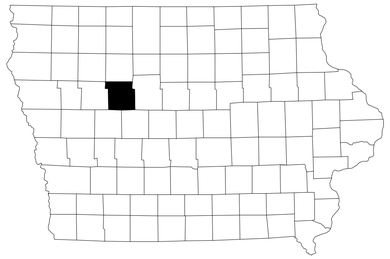
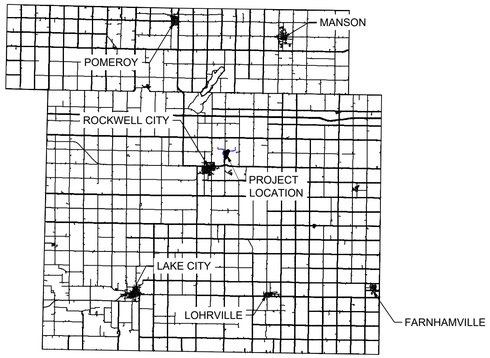
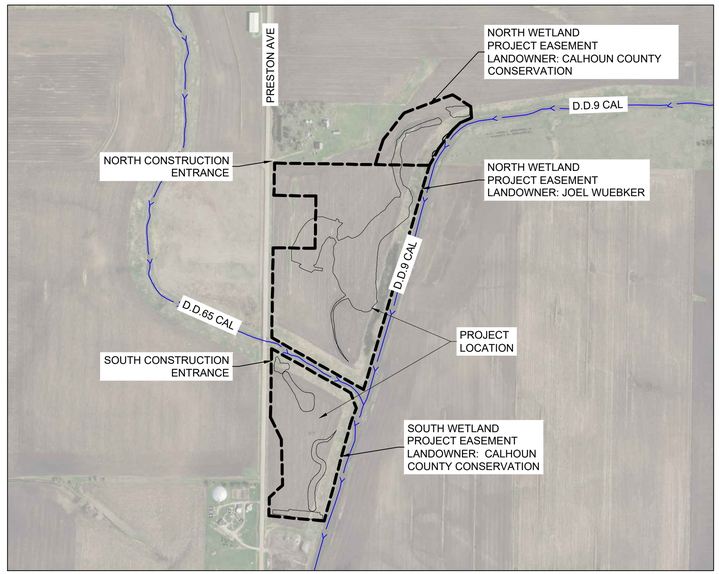
CAL883229B PUMPED WETLANDS
IDALS
ROCKWELL CITY, IOWA

STATE OF IOWA



CALHOUN COUNTY





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ROCKWELL CITY, IA, 50579

PROJECT DRAWING COORDINATE SYSTEM:
HORIZONTAL: NAD83 IOWA STATE PLANE NORTH ZONE (1401)
VERTICAL: NAVD88
UNITS: U.S. SURVEY FEET

THE ENGINEERING JOB CLASS IS IV

NRCS NEM PART 505 CERTIFICATION
THE SIGNING PROFESSIONALS HEREBY CERTIFY THAT, TO THE BEST OF THEIR PROFESSIONAL KNOWLEDGE, JUDGEMENT, AND BELIEF, THESE PLANS MEET APPLICABLE NRCS STANDARDS.

1-800-292-8989 www.iowaonecall.com

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ELECTRICAL ENGINEER

LICENSED PROFESSIONAL ENGINEER
KEVIN J. BRUXVOORT
19927
IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT DESCRIBED BELOW 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: Kevin Bruxvoort Date: 04-28-2026

Printed or typed name: KEVIN J. BRUXVOORT
License Number: 19927
My License Renewal Date is: DECEMBER 31, 2027

PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
ALL 'E' SHEETS

CIVIL ENGINEER

LICENSED PROFESSIONAL ENGINEER
DANIEL J. JENSEN
25063
IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT DESCRIBED BELOW 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: Dan Jensen Date: 04-28-2026

Printed or typed name: DANIEL JENSEN
License Number: 25063
My License Renewal Date is: DECEMBER 31, 2027

PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
ALL 'C' SHEETS

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WEST DES MOINES, IOWA 50266
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CAL883229B PUMPED WETLANDS
IDALS
ROCKWELL CITY, IOWA

04/28/2026 BID DOCUMENTS
PROJECT NO: 2142206150
CLIENT NO: --

C000

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ESTIMATED QUANTITIES:

#	ITEM DESCRIPTION	NORTH SITE QUANTITY	SOUTH SITE QUANTITY	TOTAL QUANTITY	UNITS
1	SITE STRIPPING & PREPARATION	1	1	1	LS
2	CROP DAMAGE	0	0	0	AC
3	STRUCTURE & CHANNEL SEEDING	1.5	0.4	1.9	AC
4	BUFFER SEEDING	15.1	0.6	15.7	AC
5	MOBILIZATION AND DEMOBILIZATION	1	1	1	LS
6	DRAIN TILE INVESTIGATION AND REMOVAL	2270	65	2335	LF
7	EXCAVATION (GENERAL (P))	6176	1056	7232	CY
8	EARTHFILL (GENERAL (P))	6176	585	6761	CY
9	EARTHFILL (GENERAL DAM (P))	0	579	579	CY
10	EARTHFILL (DAM CORE (P))	0	191	191	CY
11	EARTHFILL (18" CLAY LINER, WETLAND BOTTOM, TWO 9" LIFTS (P)):	9841	2046	11887	CY
12	EARTHFILL (SCARIFY AND RECOMPACT 9" LAYER OF WETLAND BOTTOM (P)):	4494	4607	9101	CY
13	TOPSOIL PLACEMENT, 6 INCH	4535	787	5322	CY
14	TOPSOIL PLACEMENT, 12 INCH	0	433	433	CY
15	8" PVC PIPE, SCHEDULE 80, FORECMAIN	92	27	119	LF
16	4" PERFORATED POLYETHYLENE PIPE WITH POROUS BACKFILL, SINGLE WALL	279	0	279	LF
17	6" NON-PERFORTATED POLYETHYLENE PIPE, SINGLE WALL	187	0	187	LF
18	24" SDR 26 PVC	367	210	577	LF
19	24" RISER INLET STRUCTURE	1	1	2	EA
20	48" CMP WATER CONTROL STRUCTURE	1	1	2	EA
21	18" ALUMINIZED CMP WETLAND DRAWDOWN PIPE, 14GA	177	114	291	LF
22	8" CMP TILE OUTLETS (20 LF EACH)	2	0	2	EA
23	RIP RAP, CLASS E	150	150	300	TON
24	1" CLEAN STONE	150	70	220	TON
25	2" CLEAN STONE	30	30	60	TON
26	POLLUTION CONTROL, SILT FENCE	472	304	776	LF
27	POLLUTION CONTROL, TYPE 2B RECP	560	395	955	SY
28	SOLAR, BATTERY, ELECTRICAL AND CONTROLS (COMPLETE SYSTEM)	2	1	3	LS
29	PUMP STATION (PUMP, CONTROLS, ELECTRICAL, STRUCTURE, APPURENTANCES (COMPLETE SYSTEM))	2	1	3	LS
30	SINGLE CANTILEVER SLIDE GATE	1	1	2	LS
31	CHAIN LINK SECURITY FENCE	215	168	383	LF

GENERAL NOTES:

1. THE LOCATIONS OF UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS PLOTTED ON THIS DRAWING ARE APPROXIMATE ONLY AND WERE OBTAINED FROM RECORDS MADE AVAILABLE TO SHIVE-HATTERY, INC. THERE MAY BE OTHER EXISTING UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS NOT KNOWN TO SHIVE-HATTERY, INC. AND NOT SHOWN ON THIS DRAWING. THE VERIFICATION OF EXISTENCE OF, AND THE DETERMINATION OF THE EXACT LOCATION OF, UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR(S).
2. IOWA CODE 480, UNDERGROUND FACILITIES INFORMATION, REQUIRES VERBAL NOTICE TO IOWA ONE-CALL 1-800-292-8989, NOT LESS THAN 48 HOURS BEFORE EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS.
3. THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
4. NO WORK SHALL BE PERFORMED BEYOND THE PROJECT LIMITS WITHOUT PRIOR AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE.
5. REPLACE ANY PROPERTY MONUMENTS REMOVED OR DESTROYED BY CONSTRUCTION. MONUMENTS SHALL BE SET BY A LAND SURVEYOR REGISTERED TO PRACTICE IN THE STATE OF IOWA.
6. ALL DEBRIS AND TRASH ENCOUNTERED DURING CONSTRUCTION WITHIN THE PROJECT LIMITS, OR DIRECTED BY THE ENGINEER, SHALL BE PROPERLY DISPOSED OF.
7. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION DE-WATERING THAT IS REQUIRED AT NO ADDITIONAL COST TO THE DIVISION.
8. REPAIR OR REPLACE DAMAGE TO EXISTING FACILITIES (TILE, UTILITIES, FENCES, ETC.) DESIGNATED TO REMAIN, AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL AREAS DISTURBED BY CONSTRUCTION, INCLUDING STAGING AREAS AND HAUL ROUTES, ARE TO BE REWORKED TO THEIR EXISTING CONDITIONS AND SEEDED AT NO ADDITIONAL COST TO THE DIVISION IF OUTSIDE OF PROJECT LIMITS AND NOT APPROVED BY ENGINEER.
9. WORK WHICH DOES NOT CONFORM TO THE REQUIREMENTS OF THE CONTRACT WILL BE CONSIDERED UNACCEPTABLE. UNACCEPTABLE WORK, WHETHER THE RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE MATERIALS, DAMAGE THROUGH CARELESSNESS OR ANY OTHER CAUSE, FOUND TO EXIST PRIOR TO THE FINAL ACCEPTANCE OF THE WORK, SHALL BE REMOVED AND REPLACED IN AN ACCEPTABLE MANNER, AS REQUIRED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.
10. WORK DONE CONTRARY TO THE INSTRUCTIONS OF THE OWNERS REPRESENTATIVE, WORK DONE BEYOND THE LINES SHOWN ON THE PLANS OR ANY EXTRA WORK DONE WITHOUT AUTHORITY WILL NOT BE PAID FOR.
11. A SHRINKAGE FACTOR OF 20% WAS ESTIMATED FOR THIS PROJECT. THE CONTRACTOR SHALL MAKE CHANGES IN EARTHWORK AS NEEDED TO ADJUST FOR INACCURACIES INHERENT WITH ESTIMATING THE SHRINKAGE FACTOR. THESE CHANGES SHALL ONLY BE MADE AFTER CONSULTATION AND APPROVAL BY THE ENGINEER AND DIVISION.
12. CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISHED GRADE.
13. THE CONTRACTOR SHALL KEEP ALL ROADS OPEN TO THROUGH TRAFFIC AT ALL TIMES.
14. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COORDINATED WITH THE GOVERNING AUTHORITY AND SHALL BE DONE IN ACCORDANCE WITH THEIR STANDARDS.
15. SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.
16. CONSTRUCTION SURVEY STAKING WILL BE PAID FOR BY THE OWNER AND PROVIDED BY THE ENGINEER. CONTROL POINTS WILL BE SET FOR USE WITH GPS CONTROLLED GRADING, IF DESIRED. CONTRACTOR SHALL PRESERVE STAKES TO THE EXTENT FEASIBLE. ANY RE-STAKING COSTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
17. NEITHER SHIVE-HATTERY NOR IDALS GUARANTEE THIS PRACTICE WILL HOLD A PERMANENT POOL OF WATER.

CULTURAL RESOURCES NOTE:

1. IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, STOP IMMEDIATELY AND NOTIFY LOCAL NATURAL RESOURCES CONSERVATION SERVICE OFFICE.

NORTH WETLAND DESIGN DATA:

PROJECT ID	CAL883229B (NORTH)	-----
LANDOWNER(S)	JOEL WUEBKER & CALHOHN COUNTY CONSERVATION	-----
PRELIMINARY OR FINAL DESIGN	FINAL	-----
DRAINAGE AREA	34,496 (DRAINAGE DITCH) 32.6 (OVERLAND FLOW)	ACRES
WETLAND POOL AREA	7.35	ACRES
DEEP WATER AREA (>3 FT DEEP)	0.05	ACRES
NORMAL POOL ELEVATION	1186.00	FEET
AVERAGE POOL DEPTH	0.85	FEET
MAXIMUM POOL DEPTH	2.2	FEET
POOL STORAGE	6.17	ACRE-FEET
BERM ELEVATION	N/A	FEET
BERM STORAGE	N/A	ACRE-FEET
LENGTH OF BERM	N/A	FEET
AUXILIARY SPILLWAY ELEVATION	N/A	FEET
AUXILIARY SPILLWAY WIDTH	N/A	FEET
WEIR WIDTH	N/A	FEET
DROP HEIGHT	N/A	FEET
TIME OF CONCENTRATION	0.179	HOURS
WEIGHTED RUNOFF CURVE NUMBER	85	-----
5-YEAR STORM DESIGN FLOW	112.04	CFS
5-YEAR FLOOD SURF. ELEVATION	1186.81	FEET
25-YEAR STORM DESIGN FLOW	191.27	CFS
25-YEAR FLOOD SURF. ELEVATION	1186.97	FEET
100-YEAR STORM DESIGN FLOW	280.62	CFS
100-YEAR FLOOD SURF. ELEVATION	1187.09	FEET
TOTAL EASEMENT AREA	24.04	ACRES
PUMP INFORMATION		
TOTAL DYNAMIC HEAD	14.5	FEET
DESIGN MAXIMUM DISCHARGE	3.2 CFS (Two Pumps)	CFS
DESIGN DAILY FLOW VOLUME	600,000 - 700,00	GAL/DAY

SOUTH WETLAND DESIGN DATA:

PROJECT ID	CAL883229B (SOUTH)	-----
LANDOWNER(S)	CALHOUN COUNTY CONSERVATION	-----
PRELIMINARY OR FINAL DESIGN	FINAL	-----
DRAINAGE AREA	10,560 (DRAINAGE DTICH) 9.8 (OVERLAND FLOW)	ACRES
WETLAND POOL AREA	4.65	ACRES
DEEP WATER AREA (>3 FT DEEP)	0.09	ACRES
NORMAL POOL ELEVATION	1186.00	FEET
AVERAGE POOL DEPTH	0.63	FEET
MAXIMUM POOL DEPTH	3.0	FEET
POOL STORAGE	2.71	ACRE-FEET
BERM ELEVATION	1187	FEET
BERM STORAGE	8.78	ACRE-FEET
LENGTH OF BERM	305	FEET
AUXILIARY SPILLWAY ELEVATION	N/A	FEET
AUXILIARY SPILLWAY WIDTH	N/A	FEET
WEIR WIDTH	N/A	FEET
DROP HEIGHT	N/A	FEET
TIME OF CONCENTRATION	0.083	HOURS
WEIGHTED RUNOFF CURVE NUMBER	85	-----
2-YEAR STORM DESIGN FLOW	31.32	CFS
2-YEAR FLOOD SURF. ELEVATION	1186.33	FEET
25-YEAR STORM DESIGN FLOW	72.07	CFS
25-YEAR FLOOD SURF. ELEVATION	1186.56	FEET
100-YEAR STORM DESIGN FLOW	105.13	CFS
100-YEAR FLOOD SURF. ELEVATION	1186.71	FEET
TOTAL EASEMENT AREA	8.83	ACRES
PUMP INFORMATION		
TOTAL DYNAMIC HEAD	12.8	FEET
DESIGN MAXIMUM DISCHARGE	1.7 CFS (One Pump)	CFS
DESIGN DAILY FLOW VOLUME	300,000 - 360,000	GAL/DAY

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IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

CAL883229B PUMPED WETLANDS

IDALS
ROCKWELL CITY, IOWA

DRAWN: GHK
APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
DATE: 04/28/2026
PROJECT NO: 2142206150
FIELD BOOK: ---
CLIENT NO: ---

PROJECT QUANTITIES

C001

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ESTIMATE REFERENCE NOTES:

ITEM #	SPEC #	DESCRIPTION
1	IA CS-001	SITE STRIPPING & PREPARATION : THIS ITEM WILL CONSIST OF WORK TO REMOVE AND DISPOSE OF EXISTING MATERIAL OR WASTE ONE SITE AND TO TO REMOVE VEGETATION ON AREAS TO BE EXCAVATED OR FILLED. TOTAL DEPTH OF VEGETATIVE STRIPPING AND TOPSOIL STRIPPING SHALL EQUAL A COMBINED DEPTH OF 12". THE TOPSOIL REPLACEMENT QUANTITY SHALL BE PAID SEPARATELY. THIS ITEM WILL ALSO INCLUDE ANY TREE AND BRUSH REMOVAL ALONG WITH ANY FENCES.
2	IA CS-001	CROP DAMAGE: THIS ITEM CONSISTS OF CROP DAMAGE THAT RESULTS FROM CONSTRUCTION ACTIVITIES. IT IS RECOMMENDED CONTRACTOR REMOVE CORN RESIDUE RATHER THAN KNOCK IT DOWN. PAYMENT FOR CROP DAMAGE WILL BE MADE TO THE NEAREST 0.1 ACRE AS MEASURED BY THE ENGINEER OR THEIR REPRESENTATIVE. THE UNIT RATE FOR CROP DAMAGE WILL BE DETERMINED BY THE DIVISION NEAR THE COMPLETION OF CONSTRUCTION AND ADDED TO THE CONTRACT WITH A CHANGE ORDER. PAYMENT WILL BE MADE TO CONTRACTOR WHO WILL PAY LANDOWNER.
3	IA CS-006	STRUCTURE & CHANNEL SEEDING: THIS ITEM INCLUDES SEEDING AND RELATED ACTIVITIES FOR STUCTURE SEEDING AREAS AS SHOWN ON THE PLANS. INCLUDES SEEDBED PREP, SEEDING, STRAW MULCH, AND FERTILIZER.
4	IA CS-006	BUFFER SEEDING: THIS ITEM INCLUDES SEEDING AND RETAED ACTVITIES FOR BUFFER SEEDING AREAS AS SHOWN ON THE PLANS. NO MULCH OR FERTILIZER SHALL BE APPLIED.
5	CS-008	MOBILIZATION AND DEMOBILIZATION: THIS ITEM SHALL BE CONSIDERED FULL COMPENSATION TO MOBILIZE AND DEMOBILIZE THE CONTRACTOR'S FORCES AND EQUIPMENT FOR THE PROJECT. ALL OTHER WORK NECESSARY TO COMPLETE THE PROJECT AS REPRESENTED HEREIN BUT NOT INCLUDED IN THE ITEMS LISTED BELOW SHALL BE INCIDENTAL TO THIS ITEM. THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND IOWA ONE CALL NOTIFICATIONS TO INSTALL SIGN PROVIDED BY IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP IN AND OWNER APPROVED LOCATION.
6	IA CS-009	DRAIN TILE INVESTIGATION AND REMOVAL: THIS ITEM INCLUDES THE EXPLORATORY EXCAVATIONS REQUIRED TO LOCATE AND REMOVE TILES SHOWN ON THE PLANS. THIS IS FULL COMPENSATION FOR EXCAVATION, BACKFILLING, AND REMOVAL OF THE TILE TRENCHES. CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR ALL TILE LOCATED AND REMOVED.
7	IA CS-021	EXCAVATION (GENERAL (P)): THIS ITEM INCLUDES THE EXCAVATION OF MATERIAL REQUIRED TO FORM THE WETLAND POOL, EXCAVATION OF THE CORE TRENCH BELOW THE EXISTING GROUND LEVEL, AS DETAILED, AND EXCAVATION FOR BORROW MATERIAL FOR PUMP EQUIPMENT PADS. COHESIVE MATERIAL FOUND DURING GENERAL GRADING MUST BE RESERVED FOR WETLAND CLAY LINER CONSTRUCTION, CORE TRENCH FILL, AND THE DAM CORE. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR THIS EARTHFILL WITHIN THE WETLAND AND MUST BE WASTED IN THE AREAS SHOWN ON THE PLANS OR MAY BE USED FOR THE EQUIPMENT PADS IF REQUIRED.
8	IA CS-023	EARTHFILL (GENERAL (P)): THIS ITEM INCLUDES THE SOIL MATERIAL REQUIRED TO CONSTRUCT THE SUBMERGED BERMS, ADDITIONAL FILL TO BE PLACED OVER TILE COVER BERMS, FILL FOR PUMP EQUIPMENT PADS, AND WASTE SOIL. COHESIVE MATERIAL FOUND DURING GENERAL GRADING MUST BE RESERVE FOR CLAY LINER CONSTRUCTION, CORE TRENCH FILL, AND THE DAM CORE. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR THIS EARTHFILL WITHIN THE WETLAND AND MUST BE WASTED IN THE AREAS SHOWN ON THE PLANS. THE REQUIRED FILL INCLUDES A 20% SHRINKAGE FACTOR. COMPACTION SHALL BE NRCS METHOD 1. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY.
9	IA CS-023	EARTHFILL (GENERAL DAM (P)): THIS ITEM INCLUDES THE EARTHFILL PLACEMENT AND COMPACTION NECESSARY TO CONSTRUCTION THE PORTION OF THE EMBANKMENT THAT IS NOT THE EMBANKMENT CORE. COHESIVE MATERIAL FOUND DURING GENERAL GRADING AND COMPACTED LINER CAN BE USED FOR THIS AREA. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR FILL IN THESE AREAS. THE REQUIRED FILL INCLUDES A 20% SHRINKAGE FACTOR. COMPACTION SHALL BE METHOD 1 OR METHOD 2. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY.
10	IA CS-023	EARTHFILL (DAM CORE (P)): THIS ITEM INCLUDES THE EARTHFILL PLACEMENT AND COMPACTION NECESSARY TO CONSTRUCT THE EMBANKMENT CORE WITHIN THE EMBANKMENT. SELECT COHESIVE MATERIAL TAKEN FROM DESIGNATED BORROW AREA SHOULD BE USED FOR THIS AREA. SAND AND GRAVEL SHALL NOT BE USED FOR THIS AREA. THE REQUIRED FILL INCLUDES A 20% SHRINKAGE FACTOR. COMPACTION SHALL BE NRCS METHOD 2. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY.
11	IA CS-023	EARTHFILL (18" RE-COMPACTED CLAY LINER, WETLAND BOTTOM (P)): THIS ITEM INCLUDES CONSTRUCTION OF A COMPACTED CLAY LINER WITHIN THE WETLAND POOL IN AREAS WHERE EXCAVATION OCCURS. SEQUENCING SHALL INCLUDE OVEREXCAVATION AND STOCKPILE OF 9" OF SOIL, SCARIFICATION TO A DEPTH OF 9 INCHES, AND RECOMPACTION (LIFT 1). AN ADDITIONAL 9 INCH CLAY LIFT WILL BE REPLACED ABOVE LIFT ONE AND COMPACTED, FORMING A TOTAL OF 18 INCHES OF CLAY LINER PRIOR TO RESPREADIN TOPSOIL. PROPOSED CONTOURS SHOWN ARE TO FINSHED SURFACE, POST TOPSOIL RESPREAD. MOISTURE CONDITIONING MAY BE REQUIRED AND COMPACTION SHALL BE NRCS METHOD 2. RESERVE SELECT CLAY SOILS FOR CONSTRUCTION OF THE CLAY LINER AND NOTIFY THE ENGINEER IS SANDY SOILS ARE LOCATED. CONTRACTOR SHALL REMOVE ROCKS LARGER THAN 6 INCHES. NOTIFY ENGINEER IMMEDIATELY IF SANDY SOILS ARE ENCOUNTERED. ITEM WILL BE PAID BASED ON PLAN QUANTITY.
12	IA CS-023	EARTHFILL (SCARIFY AND RECOMPACT 9" LAYER OF WETLAND BOTTOM (P)): THIS ITEM INCLUDES SCARIFICATION AND LOOSENING OF A 9 INCH SURFACE LAYER OF SOIL IN UNDISTURBED AREAS OF THE WETLAND POOL BOTTOM , MOISTURE CONDITIONING, AND COMPACTION OF THE WETLAND BOTTOM TO FORM A SEAL. CONTRACTOR SHALL REMOVE ROCKS LARGER THAN 6 INCHES. NOTIFY ENGINEER IMMEDIATELY IF SANDY SOILS ARE ENCOUNTERED. ITEM WILL BE PAID BASED ON PLAN QUANTITY.
13	IA CS-026	TOPSOIL PLACEMENT. 6 INCH: THIS ITEM INCLUDES THE RESPREAD OF TOPSOIL STOCKPILED DURING SITE STIRPPING. RESPREAD 6" TOPSOIL IN ALL DISTURBED AREAS INCLDUNG EXCAVATION, BORROW, AND EARTHFILL FOOTPRINTS. ITEM WILL BE PAID BASED ON PLAN QUANTITY.
14	IA CS-026	TOPSOIL PLACEMENT, 12 INCH: THIS ITEM INCLUDES THE RESPREAD OF TOPSOIL STOCKPILED DURING SITE STIRPPING. RESPREAD 12" TOPSOIL ON THE EMBANKMENT FOOTPRINT ON THE SOUTH WETLAND SITE. ITEM WILL BE PAID BASED ON PLAN QUANTITY.
15	IA CS-045	8" SCHEDULE 80 PVC PIPE: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, FITTINGS, AND BACKFILL OF THE BURIED 8" SCHEDULE 80 PVC PIPE AS SHOWN ON THE PLANS. PIPING WITHIN THE PUMP STATION IS NOT INCLUDED WITH THIS BID ITEM AND SHALL BE INCIDENTAL TO BID ITEM 30.
16	IA CS-046	4" PERFORATED POLYETHYLENE PIPE WITH POROUS BACKFILL, SINGLE WALL : THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 4" PERFORATED HDPE DRAIN TILE WITH POROUS BACKFILL.
17	IA CS-046	6" PERFORATED POLYETHYLENE PIPE, NON PERFORATED, SINGLE WALL: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 6" NON-PERFORATED HDPE DRAIN TILE.
18	IA CS-046	24" SDR 26 PVC PIPE: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 24" SDR 26 PVC PIPE WITH GASKETED BELL AND SPIGOT JOINTS FROM THE DRAINAGE DITCH TO THE PUMP STATION STUCTURES. PIPE SHALL BE BEDDED IN CLASS 1 AGGREGATE. CONCRETE COLLR CONNECTIONS AT THE PUMP STUCTURE ARE REQUIRED.
19	IA CS-051	24" RISER INLET STRUCTURE: THIS ITEM INCLUDES COSTS FOR THE MATERIAL AND INSTALLATION OF 24" CMP RISER INLET STRUCTURE PIPE, TRASH RACK, AND BASE A DETAILED.
20	IA CS-051	48" CMP WATER CONTROL STRUCTURE : THIS ITEM INCLUDES ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE PLACEMENT OF THE 48" CMP WATER CONTROL STRUCTURE, FOOTING, STEEL, FABRICATION, PIPE CONNECTIONS, STOP LOGS, STOP LOG STORAGE STRUCTURE, AND LOCKABLE LID.
21	IA CS-051	18" CMP DRAWDOWN WETLAND OUTLET PIPE: THIS ITEM INCLUDES ALL LABOR, EQUIPMENT, MATERIALS REQUIRED FOR THE EXCAVATION, AND THE PLACEMENT OF THE CORRUGATE METAL PIPE, INCLUDING ANTI-SEEPAGAE COLLARS.
22	IA CS-051	8" CMP TILE OUTLETS (20 LF EACH): THIS ITEM INCLUDES THE COSTS FOR MATERIAL, EXCAVATION, PLACEMENT, JOINTING, BEDDING, RODENT GUARDS, AND BACKFILLING OF THE 20 LF 8" CMP END SECTION FOR THE PROPOSED FIELD TILE OUTLET TO THE WETLAND. 8" CMP OUTLET SECTIONS ARE FOR 6 INCH TILES.
23	IA CS-061	RIP RAP: THIS ITEM INCLUDES THE EXCAVATION AND PLACEMENT OF CLASS 'E' REVETMENT OVER GEOTEXTILE FABRIC AT THE LOCATIONS SHOWN ON THE PLANS. GEOTEXTILE FABRIC IS INCIDENTAL TO THIS ITEM. QUANTITY DETERMINATION IS BASED ON A UNIT WEIGHT OF 105 POUNDS PER CUBIC FOOT. PROVIDE WEIGHT TICKETS TO OWNER'S REPRESENTATIVE.
24	IA CS-061	1" CLEAN STONE: THIS ITEMS INCLUDES PROCUREMENT, PLACEMENT AND SPREADING OF 1 INCH CLEAN STONE OVER GEOTEXTILE FABRIC AT THE PUMP PADS. QUANTITY DETERMINATION IS BASED ON A UNIT WEIGHT OF 130 POUNDS PER CUBIC FOOT.
25	IA CS-061	2" CLEAN STONE: THIS ITEMS INCLUDES PROCUREMENT, PLACEMENT AND SPREADING OF 2 INCH CLEAN STONE AT THE STABILIZED CONSTRUCTION ENTRANCE.
26	CS-008	POLLUTION CONTROL, SILT FENCE: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF SILT FENCE AS SHOWN ON THE PLANS AND AS DETAILED.
27	IA CS-005	POLLUTION CONTROL, TYPE 2B RECP: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF TYPE 2B RECP TURF REINFORCING MAT IN ACOORDANCE WITH SUDAS 9040. INSTALLATION SHALL BE PER THE MANUFACTURER'S RECOMMENDATIONS.
28	DIVISION 26	SOLAR, BATTERY, ELECTRICAL AND CONTROLS (COMPLETE SYSTEM); THIS ITEM INCLUDES PROCUREMENT, INSTALLATION, START UP AND WARRANTYY OF ALL COMPONENTS FOR THE PHOTOVOLTAIC AND BATTERY SYSTEM AS SHOWN IN THE PLANS AND AS DESCRIBED IN THE SPECIFICATIONS INCLUDING CONNECTION TO THE PUMP SYSTEM AND CONTROLS.
29	DIVISION 33 & 26	PUMP STATION (PUMP, CONTROLS, ELECTRICAL, STRUCTURE, APPURENTANCES (COMPLETE SYSTEM)) : THIS ITEM INCLUDES PROCUREMENT, INSTALLATION, START UP AND WARRANTY ALL COMPONENTS FOR THE PUMPING SYSTEMS AS SHOWN IN THE PLANS AND AS DESCRIBED IN THE SPECIFICATIONS INCLUDING THE CONCRETE STUCTURE, CONNECTIONS, CONTROLS, FLOATS, ELECTRICAL, VARIABLE FREQUENCY DRIVE, PUMPS, INTERIOR PIPING, WATER METER, AND REMOTE MONITORING SYSTEM. REFER TO DRAWINGS AND SPECIFICATIONS.
30	IA CS-092	SINGLE CANTILEVER SLIDE GATE: THIS TIEMS INCLUDES THE INSALLATION AND MATERIALS NEEDED TO INSTALL MANUAL CHAIN LINK CANTILEVER SLIDE GATE WITH 12 FOOT CLEAR OPENING, COMPLETE AND OPERATIONAL, AT LOCATIONS SHOWN. GATE SHALL BE INSTALLED LEVEL, ALIGNED, AND ADJUSTED TO PROVIDE SMOOTH OPERATION WITHOUT GROUND CONTACT. COORDINATE GATE CLEARANCES, POST LOCATIONS, AND FULL TRAVEL LENGTH WITH FENCE LAYOUT. GATE AUTOMATION IS NOT INCLUDED UNLESS SPECIFICALLY NOTED ON THE PLANS. INSTALLATION AND MATERIALS SHALL COMPLY WITH MANUFACTURER RECOMMENDATIONS, SUDAS, AND OTHER APPLICABLE IOWA STANDARDS.
31	IA CS-092	CHAIN LINK SECURITY FENCE: THIS ITEMS INCLUDES THE INSTALLATION AND MATERIALS NEEDED TO INSTALL 6 FOOT TALL GALVANIZED CHAIN LINK SECURITY FENCE WITH BARBED WIRE TOP AT LOCATIONS SHOW IN PLANS. INSTALLATION AND MATERIALS SHALL COMPLY WITH MANUFACTURER RECOMMENDATIONS, SUDAS, AND OTHER APPLICABLE IOWA STANDARDS. FENCE ALIGNMENT, POST SPACING, AND TERMINATION SHALL BE COORDINATED WITH GATES AND EXISTING IMPROVEMENTS. RESTORE DISTURBED AREAS TO ORIGINAL OR BETTER CONDITION UPON COMPLETION.

GENERAL NOTES:

1. THE LOCATIONS OF UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS PLOTTED ON THIS DRAWING ARE APPROXIMATE ONLY AND WERE OBTAINED FROM RECORDS MADE AVAILABLE TO SHIVE-HATTERY, INC. THERE MAY BE OTHER EXISTING UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS NOT KNOWN TO SHIVE-HATTERY, INC. AND NOT SHOWN ON THIS DRAWING. THE VERIFICATION OF EXISTENCE OF, AND THE DETERMINATION OF THE EXACT LOCATION OF, UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR(S).
2. IOWA CODE 480, UNDERGROUND FACILITIES INFORMATION, REQUIRES VERBAL NOTICE TO IOWA ONE-CALL 1-800-292-8989, NOT LESS THAN 48 HOURS BEFORE EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS.
3. THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
4. NO WORK SHALL BE PERFORMED BEYOND THE PROJECT LIMITS WITHOUT PRIOR AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE.
5. REPLACE ANY PROPERTY MONUMENTS REMOVED OR DESTROYED BY CONSTRUCTION. MONUMENTS SHALL BE SET BY A LAND SURVEYOR REGISTERED TO PRACTICE IN THE STATE OF IOWA.
6. ALL DEBRIS AND TRASH ENCOUNTERED DURING CONSTRUCTION WITHIN THE PROJECT LIMITS, OR DIRECTED BY THE ENGINEER, SHALL BE PROPERLY DISPOSED OF.
7. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION DE-WATERING THAT IS REQUIRED AT NO ADDITIONAL COST TO THE DIVISION.
8. REPAIR OR REPLACE DAMAGE TO EXISTING FACILITIES (TILE, UTILITIES, FENCES, ETC.) DESIGNATED TO REMAIN, AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL AREAS DISTURBED BY CONSTRUCTION, INCLUDING STAGING AREAS AND HAUL ROUTES, ARE TO BE REWORKED TO THEIR EXISTING CONDITIONS AND SEEDED AT NO ADDITIONAL COST TO THE DIVISION IF OUTSIDE OF PROJECT LIMITS AND NOT APPROVED BY ENGINEER.
9. WORK WHICH DOES NOT CONFORM TO THE REQUIREMENTS OF THE CONTRACT WILL BE CONSIDERED UNACCEPTABLE. UNACCEPTABLE WORK, WHETHER THE RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE MATERIALS, DAMAGE THROUGH CARELESSNESS OR ANY OTHER CAUSE, FOUND TO EXIST PRIOR TO THE FINAL ACCEPTANCE OF THE WORK, SHALL BE REMOVED AND REPLACED IN AN ACCEPTABLE MANNER, AS REQUIRED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.
10. WORK DONE CONTRARY TO THE INSTRUCTIONS OF THE OWNERS REPRESENTATIVE, WORK DONE BEYOND THE LINES SHOWN ON THE PLANS OR ANY EXTRA WORK DONE WITHOUT AUTHORITY WILL NOT BE PAID FOR.
11. A SHRINKAGE FACTOR OF 20% WAS ESTIMATED FOR THIS PROJECT. THE CONTRACTOR SHALL MAKE CHANGES IN EARTHWORK AS NEEDED TO ADJUST FOR INACCURACIES INHERENT WITH ESTIMATING THE SHRINKAGE FACTOR. THESE CHANGES SHALL ONLY BE MADE AFTER CONSULTATION AND APPROVAL BY THE ENGINEER AND DIVISION.
12. CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISHED GRADE.
13. THE CONTRACTOR SHALL KEEP ALL ROADS OPEN TO THROUGH TRAFFIC AT ALL TIMES.
14. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COORDINATED WITH THE GOVERNING AUTHORITY AND SHALL BE DONE IN ACCORDANCE WITH THEIR STANDARDS.
15. SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.
16. CONSTRUCTION SURVEY STAKING WILL BE PAID FOR BY THE OWNER AND PROVIDED BY THE ENGINEER. CONTROL POINTS WILL BE SET FOR USE WITH GPS CONTROLLED GRADING, IF DESIRED. CONTRACTOR SHALL PRESERVE STAKES TO THE EXTENT FEASIBLE. ANY RE-STAKING COSTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
17. NEITHER SHIVE-HATTERY NOR IDALS GUARANTEE THIS PRACTICE WILL HOLD A PERMANENT POOL OF WATER.

CULTURAL RESOURCES NOTE:

1. IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, STOP IMMEDIATELY AND NOTIFY LOCAL NATURAL RESOURCES CONSERVATION SERVICE OFFICE.

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IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

CAL883229B PUMPED WETLANDS

IDALS

ROCKWELL CITY, IOWA

DRAWN: GHK
APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
DATE: 04/28/2026
PROJECT NO: 21422061S0
FIELD BOOK: ---
CLIENT NO: ---

PROJECT NOTES

C002

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LEGEND

- PROPERTY LINE (APPROX)
- EASEMENT BOUNDARY
- SOIL BORING — SB
- EXISTING CONTOUR - MAJOR — 1100
- EXISTING CONTOUR - MINOR — 1101
- EXISTING DRAIN TILE
- EXISTING TILE REMOVAL
- 100-YEAR FLOODPLAIN
- 500-YEAR FLOODPLAIN
- FLOODWAY

SURVEY NOTES:

1. LIMITED TOPOGRAPHIC SURVEY COMPLETED BY SHIVE-HATTERY ON FEBRUARY 22, 2024.
2. SUPPLEMENTAL EXISTING SURFACE INFORMATION SHOWN WAS BASED ON LIGHT DETECTION AND RANGING (LIDAR) INFORMATION FROM IOWA DNR (2020).
3. CONTRACTOR SHALL VERIFY BASE SURFACE PRIOR TO CONSTRUCTION AND COORDINATE WITH ENGINEER.

COORDINATE SYSTEM AND DATUM:

HORIZONTAL DATUM - NAD83, IOWA STATE PLANE, NORTH ZONE

VERTICAL DATUM - NAVD88

TILE INFORMATION

EXISTING TILE INFORMATION IS APPROXIMATE AND WAS PROVIDED BY THE LANDOWNER.

SOILS NOTES:

1. STRIP EXISTING VEGETATION AND TOPSOIL WITHIN ALL DISTURBED AREAS. STRIPPING DEPTH SHALL BE 12 INCHES. STOCKPILE CLEAN TOPSOIL FREE OF VEGETATION FOR RESPREAD.
2. LIMITED SOIL PROBING WAS COMPLETED BY SHIVE-HATTERY ON OCTOBER 26, 2023. PROBING WAS DONE TO A DEPTH OF APPROXIMATELY 42 INCHES IN PROPOSED POOL AREAS.
3. SOILS CONSIST OF A SURFACE LAYER OF DARK ORGANIC TOPSOIL FOLLOWED BY A LEAN CLAY LAYER. SOME SILT AND SAND SEAMS WERE PRESENT AS IS TYPICAL IN FLOODPLAN AREAS. THE CLAY LAYER WAS OBSERVED DOWN TO DEPTHS OF ABOUT 42 INCHES. SOILS AT DEEPER DEPTHS ARE UNKNOWN. EXCAVATION IS LIMITS TO 3 FEET IN POOL AREAS AND SELECT SOILS SHALL BE RESERVED FOR CLAY LINER CONSTRUCTION. SOIL CONDITIONS MAY VARY.
4. NOTIFY ENGINEER IMMEDIATELY IF SAND IS ENCOUNTERED IN LARGE QUANTITIES. GRADING MAY REQUIRE MODIFICATION IN THE FIELD BASED ON SOIL CONDITIONS. COORDINATE WITH THE ENGINEER.

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IDALS

ROCKWELL CITY, IOWA

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APPROVED:	DJJ
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EXISTING CONDITIONS AND REMOVALS

CD01

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PRESTON AVE

EXCESS SOIL PLACEMENT LIMITS
AREA = 1.3 ACRES

INSTALL 90 LF OF
6" HDPE @ 1.12%
START IE = 1189.0
END IE = 1188.0

SEE SHEETS C201 AND C202 FOR
SOUTH WETLAND GRADING PLANS

TILE COVER BERM
TOP WIDTH = 12 FEET
SIDE SLOPES = 4:1

EXCAVATED CHANNEL
GRADE TO DRAIN TOWARDS OUTLET

IE = 1188.0

TILE OUTLET SWALE TO WETLAND POOL
PLACE 35 TONS CLASS 'E' RIPRAP 1.5' THICK

TILE OUTLET SWALE TO WETLAND POOL
PLACE 25 TONS CLASS 'E' RIPRAP 1.5' THICK

20 TONS CLASS 'E' RIPRAP

24" CMP RISER
RIM = 1185.50

NORTH WETLAND DRAWDOWN PIPE
146 LF 18" CMP @ 0.69%

48" CMP WATER CONTROL STRUCTURE
RIM = 1188.60

NORTH WETLAND OUTLET PIPE
31 LF 18" CMP @ 0.00%

20 TONS CLASS 'E' RIPRAP

DELINEATED
FLOODWAY

LAKE CREEK

PROPOSED NORMAL WATER LEVEL
ELEVATION = 1186.0
AREA = 7.35 ACRES
AVERAGE DEPTH = 0.85 FT
MAX DEPTH = 2.2 FT

WETLAND EXCAVATION LIMITS
AREA = 4.1 ACRES

INSTALL 279 LF 4"
PERFORATED DRAIN TILE
WITH POROUS BACKFILL.
0.5% MIN SLOPE.

