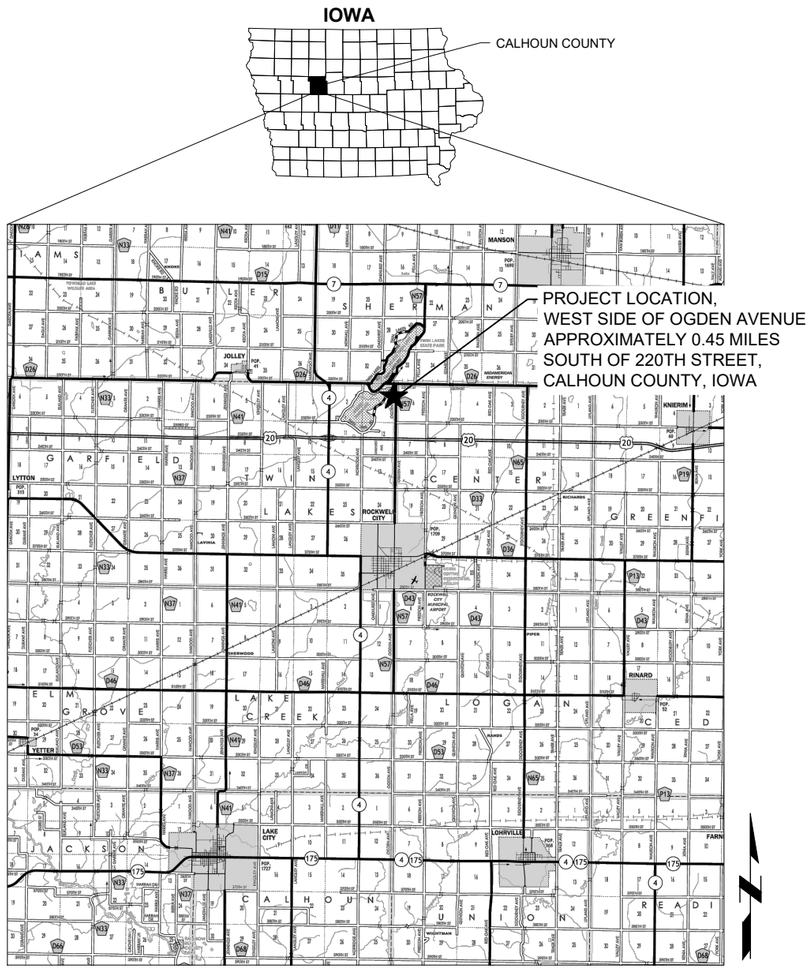
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

ENGINEER:

SUBMITTING ORGANIZATION
JEO CONSULTING GROUP, INC.
1937 N CHESTNUT ST.
WAHOO, NE 68066
P: 800.723.8567

COORDINATING PROFESSIONAL
JACOB T. MIRIOVSKY, PE
JEO CONSULTING GROUP, INC.
WAHOO, NE 68066
P: 402.367.2540
EMAIL: jmiriovsky@jeo.com

INDEX OF SHEETS:



LOCATION MAP
SCALE: 1" = 12,000'

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

ENGINEER JOB CLASS IV

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.

(signature) 7/18/2025 (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 SET NAMED IN THE SHEET INDEX

JUAN ALEJANDRO ARELLANES GALLARZO JR 28990 LICENSED PROFESSIONAL ENGINEER IOWA

TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, BELIEF, THE DESIGN MEETS NRCS STANDARDS AND SPECIFICATIONS AND IS IN COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS.

ENGINEER'S SIGNATURE: 7/18/2025
NAME DATE

CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL

ONE CALL TICKET NO.:_____

PROJECT SPONSOR:

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

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

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.

CULTURAL RESOURCES NOTE:
IF CULTURAL RESOURCES ARE IDENTIFIED DURING CONSTRUCTION, WORK WILL STOP IMMEDIATELY AND IDALS/ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

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.

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 1-800-723-8567

PUMPED NUTRIENT REDUCTION WETLAND
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COVER SHEET & LOCATION MAP

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-A.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
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APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

SHEET A.1

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	
CONTROL POINT (NON-PROPERTY)	
MONUMENT FOUND (PROPERTY)	
MONUMENT SET	
TEMPORARY POINT	
TEST BORING	
POINT ELEVATION (EXISTING)	× 0.00
POINT ELEVATION (PROPOSED)	0000.00 TC / 100.00 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

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SYMBOLS SHEET

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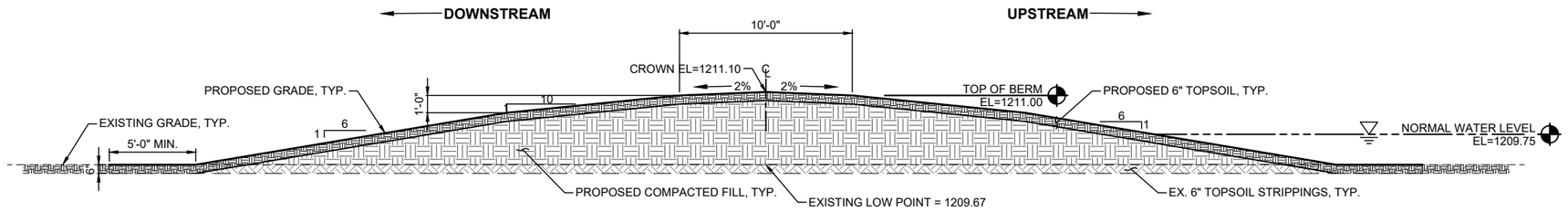
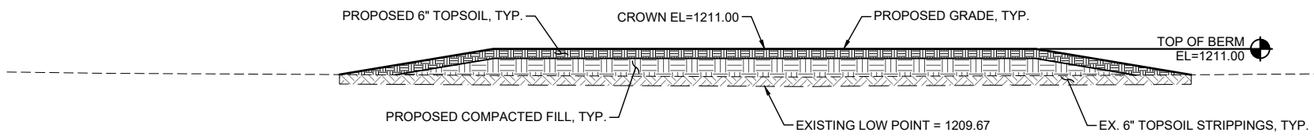
REVISIONS

SHEET **A.2**

PRELIMINARY PRELIMINARY PRELIMINARY
NOT FOR CONSTRUCTION
99%
DATE:
9/3/2024



1 BERM - TYPICAL CROSS SECTION
SCALE: N.T.S.



2 BERM - TYPICAL LONGITUDINAL PROFILE
SCALE: N.T.S.

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TYPICAL CROSS SECTION DETAILS - DAM

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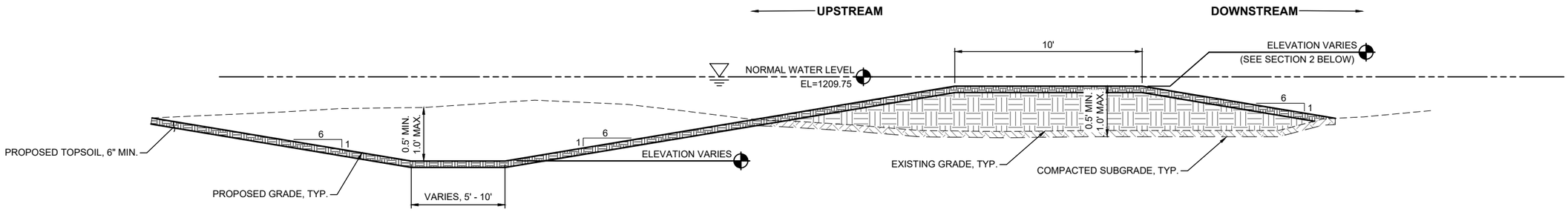
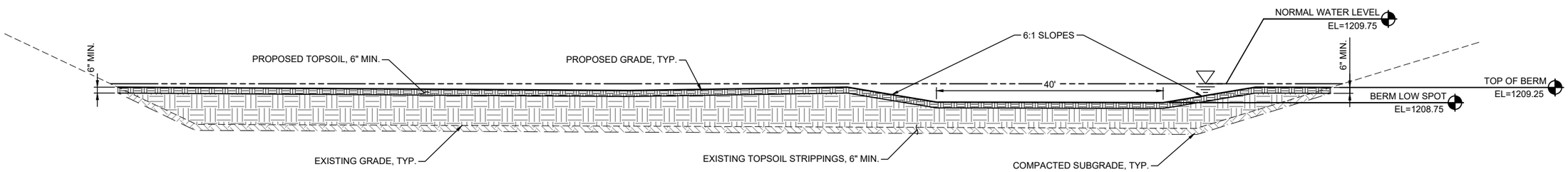
SHEET
B.1



1 SUBMERGED BERM TYPICAL SECTION
SCALE: N.T.S.



2 SUBMERGED BERM TYPICAL PROFILE
SCALE: N.T.S.

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TYPICAL CROSS SECTION DETAILS - BERMS & BORROW

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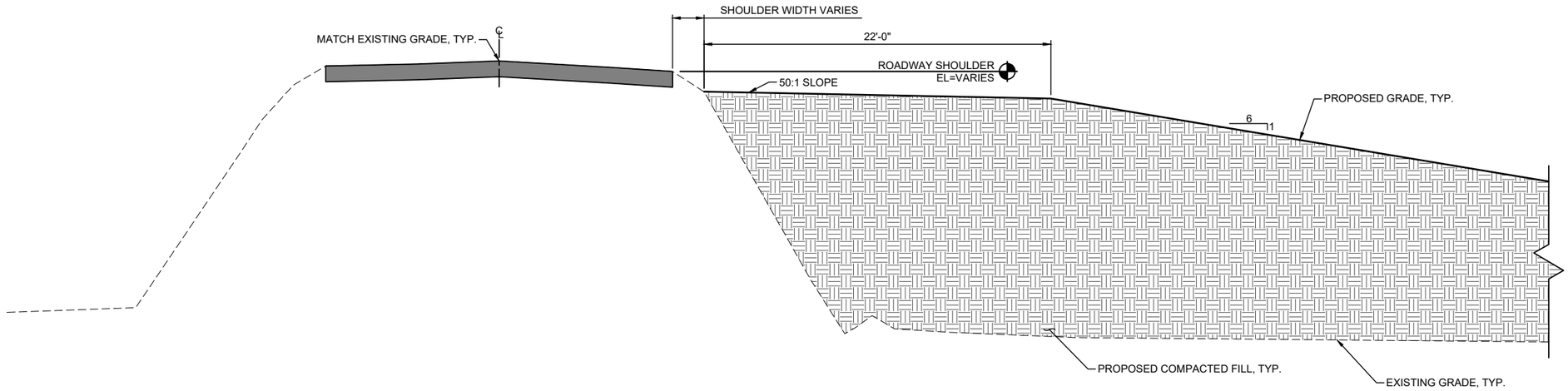
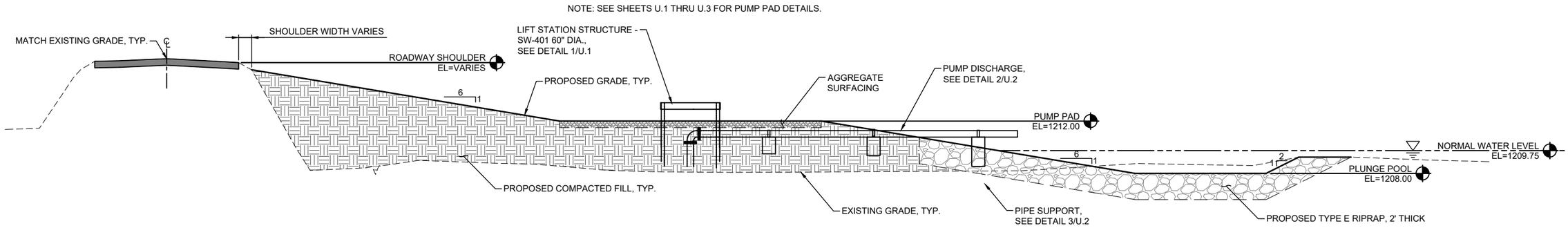
SHEET
B.2



1 TYPICAL ROADWAY SHOULDER
SCALE: N.T.S.



2 TYPICAL ROADWAY SHOULDER WITH PUMP PAD
SCALE: N.T.S.

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TYPICAL CROSS SECTION DETAILS - ROADWAY

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SHEET
B.3

GENERAL

1. THE MOST RECENT EDITIONS OF THE IOWA NRCS CONSTRUCTION SPECIFICATIONS SHALL APPLY TO ALL WORK PERFORMED ON THIS PROJECT UNLESS OTHERWISE NOTED.
2. WHEN REFERENCED, REFER TO THE MOST RECENT EDITION OF SUDAS STANDARD SPECIFICATIONS AND IOWA DOT MATERIALS I.M.'S. FOR SUPPLEMENTAL DETAILS AND STANDARDS.
3. ACCESS AND STAGING AREAS SHALL BE COORDINATED WITH THE LANDOWNER PRIOR TO MOBILIZATION.
4. WORK LIMITS SHALL BE CONFINED TO THE AREAS NOTED ON THE PLANS.
5. THERE ARE KNOWN UTILITIES IN THE WORK AREA. UTILITY WORK SHALL BE PERFORMED BY OTHERS. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION EFFORTS WITH UTILITY WORK TO BE DONE AS PART OF THE PROJECT.
7. DEWATERING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR MAINTAINING REASONABLY DRY WORKING CONDITIONS. ANY PUMPING SHALL BE CONSIDERED INCIDENTAL TO THE WORK.
8. AT LEAST ONE MEANS OF ACCESS SHALL BE MAINTAINED TO PRIVATE RESIDENCES DURING THE DURATION OF THE WORK PERIOD.
9. TRAFFIC CONTROL SIGNAGE SHALL BE IN CONFORMANCE WITH IDOT SDR TC-252.
10. AREAS SUBJECT TO EXCAVATION SHALL BE STRIPPED OF 9" OF TOPSOIL OR AS OTHERWISE DIRECTED BY THE ENGINEER. AREAS SUBJECT TO FILL OUTSIDE OF THE ROAD RIGHT-OF-WAY SHALL BE STRIPPED OF 12" OF TOPSOIL OR AS OTHERWISE DIRECTED BY THE ENGINEER. TOPSOIL SHALL BE STOCKPILED AND RESPREAD AT MINIMUM DEPTH OF 6".
11. AREAS OF OPEN TRENCH DRAIN TILE INSTALLATION SHALL BE STRIPPED OF 6" TOPSOIL AND STOCKPILED SEGREGATED FROM OTHER SOILS.
12. COMPACTION IS TO BE PERFORMED IN CONFORMANCE WITH NRCS SPECIFICATION IA-23. FILL PLACED INSIDE THE ROAD RIGHT-OF-WAY SHALL BE COMPACTED PER METHOD 2. ALL OTHER AREAS SHALL BE COMPACTED PER METHOD 1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING WATER TO ENSURE PROPER MOISTURE CONDITIONING.
13. FILL SHALL BE PLACED IN LOOSE LIFTS NOT TO EXCEED 9". ENGINEERING MAY DIRECT THINNER LIFTS BASED ON AVAILABLE COMPACTION EQUIPMENT. DISCOVERED TILE SHALL BE LEFT UNCOVERED AND REPORTED TO THE ENGINEER FOR REVIEW.
14. ALL ITEMS INCLUDING FITTINGS, VALVES, HARDWARE, COUPLINGS, REINFORCEMENT, WIRING, MOUNTING BRACKETS, LIDS, LOCKS, BEDDING, AND ANY OTHER APPURTENANCES RELATED TO SPECIFIED BID ITEMS SHALL BE CONSIDERED INCIDENTAL TO THE LISTED BID ITEM. THESE APPURTENANCES INCLUDE THOSE SHOWN IN THE PLANS, LISTED IN THE SPECIFICATIONS, AND OTHERS AS REQUIRED BY SUPPLIERS FOR PROPER INSTALLATION AND OPERATION.

STRUCTURAL

1. 28 DAY CONCRETE STRENGTH = 3500 PSI.
2. REINFORCING BARS = ASTM A615 GRADE 60.
3. THE MINIMUM COVERING FROM REINFORCEMENT TO SURFACE OF CONCRETE SHALL BE 3" MINIMUM FOR THE UNDERSIDE OF FOOTINGS AND 2" FROM ANY FORMED OR FINISHED FACE.
4. ALL CONCRETE TO HAVE 5%-7% AIR ENTRAINMENT.
5. EXPOSED CONCRETE EDGE TO RECEIVE ½" BEVEL.
6. DO NOT PLACE CONCRETE ON FROZEN GROUND.
7. LATEST ADDITION OF ACI-31B, ACI-117, & ACI-347 REQUIREMENTS FOR REINFORCED CONCRETE CONSTRUCTION & FORMWORK TO BE FOLLOWED
8. IF SHEETPILING IS UTILIZED ALL SHEET PILE SHALL BE INTERLOCKING. STEEL SHEET PILE SHALL HAVE A 7 GAUGE THICKNESS MINIMUM.
9. ALL METAL COMPONENTS FOR THIS PROJECT SHALL BE CONSTRUCTED OF CORROSION RESISTANT MATERIALS AS SPECIFIED. ANY COMPONENTS NOT SPECIFIED SHALL BE 304 STAINLESS STEEL OR APPROVED EQUAL MATERIAL.
10. BOLTS MAY BE CASE IN PLACE OR EXPOXIED. THREADS SHALL BE CUT OFF FLUSH WITH THE ANCHOR NUT.

EROSION CONTROL

1. SEEDING SHALL BE PERFORMED ON DISTURBED AREAS AT THE DIRECTION OF THE OWNER/ENGINEER.
2. THERE ARE DESIGNATED WETLAND AROUND THE PROJECT SITE. CONTRACTOR SHALL MAKE DILIGENT EFFORT TO CONTROL AND PREVENT SEDIMENT AND POLLUTION FROM CONSTRUCTION RELATED ACTIVITIES.
3. FINAL SEEDING AREA TO BE NEGOTIATED BY OWNER.

PIPE & TILE DETAILS

1. DUAL WALL PIPE SHALL BE NON-PERFORATED WITH WATER TIGHT GASKETS.
2. ANIMAL GUARDS SHALL BE AGRIDRAIN RG06 OR EQUIVALENT.
3. ENGINEER SHALL BE NOTIFIED PRIOR TO DUAL WALL HDPE INSTALLATION. DUAL WALL STICKS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. EACH PIPE SECTION SHALL BE SECURELY PUSHED TOGETHER BEFORE THE PLACEMENT OF THE NEXT SUBSEQUENT SECTION.
4. COMPACTION EFFORTS FOR HAUNCH AND BACKFILL SHALL BE SO THE INSTALLED JOINT IS IN COMPRESSION.

