



**STATE OF IOWA
DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION AND WATER QUALITY**

Winn970905C NUTRIENT REDUCTION WETLAND PROJECT

CONSTRUCTION CONTRACT BID NO. 25-19

**SECTION 09, TOWNSHIP 97 NORTH, RANGE 09 WEST
WINNISHEIK COUNTY, IOWA**

**PREPARED FOR: IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION AND WATER QUALITY
HOOVER STATE OFFICE BUILDING
1305 EAST WALNUT STREET
DES MOINES, IOWA 50319**

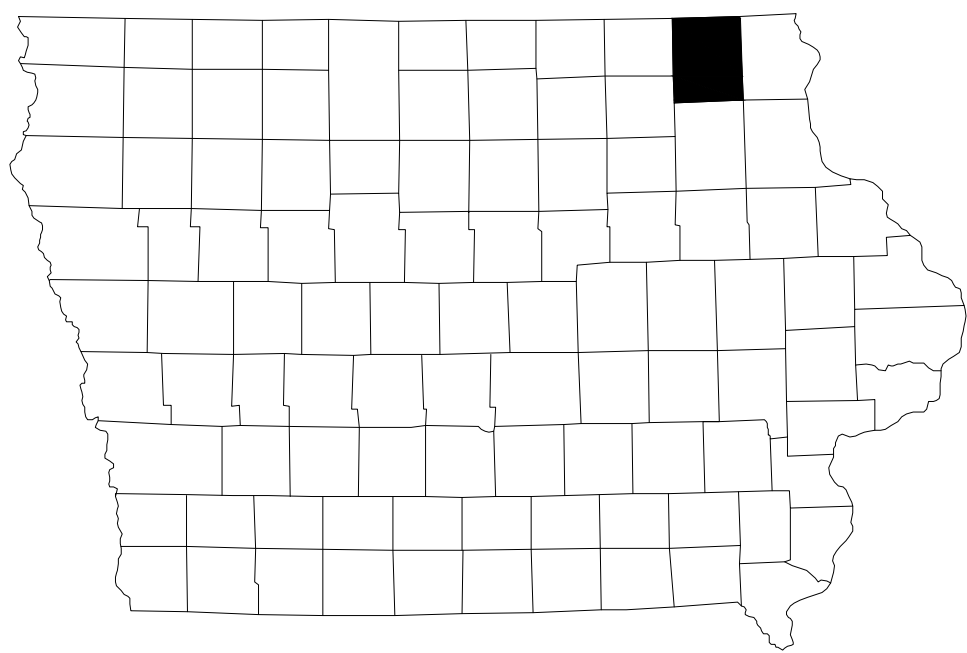
**PREPARED BY: SHIVE-HATTERY
4125 WESTONPARKWAY SUITE 100
WEST DES MOINES, IOWA 50266
515-223-8104**

December 2025

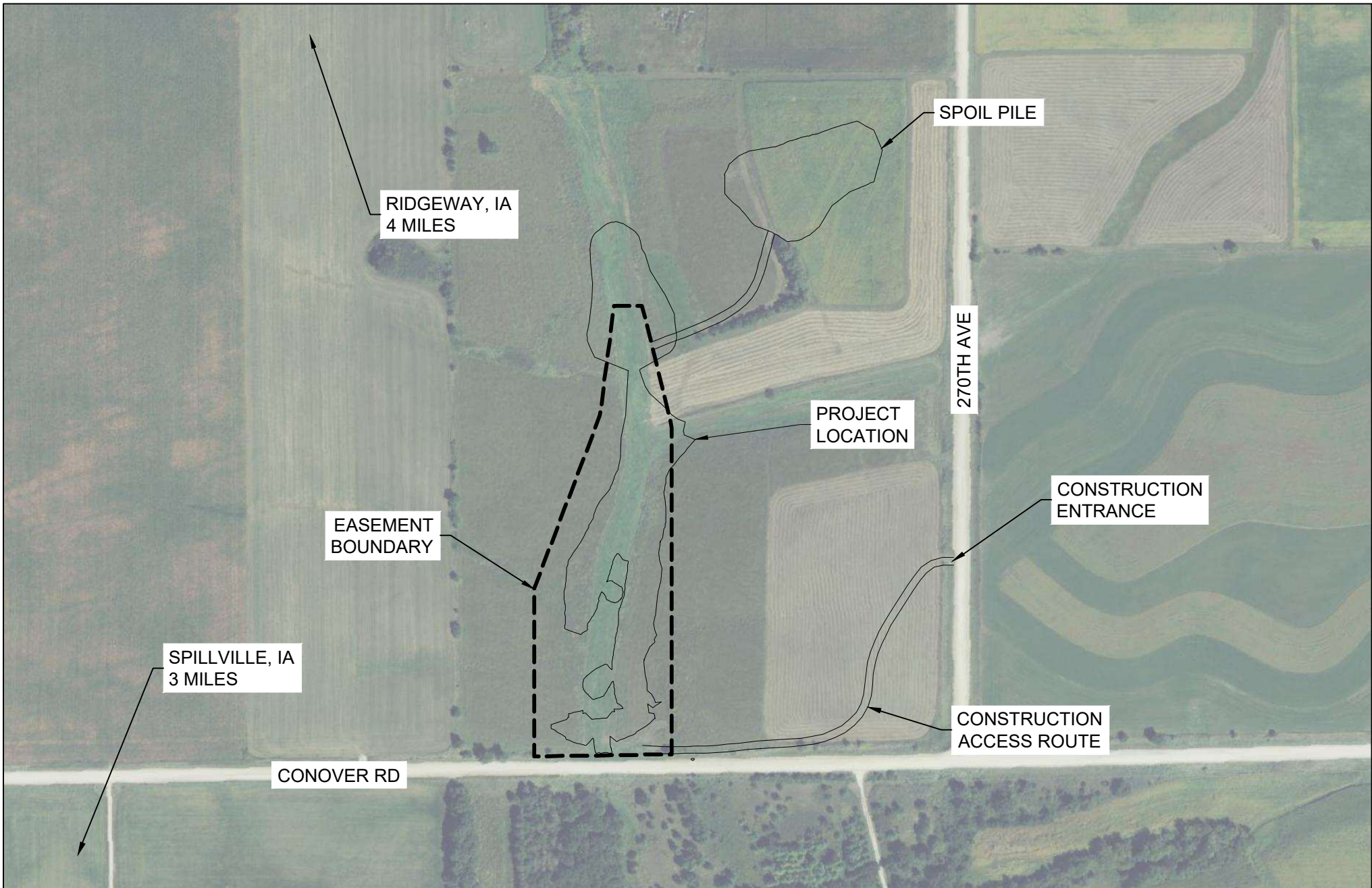
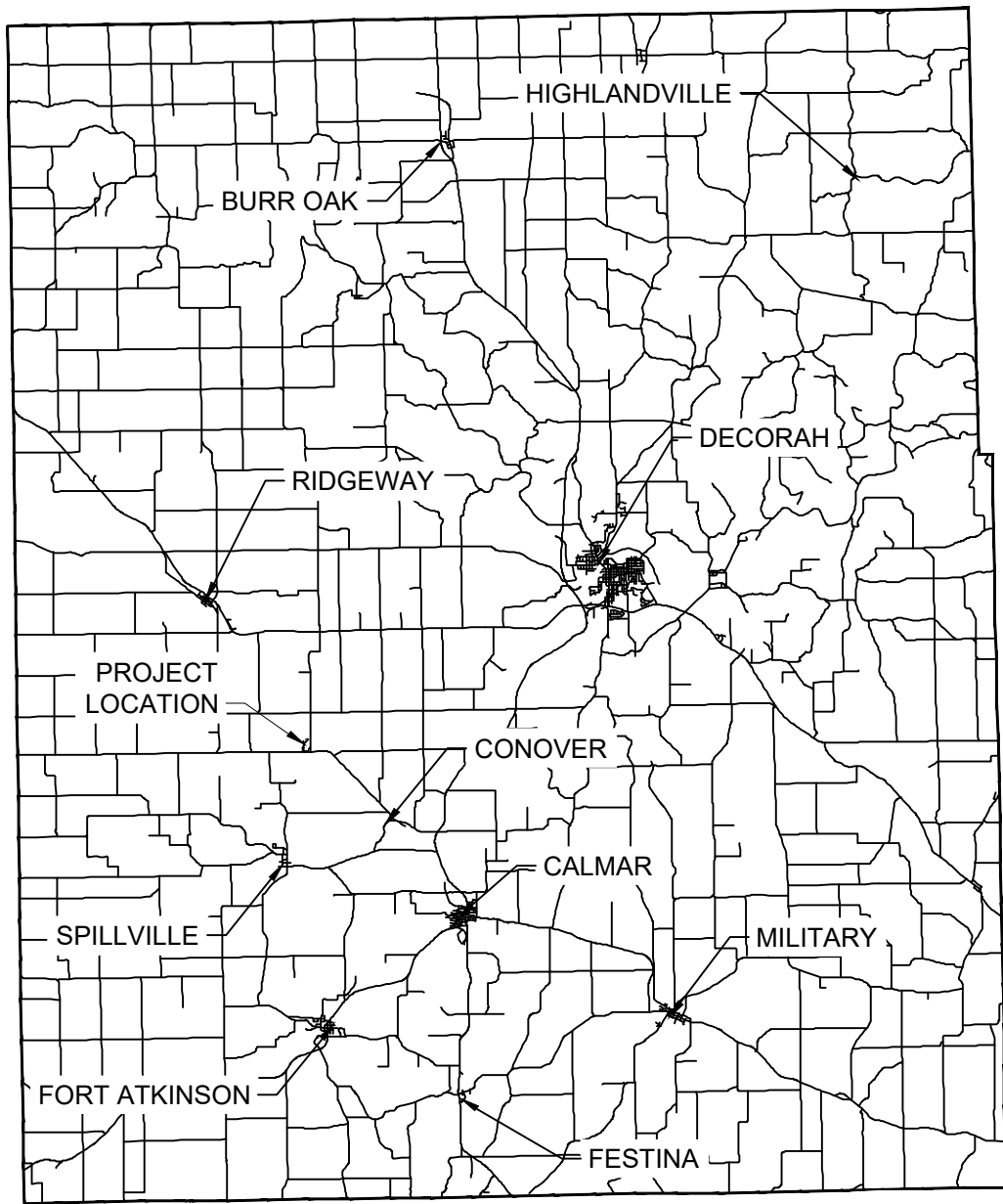
PLANS

WINN970905C NUTRIENT REDUCTION WETLAND IDALS WINNESHIEK COUNTY, IA

STATE OF IOWA



WINNESHIEK COUNTY



CONTACT/SITE INFORMATION:

ENGINEER
SHIVE-HATTERY, INC
ATTN: ANTHONY HARBAUGH, PE
4125 WESTOWN PARKWAY, SUITE 100
WEST DES MOINES, IOWA 50266
PH: (515) 223-8104

LANDOWNERS
STEVE & SHERRY BOUSKA
PH: (563) 737-2723

SITE ADDRESS:
2100 270TH AVE
RIDGEWAY, IA 52165

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP
SARA SMITH, PE, PROJECT MANAGER
502 E. 9TH STREET
DES MOINES, IA, 50319
PH: (515) 725-1298
SARA.SMITH@IOWAAGRICULTURE.GOV

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

STRUCTURAL ENGINEER

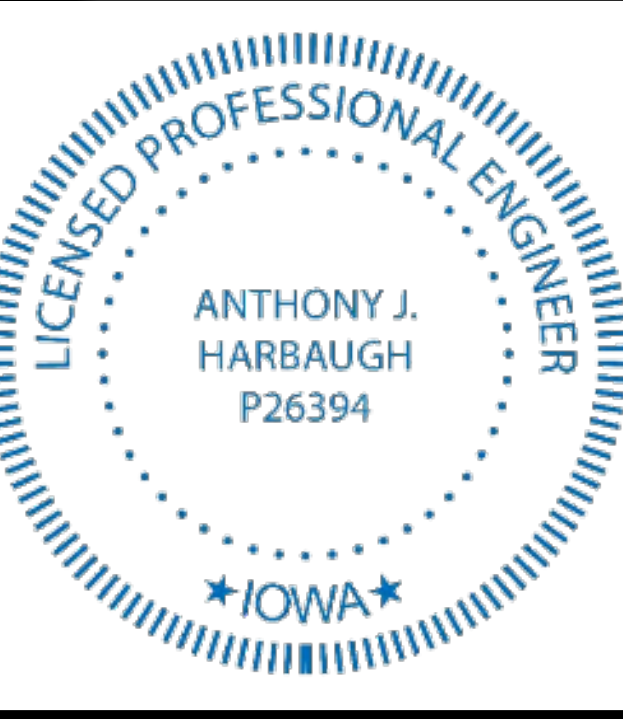


I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT DESCRIBED BELOW WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Signature: *Chris R. Marvin* Date: 08-12-2025

Printed or typed name: CHRIS R. MARVIN
License Number: 27417
My License Renewal Date is: DECEMBER 31, 2026
PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
C401

CIVIL ENGINEER



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: *Anthony J. Harbaugh* Date: 08-12-2025

Printed or typed name: ANTHONY J. HARBAUGH
License Number: 26394
My License Renewal Date is: DECEMBER 31, 2026
PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
ALL SHEETS EXCLUDING C401



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.

WINN970905C WETLAND

SHIVE-HATTERY
ARCHITECTURE + ENGINEERING



08-12-2025

ISSUED FOR CONSTRUCTION

PROJECT NO: 2240006350

CLIENT NO: --

C000

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	A	B	C	D	E	F
	ESTIMATED QUANTITIES:					
1	#	ITEM DESCRIPTION	QUANTITY	UNITS		
	1	SITE STRIPPING & PREPARATION	1	LS		
	2	CROP DAMAGE	0	AC		
	3	STRUCTURE & CHANNEL SEEDING	0.3	AC		
	4	BUFFER SEEDING	8.4	AC		
	5	MOBILIZATION AND DEMOBILIZATION	1	LS		
	6	DRAIN TILE INVESTIGATION AND REMOVAL	1,115	LF		
	7	STEEL SHEET PILING	1,403	SF		
	8	EXCAVATION (GENERAL)	795	CY		
	9	EARTHFILL (GENERAL (P))	4,702	CY		
	10	EARTHFILL (GENERAL DAM (P))	903	CY		
	11	EARTHFILL (DAM CORE (P))	1,864	CY		
	12	EARTHFILL (18" CLAY LINER, WETLAND BOTTOM, TWO 9" LIFTS (P))	3,377	CY		
	13	EARTHFILL (SCARIFY AND RECOMPACT 9" LAYER OF WETLAND BOTTOM (P))	1,214	CY		
	14	TOPSOIL PLACEMENT, 12 INCH (P)	574	CY		
	15	TOPSOIL PLACEMENT, 6 INCH (P)	5,272	CY		
	16	6" CORRUGATED PROFILE WALL (DUAL WALL, NON-PERFORATED) POLYETHYLENE PIPE	176	LF		
2	17	8" CORRUGATED PROFILE WALL (DUAL WALL, NON-PERFORATED) POLYETHYLENE PIPE	209	LF		
	18	24" ALUMINIZED CMP DRAWDOWN RISER, 12 GA	1	EA		
	19	48" CMP WATER CONTROL STRUCTURE	1	EA		
	20	18" ALUMINIZED CMP WETLAND DRAWDOWN PIPE, 14GA	116	LF		
	21	8" CMP TILE OUTLETS (20 LF EACH)	1	EA		
	22	10" CMP TILE OUTLETS (20 LF EACH)	1	EA		
	23	RIP RAP	885	TON		
	24	2" CLEAN STONE	35	TON		
	25	CONCRETE GROUT	115	CY		
	26	POLLUTION CONTROL, SILT FENCE	720	LF		
	27	BARB-WIRED FENCE REMOVAL AND REPLACEMENT	20	LF		
	WETLAND DESIGN DATA:					
3	PROJECT ID		WINN970905C	----		
	LANDOWNER(S)		STEVE & SHERRY BOUSKA	----		
	PRELIMINARY OR FINAL DESIGN		FINAL DESIGN	----		
	DRAINAGE AREA		280.5	ACRES		
	WETLAND POOL AREA		2.40	ACRES		
	DEEP WATER AREA (>3 FT DEEP)		0.20	ACRES		
	NORMAL POOL ELEVATION / PRIMARY SPILLWAY ELEVATION		1154.10	FEET		
	AVERAGE POOL DEPTH		1.31	FEET		
	MAXIMUM POOL DEPTH		4.85	FEET		
	WETLAND STORAGE		2.80	ACRE-FEET		
	BERM ELEVATION		1159.00	FEET		
	WETLAND BERM STORAGE		18.87	ACRE-FEET		
	LENGTH OF BERM		277	FEET		
	AUXILIARY SPILLWAY ELEVATION		N/A	FEET		
	AUXILIARY SPILLWAY WIDTH		N/A	FEET		
	WEIR WIDTH		40	FEET		
4	DROP HEIGHT (PRIMARY SPILLWAY ELEVATION – STILLING BASIN LOWEST ELEVATION)		5.4	FEET		
	HEIGHT OF DAM (BERM ELEVATION – STILLING BASIN LOWEST ELEVATION)		10.3	FEET		
	STILLING BASIN LENGTH		77	FEET		
	TIME OF CONCENTRATION		1.48	HOURS		
	WEIGHTED RUNOFF CURVE NUMBER		79	----		
	25-YEAR STORM DESIGN FLOW		373.64	CFS		
	25-YEAR FLOOD SURF. ELEVATION		1156.64	FEET		
	50-YEAR STORM DESIGN FLOW		466.75	CFS		
	50-YEAR FLOOD SURF. ELEVATION		1156.86	FEET		
	100-YEAR STORM DESIGN FLOW		569.23	CFS		
	100-YEAR FLOOD SURF. ELEVATION		1157.10	FEET		
	ESTIMATED SEDIMENT STORAGE		31	YEARS		
	TOTAL EASEMENT AREA		7.41	ACRES		
	GENERAL NOTES:					
4	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 OWNER'S 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 OWNER'S 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.					
	A	B	C	D	E	F