IE = 1187.5

INSTALL 74 LF OF
6" HDPE @ 0.47%
START IE = 1188.0
END IE = 1187.7

INSTALL 30 LF OF
6" HDPE @ 3.28%
START IE = 1189.0
END IE = 1188.0

TILE COVER BERM
TOP WIDTH = 12 FEET
SIDE SLOPES = 4:1

INSTALL 34 LF OF
6" HDPE @ 0.47%
START IE = 1187.7
END IE = 1187.5

FEMA ZONE A
100-YEAR FLOODPLAIN

APPROXIMATE PROPERTY
BOUNDARY (TYP.)

EASEMENT BOUNDARY (TYP.)

20 TONS CLASS 'E' RIPRAP

30 TONS CLASS 'E' RIPRAP

BURIED WATER FORCEMAIN
8 INCH SCHEDULE 80 PVC.

INSTALL SINGLE
CANTILEVER SLIDE GATE
- SEE DETAIL

APPROXIMATE FENCE
POST LOCATION (TYP.)
- SEE DETAIL

EQUIPMENT PAD
TOP ELEV = 1191.50

INSTALL 215 LF OF CHAIN
LINK SECURITY FENCE
- SEE DETAIL

GRAVITY INTAKE PIPE FROM
STREAM TO SUMP. TWIN 24"
SDR 26 PVC TO EACH VAULT

TWO PUMP STATION SUMPS, SOLAR PANELS,
BATTERY AND CONTROLS. WATER METER TO
BE INSTALLED ON EACH DISCHARGE PIPE
- SEE DETAIL ON C305

LEGEND

DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER LEVEL	
PROPOSED TILE	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	800
MINOR CONTOUR (PROPOSED)	801
MAJOR CONTOUR (EXISTING)	800
MINOR CONTOUR (EXISTING)	801
APPROX. PROPERTY BOUNDARY	
EASEMENT BOUNDARY	
100-YEAR FLOODPLAIN	
SECURITY FENCE	

NORTH

0 40 80 160
SCALE IN FEET

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CAL883229B PUMPED WETLANDS

IDALS
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ROCKWELL CITY, IOWA

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NORTH WETLAND GRADING PLAN

C101

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SCARIFY AND RECOMPACT 9" OF ALL NON-EXCAVATED AREAS WITHIN POOL LIMITS

TILE COVERS

WASTE SOIL AREA

FEMA ZONE A 100-YEAR FLOODPLAIN

18" RECOMPACTED CLAY LINER WITHIN EXCAVATION LIMITS OF POOL

SCARIFY AND RECOMPACT 9" OF ALL NON-EXCAVATED AREAS WITHIN POOL LIMITS

DELINEATED FLOODWAY

NORTH EQUIPMENT PAD

ELEVATIONS TABLE

CUT/FILL	MINIMUM ELEVATION (FT.)	MAXIMUM ELEVATION (FT.)	COLOR
CUT	-3.0	-2.5	
CUT	-2.5	-2.0	
CUT	-2.0	-1.5	
CUT	-1.5	-1.0	
CUT	-1.0	-0.5	
CUT	-0.5	0.0	
FILL	0.0	0.5	
FILL	0.5	1.0	
FILL	1.0	1.5	
FILL	1.5	2.0	
FILL	2.0	2.5	
FILL	2.5	3.0	
FILL	3.0	3.5	
FILL	3.5	4.0	
FILL	4.0	4.5	
FILL	4.5	5.0	
FILL	5.0	5.5	

EARTHWORK TABLE

CLASSIFICATION	CUT	TOTAL FILL + 20% SHRINK
EXCAVATION, WETLAND	6,176	0
EARTHFILL, EQUIPMENT PAD	0	1,110
EARTHFILL, WASTE SOIL	0	4,046
EARTHFILL, TILE BERMS	0	1,020
TOTAL EARTHWORK	6,176	6,176

NORTH

0 30 60 120

SCALE IN FEET

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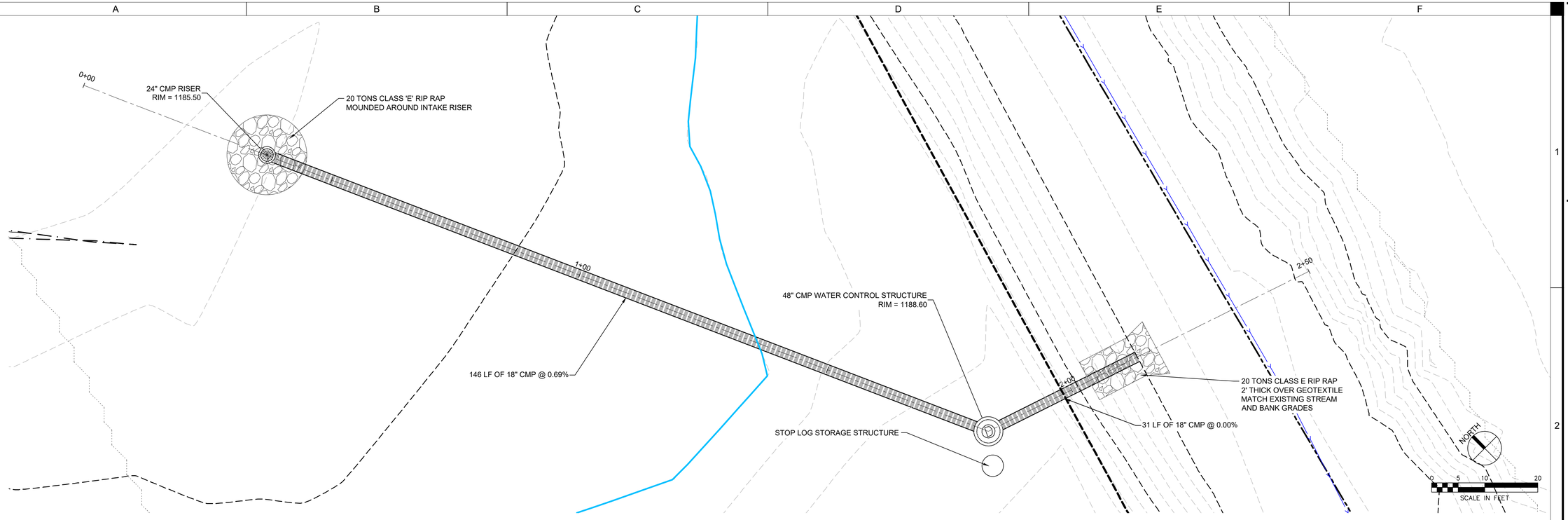
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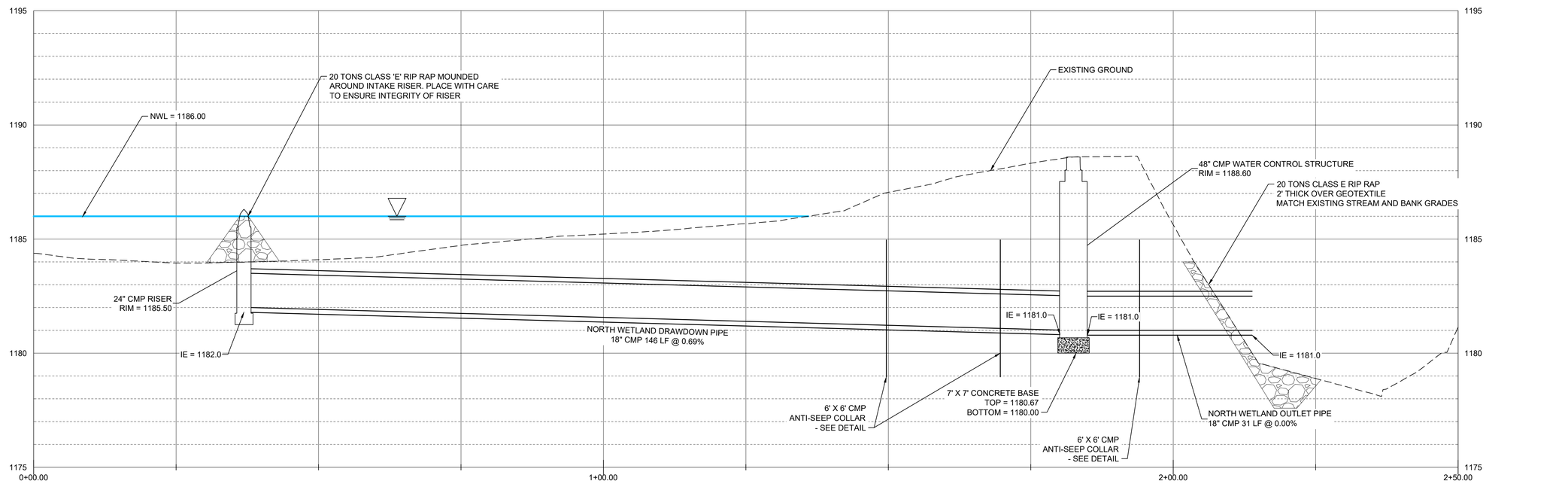
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NORTH WETLAND CUT-FILL PLAN

C102

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VERTICAL SCALE:
0 1.25 2.5 5
SCALE IN FEET

HORIZONTAL SCALE:
0 5 10 20
SCALE IN FEET

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NORTH WETLAND DRAWDOWN PLAN AND PROFILE

C103

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30 TONS CLASS E RIP RAP 2' THICK OVER GEOTEXTILE MATCH EXISTING STREAM AND BANK GRADES

0+00

0+00

NORTH WETLAND GRAVITY INTAKE PIPE 1A.1
24" SDR 26 PVC 94 LF @ -1.02%

20 TONS CLASS 'E' RIPRAP

NORTH WETLAND GRAVITY INTAKE PIPE 1A.2
24" SDR 26 PVC 4 LF @ 0.00%

NORTH BURIED WATER FORCEMAIN 1A
8" SCH 80 PVC 26 LF @ 0.00%

ACCESS RAMP
WIDTH = 12 FEET

NORTH BURIED WATER FORC
8" SCH 80 PVC 9 LF @ 0.00%

INSTALL SINGLE CANTILEVER SLIDE GATE
- SEE DETAIL

NORTH WETLAND GRAVITY INTAKE PIPE 1B.1
24" SDR 26 PVC 91 LF @ 1.03%

NORTH WETLAND PUMP STATION #1
9' X 9' CONCRETE BOX STRUCTURE
RIM = 1191.50
SUMP = 1173.00

APPROXIMATE FENCE POST LOCATION (TYP.)
- SEE DETAIL

NORTH WETLAND GRAVITY INTAKE PIPE 1B.2
24" SDR 26 PVC 4 LF @ 0.00%

560 SY TPE 2B RECP

105 TONS 1" CLEAN STONE, 6" THICK OVER GEOTEXTILE

DUPLEX PUMP STATION
- SEE DETAIL ON C305

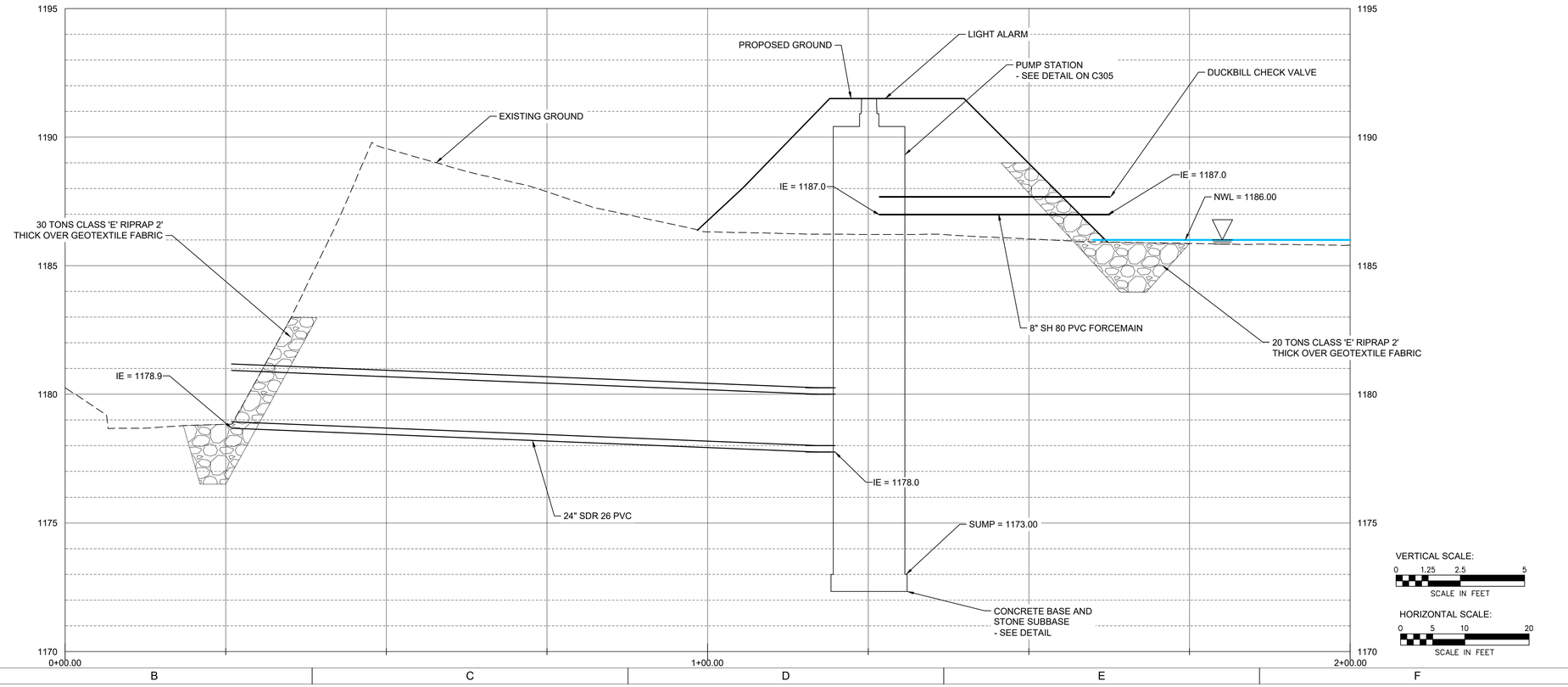
SOLAR PANELS
- SEE DETAILS

UNISTRUT RACKING FOR PUMP AND SOLAR CONTROLS
- SEE DETAIL

INSTALL 215 LF OF CHAIN LINK SECURITY FENCE
- SEE DETAIL

NORTH

0 5 10 20
SCALE IN FEET



VERTICAL SCALE:
0 1.25 2.5 5
SCALE IN FEET

HORIZONTAL SCALE:
0 5 10 20
SCALE IN FEET

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IDALS

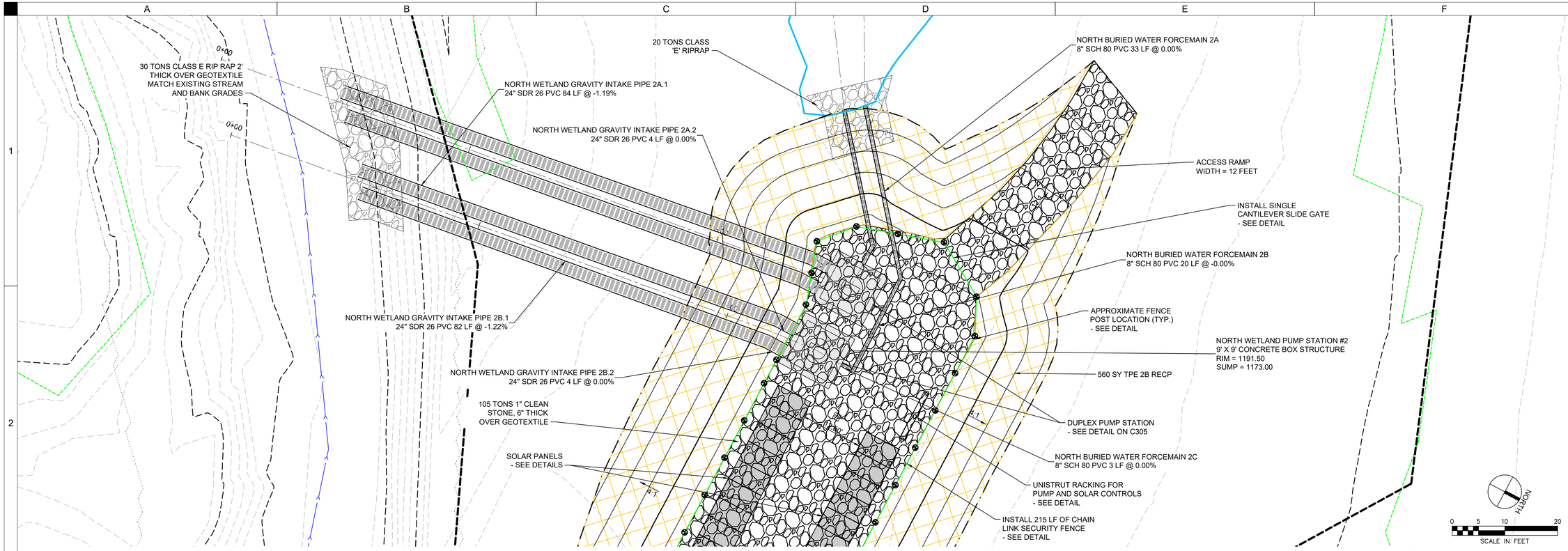
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NORTH WETLAND PUMP STATION 1 PLAN AND PROFILE

C104

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NORTH WETLAND PUMP STATION 2 PLAN AND PROFILE

C105

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SEE C206 FOR SOUTH WETLAND SEEDING PLAN

PRESTON AVE

SEED SPOIL AREA AND TILE COVER BERMS
STRUCTURE SEEDING
AREA = 1.3 ACRES

WEBSTER-CALHOUN

CALHOUN COUNTY

EASEMENT BOUNDARY

GRADING LIMITS (TYP)

EXISTING STREAM CENTERLINE

SEED FROM WETLAND POOL TO EASEMENT BOUNDARY BUFFER SEEDING
AREA = 15.1 ACRES

560 SY TYPE 2B RECP

SEED PUMP STATION PAD
STRUCTURE SEEDING
AREA = 0.2 ACRES

D&J LAND TRUST

D&J LAND TRUST

NORTH

0 40 80 160
SCALE IN FEET

LEGEND

DESCRIPTION	LINE TYPE
FENCE	
GRADING LIMITS	
EASEMENT BOUNDARY	
MAJOR CONTOUR (EXISTING)	800
MINOR CONTOUR (EXISTING)	801
STRUCTURE SEEDING	
BUFFER SEEDING	

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CAL883229B PUMPED WETLANDS

IDALS

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ISSUED FOR: BID DOCUMENTS
DATE: 04/28/2026
PROJECT NO: 2142261S0
FIELD BOOK: ---
CLIENT NO: ---

NORTH SEEDING PLAN

C106

PRESTON AVE

APPROXIMATE PROPERTY BOUNDARY (TYP.)

EASEMENT BOUNDARY (TYP.)