SOLAR AG. LIFT STATION

1. LIFT STATION SYSTEM SHALL BE PACKAGE # DPC3500-30C FROM SOLAR LIFT STATION WATER PUMPING SOLUTIONS. TO INCLUDE; HIGH OUTPUT 144 CELL BI-FACIAL SOLAR PANELS, PRE-WIRED SOLAR DRAINAGE PUMP CONTROLLER WITH HOUR METER, 230V AC 3-PHASE AXIAL FLOW PUMP WITH STAINLESS REMOVAL CABLE, TWO FLOAT SWITCHES WITH 50' CORDS, UNISTRUT CLAMPS FOR CONTROLLER MOUNTING, SUN RAC TOP OF POLE MOUNTING KIT FOR 4" SCHEDULE 40 STEEL POST, AND OTHER FURNISHINGS AS REQUIRED BY THE MANUFACTURER FOR OPERATION. SUBMERSIBLE PUMPING SYSTEM SHALL MEET THE REQUIREMENTS OUTLINED BELOW, AT A MINIMUM.
2. WETWELL: 60 INCH DIA., PRECAST CONC MH, SW-401 PER IOWA SUDAS STANDARDS, 2024 ED.
3. PUMP AND MOTOR SYSTEM:
   - A. TYPE: AXIAL FLOW SUBMERSIBLE; STAINLESS STEEL EXTERIOR;CAST DYNAMICALLY POWERED IMPELLER, NUTS AND BOLTS;
   - B. QUANTITY: 1 EACH
   - C. CAPACITY: MIN. 450 GPM @ 8 FEET TDH.
   - D. PUMP DISCHARGE: 4 INCH DIA., NPT MALE THREAD.
   - E. DISCHARGE PIPING: 8 INCH DIA. SCH 80 PVC WITH INLINE CHECK VALVE;
   - F. MOTOR: 3 HP, 3-PHASE, 3450 RPM; WATER LUBRICATED SUBMERSIBLE, STAINLESS STEEL EXTERIOR; LIGHTNING ARRESTOR; UL 778 RECOGNIZED;
   - G. SCREEN: EXTERIOR PLASTIC STRAINER, SDR 35 PVC, 0.5 INCH ROUND OPENINGS, DESIGNED FOR PUMPS;
   - H. STAINLESS STEEL LIFT CABLE SECURED TO DECK;
   - I. FLOAT SWITCHES: 2 EACH, MINIMUM; 50 FOOT CORDS; 120/320V ON-OFF.
4. SOLAR ALTERNATING CURRENT MOTOR CONTROLLER:
   - A. VOLTAGE RANGE: 100-380V;
   - B. PV PANELS OPEN CIRCUIT VOLTAGE: 400V MAX;
   - C. SOLAR PV RATED CURRENT PER CHANNEL: 12A;
   - D. THREE-PHASE AC MOTOR POWER: 10.5A;
   - E. ENCLOSURE: NEMA3/IP65, ALUMINUM BODY, PASSIVE COOLING:
   - F. OPERATING TEMPERATURE: -40 TO 50 DEGREES C
   - G. SOLAR TERMINAL: AWG #10-14
   - H. MOTOR TERMINAL: AWG #8-14
   - I. SENSOR TERMINAL: AWG #14-22
   - J. MANUFACTURER: PREMIER ENERGY HOLDINGS, INC., MODEL - ENFUSION CELL 3500
5. SOLAR PANELS:
   - A. EACH PANEL: HIGH OUTPUT 144 SPLIT CELL, BI-FACIAL; 450W PEAK POWER; 41V MAX VOLTAGE; 9.8A MAX POWER CURRENT; 20% MODULE EFFICIENCY, MIN; -0 -/+ 5W POWER TOLERANCE; IRRADIANCE 1,000W/M2, 25 DEGREES C CELL TEMPERATURE, AIR MASS 1.5;
   - B. QUANTITY: AS SIZED BY MANUFACTURER FOR COMPLETE WORKING SYSTEM; THE NUMBER OF SOLAR PANELS SUPPLIED SHALL BE SUFFICIENT TO CARRY THE MOTOR LOAD;
   - C. WIRING: ALL EXPOSED WIRING NEEDS TO BE SUNLIGHT RESISTANT (UL 4703 AND/OR UL 3003).
   - D. LP67 JUNCTION BOX; MC4 COMPATIBLE CONNECTOR;
   - E. SUN-RAC POLE MOUNTING SYSTEM TO 4 INCH DIA. POST.
6. CONTROL PANEL: SELF-ENCLOSED, SIMPLEX PUMP CONTROLS BASED ON FLOAT SWITCH SIGNALS; PUMP RUN HOURS ODOMETER; POLYCARBONATE ENCLOSURE W/ LOCKING LATCH, NEMA 3/3R RATED. CONTROL PANELS SHALL BE LISTED TO UL 508A.
7. ELECTRICAL & CONTROLS MOUNTING:
   - A. UNISTRUT CLAMPS ONTO 4 INCH DIA. SCH. 40 GALVANIZED STEEL POST
8. PACKAGE SYSTEM - APPROVED MANUFACTURER: SOLAR LIFT STATIONS (ENERGY SERVICE SOLUTIONS, LLC), 777 INDUSTRIAL PARK DRIVE, SHELBY, MI 49455, (231)259-0095, WWW.SOLARLIFTSTATIONS.COM
9. CONTRACTOR SHALL FURNISH A MINIMUM OF FOUR (4) COPIES OF COMPLETE MANUFACTURER'S OPERATION, MAINTENANCE, AND PARTS DATA FOR ALL EQUIPMENT TO BE INSTALLED IN THE PROJECT (NONE OF WHICH WILL BE RETURNED. ALL EQUIPMENT THAT MAY REQUIRE SPARE PARTS SHALL BE DOCUMENTED AND DATA FURNISHED AS TO SOURCE OF SPARE PARTS. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   - A. MANUFACTURER'S OPERATION & MAINTENANCE MANUAL.
   - B. MANUFACTURER'S PARTS MANUAL AND SPECIFICATIONS.
   - C. MANUFACTURER'S SERVICE & REPAIR MANUAL.
   - D. REPAIR PARTS SOURCE.
   - E. DETAILED DRAWINGS OF EQUIPMENT.
   - F. DETAILED ELECTRICAL SCHEMATIC DRAWINGS, IF APPLICABLE.
10. INSTALLATION:
   - A. INSTALL ALL EQUIPMENT TO THE CONFIGURATION SHOWN IN THE PLANS PER ALL LOCATION, STATE AND FEDERAL CODES, STANDARDS AND REGULATIONS, PER MANUFACTURER'S RECOMMENDATIONS.
   - B. COORDINATE AND INSTALL ALL MATERIALS AND SYSTEMS FURNISHED TO OPERATE AS A COMPLETE AND WORKING SYSTEM FOR THE PERFORMANCE REQUIREMENTS PROVIDED.
   - C. SOLAR PANELS SHALL BE INSTALLED IN A 30 DEGREE ORIENTATION FROM VERTICAL FACING TOWARDS THE SOUTH.
   - D. ELECTRICAL CONNECTIONS SHALL BE MADE BY A QUALIFIED LICENSED ELECTRICIAN. ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH NFPA 70-2023 "NATIONAL ELECTRIC CODE". AS-BUILT DRAWINGS OF THE ELECTRICAL LAYOUT SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER.
   - E. ALL PERMITS, LICENSES, FEES, AND INSPECTIONS OBTAINED OR SCHEDULED BY THE CONTRACTOR FOR ELECTRIC WORK SHALL INCIDENTAL TO "SOLAR LIFT STATION SYSTEM" BID ITEM.

MISSING GROUNDING PROVISIONS, MISSING DISCONNECTION PROVISIONS.

OTHER

1. UNLESS NOTED OTHERWISE ALL RIPRAP AND AGGREGATE PLACED SHALL HAVE A GEOTEXTILE FABRIC UNDERLAYMENT.
2. GRAVEL SURFACING SHALL BE AN IOWA DOT CLASS C GRAVEL OR CRUSHED STONE.
3. EARTHWORK IS DESIGNED TO BE A NET ZERO QUANTITY. BORROW AND SPOIL LOCATIONS TO BALANCE SO NO ADDITIONAL MATERIAL NEEDS TO BE BROUGHT ON SITE OR HAULED OFF SITE. NO ADDITIONAL MEASUREMENT OR PAYMENT SHALL BE MADE FOR EARTHWORK BEYOND WHAT IS SPECIFIED IN THESE PLANS.

QUANTITY TABULATIONS

ITEMS OF WORK

No.	DESCRIPTION	UNIT	QUANTITY	SPECIFICATION	SHOP DRAWING	AS-BUILT QTY.
1.	SITE STRIPPING & PREPARATION	LS	1	IA CS-001		
2.	REMOVE 24" RCP	LF	80	IA CS-001		
3.	REMOVAL OF ROADWAY	SY	158	IA CS-001		
4.	POLLUTION CONTROL	LS	1	IA CS-005		
5.	SILT FENCE	LF	500	IA CS-005		
6.	BUFFER SEEDING***	ACRE	11.3	IA CS-006	X	
7.	HYDROSEEDING AND MULCHING, STRUCTURE SEEDING	ACRE	1.1	IA CS-006	X	
8.	MOBILIZATION & DEMOBILIZATION*	LS	1	CS-008		
9.	TRAFFIC CONTROL	LS	1	CS-008		
10.	DRAIN TILE INVESTIGATION AND REMOVAL	LF	770	IA CS-009		
11.	EXCAVATION (WETLAND BORROW)	CY	5065	IA CS-021		
12.	EXCAVATION (GENERAL)	CY	535	IA CS-021		
13.	EARTHFILL (WEST ROAD SHOULDER)**	CY	4142	IA CS-023		
14.	EARTHFILL (ISLAND TYPE DAM)**	CY	70	IA CS-023		
15.	EARTHFILL (SUBMERGED BERM)**	CY	490	IA CS-023		
16.	EARTHFILL (DITCH FILL)**	CY	305	IA CS-023		
17.	TOPSOIL PLACEMENT	CY	5145	IA CS-026		
18.	PCC PAVEMENT PATCH	SY	158	IA CS-031		
19.	SW-401 48" DIA.	EA	1	IA CS-031	X	
20.	SW-401 60" DIA.	EA	1	IA CS-031	X	
21.	RCP CULVERT, 24" DIA.	LF	248	IA CS-031	X	
22.	RCP FLARED END SECTION, 24" DIA.	EA	6	IA CS-031	X	
23.	LIFT STATION STRUCTURE - SW-401 60" DIA.	EA	1	IA CS-031	X	
24.	CONCRETE PILE SUPPORT	EA	3	IA CS-031	X	
25.	PVC PIPE, 18" DIA. (WETLAND INLET)	LF	19	IA CS-045	X	
26.	PVC PIPE, 6" DIA. (LIFT STATION DISCHARGE)	LF	25	IA CS-045	X	
27.	HDPE PIPE, 30" DIA. (NON-PERFORATED TILE)	LF	828	IA CS-045	X	
28.	CMP PIPE, 15" DIA. (WETLAND OUTLET)	LF	97	IA CS-051	X	
29.	CMP INTAKE RISER, 30" DIA.	LS	1	IA CS-051	X	
30.	CMP WATER CONTROL STRUCTURE W/ GRATE & STORAGE STRUCTURE	EA	1	IA CS-051	X	
31.	REVETMENT, IDOT CLASS E	TON	399	IA CS-061	X	
32.	AGGREGATE SURFACING, IDOT CLASS A STONE	TON	29	IA CS-061	X	
33.	SOLAR LIFT STATION SYSTEM	EA	1	IA CS-081	X	

QUANTITY NOTES:

- * INCLUDES SHAPING AND MAINTENANCE ON THE INGRESS/EGRESS.
- ** EARTH FILL (EMBANKMENT) ASSUMES A 1.2 COMPACTION FACTOR.
- *** QUANTIFIED AREAS ARE APPROXIMATE AND SHALL BE DETERMINED BY CONTRACTOR, ENGINEER, AND OWNER.

WETLAND DATA TABLE

WETLAND DATA SHEET**		
PROJECT ID	CAL883301A	
DESIGN STAGE	FINAL	
DRAINAGE AREA	774	ACRES
WETLAND POOL AREA	6.56	ACRES
DEEP WATER AREA (>3 FT DEEP)	0	ACRES
NORMAL POOL ELEVATION	1209.75	
AVERAGE POOL DEPTH	0.79	FEET
MAXIMUM POOL DEPTH	1.5	FEET
POOL STORAGE	5.20	AC-FT
BERM ELEVATION	1211.00	
BERM STORAGE	12.75	AC-FT
LENGTH OF BERM		FEET
TIME OF CONCENTRATION*	1.25	HR
WEIGHTED RCN (WETLAND)	84.00	
25YR STORM DESIGN OUTFLOW	244.43	CFS
100YR STORM DESIGN OUTFLOW	388.78	CFS
100YR FLOOD SURFACE ELEVATION	1214.8	FEET
ESTIMATE SEDIMENT STORAGE	102.4	YEARS
TOTAL EASEMENT AREA	17.6	ACRES
*ToC VARIES WITH PRAIRIE POTHOLE TOPOGRAPHY.		
**STORAGE DATA LIMITED TO PROJECT EASEMENT AREA.		

WETLAND STORAGE TABLE

ELEVATION	CUM. STORAGE ACRE-FEET	SURFACE AREA ACRES	FEATURE
1211.00	14.86	8.43	TOP OF BANK
1210.75	12.75	8.08	
1210.50	10.73	7.73	
1210.25	8.80	7.37	
1210.00	6.96	7.03	
1209.75	5.20	6.56	NORMAL POOL
1209.50	3.56	5.30	
1209.25	2.23	3.66	
1209.00	1.32	2.51	
1208.75	0.69	1.82	
1208.50	0.24	0.90	
1208.25	0.01	0.05	
1208.00	0.00	0.00	FLOOR

JEO CONSULTING GROUP
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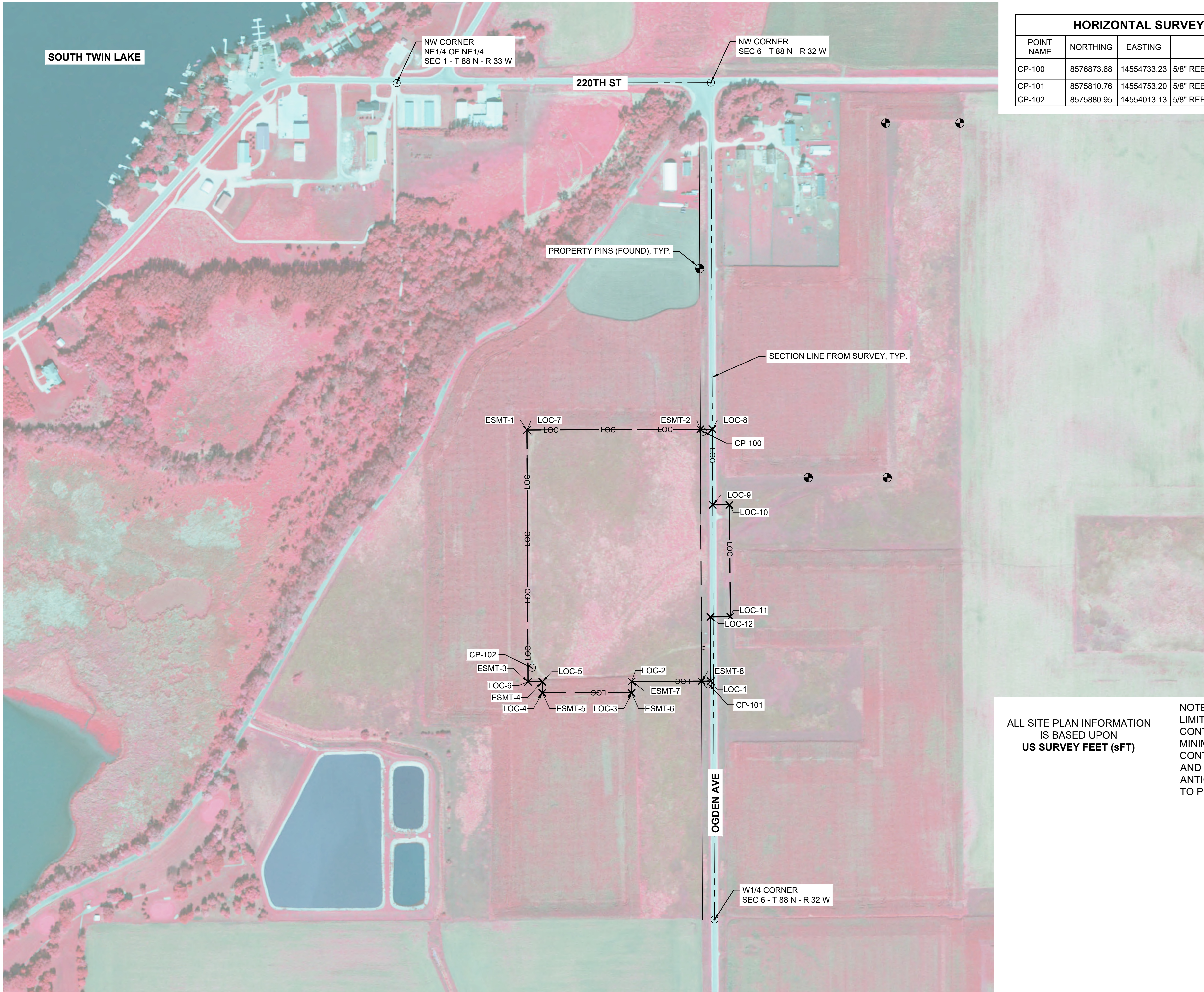
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

CONSTRUCTION NOTES

JEO PROJECT NO. 210779.10
FILE NAME S-210779.10-C.dwg
FIELD CREW DHM
FIELD BOOK MISC 29
DESIGNED BY JAA DATE 7/31/2024
DRAWN BY GL DATE 8/15/2024
CHECKED BY JJS DATE 7/29/2024
APPROVED BY JTM DATE 09/03/2024
REVISIONS



HORIZONTAL SURVEY CONTROL - IA RCS ZONE 4

POINT NAME	NORTHING	EASTING	DESCRIPTION
CP-100	8576873.68	14554733.23	5/8" REBAR 38' +/- WEST OF CENTERLINE OF ROAD
CP-101	8575810.76	14554753.20	5/8" REBAR 23' +/- WEST OF CENTERLINE OF ROAD
CP-102	8575880.95	14554013.13	5/8" REBAR 8' +/- SOUTH OF BIRD BLIND

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EASEMENT BOUNDARY

ESMT #	Northing	Easting
ESMT-1	8576881.08	14553991.12
ESMT-2	8576884.23	14554721.12
ESMT-3	8575821.09	14553995.70
ESMT-4	8575821.45	14554056.24
ESMT-5	8575775.49	14554056.24
ESMT-6	8575775.49	14554431.08
ESMT-7	8575823.10	14554431.08
ESMT-8	8575824.24	14554725.70

LIMITS OF CONSTRUCTION

LOC #	Northing	Easting
LOC-1	8575824.38	14554764.75
LOC-2	8575823.10	14554431.08
LOC-3	8575775.49	14554431.08
LOC-4	8575775.49	14554056.24
LOC-5	8575821.45	14554056.24
LOC-6	8575821.09	14553995.70
LOC-7	8576881.08	14553991.12
LOC-8	8576884.33	14554771.12
LOC-9	8576565.95	14554772.25
LOC-10	8576566.13	14554842.99
LOC-11	8576095.64	14554846.90
LOC-12	8576095.02	14554763.05

PRELIMINARY
NOT FOR CONSTRUCTION
99%
DATE:
9/3/2024

PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

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

NOTE:
LIMITS OF CONSTRUCTION ARE APPROXIMATE. CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE OVERALL DISTURBANCE AREA. CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER OF ANY WORK OUTSIDE OF THE ANTICIPATED LIMITS OF CONSTRUCTION, PRIOR TO PERFORMING THE WORK.

SURVEY CONTROL

GRAPHIC SCALE
0 100 200 400
UNIT OF MEASURE IS FEET

IOWA ONE CALL
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www.iowaonecall.com
811

SURVEY FILE: SV 210779.10 TOPO.dwg

JEO PROJECT NO. 210779.10
FILE NAME S-210779.10-CG.dwg
FIELD CREW DHM
FIELD BOOK MISC #29
DESIGNED BY JAA DATE 7/31/2024
DRAWN BY GL DATE 8/15/2024
CHECKED BY JJS DATE 7/29/2024
APPROVED BY JTM DATE 09/03/2024
REVISIONS

SHEET CG.1

SUBMERGED BERM 1				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L101	275.00	S25°55'30"E	10+00.00, 8576336.48, 14554269.37	12+75.00, 8576089.16, 14554389.60

SUBMERGED BERM 2				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L201	350.00	S25°55'30"E	5+00.00, 8576529.48, 14554341.33	8+50.00, 8576214.70, 14554494.35

SUBMERGED BERM 3				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L301	350.00	S25°55'30"E	0+00.00, 8576623.96, 14554533.14	3+50.00, 8576309.18, 14554686.15

WETLAND BERM				
NUMBER	Length	LINE/CHORD DIR	START STATION, N, E	END STATION, N, E
L401	150.00	S60° 24' 43.48"E	15+00.00, 14554135.56, 8575935.05	16+50.00, 14554266.00, 8575860.99

NOTE:
SEE SHEET CG.1 FOR LIMITS OF CONSTRUCTION (LOC) CONTROL POINT COORDINATES.

