ] ARAMID FIBER COMPOSITE, BITUMINOUS COATED
[ ] FULLY BITUMINOUS COATED

CORRUGATION TYPES - SEE FABRICATION NOTE No.1:

[X] ANNULAR, CLOSE RIVETED
[X] HELICAL

COUPLING BAND REQUIREMENTS

GAGE		BAND TYPE AND NUMBER OF RODS REQUIRED	NUMBER BANDS REQUIRED	SEE DETAIL			
14	X	2 FT. WITH 4 RODS FOR 36" DIA. PIPE	AS REQUIRED	X	A	X	B
-		4 FT. WITH 6 RODS FOR 54" DIA. PIPE	-		A		B



NOTE:
WELD SYMBOL ABOVE LINE INDICATES WELD IS ON OPPOSITE SIDE OF JOINT TO WHICH ARROWS POINTS.
WELD SYMBOL BELOW LINE INDICATES WELD IS ON SIDE OF JOINT TO WHICH ARROW POINTS.

1 **WELD SYMBOLS**
SCALE: N.T.S

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NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

COUPLING DETAILS

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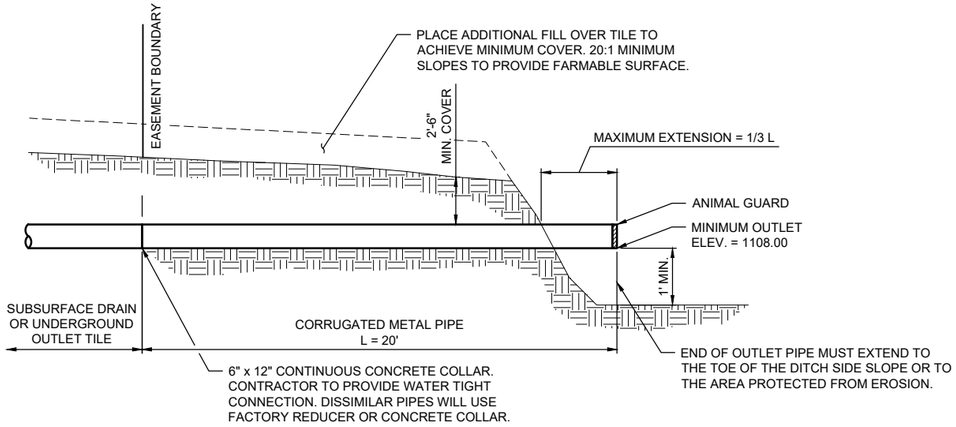
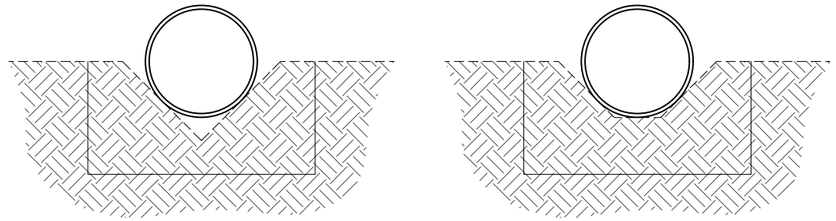
APPROVED BY	DATE
JTM	?
REVISIONS	

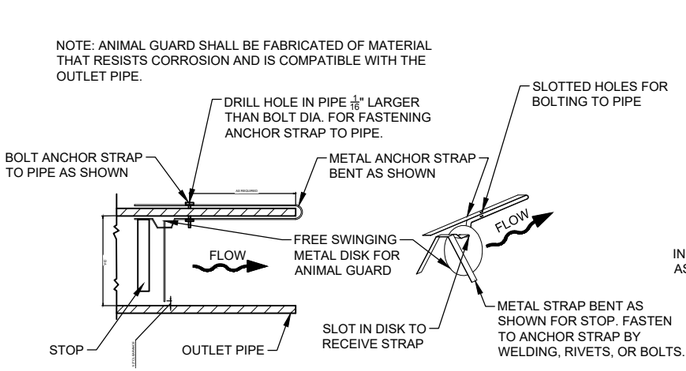
SHEET
U.4



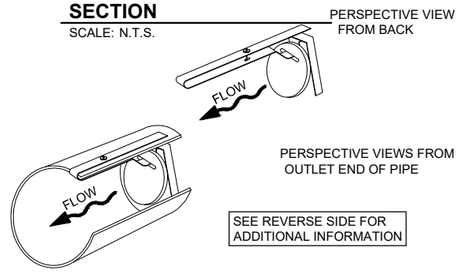
1 TILE OUTLET CROSS SECTION AT CENTER OF PIPE
SCALE: N.T.S.

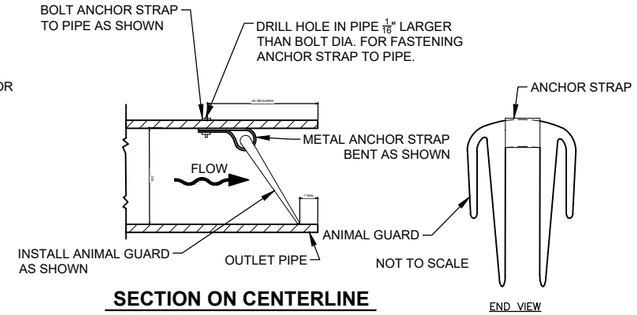


2 AG DRAIN TILE TRENCH INSTALLATION DETAIL
SCALE: N.T.S.



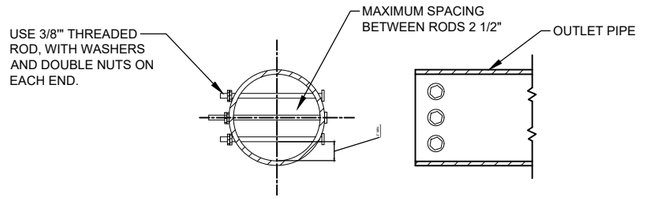
SECTION
SCALE: N.T.S.





SECTION ON CENTERLINE
SCALE: N.T.S.

NOTE: ANIMAL GUARD SHALL BE FABRICATED OF MATERIAL THAT RESISTS CORROSION AND IS COMPATIBLE WITH THE OUTLET PIPE.



END ELEVATION
SCALE: N.T.S.

SIDE ELEVATION
SCALE: N.T.S.

NOTE: OTHER OPTIONS FOR SECURING THE RODS IN PLACE INCLUDE COTTER PINS, OR SIMPLY BENDING THE RODS AT RIGHT ANGLE TO THE PIPE. SMOOTH ROD WOULD BE ACCEPTABLE IF THESE METHODS ARE USED.

3 ANIMAL GUARD FOR TILE OUTLETS
SCALE: N.T.S.

JEO CONSULTING GROUP 1-800-728-8567

NUTRIENT REDUCTION WETLAND
CARROLL COUNTY, IOWA
CAR853313A

TILE & GEOTEXTILE FABRIC DETAILS

JEO PROJECT NO.	210779.18
FILE NAME	S-210779.18-U.dwg
FIELD CREW	JR & DHM
FIELD BOOK	MIS29
DESIGNED BY	DATE
JAA	06-17-2024
DRAWN BY	DATE
GTL	07-31-2024
CHECKED BY	DATE
JSS	06-21-2024
APPROVED BY	DATE
JTM	?
REVISIONS	

SHEET
U.5