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 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", WITH THE ESTIMATED AMOUNT OF TOPSOIL REMOVAL BEING 11,118 CUBIC YARDS. 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 FOR ALL EMBANKMENT AREAS AND INCLUDES SEEDBED PREP, SEEDING, MULCHING, AND FERTILIZER.
4	IA CS-006	BUFFER SEEDING: THIS ITEM INCLUDES SEEDING FOR ALL AREAS ABOVE NORMAL POOL AND WITHIN EASEMENT BOUNDARY, EXCLUDING THOSE AREAS WHERE STRUCTURE SEEDING IS SPECIFIED. SEE SEEDING PLAN. 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, AS SHOWN ON THE PLANS OR ON NEXT PAGE.
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.
7	IA CS-013	STEEL SHEET PILING: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF THE SHEET PILING AS DETAILED ON SHEET C401 INCLUDING FIELD WELDING, CUTTING, TRIMMING, WALER, BOLTS, NUTS, AND OTHER APPURTENANCES.
8	IA CS-021	EXCAVATION (GENERAL): THIS ITEM INCLUDES THE EXCAVATION OF MATERIAL REQUIRED TO CONSTRUCT THE CORE TRENCH BELOW THE EXISTING GROUND LEVEL, AS DETAILED, ALONG THE CENTERLINE OF PROPOSED DAM EMBANKMENT. TERMINATE CORE TRENCH IN SUITABLE IMPERVIOUS SOILS. CORE TRENCHES SHALL BE LEFT OPEN FOR INSPECTION BY THE ENGINEER. THIS ITEM ALSO INCLUDE REMOVAL OF ANY TILE LOCATE WITHIN THE CORE TRENCH EXTENDING 10 FEET BEYOND THE EMBANKMENT FOOTPRINT. TILE SHALL BE TRACED UPSTREAM AND DAYLIGHTED TO PROPOSED POOLS WHERE POSSIBLE. COORDINATE WITH THE ENGINEER IF ADDITIONAL TILE WORK IS REQUIRED.
9	IA CS-023	EARTHFILL (GENERAL (P)): THIS ITEM INCLUDES THE AMOUNT OF MATERIAL REQUIRED TO CONSTRUCT THE SUBMERGED BERMS AND ADDITIONAL FILL TO BE PLACED OVER TILE COVER BERMS. COHESIVE MATERIAL FOUND DURING GENERAL GRADING AND COMPACTED LINER REMOVAL CAN BE USED FOR THESE AREAS. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR THIS EARTHFILL. SEE SHEET C201, C202, AND C203 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. THE REQUIRED FILL INCLUDES A 20% SHRINKAGE FACTOR. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY. COMPACTION SHALL BE NRCS METHOD 1.
10	IA CS-023	EARTHFILL (GENERAL DAM (P)): THIS ITEM INCLUDES THE EARTHFILL PLACEMENT AND COMPACTION NECESSARY TO CONSTRUCT 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. SEE SHEET C201, C202, AND C203 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. THE REQUIRED FILL INCLUDES A 20% SHRINKAGE FACTOR. REMOVE ALL BRICKS, ROCK FRAGMENTS, AND OTHER DELETERIOUS OBJECTS FROM FILL MATERIALS. FILL MATERIAL SHALL BE PLACED IN COMPACTED IN LIFTS NO MORE THAN 9" THICK. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY. COMPACTION SHALL BE NRCS METHOD 1.
11	IA CS-023	EARTHFILL (DAM CORE (P)): THIS ITEM INCLUDES THE EARTHFILL PLACEMENT AND COMPACTION NECESSARY TO CONSTRUCT THE EMBANKMENT CORE WITHIN THE EMBANKMENT. COHESIVE MATERIAL TAKEN FROM DESIGNATED BORROW AREA SHOULD BE USED FOR THIS AREA. SAND AND GRAVEL SHALL NOT BE USED FOR THIS AREA. SEE SHEET C201, C202, AND C203 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. THE REQUIRED FILL INCLUDES A 20% SHRINKAGE FACTOR. REMOVE ALL BRICKS, ROCK FRAGMENTS, AND OTHER DELETERIOUS OBJECTS FROM FILL MATERIALS. FILL MATERIAL SHALL BE PLACED IN COMPACTED IN LIFTS NO MORE THAN 9" THICK. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY. COMPACTION SHALL BE NRCS METHOD 2.
12	IA CS-023	EARTHFILL (18" CLAY LINER, WETLAND BOTTOM, TWO 9" LIFTS (P)): THIS ITEM INCLUDES SCARIFICATION AND LOOSENING OF AN 18" LINER IN TWO LIFTS IN ALL EXCAVATED AREAS WITHIN THE WETLAND POOL. REMOVE AN ADDITIONAL 9" OF SOIL, SCARIFY AND RE-COMPACT 9" BELOW, REPLACE 9" AND RECOMPACT, MOISTURE CONDITIONING, AND COMPACTION OF THE WETLAND BOTTOM TO FORM A SEAL. SEE SHEET C201, C202, AND C203 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. 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-023	EARTHFILL (SCARIFY AND RECOMPACT 9" LAYER OF WETLAND BOTTOM AND EMBANKMENT FOOTPRINT (P)): THIS ITEM INCLUDES SCARIFICATION AND LOOSENING OF A 9 INCH SURFACE LAYER OF SOIL WITHIN THE WETLAND POOL BOTTOM AND EMBANKMENT FOOTPRINT WHERE EXCAVATION DOES NOT OCCUR, MOISTURE CONDITIONING, AND COMPACTION OF THE MATERIAL TO FORM A SEAL AND SOILD EMBANKMENT FOUNDATION. SEE SHEET C201, C202, AND C203 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. CONTRACTOR SHALL REMOVE ROCKS LARGER THAN 6 INCHES. NOTIFY ENGINEER IMMEDIATELY IF SANDY SOILS ARE ENCOUNTERED. ITEM WILL BE PAID BASED ON PLAN QUANTITY.
14	IA CS-026	TOPSOIL PLACEMENT, 12 INCH (P): THIS ITEM WILL CONSIST OF SPREADING SALVAGED AND STOCKPILED TOPSOIL AS THE SURFACE LAYER OF THE EMBANKMENT. TOPSOIL SHALL BE PLACED AS FINAL LIFT. MEASUREMENT AND PAYMENT FOR TOPSOILING SHALL BE ON A PLAN QUANTITY. PLAN QUANTITY LISTED IN THE PROPOSAL WILL BE USED TO MEASURE AND PAY FOR THE BID.
15	IA CS-026	TOPSOIL PLACEMENT, 6 INCH (P): THIS ITEM WILL CONSIST OF SPREADING SALVAGED AND STOCKPILED TOPSOIL AS THE SURFACE LAYER OF ALL EXCAVATIONS AND EARTHFILLS THAT WILL BE SEEDED. TOPSOIL SHALL BE PLACED AS FINAL LIFT. MEASUREMENT AND PAYMENT FOR TOPSOILING SHALL BE ON A PLAN QUANTITY. PLAN QUANTITY LISTED IN THE PROPOSAL WILL BE USED TO MEASURE AND PAY FOR THE BID.
16	IA CS-046	6" CORRUGATED POLYETHYLENE PIPE (DUAL WALL, NON-PERFORATED): THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 6" DUAL-WALL NON-PERFORATED HDPE DRAIN TILE. SEE SHEET C306 FOR LENGTHS, LOCATIONS AND ELEVATIONS.
17	IA CS-046	8" CORRUGATED POLYETHYLENE PIPE (DUAL WALL, NON-PERFORATED): THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 6" DUAL-WALL NON-PERFORATED HDPE DRAIN TILE. SEE SHEET C306 FOR LENGTHS, LOCATIONS AND ELEVATIONS.
18	IA CS-051	24" ALUMINIZED CMP DRAWDOWN RISER, 12 GA: THIS ITEM INCLUDES COSTS FOR THE MATERIAL AND INSTALLATION OF 24 INCH ALUMINIZED CMP DRAWDOWN STRUCTURE RISER PIPE, TRASH RACK, AND BASE A DETAILED.
19	IA CS-051	48" CMP WATER CONTROL STRUCTURE: THIS ITEM INCLUDES ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE PLACEMENT OF THE 48" CMP RISER STRUCTURE, FOOTING, STEEL, FABRICATION, PIPE CONNECTIONS, AND TRASH RACK.
20	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.
21	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.
22	IA CS-051	10" 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 10" CMP END SECTION FOR THE PROPOSED FIELD TILE OUTLET TO THE WETLAND. 10" CMP OUTLET SECTIONS ARE FOR 8 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. THIS ITEM INCULCES TILE OUTLETS, FOREBAY ROCK CHECKS, SHEET PILE OUTLET CHANNEL, AND LOW WATER CROSSING. 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	2" CLEAN STONE: THIS ITEMS INCLUDES PROCUREMENT, PLACEMENT AND SPREADING OF 2 INCH CLEAN STONE AT THE CONSTRUCTION ENTRANCE. QUANTITY DETERMINATION IS BASED ON A UNIT WEIGHT OF 130 POUNDS PER CUBIC FOOT.
25	IA CS-062	CONCRETE GROUT: GROUT MIX SHALL BE AS SPECIFIED AND SHALL BE PLACED USING A CONCRETE PUMPER. GROUT SHALL FULLY ENCASE THE BOTTOM OF THE RIP RAP BUT NOT FULL TO THE TOP OF THE RIP RAP SO AS TO REDUCE THE ENERGY DISSIPATION CAPABILITIES. GROUT UPSTREAM OF THE WEIR SHALL BE SMOOTH FINISHED 1" BELOW THE CREST. GROUT SHALL ONLY BE PLACED IN THE PRESENCE OF THE ENGINEER.
26	IA CS-005	POLLUTION CONTROL, SILT FENCE: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF SILT FENCE DITCH CHECKS AS SHOWN ON THE PLANS AND AS DETAILED.
27	IA-392	BARB-WIRED FENCE REMOVAL AND REPLACEMENT: THIS ITEM INCLUDES ALL MATERIALS, LABOR, AND EQUIPMENT REQUIRED FOR THE PROPER INSTALLATION OF 5-STRAND BARBED WIRE FENCE AT THE LOCATIONS INDICATED IN THE PLANS.

CULTURAL RESOURCES NOTE:

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



WINN970905C WETLAND

IDALS

WINNEBIEK COUNTY, IA

DRAWN: GHK	ISSUED FOR: ISSUED FOR CONSTRUCTION
APPROVED: AJH	DATE: 08-12-2025
PROJECT NO: 224006350	FIELD BOOK: --
CLIENT NO: --	

PROJECT QUANTITIES & NOTES

C001

SHIVEHATTERY
ARCHITECTURE + ENGINEERING

4125 Westown Pkwy, Suite 100 | West Des Moines, Iowa 50266
515.223.0104 | www.shivehattery.com
Iowa | Illinois | Indiana | Nebraska | Wisconsin

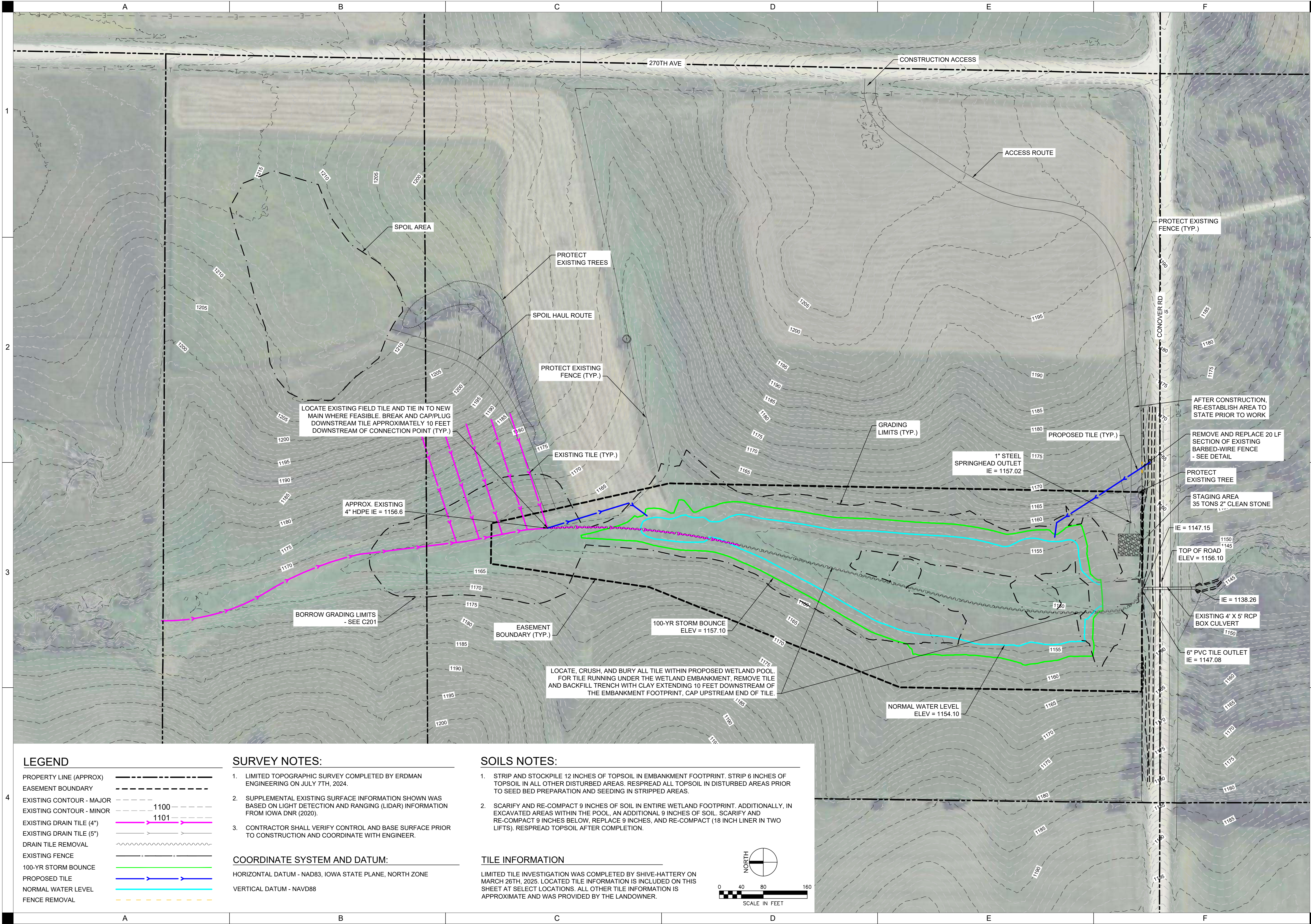
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LEGEND

PROPERTY LINE (APPROX)	---
EASEMENT BOUNDARY	- - - -
EXISTING CONTOUR - MAJOR	--- 1100 ---
EXISTING CONTOUR - MINOR	--- 1101 ---
EXISTING DRAIN TILE (4")	→ 1101 →
EXISTING DRAIN TILE (6")	→ 1101 →
DRAIN TILE REMOVAL	~~~~~
EXISTING FENCE	—●—
100-YR STORM BOUNCE	—●—
PROPOSED TILE	→ 1101 →
NORMAL WATER LEVEL	—●—
FENCE REMOVAL	--- 1101 ---

SURVEY NOTES:

- LIMITED TOPOGRAPHIC SURVEY COMPLETED BY ERDMAN ENGINEERING ON JULY 7TH, 2024.
- SUPPLEMENTAL EXISTING SURFACE INFORMATION SHOWN WAS BASED ON LIGHT DETECTION AND RANGING (LIDAR) INFORMATION FROM IOWA DNR (2020).
- CONTRACTOR SHALL VERIFY CONTROL AND BASE SURFACE PRIOR TO CONSTRUCTION AND COORDINATE WITH ENGINEER.

COORDINATE SYSTEM AND DATUM:

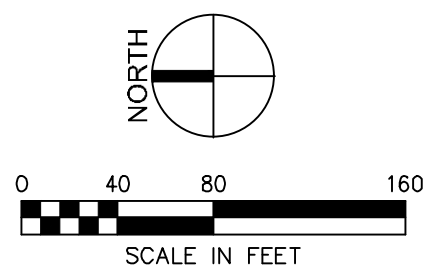
HORIZONTAL DATUM - NAD83, IOWA STATE PLANE, NORTH ZONE
VERTICAL DATUM - NAVD88

SOILS NOTES:

- STRIP AND STOCKPILE 12 INCHES OF TOPSOIL IN EMBANKMENT FOOTPRINT. STRIP 6 INCHES OF TOPSOIL IN ALL OTHER DISTURBED AREAS. RESPREAD ALL TOPSOIL IN DISTURBED AREAS PRIOR TO SEED BED PREPARATION AND SEEDING IN STRIPPED AREAS.
- SCARIFY AND RE-COMPACT 9 INCHES OF SOIL IN ENTIRE WETLAND FOOTPRINT. ADDITIONALLY, IN EXCAVATED AREAS WITHIN THE POOL, AN ADDITIONAL 9 INCHES OF SOIL. SCARIFY AND RE-COMPACT 9 INCHES BELOW, REPLACE 9 INCHES, AND RE-COMPACT (18 INCH LINER IN TWO LIFTS). RESPREAD TOPSOIL AFTER COMPLETION.

TILE INFORMATION

LIMITED TILE INVESTIGATION WAS COMPLETED BY SHIVE-HATTERY ON MARCH 26TH, 2025. LOCATED TILE INFORMATION IS INCLUDED ON THIS SHEET AT SELECT LOCATIONS. ALL OTHER TILE INFORMATION IS APPROXIMATE AND WAS PROVIDED BY THE LANDOWNER.



WINN970905C WETLAND

IDALS WINNESHIEK COUNTY, IA

EXISTING
CONDITIONS &
REMOVALS

CD01

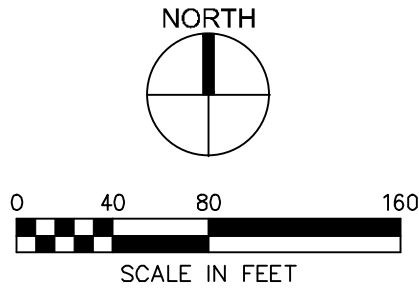
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APPROVED:	AJH
ISSUED FOR:	ISSUED FOR CONSTRUCTION
DATE:	08-12-2025
PROJECT NO:	224006350
FIELD BOOK:	---
CLIENT NO:	---

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LEGEND	
DESCRIPTION	PROPOSED LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER ELEVATION	
PROPOSED DUAL WALL TILE	
EXISTING TILE (4")	
EXISTING TILE (5")	
100-YR STORM BOUNCE	
MAJOR CONTOUR	
MINOR CONTOUR	
EXISTING CONTOUR - MAJOR	
EXISTING CONTOUR - MINOR	
EXISTING STREAM	
EASEMENT BOUNDARY	

WETLAND PARAMETERS	
DRAINAGE AREA = 285.1 ACRES	
NORMAL POOL AREA = 2.40 ACRES	
SA/DA RATIO = 0.84%	
WETLAND HYDRAULIC PARAMETERS	
TOP OF BERM ELEVATION = 1159.00	
100-YEAR STORM ELEVATION = 1157.10	
NORMAL WATER ELEVATION = 1154.10	
STORAGE AT NWL = 2.80 ACRE-FEET	
STORAGE AT TOP OF DAM = 18.87 ACRE-FEET	

- TILE NOTES
- THE INVERT ELEVATIONS AND SLOPES FOR PROPOSED DRAIN TILES ON THIS PLAN ARE BASED ON ASSUMED DEPTHS OF EXISTING DRAIN TILES. CONTRACTOR TO LOCATE AND CONNECT PROPOSED DRAIN TILES TO EXISTING TILES WHERE FEASIBLE. COORDINATE WITH ENGINEER.
 - INTERCEPT ALL CROSSING TILES AND CAP DOWNSTREAM ENDS.
 - MAINTAIN A MINIMUM OF 3' OF COVER OVER TOP OF PROPOSED TILES AND A MINIMUM SLOPE OF 0.50%.



PROPOSED ESTIMATED BORROW AREA BASED ON 24" OF SUITABLE MATERIAL FOR EMBANKMENT CONSTRUCTION

ESTIMATED QUANTITY OF COHESIVE MATERIAL NEEDED TO CONSTRUCT EMBANKMENT AND DAM CORE = 2,767 CY

STRIP AND STOCKPILE TOPSOIL 6", REMOVE BORROW MATERIAL, REPLACE WITH EXCESS SOIL EXCAVATED FROM WETLAND POOL AREA AND RE-SPREAD TOPSOIL. RESTORE AREA OUTSIDE OF PROPOSED GRADING TO ORIGINAL GRADES

SUBMERGED BERMS
TOP WIDTH = 20 FEET
SIDE SLOPES = 8:1
ELEV = 1153.60

SHEET PILE STRUCTURE
CREST ELEV = 1154.10
CREST WIDTH = 40 FEET
TOP WIDTH = 87.4 FEET
DROP HEIGHT = 5.4 FEET
SHEET PILE HEIGHT = 17.1 FEET
SEE SHEETS C301, C302, AND C401

10' WIDE WAVE BENCH
SEE DETAIL

EMBANKMENT FOOTPRINT
AREA = 0.3 ACRES

GROUTED RIPRAP
STILLING BASIN
SEE C302

WETLAND FOREBAY
SEE C304

WETLAND TOP OF DAM
ELEVATION = 1159.00
AREA = 4.1 ACRES

PROTECT EXISTING TILE
WITHIN BORROW AREA (TYP.)

TILE CONNECTION
SEE SHEET C306

WASTE REMAINING EXCESS
SOIL IN SPOIL AREA
SEE SHEET C202

PROJECT EASEMENT (TYP.)

TRANSITION WATERWAY
INTO FOREBAY
SEE C305

WETLAND 100-YR STORM BOUNCE
ELEVATION = 1157.10
AREA = 3.4 ACRES

WETLAND NORMAL WATER LEVEL
ELEVATION = 1154.10
AREA = 2.4 ACRES

DRAWDOWN STRUCTURE
SEE SHEET C303

DITCH RE-ROUTE AND
SPRINGHEAD CONNECTION
SEE SHEET C307

REMOVE AND REPLACE 20 LF
SECTION OF BARBED-WIRE FENCE
SEE DETAIL

APPROXIMATE PROPERTY
BOUNDARY (TYP.)