LEGEND

SYMBOL	DESCRIPTION
0+00 1+00	BASELINE ALIGNMENT (DESIGN)
C1	BASELINE ALIGNMENT CURVE TAG LABEL
L1	BASELINE ALIGNMENT LINE TAG LABEL
	BASELINE ALIGNMENT PI POINT
	PROJECT CONTROL POINTS

PRELIMINARY
NOT FOR CONSTRUCTION
99%
DATE:
9/3/2024

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

GRAPHIC SCALE
0 30 60 120
UNIT OF MEASURE IS FEET

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SURVEY FILE: SV 210779.10 TOPO.dwg

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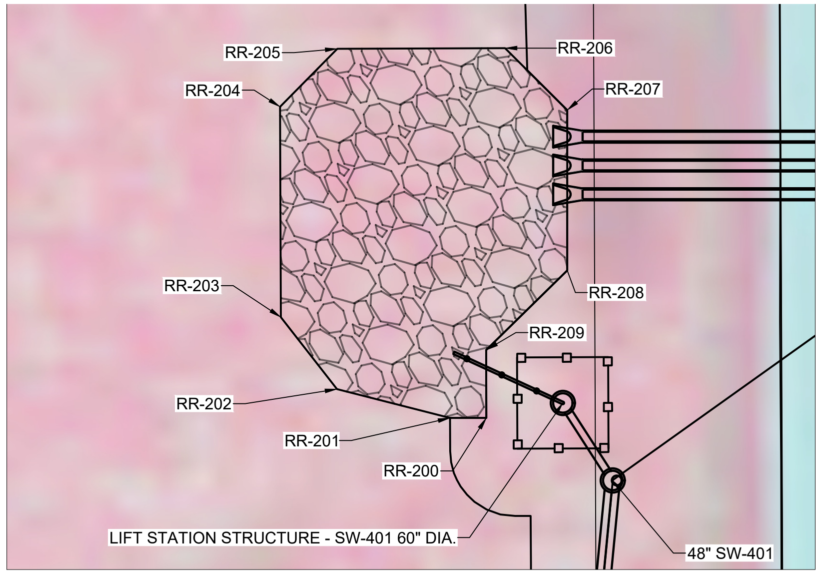
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

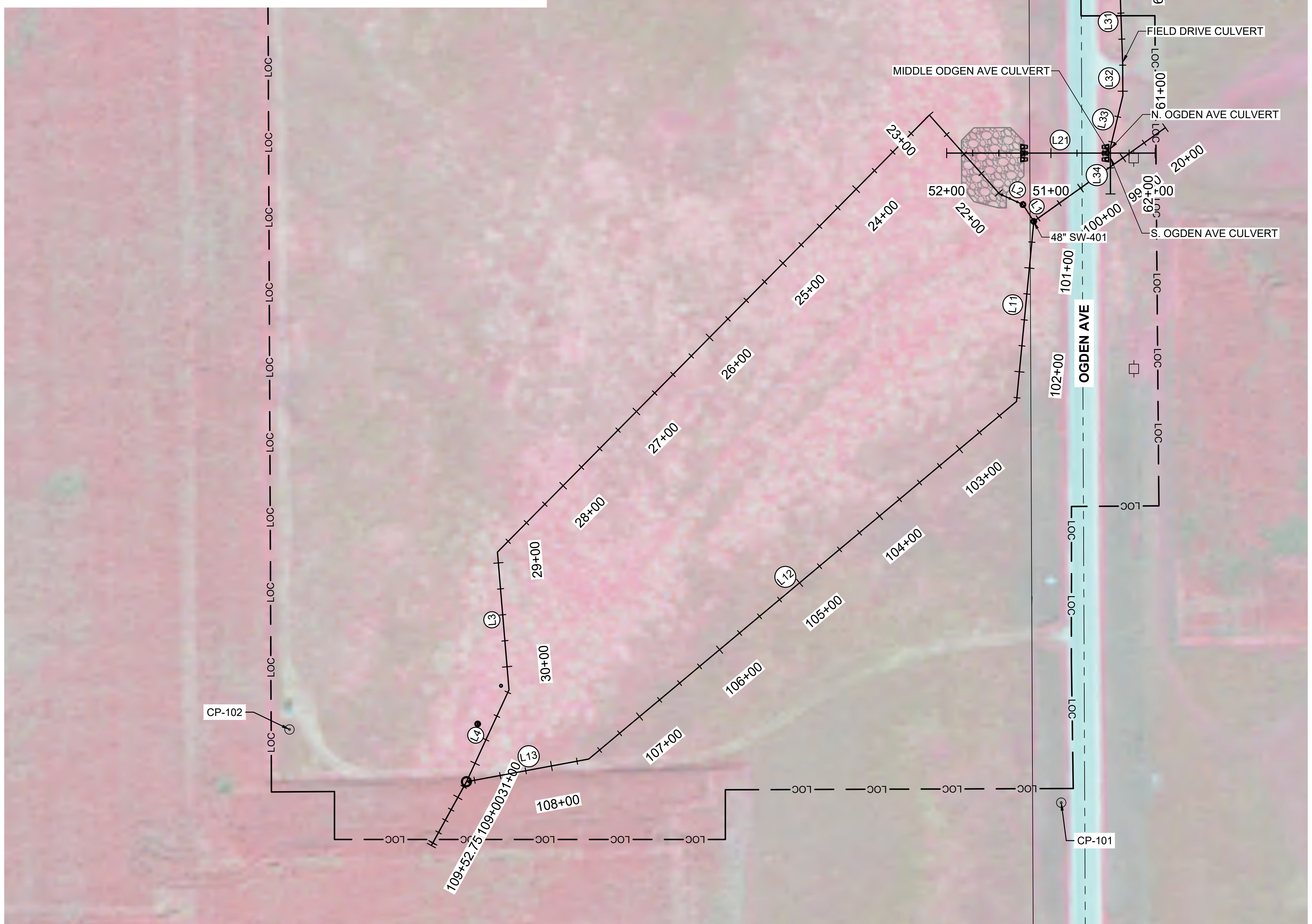
STAKING CONTROLS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-CG.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

SHEET
CG.2



REVETMENT BOUNDARY		
Point #	Northing	Easting
200	8576381.69	14554700.58
201	8576381.68	14554693.04
202	8576387.69	14554669.46
203	8576402.65	14554657.78
204	8576446.46	14554657.59
205	8576458.51	14554669.54
206	8576458.66	14554704.49
207	8576445.74	14554717.46
208	8576412.40	14554717.46
209	8576395.82	14554700.57



WETLAND				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L1	19.11	N32°59'24"W	21+54.94, 8576368.76, 14554726.94	21+74.05, 8576384.79, 14554716.54
L2	24.99	N65°17'21"W	21+74.05, 8576384.79, 14554716.54	21+99.05, 8576395.24, 14554693.83
L3	132.68	S04°48'01"E	28+89.61, 8576051.24, 14554212.51	30+22.29, 8575919.02, 14554223.62
L4	97.19	S24°51'10"W	30+22.29, 8575919.02, 14554223.62	31+19.48, 8575830.83, 14554182.77

TILE REROUTE				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L11	173.67	S05°28'08"W	100+54.94, 8576368.76, 14554726.94	102+28.61, 8576195.88, 14554710.39
L12	534.95	S50°05'10"W	102+28.61, 8576195.88, 14554710.39	107+63.56, 8575852.64, 14554300.08
L13	119.32	S79°28'07"W	107+63.56, 8575852.64, 14554300.08	108+82.88, 8575830.83, 14554182.77

OGDEN AVENUE CULVERTS				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L21	84.25	N90°00'00"W	50+44.61, 8576434.23, 14554798.77	51+28.86, 8576434.23, 14554714.52

FIELD DRIVE CULVERT				
NUMBER	LENGTH	LINE/CHORD DIR	START STATION, N, E	END STATION N, E
L31	72.53	S02°02'44"E	60+00.00, 8576593.58, 14554809.57	60+72.53, 8576521.09, 14554812.16
L32	31.61	S00°15'05"E	60+72.53, 8576521.09, 14554812.16	61+04.15, 8576489.48, 14554812.30
L33	51.41	S13°25'21"W	61+04.15, 8576489.48, 14554812.30	61+55.56, 8576439.47, 14554800.36
L34	44.44	S00°07'17"E	61+55.56, 8576439.47, 14554800.36	62+00.00, 8576395.03, 14554800.46

STRUCTURE POINTS TABLE			
Point #	Northing	Easting	Description
106	8575830.83	14554182.77	60" SW-401
107	8575892.13	14554211.16	WCS
108	8575919.02	14554223.62	WCS RISER
109	8576384.79	14554716.54	LIFT STATION STRUCTURE - SW-401 60" DIA.
110	8576368.70	14554726.88	48" SW-401
111	8576438.22	14554800.37	N. OGDEN AVE CULVERT
112	8576432.98	14554800.38	MIDDLE OGDEN AVE CULVERT
113	8576430.21	14554800.38	S. OGDEN AVE CULVERT
114	8576521.09	14554812.16	FIELD DRIVE CULVERT

NOTE:
SEE SHEET CG.1 FOR LIMITS OF CONSTRUCTION (LOC) CONTROL POINT COORDINATES.

LEGEND

SYMBOL	DESCRIPTION
0+00 1+00	BASELINE ALIGNMENT (DESIGN)
C1	BASELINE ALIGNMENT CURVE TAG LABEL
L1	BASELINE ALIGNMENT LINE TAG LABEL
	BASELINE ALIGNMENT PI POINT
	PROJECT CONTROL POINTS

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

GRAPHIC SCALE
0 30 60 120
UNIT OF MEASURE IS FEET

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SURVEY FILE: SV 210779.10 TOPO.dwg

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PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

STAKING CONTROLS

JEO PROJECT NO. 210779.10
FILE NAME S-210779.10-CG.dwg
FIELD CREW DHM
FIELD BOOK MISC #29

DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024

REVISIONS

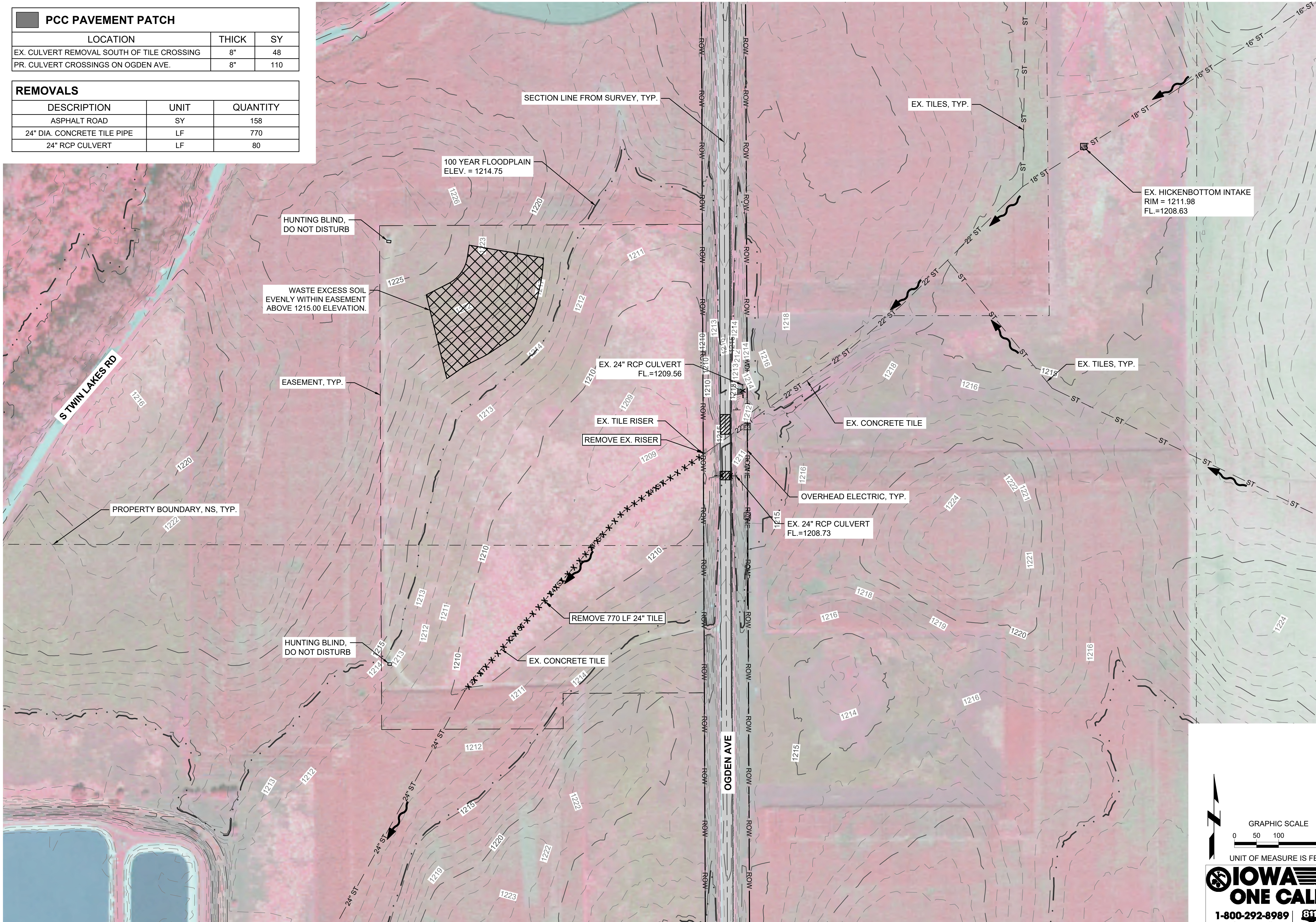
SHEET **CG.3**

PCC PAVEMENT PATCH

LOCATION	THICK	SY
EX. CULVERT REMOVAL SOUTH OF TILE CROSSING	8"	48
PR. CULVERT CROSSINGS ON OGDEN AVE.	8"	110

REMOVALS

DESCRIPTION	UNIT	QUANTITY
ASPHALT ROAD	SY	158
24" DIA. CONCRETE TILE PIPE	LF	770
24" RCP CULVERT	LF	80



GRAPHIC SCALE

0 50 100 200

UNIT OF MEASURE IS FEET

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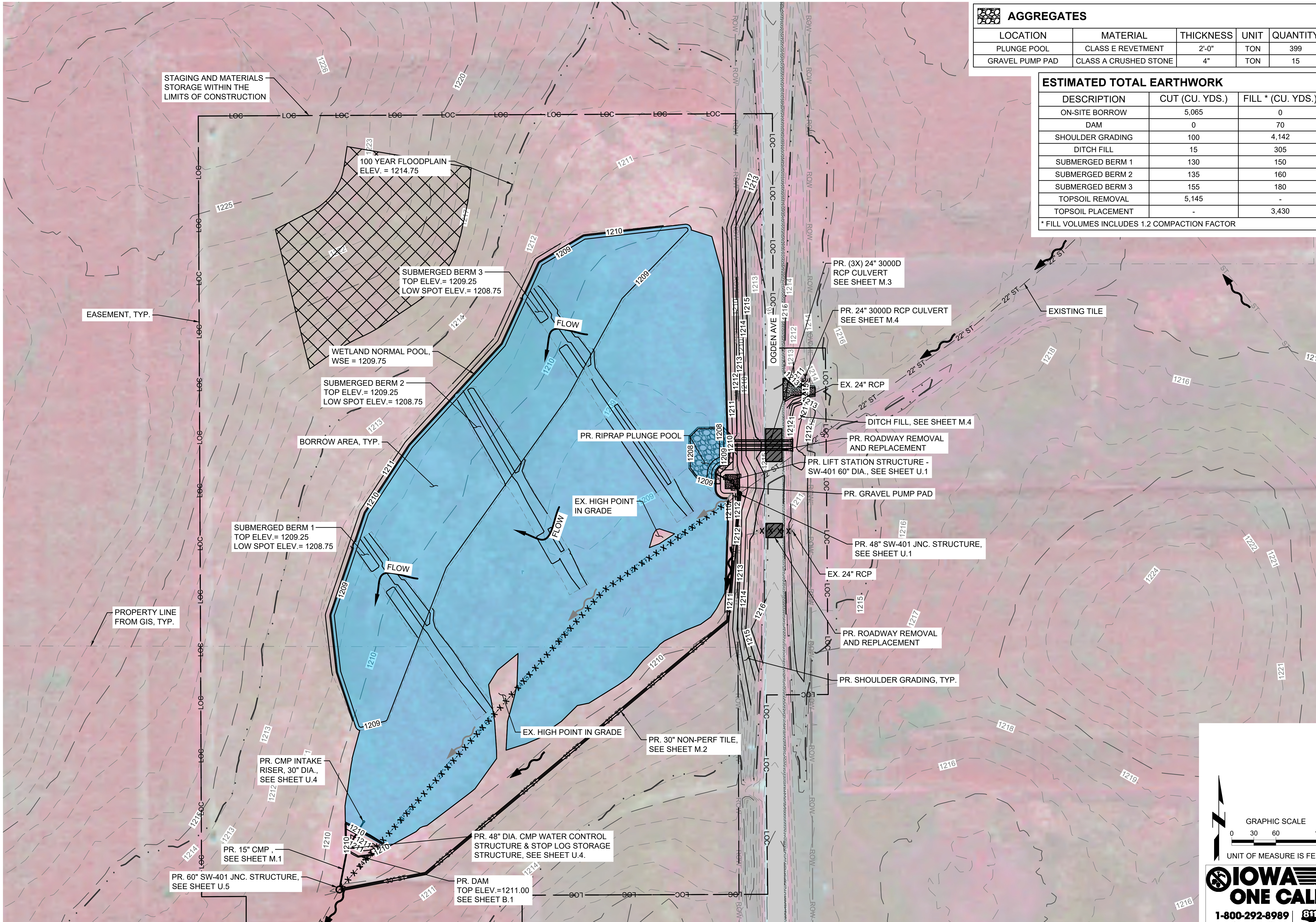
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

EXISTING SITE & REMOVALS PLAN

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-D.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY / DATE	JAA 7/31/2024
DRAWN BY / DATE	GL 8/15/2024
CHECKED BY / DATE	JJS 7/29/2024
APPROVED BY / DATE	JTM 09/03/2024
REVISIONS	

