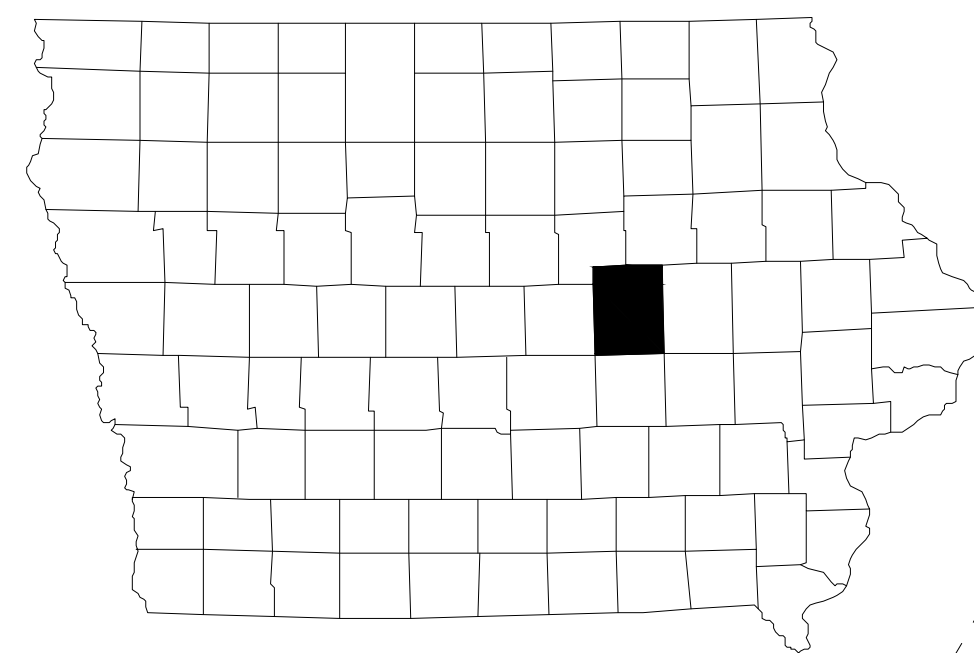


CASEY LAKE RESTORATION BLACK HAWK COUNTY CONSERVATION

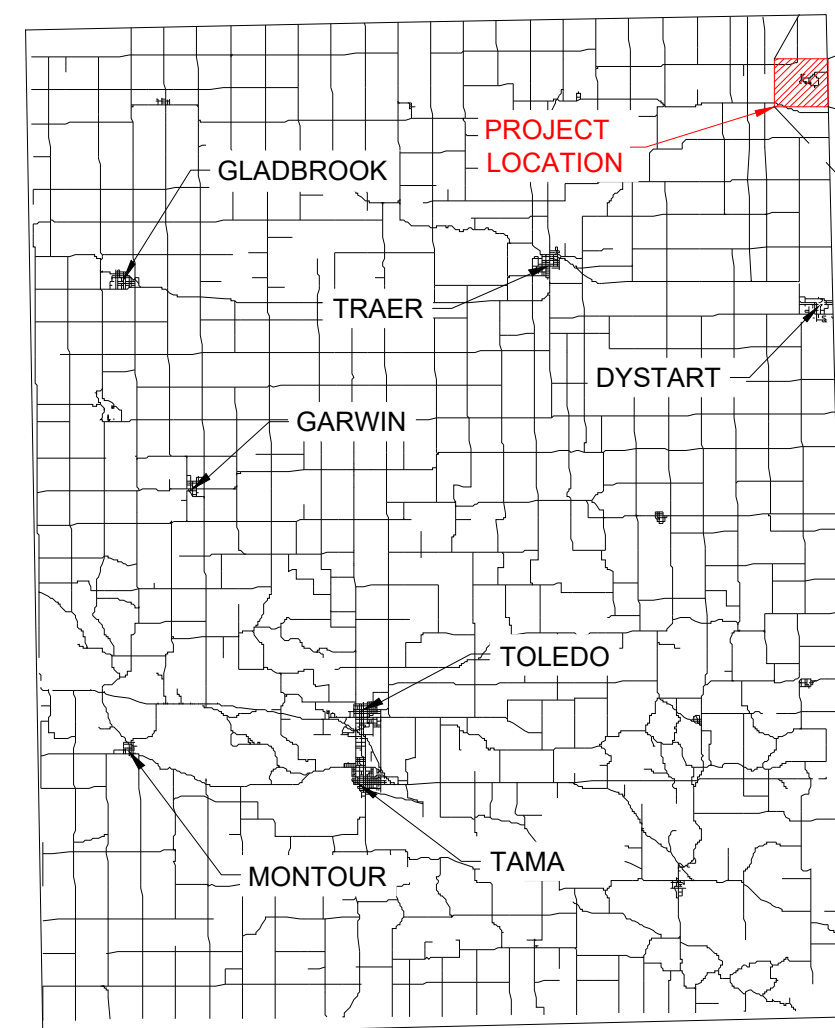
HICKORY HILLS PARK, TAMA COUNTY

DNR Project #24-05-86-01

STATE OF IOWA



TAMA COUNTY



CONTACT INFORMATION:

OWNER:
BLACK HAWK COUNTY CONSERVATION
ATTN: CHERRIE NORTHRUP & AL FINKE
1346 WEST AIRLINE HIGHWAY
WATERLOO, IOWA 50703
PH: (319) 433-7276

ENGINEER
SHIVE-HATTERY, INC
ATTN: LUKE MONAT
4125 WESTOWN PARKWAY, SUITE 100
WEST DES MOINES, IOWA 50266
PH: (515) 223-8104
FX: (515) 223-0622

DNR FIELD ENGINEER
IOWA DEPT. OF NATURAL RESOURCES
ATTN: JASON KRUSE
JASON.KRUSE@DNR.IOWA.GOV
PH: (515) 250-3707

OVERALL PROJECT PLANS:

A000	COVER SHEET
A001	OVERALL PROJECT QUANTITIES & NOTES

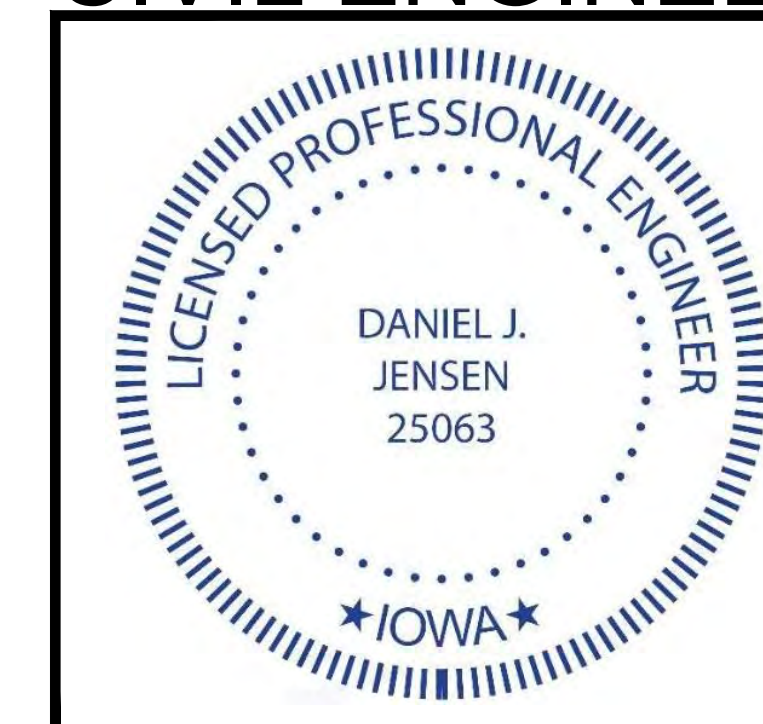
WATERSHED PLANS:

B001	WATERSHED NOTES AND QUANTITIES
B002	OVERALL WATERSHED PROJECT PLAN
B200 - B203	BMP 3 PLANS
B210 - B213	BMP 7 PLANS
B220 - B223	BMP 11 PLANS
B230 - B233	BMP 12 PLANS
B240 - B243	BMP 17 PLANS
B250 - B257	STREAM STABILIZATION PLANS
B501 - B505	CONSTRUCTION DETAILS

IN-LAKE PLANS:

C001	IN-LAKE NOTES AND QUANTITIES
C002	OVERALL IN-LAKE PROJECT PLAN
C201	PRINCIPAL SPILLWAY PLAN
C202	BMP 14 GRADING PLAN
C203	BMP 15 GRADING PLAN
C204	BMP 16 GRADING PLAN
C205	NW SPOIL SITE BERM GRADING PLAN
C206	NW SPOILS GRADING PLAN
C207	EAST SPOIL SITE BERM GRADING PLAN
C208	EAST SPOILS GRADING PLAN
C301	LAKE BOTTOM DREDGING AND GRADING PLAN
C302	LAKE BOTTOM CROSS SECTIONS
C303	LAKE BOTTOM CROSS SECTIONS
C304	CUT-FILL PLAN
C401	SHORELINE STABILIZATION PLAN
C501-504	CONSTRUCTION DETAILS
C601	SWPPP PLAN

CIVIL ENGINEER



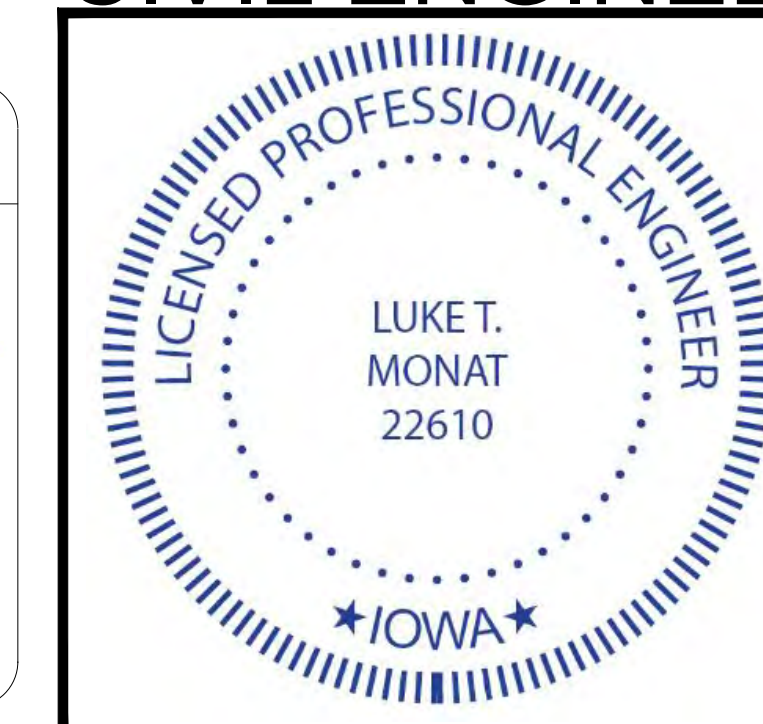
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT DESCRIBED BELOW WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Signature: *Dan Jensen* Date: 8/18/2023

Printed or typed name: DAN JENSEN
License Number: 25063
My License Renewal Date is: DECEMBER 31, 2023

PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
ALL 'A' AND 'B' SHEETS

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: *Luke Monat* Date: 8/18/2023

Printed or typed name: LUKE MONAT
License Number: 22610
My License Renewal Date is: DECEMBER 31, 2023

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

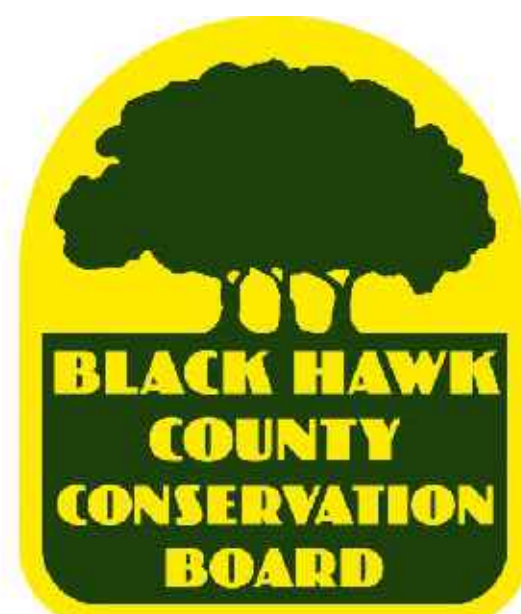
AUTHORIZATION TO BID

George Antoniou Digitally signed by George Antoniou
Date: 2023.08.21 15:50:15 -05'00'

Travis Baker Digitally signed by Travis Baker
Date: 2023.08.22 08:13:25 -05'00'

ENGINEERING BUREAU CHIEF DATE

DNR PROJECT #24-05-86-01



OVERALL PROJECT BID ITEMS:

#	ITEM DESCRIPTION	QUANTITY	UNITS
A1	MOBILIZATION & DEMOBILIZATION	1	LS
A2	SITE PREPARATION & CLEARING	1	LS
A3	SWPPP MANAGEMENT	1	LS

WATERSHED ESTIMATED PROJECT QUANTITIES:

#	ITEM DESCRIPTION	QUANTITY	UNITS
B1	OVER-EXCAVATION, CORE TRENCH	950	CY
B2	OVER-EXCAVATION, EMBANKMENT TOP	1,548	CY
B3	EXCAVATION, STREAM BANK EXCAVATION, HAUL TO BMP 17	1,138	CY
B4	TOPSOIL, STRIP, STOCKPILING & RESPREAD	4,898	CY
B5	EXISTING STUCTURE REMOVAL, BMP 3	1	LS
B6	EXISTING STUCTURE REMOVAL, BMP 7	1	LS
B7	EXISTING STUCTURE REMOVAL, BMP 12	1	LS
B8	EARTHFILL, EMBANKMENT & STUCTURE REMOVAL EXCAVATION FILL	20,140	CY
B9	EXCAVATION, MECHANICAL DREDGING EXISTING BMP - HARDBOTTOM & SOFT SEDIMENT	8,306	CY
B10	6" PVC, ANTI SEEP COLLARS, AND TRASH RACKS	119	LF
B11	10" CMP, ANTI SEEP COLLARS, AND TRASH RACKS	372	LF
B12	18" CMP & ANTI SEEP COLLARS	111	LF
B13	36" CMP RISER AND TRASH RACK	3	LS
B14	10" KNIFE GATE VALVES, STAINLESS STEEL	3	EA
B15	AGRIDRAIN INLET WATER CONTROL STUCTURE, 4' HEIGHT, 6" PIPE CONNECTIONS	1	EA
B16	AGRIDRAIN INLET WATER CONTROL STUCTURE, 5' HEIGHT, 10" PIPE CONNECTIONS	1	EA
B17	RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	465	TON
B18	CHOKE/CHINK STONE, 1 TO 5", WELL GRADED	80	TON
B19	BOULDERS, STEP POOL, 600 TO 900 LB	80	TON
B20	GRANULAR SURFACING, STAGING AREA	160	TON
B21	COMPOSITE BENTONTE COATED AGGREGATE, AQUABLOK OR APPROVED EQUAL	5	TON
B22	RECP- 400 G COIR	175	SY
B23	RECP- TYPE 2B	2,425	SY
B24	EROSION CONTROL SILT FENCE	1,940	LF
B25	LIVE STAKES, HARVEST ON SITE	1,000	EA
B26	TEMPORARY SEEDING	5.1	AC

IN-LAKE ESTIMATED PROJECT QUANTITIES:

#	ITEM DESCRIPTION	QUANTITY	UNITS
C1	LAKE DRAWDOWN/DEWATERING	1	LS
C2	EXCAVATION, MECHANICAL DREDGING	138,831	CY
C3	EARTHFILL, EMBANKMENT AND LAKE BOTTOM FILL	33,768	CY
C4	TOPSOIL STRIP, SALVAGE, AND RESPREAD	3,800	CY
C5	RIP RAP, CLASS 'C' - JETTIES AND SHORELINE ARMORING	2,748	TON
C6	SALVAGE EXISTING RIP RAP	480	TON
C7	GRANULAR SURFACING, BOAT LAUNCH AND PARKING AREA	450	TON
C8	TIED CONCRETE BLOCK MAT, SHORELINE ARMORING AND OVERFLOWS, 12" WIDE ROLL	1,828	SY
C9	LAKE RISER STRUCTURE MODIFICATIONS, ALUMINUM BULKHEAD, STOPLOGS, AND 18" X 18" SLIDE GATE	1	LS
C10	12" PPHP PIPE	330	LF
C11	12" HICKENBOTTOM RISER	4	EA
C12	REINFORCED CONCRETE ARCH PIPE, 42" EQUIVALENT (51" X 31")	128	LF
C13	REINFORCED CONCRETE ARCH FLARED END SECTION, 42" EQUIVALENT (51" X 31")	6	EA
C14	STONE TERRACE	1	LS
C15	SHORELINE FISHING NODE, 18' X 10'	4	EA
C16	SEEDING, TYPE 1	4	AC
C17	SEEDING, TYPE 2	6	AC
C18	SEEDING, TYPE 4 (TEMPORARY)	9	AC

OVERALL PROJECT ESTIMATE REFERENCE NOTES:

ITEM DESCRIPTION	DESCRIPTION
MOBILIZATION & DEMOBILIZATION	MOBILIZATION & 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. CONTRACTOR MUST PROVIDE ON SITE PORTABLE RESTROOMS FOR THE DURATION OF THE PROJECT.
SITE PREPARATION & CLEARING	SITE PREPARATION AND CLEARING: THIS ITEM SHALL BE CONSIDERED FULL COMPENSATION TO REMOVE ALL TREES, STUMPS, WOODY DEBRIS, WASTE, RUBBISH AND BRUSH FROM WITHIN THE GRADING LIMITS, PROPOSED POOL LIMITS, AND ALONG THE CONSTRUCTION ACCESS ROUTES. SEE SHEET B002 AND C002. THIS ITEM ALSO INCLUDES THE REMOVAL AND PROPER OFF-SITE DISPOSAL OF ALL WASTE ENCOUNTERED. THIS ITEM INCLUDES CLEARING AND GRUBBING OF TREES IDENTIFIED TO BE REMOVED. THIS ITEM ALSO INCLUDES THE REMOVAL AND SALVAGING OR PROPER DISPOSAL OF THE EXISTING BRIDGES AND WOOD PILES. SITE PREP AND REMOVAL AREAS INCLUDE THE BMP FOOTPRINTS, DAM EMBANKMENT, LAKE FOREBAY SITES, SPOILS SITES, HAUL ROUTES, AND ALONG THE LAKE EDGE AS NEEDED. SAVE ANY BROKEN CONCRETE, RIP RAP, AND SELECT TREES/ROOT BALLS THAT ARE REMOVED DURING SITE PREP AND TREE CLEARING FOR USE AS FISH HABITAT. SAVE 44 TREES WITH ROOTBALLS INTACT FOR USE AS FISH HABITAT BY OTHERS AND STOCKPILE AS DIRECTED BY OWNERS REPRESENTATIVE. TREES TO HAVE TRUNK DIAMETER OF 10-20" AND 20-40" TALL. COORDINATE WITH DNR FIELD ENGINEER. REMAINING CLEARED TREES ARE TO BE BURNED ONSITE AND REMAINS BURIED IN AN OWNER APPROVED LOCATION.
SWPPP MANAGEMENT	SWPPP MANAGEMENT: THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) WILL BE PROVIDED TO THE CONTRACTOR. THE OWNER HAS OBTAINED COVERAGE FOR THE PROJECT UNDER IOWA DNR NPDES GENERAL PERMIT NO. 2. THIS ITEM INCLUDES ALL WORK REQUIRED TO COMPLY WITH THE ADMINISTRATIVE PROVISIONS OF THE IOWA DNR GENERAL PERMIT NO. 2; INCLUDING RECORD KEEPING, DOCUMENTATION, UPDATING THE SWPPP, FILING THE NOTICE OF DISCONTINUATION, ETC. THIS ITEM ALSO INCLUDES INSPECTIONS AS REQUIRED TO SATISFY THE PROVISIONS OF THE GENERAL PERMIT.



CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

DRAWN: GHK
APPROVED: DJJ
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 09/19/2023
PROJECT NO: 4213130
FIELD BOOK: --
CLIENT NO: --

OVERALL PROJECT QUANTITIES AND NOTES

A001

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ESTIMATED PROJECT QUANTITIES:

Table with 4 columns: #, ITEM DESCRIPTION, QUANTITY, UNITS. Rows include OVER-EXCAVATION, CORE TRENCH, EXCAVATION, STREAM BANK EXCAVATION, TOPSOIL, STRIP, STOCKPILING & RESPREAD, etc.

ESTIMATED REFERENCE NOTES:

Table with 2 columns: BID ITEM #, DESCRIPTION. Rows include OVER-EXCAVATION, CORE TRENCH, OVER-EXCAVATION, EMBANKMENT TOP, EXCAVATION, STREAM BANK EXCAVATION, etc.

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.
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 OWNER.
8. REPAIR OR REPLACE DAMAGE TO EXISTING FACILITIES (TILE, UTILITIES, FENCES, ETC.) DESIGNATED TO REMAIN, AT NO ADDITIONAL EXPENSE TO THE OWNER.
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.
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. SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.
15. CONSTRUCTION SURVEY STAKING IS THE RESPONSIBILITY OF THE CONTRACTOR.
16. ALL WORK SHALL BE PER PER SUDAS UNLESS STATED OTHERWISE IN THE PROJECT SPECIFICATIONS.
17. CONTRACTOR SHALL VISIT AND INSPECT THE PROJECT AREA AND THOROUGHLY FAMILIARIZE THEMSELVES WITH THE ACTUAL JOB CONDITIONS PRIOR TO THE START OF WORK. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR FROM PERFORMING THE WORK IN ACCORDANCE TO THE PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND CONTRACT.
18. ALL WORK SHALL CONFORM TO AND BE CONDUCTED IN ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES OF THE STATE OF IOWA, AND THE UNITED STATES.
19. SITE ACCESS ROUTES AND PARKING SHALL BE DETERMINED/APPROVED BY THE OWNER.
20. IF A CULTURAL RESOURCE IS IDENTIFIED DURING CONSTRUCTION, CONTRACTORS SHALL IMMEDIATELY HALT ALL WORK AND NOTIFY IOWA DNR, OWNER, AND ENGINEER. WORK MAY NOT RECOMMENCE UNTIL THE SITE IS CLEARED BY IOWA DNR, OWNER, AND ENGINEER.
21. CONTRACTOR SHALL MANAGE AND REPAIR EROSION AND SEDIMENT CONTROL THROUGHOUT THE PROJECT. THE ENGINEER SHALL OBTAIN AND PROVIDE A STORMWATER POLLUTION PREVENTION PLAN UNDER NPDES GENERAL PERMIT NO. 2 REGULATIONS. THE CONTRACTOR SHALL HAVE MATERIALS EQUIPMENT AND LABOR AVAILABLE ON A DAILY BASIS TO INSTALL AND MAINTAIN EROSION CONTROL FEATURES IDENTIFIED IN THE APPROVED SWPPP THROUGHOUT THE PROJECT.
22. PROJECT COORDINATES AND ELEVATIONS ARE NAD83, NAVD88, IOWA NORTH STATE PLANE COORDINATES (1401), US SURVEY FEET.
23. TREE CLEARING SHALL ONLY TAKE PLACE FROM NOVEMBER 1ST THROUGH MARCH 31ST.



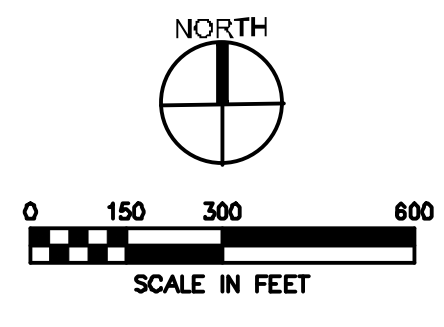
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WATERSHED QUANTITIES & NOTES

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- REMOVAL AND STAGING NOTES:**
- COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREAS AND ACCEPTABLE ACCESS ROUTES.
 - CONTRACTOR SHALL HALT WORK AND NOTIFY ENGINEER IMMEDIATELY IF A CULTURAL RESOURCE IS IDENTIFIED WITHIN THE PROJECT LIMITS.
 - CONTRACTOR SHALL BURN ALL WOODY DEBRIS ON SITE. BURNS SHALL BE MONITORED BY THE CONTRACTOR AND PERFORMED WHEN CONDITIONS ARE NOT PRONE TO SPREADING FIRES. COORDINATE WITH OWNER.
 - TREE CLEARING SHALL ONLY TAKE PLACE BETWEEN NOVEMBER 1 AND MARCH 31.
 - CONTRACTOR SHALL DISPOSE OF ALL DEBRIS AND REFUSE LOCATED WITHIN THE PROJECT AREA AT AN OFF SITE LOCATION IN COMPLIANCE WITH THE LAW.
 - PROTECT EXISTING PAVEMENT DESIGNATED TO REMAIN. CONTRACTOR SHALL REPLACE DAMAGED PAVING AT NO ADDITIONAL EXPENSE TO THE OWNER.

DESCRIPTION	LINE TYPE
STREAM CENTERLINE	
NORMAL WATER LEVEL	
GRADING LIMITS	
EXISTING WETLAND	
APPROX. PROPERTY BOUNDARY	
ACCESS ROUTE	
SURVEY CONTROL POINT	
SOIL BORING POINT	



EROSION AND SEDIMENT CONTROL NOTES:

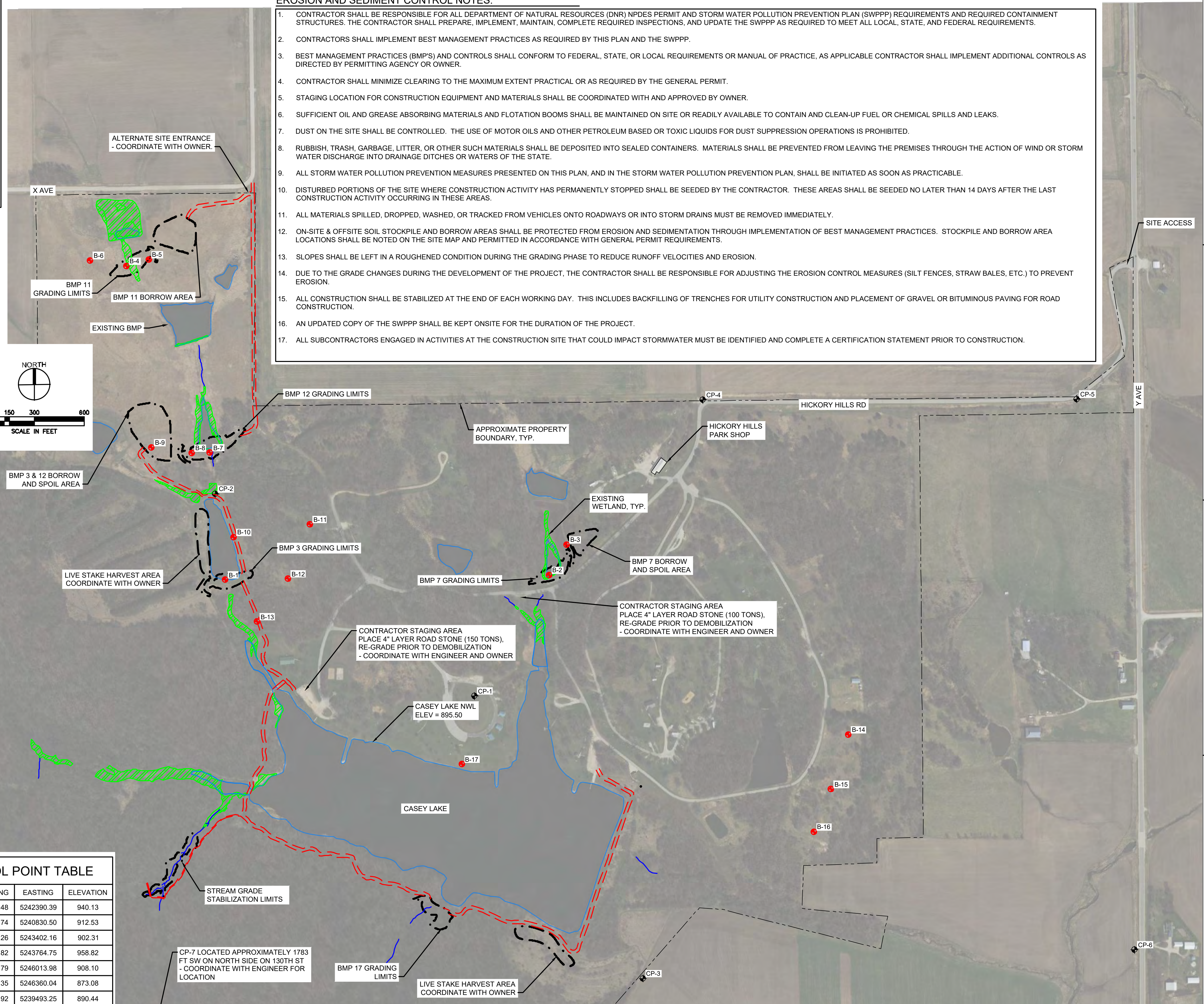
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEPARTMENT OF NATURAL RESOURCES (DNR) NPDES PERMIT AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS AND REQUIRED CONTAINMENT STRUCTURES. THE CONTRACTOR SHALL PREPARE, IMPLEMENT, MAINTAIN, COMPLETE REQUIRED INSPECTIONS, AND UPDATE THE SWPPP AS REQUIRED TO MEET ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
- CONTRACTORS SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THIS PLAN AND THE SWPPP.
- BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
- CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.
- STAGING LOCATION FOR CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE COORDINATED WITH AND APPROVED BY OWNER.
- SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
- DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
- RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
- ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
- DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE SEEDED BY THE CONTRACTOR. THESE AREAS SHALL BE SEEDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS.
- ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
- ON-SITE & OFFSITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
- SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
- DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) TO PREVENT EROSION.
- ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.
- AN UPDATED COPY OF THE SWPPP SHALL BE KEPT ONSITE FOR THE DURATION OF THE PROJECT.
- ALL SUBCONTRACTORS ENGAGED IN ACTIVITIES AT THE CONSTRUCTION SITE THAT COULD IMPACT STORMWATER MUST BE IDENTIFIED AND COMPLETE A CERTIFICATION STATEMENT PRIOR TO CONSTRUCTION.

SOIL BORING TABLE

POINT #	NORTHING	EASTING	ELEVATION
B-1	3563488.88	5240890.59	908.36
B-2	3563516.18	5242839.16	903.83
B-3	3563699.90	5242944.85	912.05
B-4	3565375.74	5240295.83	935.83
B-5	3565414.06	5240430.63	938.77
B-6	3565409.16	5240078.83	948.22
B-7	3564252.95	5240798.71	914.72
B-8	3564251.44	5240690.46	919.52
B-9	3564284.48	5240446.39	939.00
B-10	3563744.70	5240941.15	910.92
B-11	3563820.40	5241400.26	955.83
B-12	3563494.17	5241269.48	923.04
B-13	3563236.46	5241083.60	904.28
B-14	3562557.53	5244639.25	935.24
B-15	3562228.05	5244535.63	912.07
B-16	3561971.46	5244430.97	891.77
B-17	3562378.99	5242313.74	901.54

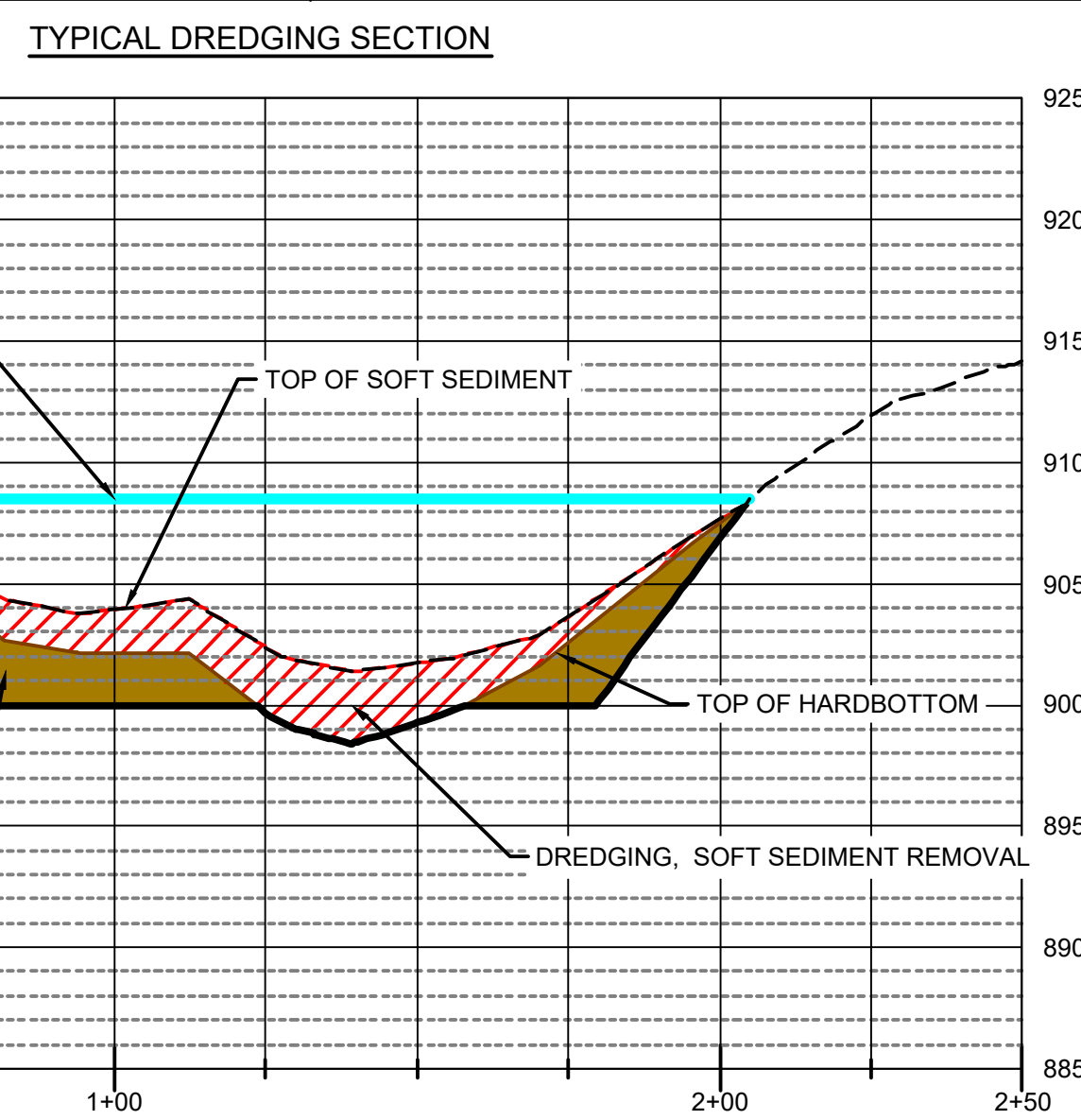
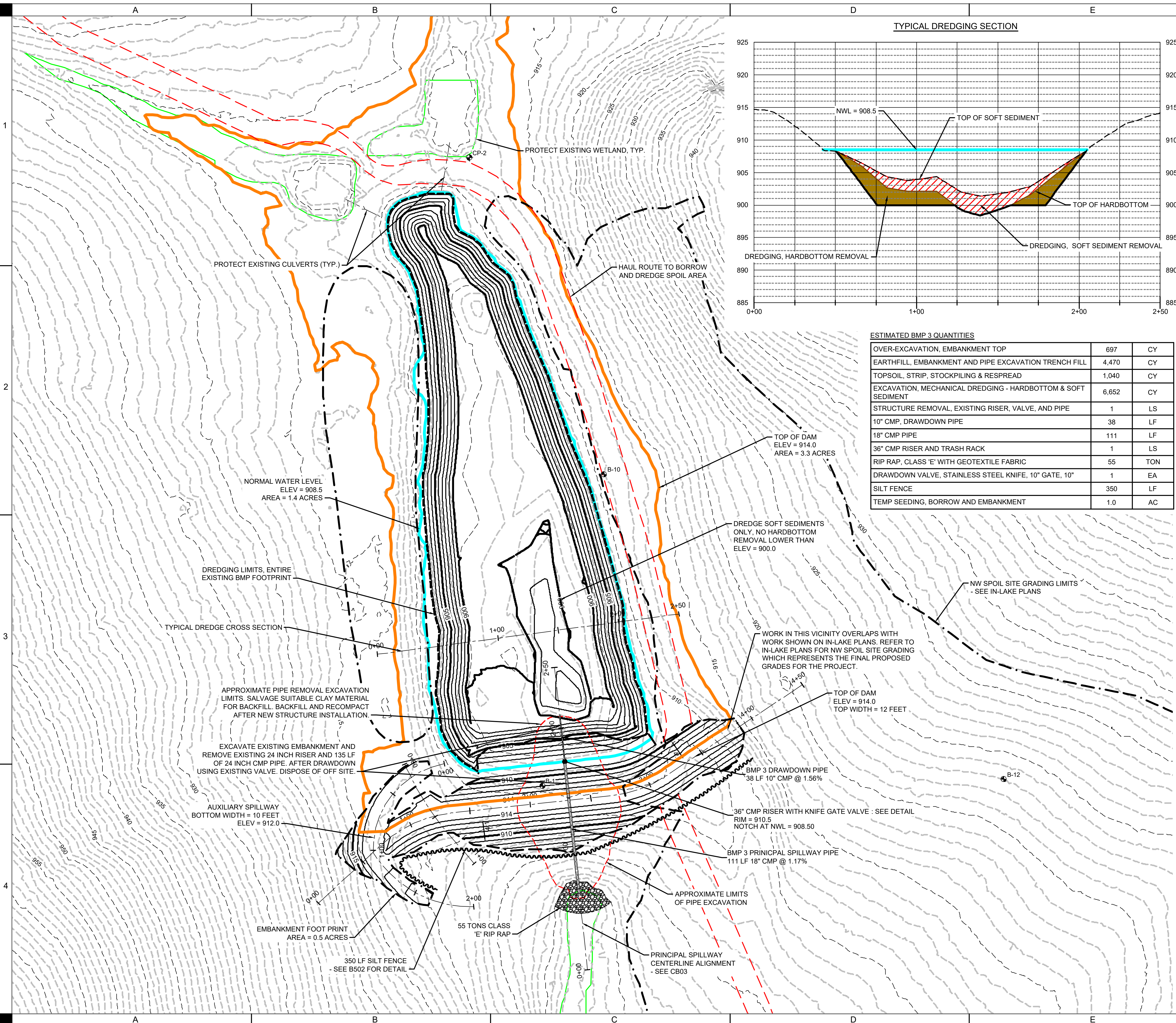
CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION
CP-1	3562789.48	5242390.39	940.13
CP-2	3564004.74	5240830.50	912.53
CP-3	3561090.26	5243402.16	902.31
CP-4	3564570.82	5243764.75	958.82
CP-5	3564575.79	5246013.98	908.10
CP-6	3561263.35	5246360.04	873.08
CP-7	3558818.92	5239493.25	890.44