CONSTRUCTION
ACCESS

ACCESS ROUTE

CONOVER RD

270TH AVE

WINN970905C WETLAND

WETLAND GRADING
PLAN

C201



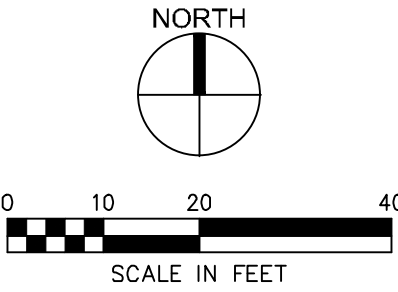
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WINNEBAGO COUNTY, IA

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DATE: 08-12-2025	
PROJECT NO: 2240006350	
FIELD BOOK: ---	
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LEGEND	
DESCRIPTION	PROPOSED LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER ELEVATION	
PROPOSED DUAL WALL TILE	
EXISTING TILE (4")	
EXISTING TILE (5")	
100-YR STORM BOUNCE	
MAJOR CONTOUR	800
MINOR CONTOUR	801
EXISTING CONTOUR - MAJOR	800
EXISTING CONTOUR - MINOR	801
EXISTING STREAM	
EASEMENT BOUNDARY	

SPOIL AREA
AREA = 1.9 ACRES

SPOIL GRADING
PLAN

C202

DRAWN:	GKH
APPROVED:	A/H
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DATE:	08-12-2025
PROJECT NO:	2240006350
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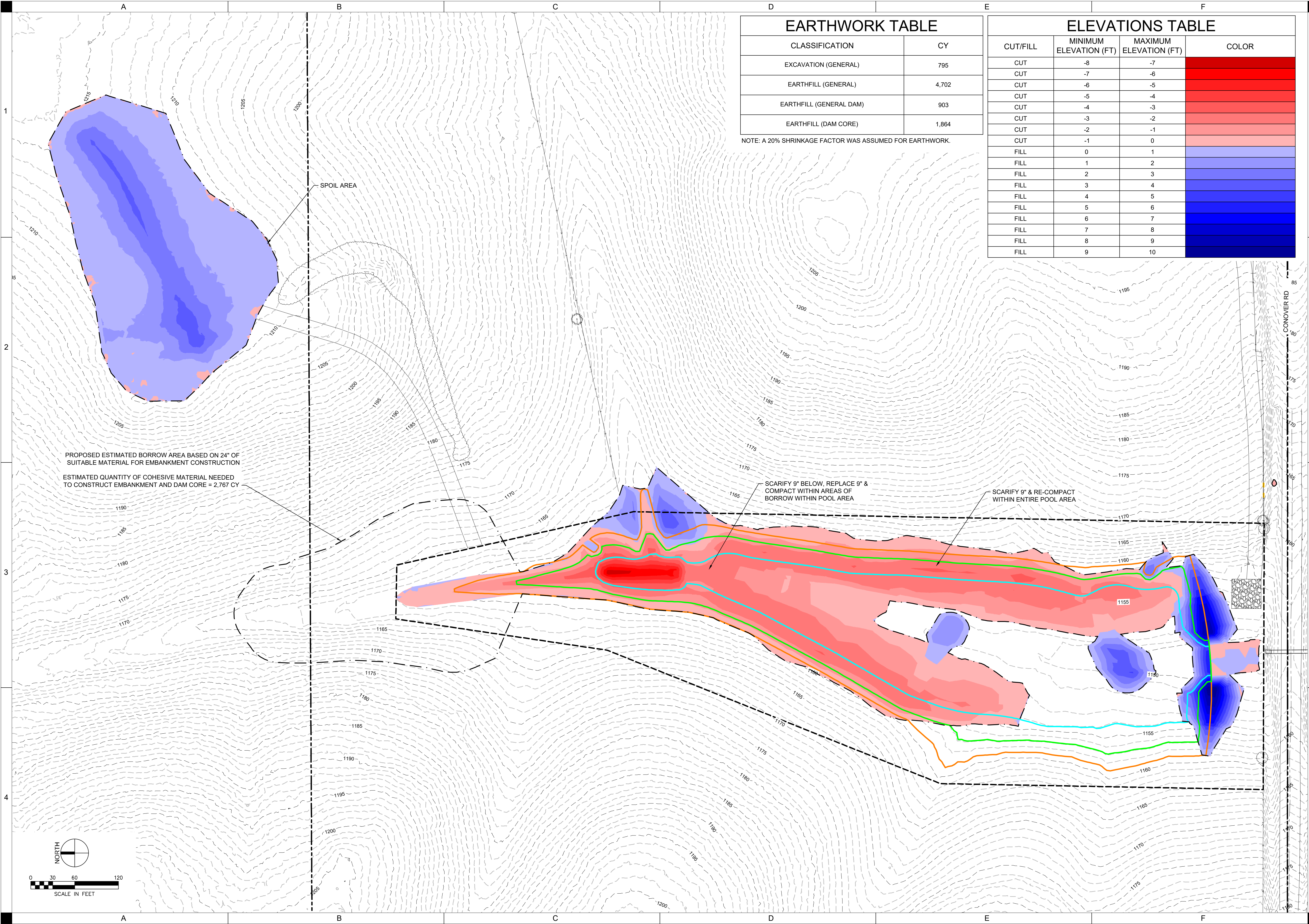


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EARTHWORK TABLE	
CLASSIFICATION	CY
EXCAVATION (GENERAL)	795
EARTHFILL (GENERAL)	4,702
EARTHFILL (GENERAL DAM)	903
EARTHFILL (DAM CORE)	1,864

NOTE: A 20% SHRINKAGE FACTOR WAS ASSUMED FOR EARTHWORK.

ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-8	-7	
CUT	-7	-6	
CUT	-6	-5	
CUT	-5	-4	
CUT	-4	-3	
CUT	-3	-2	
CUT	-2	-1	
CUT	-1	0	
FILL	0	1	
FILL	1	2	
FILL	2	3	
FILL	3	4	
FILL	4	5	
FILL	5	6	
FILL	6	7	
FILL	7	8	
FILL	8	9	
FILL	9	10	

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CUT-FILL PLAN

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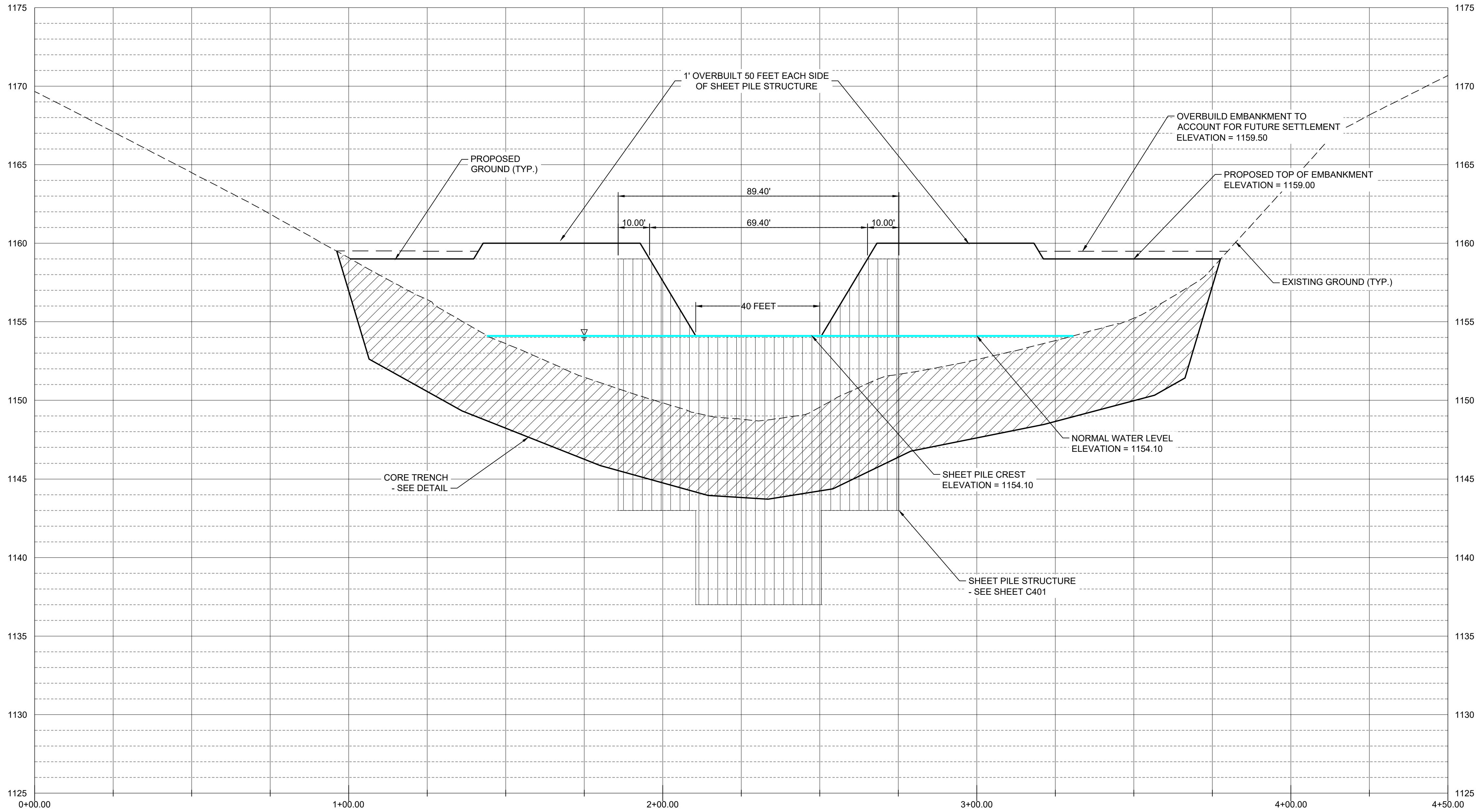
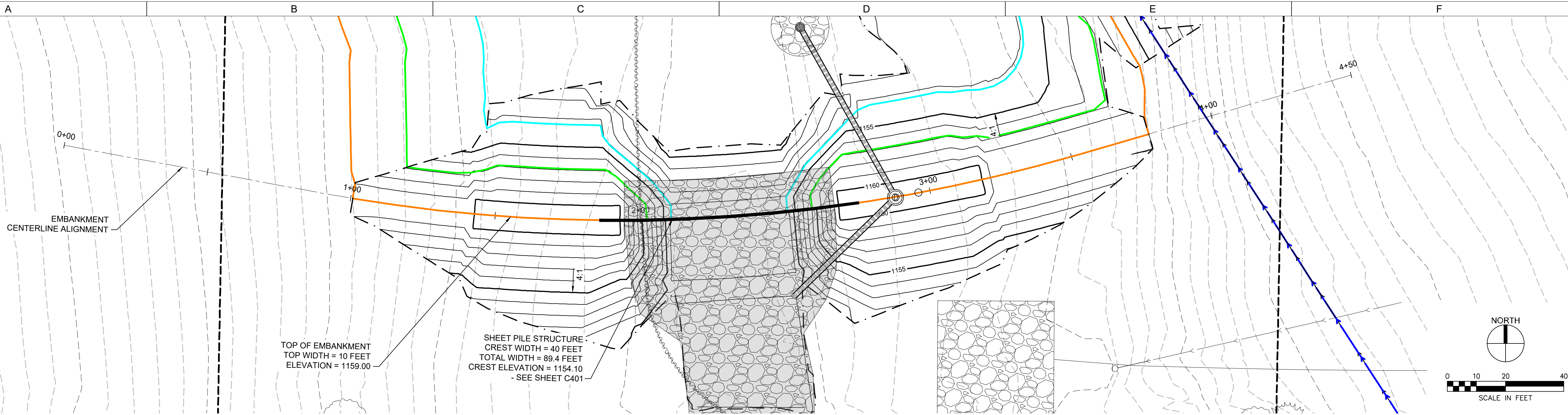
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C203

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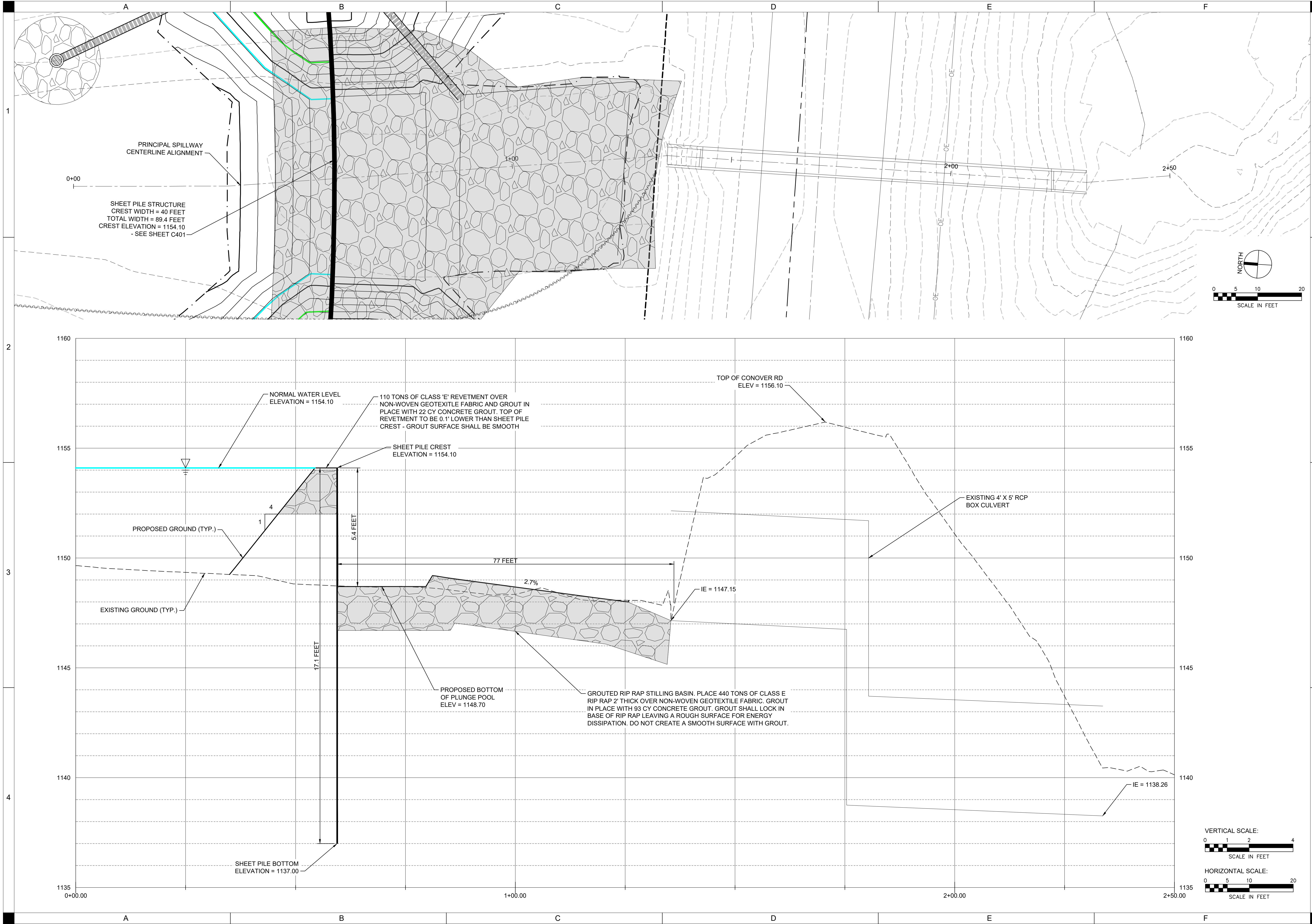
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EMBANKMENT PLAN
& PROFILE

