

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-PERFORATED 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, APPURTENANCES (COMPLETE SYSTEM))	2	1	3	LS

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 - 700,000		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

GENERAL NOTES:

- 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).
- 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.
- THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- NO WORK SHALL BE PERFORMED BEYOND THE PROJECT LIMITS WITHOUT PRIOR AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE.
- 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.
- ALL DEBRIS AND TRASH ENCOUNTERED DURING CONSTRUCTION WITHIN THE PROJECT LIMITS, OR DIRECTED BY THE ENGINEER, SHALL BE PROPERLY DISPOSED OF.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION DE-WATERING THAT IS REQUIRED AT NO ADDITIONAL COST TO THE DIVISION.
- 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.
- 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.
- 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.
- 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.
- CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISHED GRADE.
- THE CONTRACTOR SHALL KEEP ALL ROADS OPEN TO THROUGH TRAFFIC AT ALL TIMES.
- ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COORDINATED WITH THE GOVERNING AUTHORITY AND SHALL BE DONE IN ACCORDANCE WITH THEIR STANDARDS.
- SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.
- 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.
- NEITHER SHIVE-HATTERY NOR IDALS GUARANTEE THIS PRACTICE WILL HOLD A PERMANENT POOL OF WATER.

CULTURAL RESOURCES NOTE:

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



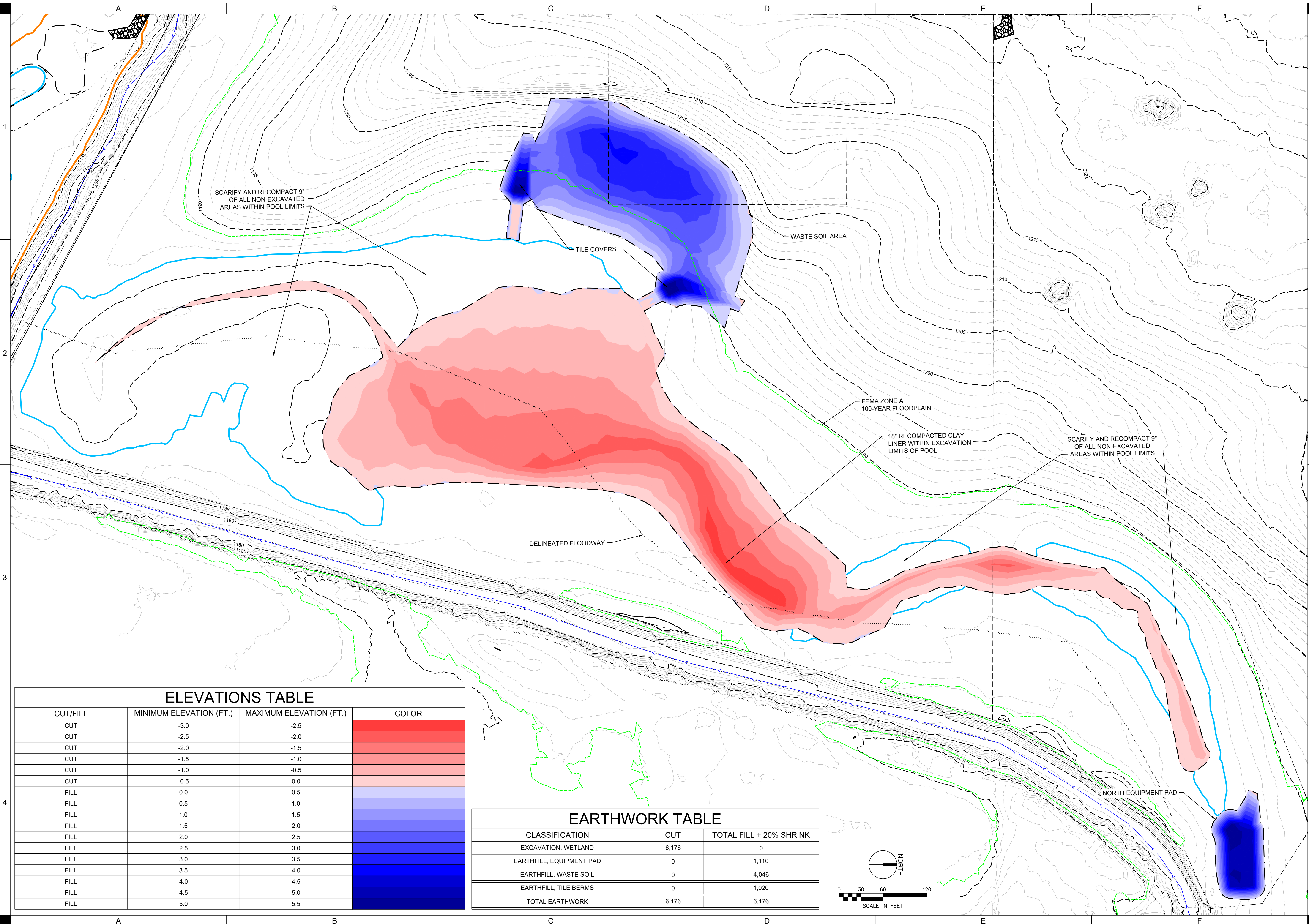
CAL883229B PUMPED WETLANDS

IDALS ROCKWELL CITY, IOWA

DRAWN: GHK
 APPROVED: DJJ
 ISSUED FOR: BID DOCUMENTS
 DATE: 1/10/2025
 PROJECT NO: 2142206150
 FIELD BOOK: --
 CLIENT NO: --

PROJECT QUANTITIES

C001

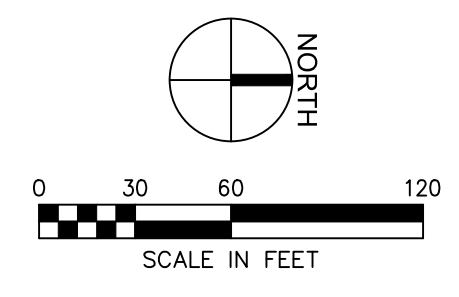


ELEVATIONS TABLE

CUT/FILL	MINIMUM ELEVATION (FT.)	MAXIMUM ELEVATION (FT.)	COLOR
CUT	-3.0	-2.5	Dark Red
CUT	-2.5	-2.0	Red
CUT	-2.0	-1.5	Light Red
CUT	-1.5	-1.0	Lighter Red
CUT	-1.0	-0.5	Very Light Red
CUT	-0.5	0.0	Lightest Red
FILL	0.0	0.5	Lightest Blue
FILL	0.5	1.0	Light Blue
FILL	1.0	1.5	Medium Light Blue
FILL	1.5	2.0	Medium Blue
FILL	2.0	2.5	Dark Blue
FILL	2.5	3.0	Very Dark Blue
FILL	3.0	3.5	Darkest Blue
FILL	3.5	4.0	Very Dark Blue
FILL	4.0	4.5	Darkest Blue
FILL	4.5	5.0	Darkest Blue
FILL	5.0	5.5	Darkest Blue

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



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**CAL883229B PUMPED
 WETLANDS**

IDALS
 ROCKWELL CITY, IOWA

DRAWN BY	GHK
APPROVED BY	DJ
ISSUED FOR	BID DOCUMENTS
ISSUE DATE	1/10/2025
PROJECT NUMBER	2142206150
FIELD BOOK	-

**NORTH WETLAND
 CUT-FILL PLAN**

C102



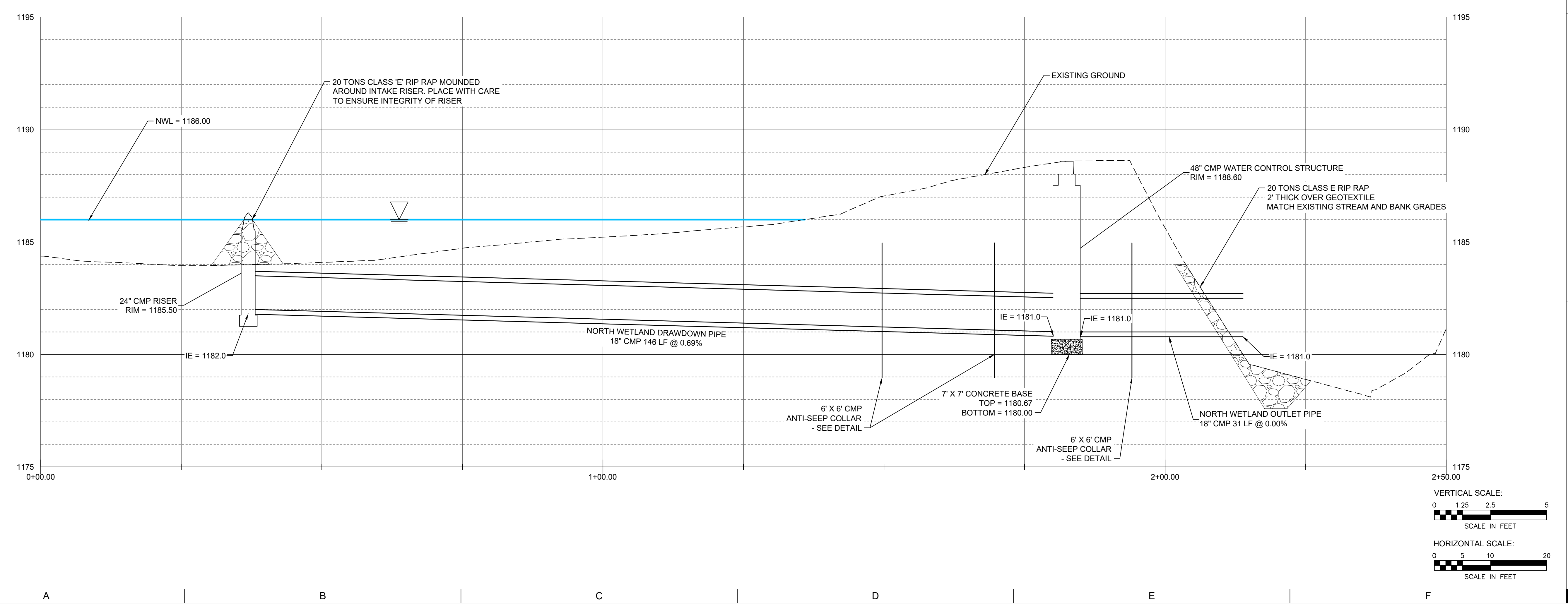
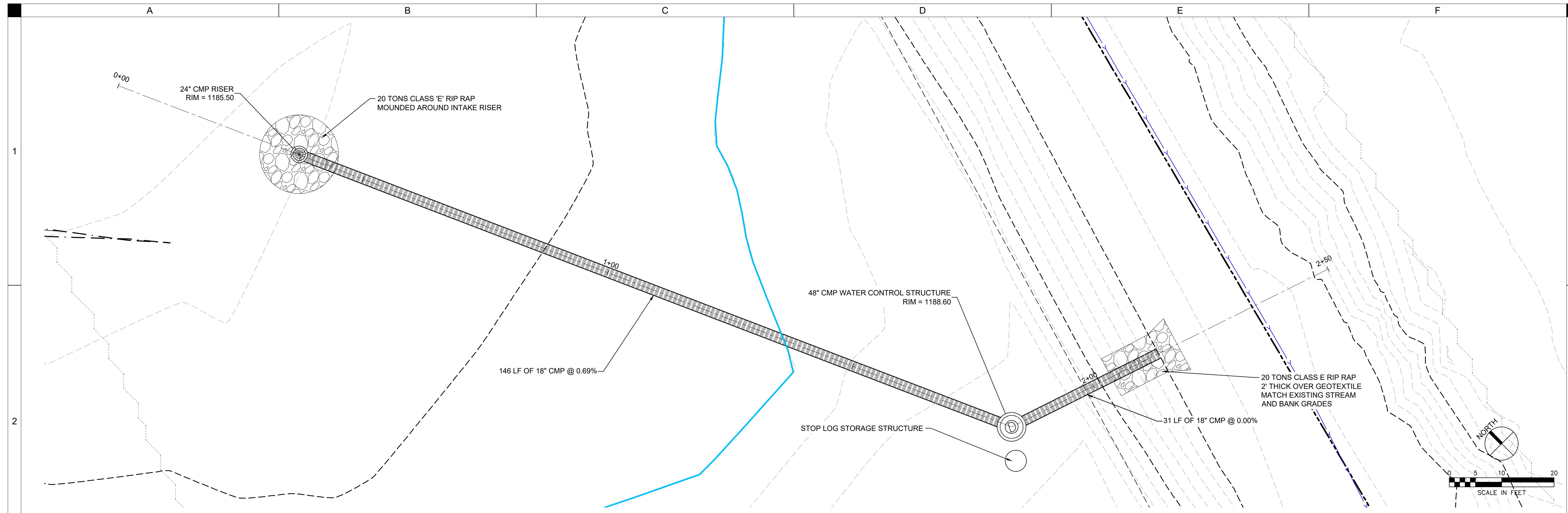
**CAL883229B PUMPED
WETLANDS**

IDALS
ROCKWELL CITY, IOWA

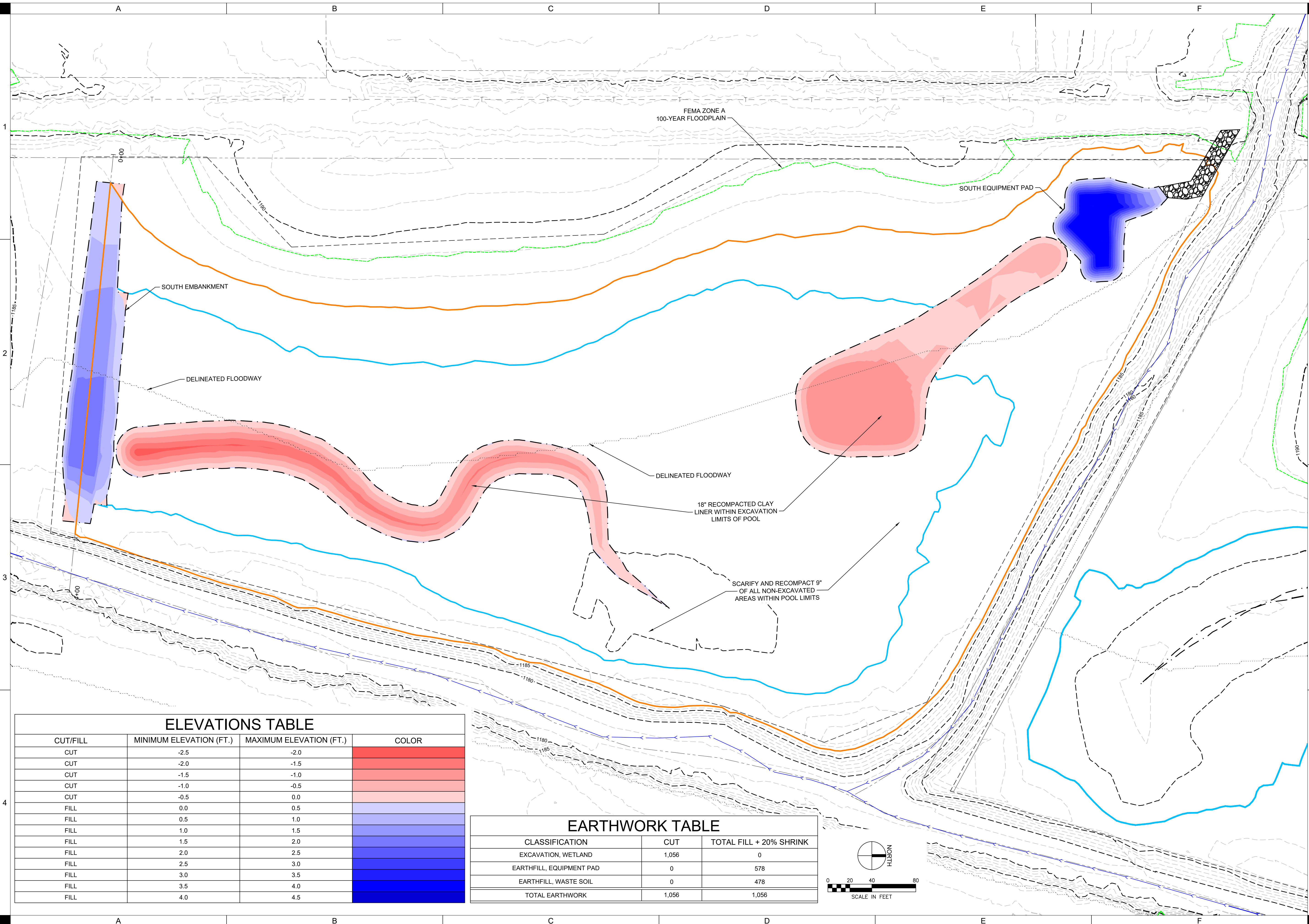
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APPROVED:	DJ
ISSUED FOR:	BID DOCUMENTS
DATE:	1/10/2025
PROJECT NO.:	2142208150
FIELD BOOK:	--
CLIENT NO.:	--

**NORTH WETLAND
DRAWDOWN PLAN
AND PROFILE**

C103



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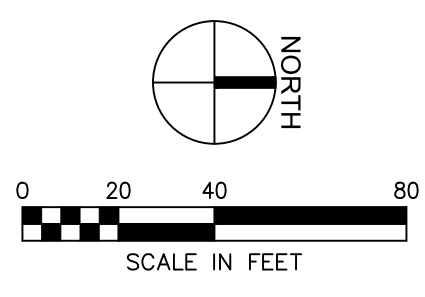


ELEVATIONS TABLE

CUT/FILL	MINIMUM ELEVATION (FT.)	MAXIMUM ELEVATION (FT.)	COLOR
CUT	-2.5	-2.0	Red
CUT	-2.0	-1.5	Light Red
CUT	-1.5	-1.0	Light Orange
CUT	-1.0	-0.5	Light Yellow
CUT	-0.5	0.0	Yellow
FILL	0.0	0.5	Light Green
FILL	0.5	1.0	Light Blue
FILL	1.0	1.5	Light Cyan
FILL	1.5	2.0	Light Blue
FILL	2.0	2.5	Blue
FILL	2.5	3.0	Dark Blue
FILL	3.0	3.5	Very Dark Blue
FILL	3.5	4.0	Black
FILL	4.0	4.5	Black