SHEET **D.1**


STAGING AND MATERIALS STORAGE WITHIN THE LIMITS OF CONSTRUCTION
100 YEAR FLOODPLAIN ELEV. = 1214.75
EASEMENT, TYP.
SUBMERGED BERM 3 TOP ELEV.= 1209.25 LOW SPOT ELEV.= 1208.75
WETLAND NORMAL POOL, WSE = 1209.75
SUBMERGED BERM 2 TOP ELEV.= 1209.25 LOW SPOT ELEV.= 1208.75
BORROW AREA, TYP.
SUBMERGED BERM 1 TOP ELEV.= 1209.25 LOW SPOT ELEV.= 1208.75
PROPERTY LINE FROM GIS, TYP.
FLOW
PR. RIPRAP PLUNGE POOL
EX. HIGH POINT IN GRADE
OGDEN AVE
PR. (3X) 24" 3000D RCP CULVERT SEE SHEET M.3
PR. 24" 3000D RCP CULVERT SEE SHEET M.4
EXISTING TILE
EX. 24" RCP
DITCH FILL, SEE SHEET M.4
PR. ROADWAY REMOVAL AND REPLACEMENT
PR. LIFT STATION STRUCTURE - SW-401 60" DIA., SEE SHEET U.1
PR. GRAVEL PUMP PAD
PR. 48" SW-401 JNC. STRUCTURE, SEE SHEET U.1
EX. 24" RCP
PR. ROADWAY REMOVAL AND REPLACEMENT
PR. SHOULDER GRADING, TYP.
EX. HIGH POINT IN GRADE
PR. 30" NON-PERF TILE, SEE SHEET M.2
PR. CMP INTAKE RISER, 30" DIA., SEE SHEET U.4
PR. 15" CMP, SEE SHEET M.1
PR. 60" SW-401 JNC. STRUCTURE, SEE SHEET U.5
PR. 48" DIA. CMP WATER CONTROL STRUCTURE & STOP LOG STORAGE STRUCTURE, SEE SHEET U.4.
PR. DAM TOP ELEV.=1211.00 SEE SHEET B.1
GRAPHIC SCALE
0 30 60 120
UNIT OF MEASURE IS FEET

AGGREGATES

LOCATION	MATERIAL	THICKNESS	UNIT	QUANTITY
PLUNGE POOL	CLASS E REVETMENT	2'-0"	TON	399
GRAVEL PUMP PAD	CLASS A CRUSHED STONE	4"	TON	15

ESTIMATED TOTAL EARTHWORK

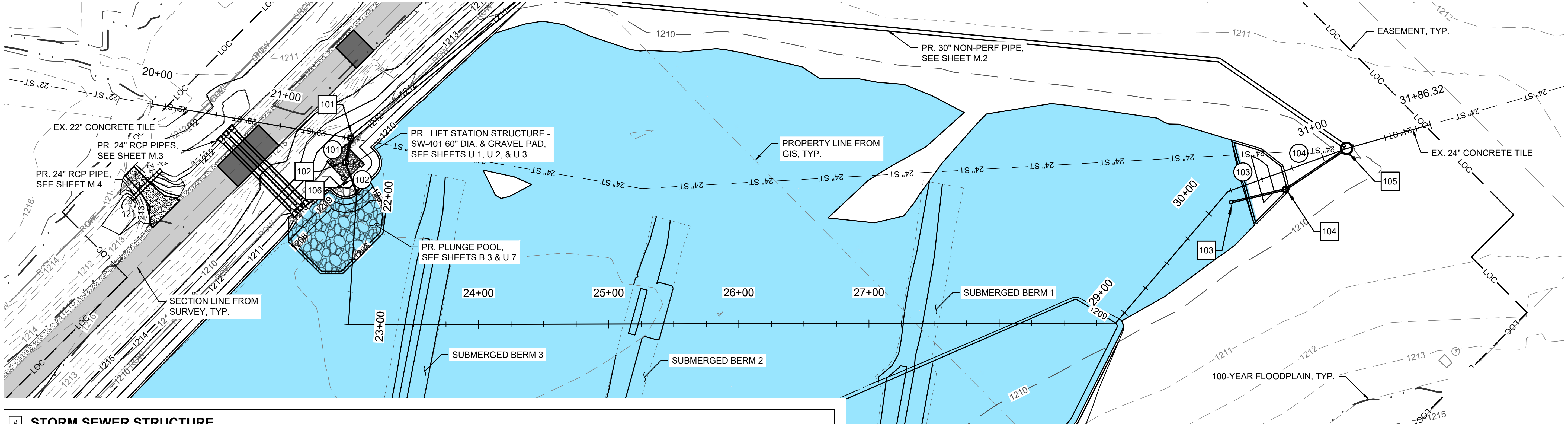
DESCRIPTION	CUT (CU. YDS.)	FILL * (CU. YDS.)
ON-SITE BORROW	5,065	0
DAM	0	70
SHOULDER GRADING	100	4,142
DITCH FILL	15	305
SUBMERGED BERM 1	130	150
SUBMERGED BERM 2	135	160
SUBMERGED BERM 3	155	180
TOPSOIL REMOVAL	5,145	-
TOPSOIL PLACEMENT	-	3,430

* FILL VOLUMES INCLUDES 1.2 COMPACTION FACTOR

PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

PROPOSED SITE & GRADING PLAN

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-D.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY	JAA 7/31/2024
DRAWN BY	GL 8/15/2024
CHECKED BY	JJS 7/29/2024
APPROVED BY	JTM 09/03/2024
REVISIONS	
SHEET	D.2

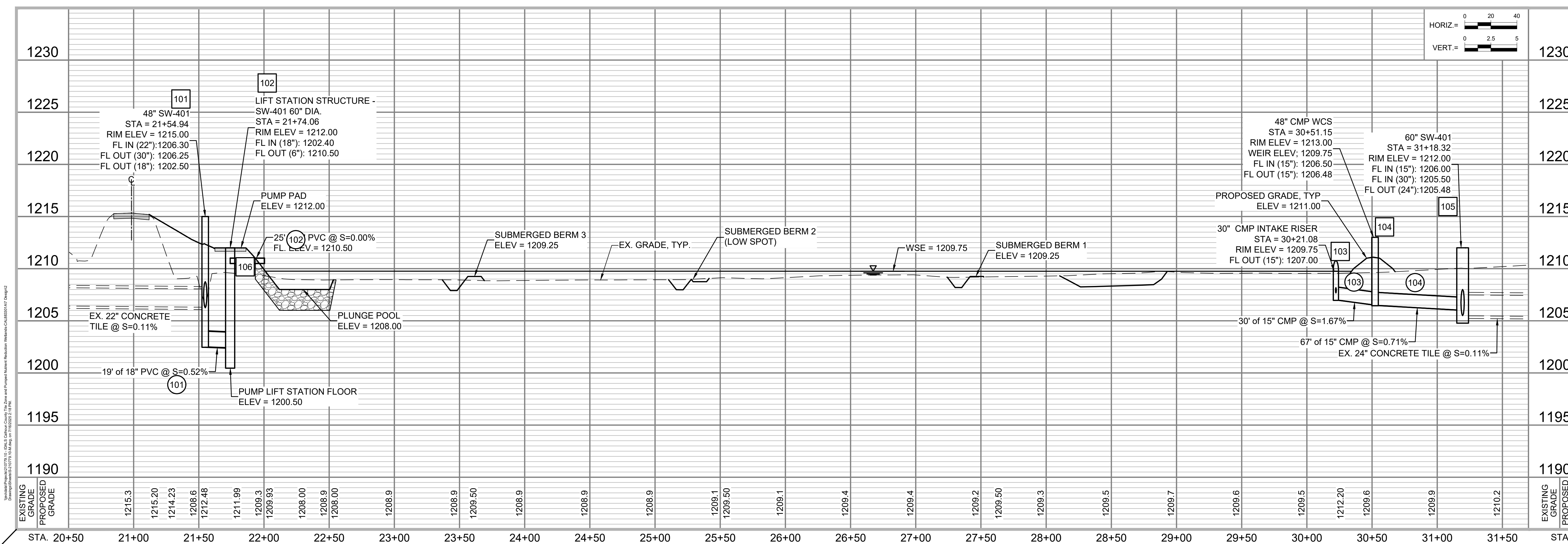


STORM SEWER STRUCTURE

NO.	STATION	TYPE	REFERENCE	SIZE (Ø)	TOP TYPE	RING & COVER	RIM ELEV.	FL ELEV.	FL ELEV.	FL ELEV.
101	21+54.94	SW-401	SHEETS U.1 & U.2	48"	FLAT	24"	1215.00	1206.30 (22" IN)	1206.25 (24" OUT)	1202.50 (18" OUT)
102	21+74.05	PUMP LIFT STATION	SHEETS U.1 & U.2	60"	FLAT	24"	1213.00	1202.40 (18" IN)	1210.50 (6" OUT)	-
103	29+83.73	CMP INTAKE RISER	SHEETS U.4 & U.5	30"	BEEHIVE GRATE	30"	1211.00	1207.00 (15" OUT)	-	-
104	30+26.71	LEVEL CONTROL	SHEETS U.4 & U.5	48"	GRATED	-	1213.00	1206.50 (15" IN)	1206.48 (15" OUT)	-
105	30+83.16	SW-401	SHEETS U.4 & U.5	60"	FLAT	24"	1212.00	1206.00 (15" IN)	1205.50 (30" IN)	1204.48 (24" OUT)
106	21+75-22+00	CONCRETE PILE SUPPORT	SHEET U.2	12"	FLAT	-	1212.50	-	-	-

STORM SEWER PIPE

NO.	SIZE	MATERIAL	LF	SLOPE	DESCRIPTION
101	18" Ø	PVC	19	0.52%	#101 (UPSTREAM) TO #102 (DOWNSTREAM)
102	6" Ø	PVC	25	0%	#102 (UPSTREAM) TO WETLANDS
103	15" Ø	CMP	30	1.67%	#103 (UPSTREAM) TO #104 (DOWNSTREAM)
104	15" Ø	CMP	67	0.71%	#104 (UPSTREAM) TO #105 (DOWNSTREAM)



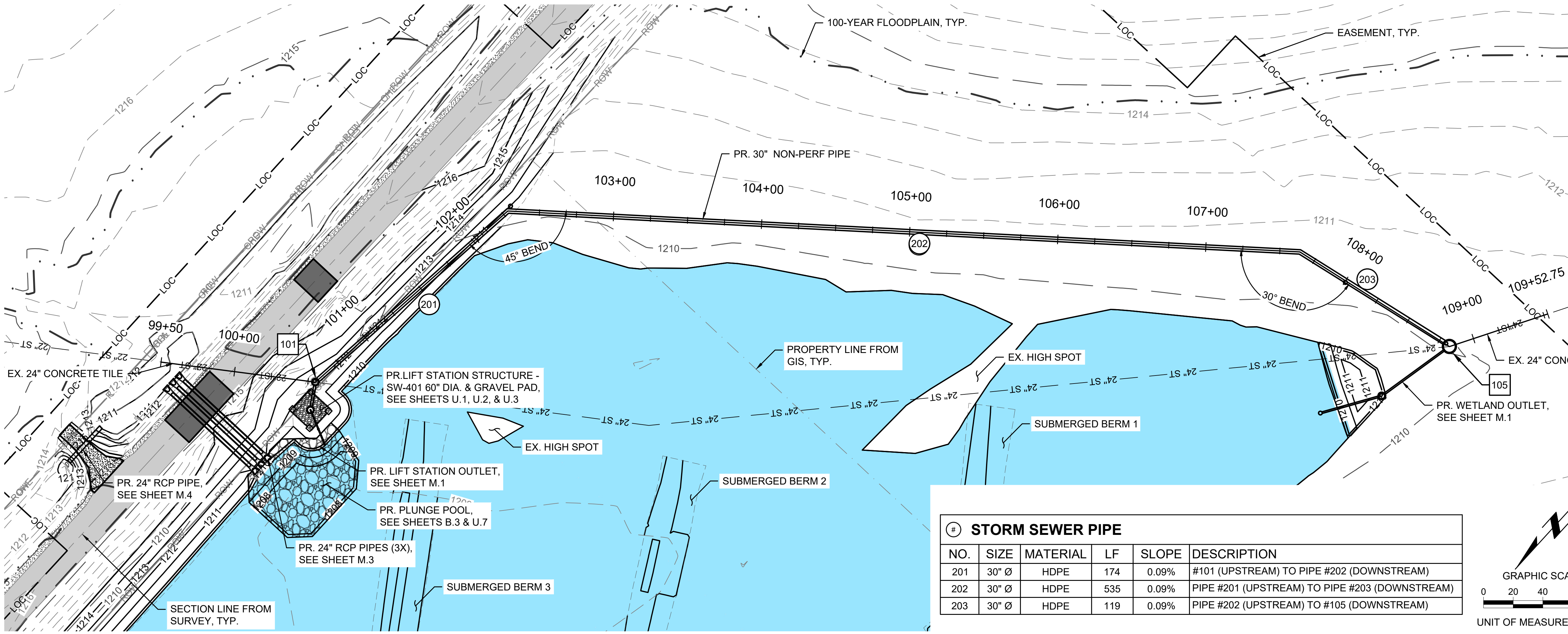
JEO CONSULTING GROUP 1-800-723-8567

PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

PLAN & PROFILE - LONGITUDINAL WETLAND

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-M.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY: JAA	DATE: 7/31/2024
DRAWN BY: GL	DATE: 8/15/2024
CHECKED BY: JJS	DATE: 7/29/2024
APPROVED BY: JTM	DATE: 09/03/2024
REVISIONS	
SHEET	M.1

NOTES:
1. REFER TO SHEET M.1 FOR ADDITIONAL STORM SEWER STRUCTURE DETAILS FOR #101 AND #105.
2. PIPE FITTINGS FOR BENDS IN PIPE TO BE INCLUDED WITH PIPE QUANTITY.

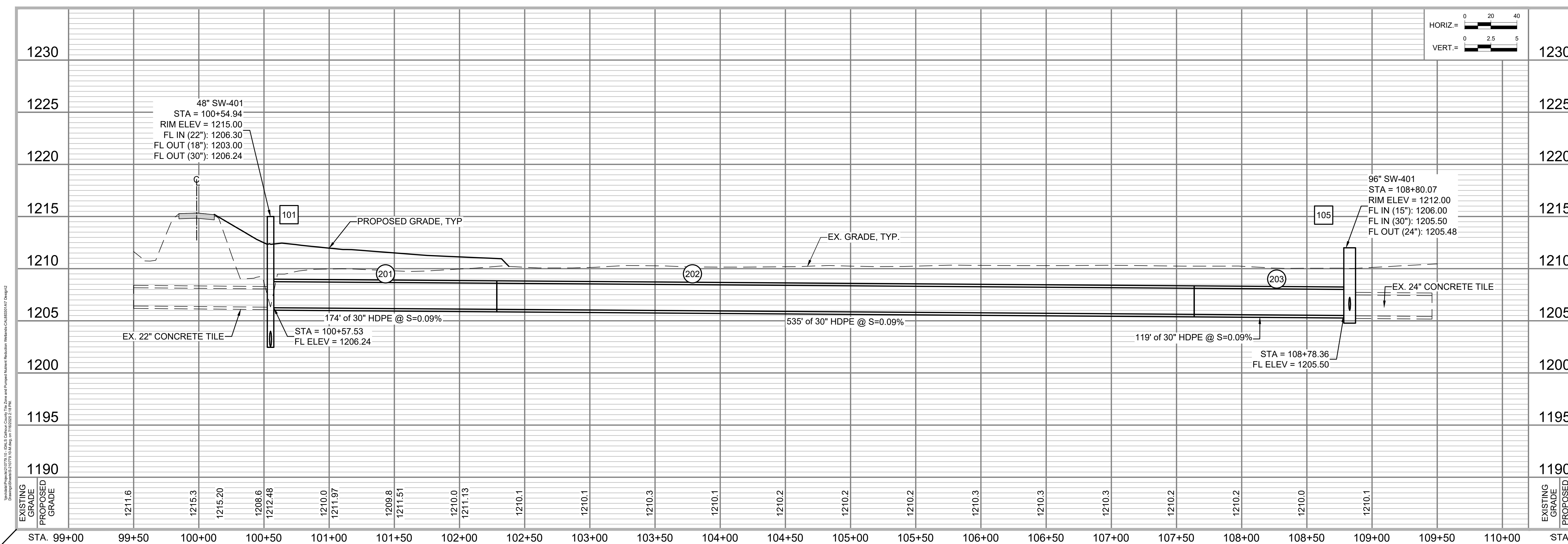


100-YEAR FLOODPLAIN, TYP.
EASEMENT, TYP.
PR. 30" NON-PERF PIPE
45° BEND
30° BEND
EX. 24" CONCRETE TILE
PR.LIFT STATION STRUCTURE - SW-401 60" DIA. & GRAVEL PAD, SEE SHEETS U.1, U.2, & U.3
PROPERTY LINE FROM GIS, TYP.
EX. HIGH SPOT
SUBMERGED BERM 1
SUBMERGED BERM 2
SUBMERGED BERM 3
PR. WETLAND OUTLET, SEE SHEET M.1
PR. LIFT STATION OUTLET, SEE SHEET M.1
PR. PLUNGE POOL, SEE SHEETS B.3 & U.7
PR. 24" RCP PIPE, SEE SHEET M.4
PR. 24" RCP PIPES (3X), SEE SHEET M.3
SECTION LINE FROM SURVEY, TYP.
99+50
100+00
101+00
102+00
103+00
104+00
105+00
106+00
107+00
108+00
109+00
109+52.75
GRAPHIC SCALE
0 20 40 80
UNIT OF MEASURE IS FEET

STORM SEWER PIPE

NO.	SIZE	MATERIAL	LF	SLOPE	DESCRIPTION
201	30" Ø	HDPE	174	0.09%	#101 (UPSTREAM) TO PIPE #202 (DOWNSTREAM)
202	30" Ø	HDPE	535	0.09%	PIPE #201 (UPSTREAM) TO PIPE #203 (DOWNSTREAM)
203	30" Ø	HDPE	119	0.09%	PIPE #202 (UPSTREAM) TO #105 (DOWNSTREAM)

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



HORIZ.= 0 20 40
VERT.= 0 2.5 5
48" SW-401
STA = 100+54.94
RIM ELEV = 1215.00
FL IN (22"): 1206.30
FL OUT (18"): 1203.00
FL OUT (30"): 1206.24
96" SW-401
STA = 108+80.07
RIM ELEV = 1212.00
FL IN (15"): 1206.00
FL IN (30"): 1205.50
FL OUT (24"): 1205.48
PROPOSED GRADE, TYP
EX. GRADE, TYP.
EX. 24" CONCRETE TILE
EX. 22" CONCRETE TILE
174' of 30" HDPE @ S=0.09%
535' of 30" HDPE @ S=0.09%
119' of 30" HDPE @ S=0.09%
STA = 100+57.53
FL ELEV = 1206.24
STA = 108+78.36
FL ELEV = 1205.50
1230
1225
1220
1215
1210
1205
1200
1195
1190
EXISTING GRADE
PROPOSED GRADE
1211.6
1215.3
1215.20
1208.6
1212.48
1210.0
1211.97
1209.8
1211.51
1210.0
1211.13
1210.1
1210.1
1210.3
1210.1
1210.2
1210.2
1210.2
1210.3
1210.3
1210.3
1210.2
1210.2
1210.0
1210.1
STA. 99+00 99+50 100+00 100+50 101+00 101+50 102+00 102+50 103+00 103+50 104+00 104+50 105+00 105+50 106+00 106+50 107+00 107+50 108+00 108+50 109+00 109+50 110+00

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PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