DRAWN: CHK
APPROVED: DJJ
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 09/19/2023
PROJECT NO: 423830
FIELD BOOK: --
CLIENT NO: --

DATE: 09/19/2023 11:17:59 AM
 PROJECT: 423830 - CASEY LAKE RESTORATION
 DRAWING: B002 - OVERALL WATERSHED PROJECT PLAN



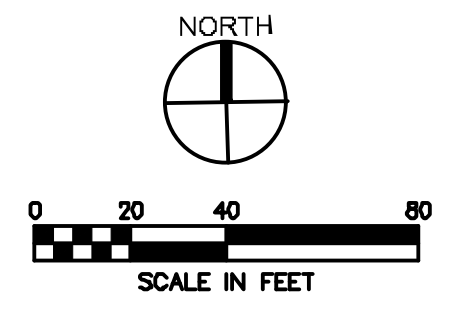
ESTIMATED BMP 3 QUANTITIES

OVER-EXCAVATION, EMBANKMENT TOP	697	CY
EARTHFILL, EMBANKMENT AND PIPE EXCAVATION TRENCH FILL	4,470	CY
TOPSOIL, STRIP, STOCKPILING & RESPREAD	1,040	CY
EXCAVATION, MECHANICAL DREDGING - HARDBOTTOM & SOFT SEDIMENT	6,652	CY
STRUCTURE REMOVAL, EXISTING RISER, VALVE, AND PIPE	1	LS
10" CMP, DRAWDOWN PIPE	38	LF
18" CMP PIPE	111	LF
36" CMP RISER AND TRASH RACK	1	LS
RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	55	TON
DRAWDOWN VALVE, STAINLESS STEEL KNIFE, 10" GATE, 10"	1	EA
SILT FENCE	350	LF
TEMP SEEDING, BORROW AND EMBANKMENT	1.0	AC

- EARTHWORK NOTES:**
- STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN EMBANKMENT FILL LIMITS AND PIPE REMOVAL EXCAVATION LIMITS. RESPREAD TOPSOIL IN ALL STRIPPED AREAS OUTSIDE OF THE PERMANENT POOL. AFTER TOP SOIL IS STRIPPED, STRIP AN ADDITIONAL 2 FEET OF MATERIAL ON EMBANKMENT TOP PRIOR TO EMBANKMENT FILL PLACEMENT.
 - MAXIMUM SIDE SLOPES OF ALL EXCAVATED AREAS TO BE 3:1 OR FLATTER.
 - CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN GRADING LIMITS. BRUSH MAY BE BURNED AND BURIED ON SITE OUTSIDE OF THE NORMAL POOL. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO NOVEMBER 1ST TO MARCH 31ST.
 - COMPACTION SHALL BE 95% MAXIMUM DRY DENSITY AND -1% TO +4% OPTIMUM MOISTURE CONTENT. PLACE SOIL IN 8 INCH LOOSE LIFTS PRIOR TO COMPACTION. SEE SPECIFICATIONS FOR TESTING FREQUENCY. TESTING PAID FOR BY OWNER. CONTRACTOR SHALL COORDINATE WITH THIRD PARTY TESTING COMPANY AND ENGINEER.
 - A 20% SHRINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE. OVERBUILD EARTHWORK FOR THE TOP OF EMBANKMENT IS NOT INCLUDED IN THE BID QUANTITIES, SIDE SLOPES DO NOT REQUIRE OVERBUILD.
- DRAWDOWN NOTES:**
- PRIOR TO WORK, CONTRACTOR SHALL OPEN VALVE AND DRAWDOWN POND. DRAWDOWN SHALL BE LIMITED TO 1.5 FEET PER DAY. DRAWDOWN TO MAXIMUM EXTENT FEASIBLE PRIOR TO EMBANKMENT BREACH/EXCAVATION TO LIMIT EROSION.
 - EXCAVATE EXISTING EMBANKMENT TO REMOVE EXISTING PIPE AND APPURTENANCE. SALVAGE CLAY. AND REMOVE EXISTING OUTLET STRUCTURE AND PIPE. COORDINATE TEMPORARY STOCK PILE WITH OWNER AND ENGINEER.
- DREDGE NOTES:**
- REMOVE ALL SOFT SEDIMENT FROM ENTIRE BMP FOOTPRINT (3,649 CY). EXCAVATE ADDITIONAL HARDBOTTOM MATERIAL AT 3 TO 1 SLOPE FROM WAVE BENCH DOWN TO ELEVATION 900.00. DO NOT PLACE FILL MATERIAL IN AREA WHERE HARDBOTTOM IS DEEPER THAN 900.0.
 - HAUL AND PLACE DREDGED MATERIAL IN PROPOSED BMP BORROW SITES AFTER BORROW ACTIVITIES ARE COMPLETE. GRADE MATERIAL TO DRAIN WITH MAXIMUM SLOPES OF 5%. SOFT SEDIMENT MAY REQUIRE DRYING AND BLENDING WITH HARDBOTTOM TO FORM WORKABLE MATERIAL.
- ACCESS NOTES:**
- CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET B002. COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREA.
 - NO POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA.
 - RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
 - SEE SHEET B002 FOR PROPOSED HAUL ROUTES AND ACCESS FROM STAGING AREA TO CONSTRUCTION AREAS. CONTRACTOR RESPONSIBLE FOR TREE TRIMMING AND CLEARING ALONG EXISTING TRAILS AS REQUIRED.

LEGEND

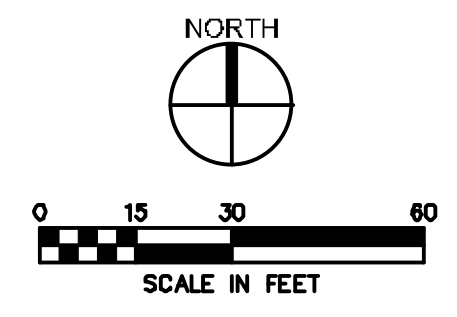
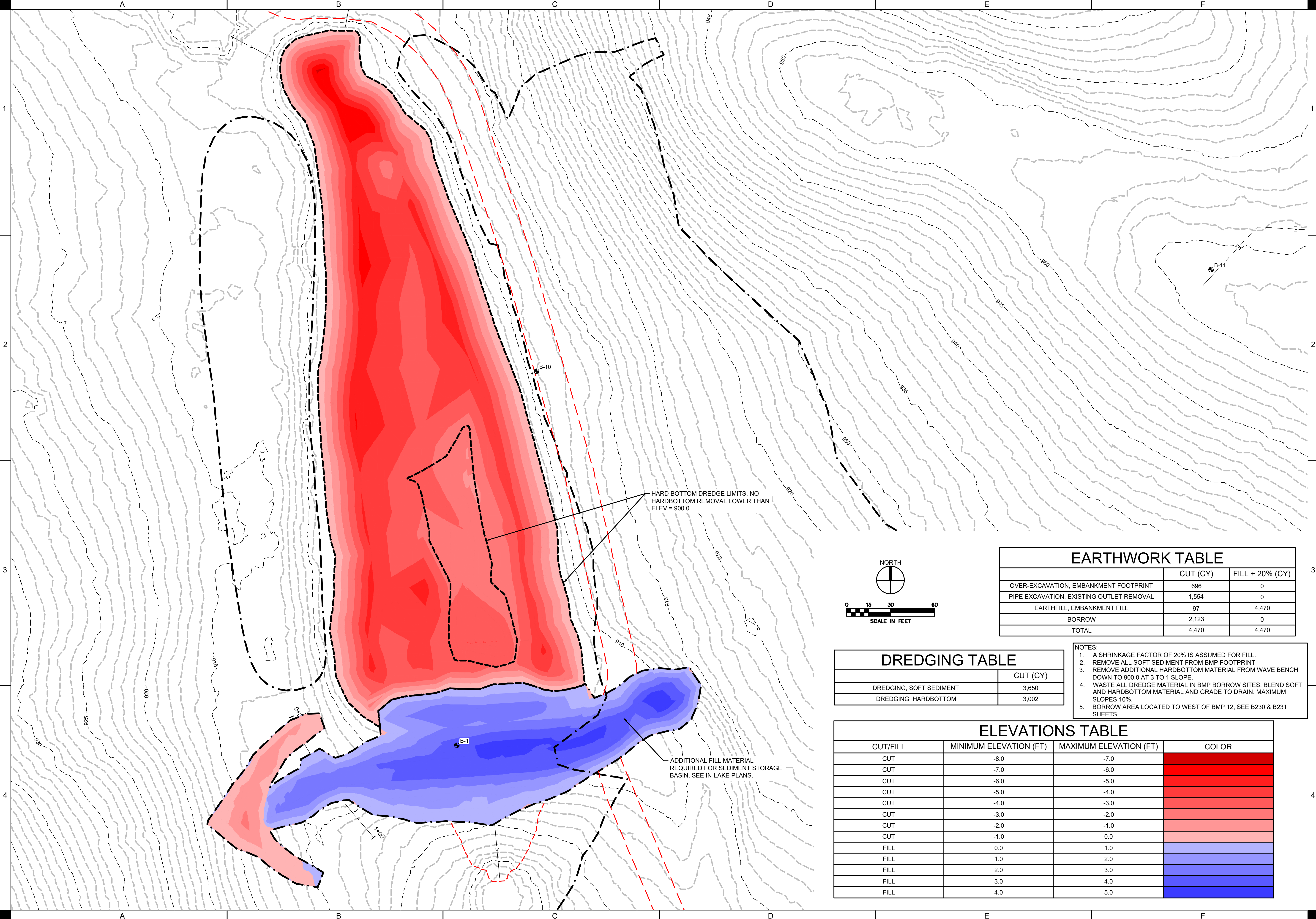
DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER LEVEL	
PRINCIPAL SPILLWAY	
RIP RAP	
GRADING LIMITS	
DREDGE LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	



PROJECT INFORMATION

DRAWN: MKO	APPROVED: LTM
ISSUED FOR: CONSTRUCTION DOCUMENTS	DATE: 09/18/2023
PROJECT NO: 423830	FIELD BOOK: --
CLIENT NO: --	

DATE: 09/18/2023
 DRAWN: MMO
 PROJECT NO: 423030
 SHEET NO: B201



EARTHWORK TABLE		
	CUT (CY)	FILL + 20% (CY)
OVER-EXCAVATION, EMBANKMENT FOOTPRINT	696	0
PIPE EXCAVATION, EXISTING OUTLET REMOVAL	1,554	0
EARTHFILL, EMBANKMENT FILL	97	4,470
BORROW	2,123	0
TOTAL	4,470	4,470

DREDGING TABLE	
	CUT (CY)
DREDGING, SOFT SEDIMENT	3,650
DREDGING, HARDBOTTOM	3,002

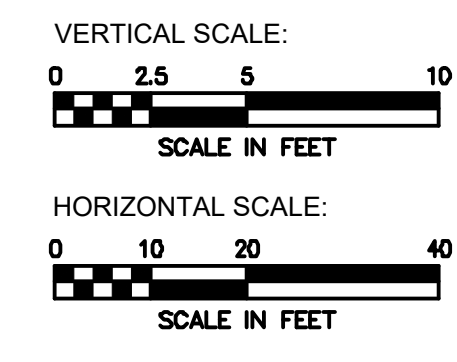
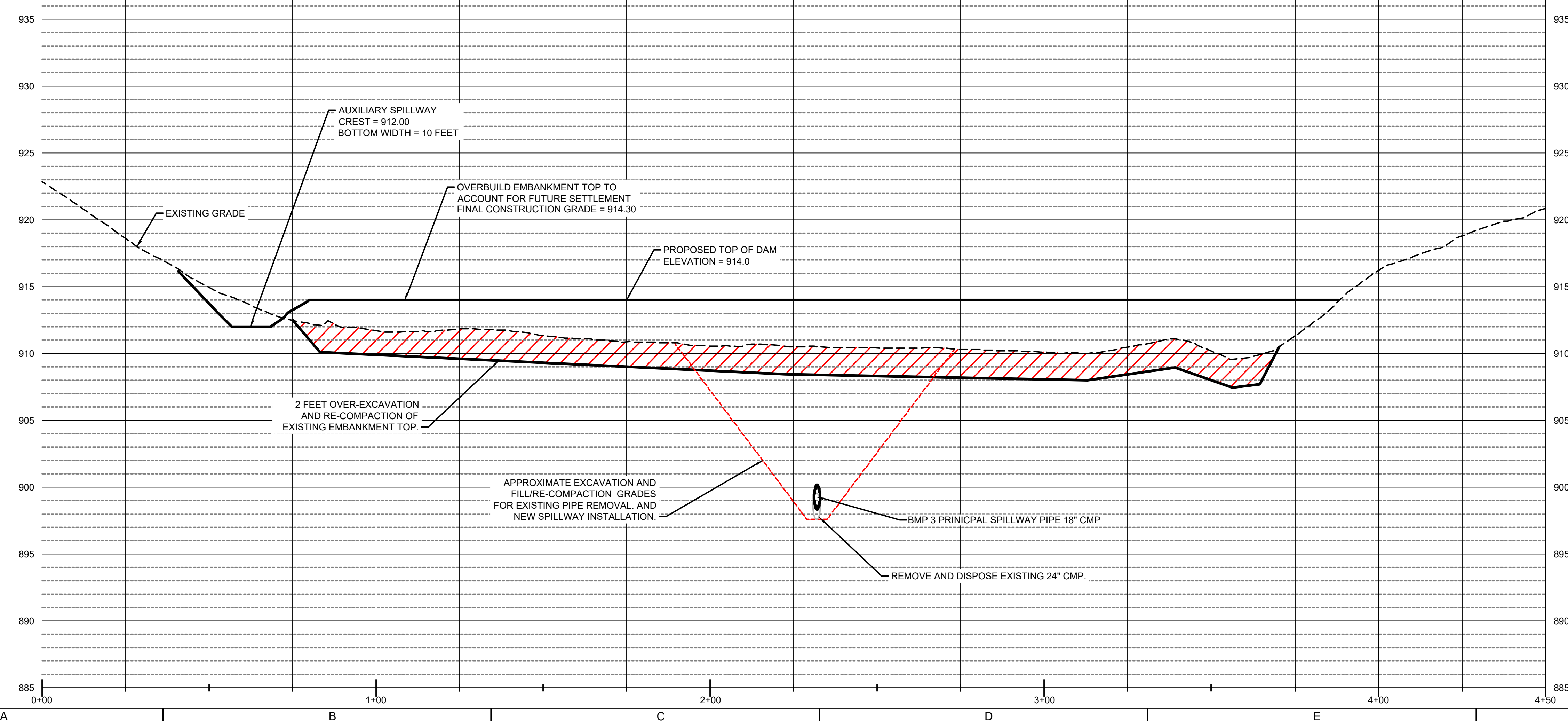
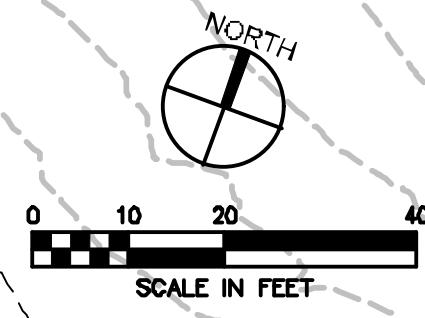
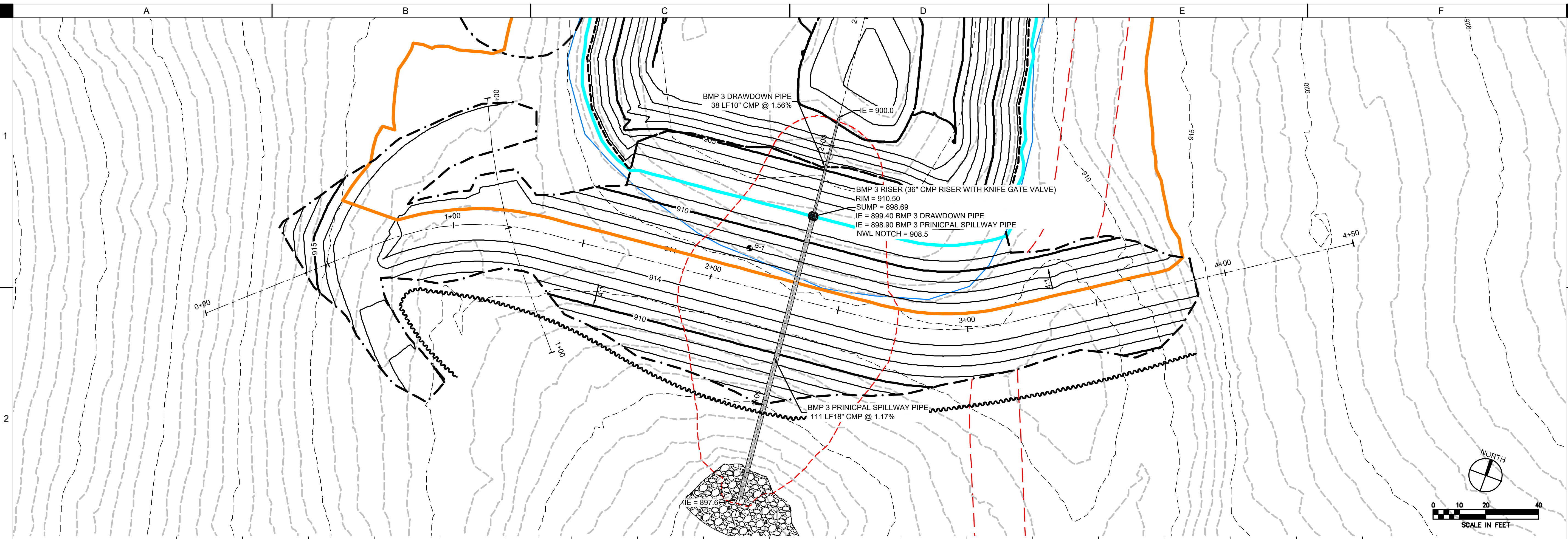
- NOTES:
1. A SHRINKAGE FACTOR OF 20% IS ASSUMED FOR FILL.
 2. REMOVE ALL SOFT SEDIMENT FROM BMP FOOTPRINT
 3. REMOVE ADDITIONAL HARDBOTTOM MATERIAL FROM WAVE BENCH DOWN TO 900.0 AT 3 TO 1 SLOPE.
 4. WASTE ALL DREDGE MATERIAL IN BMP BORROW SITES. BLEND SOFT AND HARDBOTTOM MATERIAL AND GRADE TO DRAIN. MAXIMUM SLOPES 10%.
 5. BORROW AREA LOCATED TO WEST OF BMP 12, SEE B230 & B231 SHEETS.

ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-8.0	-7.0	[Color gradient from red to blue]
CUT	-7.0	-6.0	
CUT	-6.0	-5.0	
CUT	-5.0	-4.0	
CUT	-4.0	-3.0	
CUT	-3.0	-2.0	
CUT	-2.0	-1.0	
CUT	-1.0	0.0	
FILL	0.0	1.0	
FILL	1.0	2.0	
FILL	2.0	3.0	[Color gradient from blue to dark blue]
FILL	3.0	4.0	
FILL	4.0	5.0	
FILL	4.0	5.0	

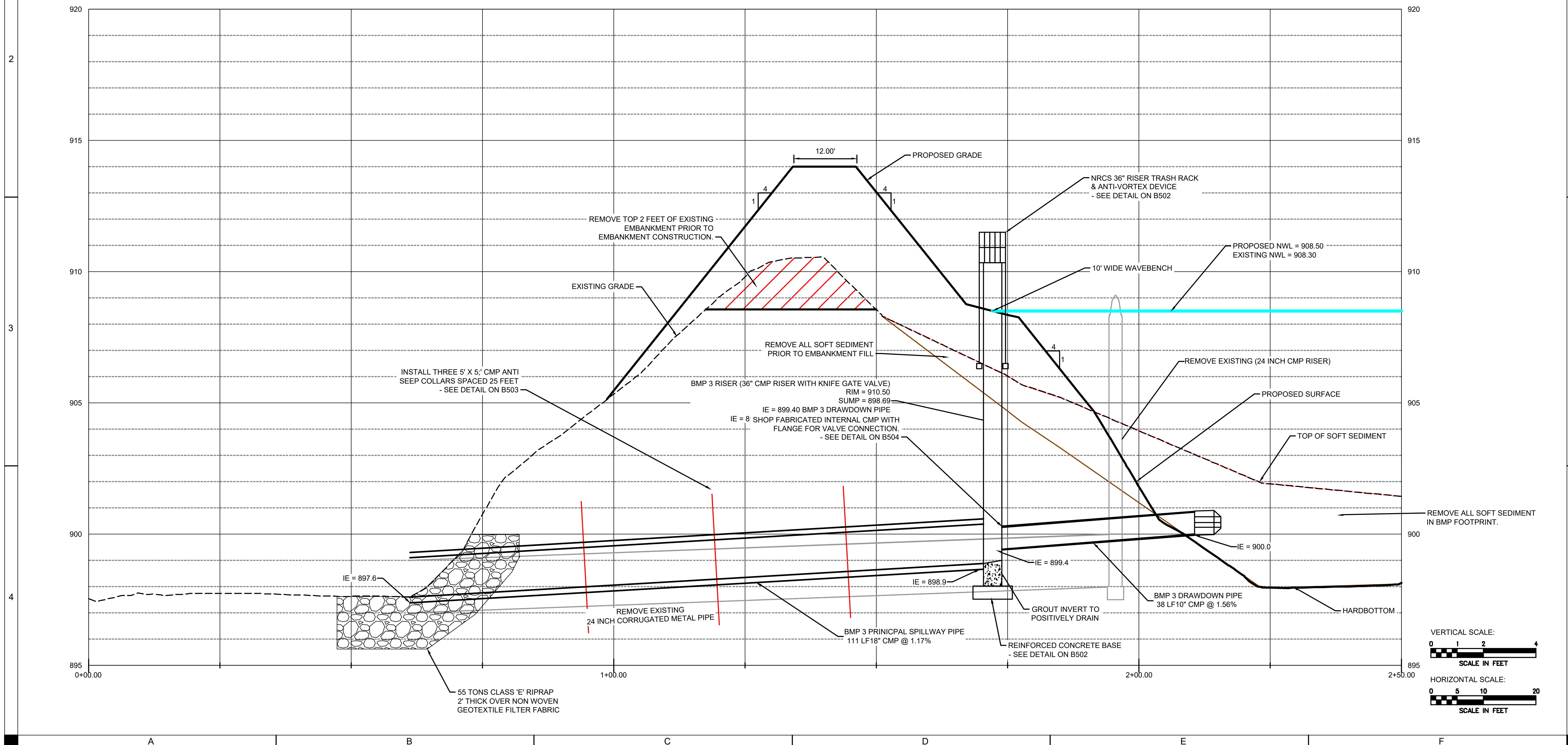
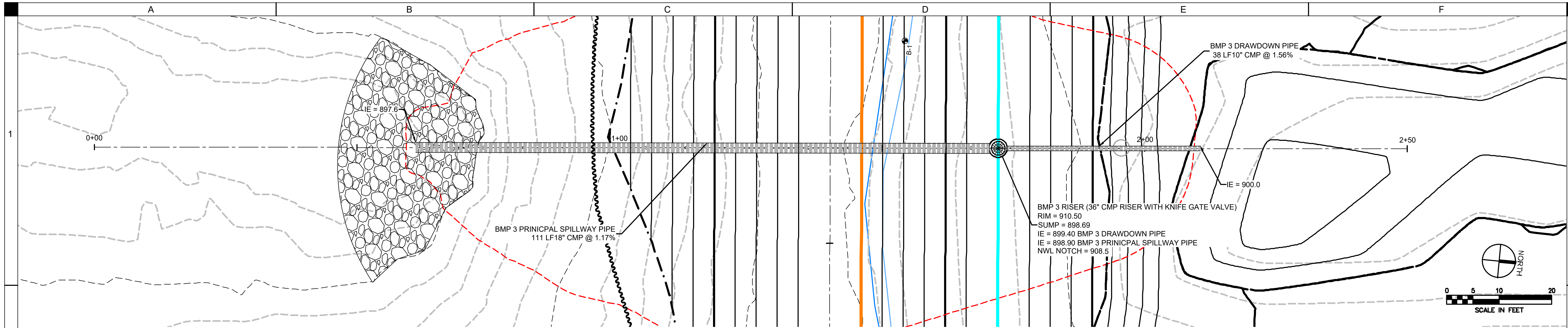


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 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 09/18/2023
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 FIELD BOOK: --
 CLIENT NO: --

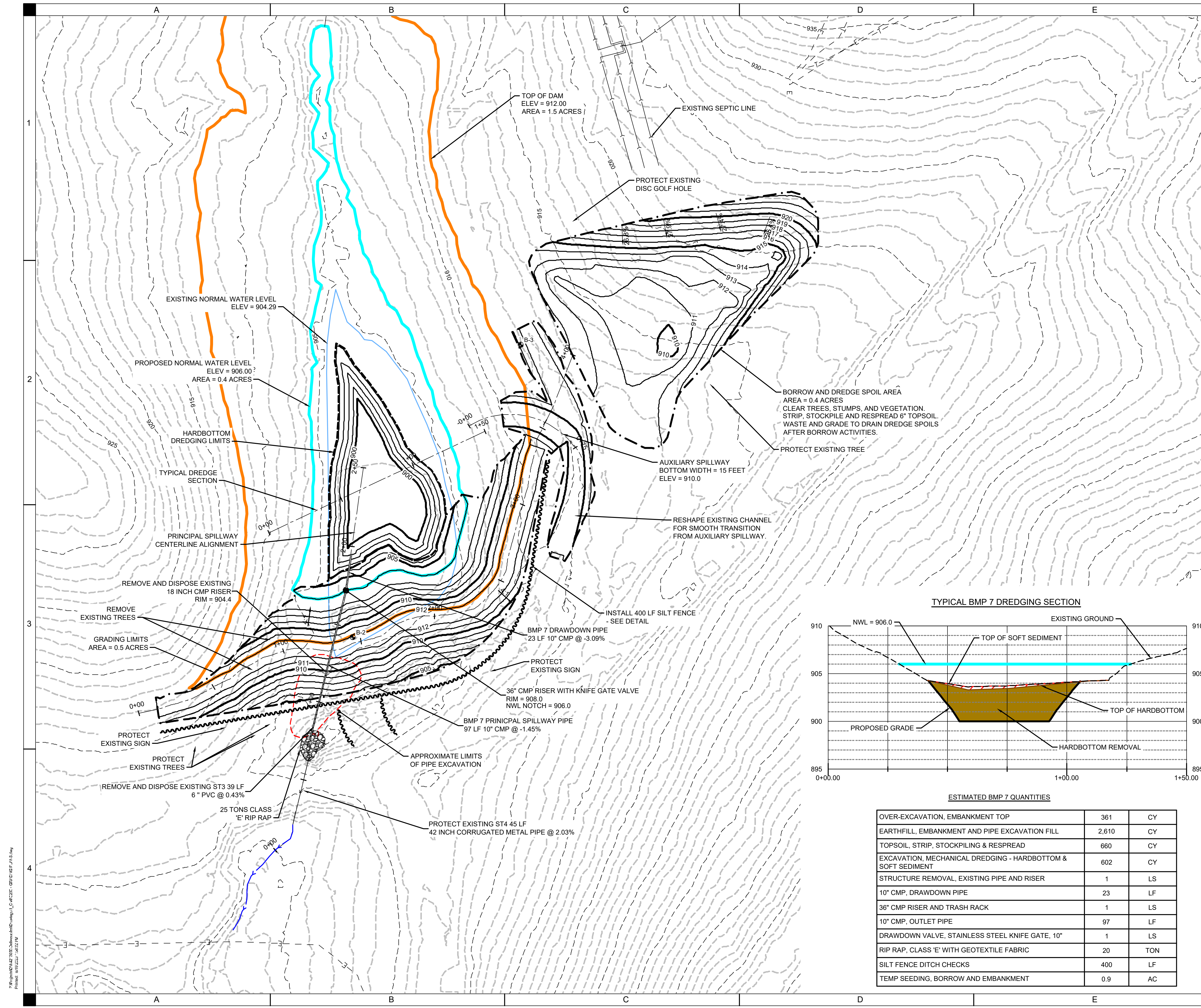
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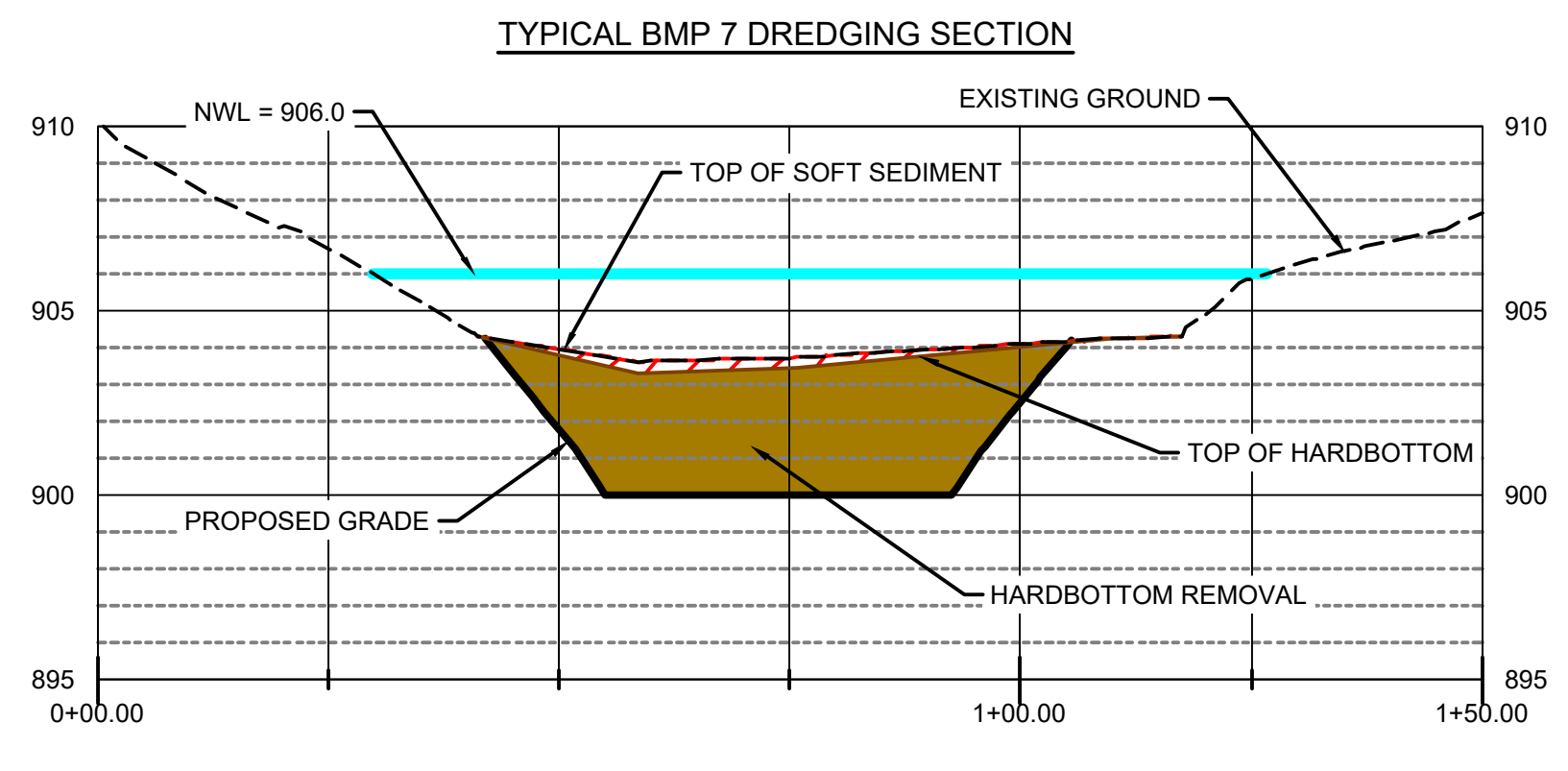
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FIELD BOOK:	---
CLIENT NO.:	---



DRAWN:	MMO
APPROVED:	LTM
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	09/19/2023
PROJECT NO.:	423103
FIELD BOOK:	---
CLIENT NO.:	---



- DRAWDOWN NOTES:**
- DRAWDOWN EXISTING STRUCTURE BY REMOVING 6" STEEL RISER AND ALLOW TO DRAIN THROUGH EXISTING PIPE. DRAWDOWN SHALL BE LIMITED TO 1 FEET PER DAY. DRAWDOWN TO MAXIMUM EXTENT FEASIBLE PRIOR TO EMBANKMENT BREACH/EXCAVATION TO LIMIT EROSION.
 - EXCAVATE EXISTING EMBANKMENT, SALVAGE CLAY, AND REMOVE EXISTING OUTLET STRUCTURE AND PIPE. INSTALL PROPOSED OUTLET (SEE B213). COORDINATE TEMPORARY STOCK PILE WITH OWNER AND ENGINEER.
- EARTHWORK NOTES:**
- STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN EMBANKMENT AND BORROW FOOTPRINT. RESPREAD TOPSOIL IN ALL STRIPPED AREAS OUTSIDE OF THE PERMANENT POOL.
 - MAXIMUM SIDE SLOPES OF ALL EXCAVATED AREAS TO BE 3:1 OR FLATTER.
 - CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN GRADING LIMITS. BRUSH MAY BE BURNED AND BURIED ON SITE OUTSIDE OF THE NORMAL POOL. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO NOVEMBER 1ST TO MARCH 31ST.
 - COMPACTION SHALL BE 95% MAXIMUM DRY DENSITY AND -1% TO +4% OPTIMUM MOISTURE CONTENT. PLACE SOIL IN 8 INCH LOOSE LIFTS PRIOR TO COMPACTION. SEE SPECIFICATIONS FOR TESTING FREQUENCY. TESTING PAID FOR BY OWNER. CONTRACTOR SHALL COORDINATE WITH THIRD PARTY TESTING COMPANY AND ENGINEER.
 - A 20% SHRINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE. OVERBUILD EARTHWORK FOR THE TOP OF EMBANKMENT IS NOT INCLUDED IN THE BID QUANTITIES, SIDE SLOPES DO NOT REQUIRE OVERBUILD.
- DREDGE NOTES:**
- REMOVE ALL SOFT SEDIMENT WITHIN EXISTING BMP FOOTPRINT AREA.
 - REMOVE ADDITIONAL HARDBOTTOM TO 900.0' @ 3:1.
- ACCESS NOTES:**
- CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET B002. COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREA.
 - NO POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA.
 - RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
 - SEE SHEET B002 FOR PROPOSED HAUL ROUTES AND ACCESS FROM STAGING AREA TO CONSTRUCTION AREAS. CONTRACTOR RESPONSIBLE FOR TREE TRIMMING AND CLEARING ALONG EXISTING TRAILS AS REQUIRED.