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



**CAL883229B PUMPED
WETLANDS**

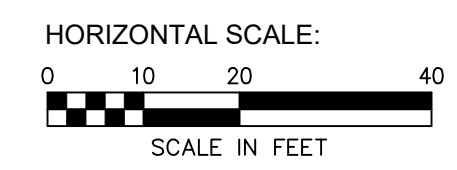
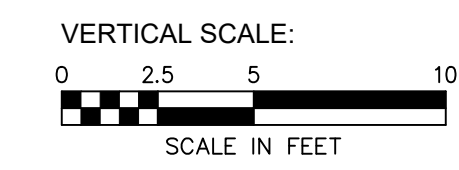
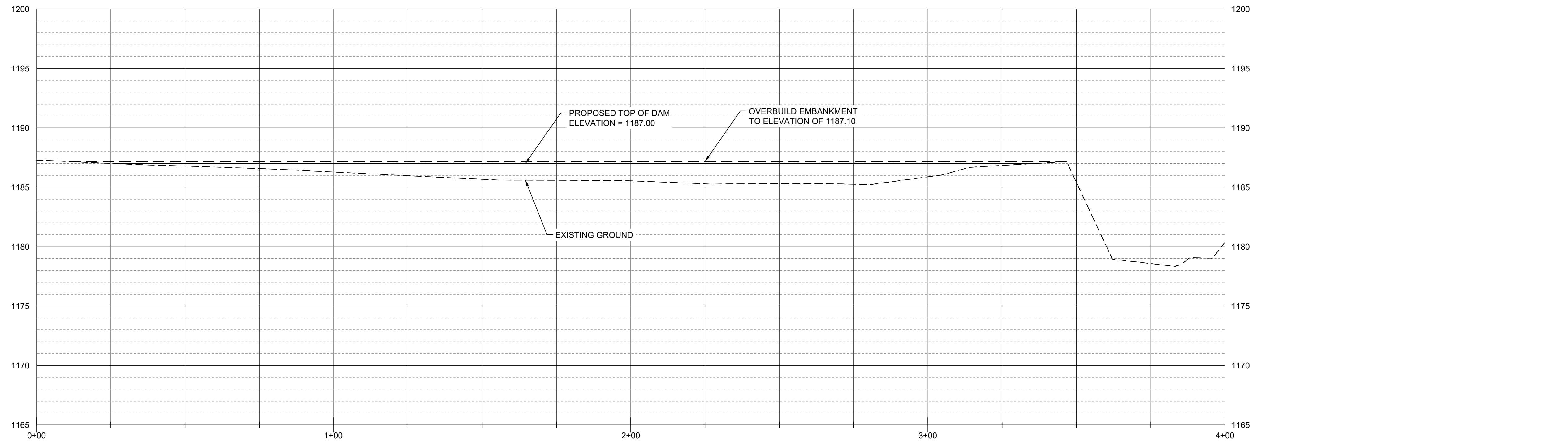
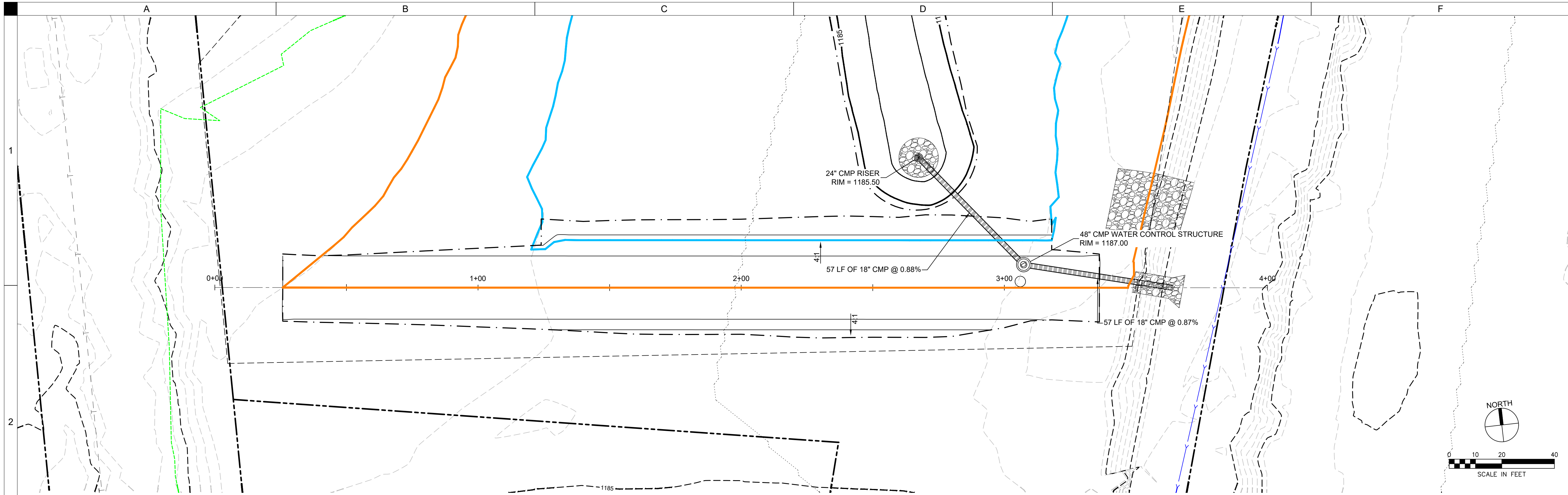
IDALS
ROCKWELL CITY, IOWA

DRAWN BY	GHK
APPROVED BY	DJH
ISSUED FOR	BID DOCUMENTS
ISSUE DATE	1/10/2025
PROJECT NUMBER	2142206150
FIELD BOOK	-

**SOUTH WETLAND
CUT-FILL PLAN**

C202

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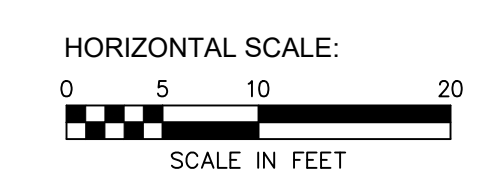
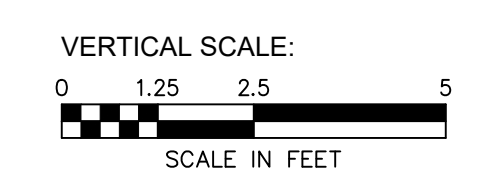
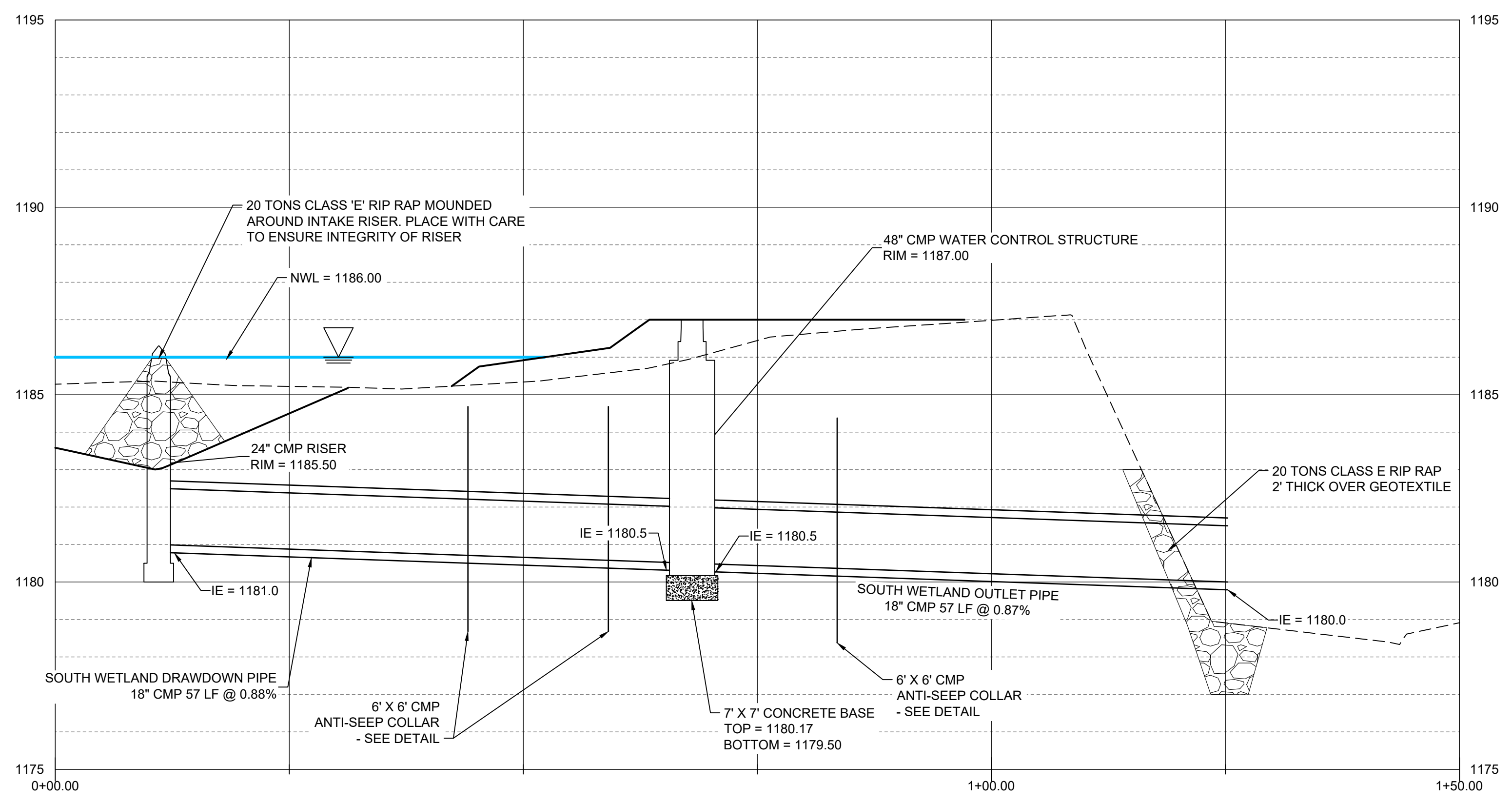
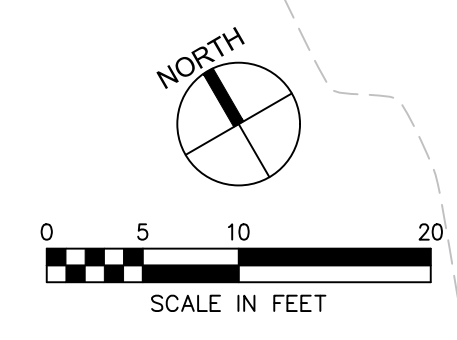
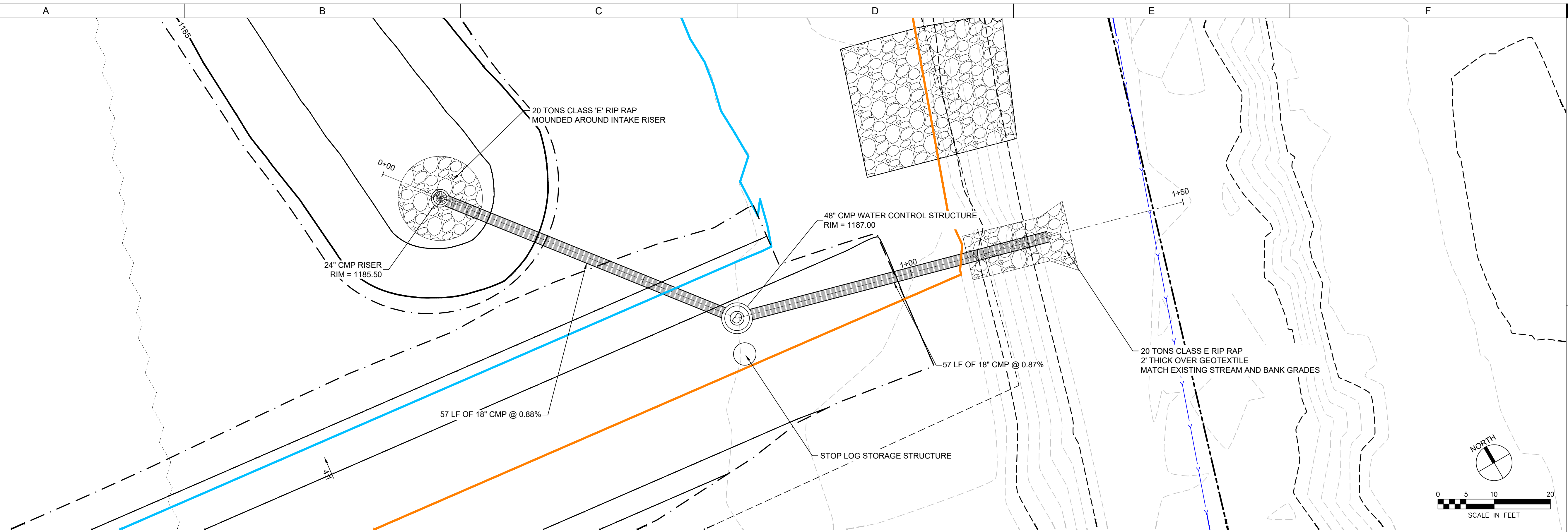


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APPROVED:	DJ
ISSUED FOR:	BID DOCUMENTS
DATE:	1/10/2025
PROJECT NO.:	2142208150
FIELD BOOK:	--
CLIENT NO.:	--

PROJECT NO.:	2142208150
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ISSUED FOR:	BID DOCUMENTS
APPROVED:	DJ
DRAWN:	GHK



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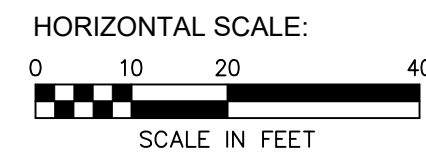
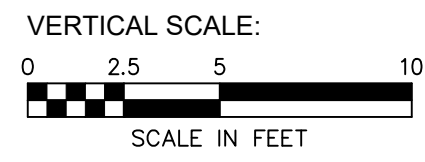
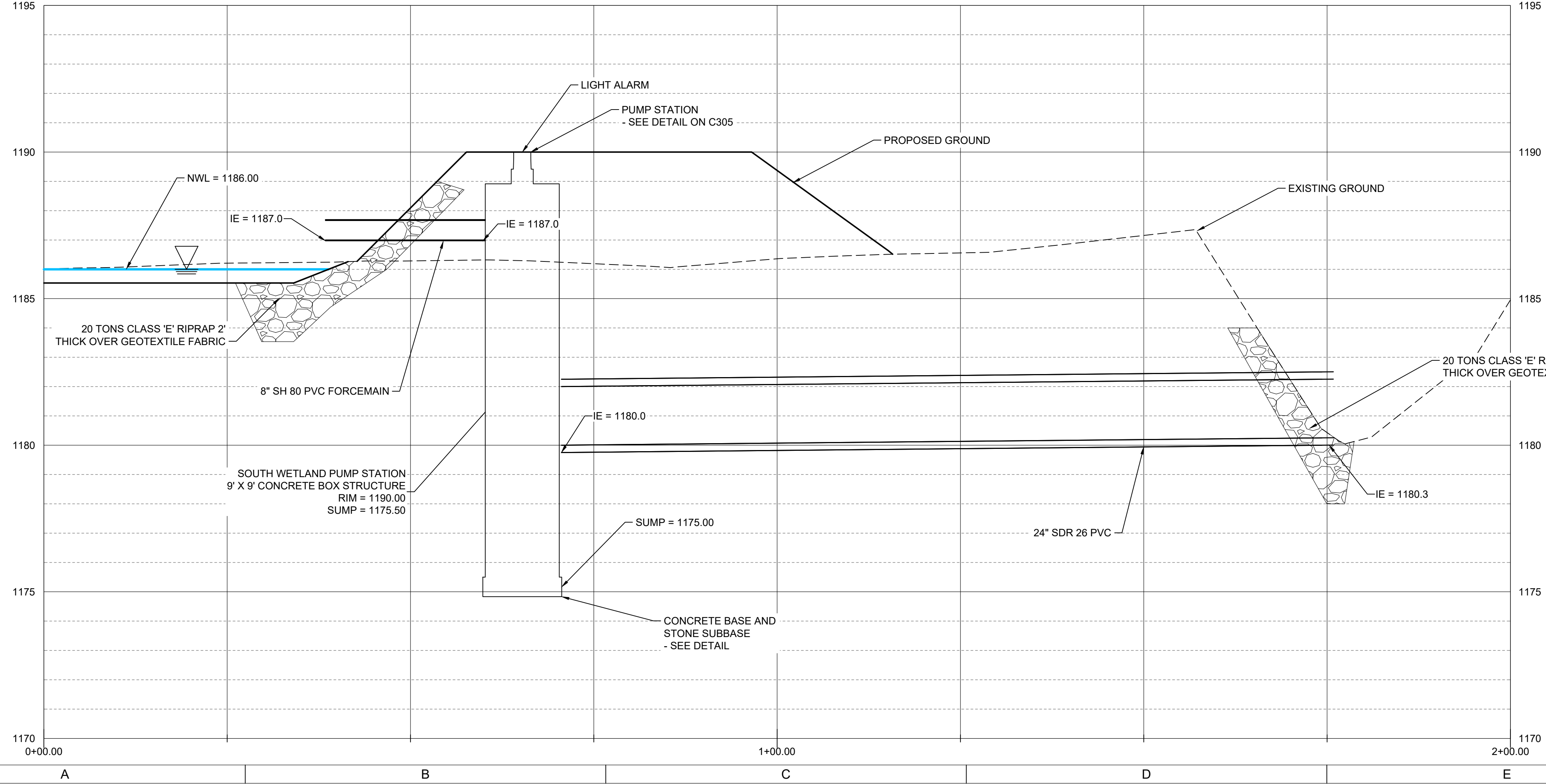
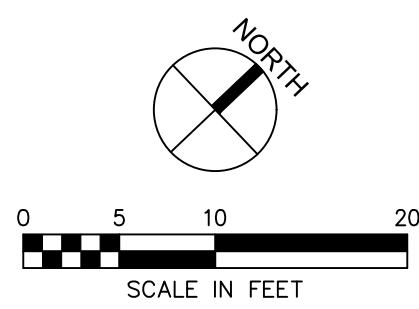
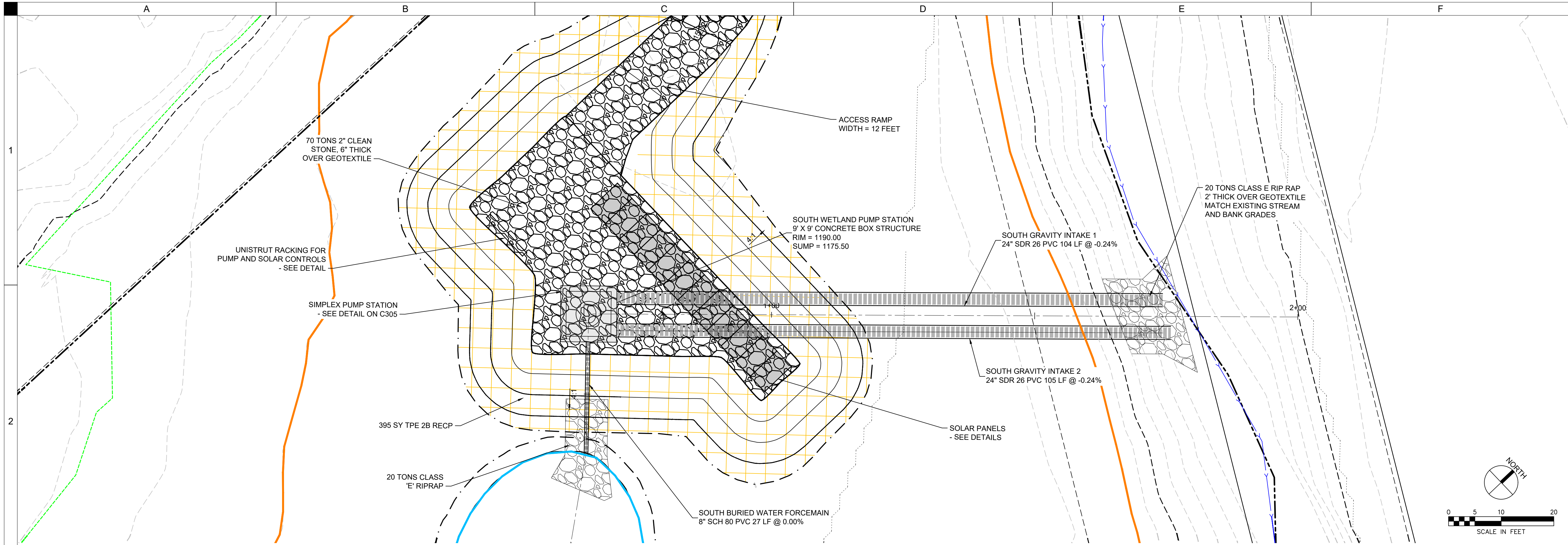
**CAL883229B PUMPED
WETLANDS**