PLAN & PROFILE - PROPOSED TILE

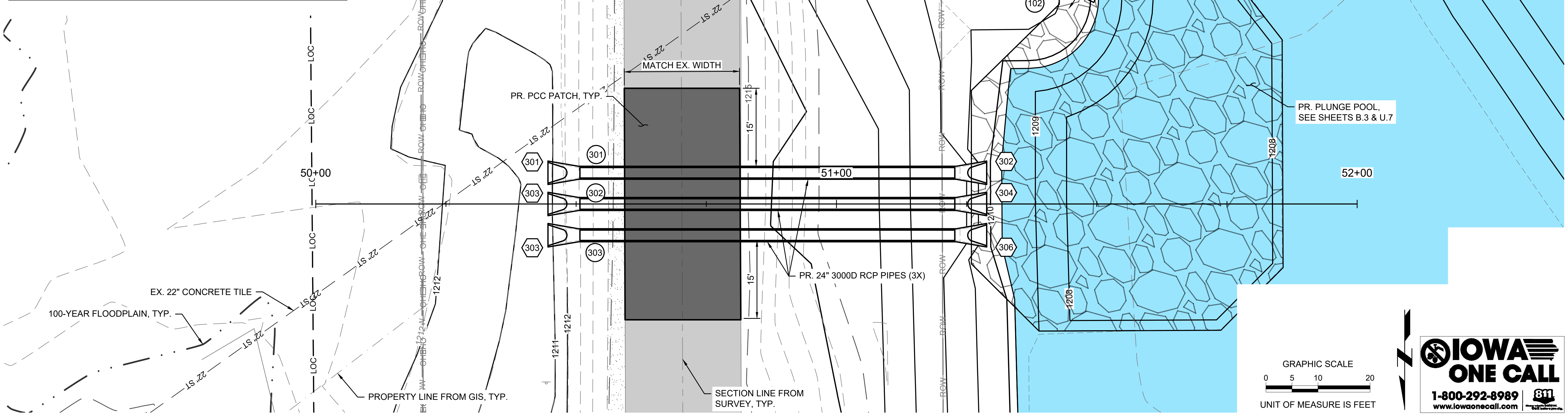
JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-M.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY: JAA	DATE: 7/31/2024
DRAWN BY: GL	DATE: 8/15/2024
CHECKED BY: JJS	DATE: 7/29/2024
APPROVED BY: JTM	DATE: 09/03/2024
REVISIONS	
SHEET	M.2

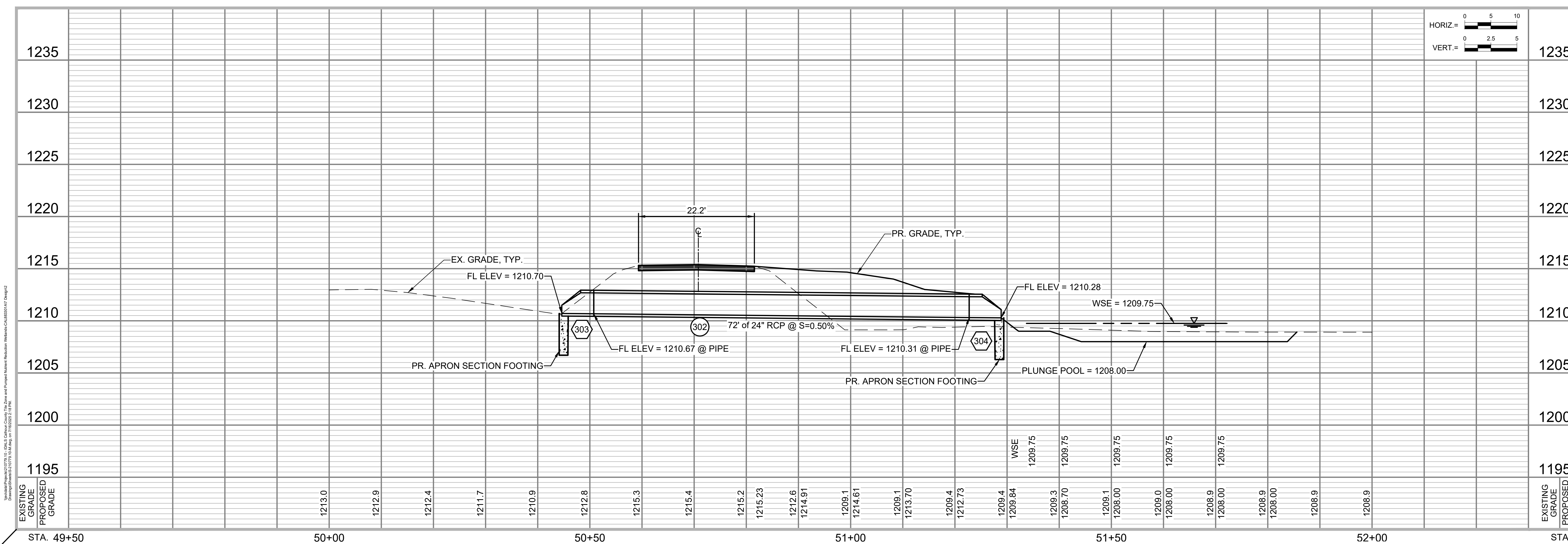
FLARED END SECTION, CONCRETE

NO.	STATION	OFFSET	TYPE	FL ELEV. (@ PIPE)
301	50+44.61	6' LT	INLET	1210.67 (24")
302	51+28.86	6' LT	OUTLET	1210.31 (24")
303	50+44.61	N/A	INLET	1210.67 (24")
304	51+28.86	N/A	OUTLET	1210.31 (24")
305	50+44.61	6' RT	INLET	1210.67 (24")
306	51+28.86	6' RT	OUTLET	1210.31 (24")

STORM SEWER PIPE

NO.	SIZE	MATERIAL	LF	SLOPE	DESCRIPTION
301	24" Ø	3000D RCP	72	0.50%	#301 (UPSTREAM) TO #302 (DOWNSTREAM)
302	24" Ø	3000D RCP	72	0.50%	#303 (UPSTREAM) TO #304 (DOWNSTREAM)
303	24" Ø	3000D RCP	72	0.50%	#305 (UPSTREAM) TO #306 (DOWNSTREAM)





PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

PLAN & PROFILE - OGDEN AVE CULVERTS

JEO CONSULTING GROUP
1-800-723-8567

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-M.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY JAA	DATE 7/31/2024
DRAWN BY GL	DATE 8/15/2024
CHECKED BY JJS	DATE 7/29/2024
APPROVED BY JTM	DATE 09/03/2024
REVISIONS	

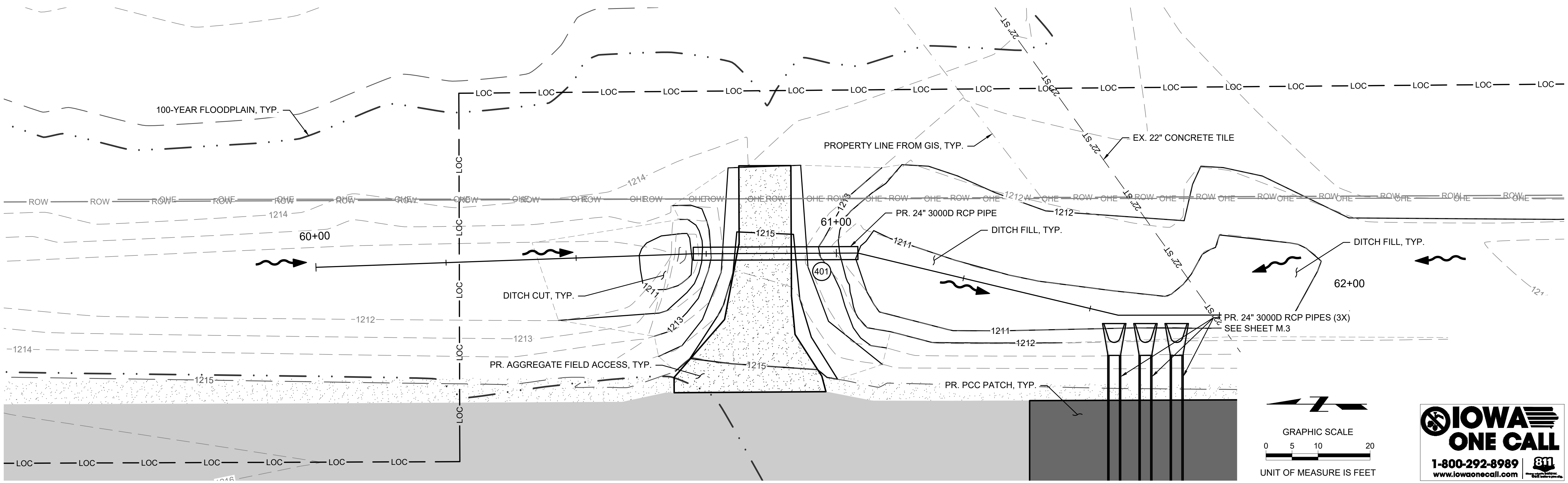
SHEET M.3

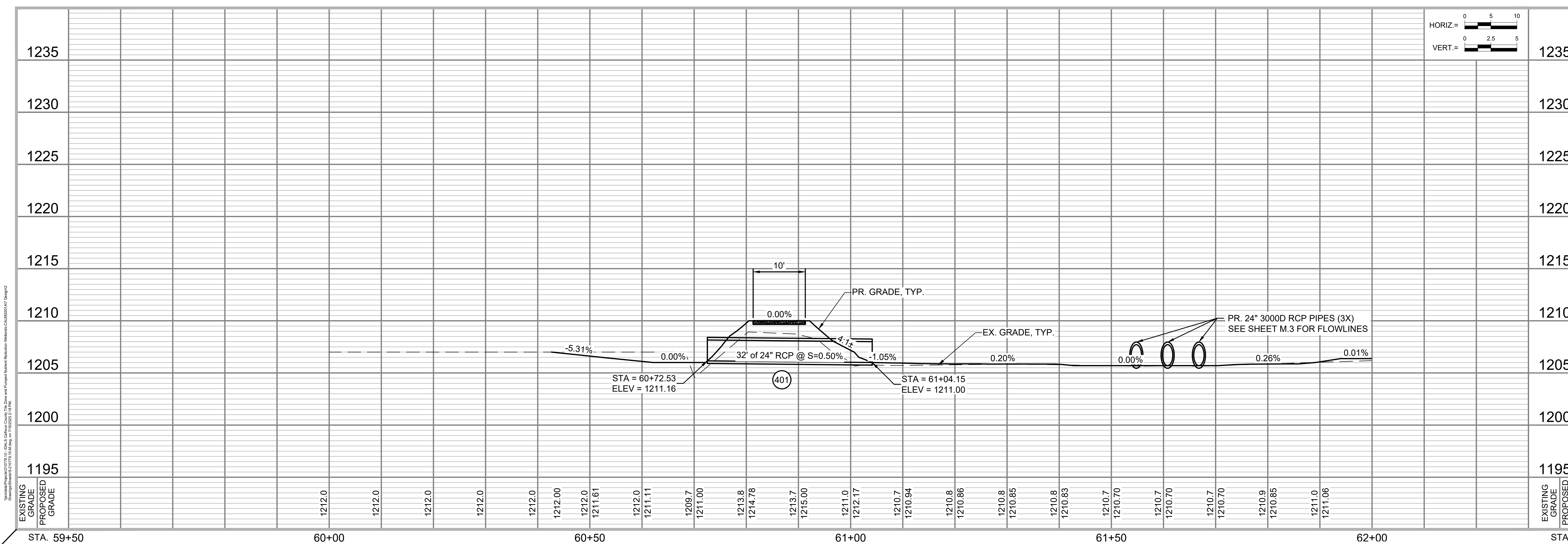
STORM SEWER PIPE

NO.	SIZE	MATERIAL	LF	SLOPE	DESCRIPTION
401	24" Ø	3000D RCP	32	0.50%	DITCH (UPSTREAM) TO DITCH (DOWNSTREAM)

AGGREGATE FIELD ACCESS

STATION TO STATION	THICK	SIDE	TONS
60+65± TO 61+00±	4"	LT. & RT.	14





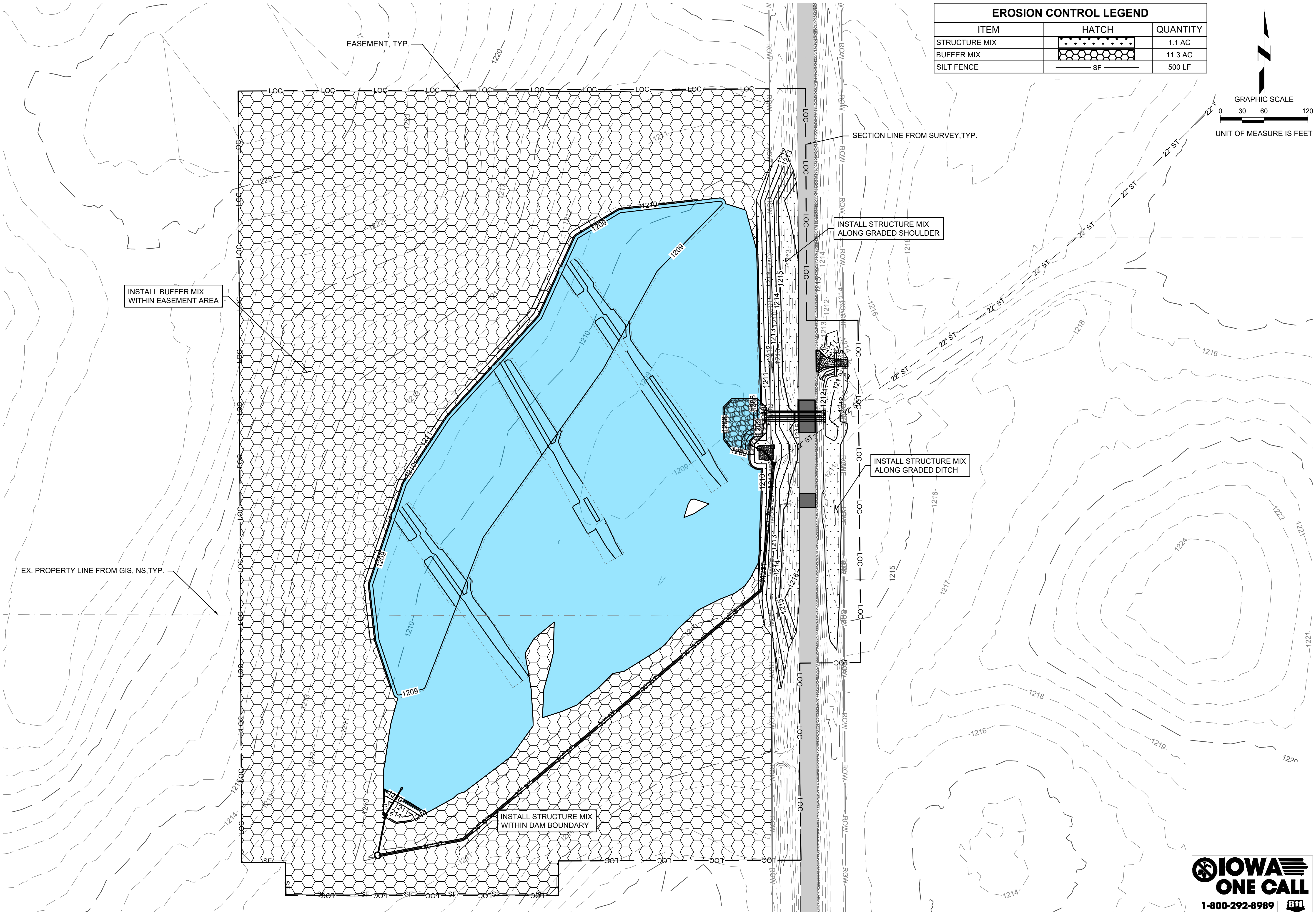
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

PLAN & PROFILE - FIELD DRIVE CULVERT

JEO CONSULTING GROUP
1-800-723-8567

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-M.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY: JAA	DATE: 7/31/2024
DRAWN BY: GL	DATE: 8/15/2024
CHECKED BY: JJS	DATE: 7/29/2024
APPROVED BY: JTM	DATE: 09/03/2024
REVISIONS	

SHEET M.4



EROSION CONTROL LEGEND

ITEM	HATCH	QUANTITY
STRUCTURE MIX		1.1 AC
BUFFER MIX		11.3 AC
SILT FENCE	SF	500 LF

GRAPHIC SCALE

0 30 60 120

UNIT OF MEASURE IS FEET

JEO CONSULTING GROUP
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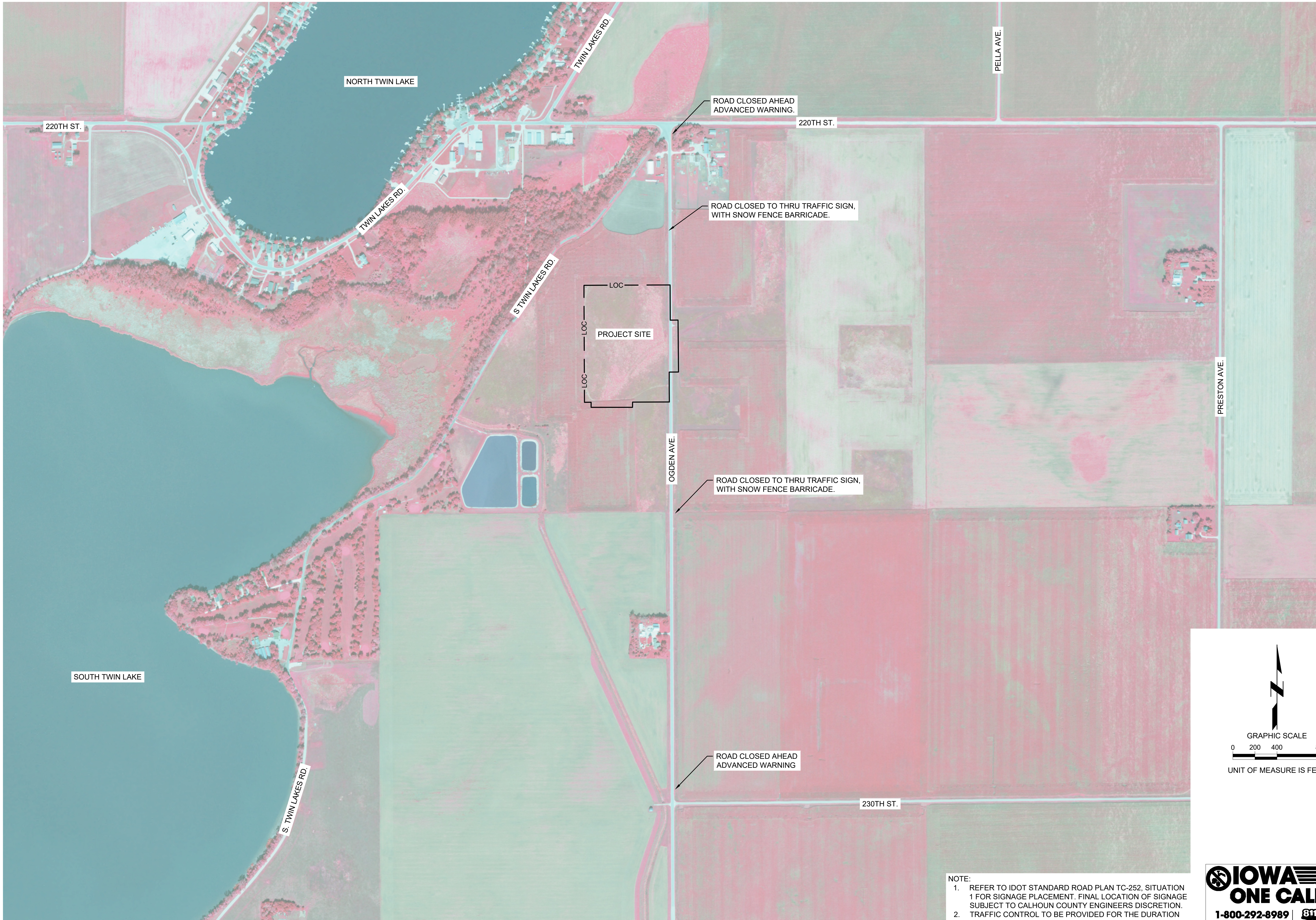
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

SEEDING & EROSION CONTROL PLAN

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-RR.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

SHEET
RR.1



NOTE:
1. REFER TO IDOT STANDARD ROAD PLAN TC-252, SITUATION 1 FOR SIGNAGE PLACEMENT. FINAL LOCATION OF SIGNAGE SUBJECT TO CALHOUN COUNTY ENGINEERS DISCRETION.
2. TRAFFIC CONTROL TO BE PROVIDED FOR THE DURATION OF THE WORK LIMITING PUBLIC ACCESS.