C301

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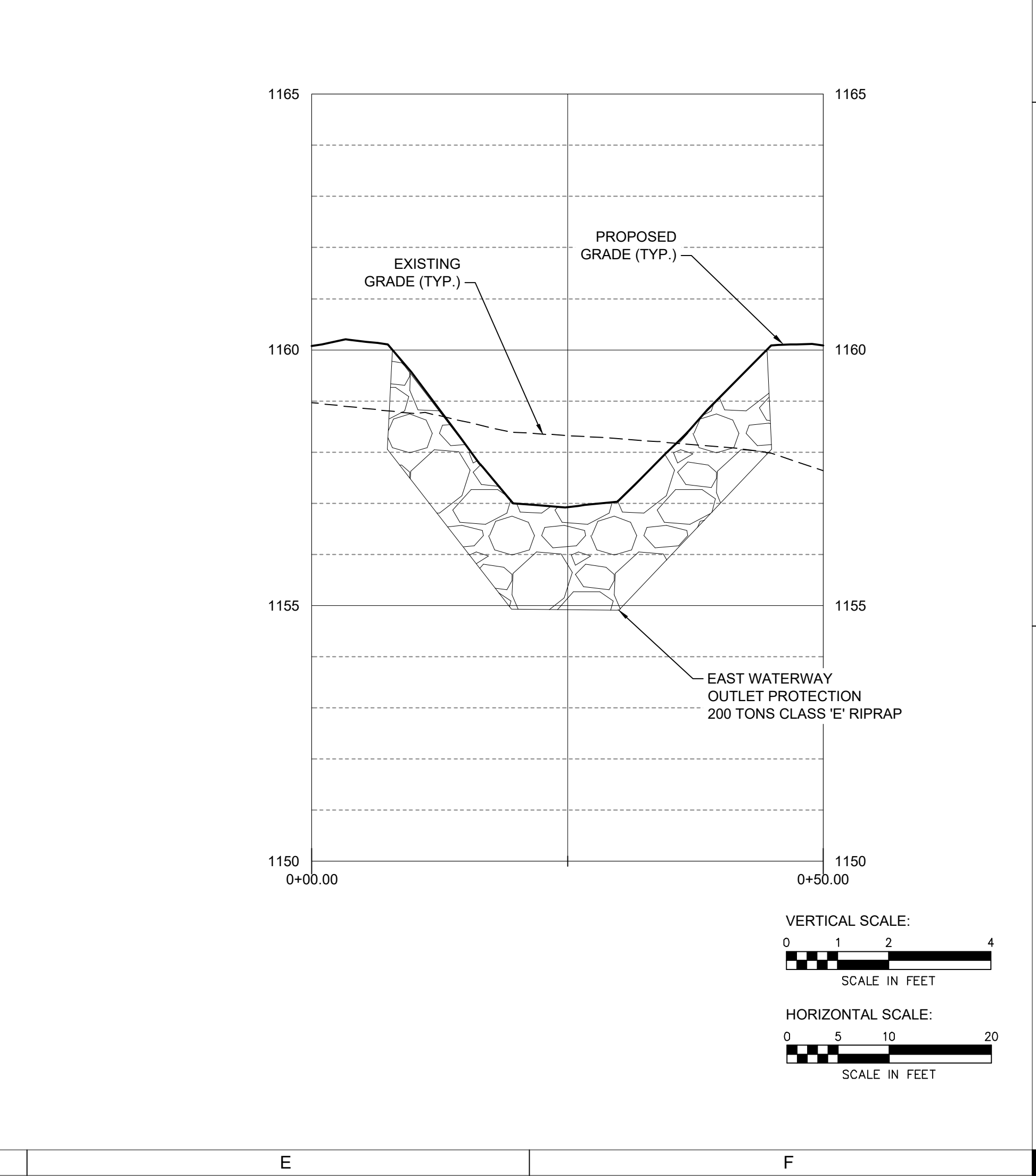
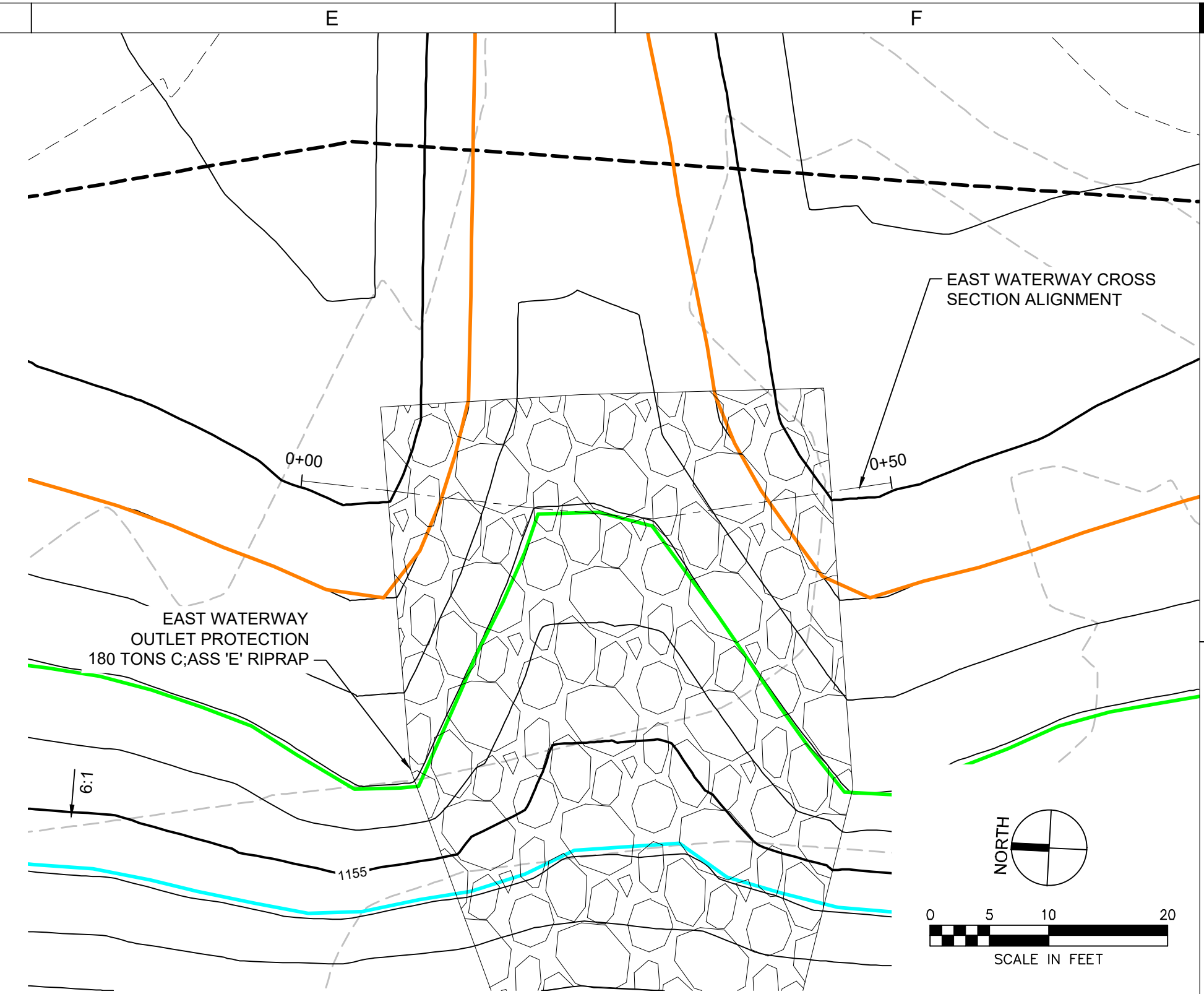
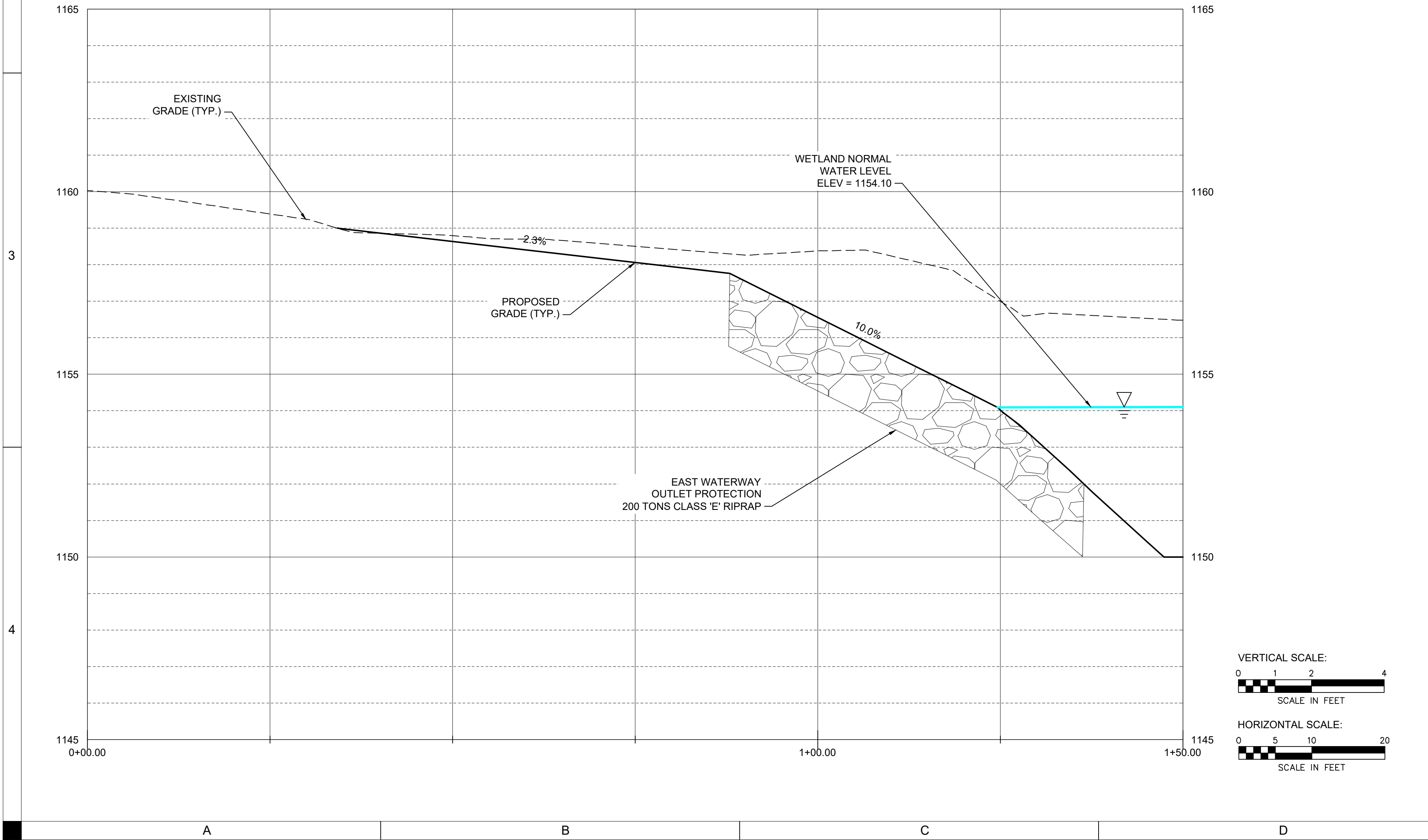
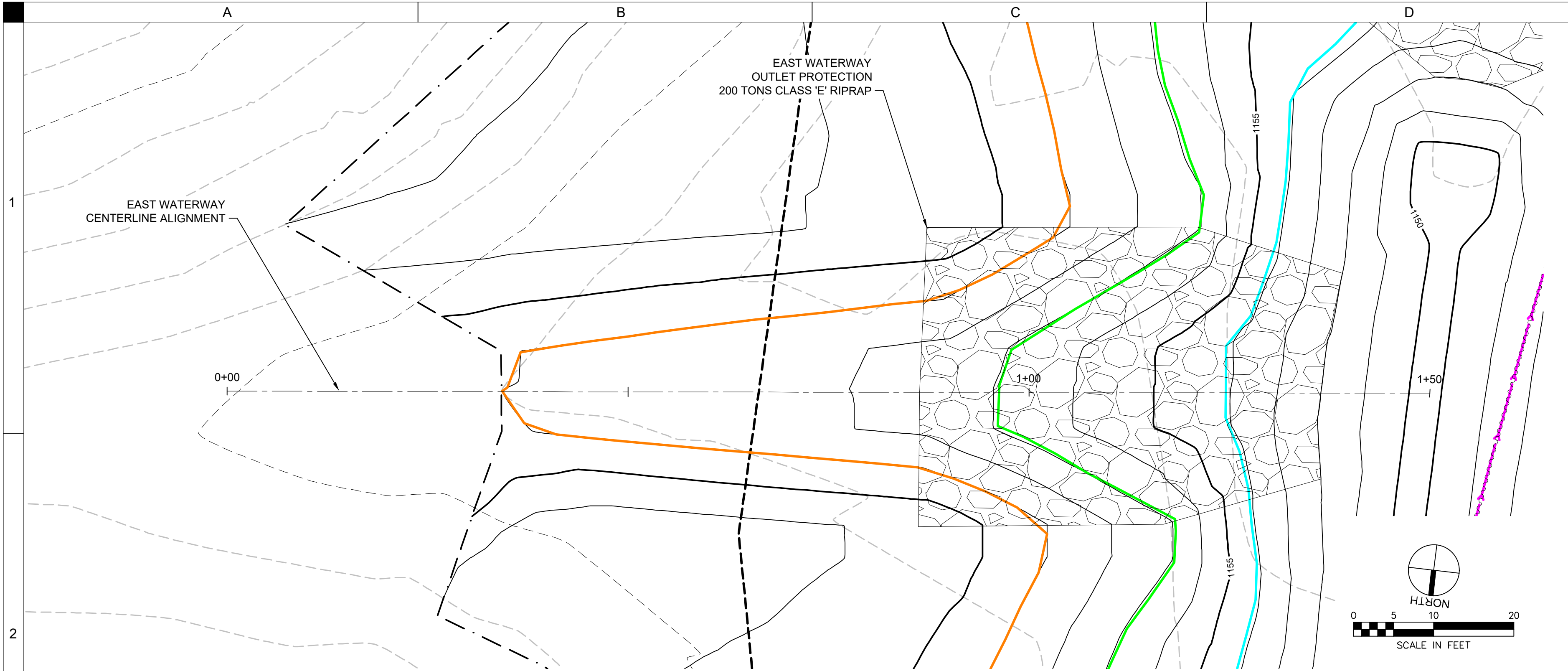
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PRINCIPAL SPILLWAY PLAN & PROFILE

C302

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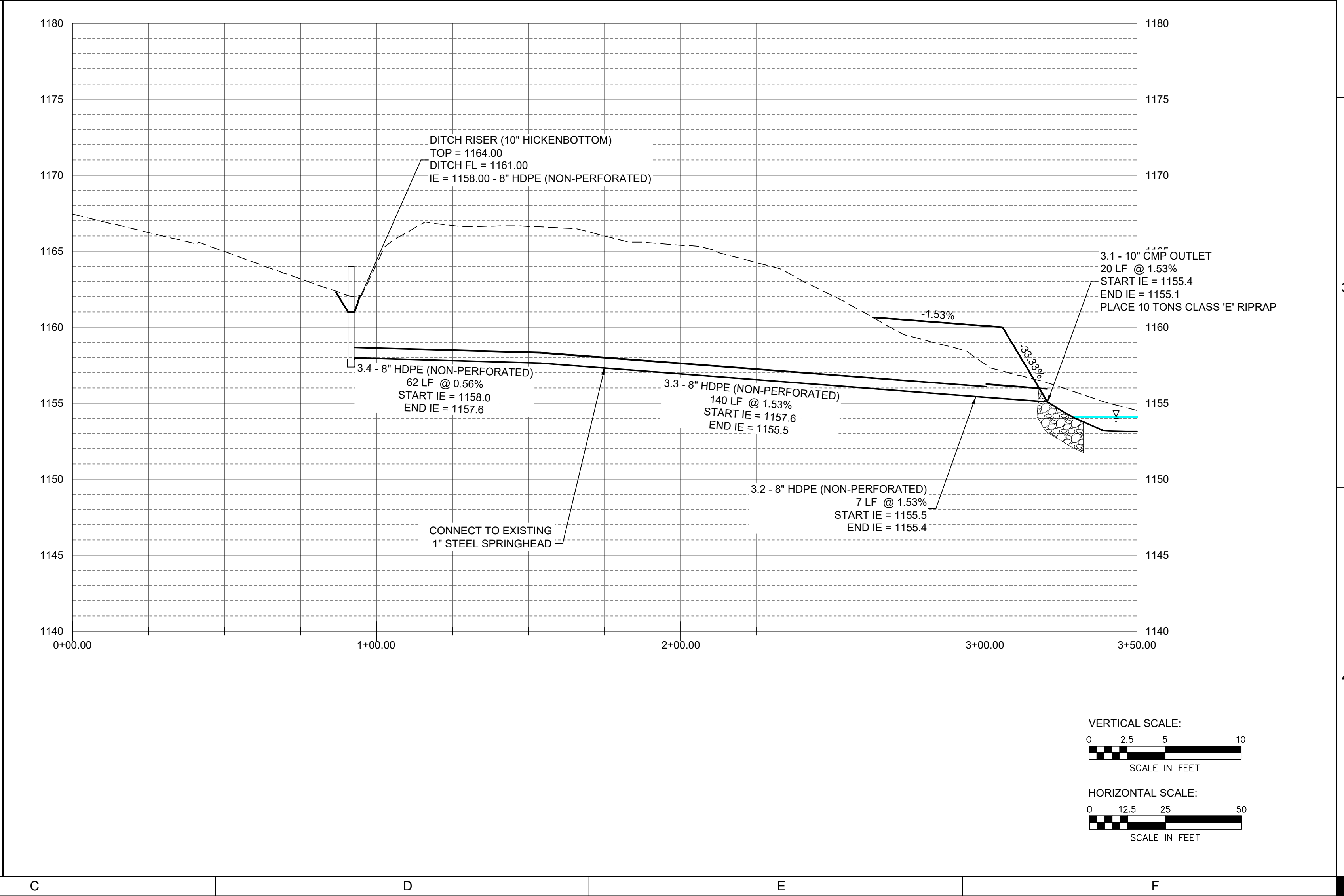
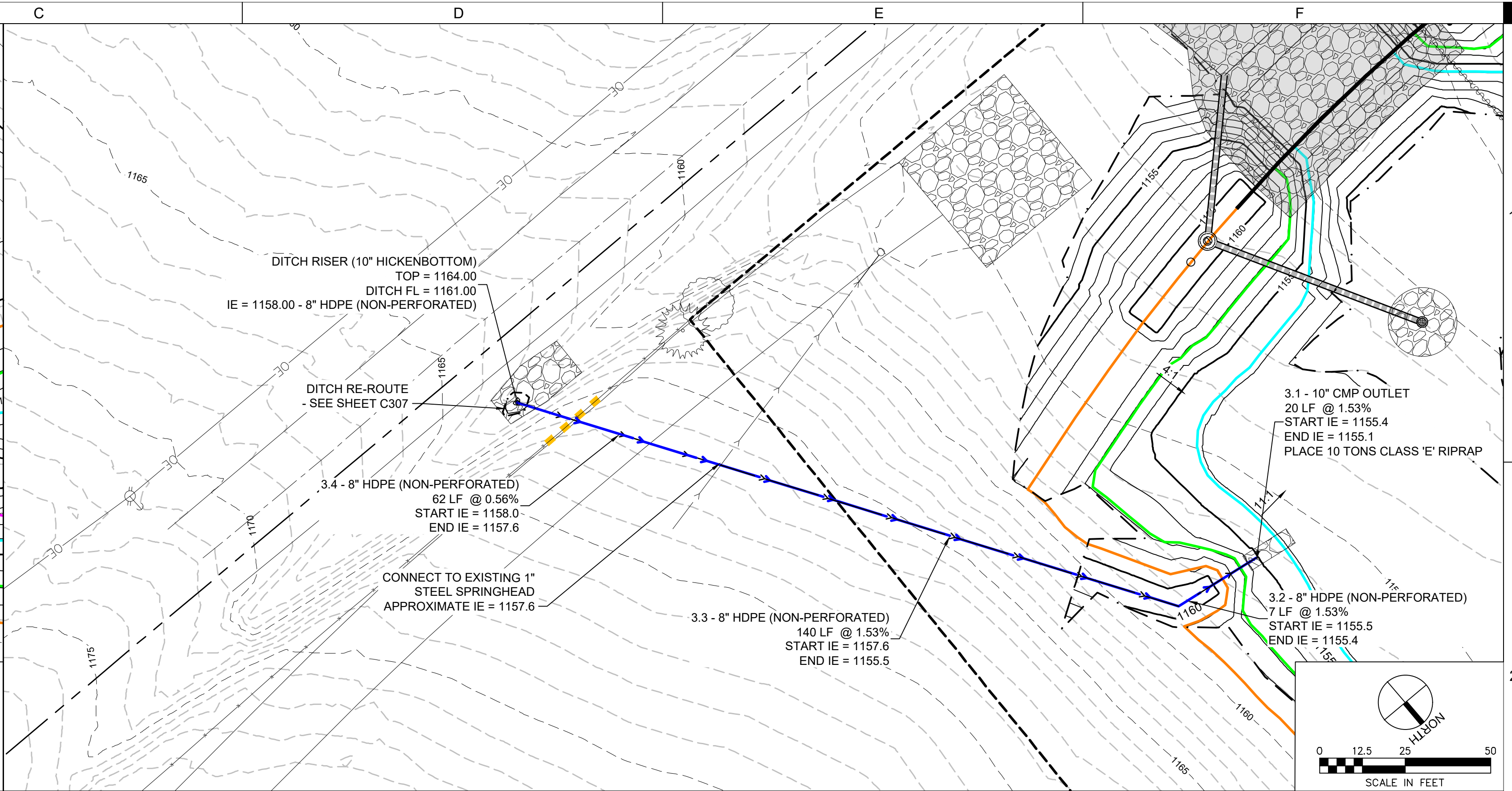
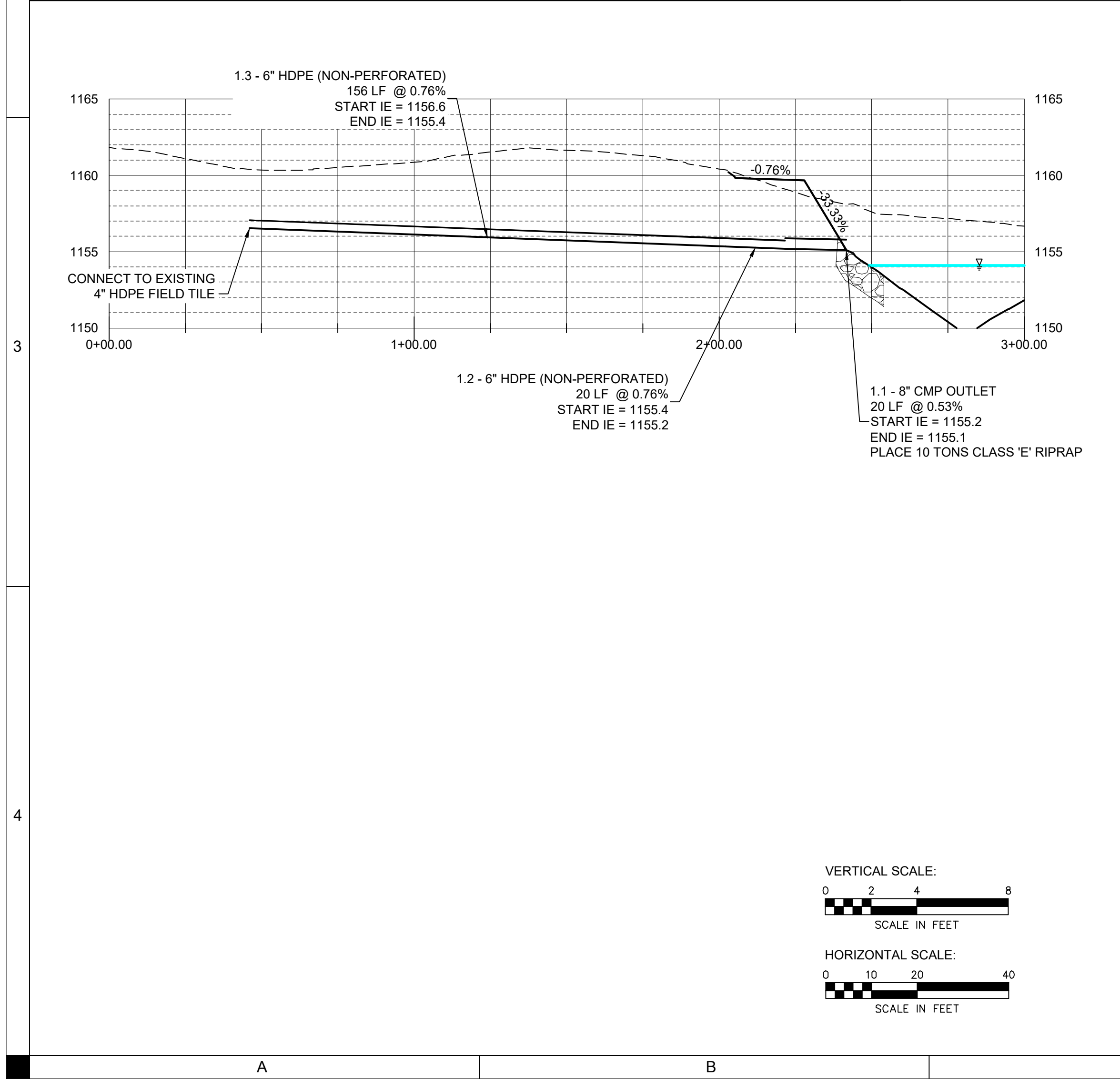
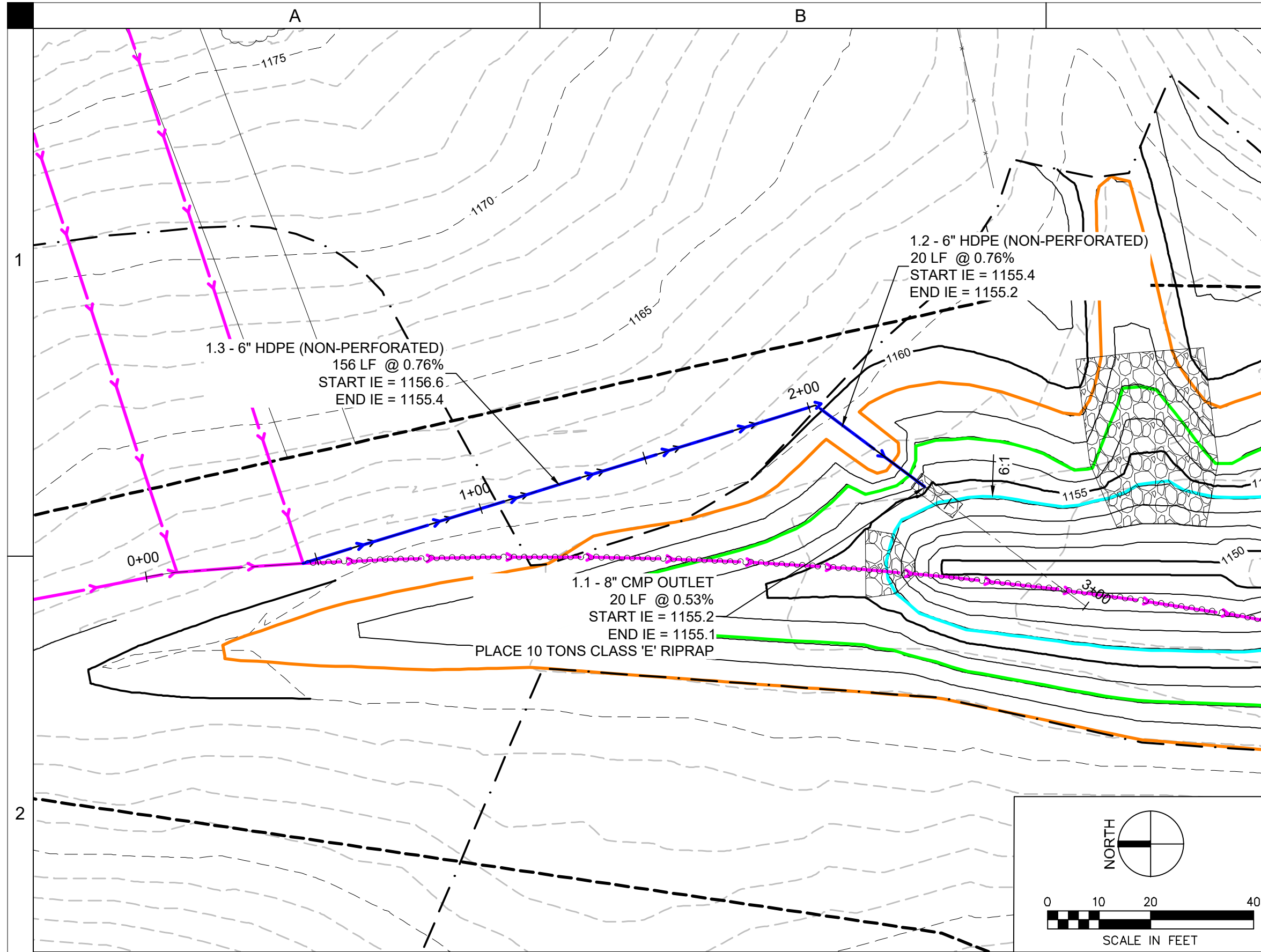
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EAST WATERWAY