IDALS
ROCKWELL CITY, IOWA

DRAWN:	GHK
APPROVED:	DJ
ISSUED FOR:	BID DOCUMENTS
DATE:	1/10/2025
PROJECT NO.:	2142206150
FIELD BOOK:	-
CLIENT NO.:	-

**SOUTH WETLAND
DRAWDOWN PLAN
AND PROFILE**

C204

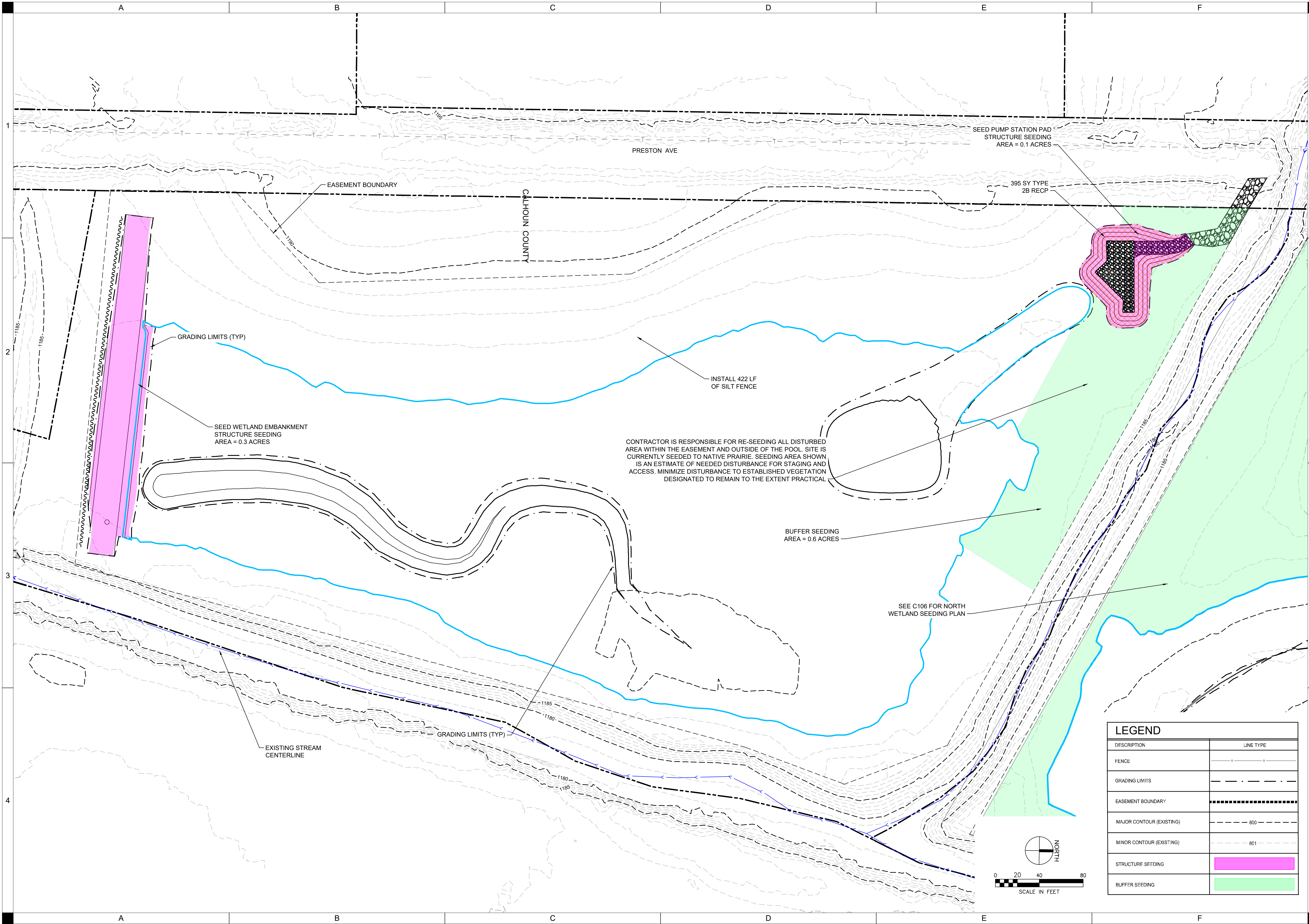


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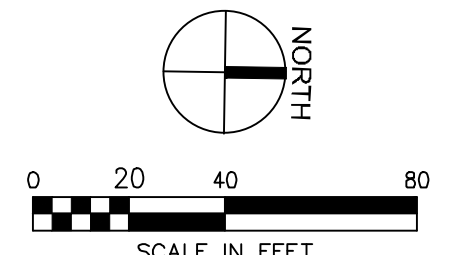


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APPROVED:	DJJ
ISSUED FOR:	BID DOCUMENTS
DATE:	1/10/2025
PROJECT NO.:	2142206150
FIELD BOOK:	--
CLIENT NO.:	--

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



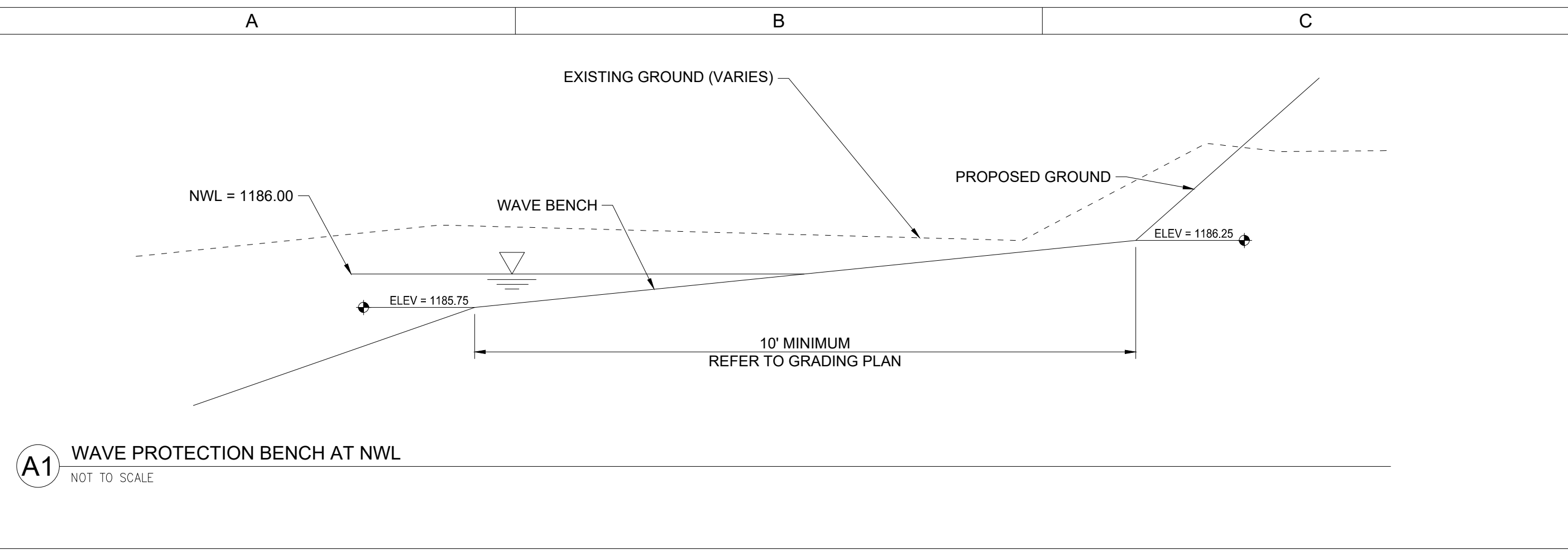
**CAL883229B PUMPED
WETLANDS**

IDALS
ROCKWELL CITY, IOWA

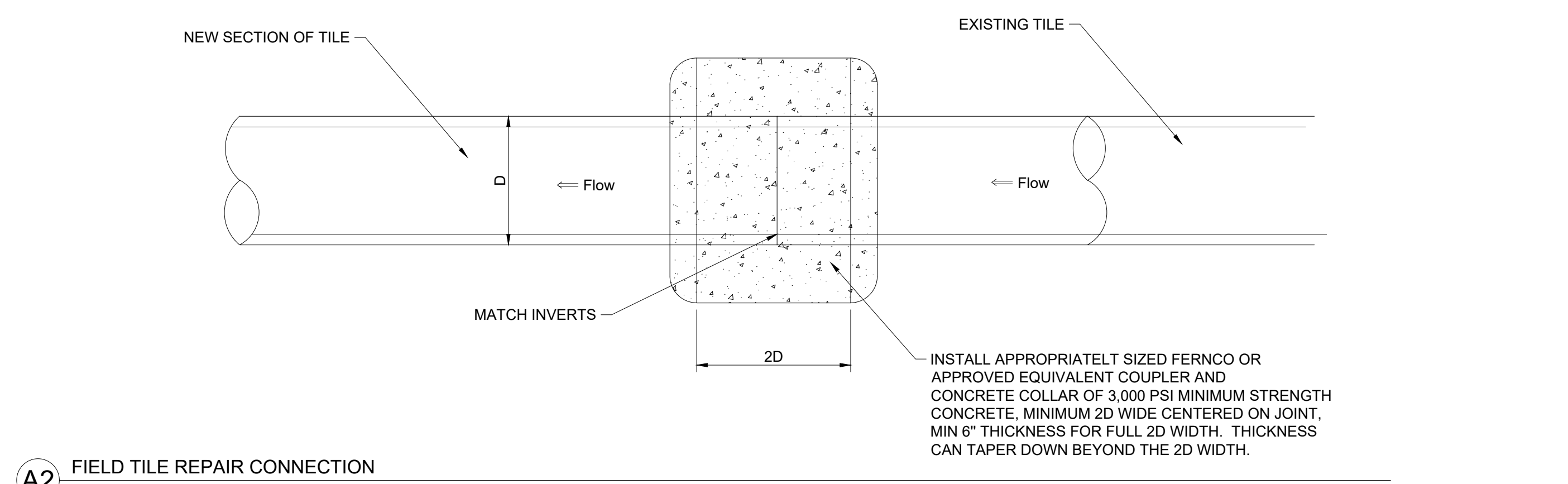
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APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS
DATE: 1/10/2025
PROJECT NO: 2142206150
FIELD BOOK: --
CLIENT NO: --

**SOUTH SEEDING
PLAN**

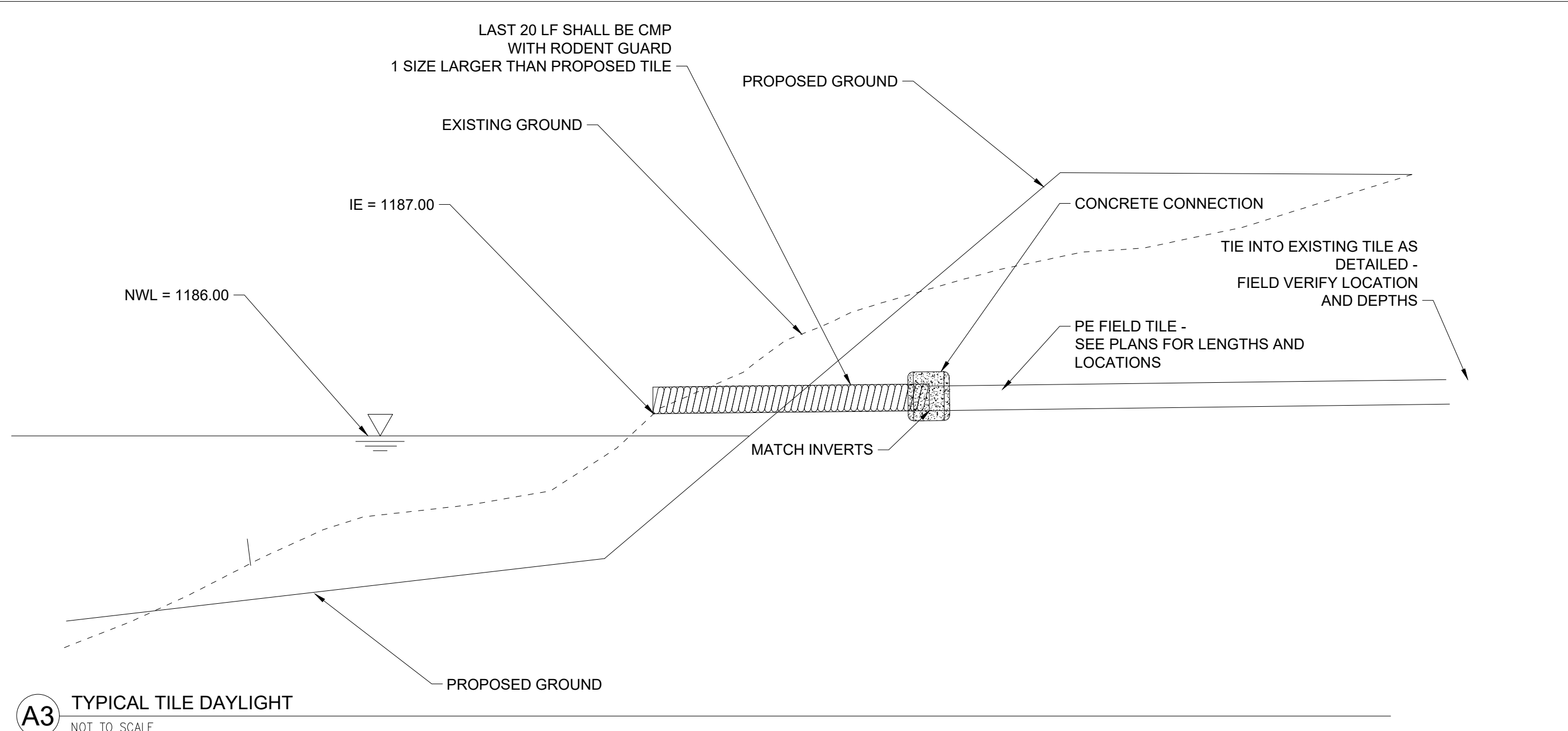
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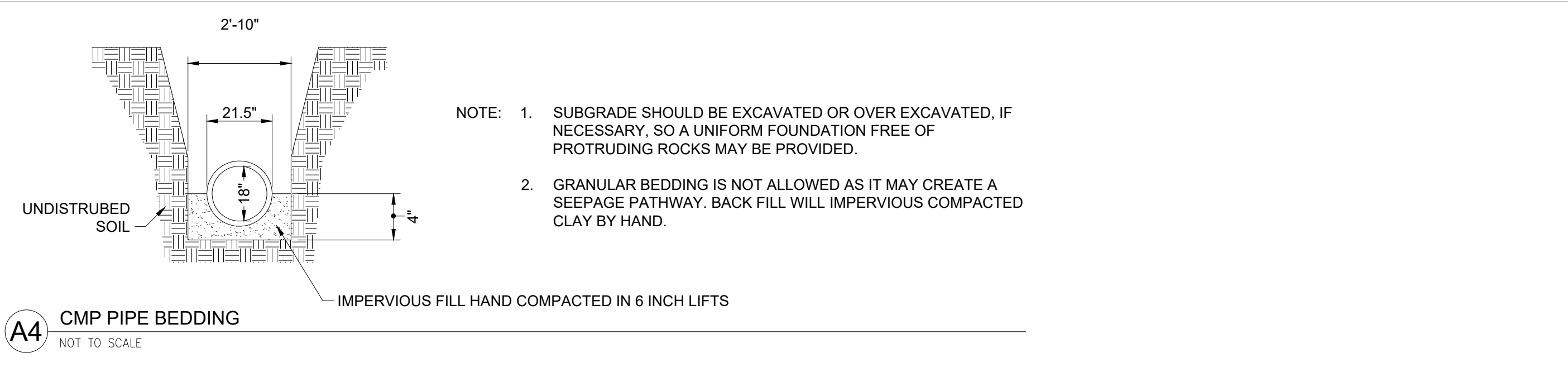
A1 WAVE PROTECTION BENCH AT NWL
NOT TO SCALE