PROTECT EXISTING BURIED TELECOM LINE

PUMP STATION SUMP,SOLAR PANELS, BATTERY, AND CONTROLS. WATER METER TO BE INSTALLED ON DISCHARGE PIPE - SEE DETAIL ON C306

INSTALL 168 LF OF CHAIN LINK SECURITY FENCE - SEE DETAIL

APPROXIMATE FENCE POST LOCATION (TYP.) - SEE DETAIL

STABILIZED CONSTRUCTION ENTRANCE, 30 TONS 2 INCH CLEAN STONE

INSTALL SINGLE CANTILEVER SLIDE GATE - SEE DETAIL

SEDIMENT FOREBAY GRADING LIMITS
BOTTOM = 1185.0
DEPTH = 2 FEET

20 TONS CLASS 'E' RIPRAP

20 TONS CLASS 'E' RIPRAP

GRAVITY INTAKE PIPE FROM STREAM TO SUMP TWIN 24" SDR 26 PVC

BURIED WATER FORCEMAIN. 8 INCH C900 PVC

TOP OF BERM
TOP WIDTH = 24 FEET
ELEVATION = 1187.0

MAINTAIN SWALE DRAINAGE

20 TONS CLASS 'E' RIPRAP

24" CMP RISER
RIM = 1185.50

EXCAVATED CHANNEL GRADE TO DRAIN TOWARDS OUTLET

WETLAND EXCAVATION LIMITS
AREA = 1.1 ACRES

48" CMP WATER CONTROL STRUCTURE
RIM = 1187.00

SOUTH WETLAND DRAWDOWN PIPE
57 LF 18" CMP @ 0.88%

SOUTH WETLAND OUTLET PIPE
57 LF 18" CMP @ 0.87%

20 TONS CLASS 'E' RIPRAP

ARMOR NATURAL FLOODPLAIN INFLOW/OUTFLOW LOCATION
CREST = 1186.5
70 TONS CLASS 'E' RIPRAP

LAKE CREEK

PROPOSED NORMAL WATER LEVEL
ELEVATION = 1186.0
AREA = 4.7 ACRES
AVERAGE DEPTH = 0.63 FT
MAX DEPTH = 3.0 FT

SEE C101 AND C102 FOR NORTH WETLAND

LEGEND

DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER LEVEL	
PROPOSED TILE	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	800
MINOR CONTOUR (PROPOSED)	801
MAJOR CONTOUR (EXISTING)	800
MINOR CONTOUR (EXISTING)	801
APPROX. PROPERTY BOUNDARY	
EASEMENT BOUNDARY	
100-YEAR FLOODPLAIN	
SECURITY FENCE	

NORTH

0 25 50 100
SCALE IN FEET

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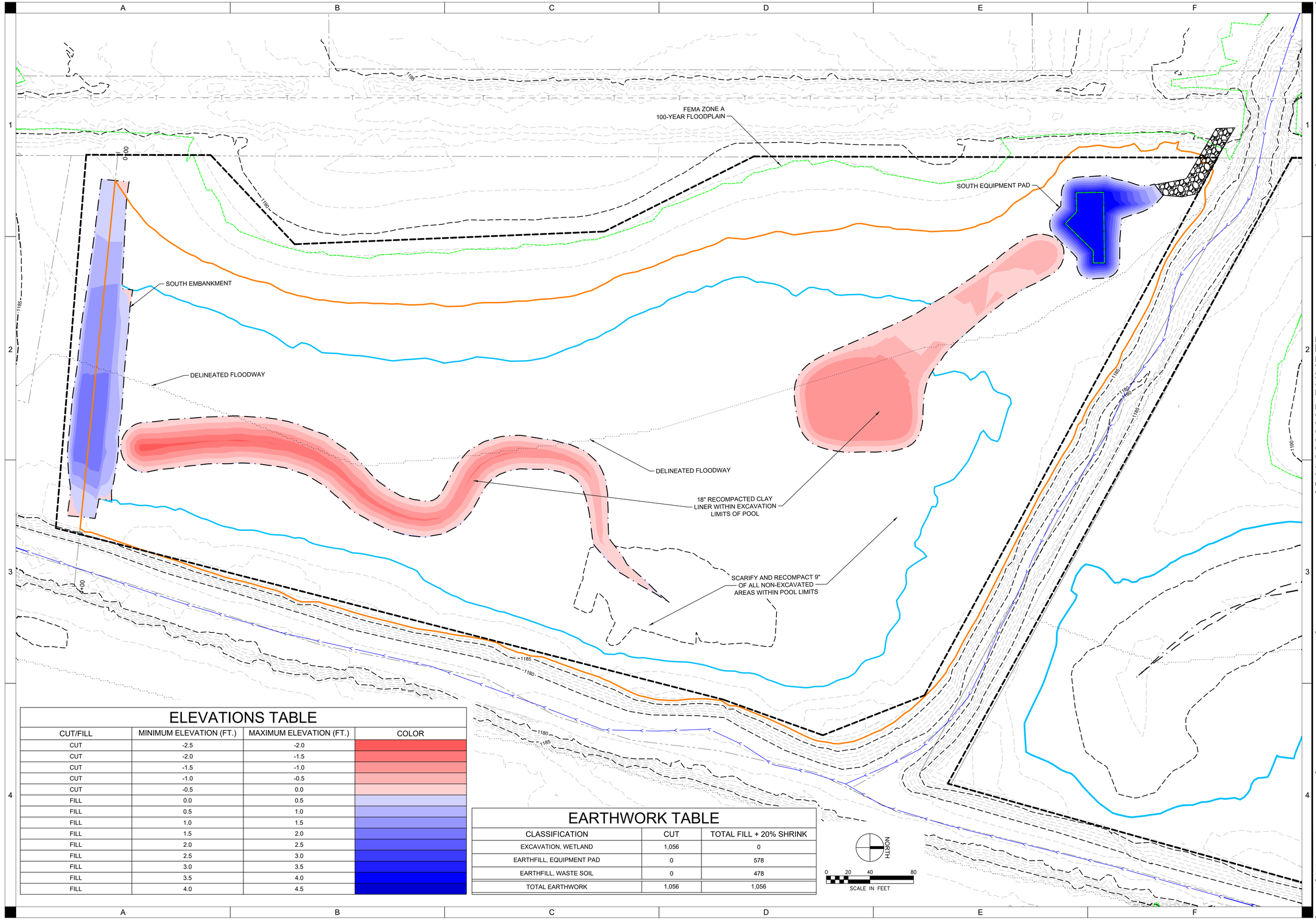
IDALS
—
ROCKWELL CITY, IOWA

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SOUTH WETLAND GRADING PLAN

C201

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ELEVATIONS TABLE

CUT/FILL	MINIMUM ELEVATION (FT.)	MAXIMUM ELEVATION (FT.)	COLOR
CUT	-2.5	-2.0	
CUT	-2.0	-1.5	
CUT	-1.5	-1.0	
CUT	-1.0	-0.5	
CUT	-0.5	0.0	
FILL	0.0	0.5	
FILL	0.5	1.0	
FILL	1.0	1.5	
FILL	1.5	2.0	
FILL	2.0	2.5	
FILL	2.5	3.0	
FILL	3.0	3.5	
FILL	3.5	4.0	
FILL	4.0	4.5	

EARTHWORK TABLE

CLASSIFICATION	CUT	TOTAL FILL + 20% SHRINK
EXCAVATION, WETLAND	1,056	0
EARTHFILL, EQUIPMENT PAD	0	578
EARTHFILL, WASTE SOIL	0	478
TOTAL EARTHWORK	1,056	1,056

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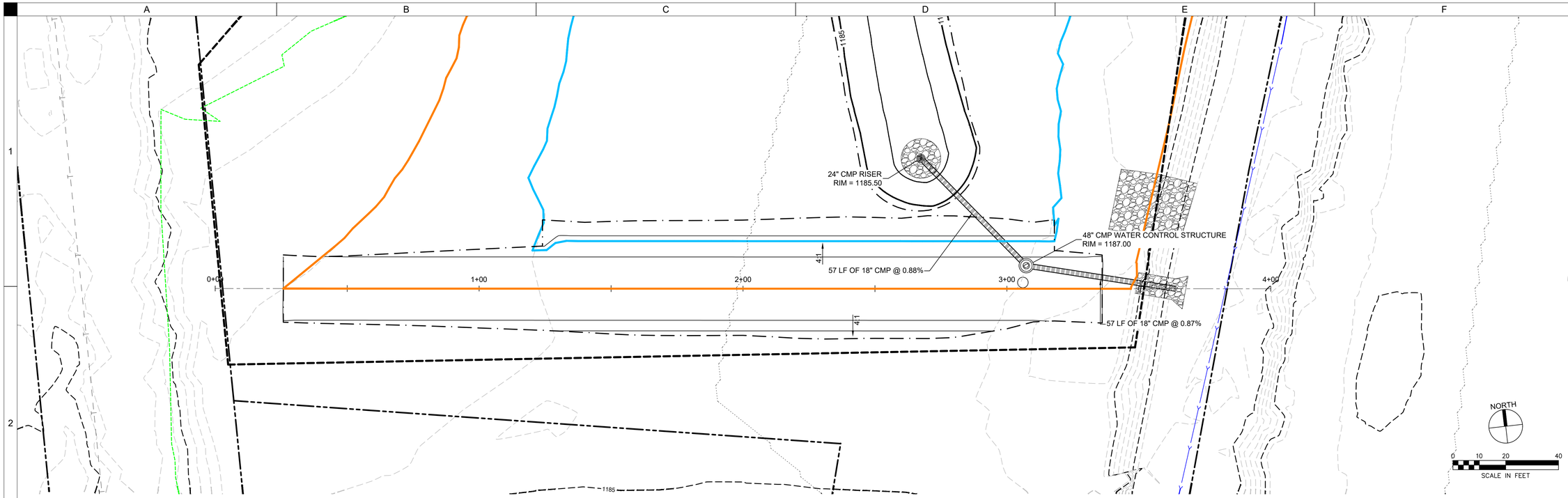
IDALS
—
ROCKWELL CITY, IOWA

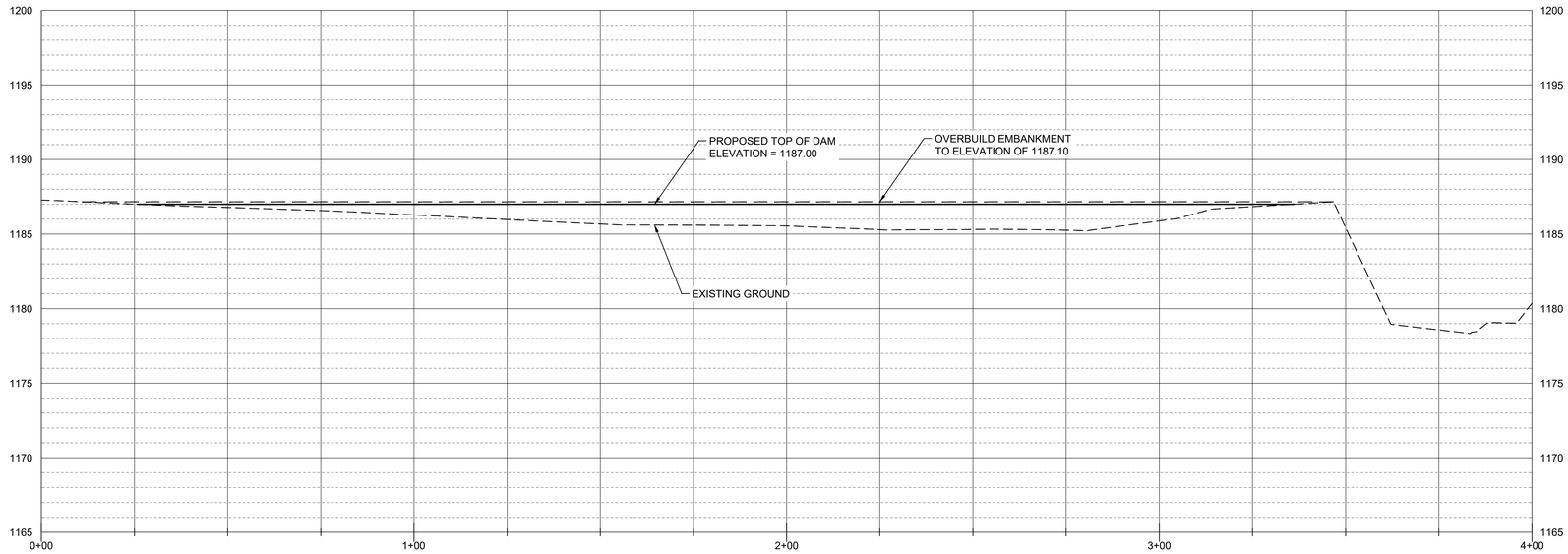
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FIELD BOOK	—

SOUTH WETLAND CUT-FILL PLAN

C202

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VERTICAL SCALE:
0 2.5 5 10
SCALE IN FEET

HORIZONTAL SCALE:
0 10 20 40
SCALE IN FEET

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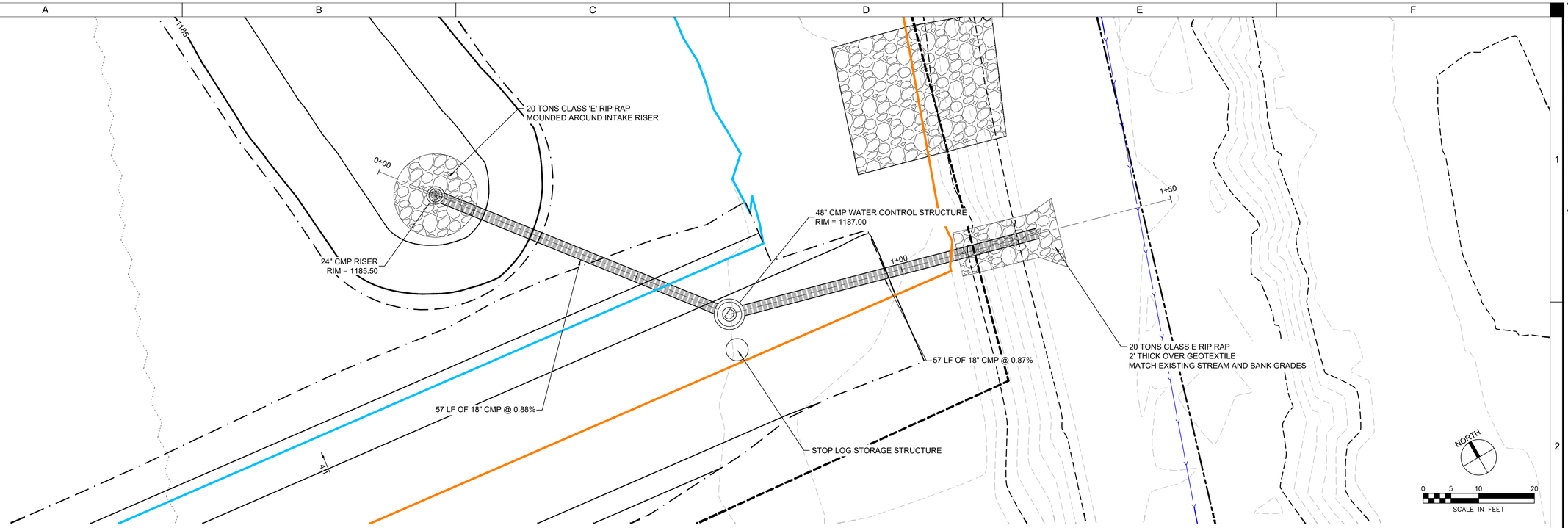
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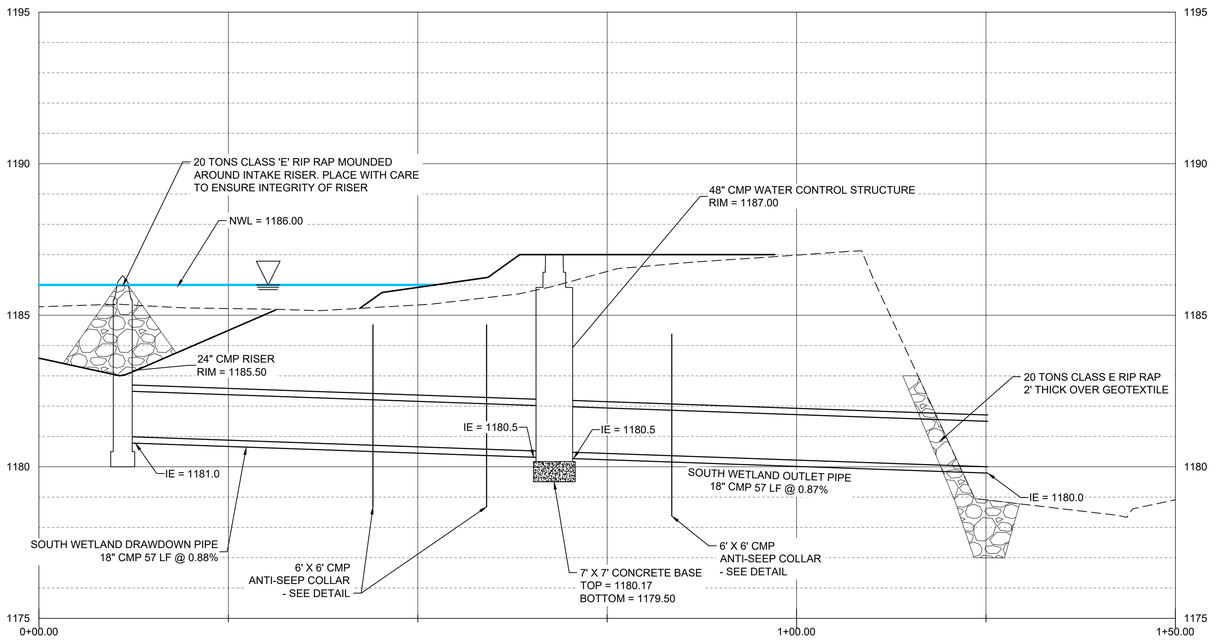
IDALS
ROCKWELL CITY, IOWA

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PROJECT NO: 214220/150
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SOUTH EMBANKMENT PLAN AND PROFILE

C203





VERTICAL SCALE:
0 1.25 2.5 5
SCALE IN FEET

HORIZONTAL SCALE:
0 5 10 20
SCALE IN FEET

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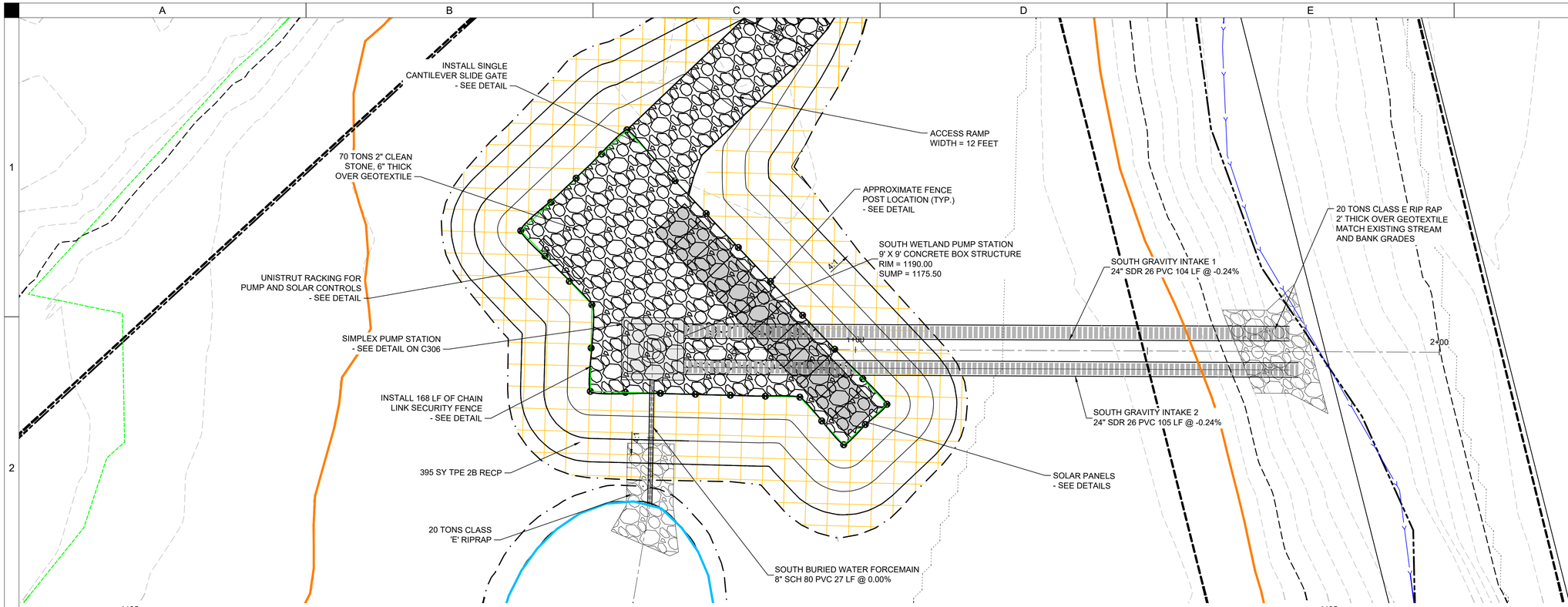
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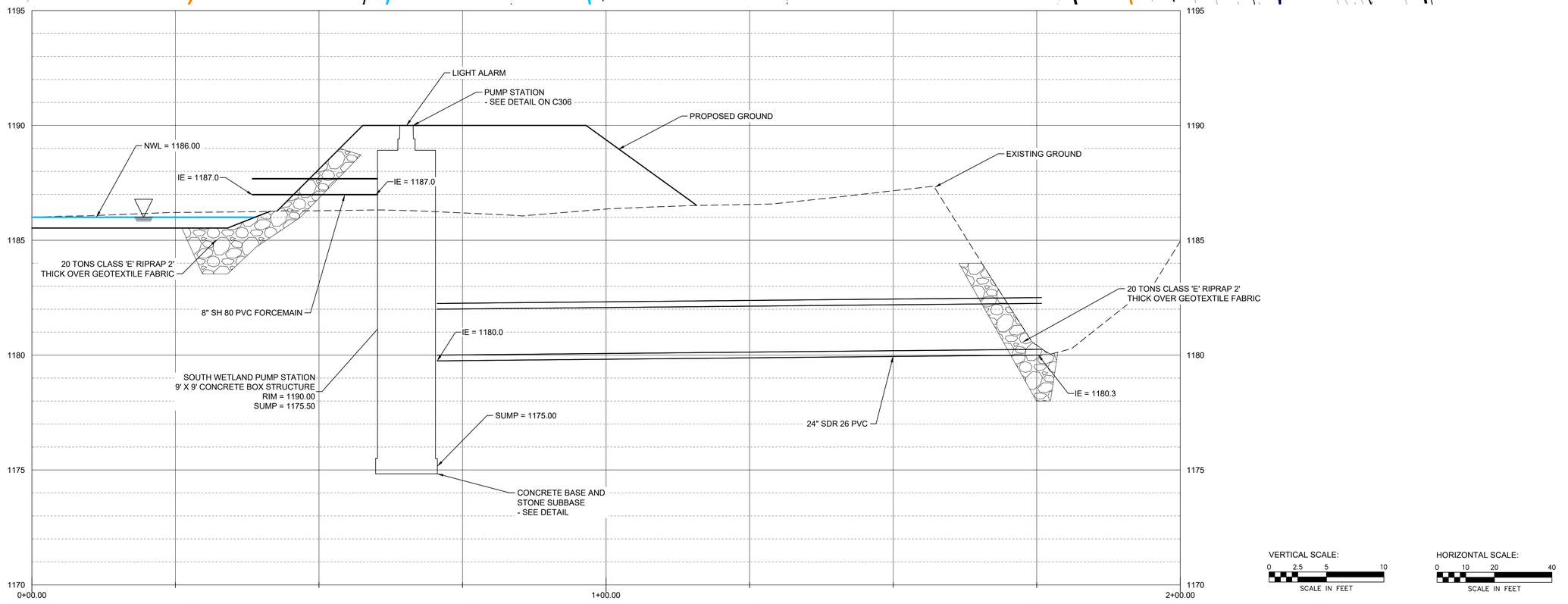
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ROCKWELL CITY, IOWA