PLAN & PROFILE

C305

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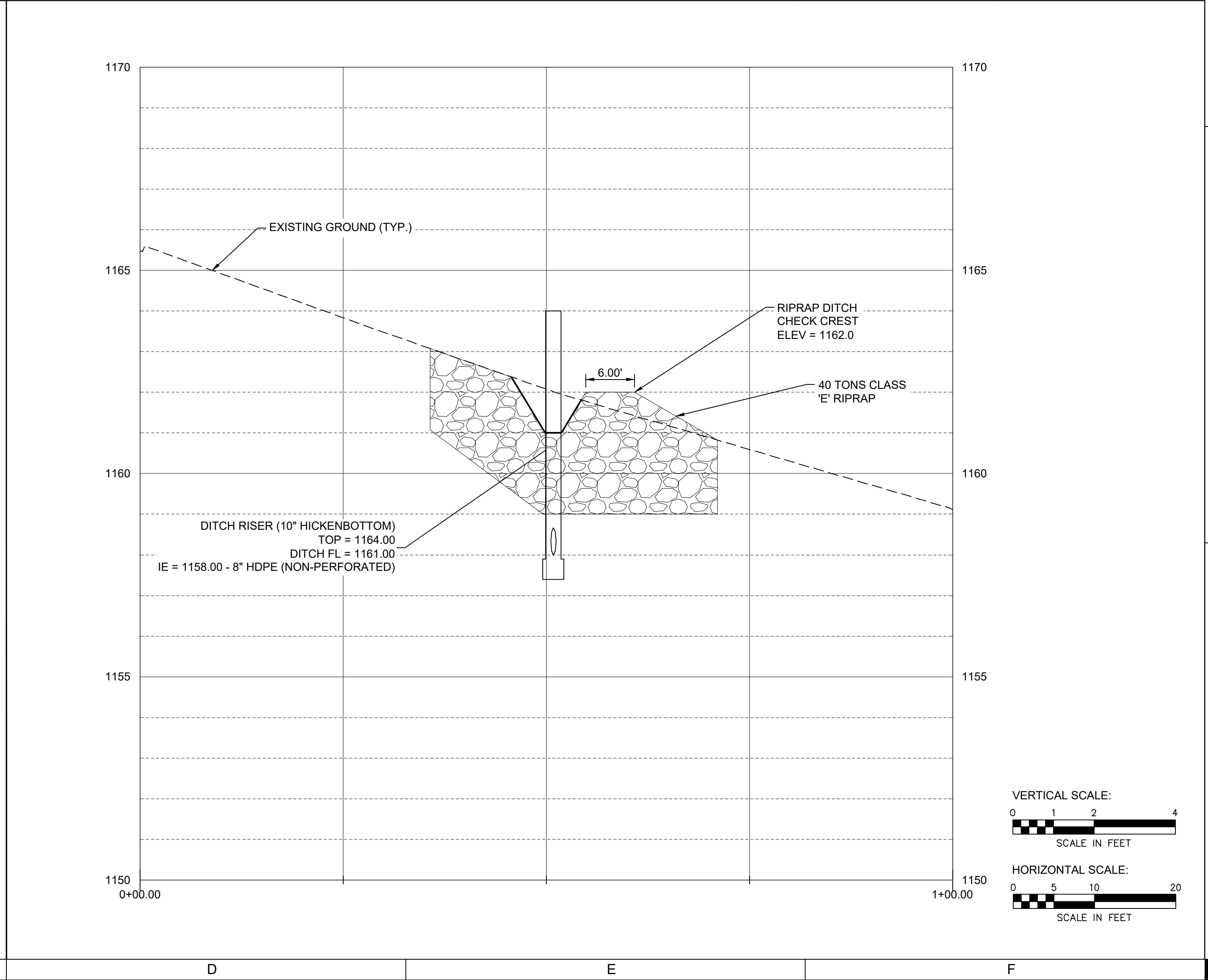
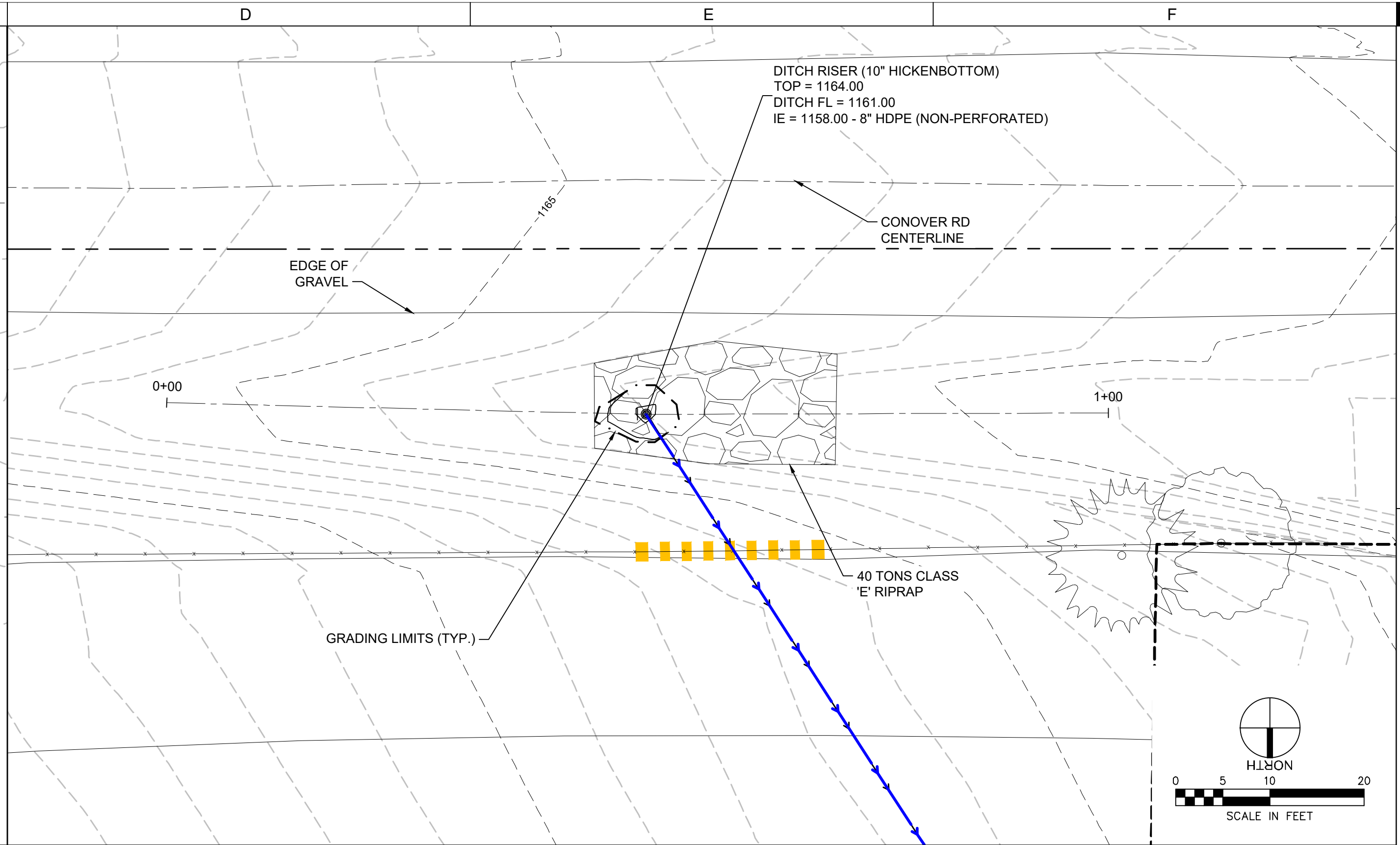
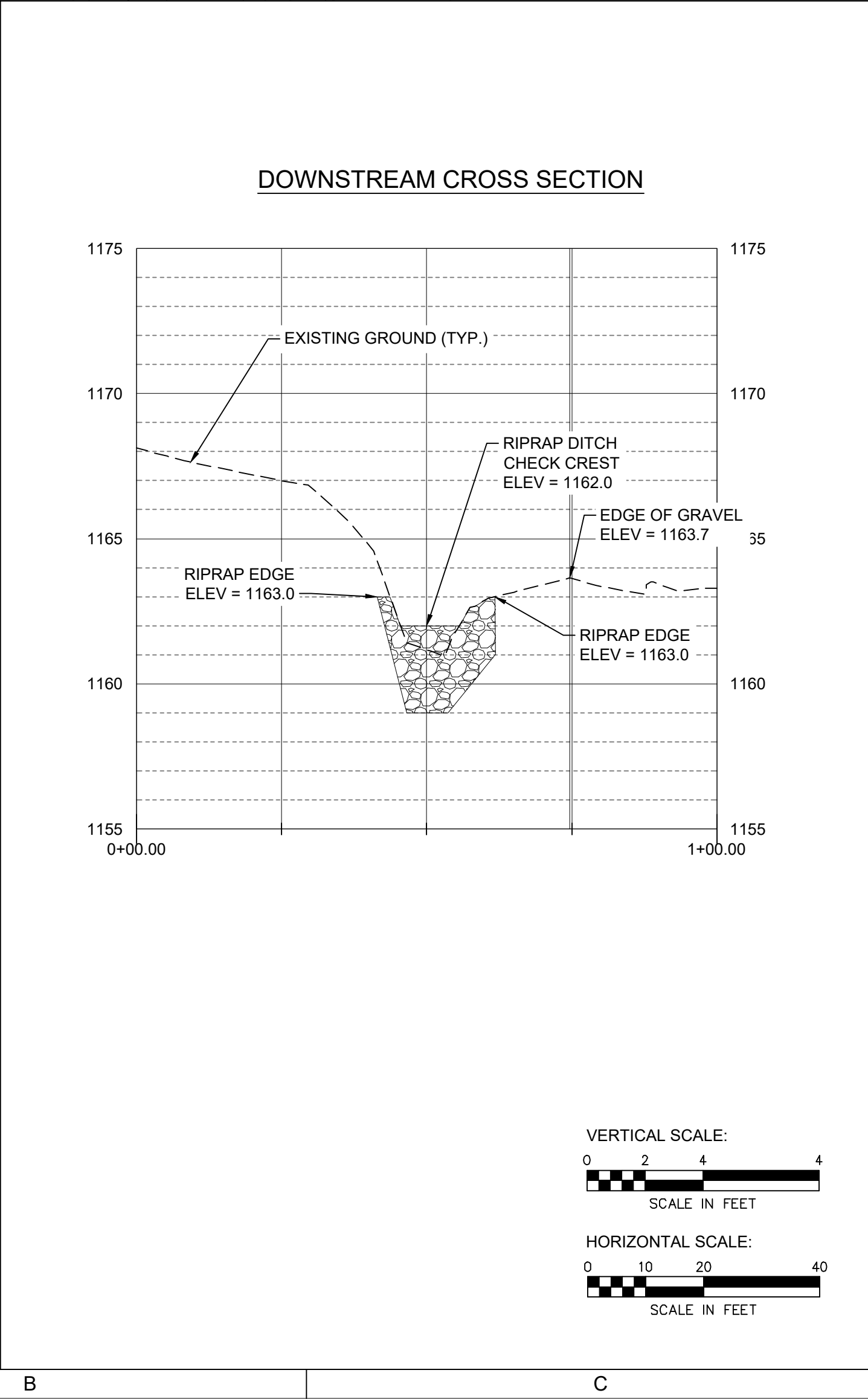
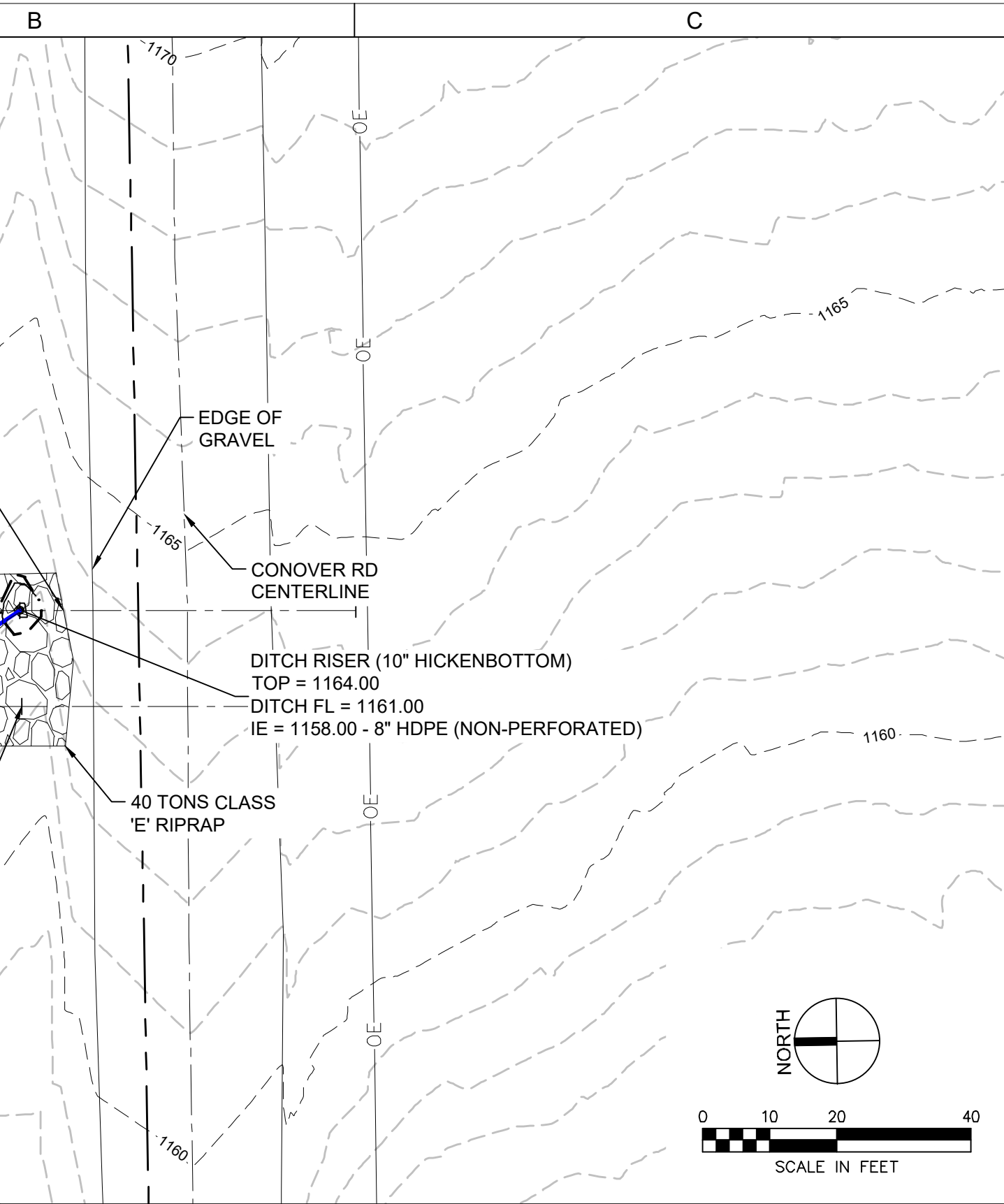
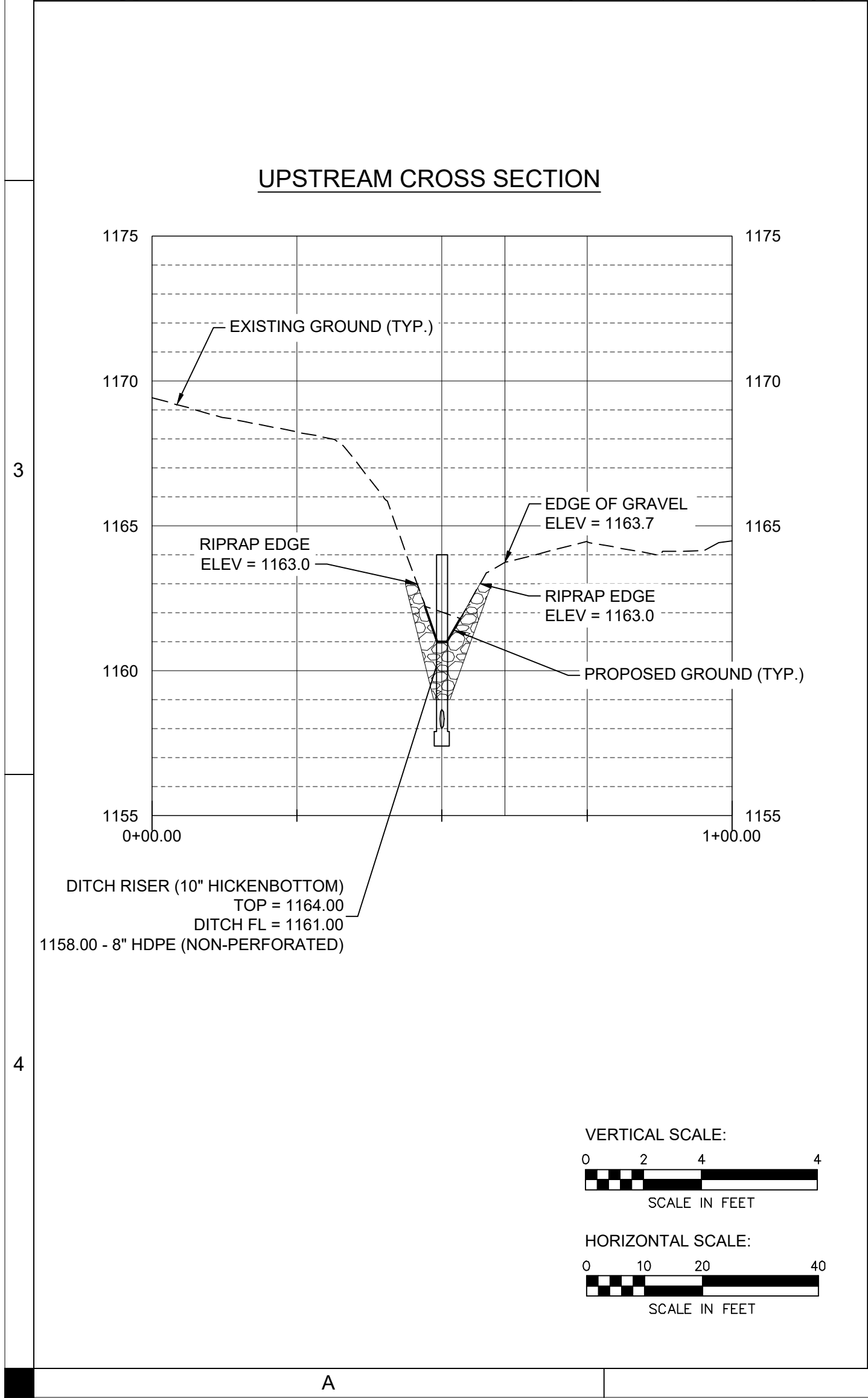
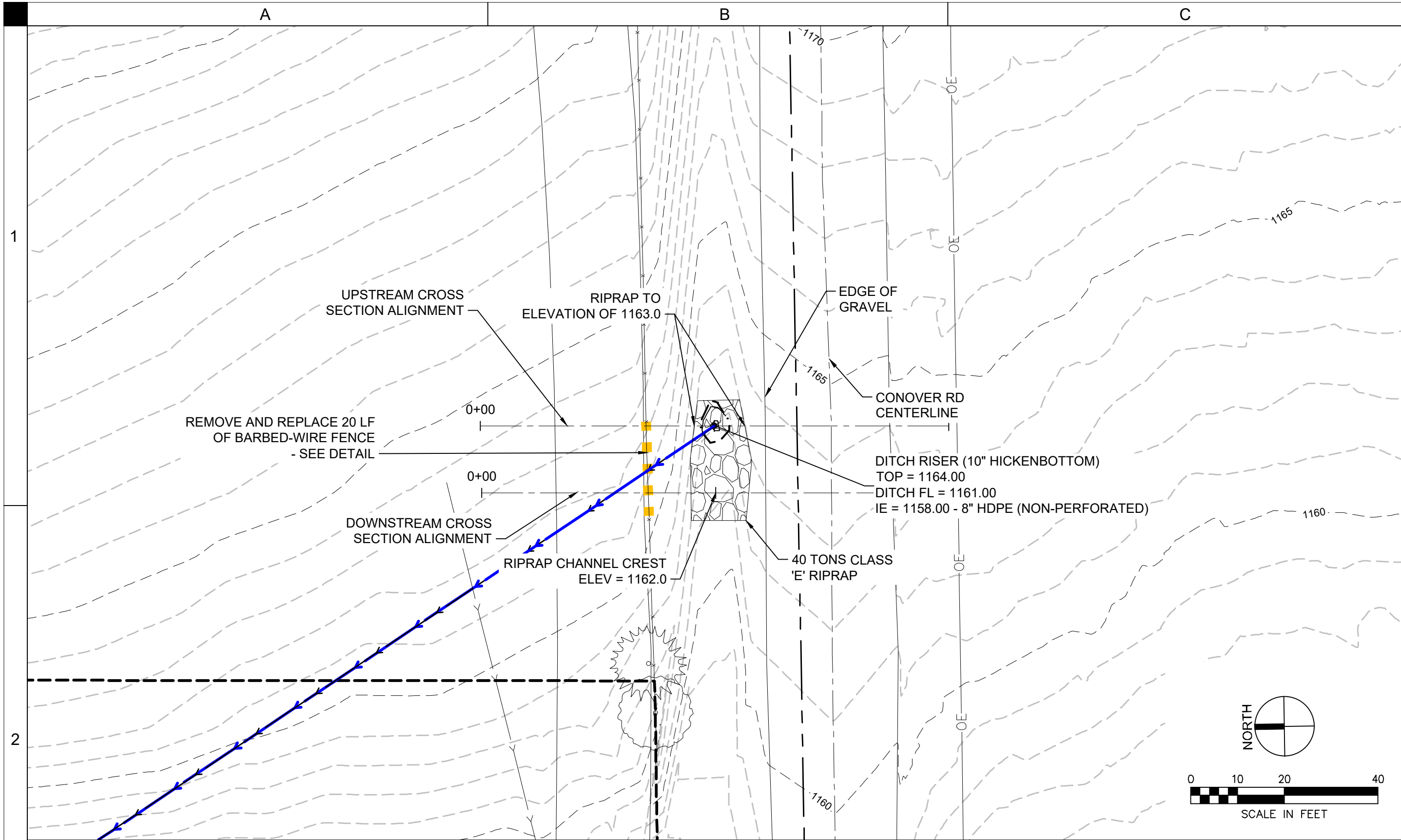
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TILE PLAN &
PROFILE