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
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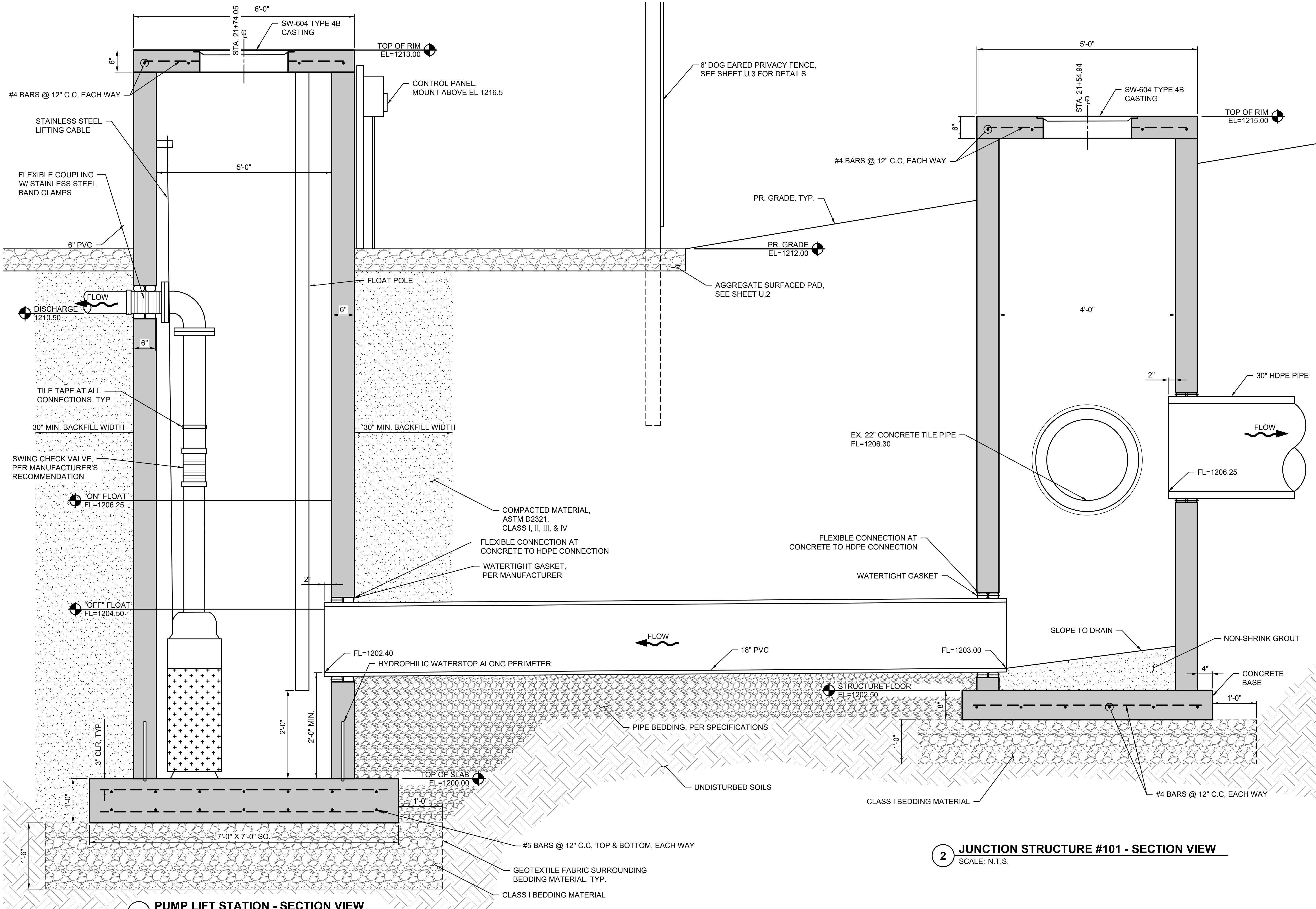
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

TRAFFIC CONTROL PLAN

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-T.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY: JAA	DATE: 7/31/2024
DRAWN BY: GL	DATE: 8/15/2024
CHECKED BY: JJS	DATE: 7/29/2024
APPROVED BY: JTM	DATE: 09/03/2024
REVISIONS	

SHEET
T.1



1 PUMP LIFT STATION - SECTION VIEW
SCALE: N.T.S.

2 JUNCTION STRUCTURE #101 - SECTION VIEW
SCALE: N.T.S.

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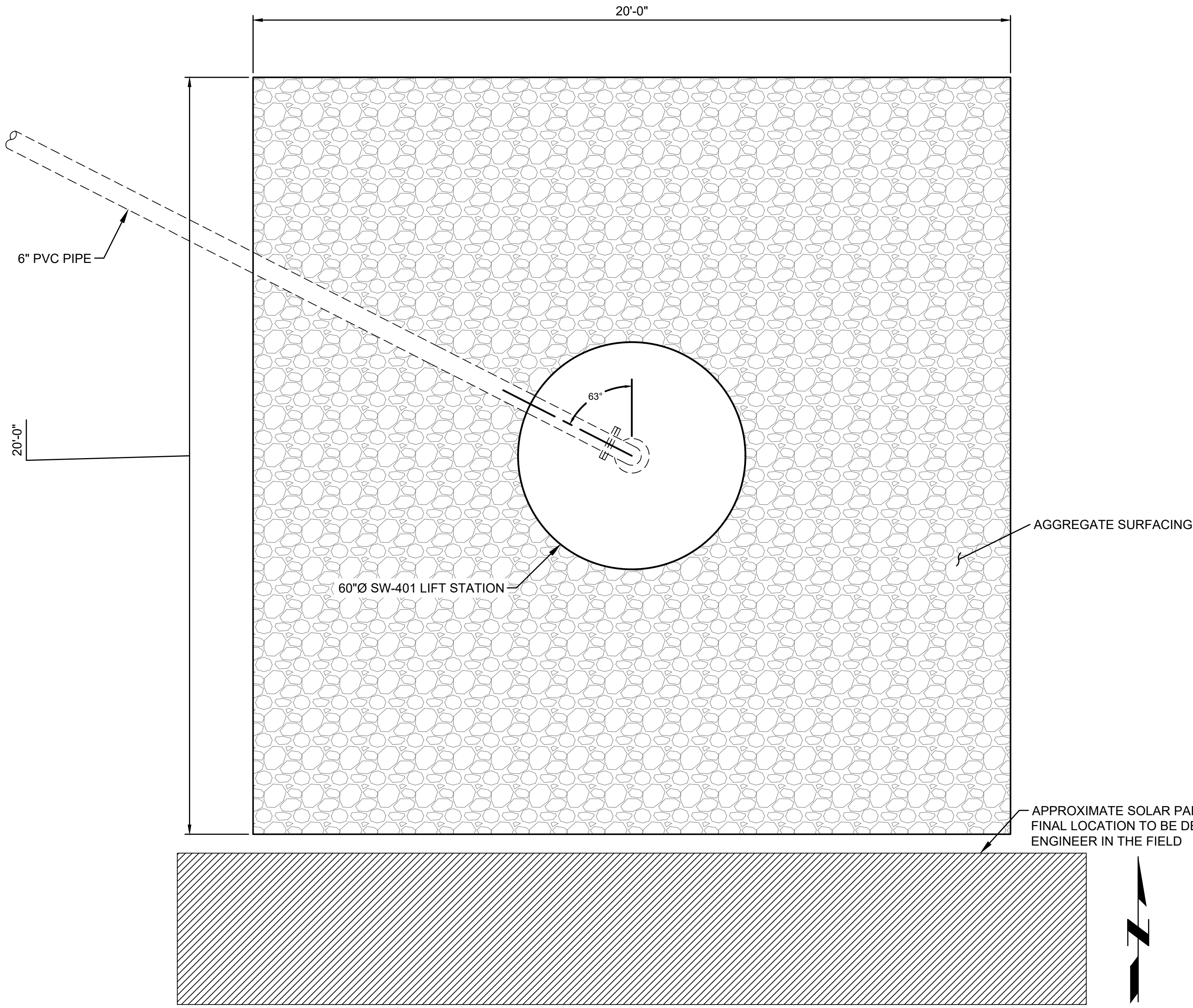
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

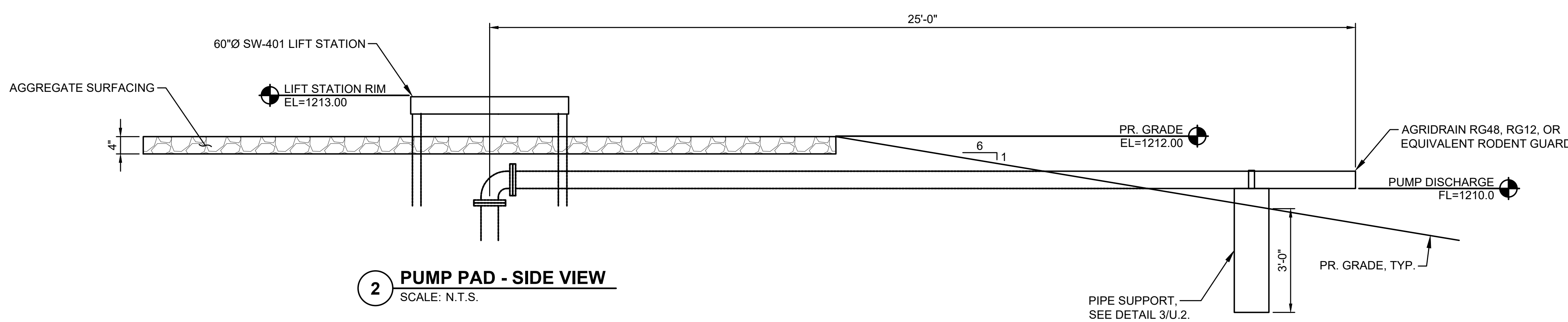
PUMP LIFT STATION DETAILS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

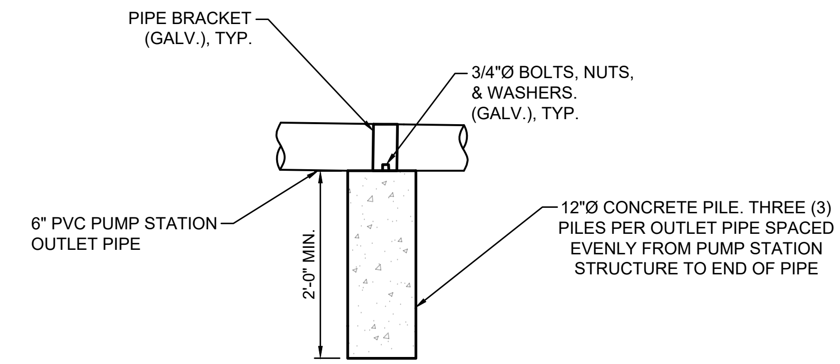
SHEET
U.1



1 PUMP PAD - TOP VIEW
SCALE: N.T.S.

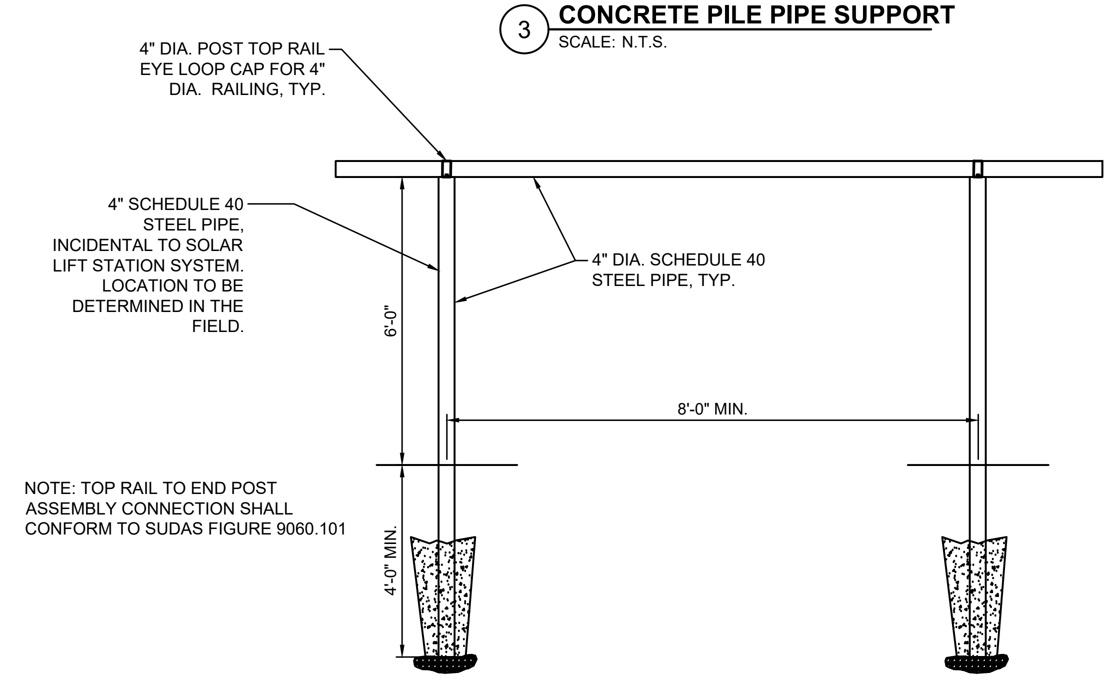


2 PUMP PAD - SIDE VIEW
SCALE: N.T.S.



SIDE ELEVATION

3 CONCRETE PILE PIPE SUPPORT
SCALE: N.T.S.



NOTE: TOP RAIL TO END POST ASSEMBLY CONNECTION SHALL CONFORM TO SUDAS FIGURE 9060.101

4 SOLAR MOUNT RAILING
SCALE: N.T.S.

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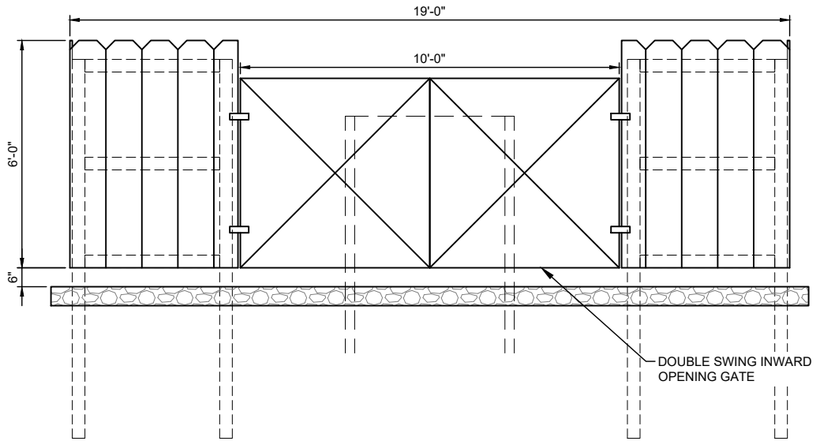
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

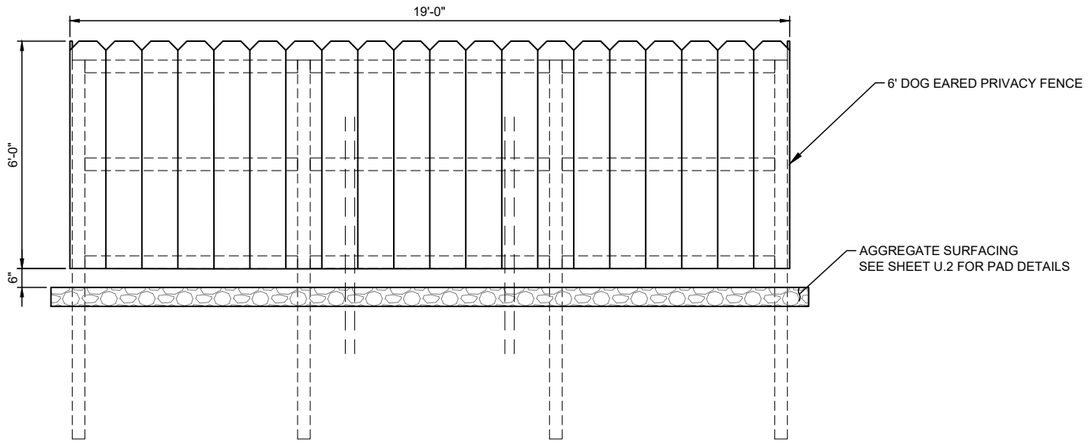
PUMP PAD DETAILS & CONCRETE PIPE SUPPORT

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

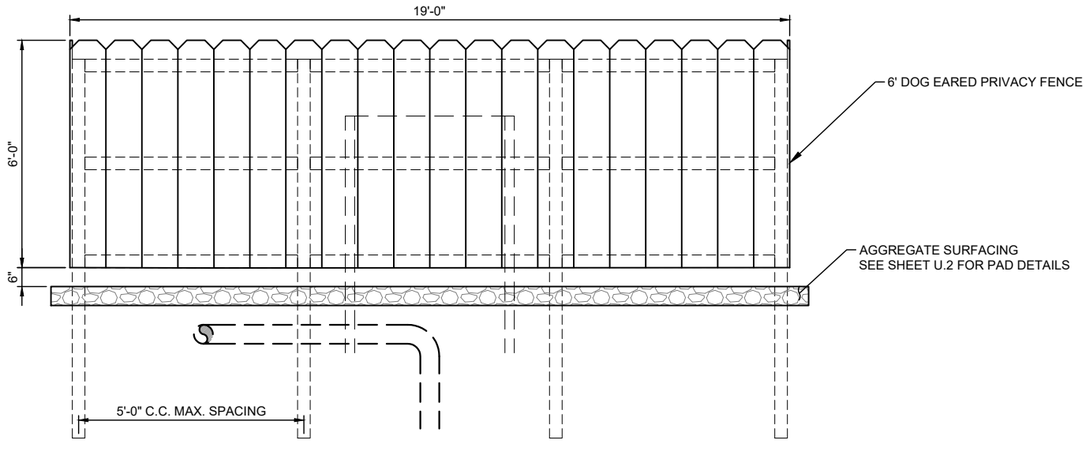
SHEET
U.2



1 PUMP PAD - EAST ELEVATION
SCALE: N.T.S.

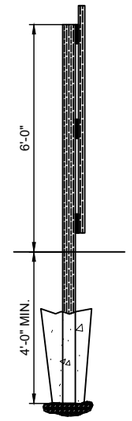


2 PUMP PAD - NORTH & SOUTH ELEVATION
SCALE: N.T.S.

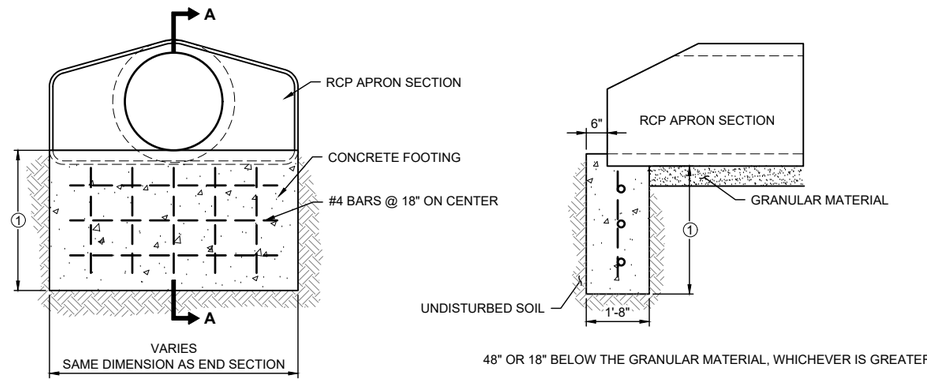


3 PUMP PAD - WEST ELEVATION
SCALE: N.T.S.

NOTE: THIS FENCE DETAIL IS FOR REFERENCE ONLY. FENCE IS NOT CONSIDERED A PART OF THE BASE BID FOR THIS PROJECT, BUT MAY BE INCLUDED AT A LATER DATE. COST WOULD BE NEGOTIATED AT THAT TIME.