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APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
DATE: 04/28/2026
PROJECT NO: 214226150
FIELD BOOK: --
CLIENT NO: --

SOUTH WETLAND DRAWDOWN PLAN AND PROFILE

C204





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IDALS

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SOUTH WETLAND PUMP STATION PLAN AND PROFILE

C205

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PRESTON AVE

EASEMENT BOUNDARY

CALHOUN COUNTY

SEED PUMP STATION PAD
STRUCTURE SEEDING
AREA = 0.1 ACRES

395 SY TYPE
2B RECP

GRADING LIMITS (TYP)

SEED WETLAND EMBANKMENT
STRUCTURE SEEDING
AREA = 0.3 ACRES

INSTALL 422 LF
OF SILT FENCE

CONTRACTOR IS RESPONSIBLE FOR RE-SEEDING ALL DISTURBED AREA WITHIN THE EASEMENT AND OUTSIDE OF THE POOL. SITE IS CURRENTLY SEEDED TO NATIVE PRAIRIE. SEEDING AREA SHOWN IS AN ESTIMATE OF NEEDED DISTURBANCE FOR STAGING AND ACCESS. MINIMIZE DISTURBANCE TO ESTABLISHED VEGETATION DESIGNATED TO REMAIN TO THE EXTENT PRACTICAL

BUFFER SEEDING
AREA = 0.6 ACRES

SEE C106 FOR NORTH
WETLAND SEEDING PLAN

EXISTING STREAM
CENTERLINE

GRADING LIMITS (TYP)

1185
1180

NORTH

0 20 40 80
SCALE IN FEET

LEGEND

DESCRIPTION	LINE TYPE
FENCE	
GRADING LIMITS	
EASEMENT BOUNDARY	
MAJOR CONTOUR (EXISTING)	800
MINOR CONTOUR (EXISTING)	801
STRUCTURE SEEDING	
BUFFER SEEDING	

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IDALS

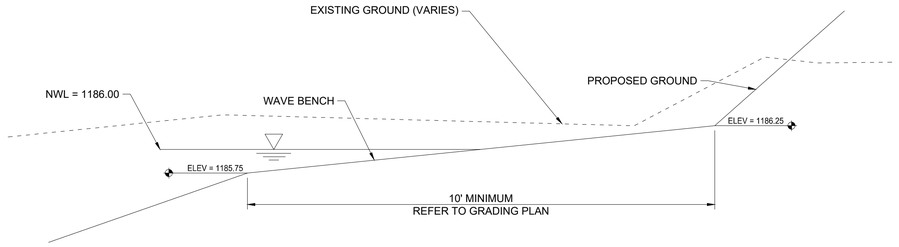
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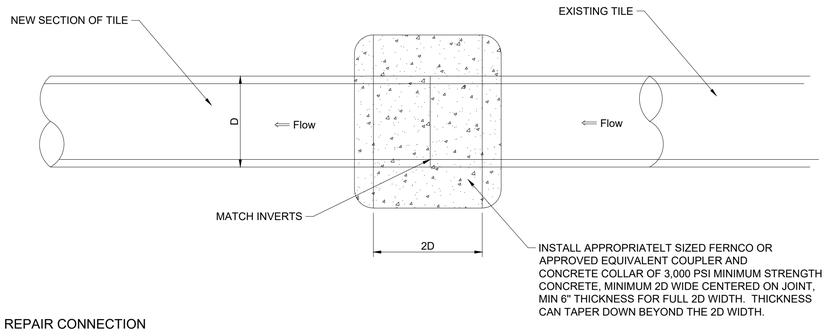
SOUTH SEEDING PLAN

C206

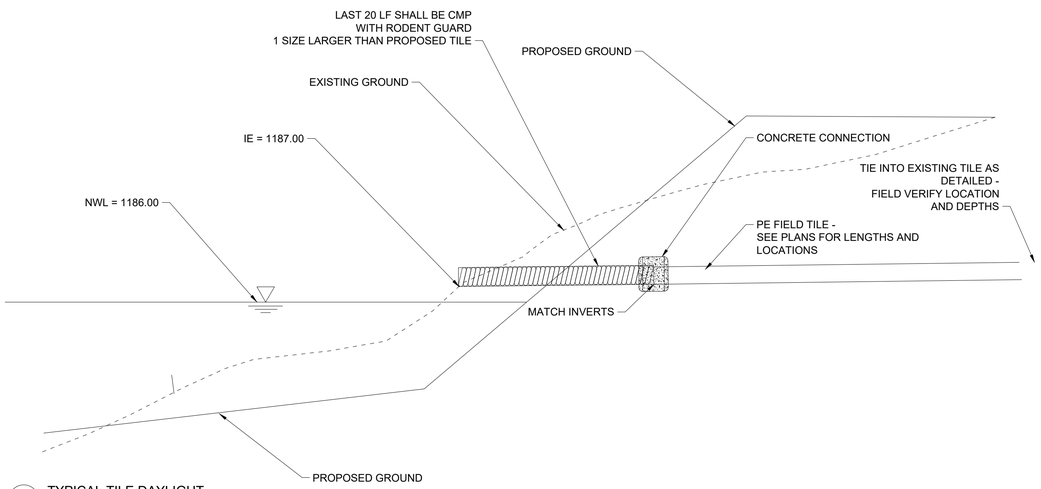
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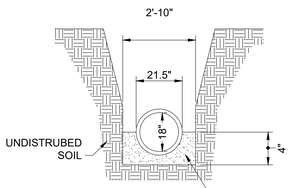
A1 WAVE PROTECTION BENCH AT NWL
NOT TO SCALE



A2 FIELD TILE REPAIR CONNECTION
NOT TO SCALE

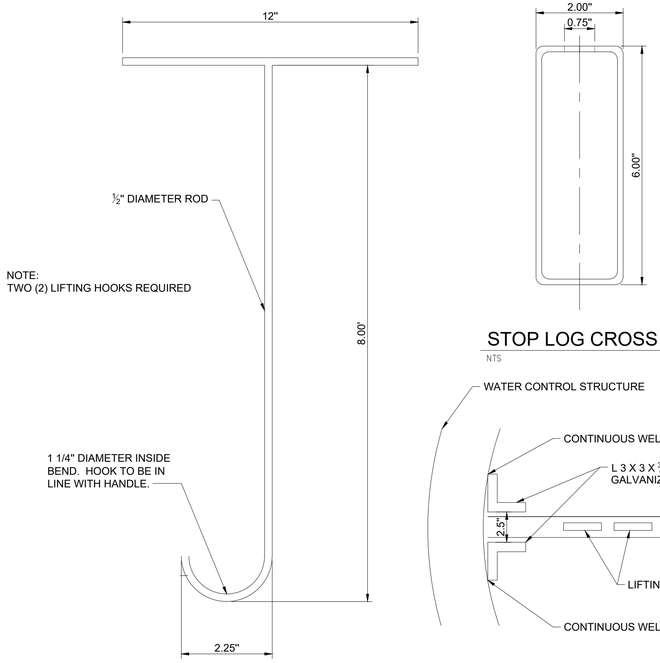


A3 TYPICAL TILE DAYLIGHT
NOT TO SCALE



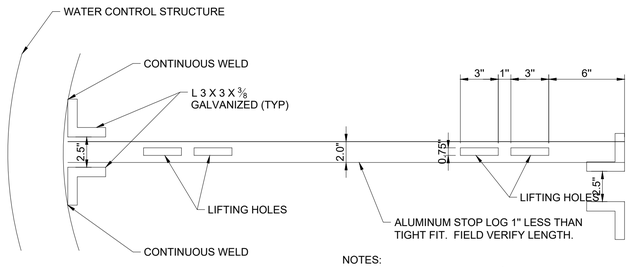
NOTE:
1. SUBGRADE SHOULD BE EXCAVATED OR OVER EXCAVATED, IF NECESSARY, SO A UNIFORM FOUNDATION FREE OF PROTRUDING ROCKS MAY BE PROVIDED.
2. GRANULAR BEDDING IS NOT ALLOWED AS IT MAY CREATE A SEEPAGE PATHWAY. BACK FILL WILL IMPERVIOUS COMPACTED CLAY BY HAND.

A4 CMP PIPE BEDDING
NOT TO SCALE



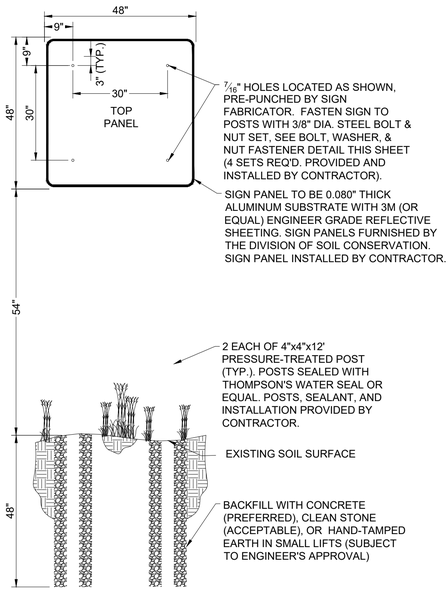
D2 STOP LOG AND LIFTING HOOK
NOT TO SCALE

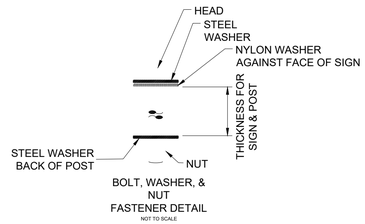
STOP LOG CROSS SECTION
NTS



NOTES:
1. ALUMINUM OR PVC STOP-LOGS SHALL BE PROVIDED BY CONTRACTOR. ALUMINUM STOP LOGS ARE DETAILED, PVC STOP LOGS SUBJECT TO APPROVAL BY ENGINEER.
2. CONTRACTOR IS RESPONSIBLE FOR CUTTING STOP-LOGS AS SHOWN. THE 0.75" DIMENSION IS CRITICAL AND NEEDS TO BE CENTERED IN THE STOP-LOG TO AVOID LEAKAGE.
3. THE FINISHED SURFACE SHALL BE SMOOTH TO PROVIDE A FLAT SURFACE FOR THE STOP-LOG ABOVE IT.
4. THE CONTRACTOR SHALL DELIVER A TOTAL OF 21 STOP-LOGS TO THE SITE (10 FOR NORTH SITE AND 11 FOR SOUTH SITE).
5. THE COST OF THE STOP-LOG WORK IS INCIDENTAL TO THE OUTLET CONTROL STRUCTURE.

NOTES:
1. CONTRACTOR TO DRILL ⅜" HOLES IN TOP OF STOP LOG CHANNELS AND PROVIDE TWO (2) PAD LOCKS TO LOCK THROUGH CHANNELS TO PREVENT LOGS FROM BEING LIFTED OUT WHEN LOCK IS IN PLACE.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FROM FABRICATOR FOR ENGINEER REVIEW.





SIGNAGE NOTES:

1. DIVISION WILL FURNISH SIGN PANEL. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSTS, HARDWARE, AND INSTALLATION.

2. ALL EXPOSED WOOD SHALL BE SEALED WITH THOMPSON'S WATER SEAL OR EQUAL MEETING ASTM D-4446-08.

3. ALL STEEL HARDWARE PIECES SHALL BE GALVANIZED OR RUST RESISTANT.

4. NYLON AND STEEL WASHERS SHALL BE USED AS SHOWN ON THE BOLT, WASHER, NUT FASTENER DETAIL ABOVE.

5. CLEAR UTILITIES WITH IOWA ONE-CALL (800) 292-8989 BEFORE EXCAVATING FOR POSTS.

6. SECURE DIVISION AND LANDOWNER APPROVAL FOR SIGN LOCATION BEFORE INSTALLATION.

7. COSTS FOR POSTS, HARDWARE, WOOD SEALANT AND SIGN INSTALLATION SHALL BE INCIDENTAL TO MOBILIZATION.

8. CONTRACTOR SHALL INSTALL SIGN POSTS USING A PLYWOOD OR OTHER SUITABLE TEMPLATE TO MAINTAIN ACCURATE POST SPACING AND ALIGNMENT DURING BACKFILLING OF THE POST HOLES. TO AVOID BENDING OF THE SIGN PANELS, POSTS SHALL NOT BE INSTALLED OR BACKFILLED WITH SIGN PANELS ATTACHED.

9. ONE (1) PROJECT SIGN IS REQUIRED UNLESS NOTED OTHERWISE.

D4 PROJECT SIGN
NOT TO SCALE

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IDALS

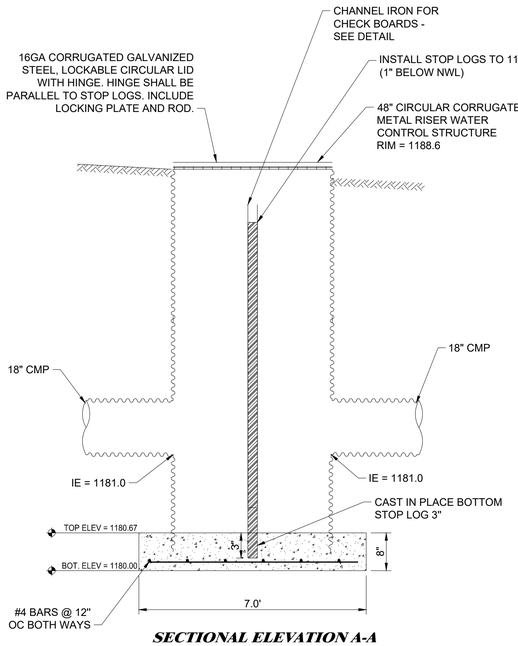
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CONSTRUCTION DETAILS

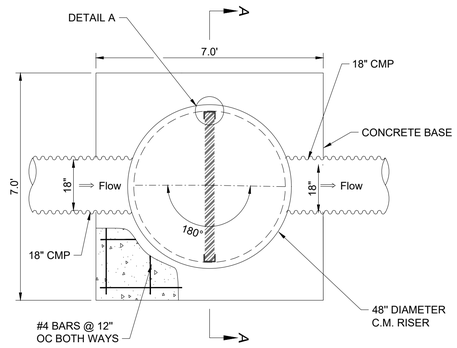
C301

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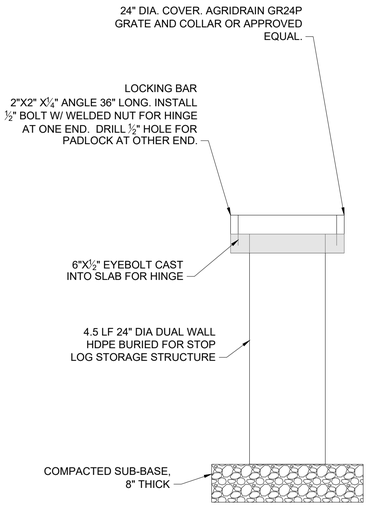


SECTIONAL ELEVATION A-A
RISER DETAIL

NOTES:
1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF WATER CONTROL STRUCTURE.
2) WATER CONTROL STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
3) STOP LOG CHANNEL IS TO BE ANCHORED TO THE WALLS AND FLOOR PRIOR TO PLACING CONCRETE INVERT.
4) POUR CONCRETE INVERT AFTER STOP LOG CHANNEL IS INSTALLED. CAST BOTTOM STOP LOG INTO PLACE WITH THREE ¾" DIA "J BOLTS".
5) PROVIDE MATCHING PADLOCKS FOR ALL LOCKING STRUCTURES. PROVIDE OWNER WITH FOUR KEYS.

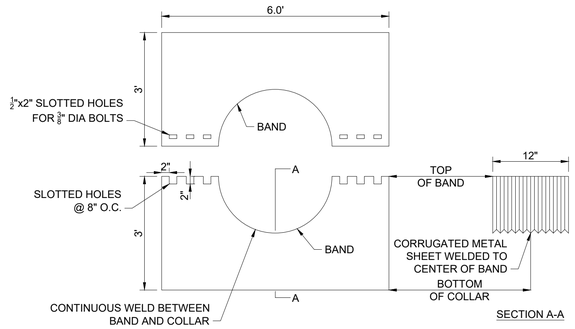


PLAN VIEW



STOP LOG STORAGE STRUCTURE

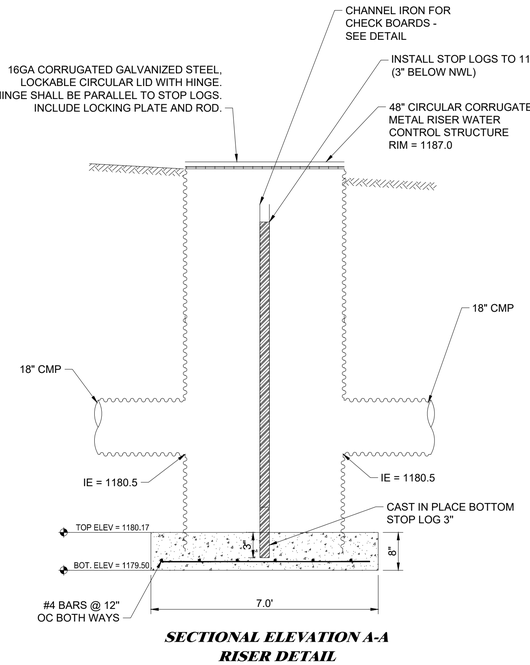
A2 NORTH WETLAND WATER CONTROL STRUCTURE AND APPURTENANCES
NOT TO SCALE



NOTE:

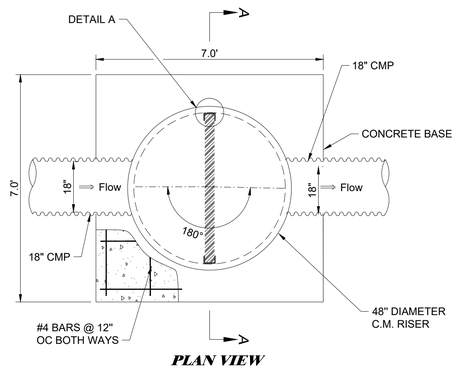
1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FROM FABRICATOR FOR ENGINEER REVIEW.

E2 CMP ANTI-SEEPAGE COLLAR
NOT TO SCALE

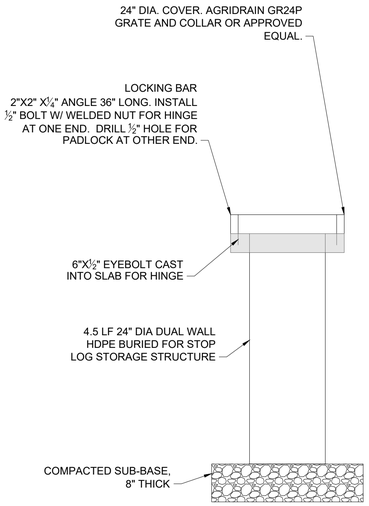


SECTIONAL ELEVATION A-A
RISER DETAIL

NOTES:
1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF WATER CONTROL STRUCTURE.
2) WATER CONTROL STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
3) STOP LOG CHANNEL IS TO BE ANCHORED TO THE WALLS AND FLOOR PRIOR TO PLACING CONCRETE INVERT.
4) POUR CONCRETE INVERT AFTER STOP LOG CHANNEL IS INSTALLED. CAST BOTTOM STOP LOG INTO PLACE WITH THREE ¾" DIA "J BOLTS".
5) PROVIDE MATCHING PADLOCKS FOR ALL LOCKING STRUCTURES. PROVIDE OWNER WITH FOUR KEYS.