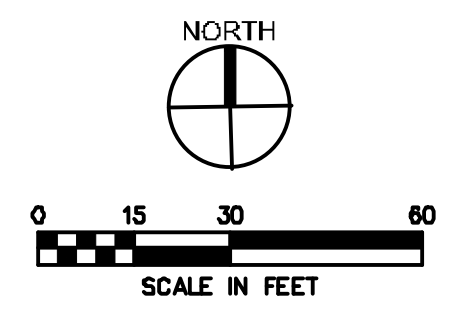


ESTIMATED BMP 7 QUANTITIES

OVER-EXCAVATION, EMBANKMENT TOP	361	CY
EARTHFILL, EMBANKMENT AND PIPE EXCAVATION FILL	2,610	CY
TOPSOIL, STRIP, STOCKPILING & RESPREAD	660	CY
EXCAVATION, MECHANICAL DREDGING - HARDBOTTOM & SOFT SEDIMENT	602	CY
STRUCTURE REMOVAL, EXISTING PIPE AND RISER	1	LS
10" CMP, DRAWDOWN PIPE	23	LF
36" CMP RISER AND TRASH RACK	1	LS
10" CMP, OUTLET PIPE	97	LF
DRAWDOWN VALVE, STAINLESS STEEL KNIFE GATE, 10"	1	LS
RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	20	TON
SILT FENCE DITCH CHECKS	400	LF
TEMP SEEDING, BORROW AND EMBANKMENT	0.9	AC

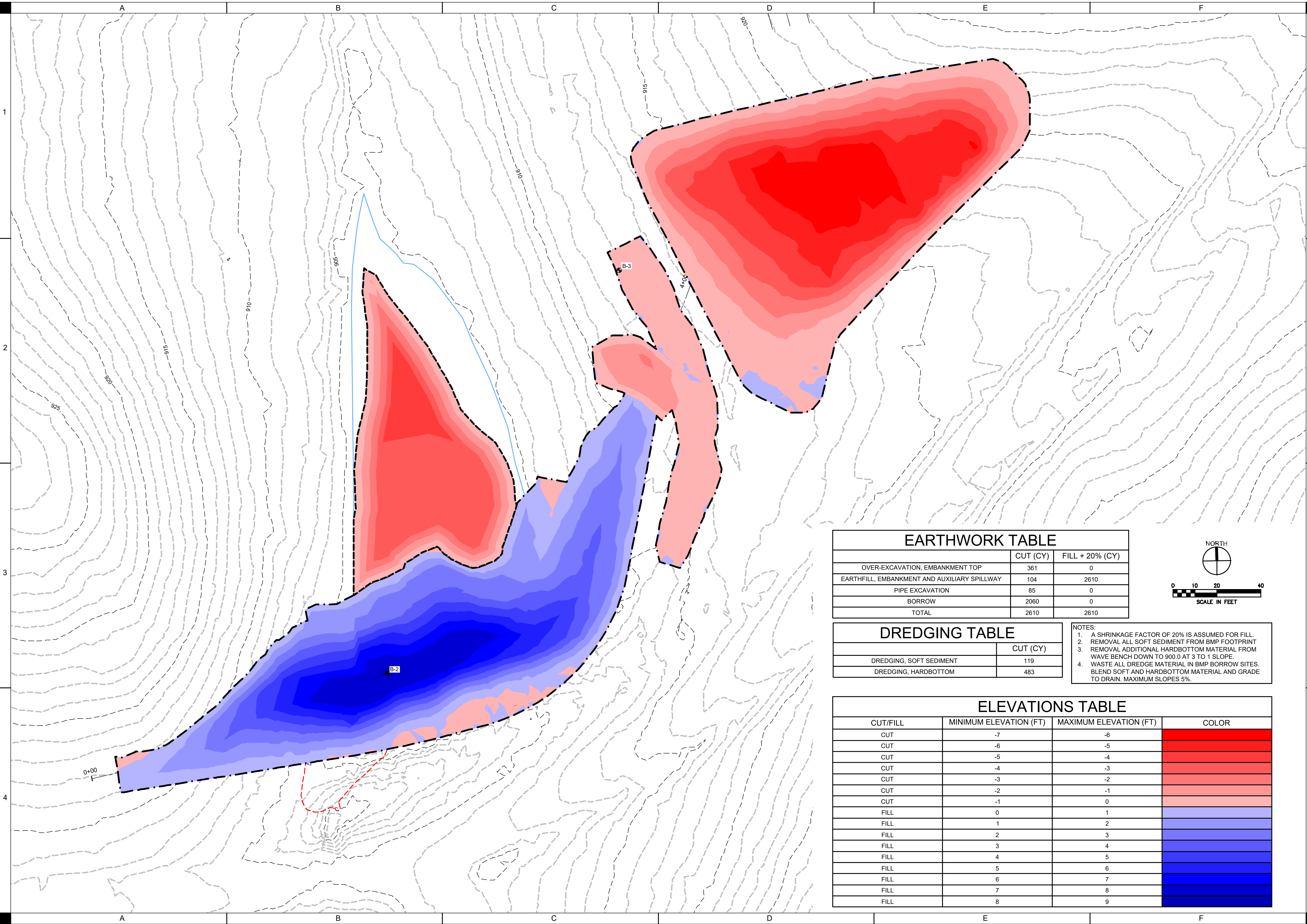
LEGEND

DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	Orange solid line
STREAM CENTERLINE	Blue dashed line with arrow
NORMAL WATER LEVEL	Light blue solid line
PRINCIPAL SPILLWAY	Black dashed line
RIP RAP	Patterned area
GRADING LIMITS	Black dashed line
DREDGE LIMITS	Black dashed line
MAJOR CONTOUR (PROPOSED)	Black dashed line
MINOR CONTOUR (PROPOSED)	Black dashed line
MAJOR CONTOUR (EXISTING)	Black dashed line
MINOR CONTOUR (EXISTING)	Black dashed line

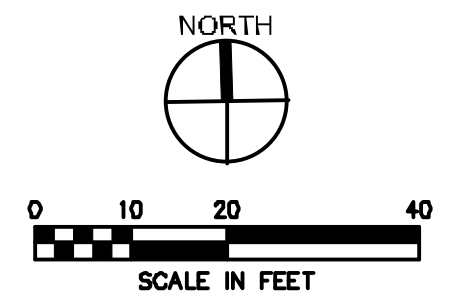


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 APPROVED: DJJ
 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 09/18/2023
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 FIELD BOOK: --
 CLIENT NO: --

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EARTHWORK TABLE		
	CUT (CY)	FILL + 20% (CY)
OVER-EXCAVATION, EMBANKMENT TOP	361	0
EARTHFILL, EMBANKMENT AND AUXILIARY SPILLWAY	104	2610
PIPE EXCAVATION	85	0
BORROW	2060	0
TOTAL	2610	2610



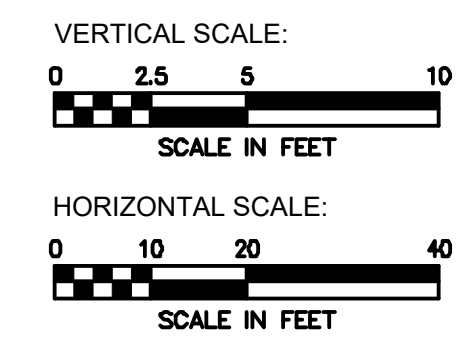
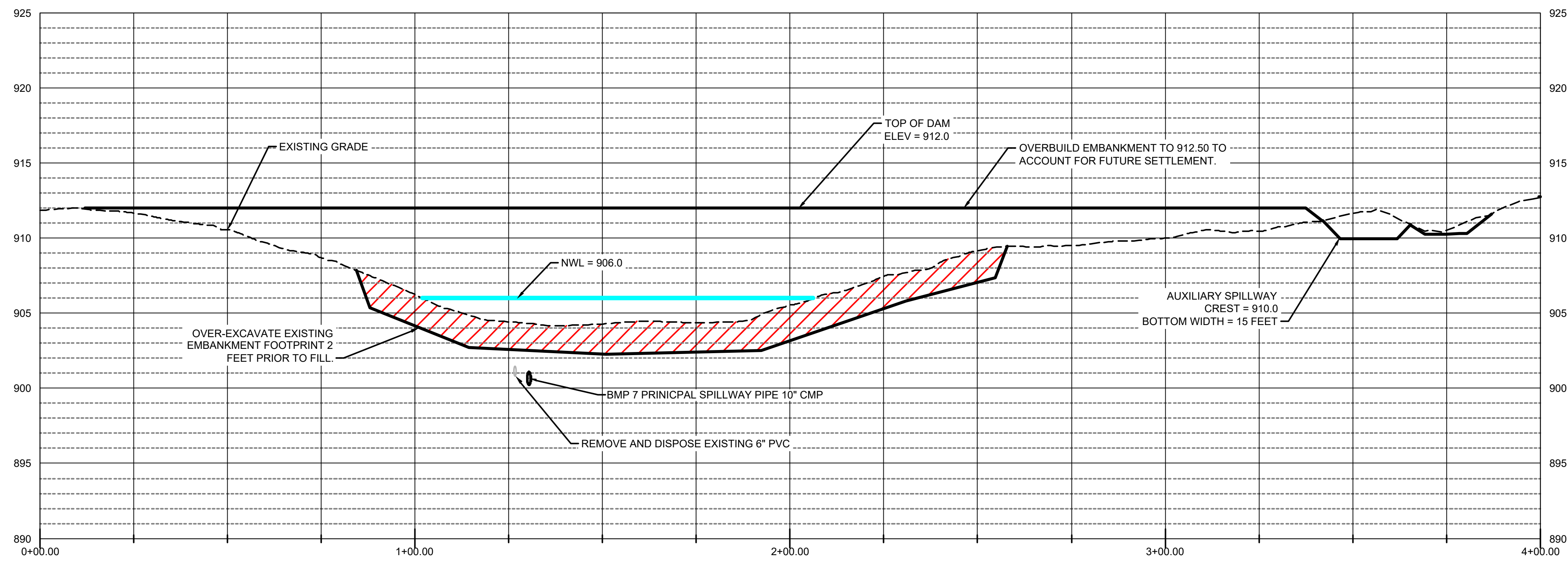
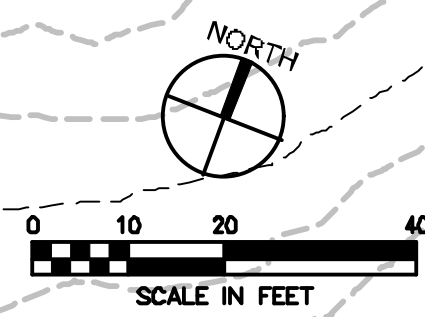
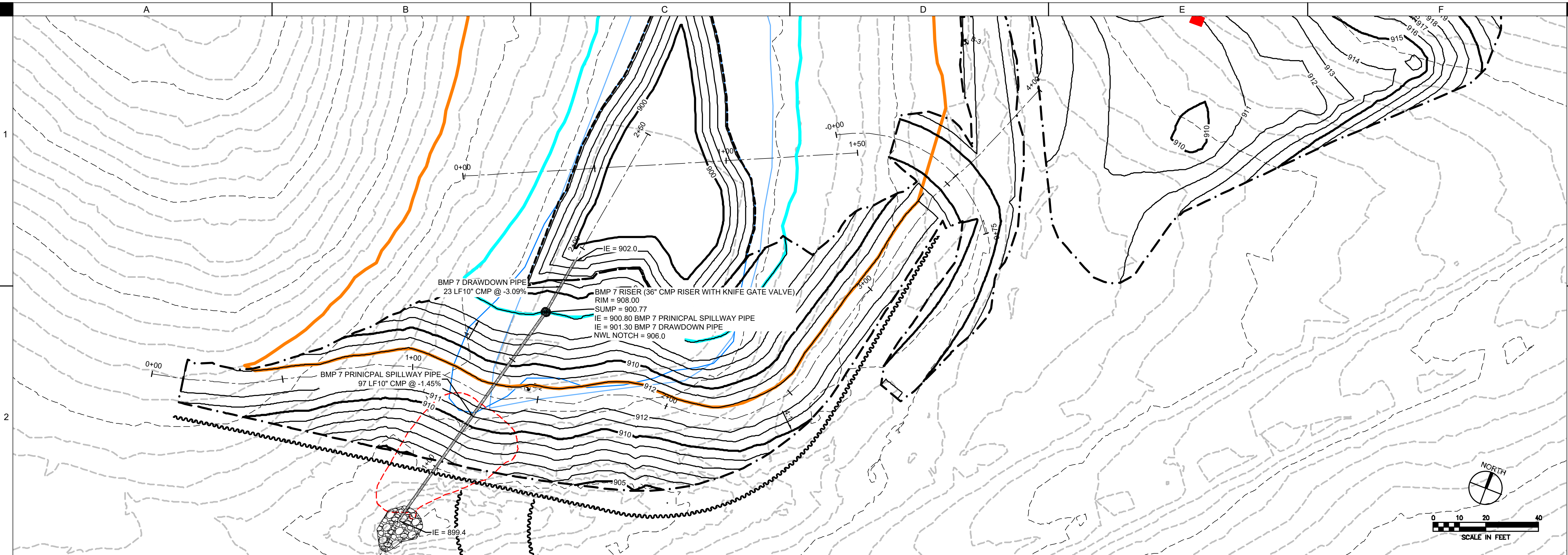
DREDGING TABLE	
	CUT (CY)
DREDGING, SOFT SEDIMENT	119
DREDGING, HARDBOTTOM	483

- NOTES:
1. A SHRINKAGE FACTOR OF 20% IS ASSUMED FOR FILL.
 2. REMOVAL ALL SOFT SEDIMENT FROM BMP FOOTPRINT
 3. REMOVAL ADDITIONAL HARDBOTTOM MATERIAL FROM WAVE BENCH DOWN TO 900.0 AT 3 TO 1 SLOPE.
 4. WASTE ALL DREDGE MATERIAL IN BMP BORROW SITES. BLEND SOFT AND HARDBOTTOM MATERIAL AND GRADE TO DRAIN. MAXIMUM SLOPES 5%.

ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-7	-6	[Red color swatch]
CUT	-6	-5	
CUT	-5	-4	
CUT	-4	-3	
CUT	-3	-2	
CUT	-2	-1	
CUT	-1	0	
FILL	0	1	[Light Blue color swatch]
FILL	1	2	
FILL	2	3	[Medium Blue color swatch]
FILL	3	4	
FILL	4	5	[Dark Blue color swatch]
FILL	5	6	
FILL	6	7	[Very Dark Blue color swatch]
FILL	7	8	
FILL	8	9	



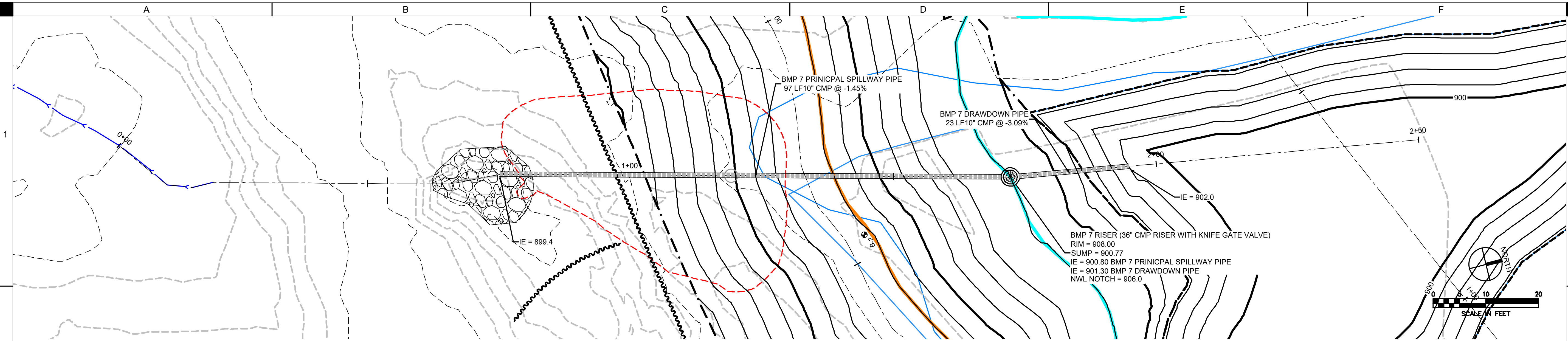
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 APPROVED: DJ
 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 09/18/2023
 PROJECT NO: 221303
 FIELD BOOK: --
 CLIENT NO: --



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APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	09/18/2023
PROJECT NO.:	423130
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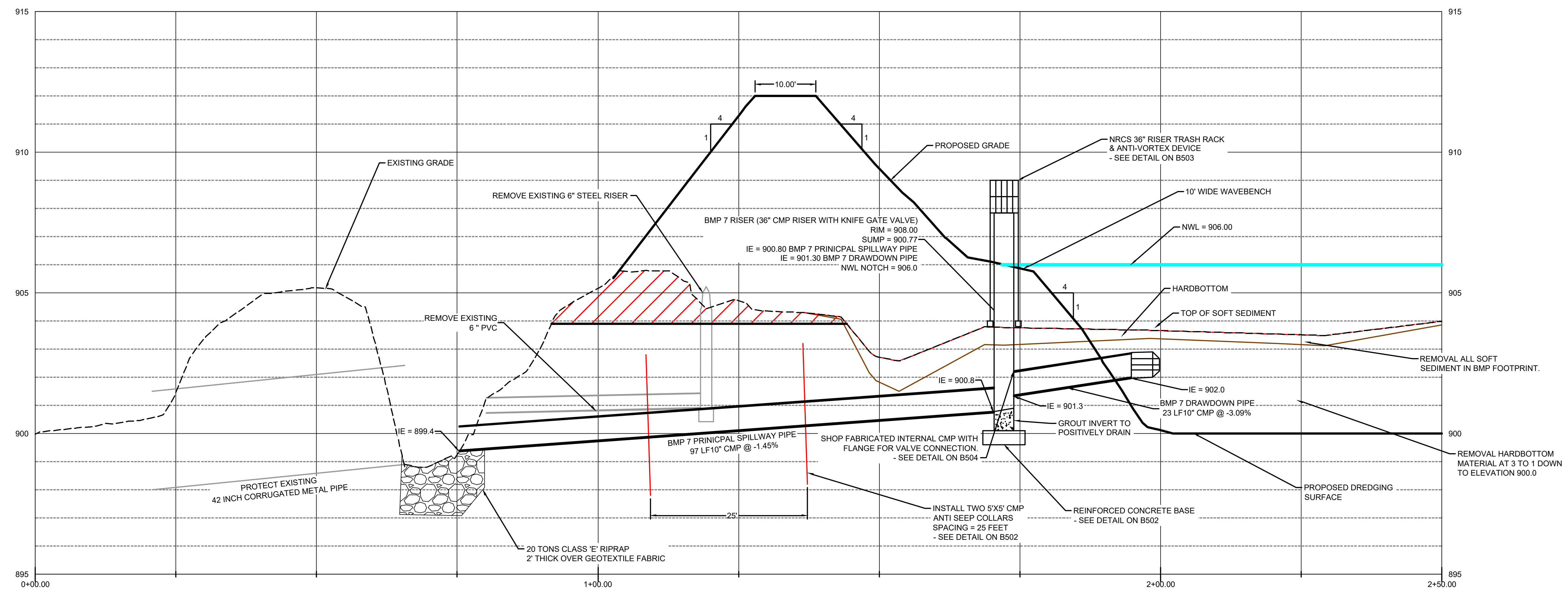


CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

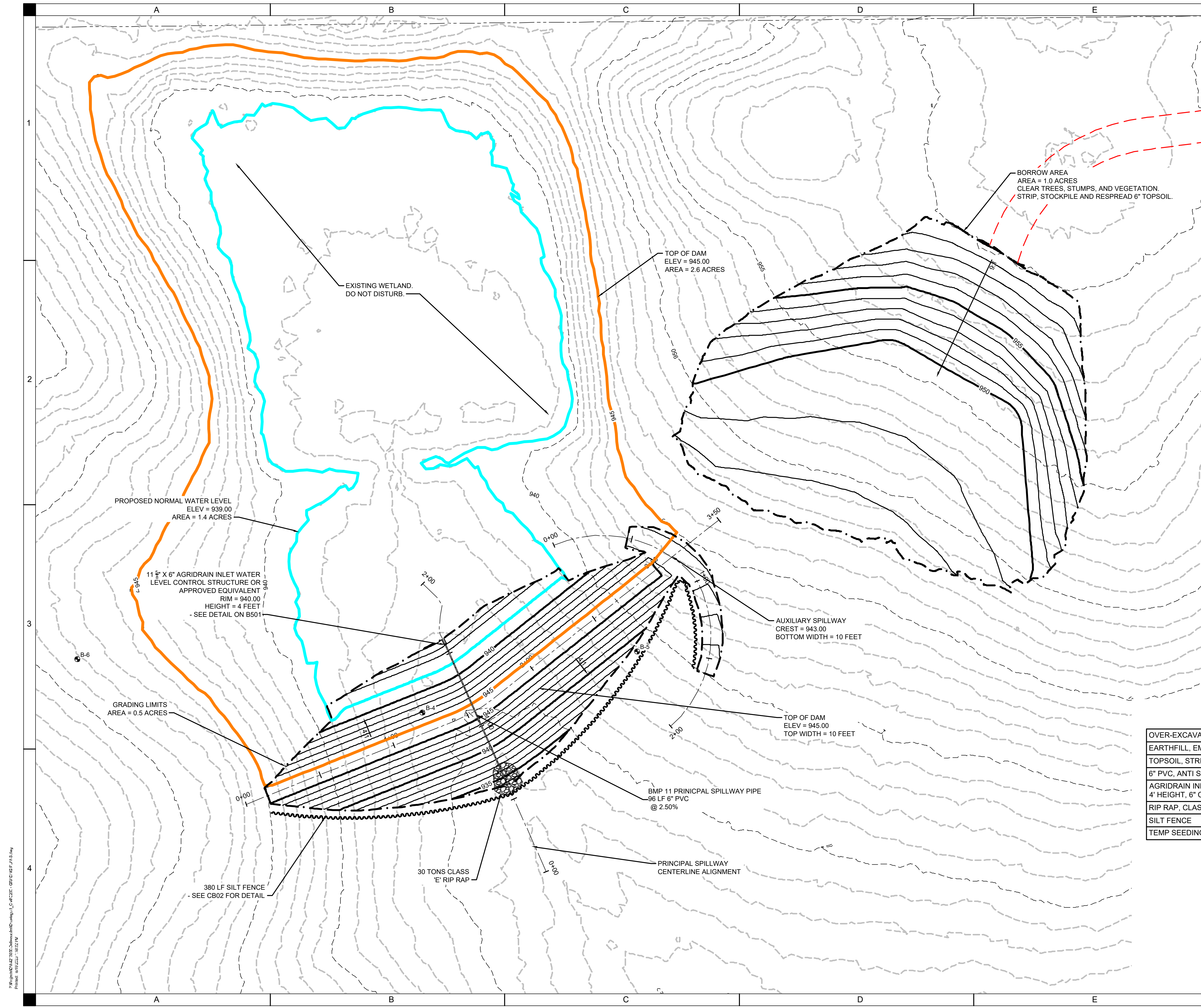
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BMP 7 PRINCIPAL SPILLWAY PLAN AND PROFILE

B213



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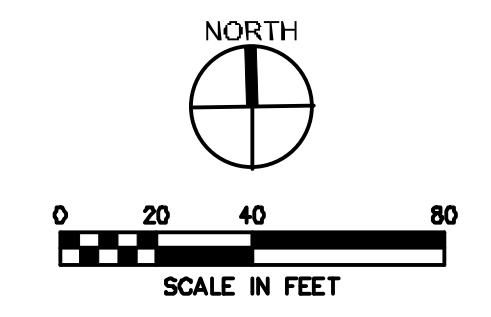


- EARTHWORK NOTES:**
1. STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN GRADING LIMITS. RESPREAD TOPSOIL IN ALL STRIPPED AREAS.
 2. EXCAVATE CORE TRENCH ALONG DAM CENTERLINE FROM STA. 0+42 TO STA. 2+90. SEE DETAIL.
 3. MAXIMUM SIDE SLOPES OF ALL EXCAVATED AREAS TO BE 5:1 OR FLATTER.
 4. CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN GRADING LIMITS. BRUSH MAY BE BURNED AND BURIED ON SITE OUTSIDE OF THE NORMAL POOL. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO NOVEMBER 1ST TO MARCH 31ST.
 4. COMPACTION SHALL BE 95% MAXIMUM DRY DENSITY AND -1% TO +4% OPTIMUM MOISTURE CONTENT. PLACE SOIL IN 8 INCH LOOSE LIFTS PRIOR TO COMPACTION. SEE SPECIFICATIONS FOR TESTING FREQUENCY. TESTING PAID FOR BY OWNER. CONTRACTOR SHALL COORDINATE WITH THIRD PARTY TESTING COMPANY AND ENGINEER.
 5. A 20% SHRINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE. OVERBUILD EARTHWORK FOR THE TOP OF EMBANKMENT IS NOT INCLUDED IN THE BID QUANTITIES. SIDE SLOPES DO NOT REQUIRE OVERBUILD.
- ACCESS NOTES:**
1. CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET B002. COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREA.
 2. NO POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA.
 3. RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
 4. SEE SHEET B002 FOR PROPOSED HAUL ROUTES AND ACCESS FROM STAGING AREA TO CONSTRUCTION AREAS. CONTRACTOR RESPONSIBLE FOR TREE TRIMMING AND CLEARING ALONG EXISTING TRAILS AS REQUIRED.

LEGEND	
DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
STREAM CENTERLINE	
NORMAL WATER LEVEL	
PRINCIPAL SPILLWAY	
RIP RAP	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	

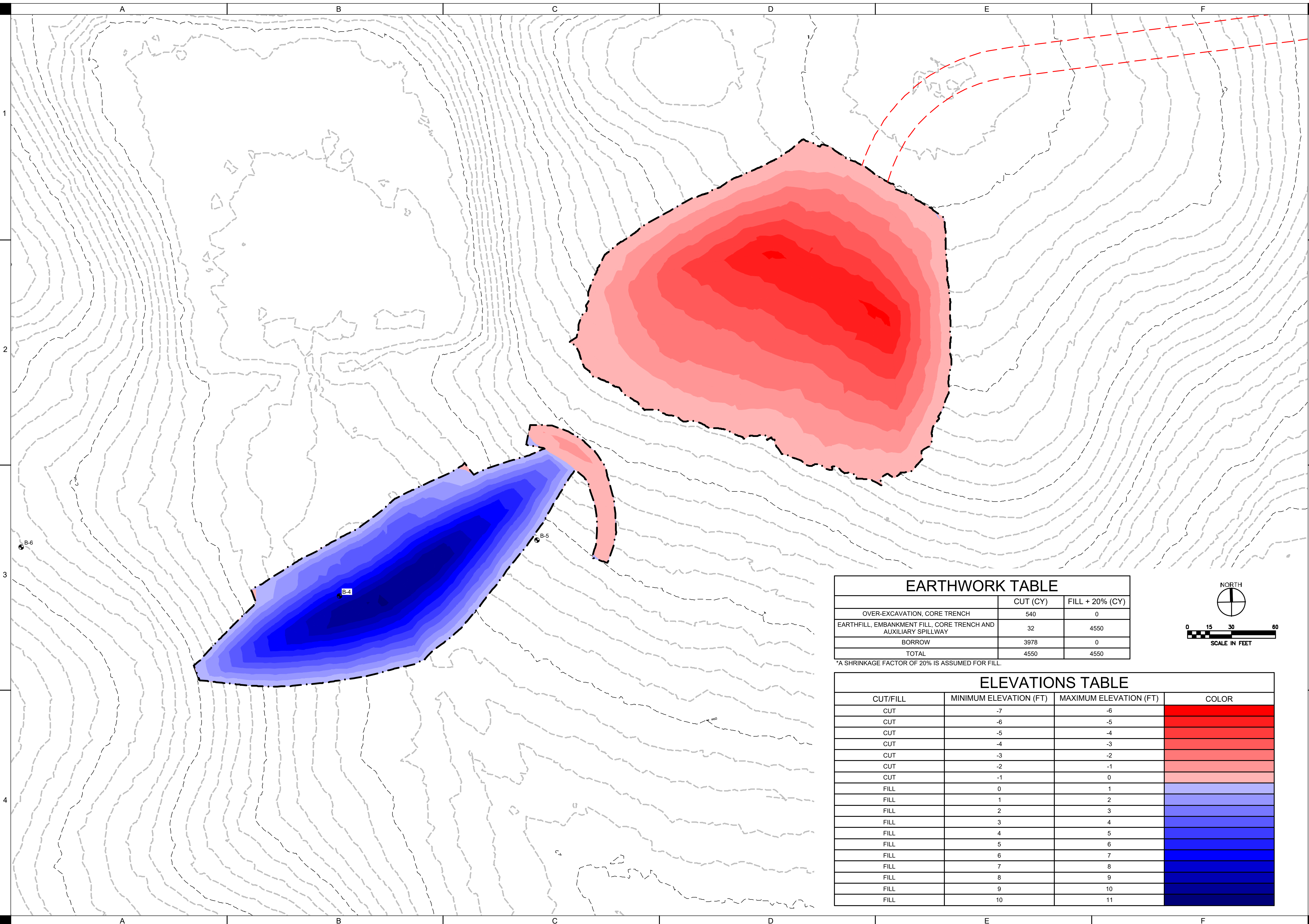
ESTIMATED BMP 11 QUANTITIES

OVER-EXCAVATION, CORE TRENCH	540	CY
EARTHFILL, EMBANKMENT & CORE TRENCH FILL	4,550	CY
TOPSOIL, STRIP, STOCKPILING & RESPREAD	1,200	CY
6" PVC, ANTI SEEP COLLARS, AND TRASH RACKS	96	LF
AGRIDRAIN INLET WATER CONTROL STRUCTURE, 4' HEIGHT, 6" CONNECTIONS	1	LS
RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	30	TON
SILT FENCE	380	LF
TEMP SEEDING, BORROW AND EMBANKMENT	1.5	AC



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SHIVE-HATTERY ARCHITECTURE + ENGINEERING
 4125 Westown Pkwy, Suite 100 | West Des Moines, Iowa 50266
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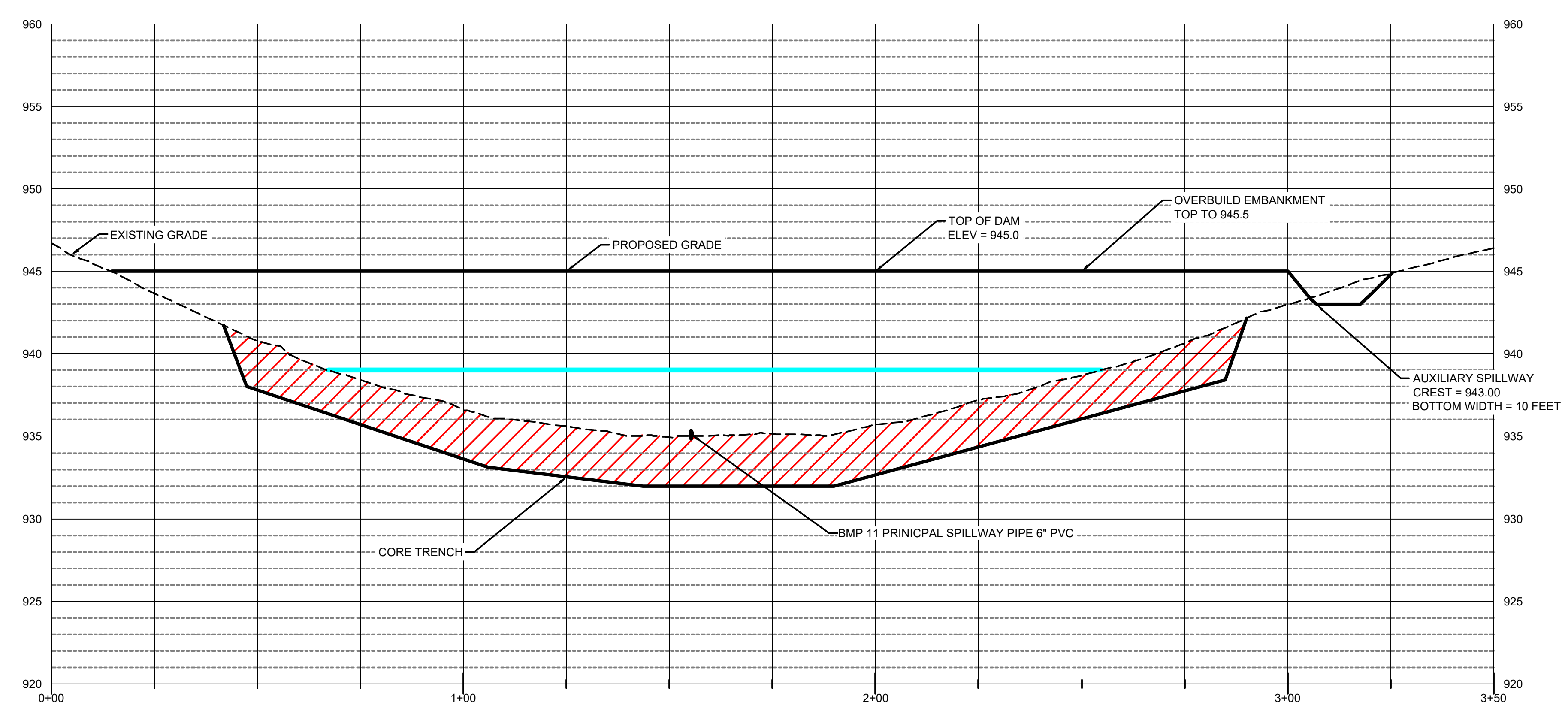
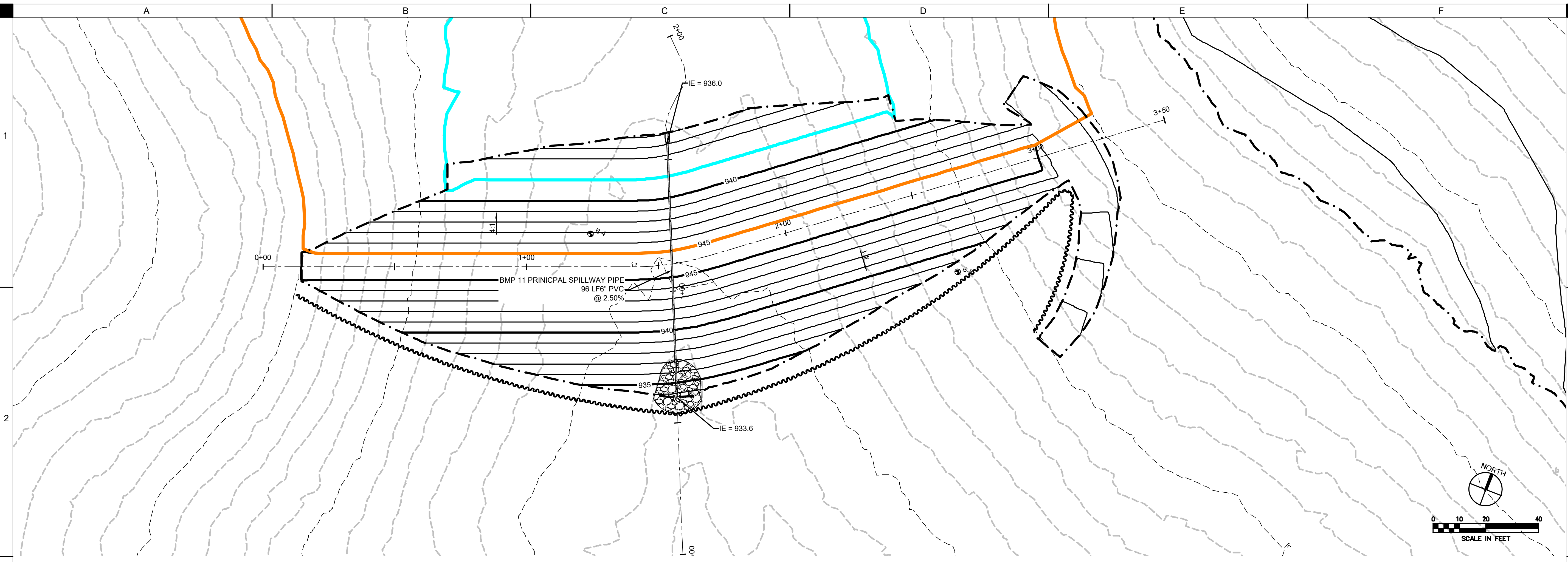
EARTHWORK TABLE		
	CUT (CY)	FILL + 20% (CY)
OVER-EXCAVATION, CORE TRENCH	540	0
EARTHFILL, EMBANKMENT FILL, CORE TRENCH AND AUXILIARY SPILLWAY	32	4550
BORROW	3978	0
TOTAL	4550	4550

*A SHRINKAGE FACTOR OF 20% IS ASSUMED FOR FILL.

ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-7	-6	Red
CUT	-6	-5	Red
CUT	-5	-4	Red
CUT	-4	-3	Red
CUT	-3	-2	Red
CUT	-2	-1	Red
CUT	-1	0	Red
FILL	0	1	Light Blue
FILL	1	2	Light Blue
FILL	2	3	Light Blue
FILL	3	4	Light Blue
FILL	4	5	Light Blue
FILL	5	6	Light Blue
FILL	6	7	Light Blue
FILL	7	8	Light Blue
FILL	8	9	Light Blue
FILL	9	10	Light Blue
FILL	10	11	Light Blue



DRAWN: GHK
 APPROVED: DJJ
 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 09/19/2023
 PROJECT NO: 223030
 FIELD BOOK: --
 CLIENT NO: --