4 4"X4" POST INSTALL TYP.
SCALE: N.T.S.



5 RCP APRON SECTION FOOTING DETAIL
SCALE: N.T.S.

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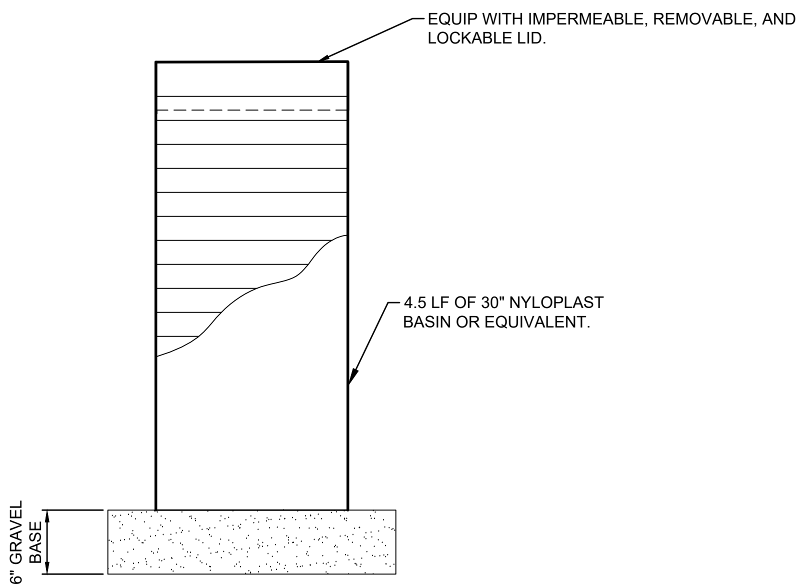
PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

PUMP PAD FENCING DETAILS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

SHEET
U.3



1 **COVER & STOP LOG STORAGE STRUCTURE**
SCALE: N.T.S.

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

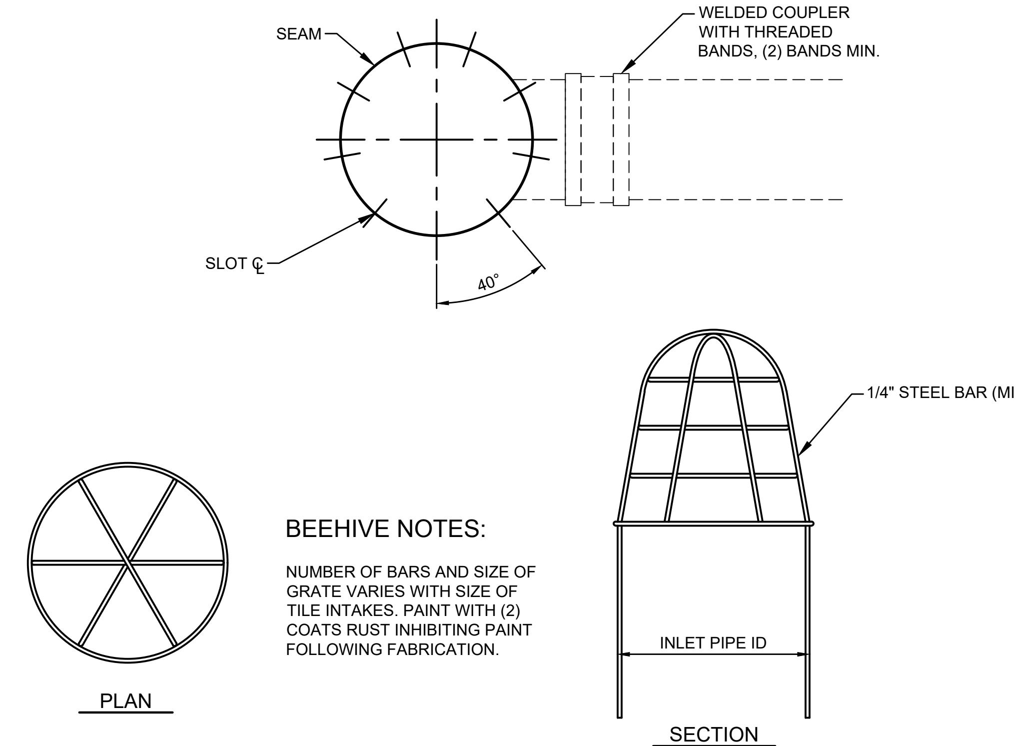
A760 STANDARD SPECIFICATION FOR CORRUGATED STEEL PIPE, METALLIC-COATED.

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.

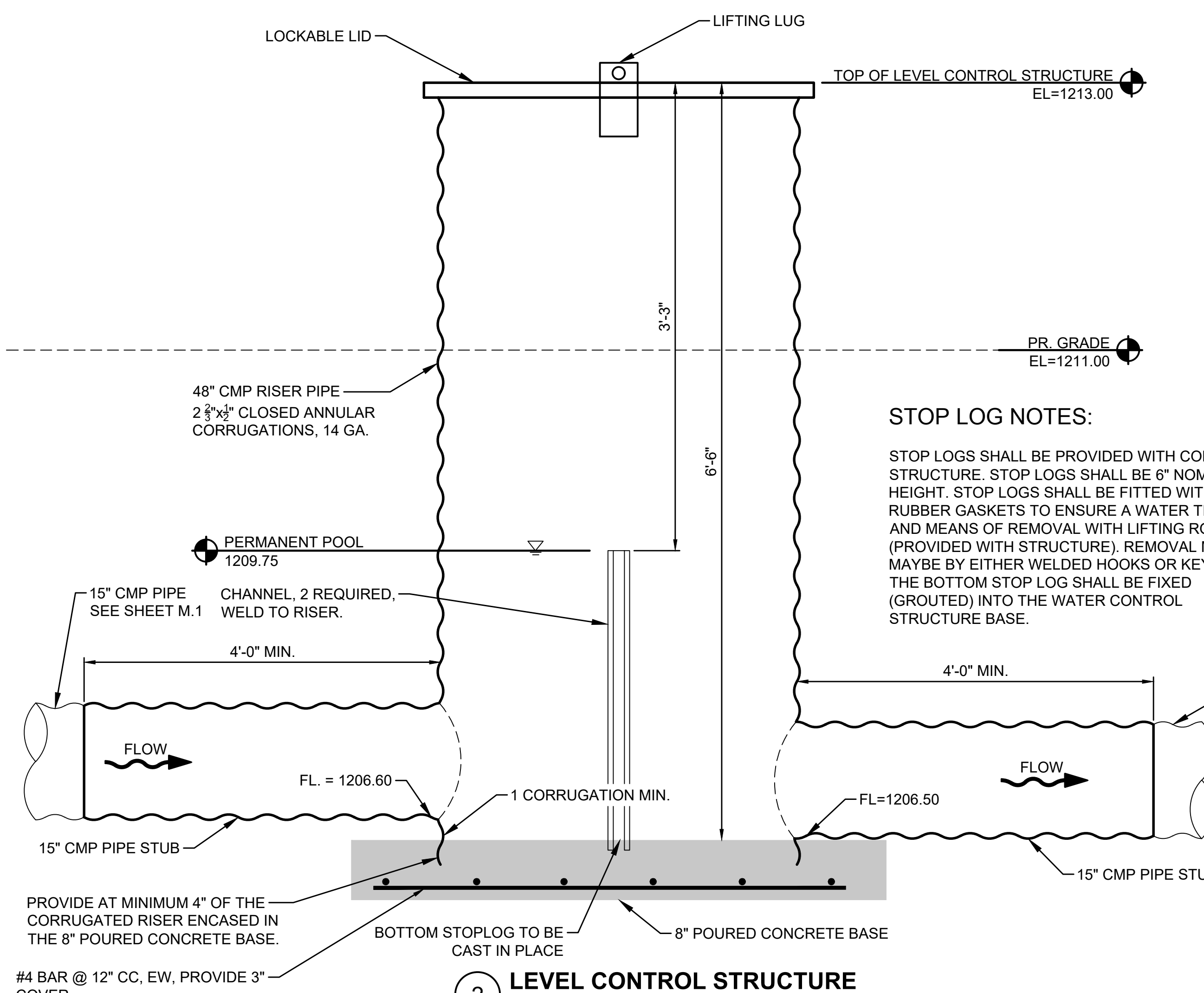
TAR MASTIC ON ALL JOINTS FOR RISER AND PIPE TEE'S.



BEEHIVE NOTES:

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

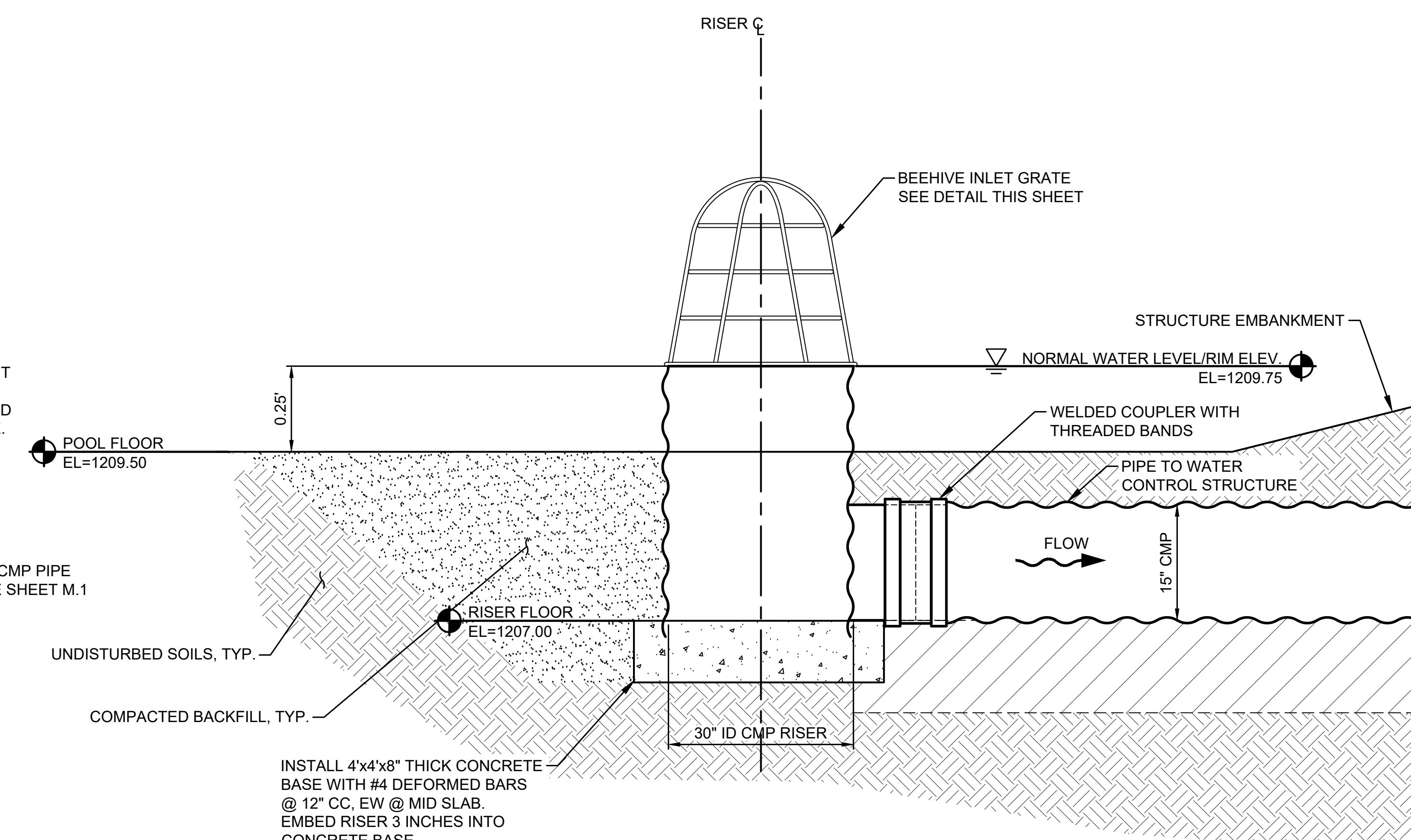
3 **BEEHIVE INLET GRATE (STEEL BARS)**
SCALE: N.T.S.



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.

2 **LEVEL CONTROL STRUCTURE**
SCALE: N.T.S.



4 **CMP INTAKE RISER**
SCALE: N.T.S.

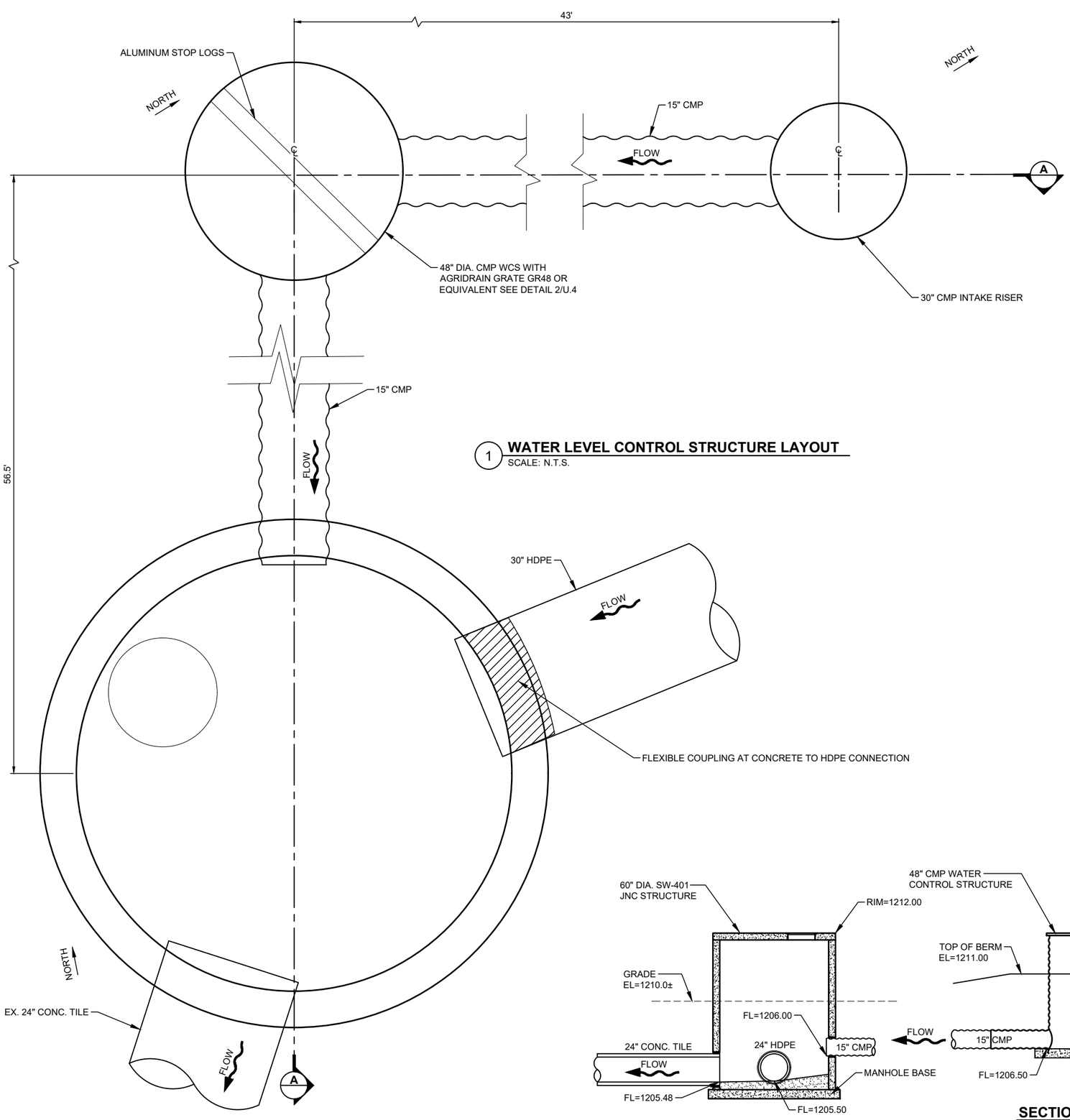
JEO CONSULTING GROUP
1-800-723-8567

PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

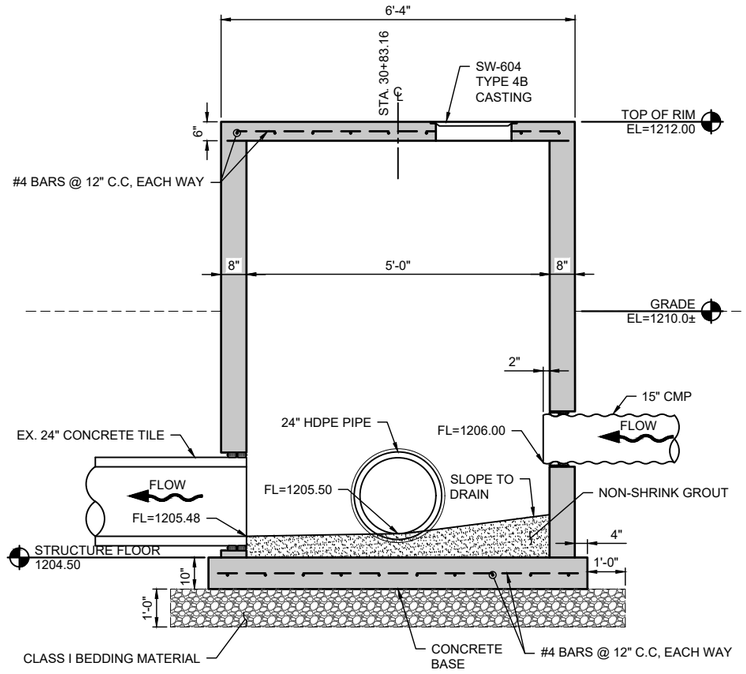
WETLANDS LEVEL CONTROL STRUCTURE DETAILS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY / DATE	JAA 7/31/2024
DRAWN BY / DATE	GL 8/15/2024
CHECKED BY / DATE	JJS 7/29/2024
APPROVED BY / DATE	JTM 09/03/2024
REVISIONS	

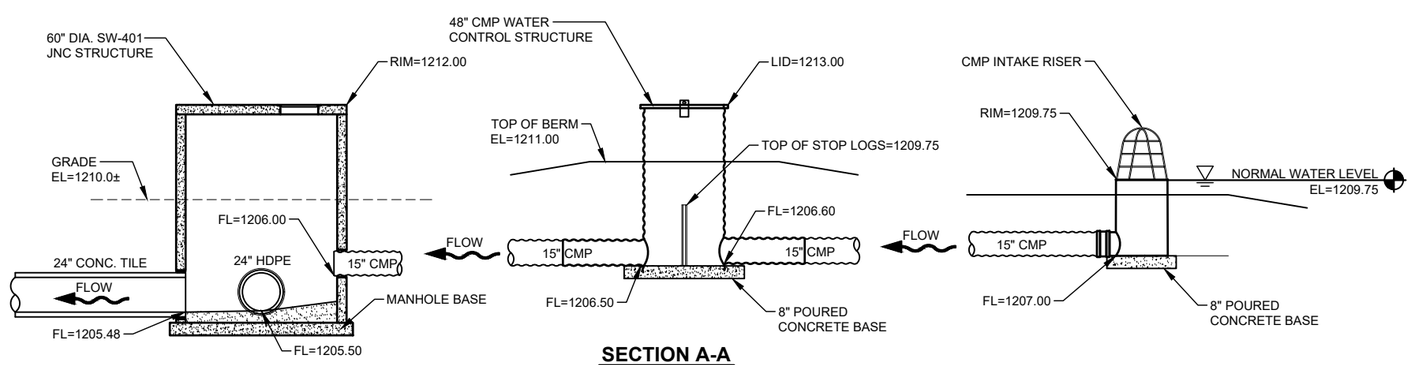
SHEET
U.4



1 WATER LEVEL CONTROL STRUCTURE LAYOUT
SCALE: N.T.S.



2 60" SW-401 JUNCTION STRUCTURE - SECTION VIEW
SCALE: N.T.S.