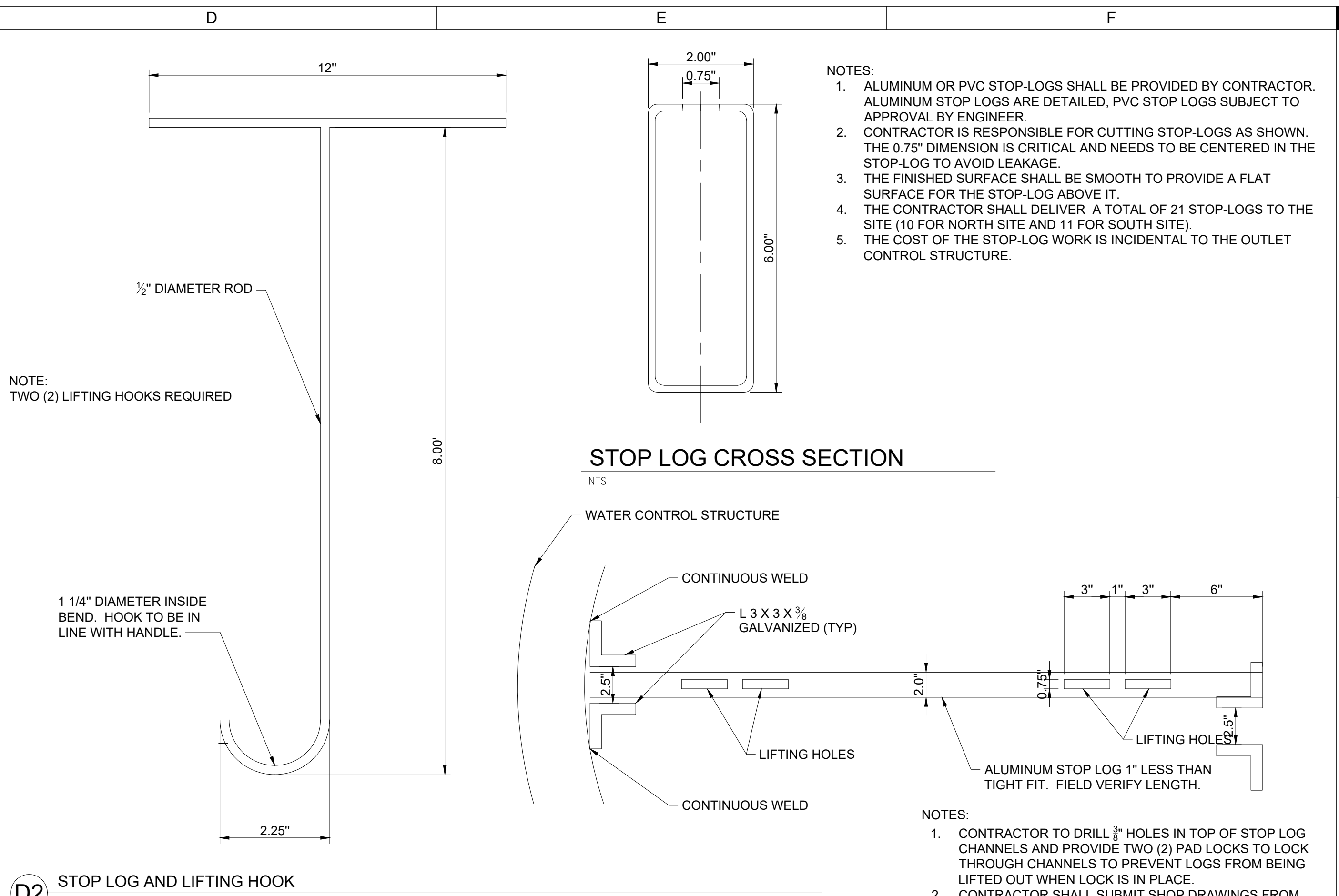
A2 FIELD TILE REPAIR CONNECTION
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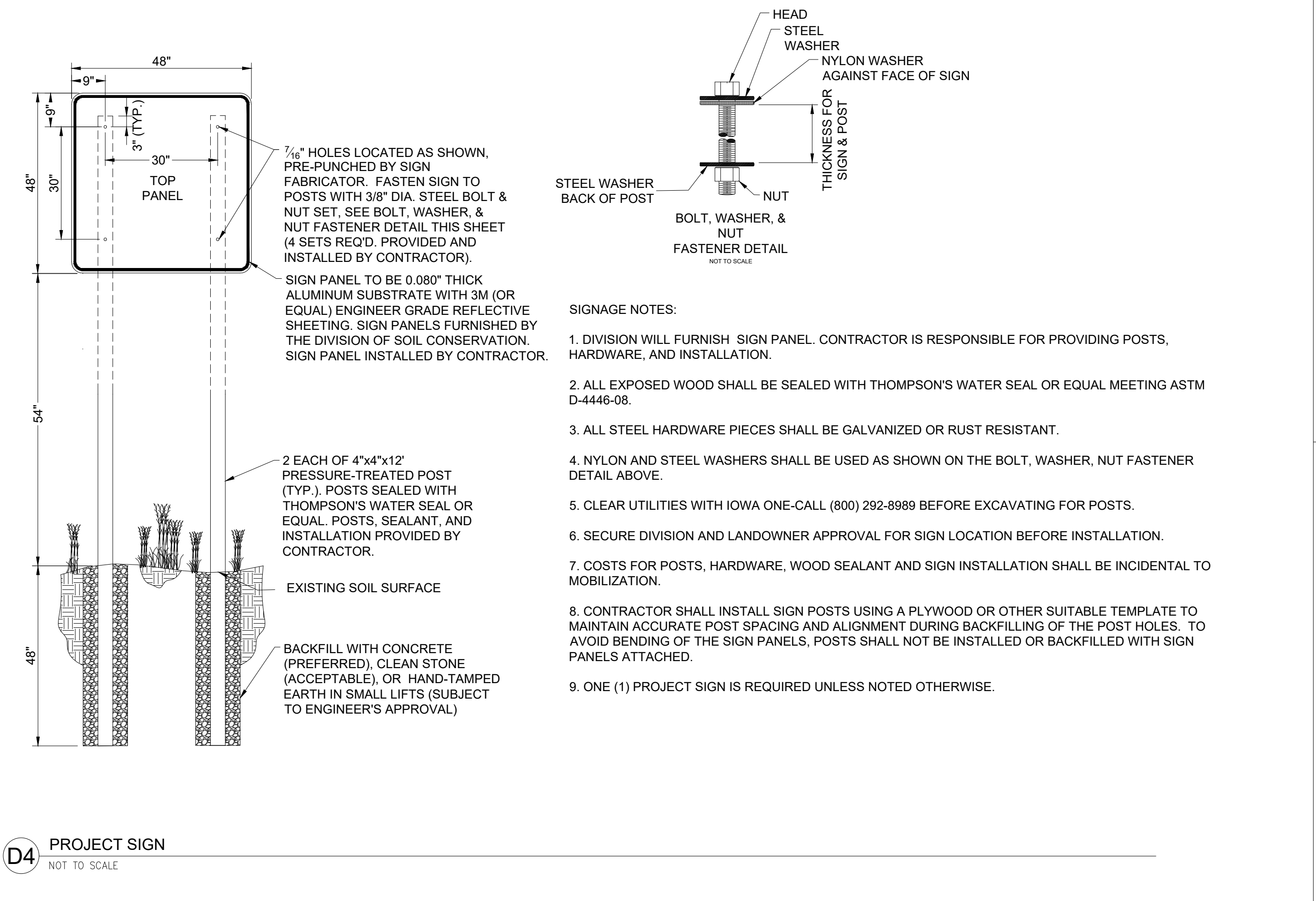
A3 TYPICAL TILE DAYLIGHT
NOT TO SCALE



A4 CMP PIPE BEDDING
NOT TO SCALE



D2 STOP LOG AND LIFTING HOOK
NOT TO SCALE

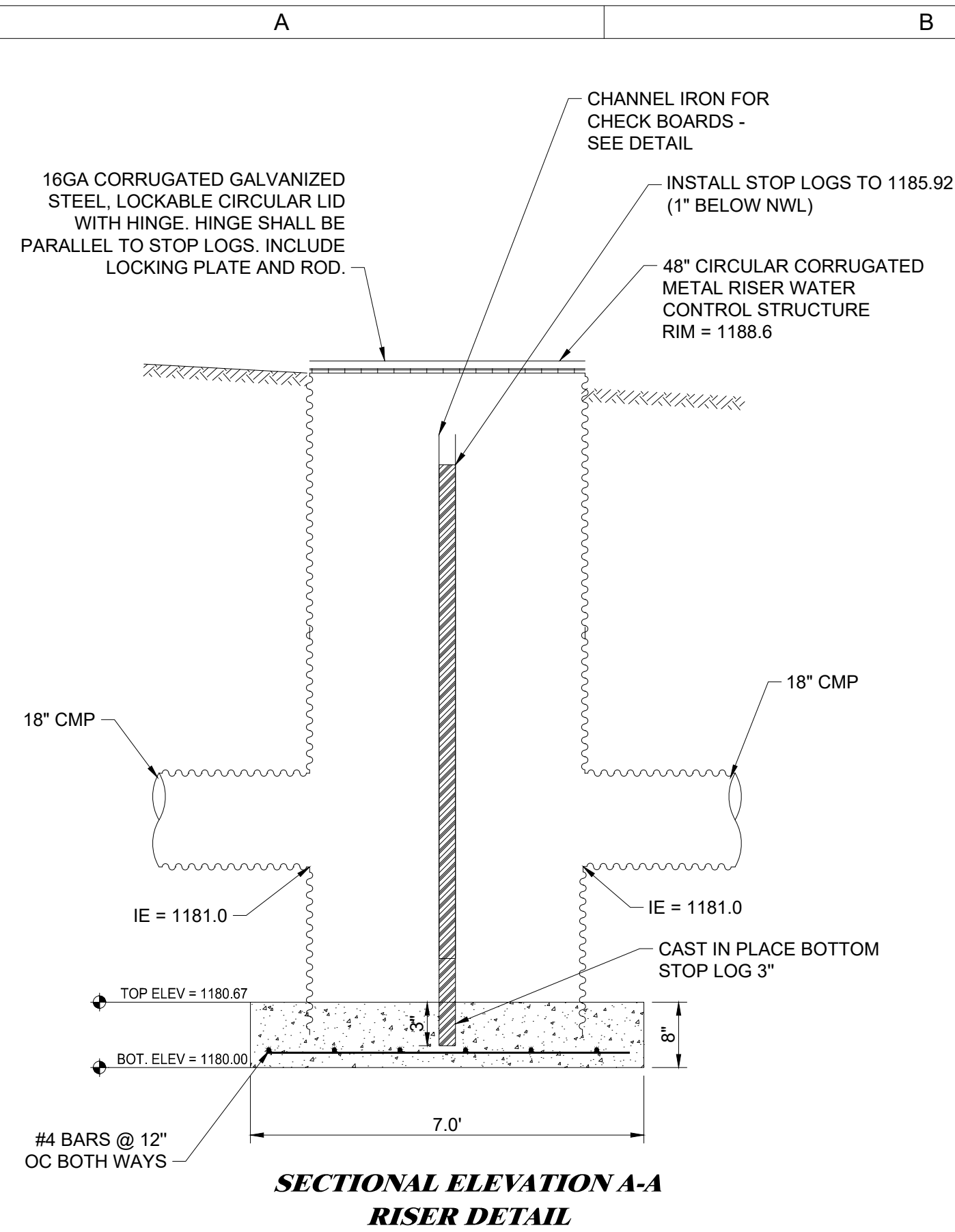


D4 PROJECT SIGN
NOT TO SCALE

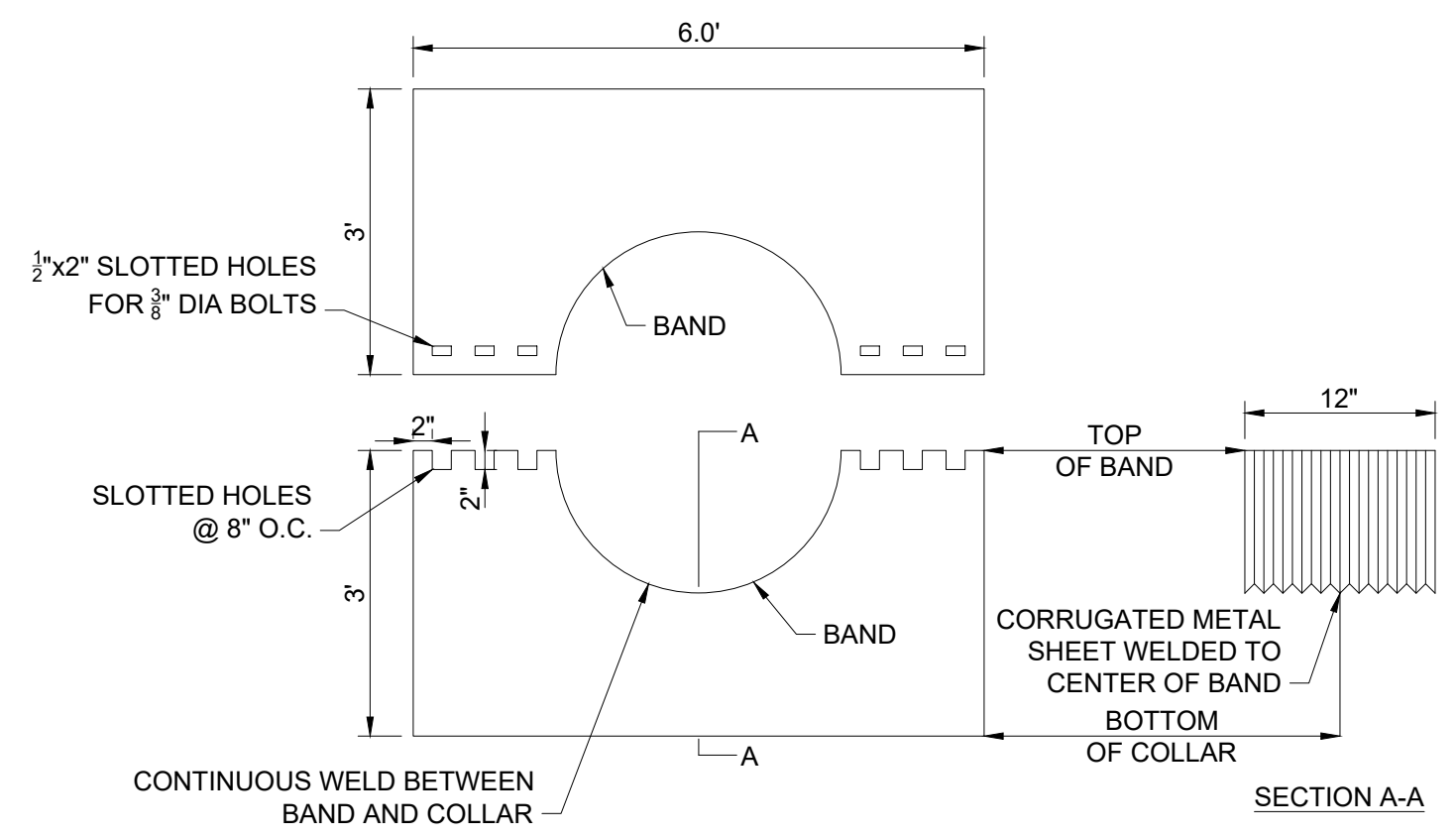
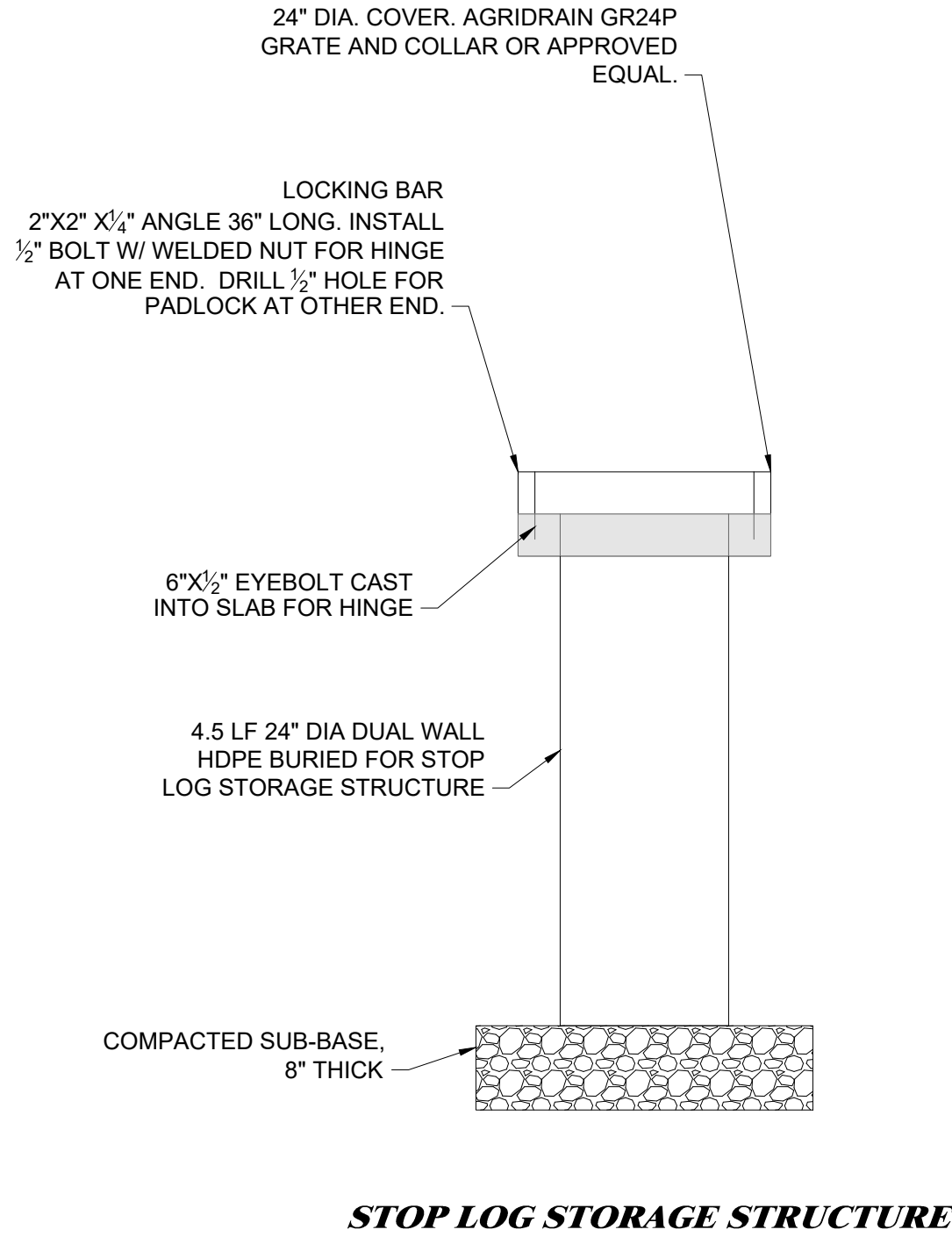
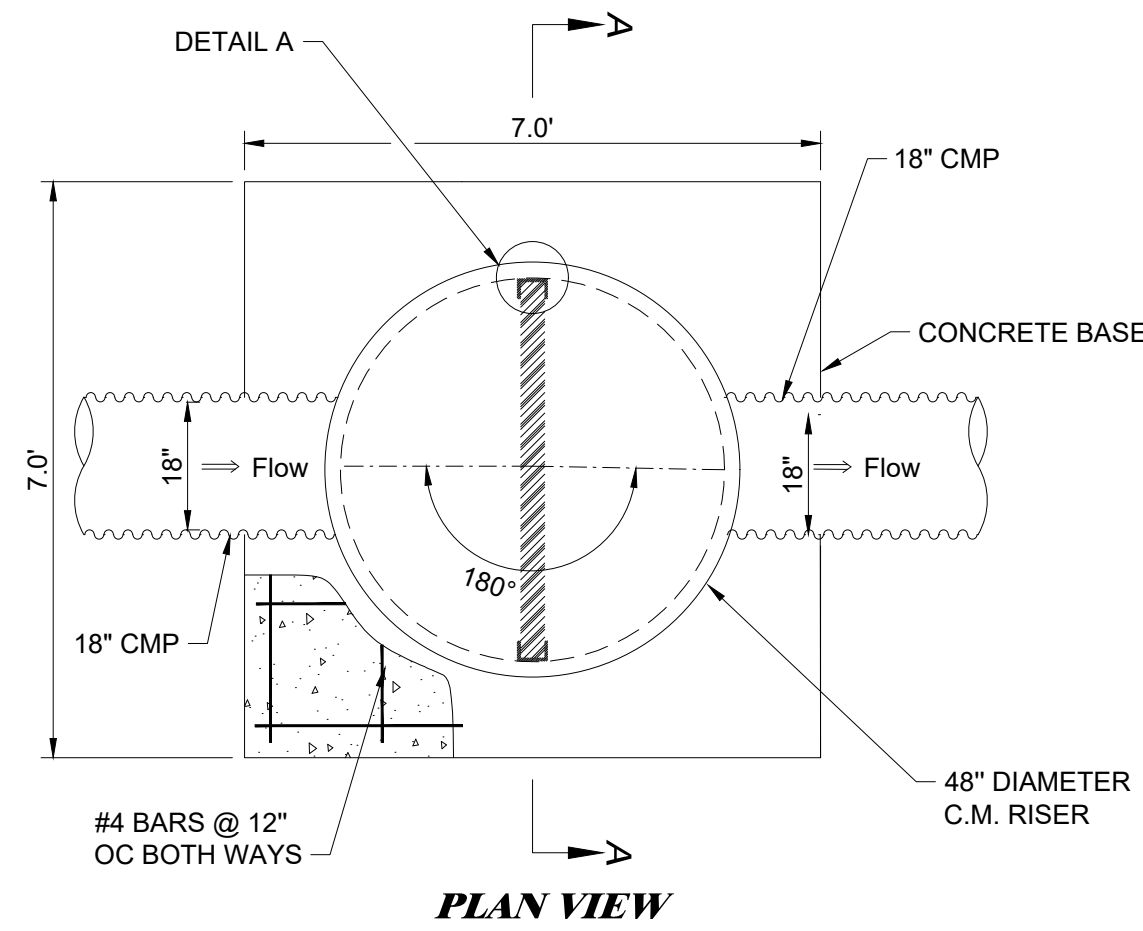