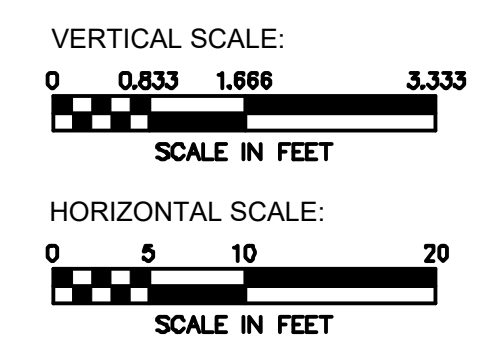
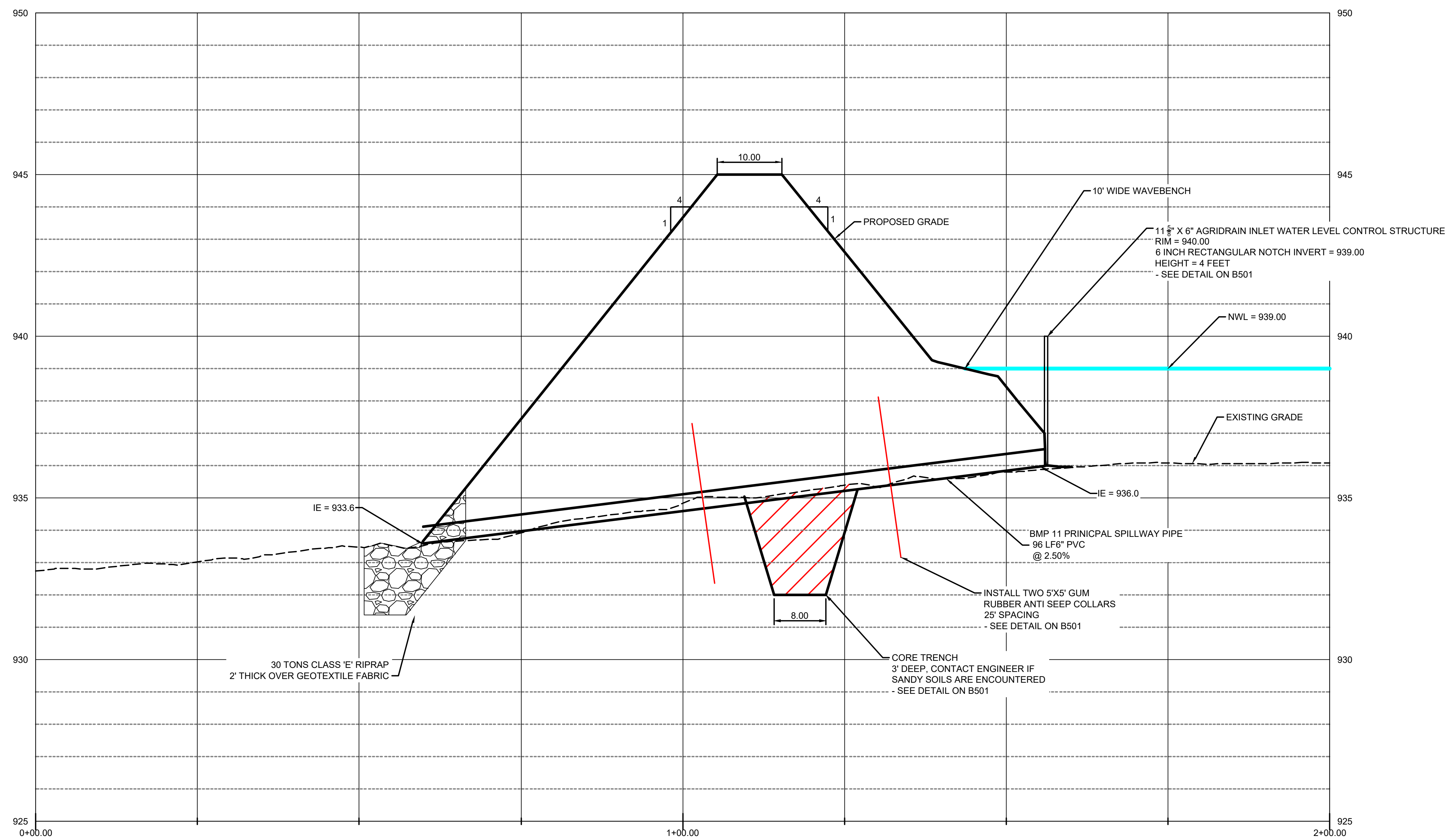
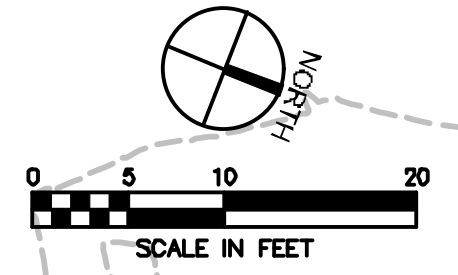
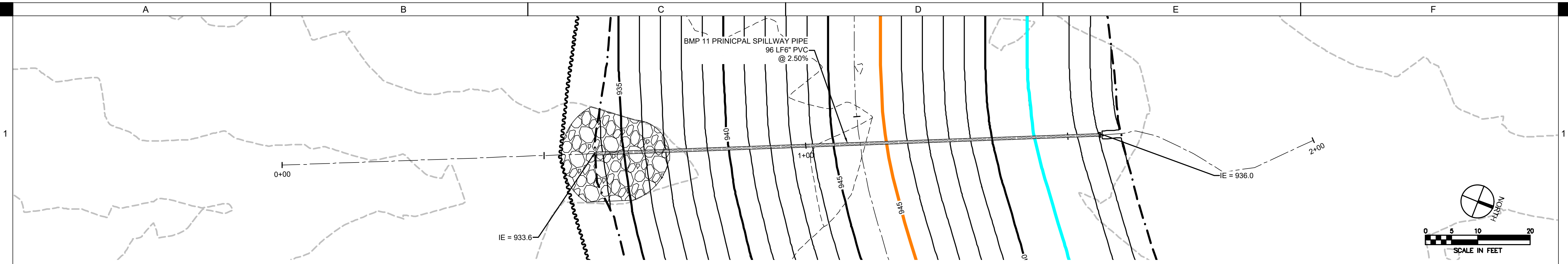


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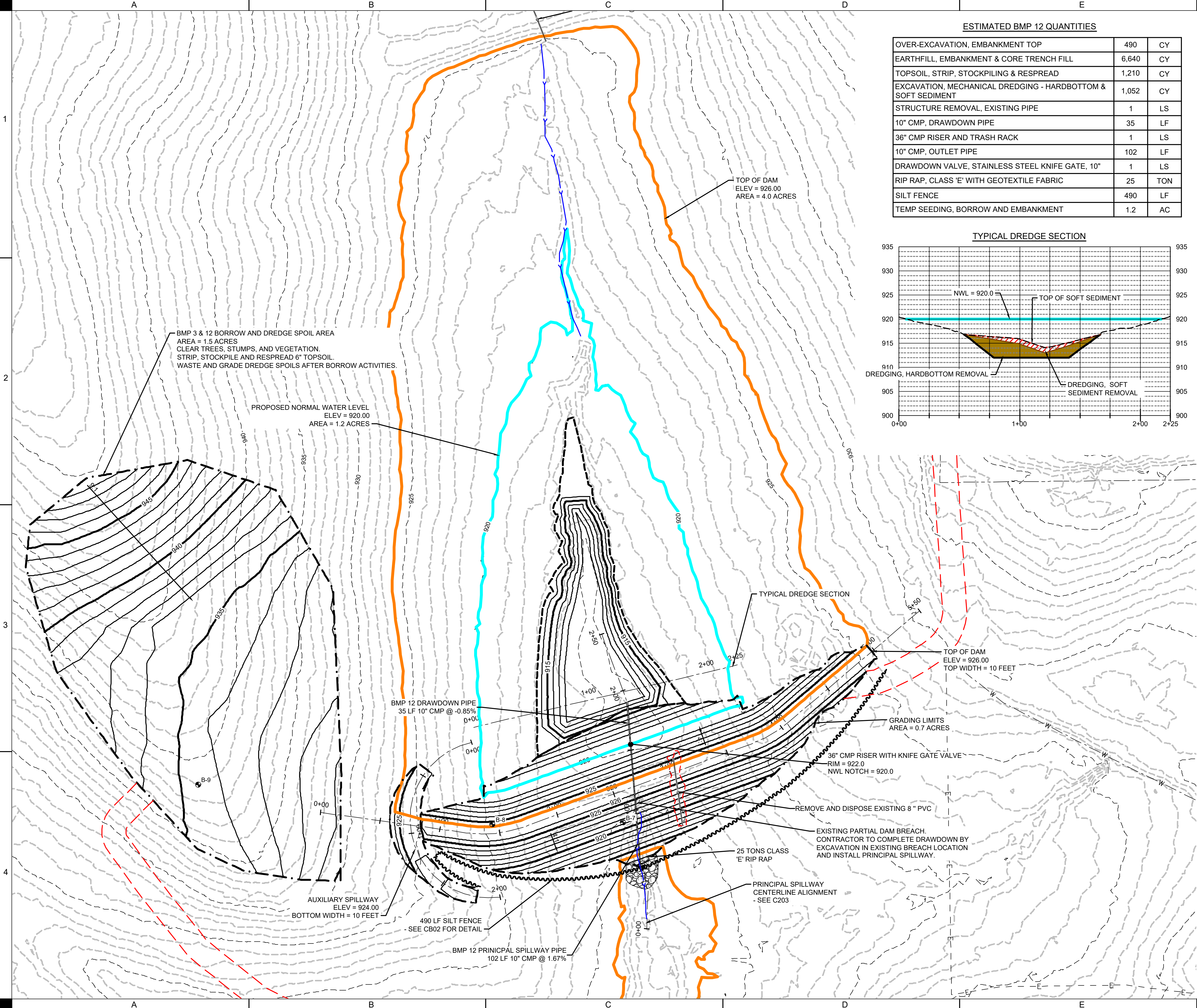


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PROJECT NO.:	423130
FIELD BOOK:	---
CLIENT NO.:	---

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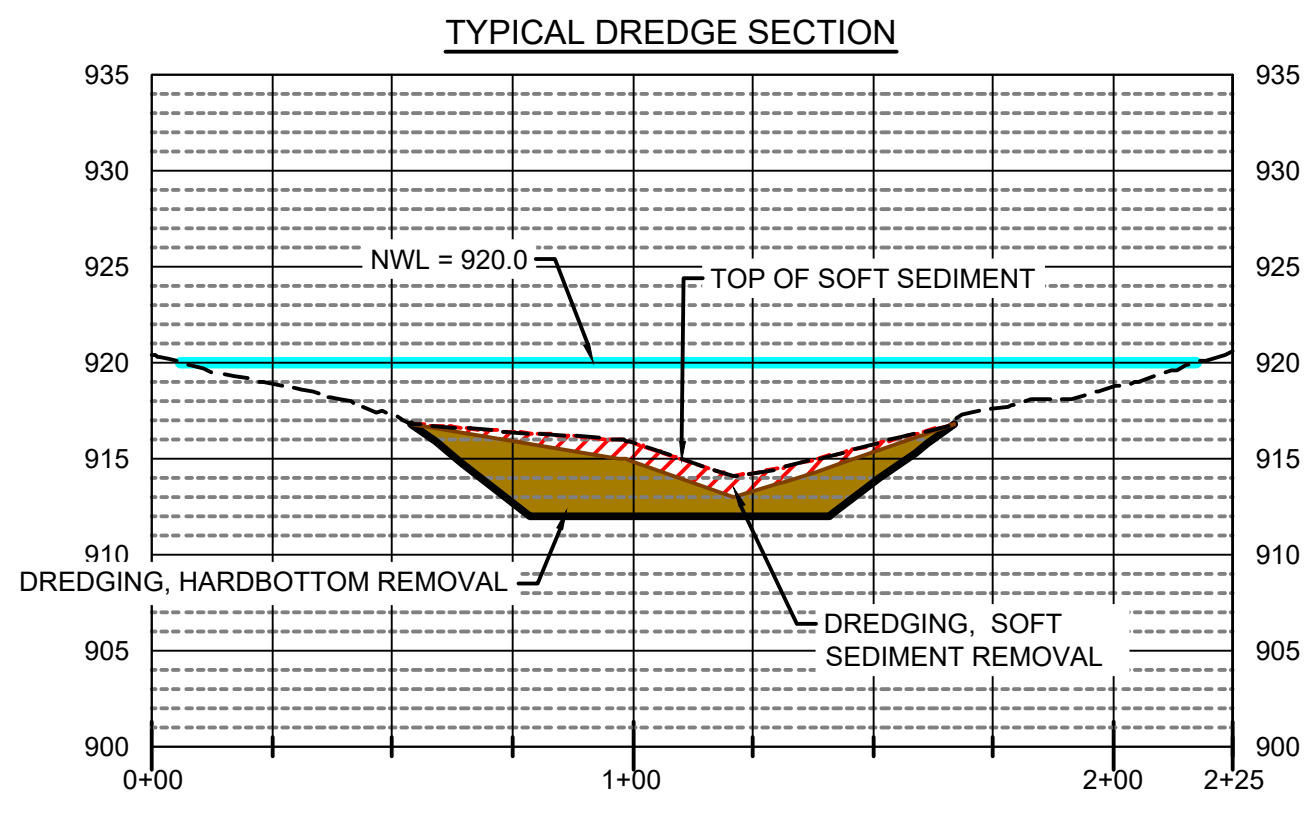


DRAWN:	CHK
APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	09/19/2023
PROJECT NO.:	423130
FIELD BOOK:	--
CLIENT NO.:	--



ESTIMATED BMP 12 QUANTITIES

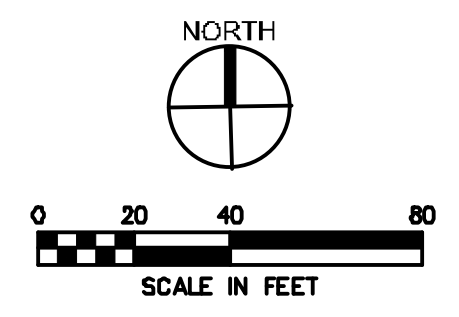
OVER-EXCAVATION, EMBANKMENT TOP	490	CY
EARTHFILL, EMBANKMENT & CORE TRENCH FILL	6,640	CY
TOPSOIL, STRIP, STOCKPILING & RESPREAD	1,210	CY
EXCAVATION, MECHANICAL DREDGING - HARDBOTTOM & SOFT SEDIMENT	1,052	CY
STRUCTURE REMOVAL, EXISTING PIPE	1	LS
10" CMP, DRAWDOWN PIPE	35	LF
36" CMP RISER AND TRASH RACK	1	LS
10" CMP, OUTLET PIPE	102	LF
DRAWDOWN VALVE, STAINLESS STEEL KNIFE GATE, 10"	1	LS
RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	25	TON
SILT FENCE	490	LF
TEMP SEEDING, BORROW AND EMBANKMENT	1.2	AC



- DRAWDOWN NOTES:**
- PRIOR TO WORK, CONTRACTOR SHALL DRAW DOWN BMP. DRAWDOWN SHALL BE LIMITED TO 1 FEET PER DAY. DRAW DOWN BMP BY CAREFULLY NOTCHING DAM AND ALLOWING TO SLOWLY DRAIN. BREACH DAM AT EXISTING DAM BREACH LOCATION.
 - EXCAVATE EXISTING EMBANKMENT, SALVAGE CLAY, AND REMOVE EXISTING OUTLET STRUCTURE AND PIPE. INSTALL PROPOSED OUTLET (SEE B233). COORDINATE TEMPORARY STOCK PILE WITH OWNER AND ENGINEER.
- EARTHWORK NOTES:**
- STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN EMBANKMENT AND BORROW FOOTPRINT. RESPREAD TOPSOIL IN ALL STRIPPED AREAS OUTSIDE OF THE PERMANENT POOL.
 - MAXIMUM SIDE SLOPES OF BORROW AREA AREAS TO BE 10:1 OR FLATTER.
 - CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN GRADING LIMITS. BRUSH MAY BE BURNED AND BURIED ON SITE OUTSIDE OF THE NORMAL POOL. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO NOVEMBER 1ST TO MARCH 31ST.
 - COMPACTION SHALL BE 95% MAXIMUM DRY DENSITY AND -1% TO +4% OPTIMUM MOISTURE CONTENT. PLACE SOIL IN 8 INCH LOOSE LIFTS PRIOR TO COMPACTION. SEE SPECIFICATIONS FOR TESTING FREQUENCY. TESTING PAID FOR BY OWNER. CONTRACTOR SHALL COORDINATE WITH THIRD PARTY TESTING COMPANY AND ENGINEER.
 - A 20% SHRINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE. OVERBUILD EARTHWORK FOR THE TOP OF EMBANKMENT IS NOT INCLUDED IN THE BID QUANTITIES, SIDE SLOPES DO NOT REQUIRE OVERBUILD.
- DREDGE NOTES:**
- REMOVE ALL SOFT SEDIMENT WITHIN BMP FOOTPRINT AND PLACE IN BORROW SITE AFTER BORROW ACTIVITIES. ALL SOFT SEDIMENT SHALL BE REMOVED FROM THE PROPOSED EMBANKMENT FOOTPRINT PRIOR TO FILL PLACEMENT.
- ACCESS NOTES:**
- CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET B002. COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREA.
 - NO POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA.
 - RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
 - SEE SHEET B002 FOR PROPOSED HAUL ROUTES AND ACCESS FROM STAGING AREA TO CONSTRUCTION AREAS. CONTRACTOR RESPONSIBLE FOR TREE TRIMMING AND CLEARING ALONG EXISTING TRAILS AS REQUIRED.

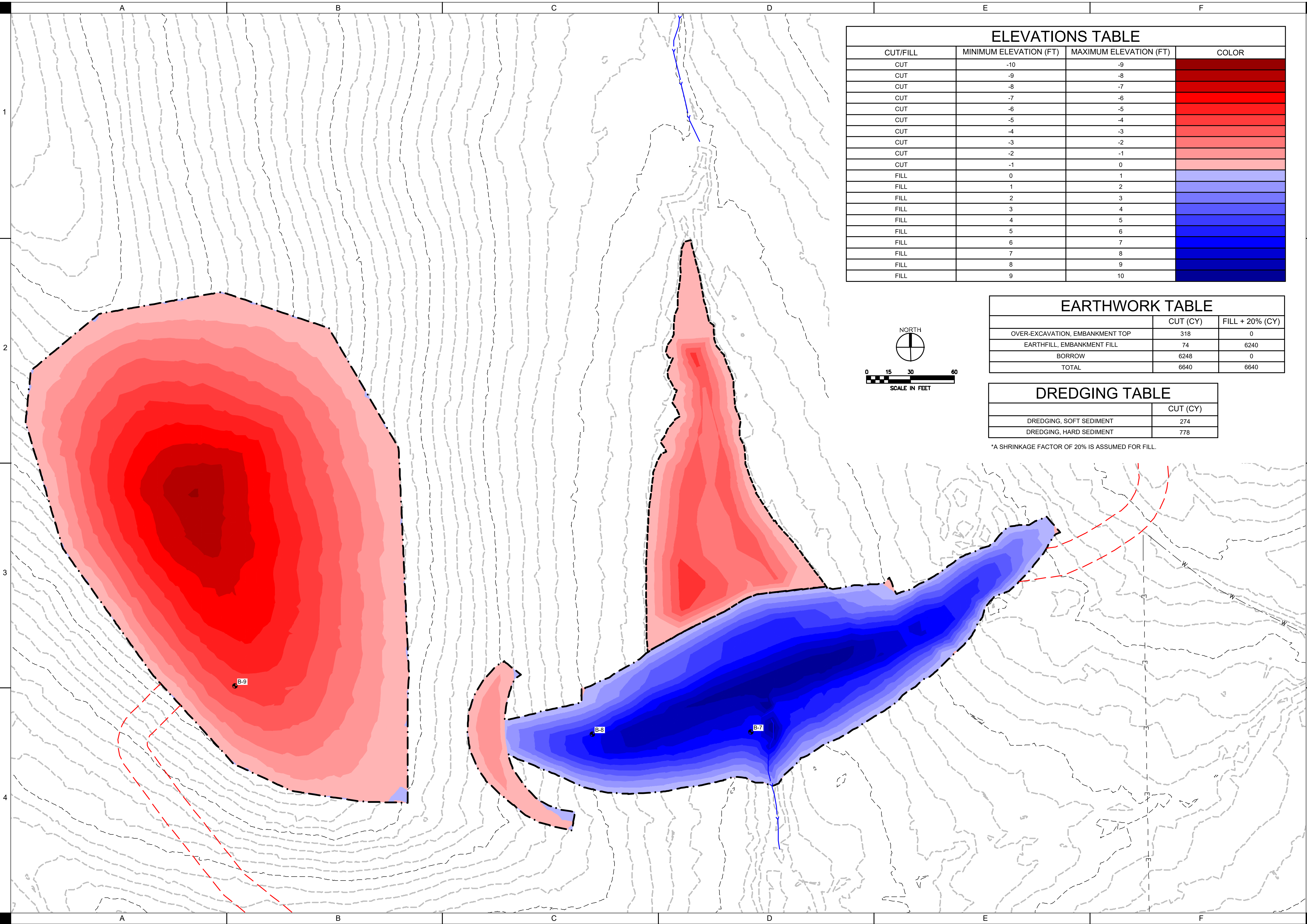
LEGEND

DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
STREAM CENTERLINE	
NORMAL WATER LEVEL	
PRINCIPAL SPILLWAY	
RIP RAP	
GRADING LIMITS	
DREDGE LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	