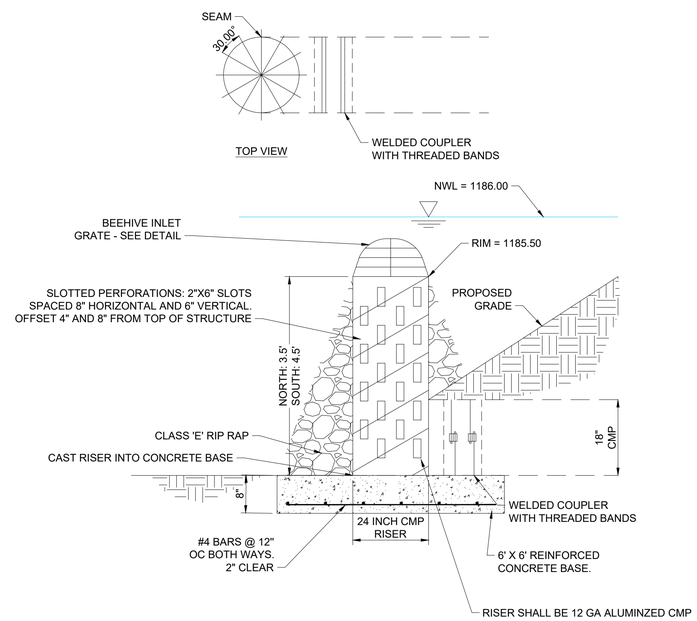


PLAN VIEW



STOP LOG STORAGE STRUCTURE

A2 SOUTH WETLAND WATER CONTROL STRUCTURE AND APPURTENANCES
NOT TO SCALE



E4 CORRUGATED METAL RISER
NOT TO SCALE

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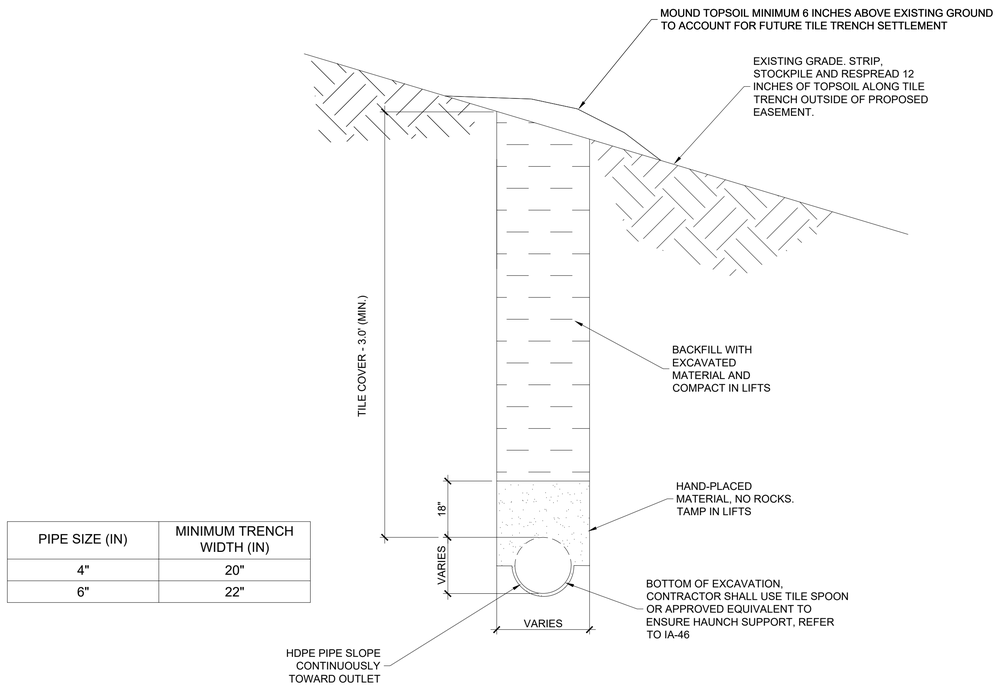
IDALS
ROCKWELL CITY, IOWA

DRAWN: GHK
APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
DATE: 04/28/2026
PROJECT NO: 2142206150
FIELD BOOK: –
CLIENT NO: –

CONSTRUCTION DETAILS

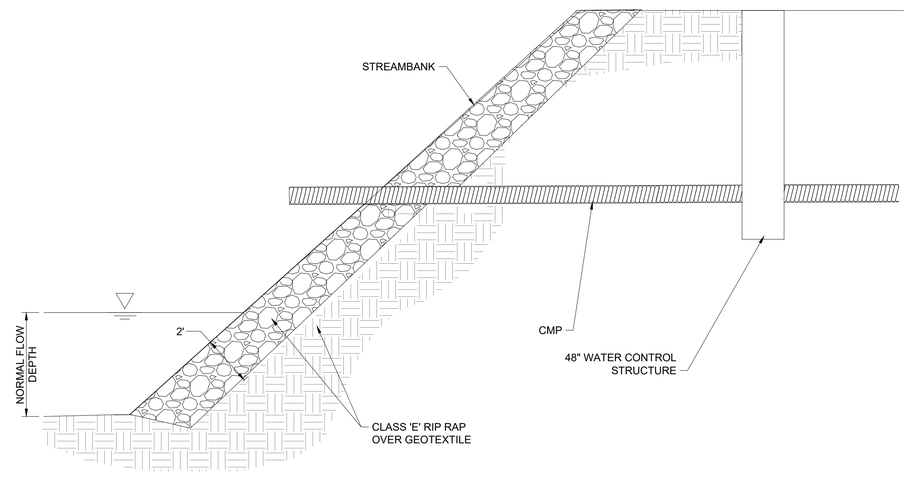
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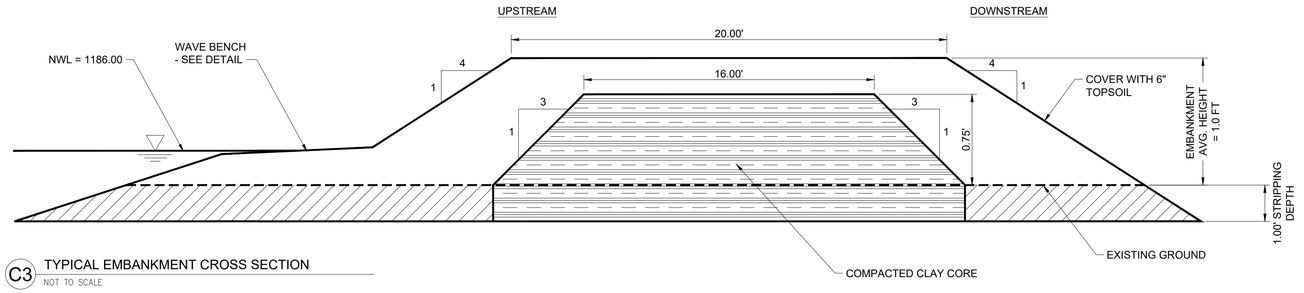


PIPE SIZE (IN)	MINIMUM TRENCH WIDTH (IN)
4"	20"
6"	22"

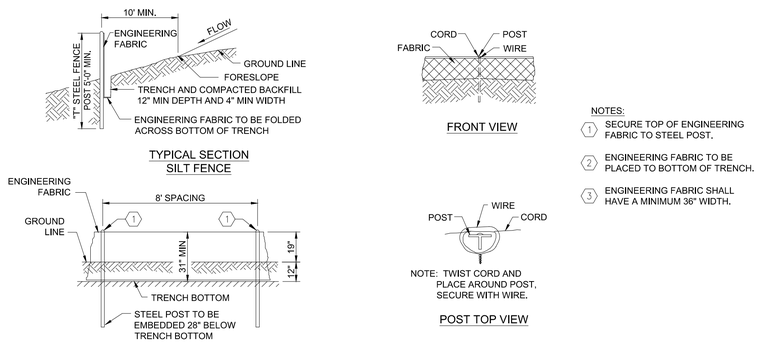
A2 TILE TRENCH
NOT TO SCALE



D2 CMP OUTLET TO STREAM
NOT TO SCALE

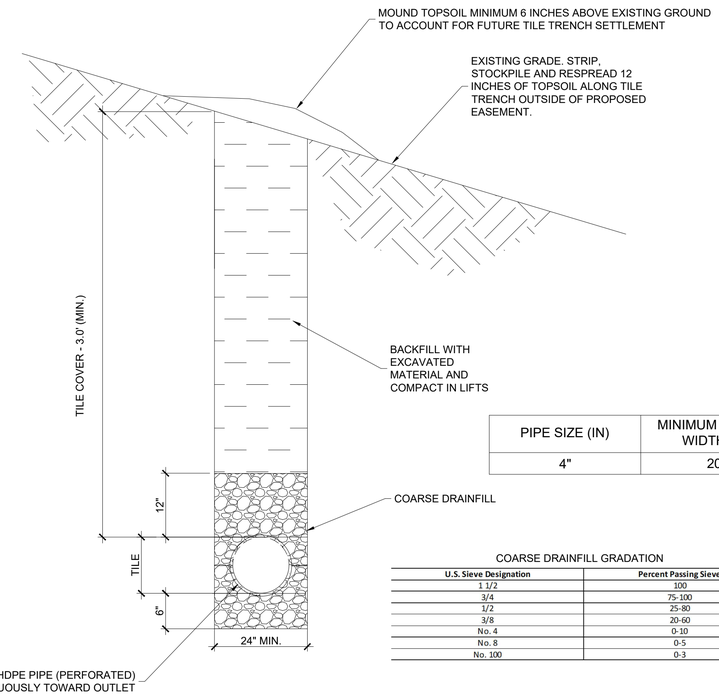


C3 TYPICAL EMBANKMENT CROSS SECTION
NOT TO SCALE



NOTES:
1. SECURE TOP OF ENGINEERING FABRIC TO STEEL POST.
2. ENGINEERING FABRIC TO BE PLACED TO BOTTOM OF TRENCH.
3. ENGINEERING FABRIC SHALL HAVE A MINIMUM 36" WIDTH.

D3 SILT FENCE
NOT TO SCALE



PIPE SIZE (IN)	MINIMUM TRENCH WIDTH (IN)
4"	20"

COARSE DRAINFILL GRADATION

U.S. Sieve Designation	Percent Passing Sieve
1 1/2	100
3/4	75-100
1/2	25-80
3/8	20-60
No. 4	0-10
No. 8	0-5
No. 100	0-3

D2 TILE TRENCH WITH POROUS BACKFILL
NOT TO SCALE

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ARCHITECTURE + ENGINEERING
4125 WESTOWN PKWY, SUITE 100
WEST DES MOINES, IOWA 50266
515.223.8104 | SHIVE-HATTERY.COM

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CAL883229B PUMPED WETLANDS

IDALS
ROCKWELL CITY, IOWA

DRAWN:	GHK
APPROVED:	DJJ
ISSUED FOR:	BID DOCUMENTS
DATE:	04/28/2026
PROJECT NO:	214220615O
FIELD BOOK:	–
CLIENT NO:	–

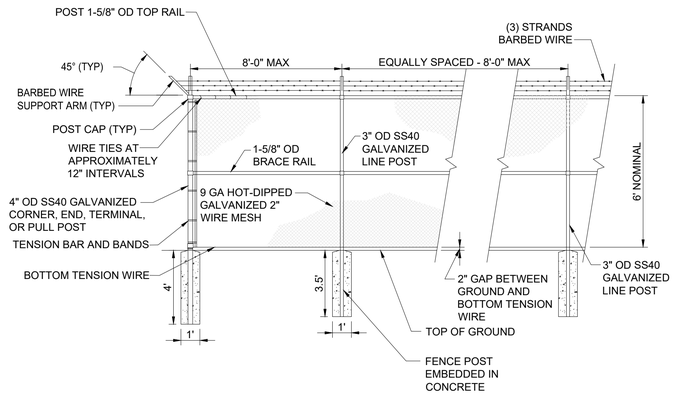
CONSTRUCTION DETAILS

C303

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FENCE NOTES:

1. GALVANIZED STEEL CHAIN-LINK FABRIC (MINIMUM 9-GA TYPICAL), TOP RAIL, LINE POSTS, TERMINAL POSTS, FITTINGS, BRACES, TIES, AND APPURTENANCES
2. THREE-STRAND BARBED WIRE MOUNTED ON OUTWARD-FACING EXTENSION ARMS
3. POSTS SET PLUMB IN CAST-IN-PLACE CONCRETE FOOTINGS TO REQUIRED DEPTH PER MANUFACTURER AND LOCAL FROST REQUIREMENTS
4. ALL STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION
5. INSTALLATION AND MATERIALS SHALL COMPLY WITH MANUFACTURER RECOMMENDATIONS, SUDAS, AND OTHER APPLICABLE IOWA STANDARDS.



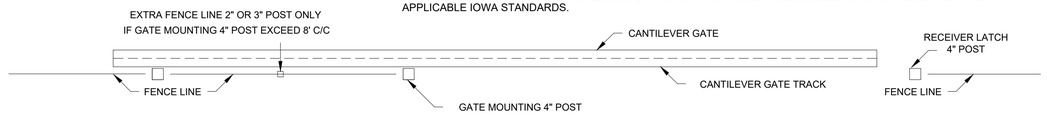
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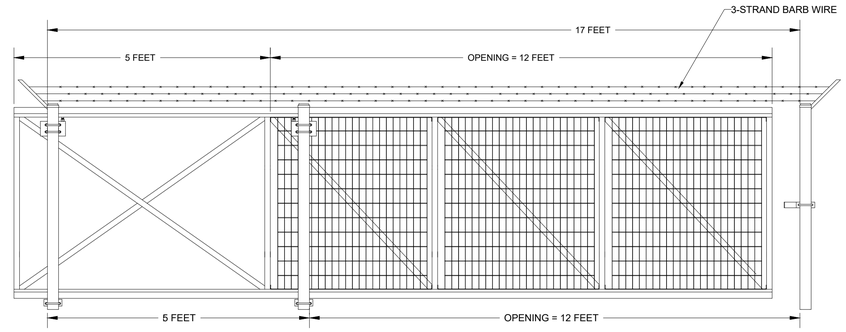
1. ANGLE BARBED WIRE TO FACE EXTERIOR OF SECURE AREA

A2 CHAIN LINK FENCE, 6' HEIGHT
NOT TO SCALE

GATE NOTES:

1. GALVANIZED STEEL CANTILEVER GATE FRAME WITH DIAGONAL TRUSS BRACING
2. GALVANIZED CHAIN-LINK FABRIC TO MATCH ADJOINING FENCE
3. CANTILEVER ROLLER ASSEMBLIES, GUIDE ROLLERS, RECEIVER POST, GATE POSTS, STOPS, AND REQUIRED HARDWARE
4. CONCRETE FOUNDATIONS FOR CANTILEVER AND GUIDE POSTS DESIGNED TO RESIST OPERATIONAL AND WIND LOADS
5. GATE HEIGHT AND BARBED WIRE CONFIGURATION TO MATCH ADJACENT FENCE UNLESS NOTED OTHERWISE
6. GATE SHALL HAVE LOCKING CAPABILITIES
7. INSTALLATION AND MATERIALS SHALL COMPLY WITH MANUFACTURER RECOMMENDATIONS, SUDAS, AND OTHER APPLICABLE IOWA STANDARDS.





D2 CHAIN LINK FENCE SINGLE CANTILEVER SLIDE GATE
NOT TO SCALE

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WEST DES MOINES, IOWA 50266
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IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

CAL883229B PUMPED WETLANDS

IDALS

ROCKWELL CITY, IOWA

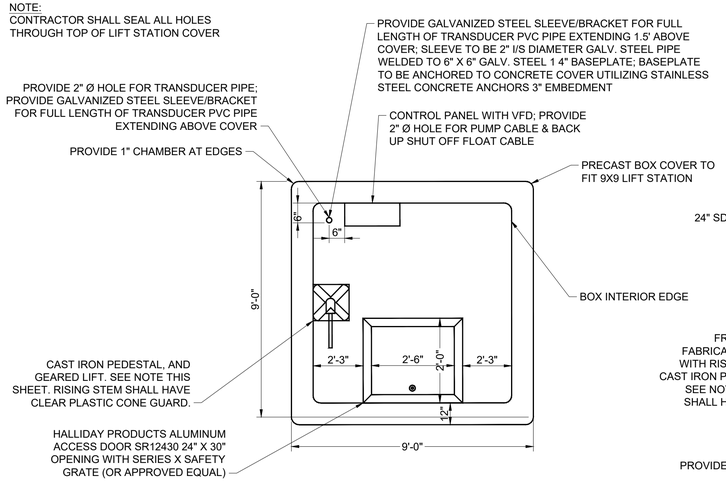
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APPROVED:	DJJ
ISSUED FOR:	BID DOCUMENTS
DATE:	04/28/2026
PROJECT NO:	2142206150
FIELD BOOK:	—
CLIENT NO:	—

CONSTRUCTION DETAILS

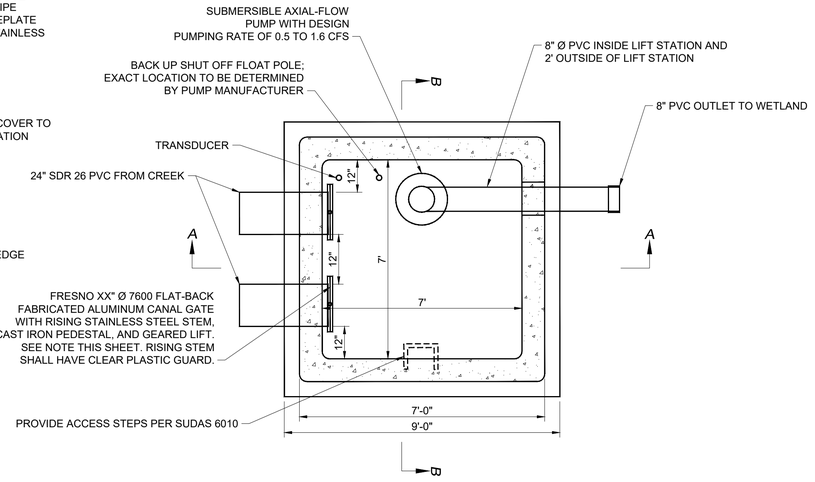
C304

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NOTE:
CONTRACTOR SHALL SEAL ALL HOLES THROUGH TOP OF LIFT STATION COVER



PLAN DETAIL - LIFT STATION COVER



PLAN DETAIL - LIFT STATION

NOTES:

1. THE CALCULATED TOTAL DYNAMIC HEAD OF PUMP SYSTEM IS 14.5 FEET.

2. PUMPING SYSTEM SHALL HAVE A DESIGN PUMPING RATE OF 1.6 CFS (APPROXIMATELY 750 GPM) AT THE DESIGN TOTAL DYNAMIC HEAD. THE PUMP AND CONTROL PANEL SHALL BE PROVIDED WITH A VARIABLE SPEED DRIVE (VFD) THAT ALLOWS THE PUMP TO AUTOMATICALLY PUMP AT A RANGE OF 0.5 - 1.6 CFS, BASED ON AVAILABLE WATER FLOW FROM THE CREEK INTAKES.

3. PUMP SYSTEM SHALL BE PROVIDED WITH TIMER OR OTHER SAFETY FEATURE TO CONTROL AMOUNT OF PUMP ON/OFF CYCLES PER HOUR, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4. PROVIDE A TOTALIZING WATER MEETING ON THE PUMP DISCHARGE.

5. A COMPLETE BACK UP SHUT OFF FLOAT ASSEMBLY SHALL BE PROVIDED.

6. A CHECK VALVE SHALL BE PROVIDED INSIDE THE LIFT STATION IN THE VERTICAL SECTION OF PIPE, AS WELL AS A FLANGE-TO-FLANGE (REMOVABLE) JOINT. A WEEP HOLE SHALL BE PROVIDED INSIDE THE CHECK VALVE TO PREVENT WATER STANDING/FREEZING INSIDE PIPE.