DRAWN:	GHK
APPROVED:	DJ
ISSUED FOR:	BID DOCUMENTS
DATE:	1/10/2025
PROJECT NO:	2142206150
FIELD BOOK:	
CLIENT NO.:	

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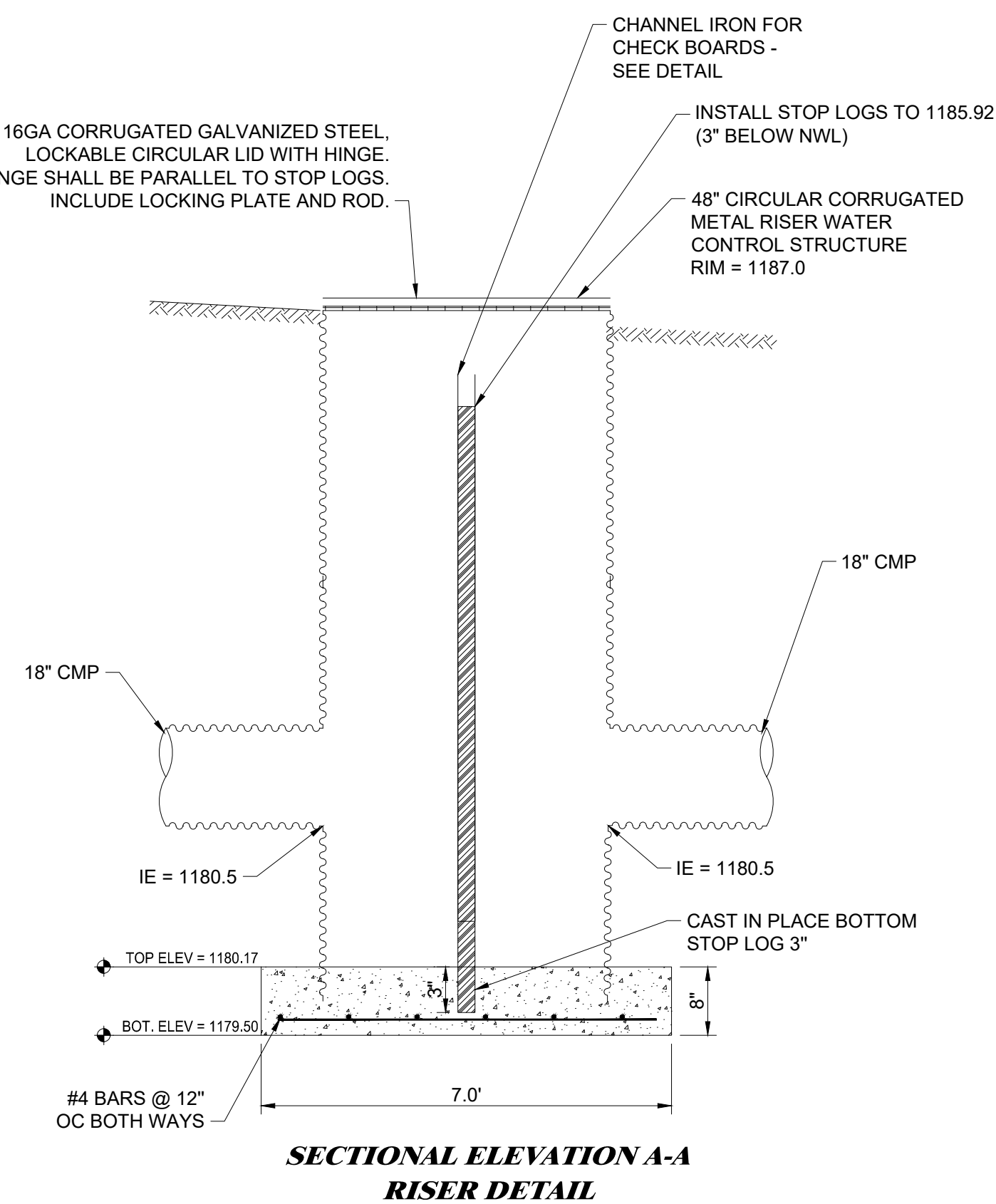
- NOTES:
- 1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF WATER CONTROL STRUCTURE.
 - 2) WATER CONTROL STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
 - 3) STOP LOG CHANNEL IS TO 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 1/2" DIA "J BOLTS".
 - 5) PROVIDE MATCHING PADLOCKS FOR ALL LOCKING STRUCTURES. PROVIDE OWNER WITH FOUR KEYS.



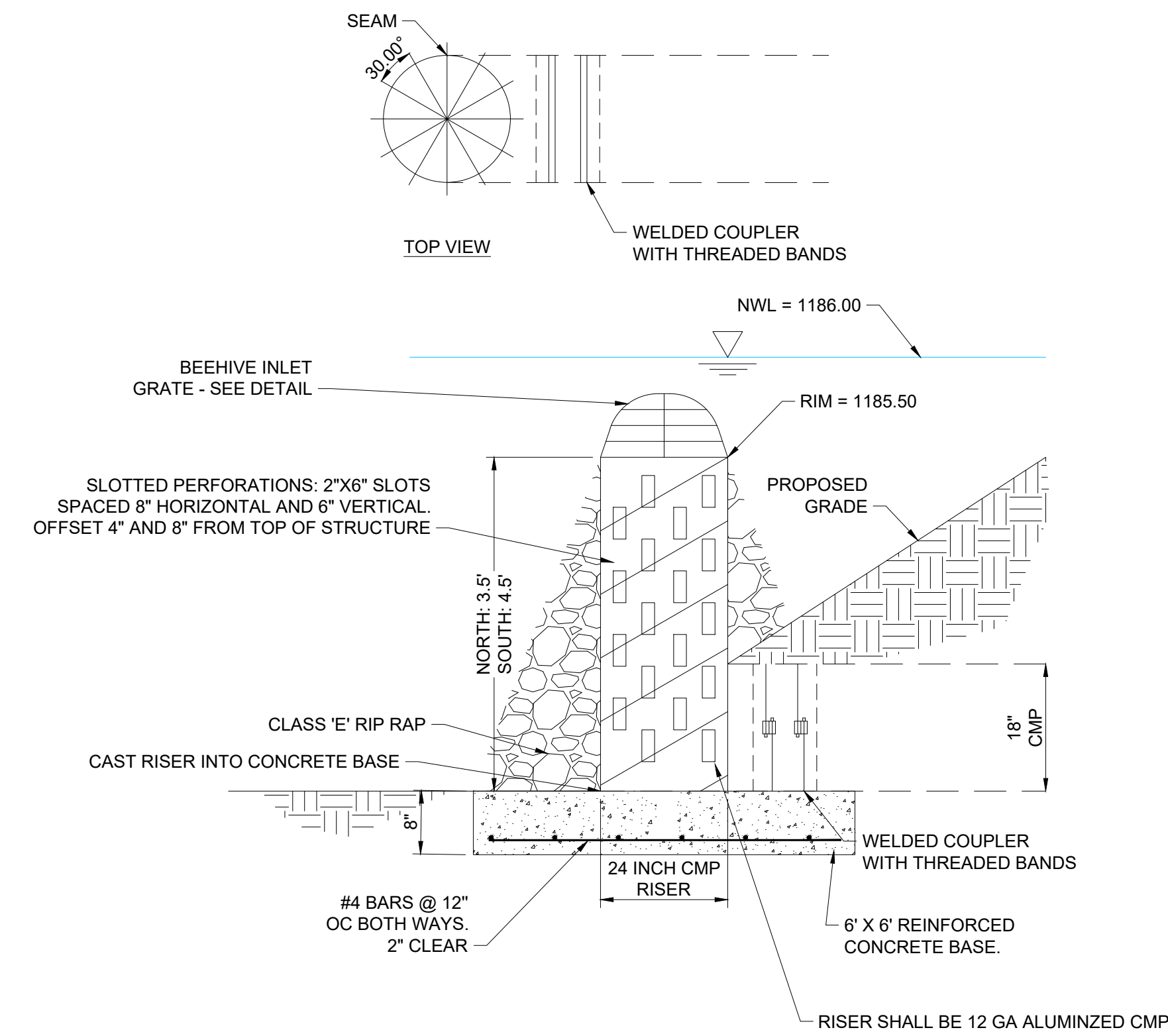
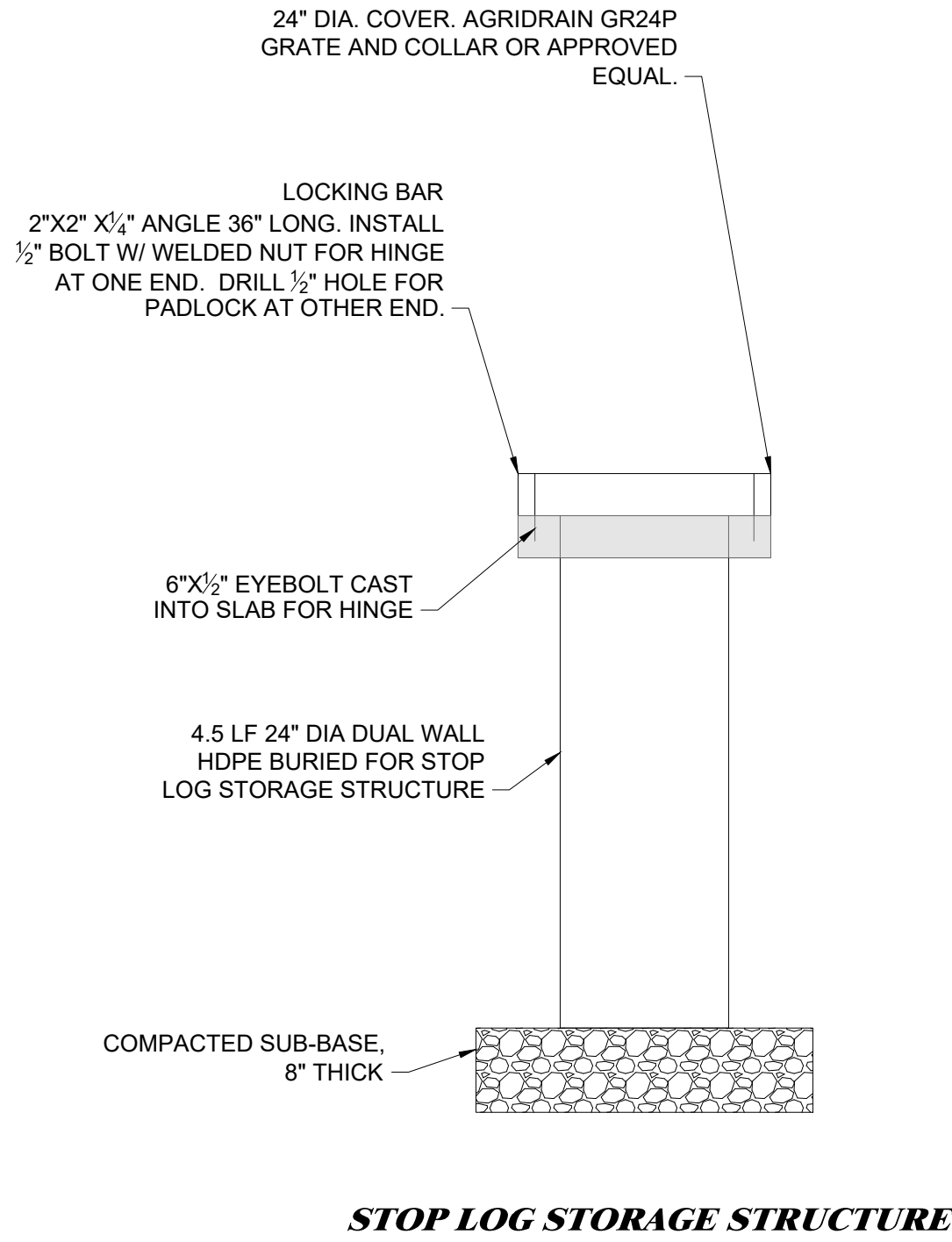
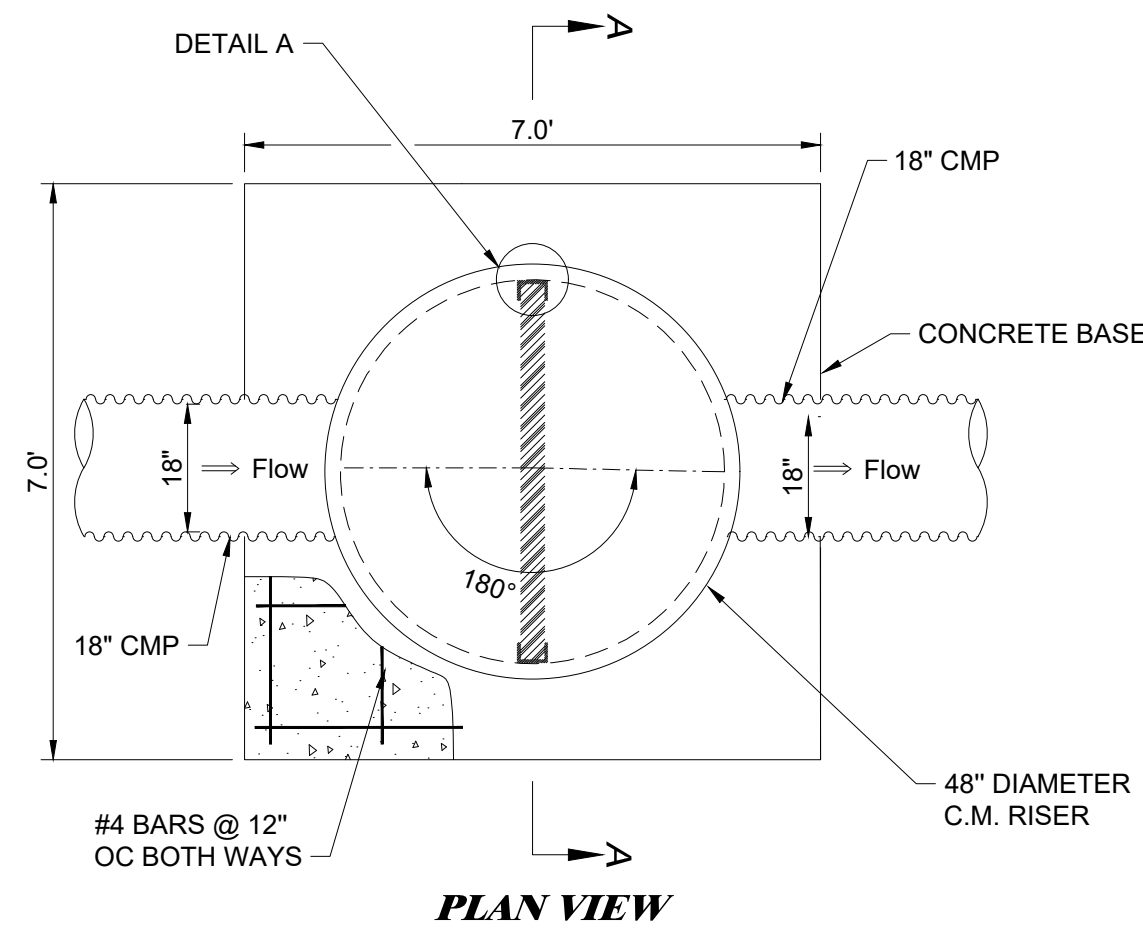
- NOTE:
1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FROM FABRICATOR FOR ENGINEER REVIEW.