C306

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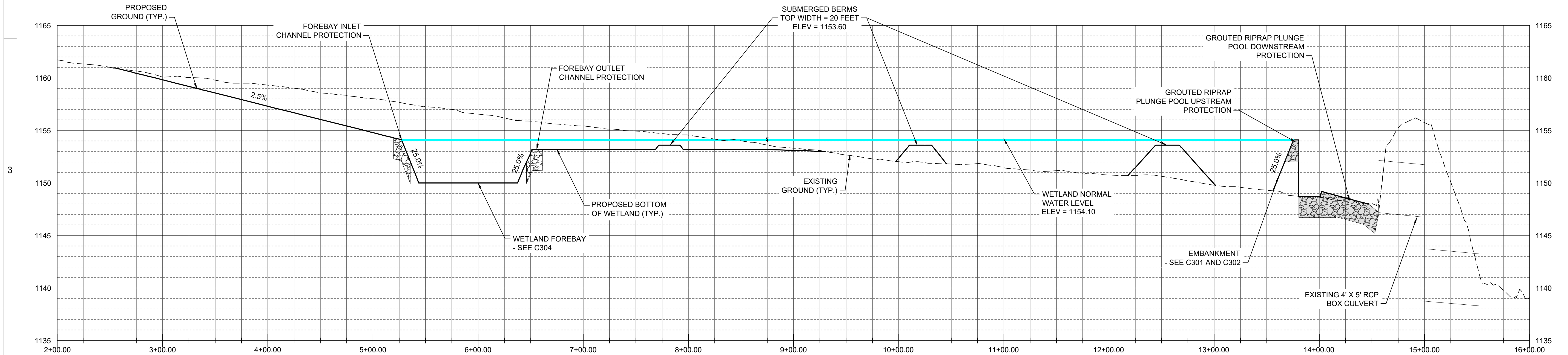
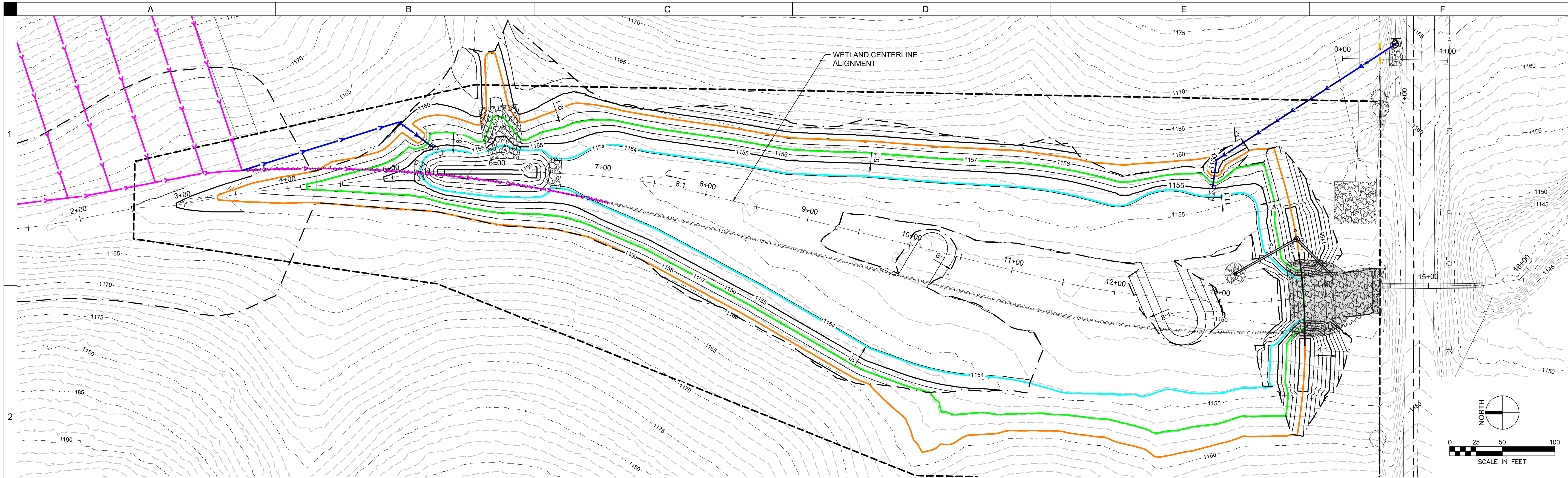
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DITCH RE-ROUTE
PLAN & PROFILE

C307

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WETLAND PLAN &
PROFILE

C308

SHEET PILE GENERAL NOTES:

1.

DESIGN SHEET PILE AREA IS 1,403 SF AFTER TRIMMING
2.

SHEET PILING REQUIREMENTS DESIGN BASIS - SKYLINE STEEL/NUCOR SCZ 20 OR ENGINEER APPROVED EQUAL
- 2.1.

MINIMUM SECTION MODULUS OF 31.69 IN³ PER FOOT OF WALL.
- 2.2.

MINIMUM GRADE OF STEEL IS 50 KSI
- 2.3.

MINIMUM MOMENT OF INERTIA OF 253.51 IN⁴ PER FOOT OF WALL.
- 2.4.

MINIMUM THICKNESS OF 0.315"
- 2.5.

ALL SHEET PILING SHALL MEET ASTM A-572 GR50.
- 2.6.

ALL BOLTS SHALL MEET ASTM A307 GRADE A.
- 2.7.

ALL WASHERS SHALL MEET ASTM F436.
- 2.8.

ALL NUTS SHALL MEET ASTM A563.
3.

CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF PROPOSED SHEET PILE SYSTEM FOR APPROVAL BY ENGINEER.
4.

SHEET PILE ATTACHMENT TO WALER:
- 4.1.

SHEET PILE WALER/PILE CAP MAY BE BOLTED OR WELDED. SEE DETAILS FOR OPTIONS.
- 4.2.

BOLTED WALER OPTION
- 4.2.1.

ALL BOLTS WILL BE 1" DIAMETER WITH 2 WASHERS. BOLT SHALL BE EXTENDED AT A MINIMUM OF 3/8" BEYOND THE NUT.
- 4.2.2.

ALL HOLES SHALL BE FIELD DRILLED TO 1 1/16" DIAMETER. TORCH, PLASMA CUTTING, OR OTHER METHODS RESULTING IN AN IMPERFECT HOLE WILL NOT BE PERMITTED.
- 4.2.3.

THE WALER SHALL BE PLACED ON THE DOWNSTREAM SIDE OF THE WEIR.
- 4.3.

WELDED PILE CAP OPTION
- 4.3.1.

AT THE CONTRACTORS OPTION, A WELDED PILE CAP MAY BE INSTALLED IN LIEU OF THE BOLTED WALER. SEE PILE CAP OPTION DETAIL.
- 4.3.2.

WELDING SHALL BE IN ACCORDANCE WITH THE STRUCTURAL WELDING CODE, AWS D1.1, LATEST EDITION, AND SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY USING E70XX ELECTRODES.
5.

ANY HOLES LEFT IN SHEET PILE SHALL BE CLOSED OFF.
6.

AFTER SHEETING AND WALER INSTALLATION, ALL SHEETING IS TO BE CUT TO CONFORM WITH THE 3:1 SIDE SLOPE OF THE WEIR, MEET DESIGN ELEVATIONS, AND TO REMOVE ANY DAMAGE CAUSED BY DRIVING.
7.

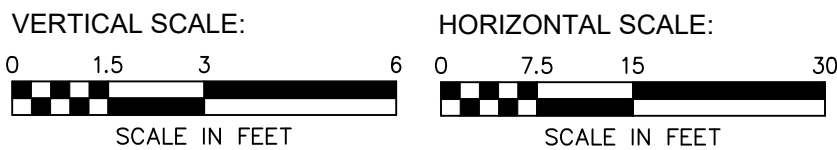
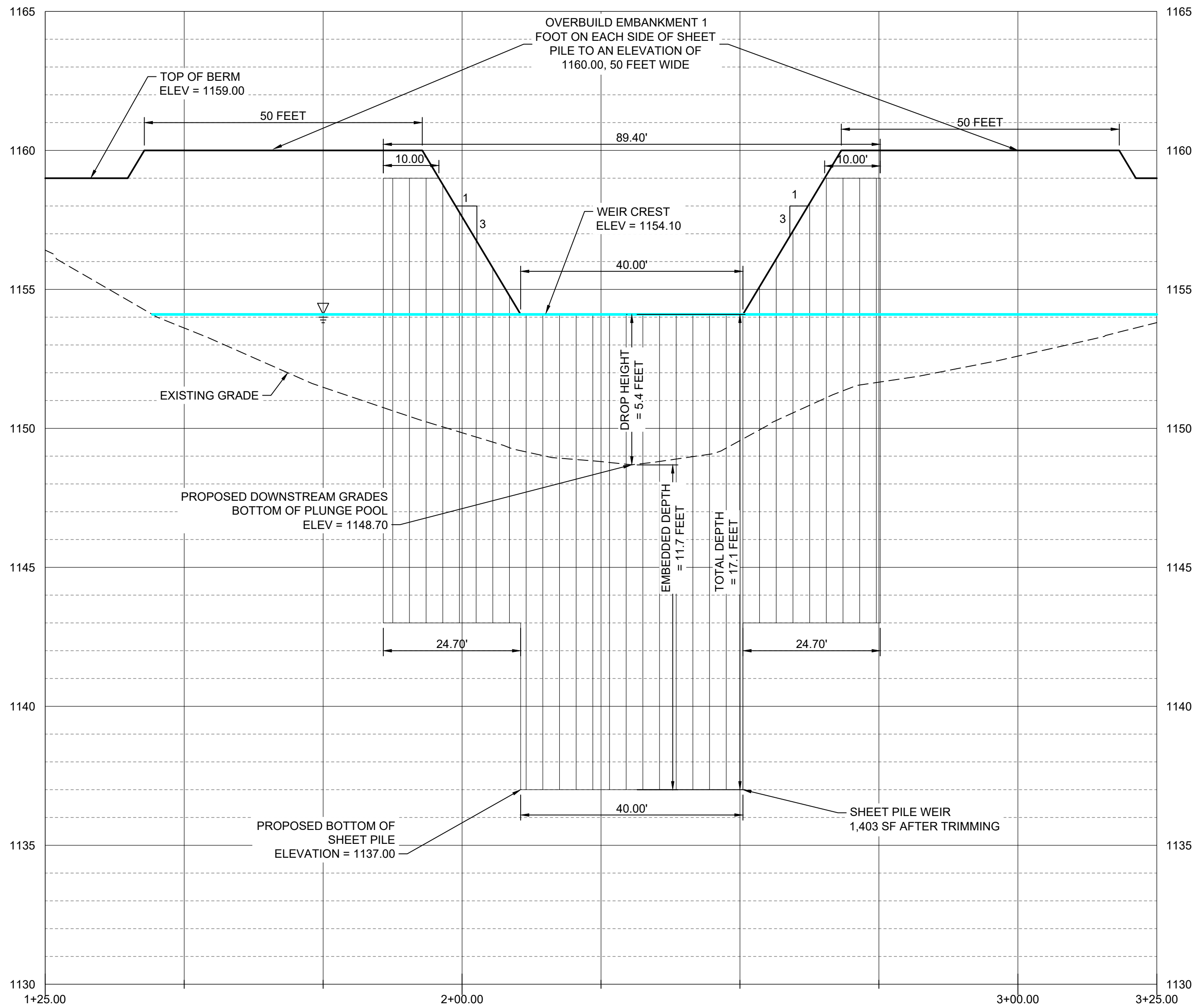
STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATION OF AISC. FABRICATOR SHALL SUBMIT SHOP DRAWINGS AND FABRICATE AFTER ENGINEER'S REVIEW AND APPROVAL.
8.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LIVE LOADS.
9.

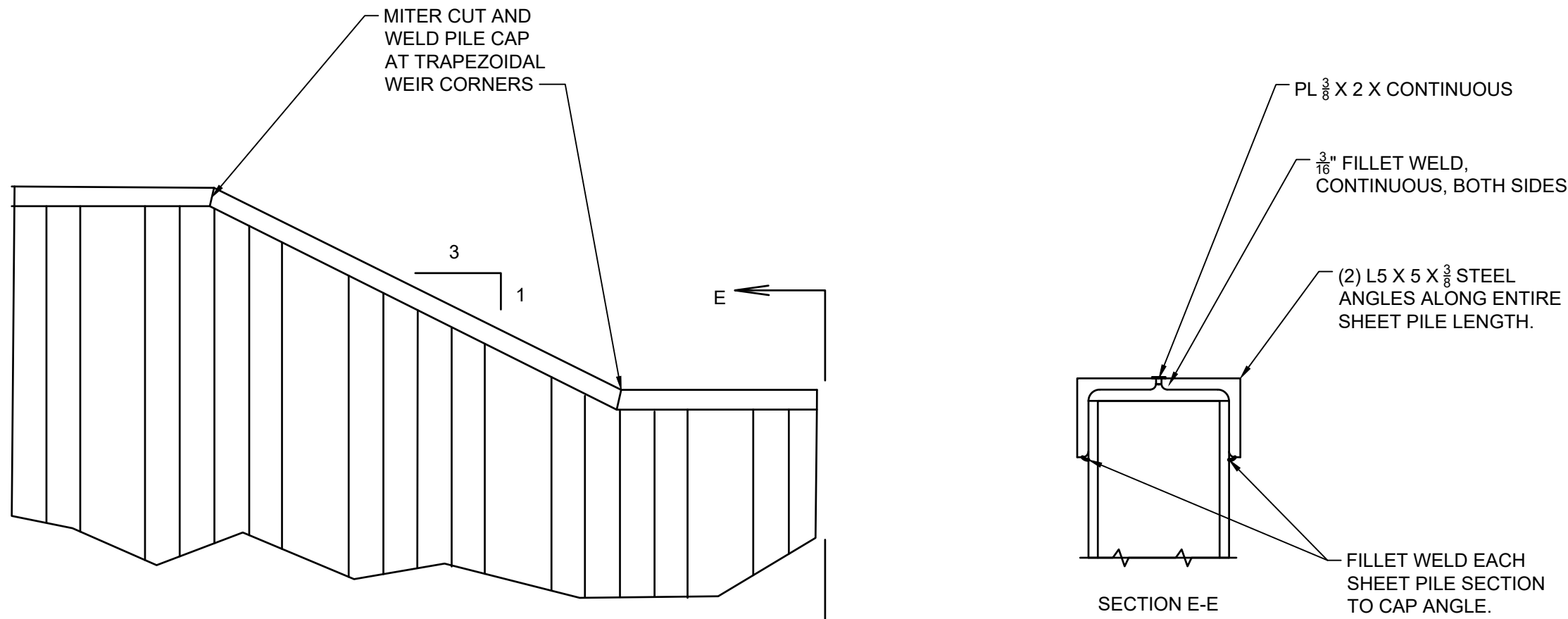
PROVIDE ALL NECESSARY TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACED DURING CONSTRUCTION.
10.

A TEMPORARY BERM TO HOLD / GUIDE SHEETPILE DURING CONSTRUCTION IS RECOMMENDED.
11.