7. PUMPING SYSTEM AND VFD SHALL BE EQUIPPED WITH LED EXTERIOR 5 COLOR LIGHT SIGNAL KIT.

8. SHOP DRAWINGS SHALL BE PROVIDED BY PUMP MANUFACTURER DISPLAYING ALL PERTINENT DETAILS TO PROVIDE A COMPLETE PUMPING SYSTEM. PUMP SYSTEM CONCEPTUAL DETAILS WERE BASED ON CARRY PUMPS - CARRY CP06 SERIES PUMP (5.0 HP, SINGLE-PHASE, 8.5" IMPELLER), WITH EXTERIOR-GRADE CONTROL PANEL AND VFD WITH SIGNAL LIGHT. CONTRACTOR MAY UTILIZE OTHER PUMPING SYSTEM THAT MEETS THE PUMP SYSTEM DESIGN INTENT, AS APPROVED BY THE ENGINEER.

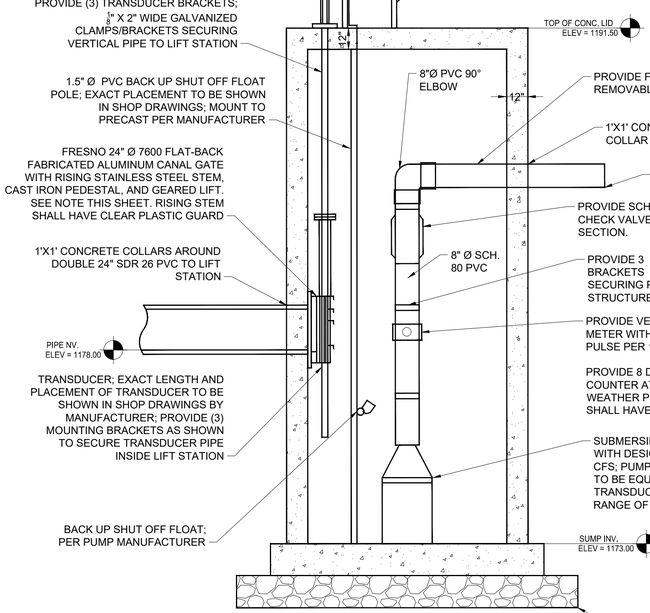
9. A FACTORY PUMP TEST SHALL BE REQUIRED. THE PUMP SHALL BE TESTED AND PAPERWORK TURNED INTO THE ENGINEER PRIOR TO SHIPPING TO SITE.

10. CONTRACTOR SHALL PROVIDE A REPRESENTATIVE FROM THE PUMP MANUFACTURER (PRIOR TO PROJECT COMPLETION) TO ASSIST IN PUMP STARTUP TO ENSURE PUMPING SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND DESIGN INTENT.

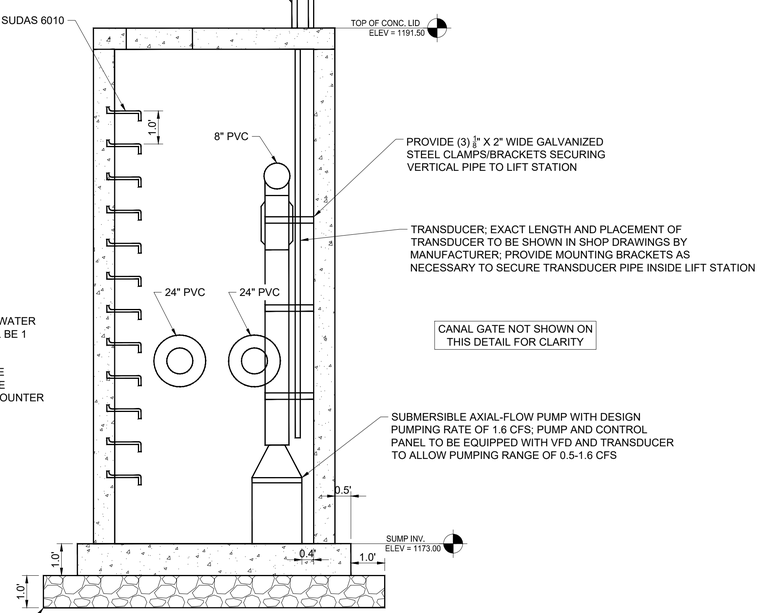
11. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF PRECAST CONCRETE LIFT STATION SEALED BY A LICENSED ENGINEER. KNOCKOUTS FOR 24"Ø PIPE SHALL BE SLIGHTLY OVERSIZED TO PROVIDE TOLERANCE FOR DIFFERENCES IN FIELD CONDITIONS.

12. CONTRACTOR SHALL VERIFY HOLES FOR THE TRANSDUCER, FLOAT, POWER AND ANY OTHER NECESSARY EQUIPMENT WITH THE PUMP MANUFACTURER PRIOR TO PRECAST CASTING. ANY HOLES NOT PROVIDED IN PRECAST WILL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.

13. FRESNO FLAT-BACK 7600 FABRICATED ALUMINUM CANAL GATE WITH RISING STAINLESS STEEL STEM OR APPROVED EQUAL SHALL BE 24"Ø. CONTRACTOR/SUPPLIER MAY HAVE TO FABRICATE AN EXTENSION TO GATE FRAME TO MOVE ANCHOR BOLT HOLES AWAY FROM CIRCULAR KNOCK-OUT IN LIFT STATION. IT WILL BE UP TO THE CONTRACTOR TO VERIFY THAT THE CANAL GATE WILL BOLT TO THE INSIDE OF THE LIFT STATION WALLS LEAVING ADEQUATE COVERAGE BETWEEN ANCHOR BOLTS AND CIRCULAR KNOCKOUT. ANY ADDITIONAL WORK WILL BE AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CORE-DRILL HOLE IN THE COVER SLAB FOR RISING STEM TO PROTRUDE THROUGH. HOLE SHALL BE AS SMALL AS POSSIBLE TO HAVE LESS FLEX IN VERTICAL SHAFT. SUPPORTS SHALL BE USED "AS DETERMINED BY SUPPLIER/CONTRACTOR) ALONG INSIDE FACE OF LIFT STATION TO SECURE VERTICAL RISING STEM. THE PEDESTAL SHALL BE MOUNTED TO ALLOW HAND TO ROTATE FREE FROM OBSTRUCTION. CLEAR PLASTIC CONE GUARD SHALL BE INCLUDED IN GEAR LIFT. COST OF GATE, FRAME, STAINLESS STEEL RISING STEM, OPERATOR, PEDESTAL AND COMPLETE INSTALLATION SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE FOR THE LIFT STATION BID ITEMS.



SECTION A-A DETAIL



SECTION B-B DETAIL

A1 WETLAND PUMP
NOT TO SCALE

SHIVEHATTERY
ARCHITECTURE + ENGINEERING
4125 WESTOWN PKWY, SUITE 100
WEST DES MOINES, IOWA 50266
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CAL883229B PUMPED WETLANDS

IDALS
ROCKWELL CITY, IOWA

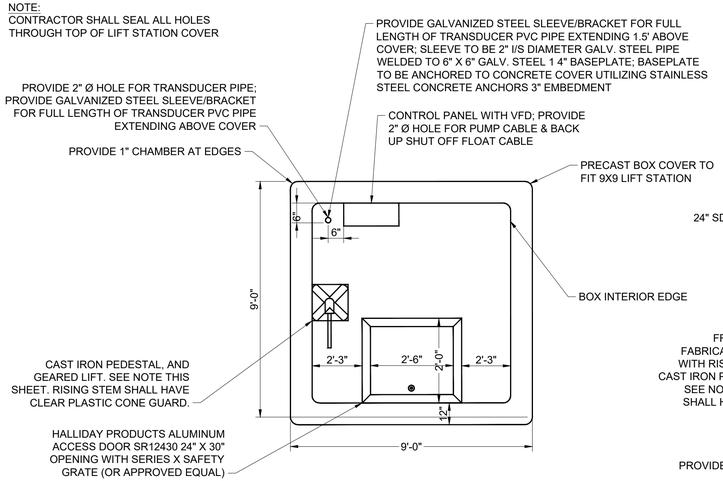
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ISSUED FOR: BID DOCUMENTS
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FIELD BOOK: --
CLIENT NO: --

NORTH WETLAND
DUPLEX PUMP
DETAILS

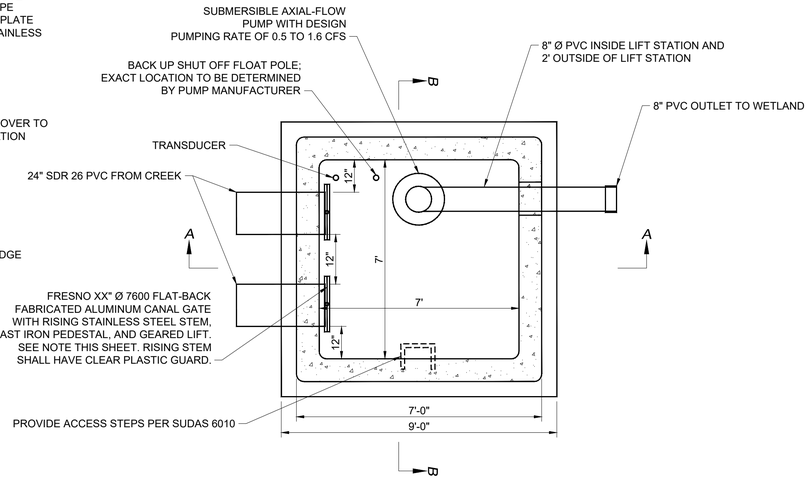
C304

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NOTE:
CONTRACTOR SHALL SEAL ALL HOLES THROUGH TOP OF LIFT STATION COVER



PLAN DETAIL - LIFT STATION COVER



PLAN DETAIL - LIFT STATION

NOTES:

1. THE CALCULATED TOTAL DYNAMIC HEAD OF PUMP SYSTEM IS 14.5 FEET.

2. PUMPING SYSTEM SHALL HAVE A DESIGN PUMPING RATE OF 1.6 CFS (APPROXIMATELY 750 GPM) AT THE DESIGN TOTAL DYNAMIC HEAD. THE PUMP AND CONTROL PANEL SHALL BE PROVIDED WITH A VARIABLE SPEED DRIVE (VFD) THAT ALLOWS THE PUMP TO AUTOMATICALLY PUMP AT A RANGE OF 0.5 - 1.6 CFS, BASED ON AVAILABLE WATER FLOW FROM THE CREEK INTAKES.

3. PUMP SYSTEM SHALL BE PROVIDED WITH TIMER OR OTHER SAFETY FEATURE TO CONTROL AMOUNT OF PUMP ON/OFF CYCLES PER HOUR, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4. PROVIDE A TOTALIZING WATER MEETING ON THE PUMP DISCHARGE.

5. A COMPLETE BACK UP SHUT OFF FLOAT ASSEMBLY SHALL BE PROVIDED.

6. A CHECK VALVE SHALL BE PROVIDED INSIDE THE LIFT STATION IN THE VERTICAL SECTION OF PIPE, AS WELL AS A FLANGE-TO-FLANGE (REMOVABLE) JOINT. A WEEP HOLE SHALL BE PROVIDED INSIDE THE CHECK VALVE TO PREVENT WATER STANDING/FREEZING INSIDE PIPE.

7. PUMPING SYSTEM AND VFD SHALL BE EQUIPPED WITH LED EXTERIOR 5 COLOR LIGHT SIGNAL KIT.

8. SHOP DRAWINGS SHALL BE PROVIDED BY PUMP MANUFACTURER DISPLAYING ALL PERTINENT DETAILS TO PROVIDE A COMPLETE PUMPING SYSTEM. PUMP SYSTEM CONCEPTUAL DETAILS WERE BASED ON CARRY PUMPS - CARRY CP06 SERIES PUMP (5.0 HP, SINGLE-PHASE, 8.5" IMPELLER), WITH EXTERIOR-GRADE CONTROL PANEL AND VFD WITH SIGNAL LIGHT. CONTRACTOR MAY UTILIZE OTHER PUMPING SYSTEM THAT MEETS THE PUMP SYSTEM DESIGN INTENT, AS APPROVED BY THE ENGINEER.

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11. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF PRECAST CONCRETE LIFT STATION SEALED BY A LICENSED ENGINEER. KNOCKOUTS FOR 24"Ø PIPE SHALL BE SLIGHTLY OVERSIZED TO PROVIDE TOLERANCE FOR DIFFERENCES IN FIELD CONDITIONS.

12. CONTRACTOR SHALL VERIFY HOLES FOR THE TRANSDUCER, FLOAT, POWER AND ANY OTHER NECESSARY EQUIPMENT WITH THE PUMP MANUFACTURER PRIOR TO PRECAST CASTING. ANY HOLES NOT PROVIDED IN PRECAST WILL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.

13. FRESNO FLAT-BACK 7600 FABRICATED ALUMINUM CANAL GATE WITH RISING STAINLESS STEEL STEM OR APPROVED EQUAL SHALL BE 24"Ø. CONTRACTOR/SUPPLIER MAY HAVE TO FABRICATE AN EXTENSION TO GATE FRAME TO MOVE ANCHOR BOLT HOLES AWAY FROM CIRCULAR KNOCK-OUT IN LIFT STATION. IT WILL BE UP TO THE CONTRACTOR TO VERIFY THAT THE CANAL GATE WILL BOLT TO THE INSIDE OF THE LIFT STATION WALLS LEAVING ADEQUATE COVERAGE BETWEEN ANCHOR BOLTS AND CIRCULAR KNOCKOUT. ANY ADDITIONAL WORK WILL BE AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CORE-DRILL HOLE IN THE COVER SLAB FOR RISING STEM TO PROTRUDE THROUGH. HOLE SHALL BE AS SMALL AS POSSIBLE TO HAVE LESS FLEX IN VERTICAL SHAFT. SUPPORTS SHALL BE USED "AS DETERMINED BY SUPPLIER/CONTRACTOR) ALONG INSIDE FACE OF LIFT STATION TO SECURE VERTICAL RISING STEM. THE PEDESTAL SHALL BE MOUNTED TO ALLOW HAND TO ROTATE FREE FROM OBSTRUCTION. CLEAR PLASTIC CONE GUARD SHALL BE INCLUDED IN GEAR LIFT. COST OF GATE, FRAME, STAINLESS STEEL RISING STEM, OPERATOR, PEDESTAL AND COMPLETE INSTALLATION SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE FOR THE LIFT STATION BID ITEMS.

SECTION A-A DETAIL

SECTION B-B DETAIL

A1 WETLAND PUMP
NOT TO SCALE

SHIVEHATTERY
ARCHITECTURE + ENGINEERING
4125 WESTOWN PKWY, SUITE 100
WEST DES MOINES, IOWA 50266
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CAL883229B PUMPED WETLANDS

IDALS
ROCKWELL CITY, IOWA

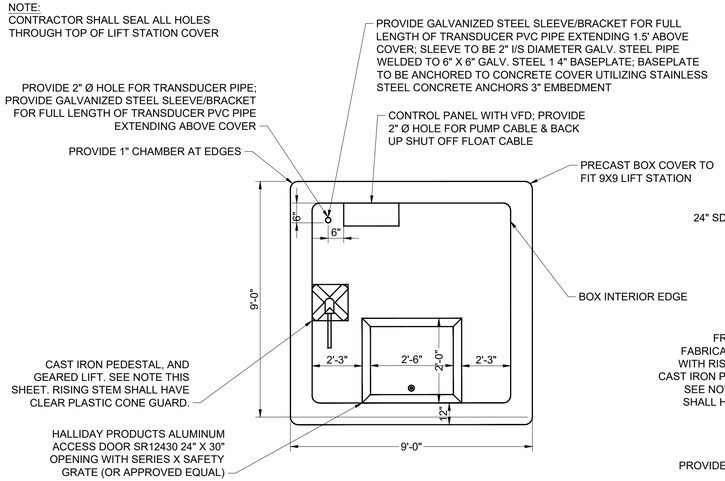
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NORTH WETLAND
DUPLEX PUMP
DETAILS

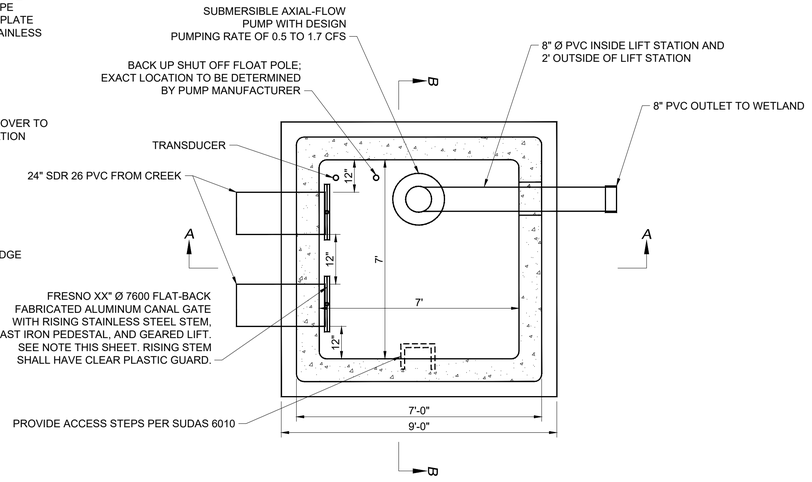
C305

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NOTE:
CONTRACTOR SHALL SEAL ALL HOLES THROUGH TOP OF LIFT STATION COVER



PLAN DETAIL - LIFT STATION COVER



PLAN DETAIL - LIFT STATION

NOTES:

1. THE CALCULATED TOTAL DYNAMIC HEAD OF PUMP SYSTEM IS 12.8 FEET.

2. PUMPING SYSTEM SHALL HAVE A DESIGN PUMPING RATE OF 1.7 CFS (APPROXIMATELY 725 GPM) AT THE DESIGN TOTAL DYNAMIC HEAD. THE PUMP AND CONTROL PANEL SHALL BE PROVIDED WITH A VARIABLE SPEED DRIVE (VFD) THAT ALLOWS THE PUMP TO AUTOMATICALLY PUMP AT A RANGE OF 0.5 - 1.7 CFS, BASED ON AVAILABLE WATER FLOW FROM THE CREEK INTAKES.

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13. FRESNO FLAT-BACK 7600 FABRICATED ALUMINUM CANAL GATE WITH RISING STAINLESS STEEL STEM OR APPROVED EQUAL SHALL BE 24"Ø. CONTRACTOR/SUPPLIER MAY HAVE TO FABRICATE AN EXTENSION TO GATE FRAME TO MOVE ANCHOR BOLT HOLES AWAY FROM CIRCULAR KNOCK-OUT IN LIFT STATION. IT WILL BE UP TO THE CONTRACTOR TO VERIFY THAT THE CANAL GATE WILL BOLT TO THE INSIDE OF THE LIFT STATION WALLS LEAVING ADEQUATE COVERAGE BETWEEN ANCHOR BOLTS AND CIRCULAR KNOCKOUT. ANY ADDITIONAL WORK WILL BE AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CORE-DRILL HOLE IN THE COVER SLAB FOR RISING STEM TO PROTRUDE THROUGH. HOLE SHALL BE AS SMALL AS POSSIBLE TO HAVE LESS FLEX IN VERTICAL SHAFT. SUPPORTS SHALL BE USED "AS DETERMINED BY SUPPLIER/CONTRACTOR) ALONG INSIDE FACE OF LIFT STATION TO SECURE VERTICAL RISING STEM. THE PEDESTAL SHALL BE MOUNTED TO ALLOW HAND TO ROTATE FREE FROM OBSTRUCTION. CLEAR PLASTIC CONE GUARD SHALL BE INCLUDED IN GEAR LIFT. COST OF GATE, FRAME, STAINLESS STEEL RISING STEM, OPERATOR, PEDESTAL AND COMPLETE INSTALLATION SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE FOR THE LIFT STATION BID ITEMS.