A2 NORTH WETLAND WATER CONTROL STRUCTURE AND APPURTENANCES
NOT TO SCALE

E2 CMP ANTI-SEEPEAGE COLLAR
NOT TO SCALE

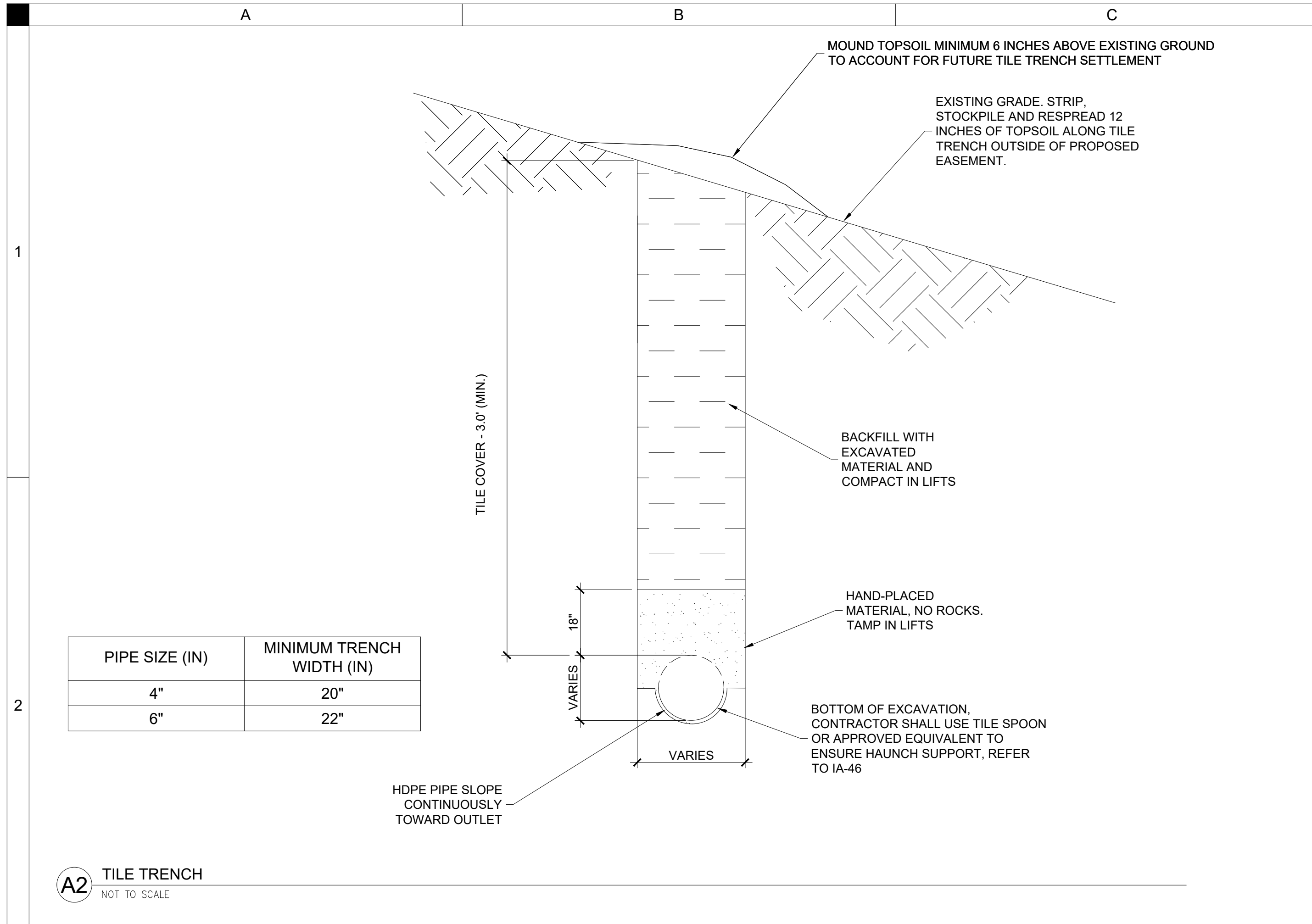


- NOTES:
- 1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF WATER CONTROL STRUCTURE.
 - 2) WATER CONTROL STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
 - 3) STOP LOG CHANNEL IS TO 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 1/2" DIA "J BOLTS".
 - 5) PROVIDE MATCHING PADLOCKS FOR ALL LOCKING STRUCTURES. PROVIDE OWNER WITH FOUR KEYS.



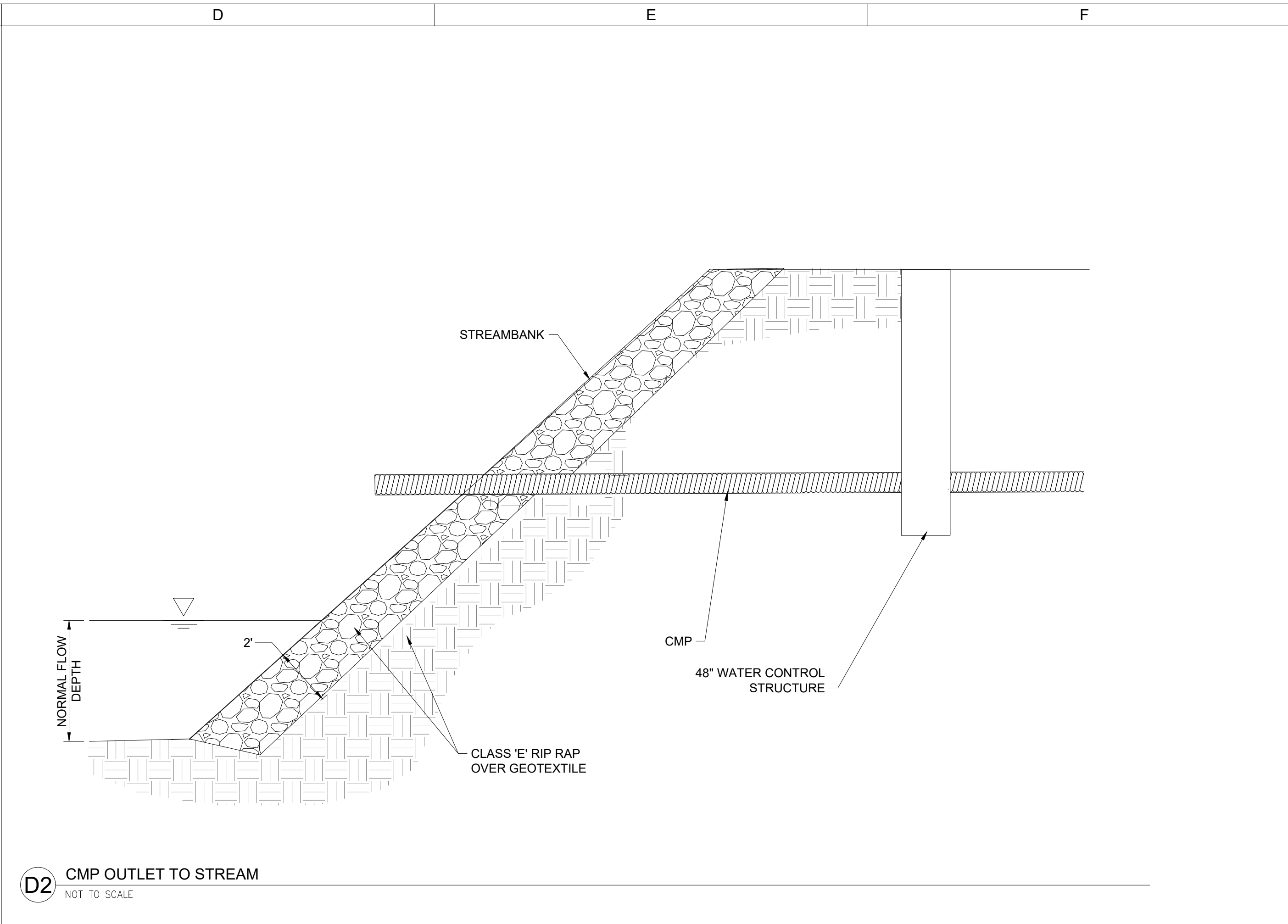
A2 SOUTH WETLAND WATER CONTROL STRUCTURE AND APPURTENANCES
NOT TO SCALE

E4 CORRUGATED METAL RISER
NOT TO SCALE

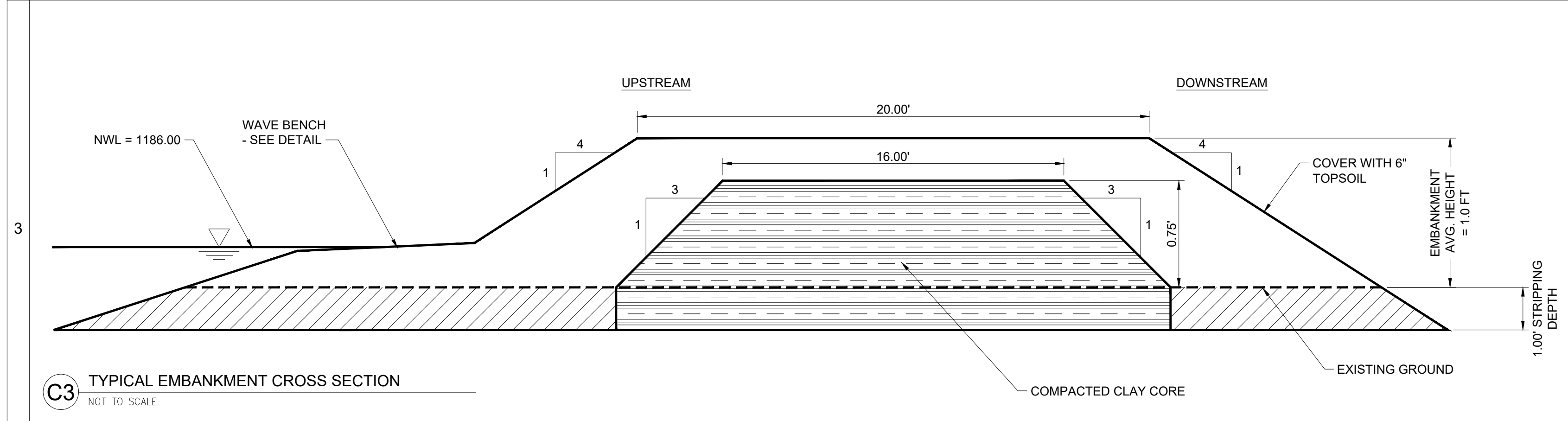


PIPE SIZE (IN)	MINIMUM TRENCH WIDTH (IN)
4"	20"
6"	22"

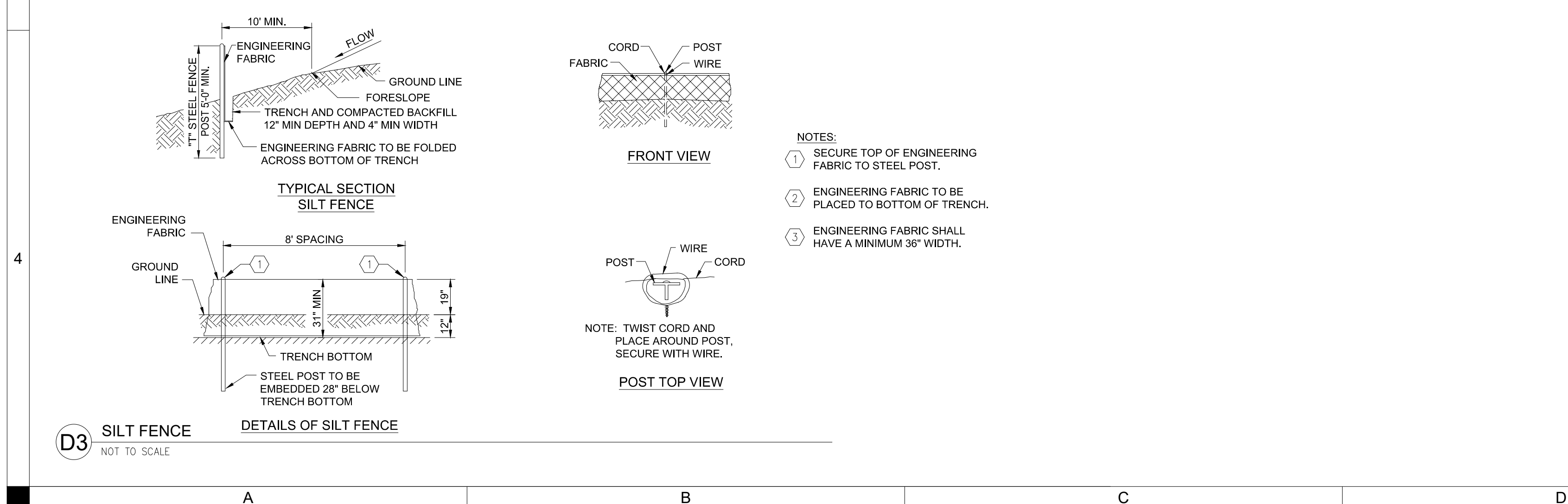
A2 TILE TRENCH
NOT TO SCALE



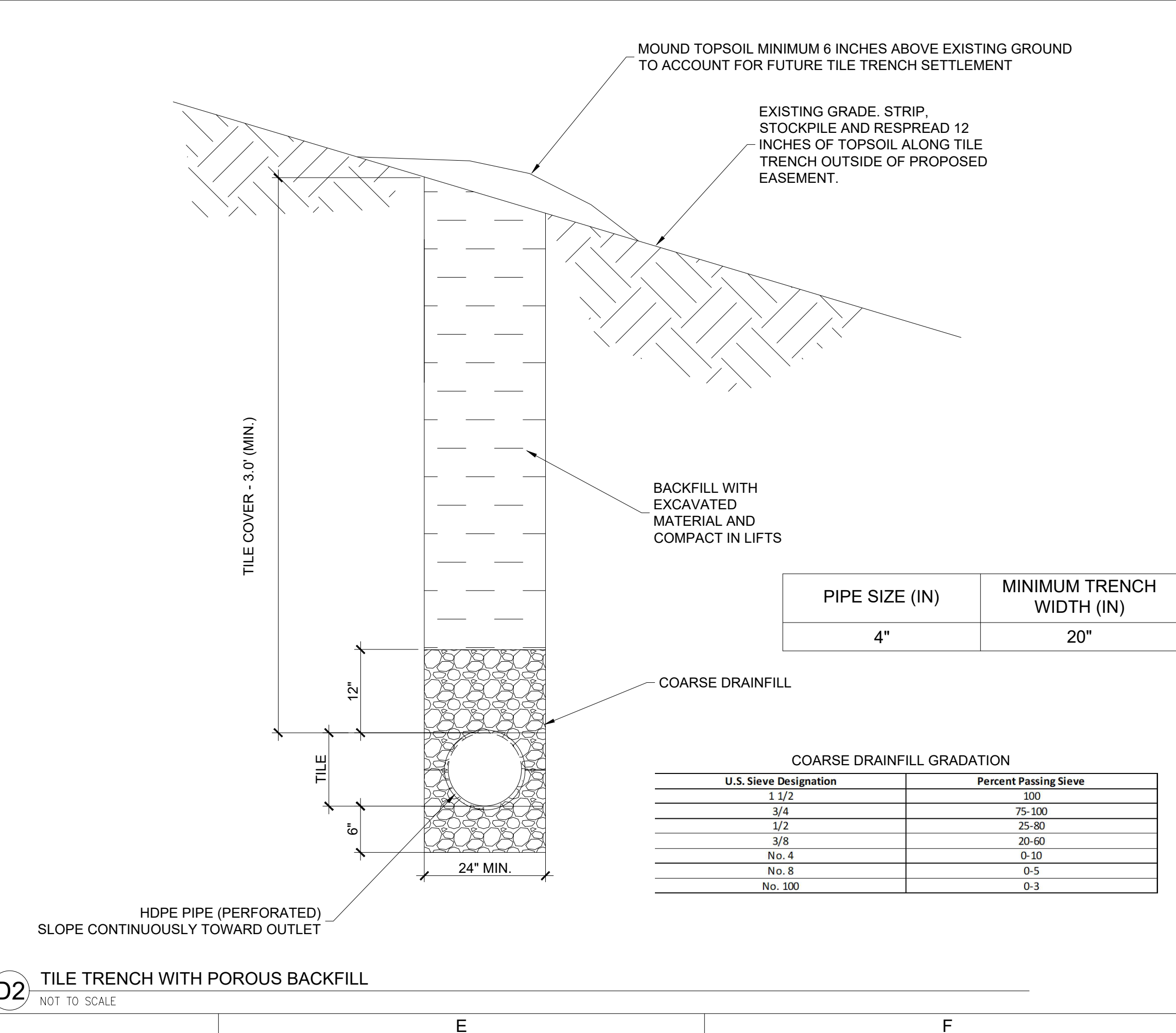
D2 CMP OUTLET TO STREAM
NOT TO SCALE



C3 TYPICAL EMBANKMENT CROSS SECTION
NOT TO SCALE



D3 SILT FENCE
NOT TO SCALE



D2 TILE TRENCH WITH POROUS BACKFILL
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