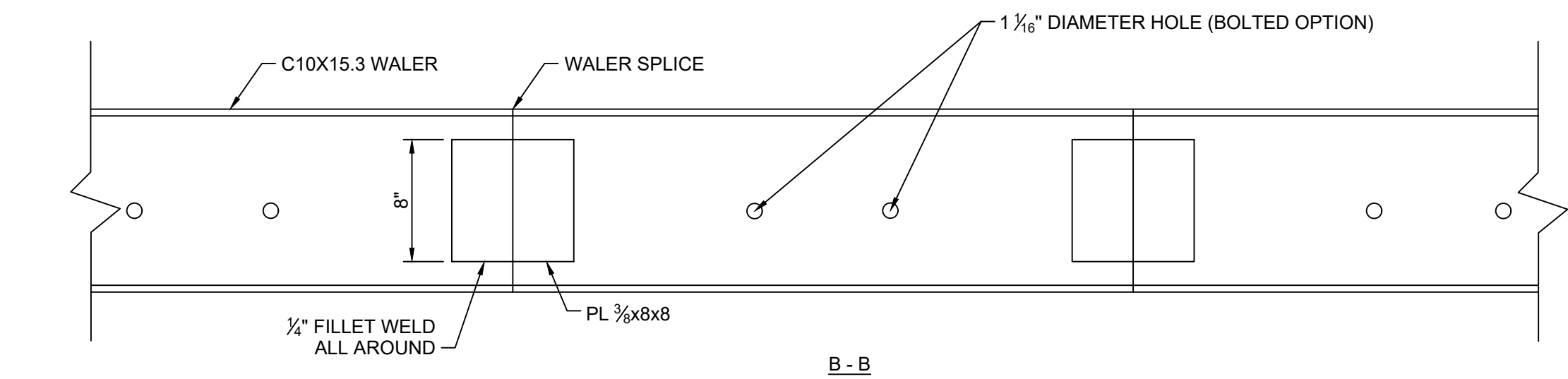
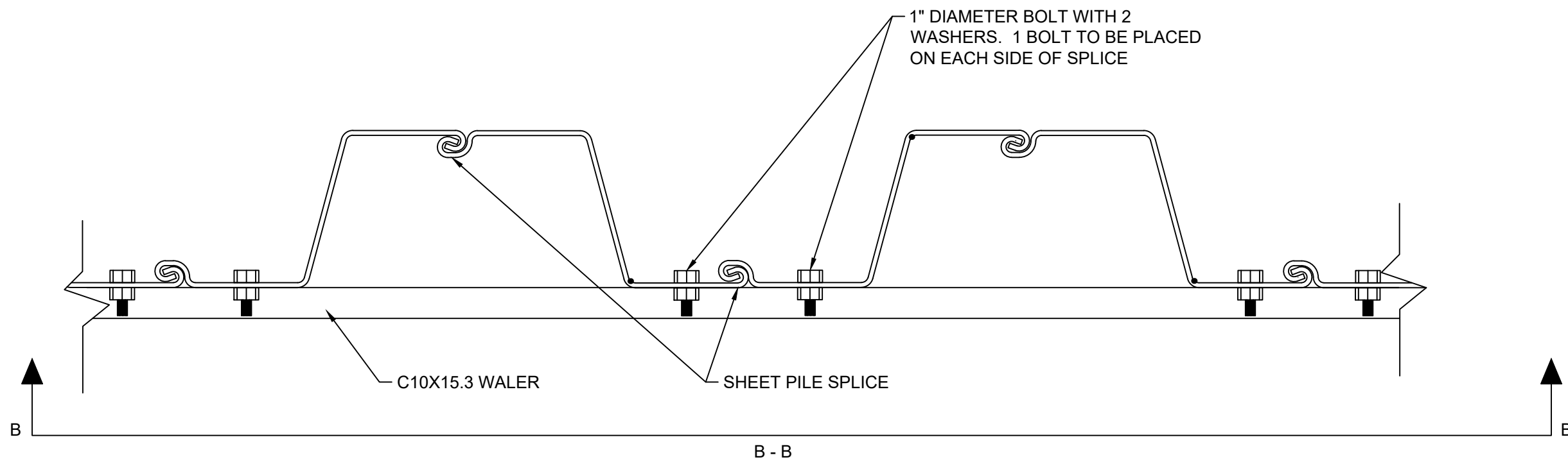
NOTIFY ENGINEER IMMEDIATELY IF BEDROCK IS ENCOUNTERED PRIOR TO INSTALLATION OF SHEET PILE TO DESIGN DEPTHS.



SHEET PILE CENTERLINE PROFILE



WELDED PILE CAP OPTION DETAIL



BOLTED WALER OPTION DETAIL

*NOTE: SHEET PILE BEYOND NOT SHOWN.

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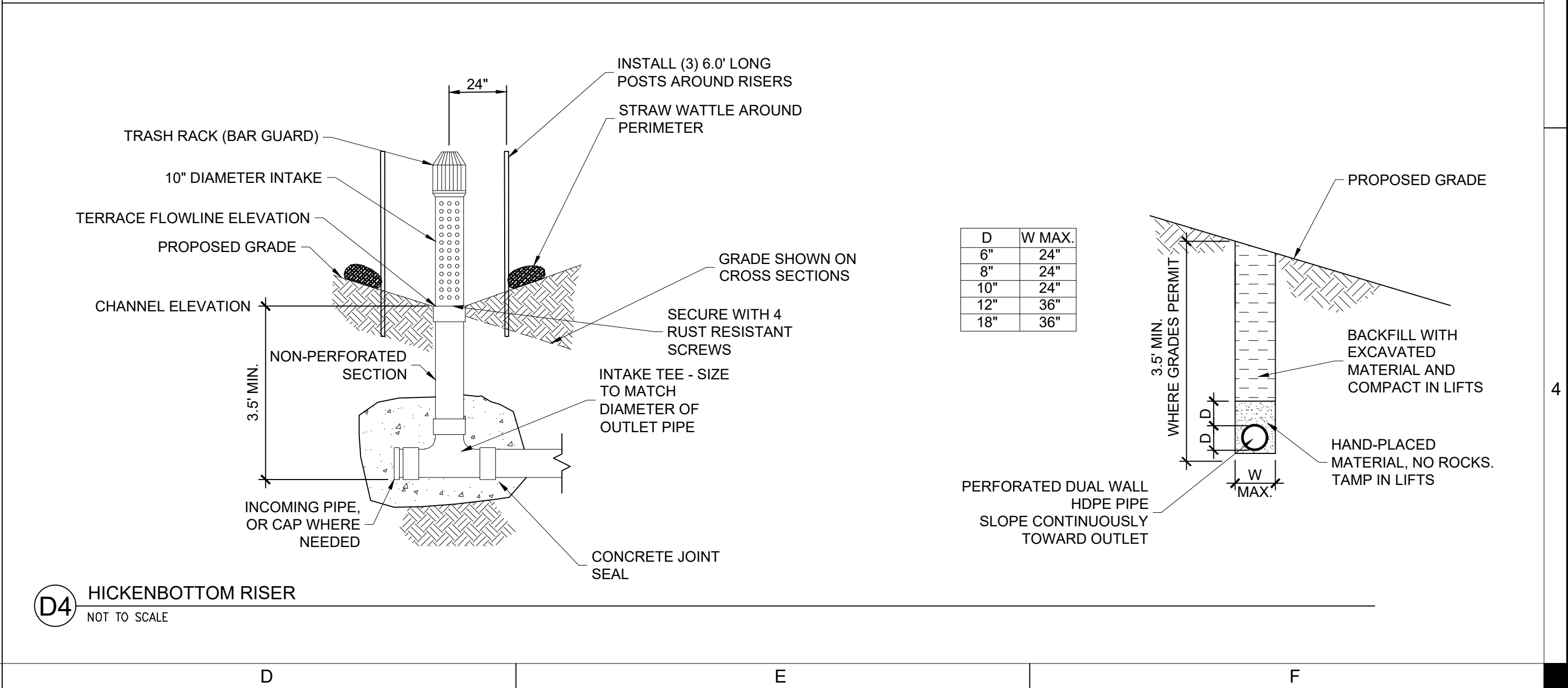
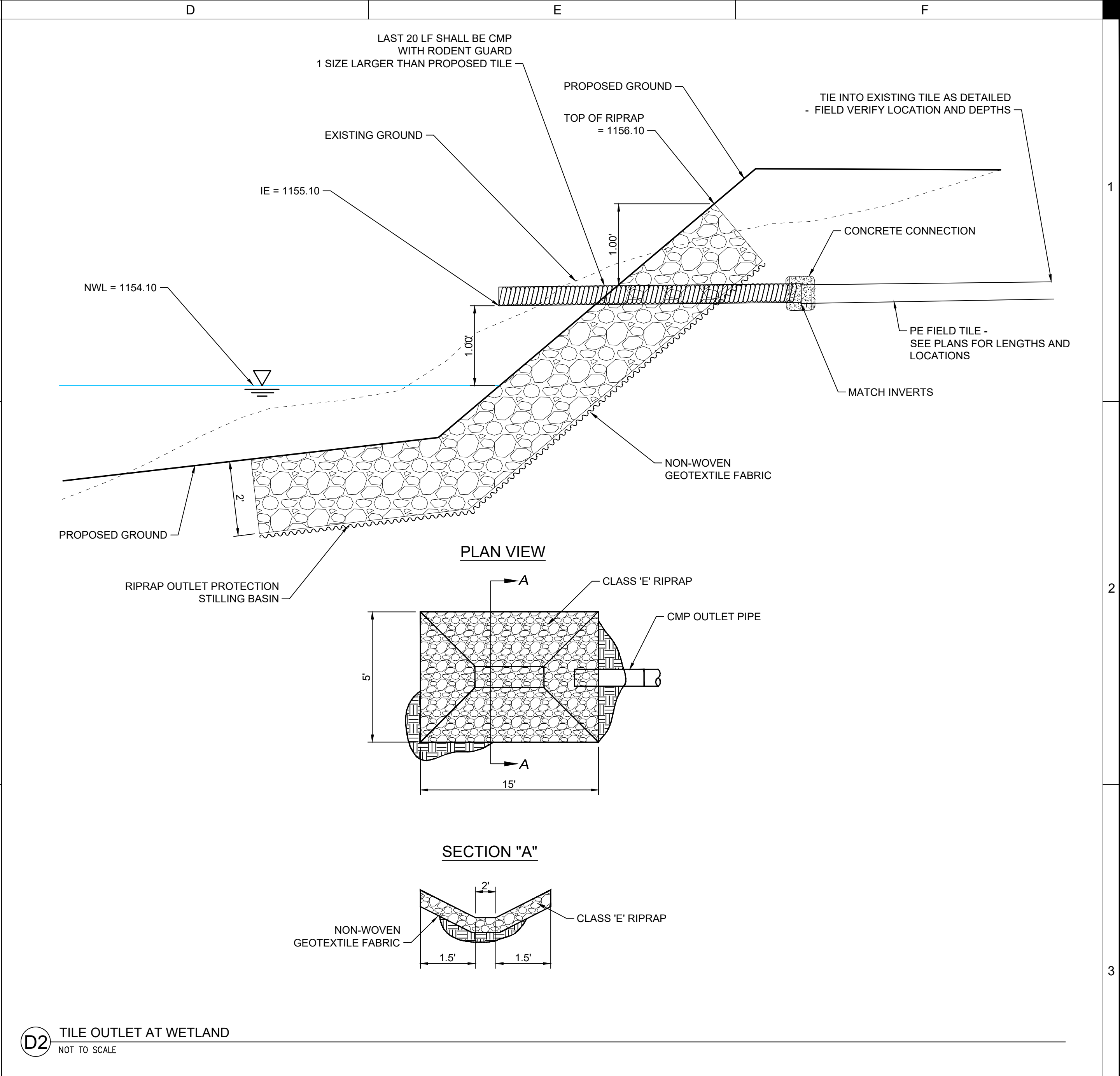
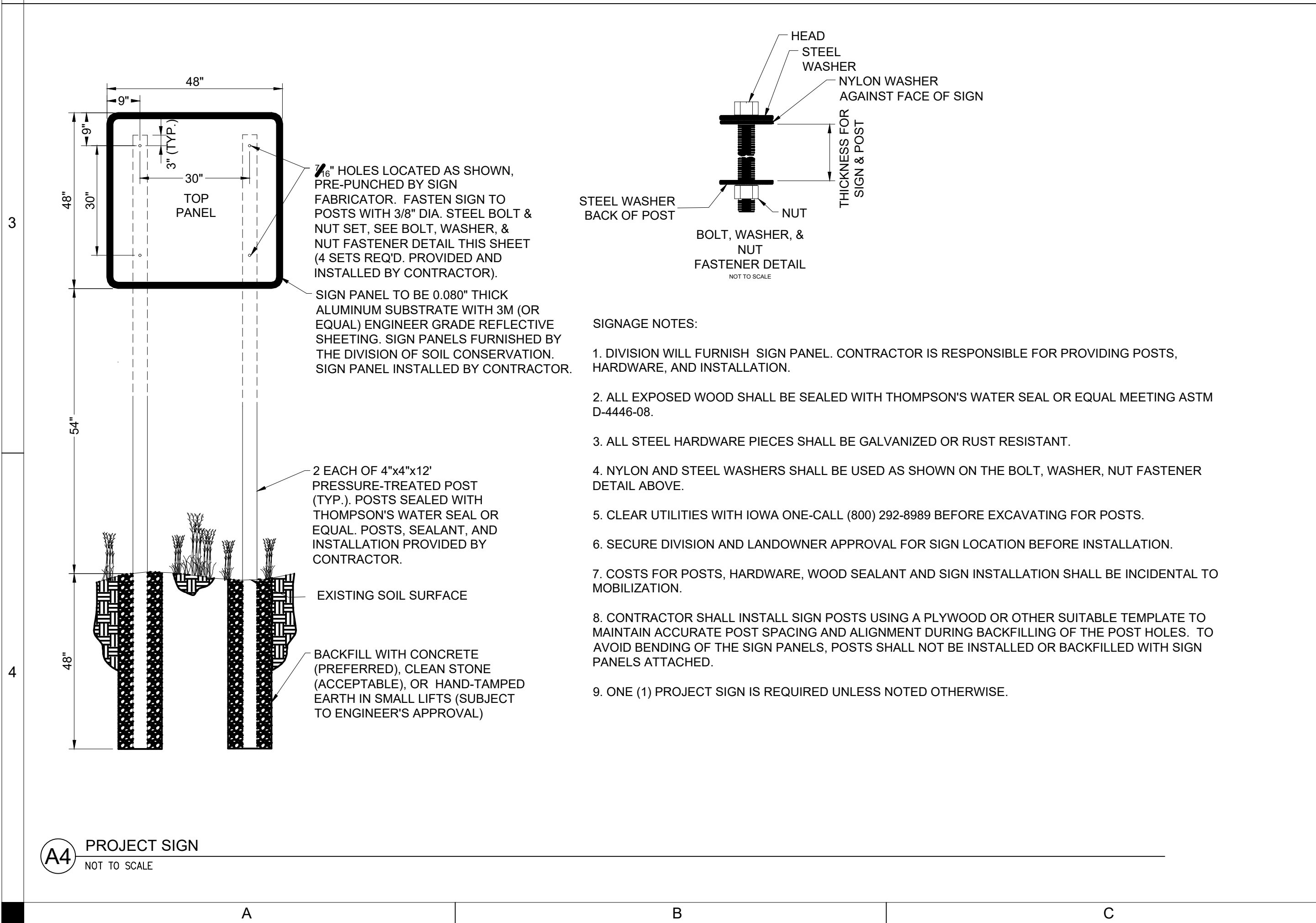
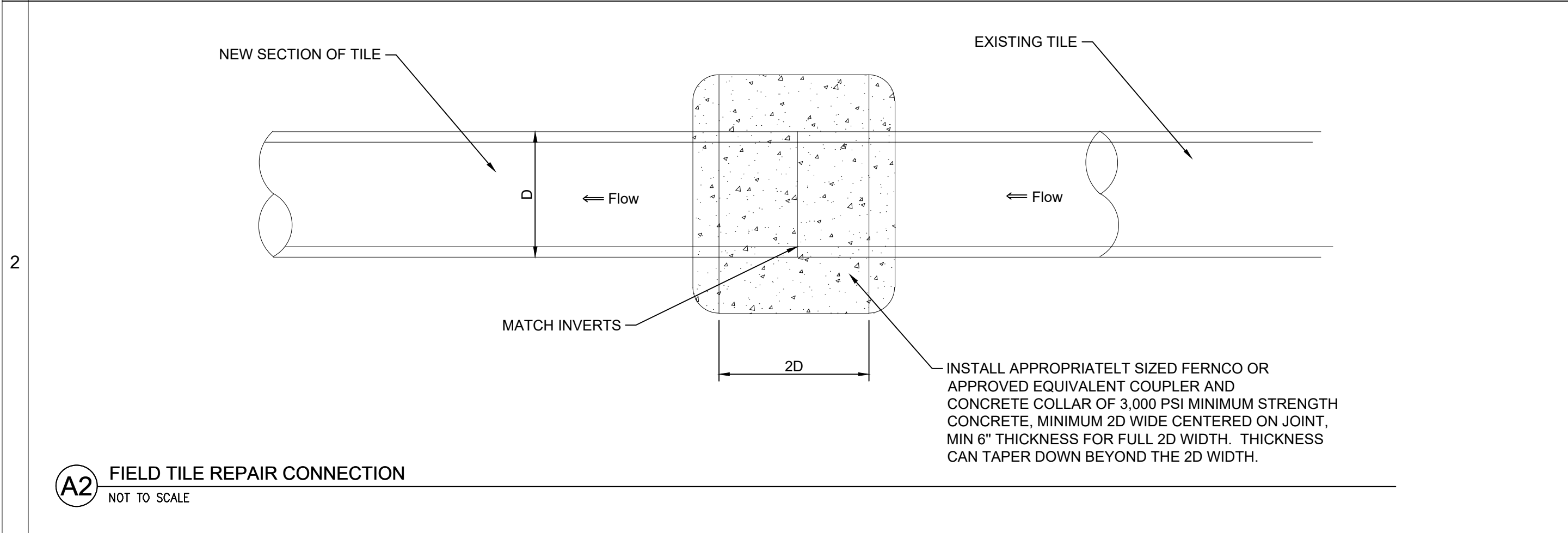
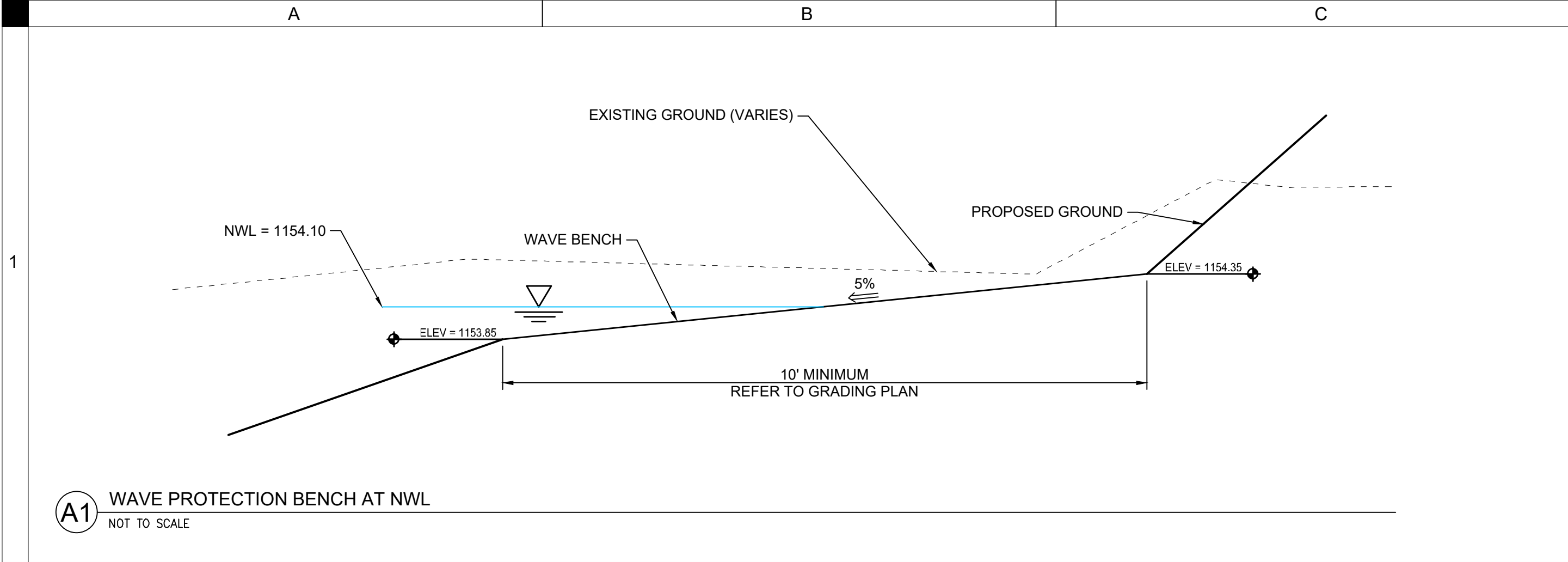
IDALS
WINNEBAGO COUNTY, IA