SECTION A-A

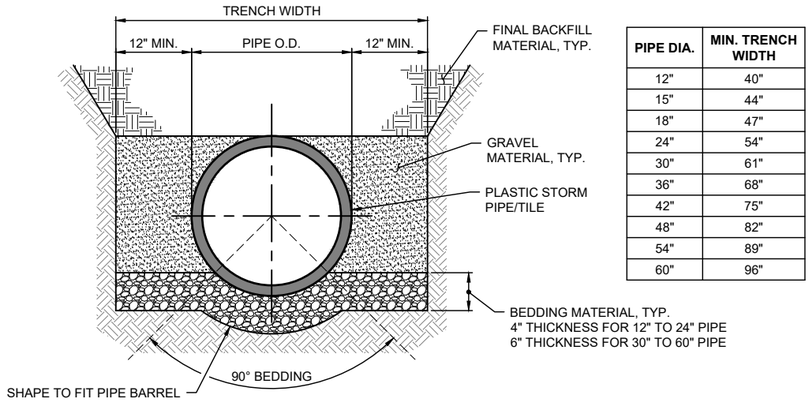
JEO CONSULTING GROUP
1-800-723-8567

PUMPED NUTRIENT REDUCTION WETLAND
CALHOUN COUNTY, IOWA
CAL883301A

WETLANDS OUTLET STRUCTURES DETAILS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

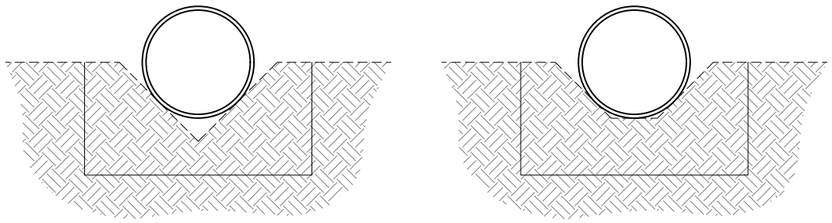
SHEET
U.5



PIPE DIA.	MIN. TRENCH WIDTH
12"	40"
15"	44"
18"	47"
24"	54"
30"	61"
36"	68"
42"	75"
48"	82"
54"	89"
60"	96"

NOTE: EXCAVATE FOR PIPE BELLS AS REQUIRED.

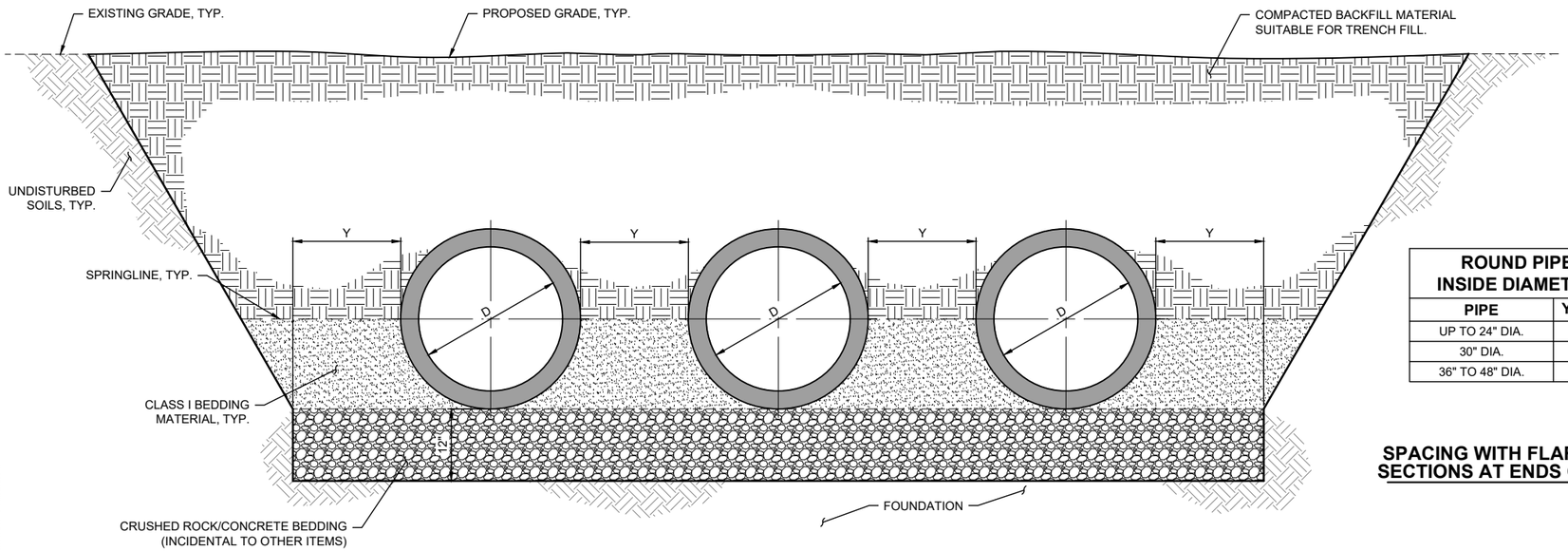
1 PLASTIC STORM SEWER PIPE & TILE TRENCH & BEDDING
SCALE: N.T.S.



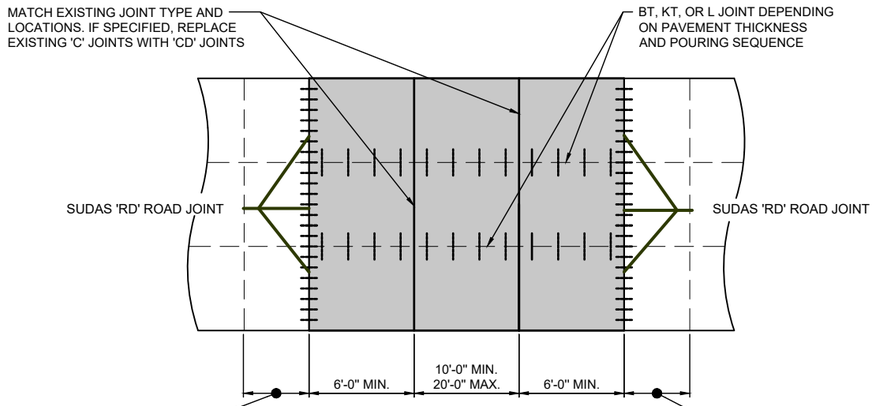
"V" GROOVE 4"-8" CPT PIPE

TRAPEZOIDAL BOTTOM 8"-24" CPT PIPE

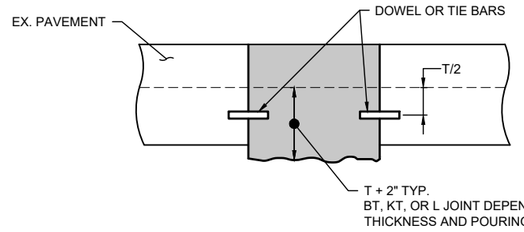
2 AG DRAIN TILE TRENCH INSTALLATION DETAIL
SCALE: N.T.S.



3 MULTIPLE STORM PIPES TRENCH INSTALLATION
SCALE: N.T.S.



4 FULL ROADWAY WIDTH PATCH
SCALE: N.T.S.



NOTE: MINIMUM THICKNESS 8" OR EQUAL TO EXISTING PAVEMENT DEPTH. WHICHEVER IS GREATER.

PATCH TO MEET SUDAS 7040 SPECIFICATIONS FOR FULL DEPTH PATCH.

5 LONGITUDINAL SECTION THOUGH PAVEMENT PATCH
SCALE: N.T.S.

ROUND PIPE INSIDE DIAMETER	
PIPE	Y (MIN.)
UP TO 24" DIA.	36"
30" DIA.	42"
36" TO 48" DIA.	48"

SPACING WITH FLARED END SECTIONS AT ENDS OF PIPES

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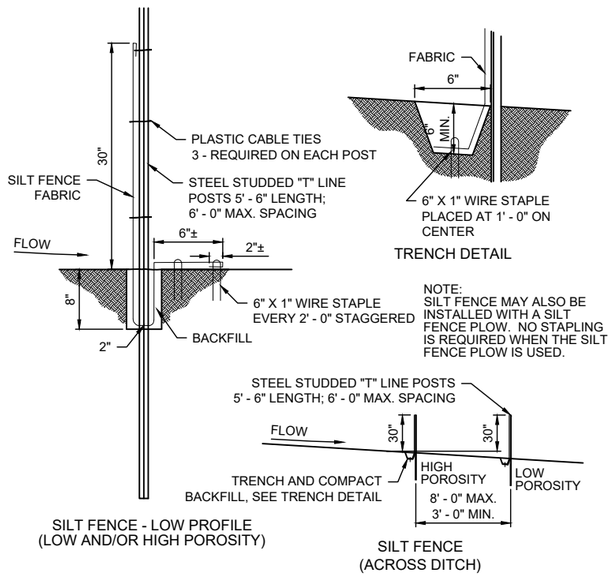
CALHOUN COUNTY, IOWA
CAL883301A

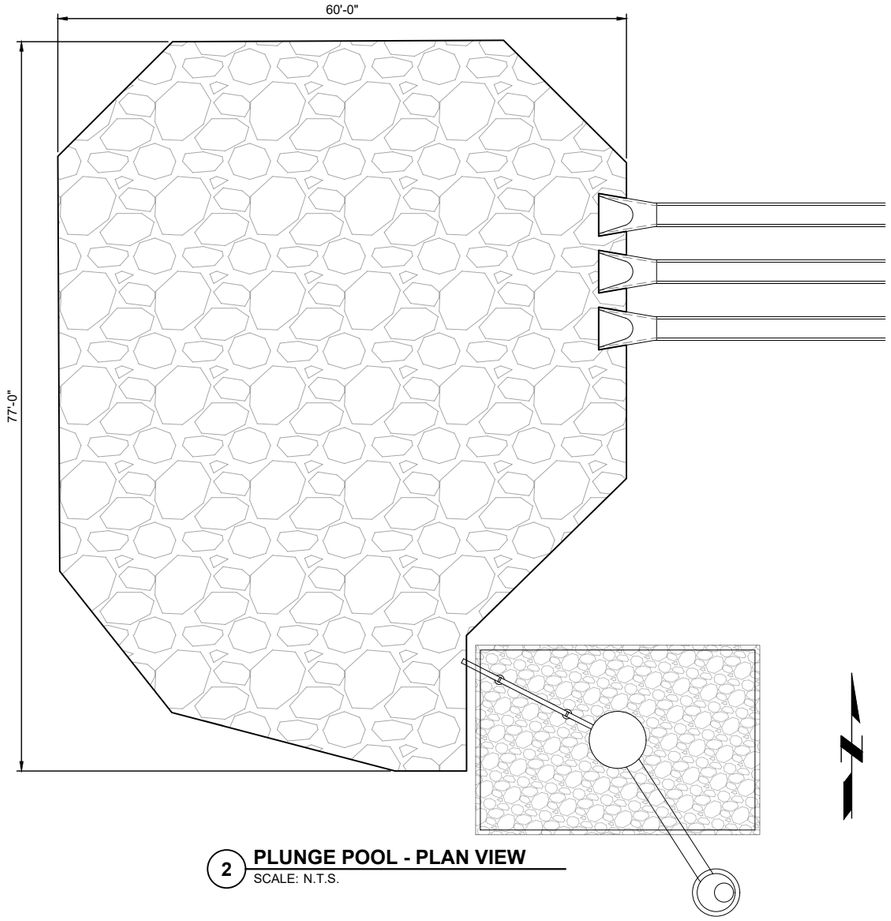
PIPE BEDDING DETAILS & PAVEMENT PATCH DETAILS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

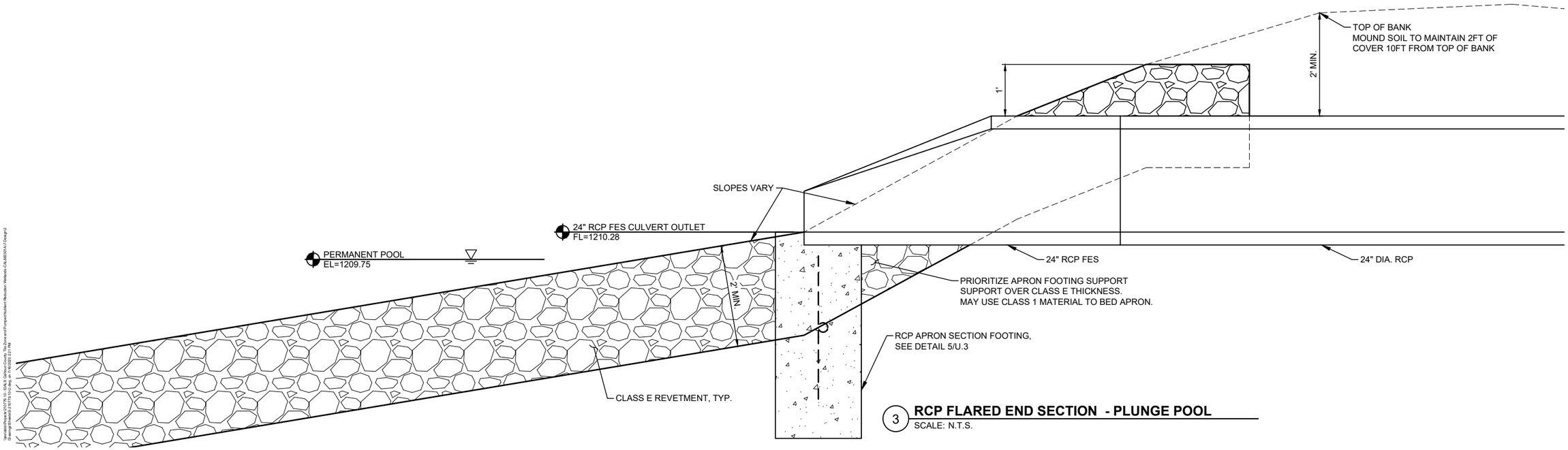
SHEET
U.6



1 **SILT FENCE DETAIL**
SCALE: N.T.S.



2 **PLUNGE POOL - PLAN VIEW**
SCALE: N.T.S.



3 **RCP FLARED END SECTION - PLUNGE POOL**
SCALE: N.T.S.

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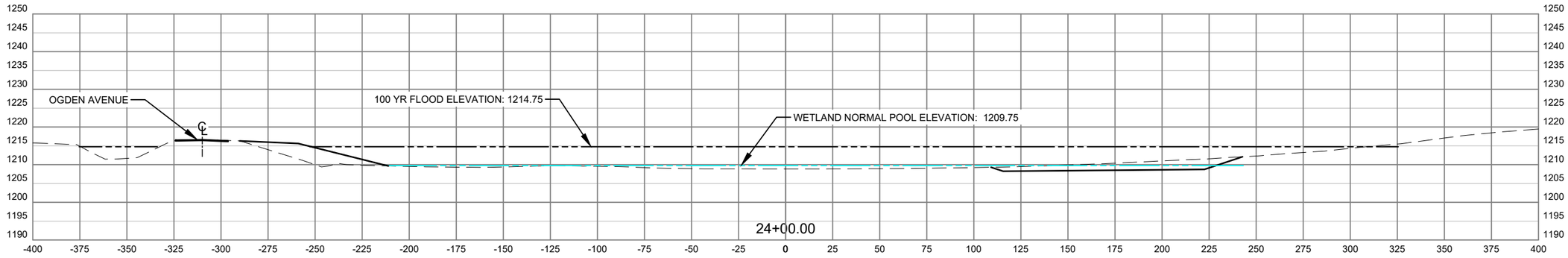
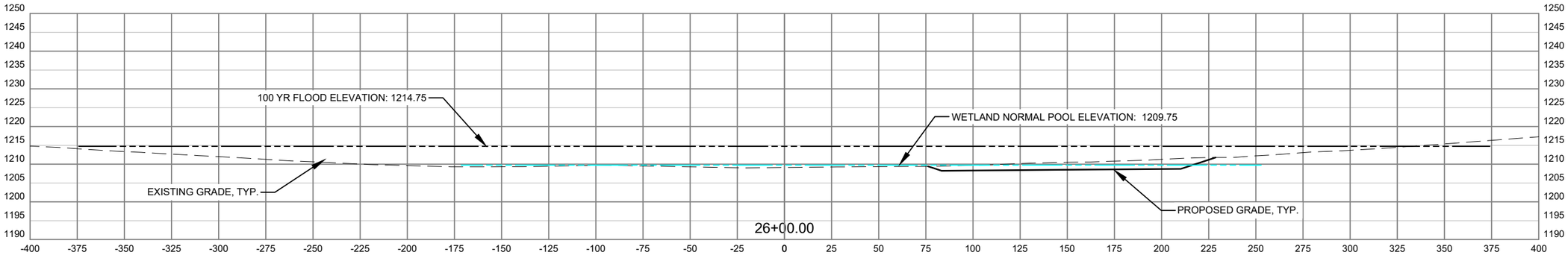
CALHOUN COUNTY, IOWA
CAL883301A

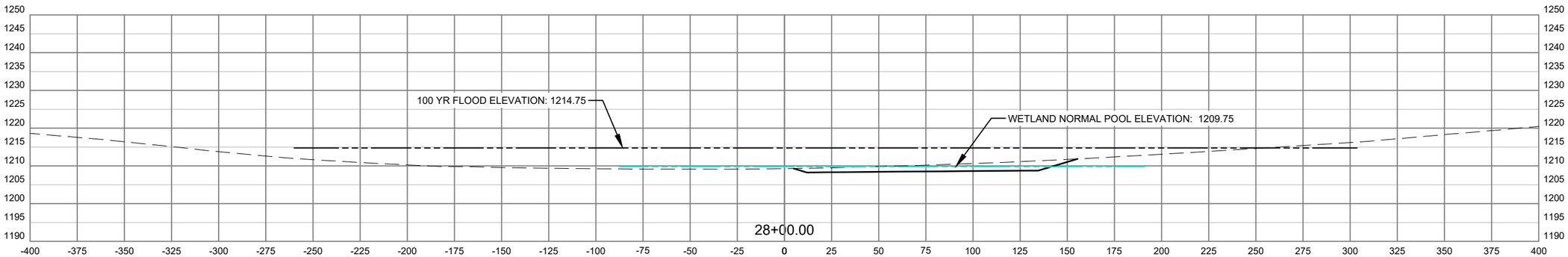
STRAW WATTLE DETAILS & PLUDGE POOL DETAIL

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-U.dwg
FIELD CREW	DHM
FIELD BOOK	MISC 29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

SHEET
U.7







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FLOODPLAIN CROSS SECTIONS

JEO PROJECT NO.	210779.10
FILE NAME	S-210779.10-X.dwg
FIELD CREW	DHM
FIELD BOOK	MISC #29
DESIGNED BY	DATE
JAA	7/31/2024
DRAWN BY	DATE
GL	8/15/2024
CHECKED BY	DATE
JJS	7/29/2024
APPROVED BY	DATE
JTM	09/03/2024
REVISIONS	

HORIZ.= 0 10 20
VERT.= 0 5 10

SHEET
X.1