DRAWN: GHK	APPROVED: DJJ
ISSUED FOR: BID DOCUMENTS	DATE: 1/10/2025
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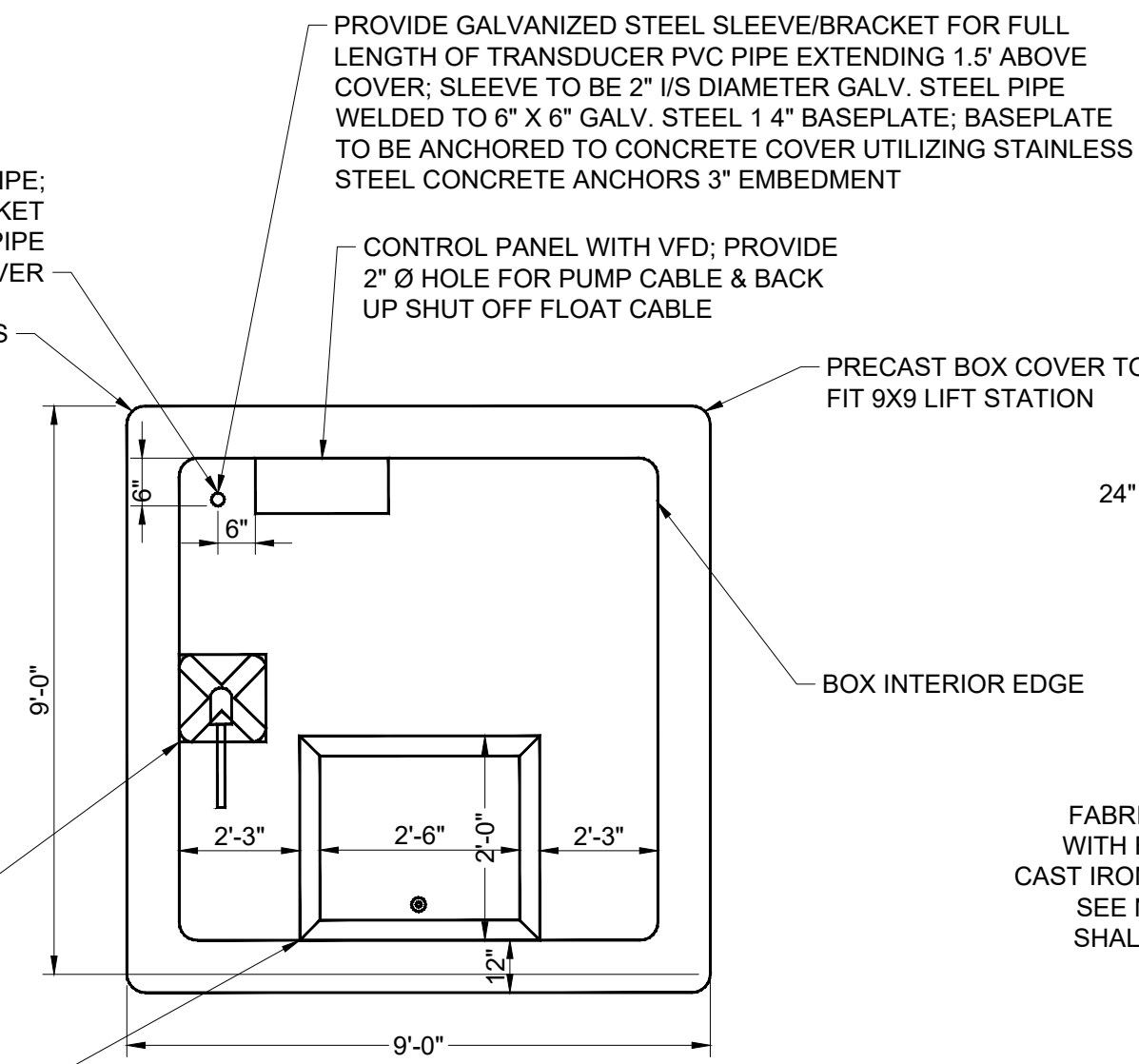
NOTE:
CONTRACTOR SHALL SEAL ALL HOLES THROUGH TOP OF LIFT STATION COVER

PROVIDE 2" Ø HOLE FOR TRANSDUCER PIPE; PROVIDE GALVANIZED STEEL SLEEVE/BACKET FOR FULL LENGTH OF TRANSDUCER PVC PIPE EXTENDING ABOVE COVER

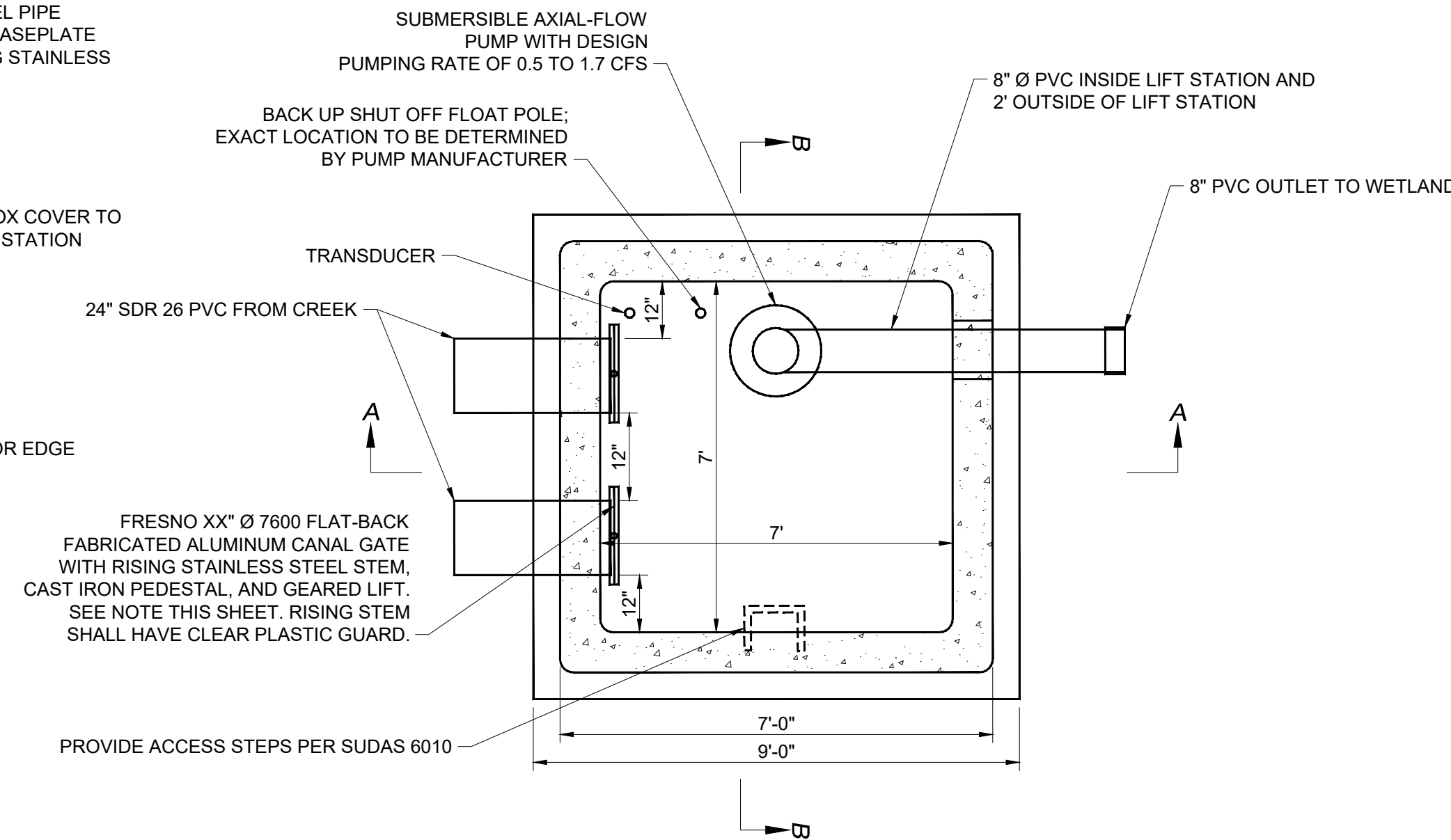
PROVIDE 1" CHAMBER AT EDGES

CAST IRON PEDESTAL, AND GEARED LIFT. SEE NOTE THIS SHEET. RISING STEM SHALL HAVE CLEAR PLASTIC CONE GUARD.

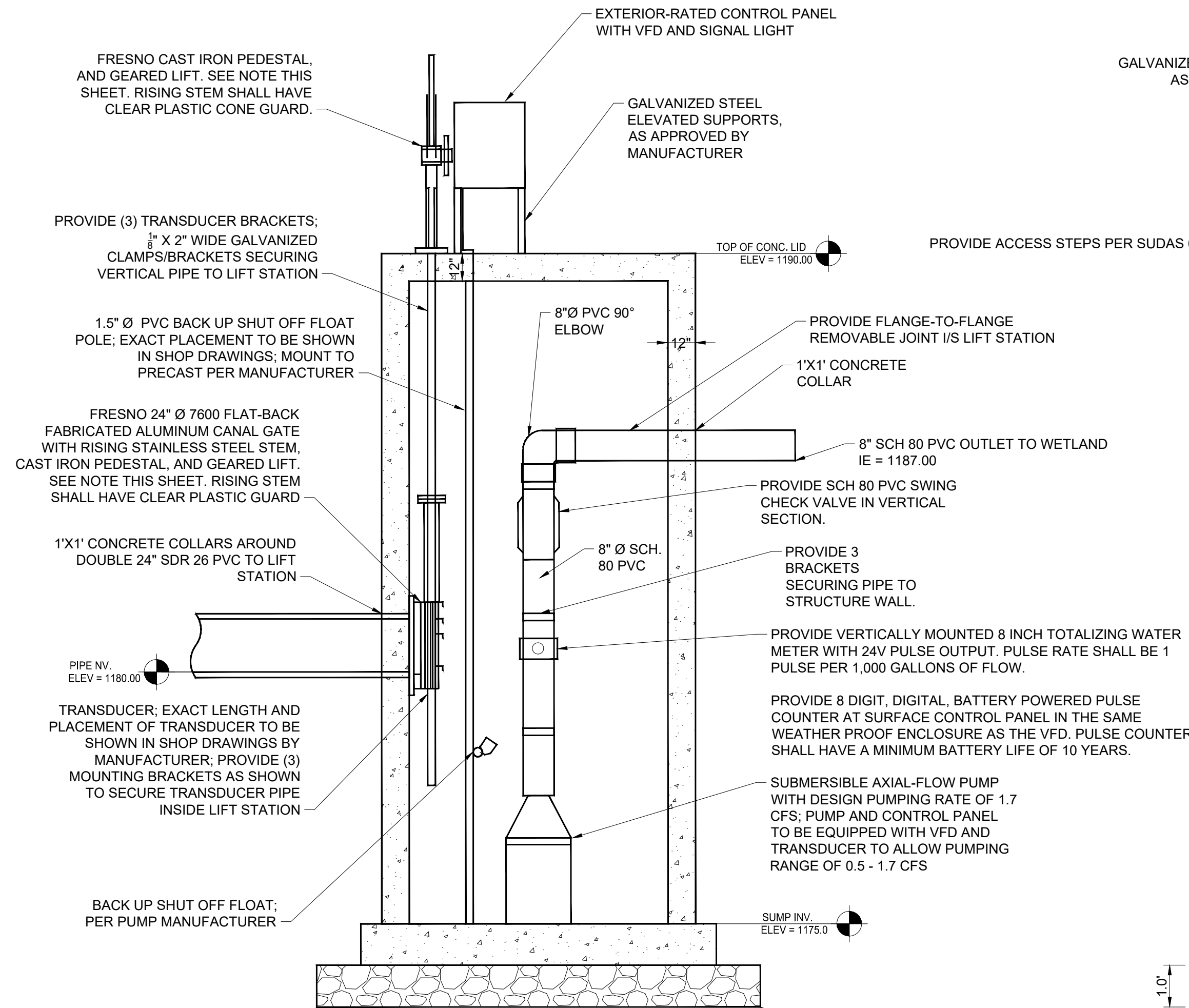
HALLIDAY PRODUCTS ALUMINUM ACCESS DOOR SR12430 24" X 30" OPENING WITH SERIES X SAFETY GRATE (OR APPROVED EQUAL)