SHEET PILE DESIGN

DRAWN: GJK
APPROVED: A/H
ISSUED FOR: ISSUED FOR CONSTRUCTION
DATE: 08-12-2025
PROJECT NO: 2240006350
FIELD BOOK: --
CLIENT NO: --

C401

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WINN970905C WETLAND

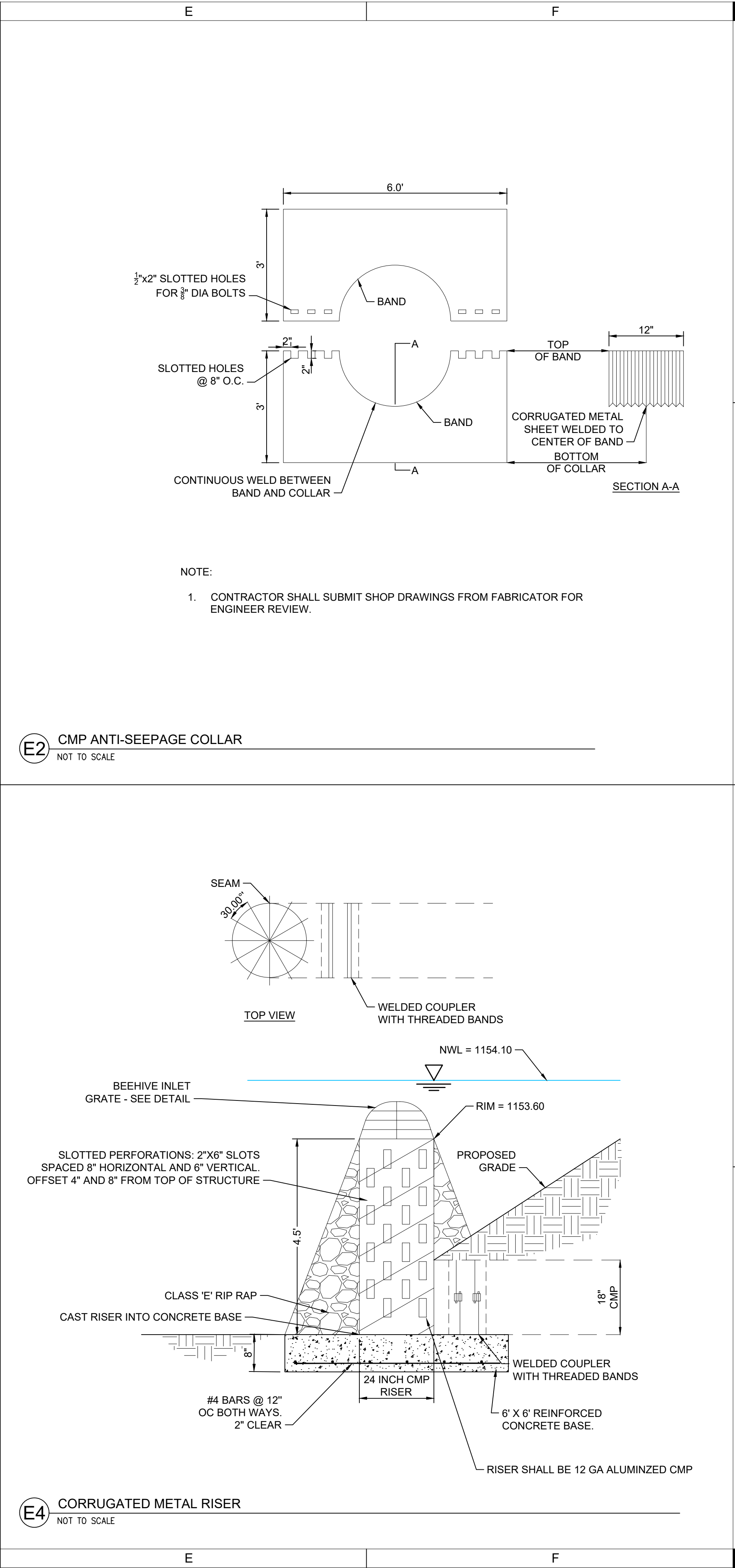
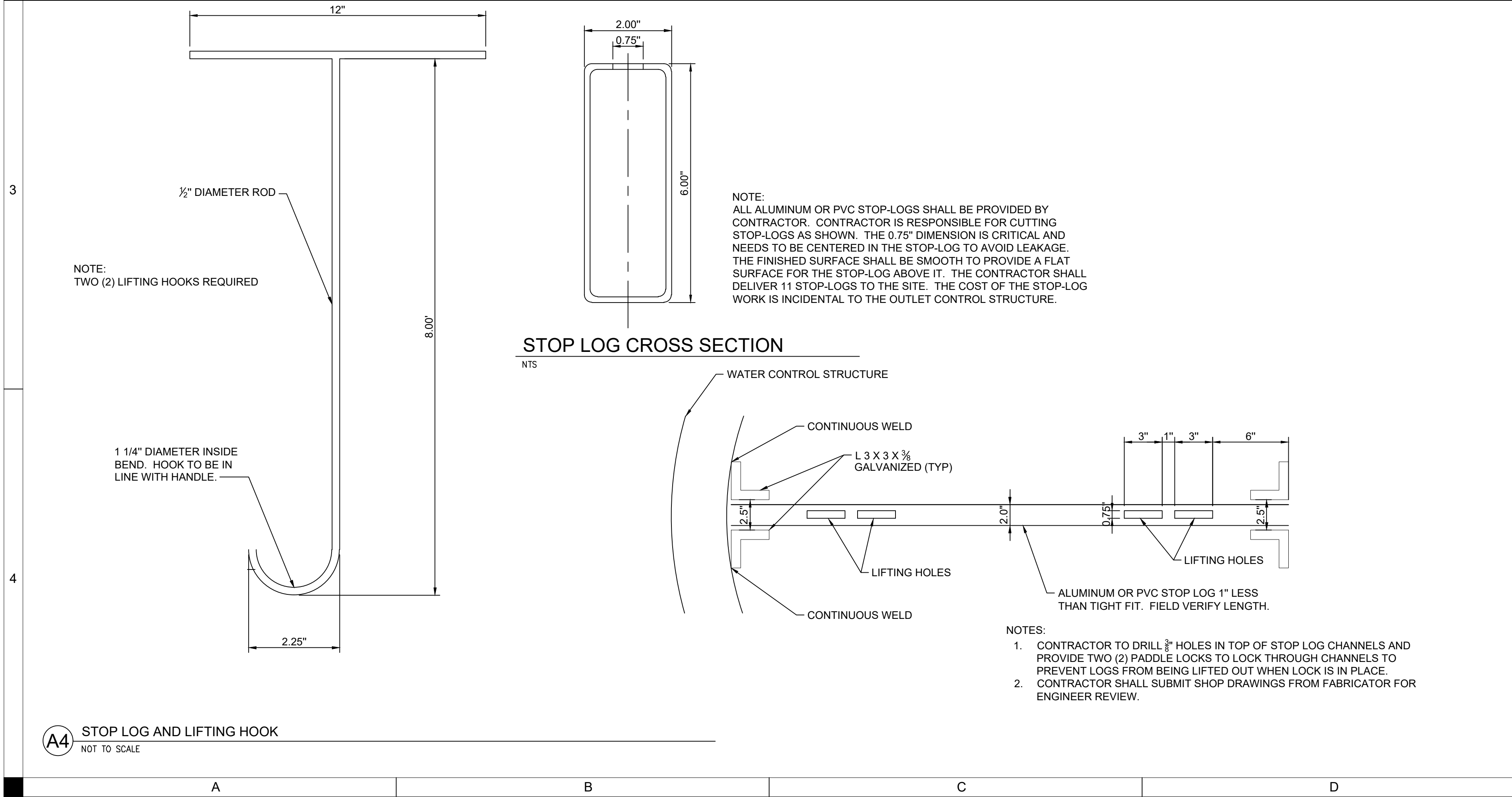
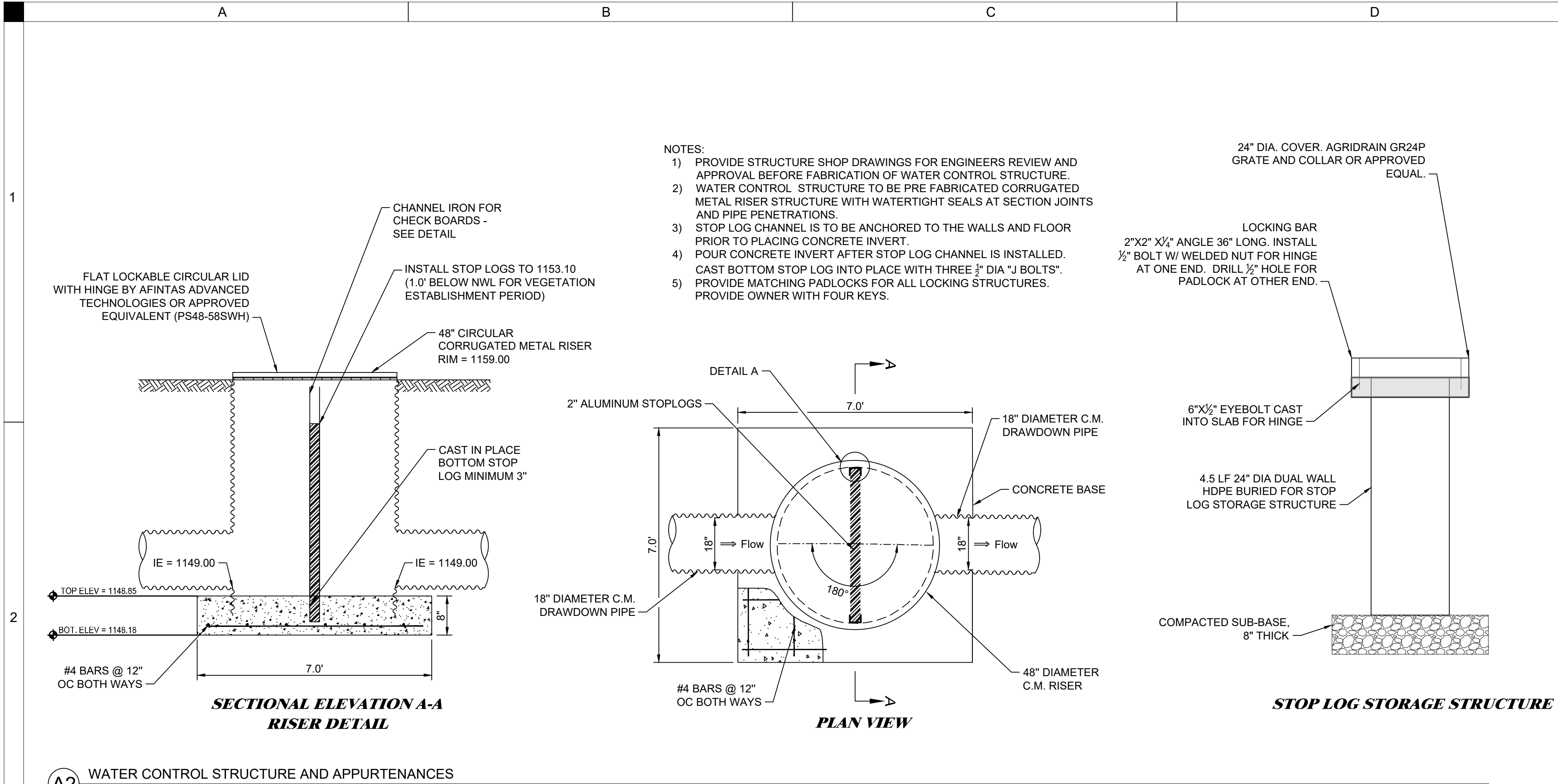
IDAALS
WINNEBAGO COUNTY, IA

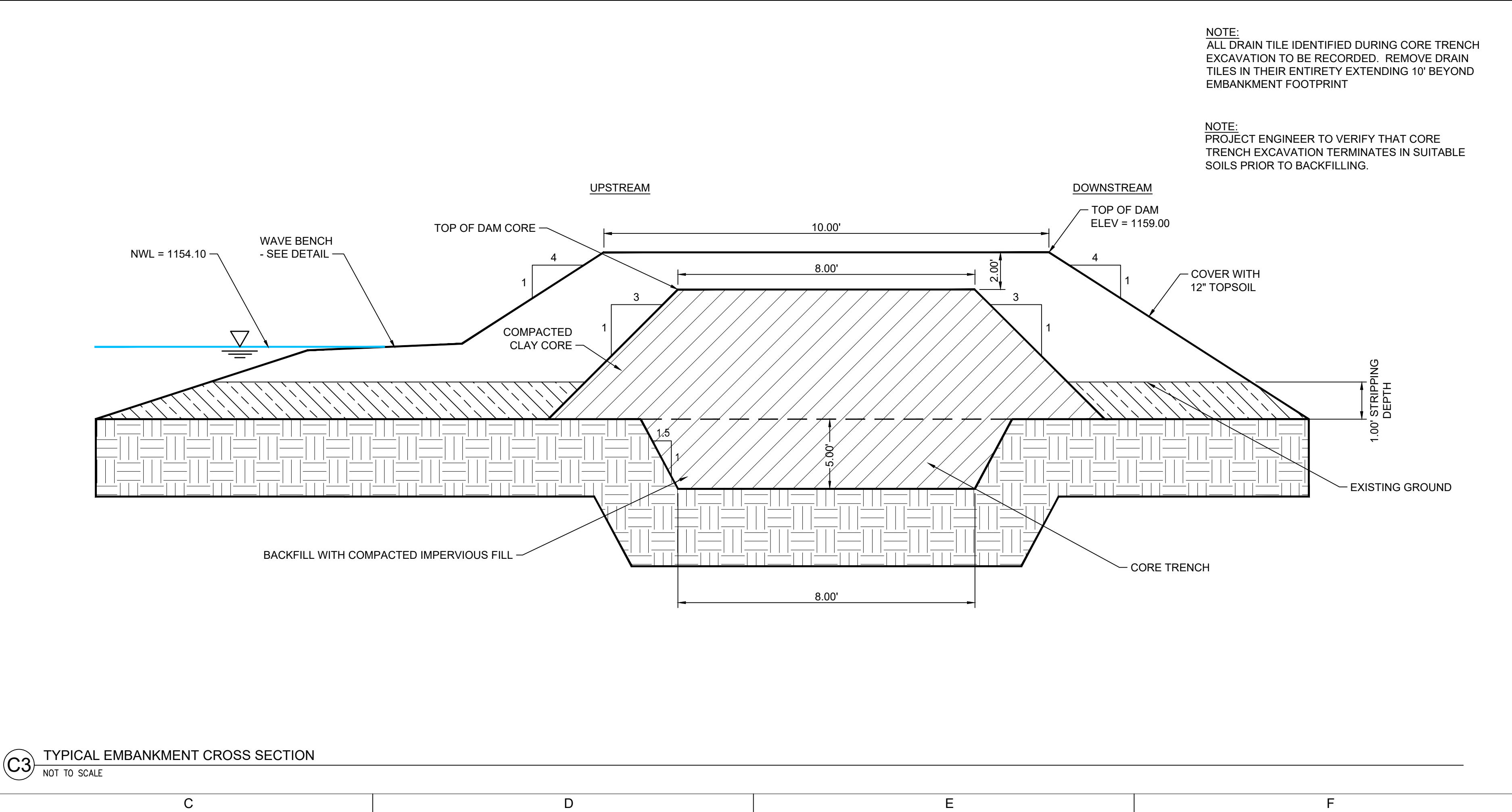
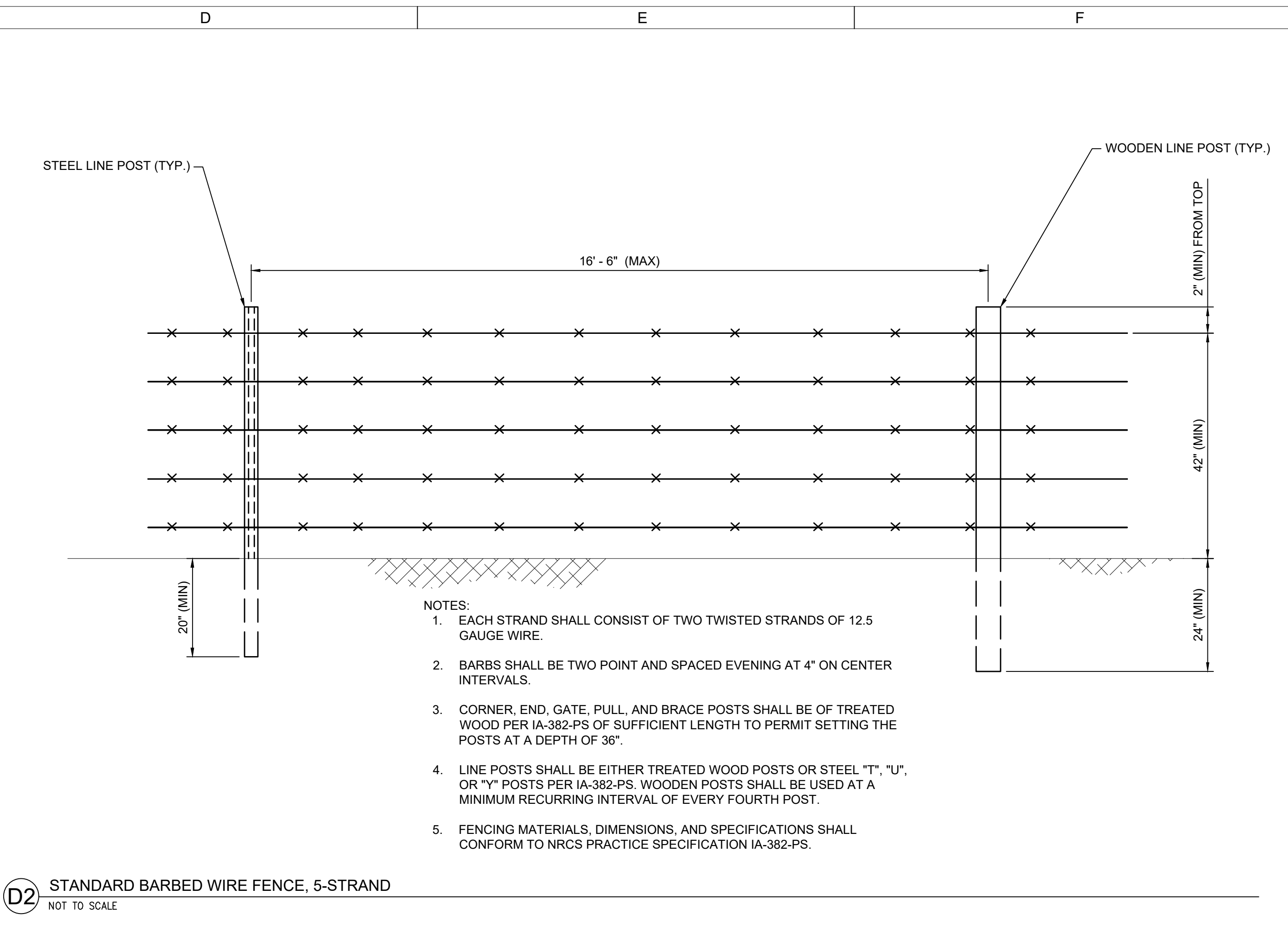
CONSTRUCTION DETAILS

C501

DRAWN: GSK
APPROVED: A/H
ISSUED FOR: ISSUED FOR CONSTRUCTION
DATE: 08-12-2025
PROJECT NO: 224006350
FIELD BOOK: ---
CLIENT NO: ---

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LEGEND	
DESCRIPTION	PROPOSED LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER ELEVATION	
100-YR STORM BOUNCE	
MAJOR CONTOUR	
MINOR CONTOUR	
EXISTING CONTOUR - MAJOR	
EXISTING CONTOUR - MINOR	
EXISTING STREAM	
EASEMENT BOUNDARY	
BUFFER SEEDING	
STRUCTURE SEEDING	
SILT FENCE	

SEEDING PLAN

DRAWN:	GSK
APPROVED:	A/H
ISSUED FOR:	ISSUED FOR CONSTRUCTION
DATE:	08-12-2025
PROJECT NO:	2240006350
FIELD BOOK:	---
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IDALS
WINNEBAGO COUNTY, IA

C601