SECTION A-A DETAIL

SECTION B-B DETAIL

A1 SOUTH WETLAND PUMP
NOT TO SCALE

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ARCHITECTURE + ENGINEERING
4125 WESTOWN PKWY, SUITE 100
WEST DES MOINES, IOWA 50266
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CAL883229B PUMPED WETLANDS

IDALS
ROCKWELL CITY, IOWA

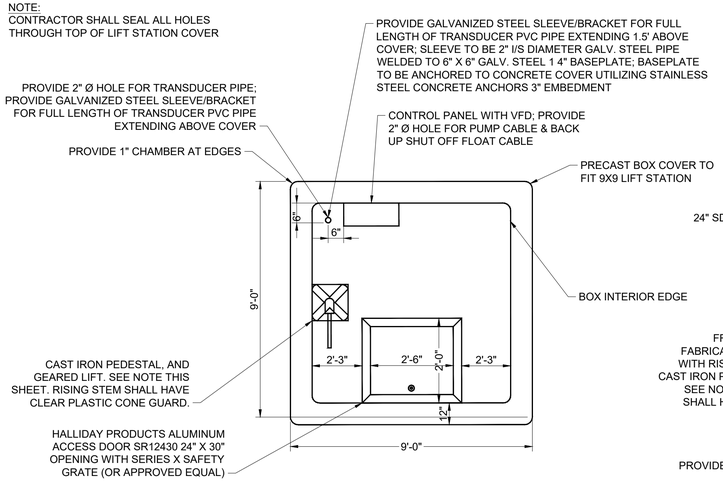
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APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
DATE: 1/10/2025
PROJECT NO: 214226150
FIELD BOOK: --
CLIENT NO: --

SOUTH WETLAND SIMPLEX PUMP DETAILS

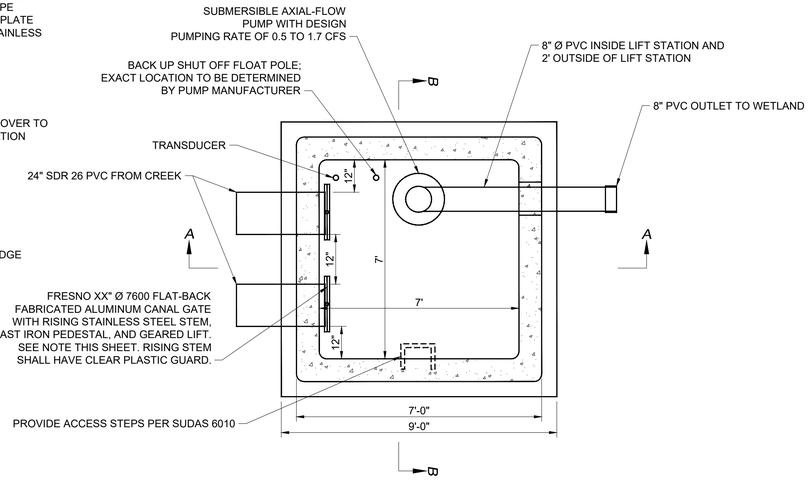
C305

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NOTE:
CONTRACTOR SHALL SEAL ALL HOLES THROUGH TOP OF LIFT STATION COVER



PLAN DETAIL - LIFT STATION COVER



PLAN DETAIL - LIFT STATION

NOTES:

1. THE CALCULATED TOTAL DYNAMIC HEAD OF PUMP SYSTEM IS 12.8 FEET.

2. PUMPING SYSTEM SHALL HAVE A DESIGN PUMPING RATE OF 1.7 CFS (APPROXIMATELY 725 GPM) AT THE DESIGN TOTAL DYNAMIC HEAD. THE PUMP AND CONTROL PANEL SHALL BE PROVIDED WITH A VARIABLE SPEED DRIVE (VFD) THAT ALLOWS THE PUMP TO AUTOMATICALLY PUMP AT A RANGE OF 0.5 - 1.7 CFS, BASED ON AVAILABLE WATER FLOW FROM THE CREEK INTAKES.

3. PUMP SYSTEM SHALL BE PROVIDED WITH TIMER OR OTHER SAFETY FEATURE TO CONTROL AMOUNT OF PUMP ON/OFF CYCLES PER HOUR, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4. PROVIDE A TOTALIZING WATER MEETING ON THE PUMP DISCHARGE.

5. A COMPLETE BACK UP SHUT OFF FLOAT ASSEMBLY SHALL BE PROVIDED.

6. A CHECK VALVE SHALL BE PROVIDED INSIDE THE LIFT STATION IN THE VERTICAL SECTION OF PIPE, AS WELL AS A FLANGE-TO-FLANGE (REMOVABLE) JOINT. A WEEP HOLE SHALL BE PROVIDED INSIDE THE CHECK VALVE TO PREVENT WATER STANDING/FREEZING INSIDE PIPE.

7. PUMPING SYSTEM AND VFD SHALL BE EQUIPPED WITH LED EXTERIOR 5 COLOR LIGHT SIGNAL KIT.

8. SHOP DRAWINGS SHALL BE PROVIDED BY PUMP MANUFACTURER DISPLAYING ALL PERTINENT DETAILS TO PROVIDE A COMPLETE PUMPING SYSTEM. PUMP SYSTEM CONCEPTUAL DETAILS WERE BASED ON CARRY PUMPS - CARRY CP06 SERIES PUMP (5.0 HP, SINGLE-PHASE, 8.5" IMPELLER), WITH EXTERIOR-GRADE CONTROL PANEL AND VFD WITH SIGNAL LIGHT. CONTRACTOR MAY UTILIZE OTHER PUMPING SYSTEM THAT MEETS THE PUMP SYSTEM DESIGN INTENT, AS APPROVED BY THE ENGINEER.

9. A FACTORY PUMP TEST SHALL BE REQUIRED. THE PUMP SHALL BE TESTED AND PAPERWORK TURNED INTO THE ENGINEER PRIOR TO SHIPPING TO SITE.

10. CONTRACTOR SHALL PROVIDE A REPRESENTATIVE FROM THE PUMP MANUFACTURER (PRIOR TO PROJECT COMPLETION) TO ASSIST IN PUMP STARTUP TO ENSURE PUMPING SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND DESIGN INTENT.

11. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF PRECAST CONCRETE LIFT STATION SEALED BY A LICENSED ENGINEER. KNOCKOUTS FOR 24"Ø PIPE SHALL BE SLIGHTLY OVERSIZED TO PROVIDE TOLERANCE FOR DIFFERENCES IN FIELD CONDITIONS.

12. CONTRACTOR SHALL VERIFY HOLES FOR THE TRANSDUCER, FLOAT, POWER AND ANY OTHER NECESSARY EQUIPMENT WITH THE PUMP MANUFACTURER PRIOR TO PRECAST CASTING. ANY HOLES NOT PROVIDED IN PRECAST WILL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE.

13. FRESNO FLAT-BACK 7600 FABRICATED ALUMINUM CANAL GATE WITH RISING STAINLESS STEEL STEM OR APPROVED EQUAL SHALL BE 24"Ø. CONTRACTOR/SUPPLIER MAY HAVE TO FABRICATE AN EXTENSION TO GATE FRAME TO MOVE ANCHOR BOLT HOLES AWAY FROM CIRCULAR KNOCK-OUT IN LIFT STATION. IT WILL BE UP TO THE CONTRACTOR TO VERIFY THAT THE CANAL GATE WILL BOLT TO THE INSIDE OF THE LIFT STATION WALLS LEAVING ADEQUATE COVERAGE BETWEEN ANCHOR BOLTS AND CIRCULAR KNOCKOUT. ANY ADDITIONAL WORK WILL BE AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL CORE-DRILL HOLE IN THE COVER SLAB FOR RISING STEM TO PROTRUDE THROUGH. HOLE SHALL BE AS SMALL AS POSSIBLE TO HAVE LESS FLEX IN VERTICAL SHAFT. SUPPORTS SHALL BE USED "AS DETERMINED BY SUPPLIER/CONTRACTOR) ALONG INSIDE FACE OF LIFT STATION TO SECURE VERTICAL RISING STEM. THE PEDESTAL SHALL BE MOUNTED TO ALLOW HAND TO ROTATE FREE FROM OBSTRUCTION. CLEAR PLASTIC CONE GUARD SHALL BE INCLUDED IN GEAR LIFT. COST OF GATE, FRAME, STAINLESS STEEL RISING STEM, OPERATOR, PEDESTAL AND COMPLETE INSTALLATION SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE FOR THE LIFT STATION BID ITEMS.

SECTION A-A DETAIL

SECTION B-B DETAIL

A1 SOUTH WETLAND PUMP
NOT TO SCALE

SHIVEHATTERY
ARCHITECTURE + ENGINEERING
4125 WESTOWN PKWY, SUITE 100
WEST DES MOINES, IOWA 50266
515.223.8104 | SHIVE-HATTERY.COM

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CAL883229B PUMPED WETLANDS

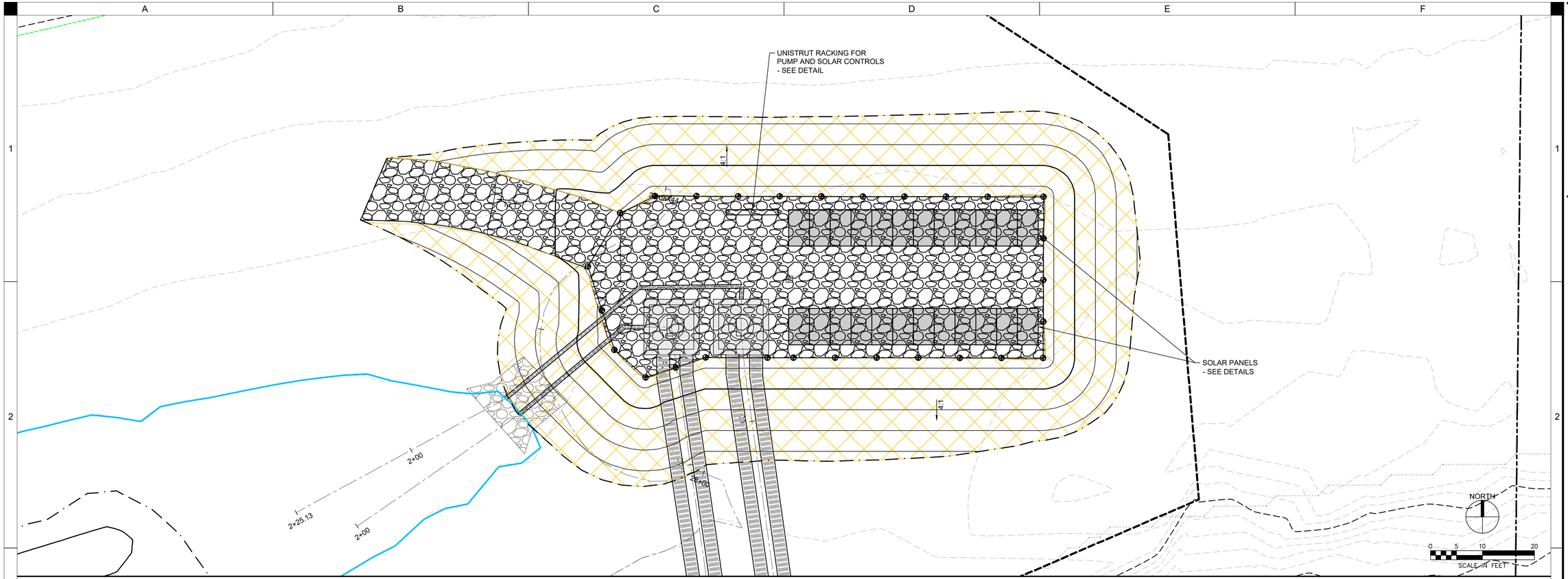
IDALS
ROCKWELL CITY, IOWA

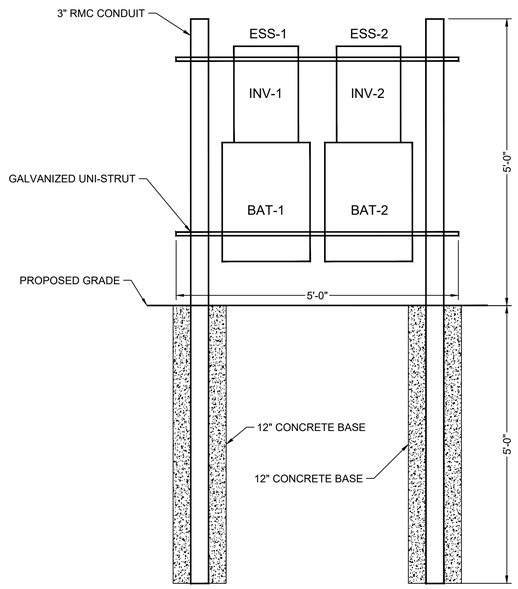
DRAWN: GHK
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SOUTH WETLAND SIMPLEX PUMP DETAILS

C306

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ELEVATION VIEW

GENERAL NOTES:

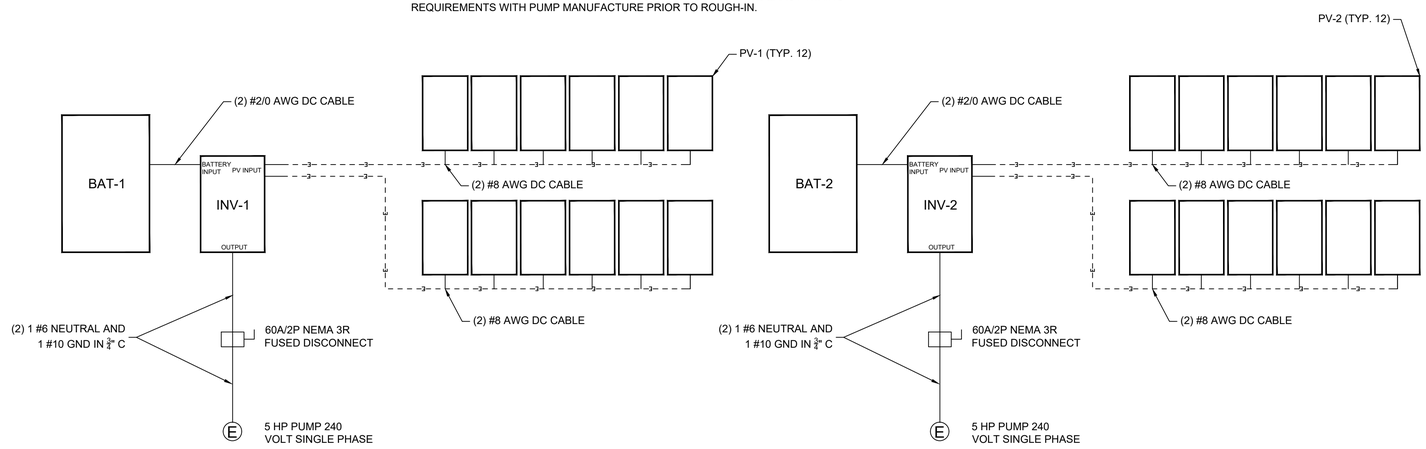
1. PROVIDE RACKING FOR PV MODULE. RACKING TO BE TAMARACK SOLAR PRODUCTS PGRM POLE TOP MOUNT OR EQUAL. USE 4" SCHEDULE 40 RMC FOR VERTICAL AND 3" SCHEDULE 40 RMC FOR HORIZONTAL. INSTALL VERTICAL IN 12" CONCRETE BASE THAT IS 5' DEEP.
2. PROGRAM SYSTEM TO START RUNNING PUMP IN THE MORNING WHEN BATTERIES ARE ABOVE 40% CAPACITY. RUN PUMPS UNTIL BATTERY CAPACITY IS DEPLETED TO 25%.
3. ELECTRICAL CONTRACTOR TO PROVIDE 24 WIRING BETWEEN PUMP CONTROLLER AND TRANSDUCER, WATER METER AND PULSE COUNTER. COORDINATE EXACT WIRING REQUIREMENTS WITH PUMP MANUFACTURE PRIOR TO ROUGH-IN.

MATERIAL SCHEDULE:

INV-1/2: + 18,000 WATT OUTDOOR RATED ALL IN ONE INVERTER.

BAT-1/2: 14.3 kWH WALL MOUNTED ALL WEATHER LITHIUM BATTERY. ESS-1/2: WALL MOUNTED ALL WEATHER ENERGY STORAGE SYSTEM. EACH SYSTEM TO INCLUDE INVERTER AND BATTERY. PROVIDE WITH WIFI DONGLE. EG40PP-16/208A1-18K1-AWALL OR EQUAL

PV-1/2: 590 WATT PV MODULE. QCELL Q. PEAK DUO RSF XL-G11S SERIES OR EQUAL



RISER DIAGRAM

A1 NORTH WETLAND UNISTRUT RACKING AND SOLAR CONTROLS
NOT TO SCALE

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CAL883229B PUMPED WETLANDS

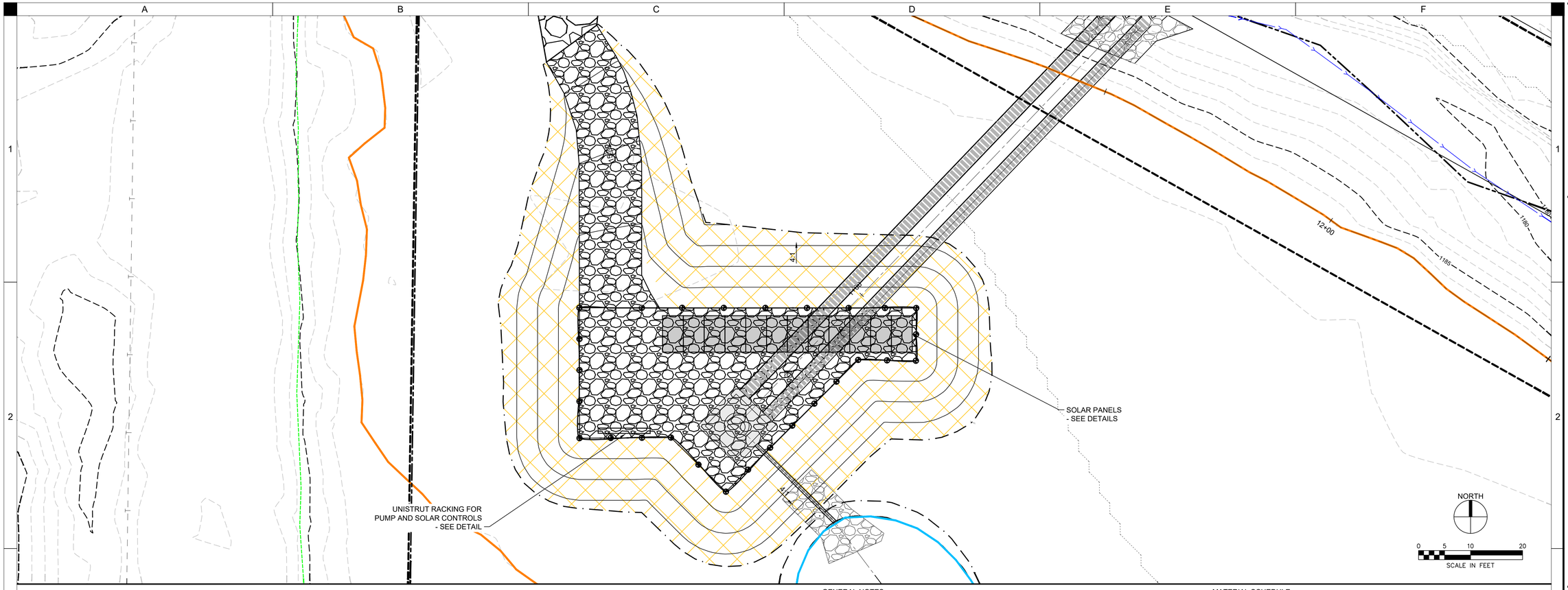
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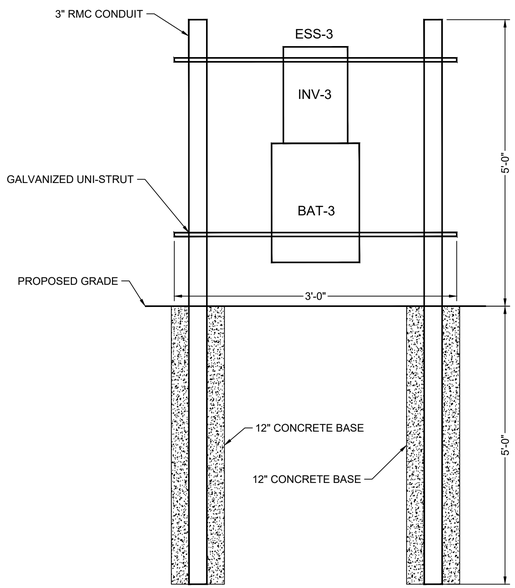
DRAWN: GHK
APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
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NORTH WETLAND
PUMP STATION

E101

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ELEVATION VIEW

GENERAL NOTES:

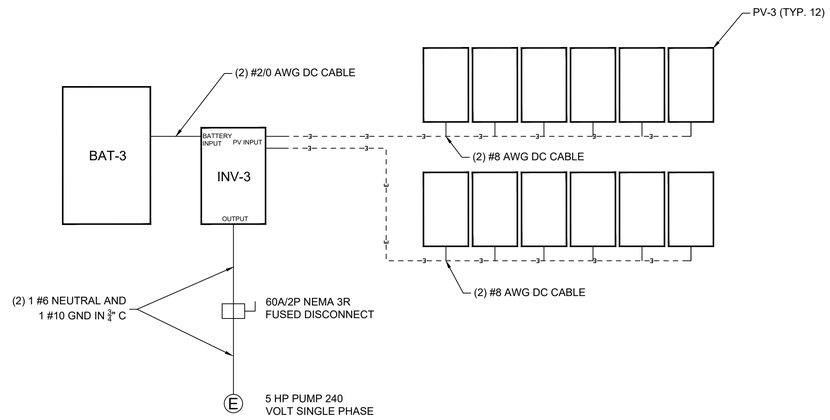
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CAL883229B PUMPED WETLANDS

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SOUTH WETLAND
PUMP STATION

E102

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