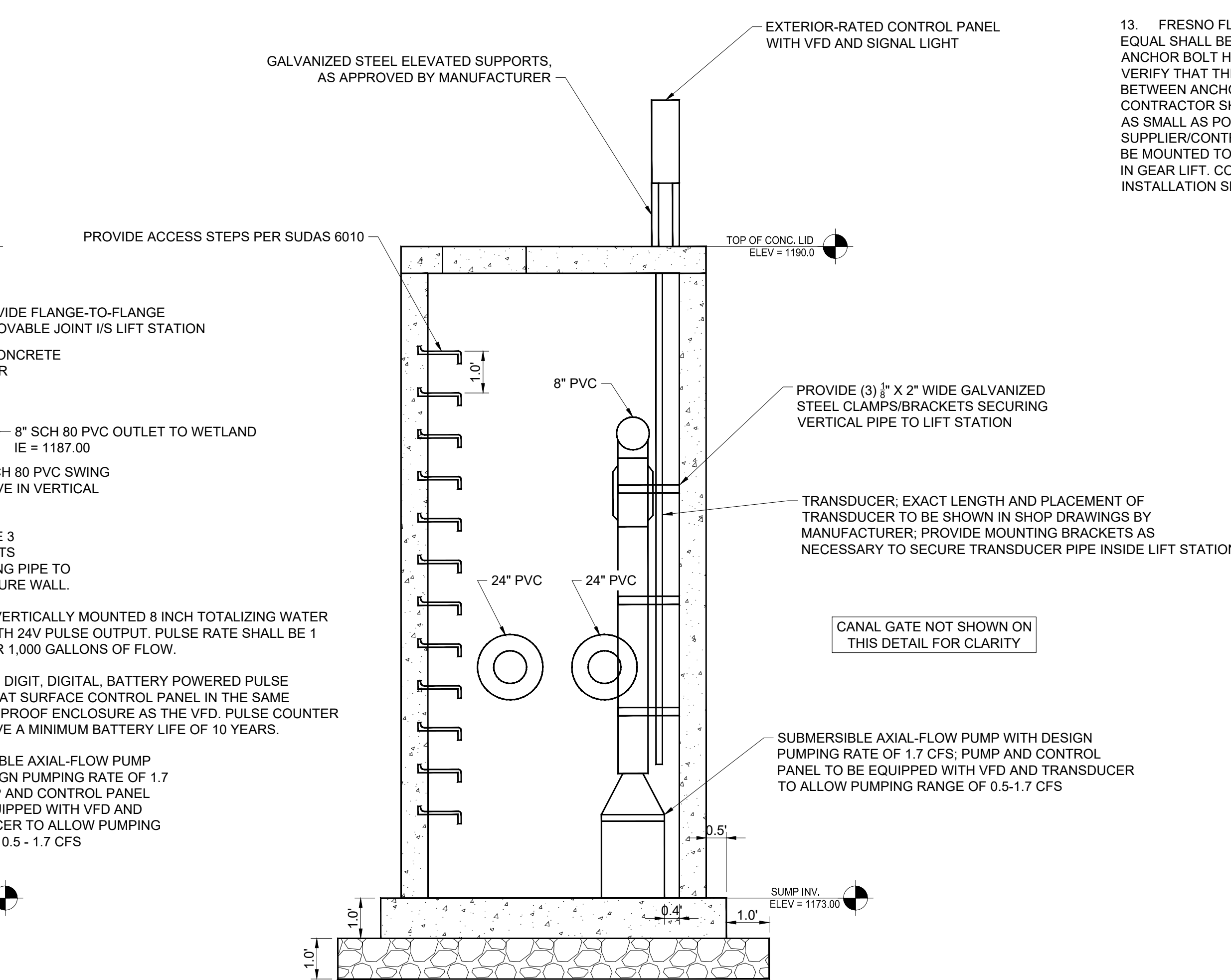
PLAN DETAIL - LIFT STATION COVER



PLAN DETAIL - LIFT STATION



SECTION A-A DETAIL



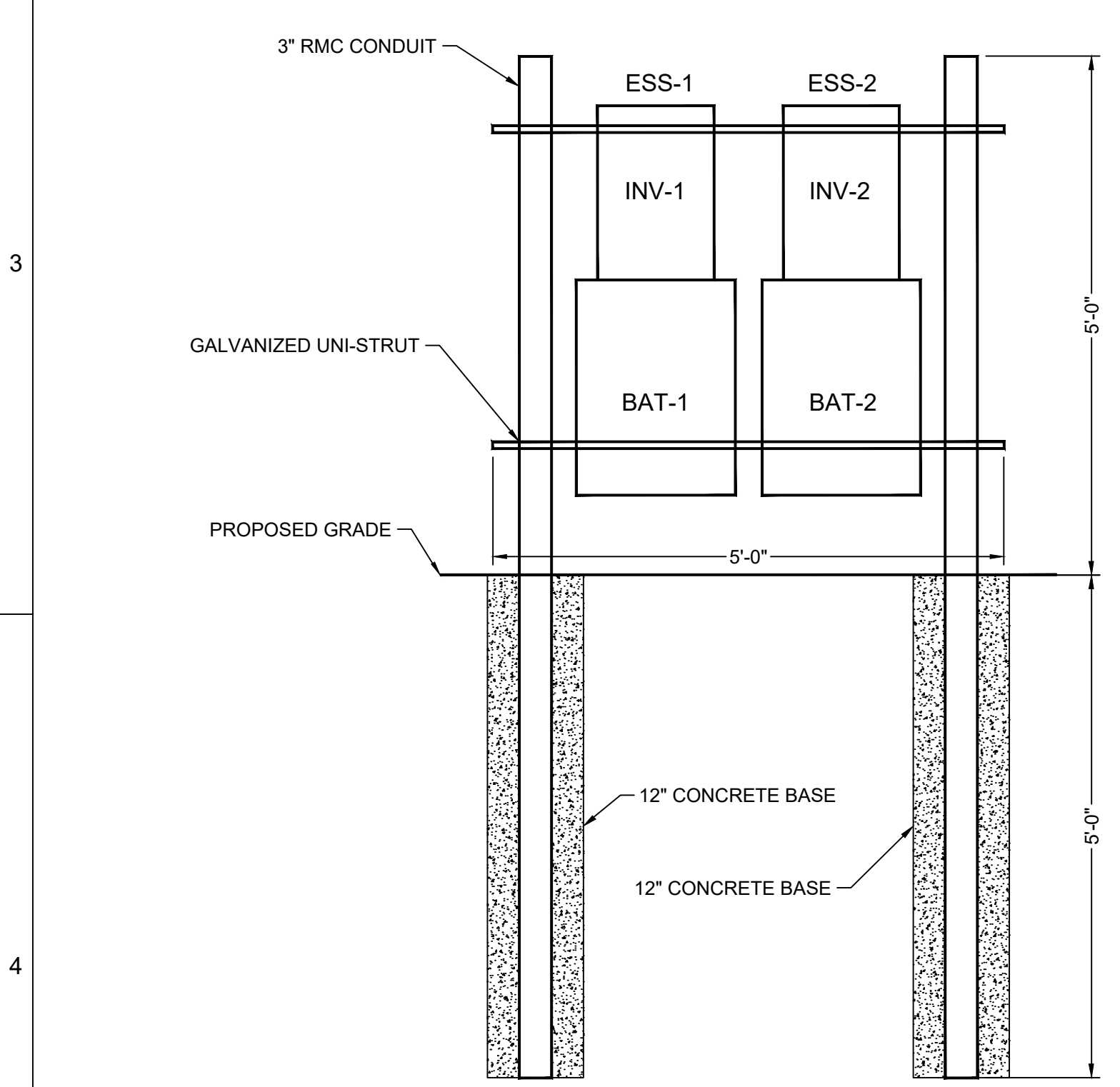
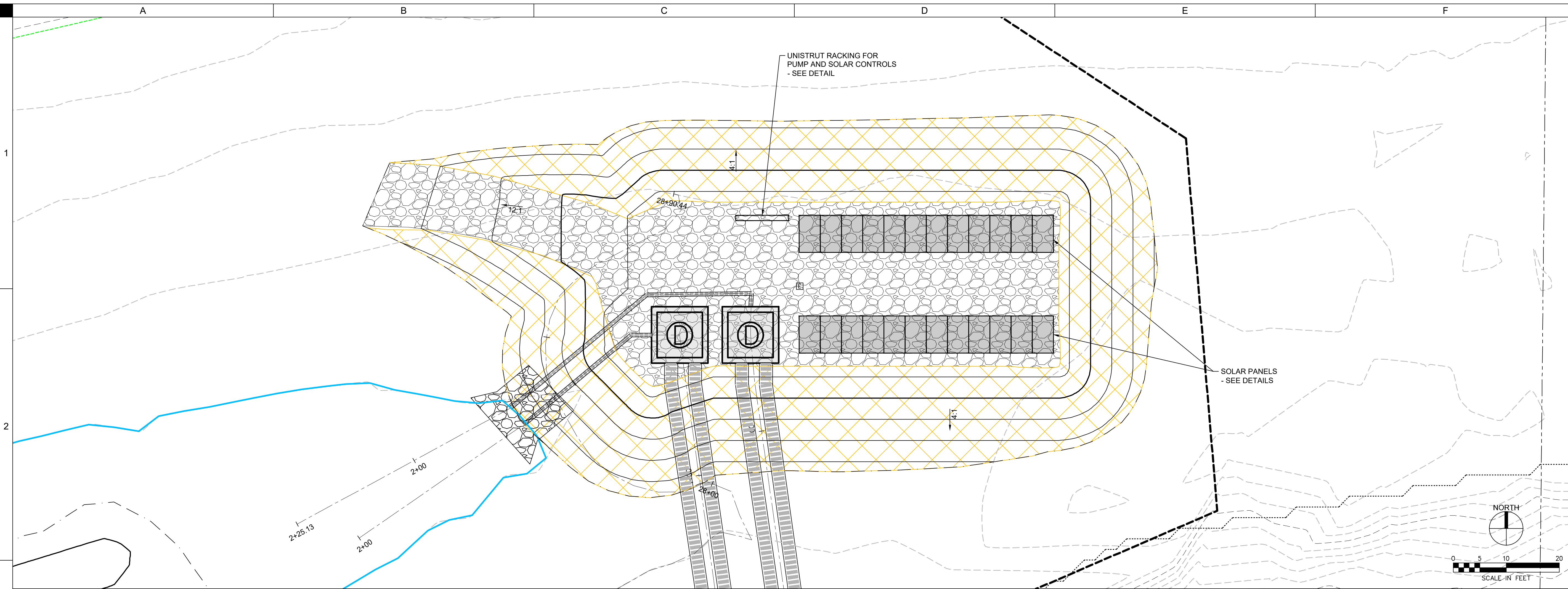
SECTION B-B DETAIL

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 METER 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 CP08 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 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.



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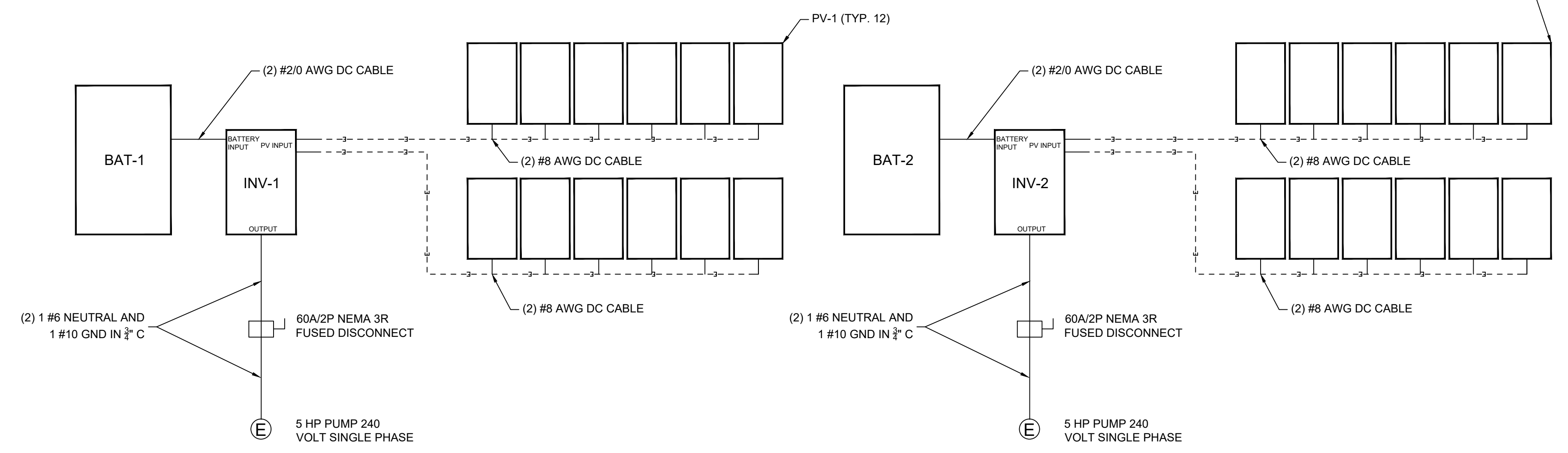
ELEVATION VIEW

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

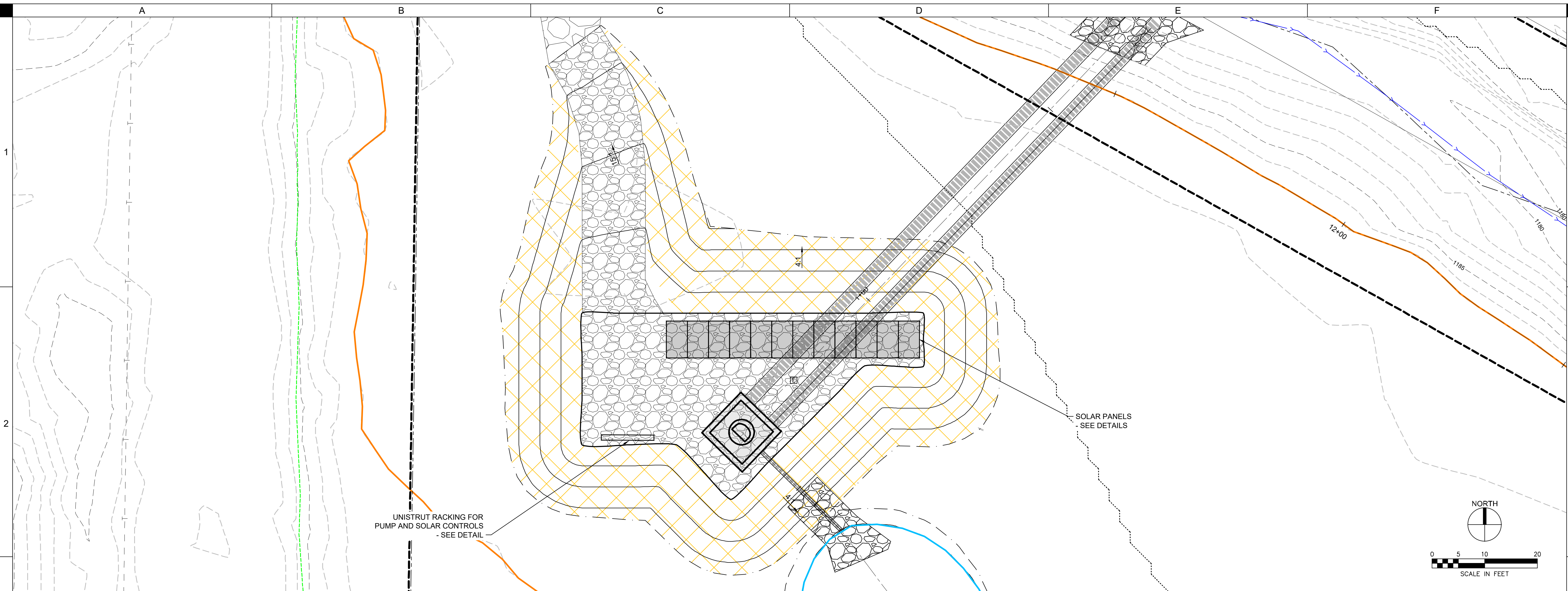
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NORTH WETLAND PUMP STATION



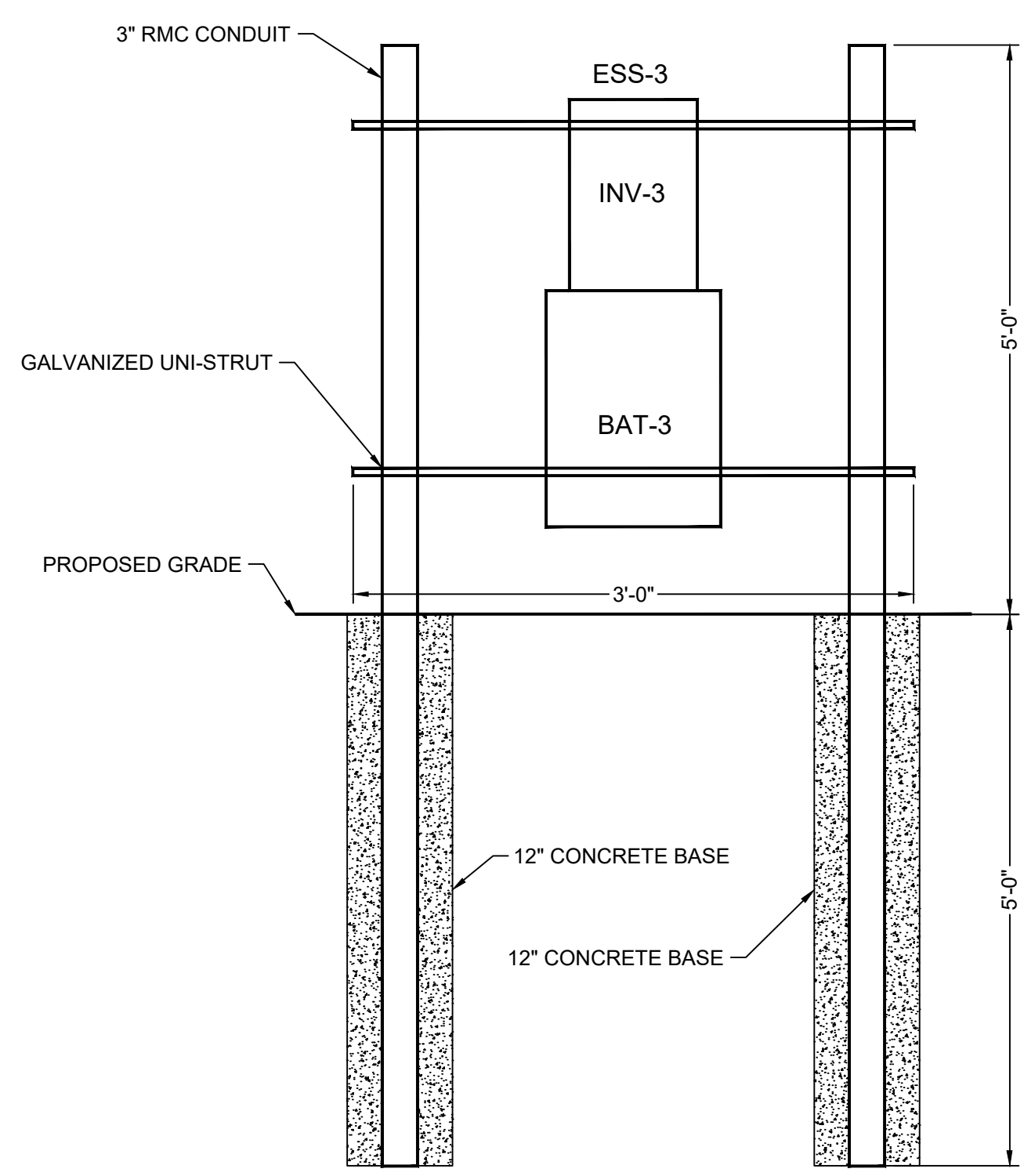
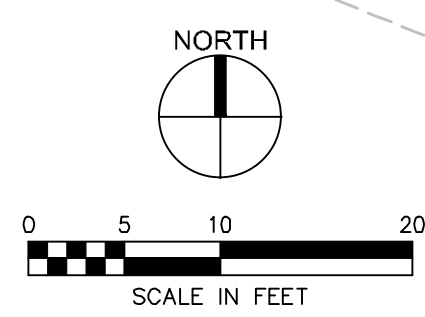
CAL883229B PUMPED
WETLANDS

IDALS
ROCKWELL CITY, IOWA



UNISTRUT RACKING FOR
PUMP AND SOLAR CONTROLS
- SEE DETAIL

SOLAR PANELS
- SEE DETAILS



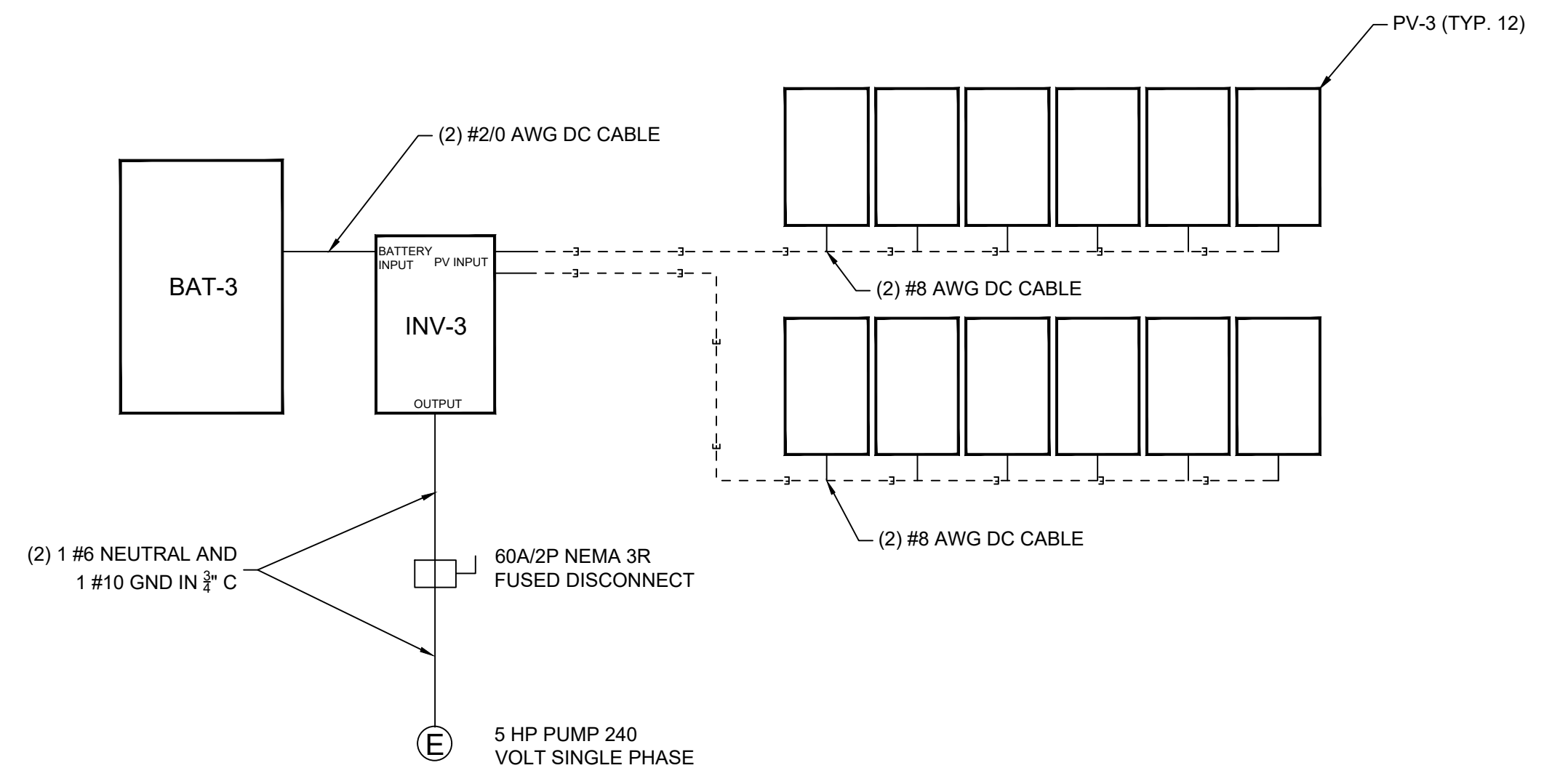
ELEVATION VIEW

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-3: + 18,000 WATT OUTDOOR RATED ALL IN ONE INVERTER.
- BAT-3: 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-3: 590 WATT PV MODULE. QCELL Q. PEAK DUO RSF XL-G11S SERIES OR EQUAL



RISER DIAGRAM

A1 SOUTH WETLAND UNISTRUT RACKING AND SOLAR CONTROLS
NOT TO SCALE

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SOUTH WETLAND
PUMP STATION