DRAWN: CHK
APPROVED: DJJ
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 09/18/2023
PROJECT NO: 423130
FIELD BOOK: --
CLIENT NO: --

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ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-10	-9	[Color swatches from dark red to light pink]
CUT	-9	-8	
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	[Color swatches from light blue to dark blue]
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	

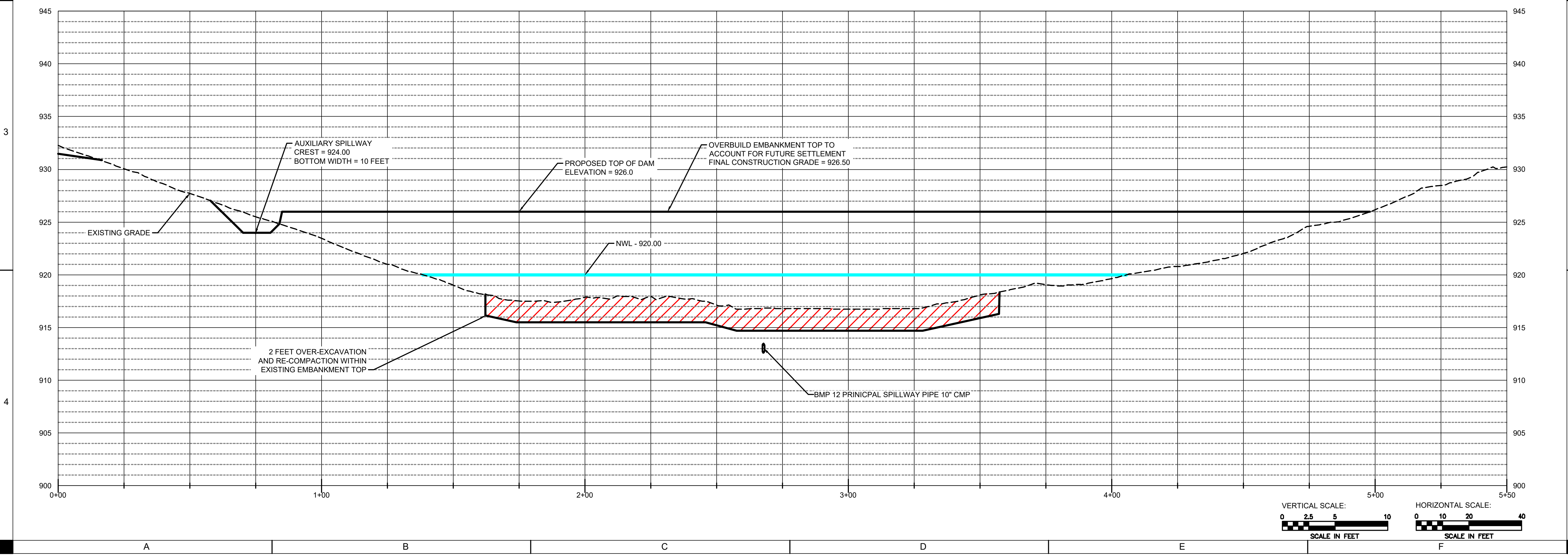
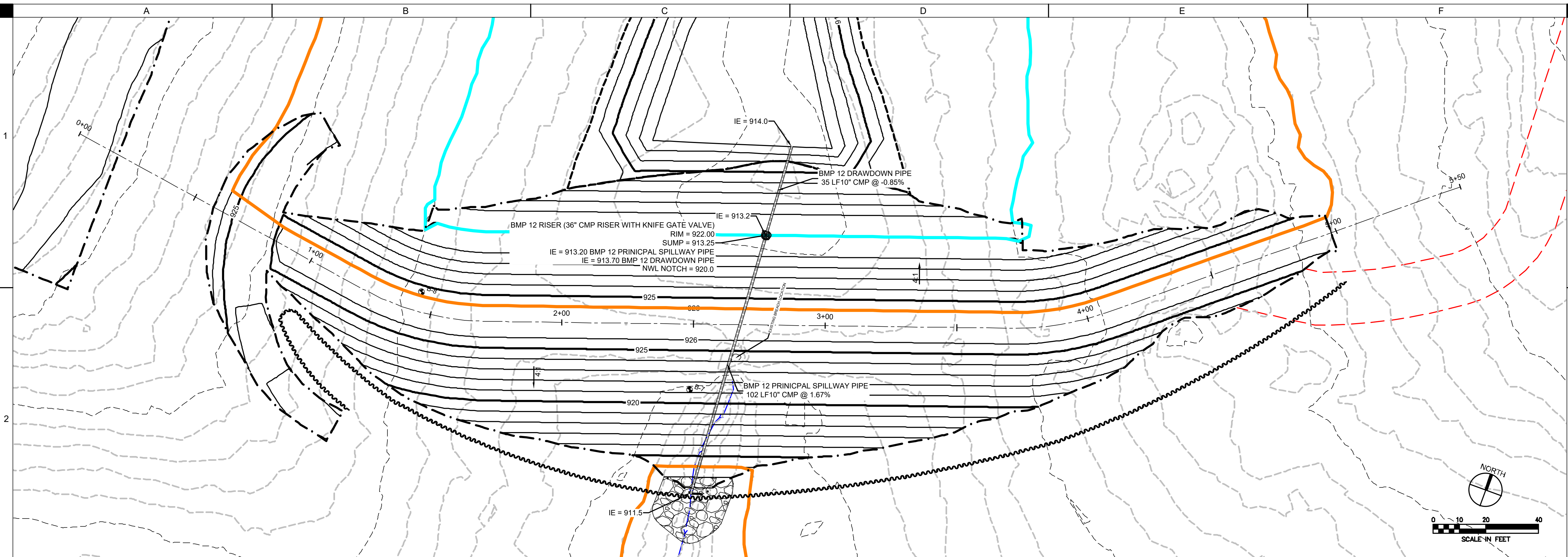
EARTHWORK TABLE		
	CUT (CY)	FILL + 20% (CY)
OVER-EXCAVATION, EMBANKMENT TOP	318	0
EARTHFILL, EMBANKMENT FILL	74	6240
BORROW	6248	0
TOTAL	6640	6640

DREDGING TABLE	
	CUT (CY)
DREDGING, SOFT SEDIMENT	274
DREDGING, HARD SEDIMENT	778

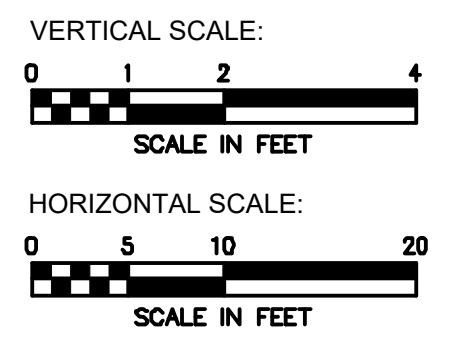
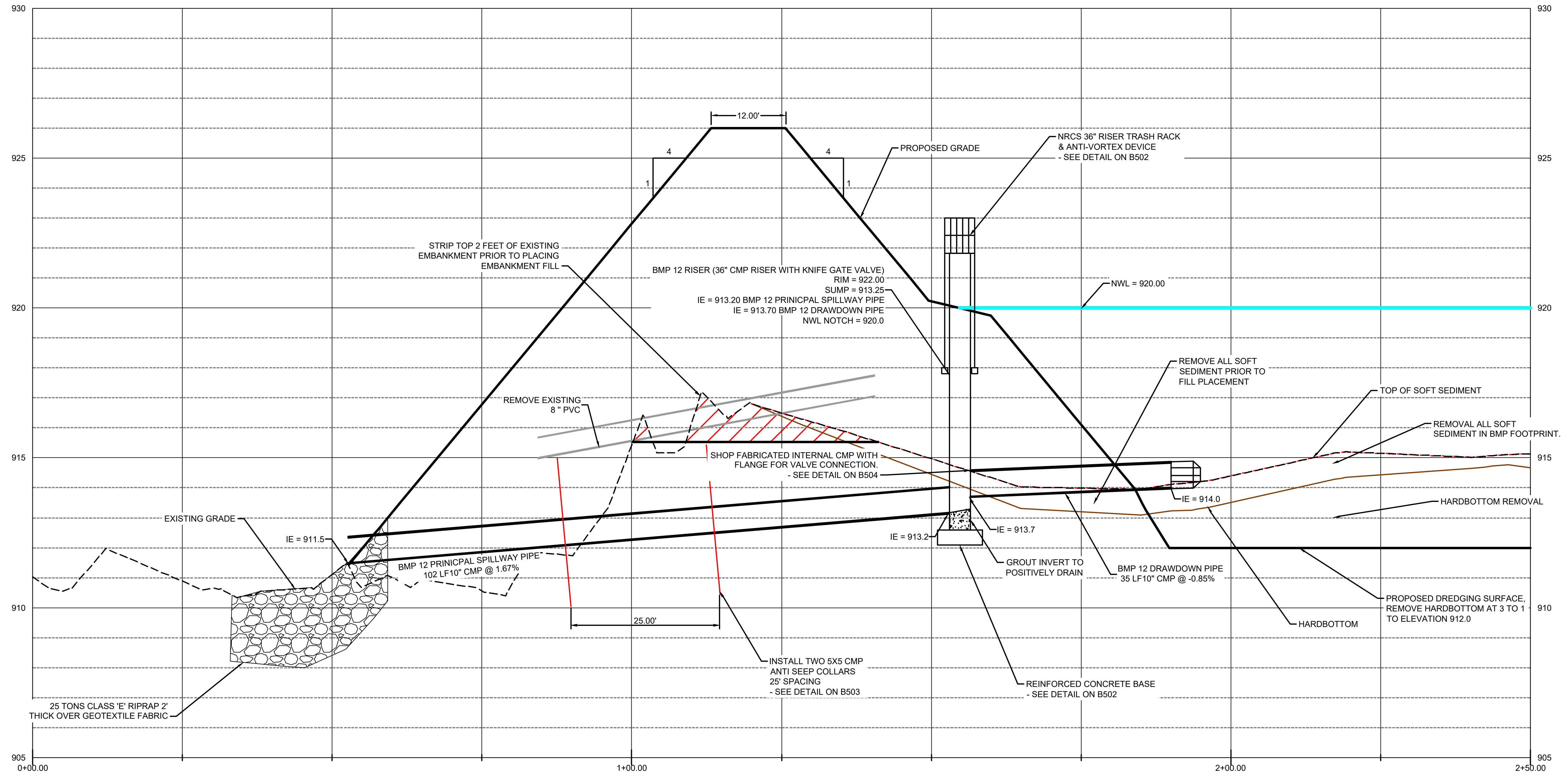
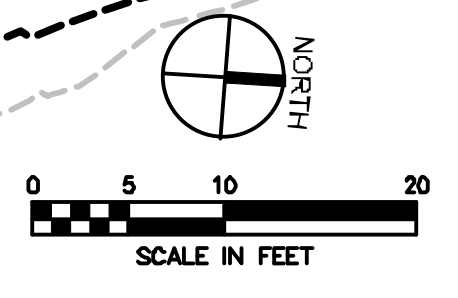
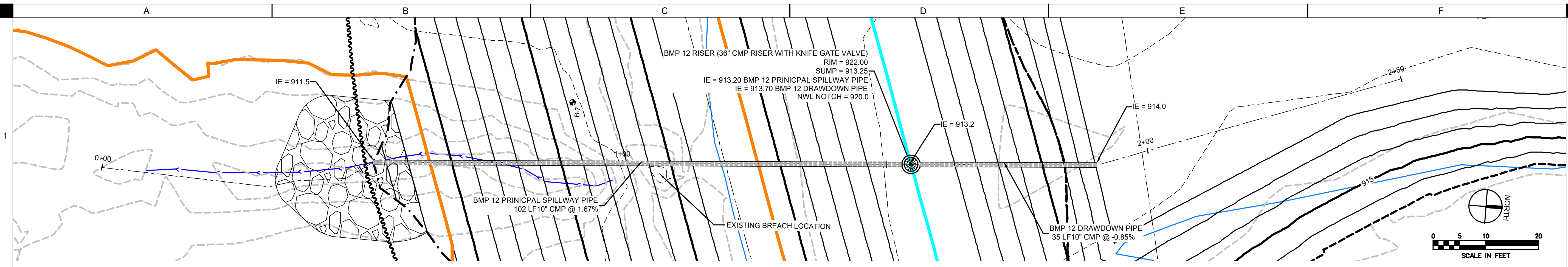
*A SHRINKAGE FACTOR OF 20% IS ASSUMED FOR FILL.



DRAWN: CHK
APPROVED: DJJ
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 09/18/2023
PROJECT NO: 423030
FIELD BOOK: --
CLIENT NO: --



DRAWN:	CHK
APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	09/19/2023
PROJECT NO.:	423103
FIELD BOOK:	---
CLIENT NO.:	---



SW: 10/10/2023 10:00 AM
 Project: 230223-131210W

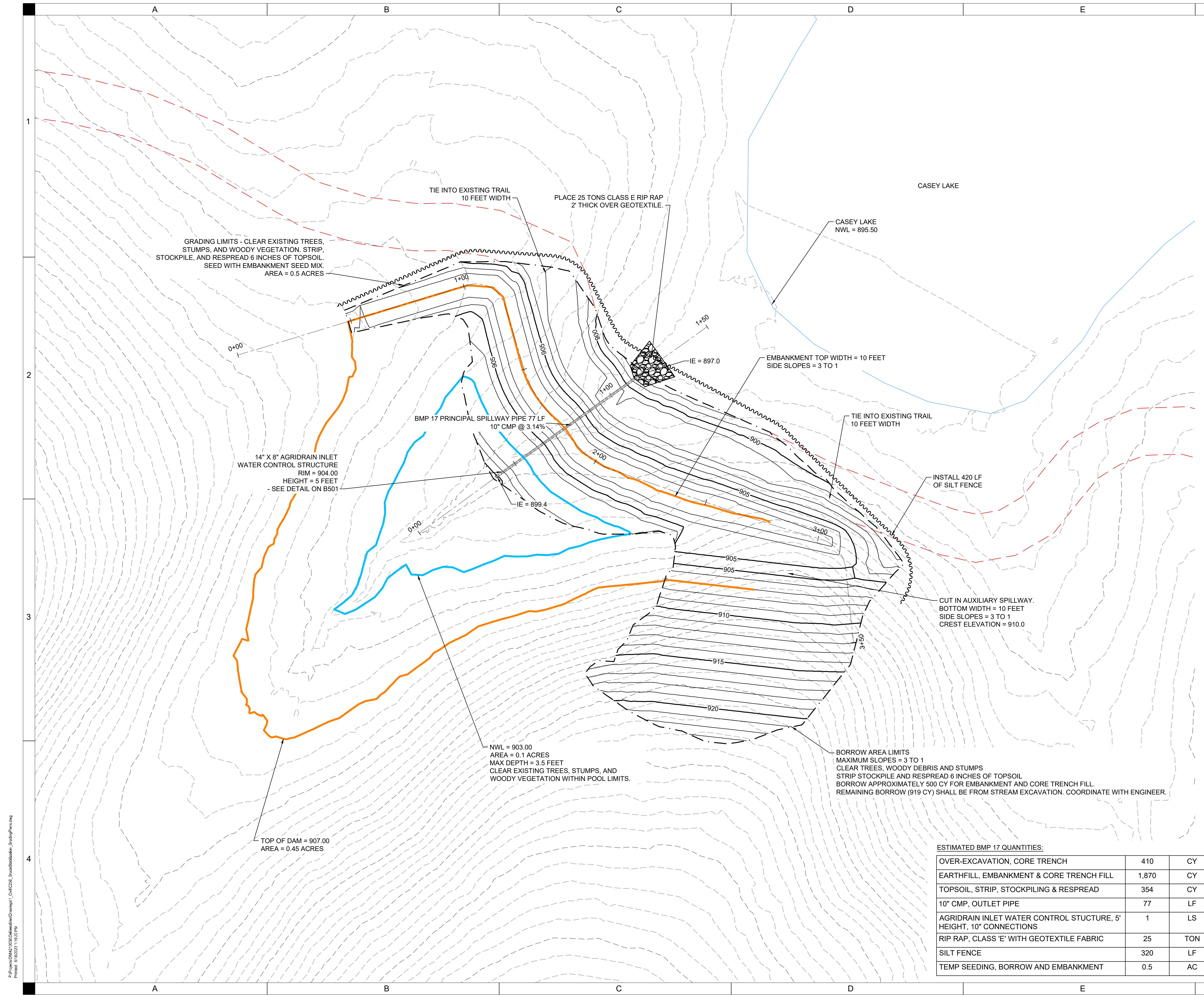


CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

DRAWN:	CHK
APPROVED:	DJ
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DATE:	09/19/2023
PROJECT NO.:	230223-131210W
FIELD BOOK:	---
CLIENT NO.:	---

BMP 12 PRINCIPAL SPILLWAY PLAN AND PROFILE

B233



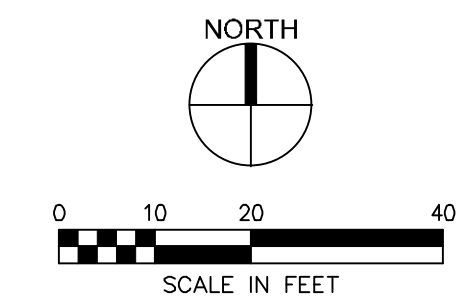
- EARTHWORK NOTES:**
- STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN GRADING LIMITS. RESPREAD TOPSOIL IN ALL STRIPPED AREAS.
 - MAXIMUM SIDE SLOPES OF ALL EXCAVATED AREAS TO BE 3:1 OR FLATTER.
 - CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN PERMANENT POOL AND GRADING LIMITS. BRUSH MAY BE BURNED AND BURIED ON SITE OUTSIDE OF THE NORMAL POOL. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO NOVEMBER 1ST TO MARCH 31ST.
 - COMPACTION SHALL BE 95% MAXIMUM DRY DENSITY AND -1% TO +4% OPTIMUM MOISTURE CONTENT. PLACE SOIL IN 8 INCH LOOSE LIFTS PRIOR TO COMPACTION. SEE SPECIFICATIONS FOR TESTING FREQUENCY. TESTING PAID FOR BY OWNER. CONTRACTOR SHALL COORDINATE WITH THIRD PARTY TESTING COMPANY AND ENGINEER. PIPE TRENCH COMPACTION SHALL BE COMPLETED WITH A JUMPING JACK OR VIBRATORY COMPACTION PLATE IN 6" LIFTS. REFER TO CS-23.
 - UNSUITABLE SOILS (LOW DENSITY CLAY, SANDY, OR GRAVELS) SHALL NOT BE USED FOR EMBANKMENT CONSTRUCTION. NOTIFY ENGINEER IMMEDIATELY IF UNSUITABLE ARE ENCOUNTERED.
 - A 20% SHINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE. OVERBUILD EARTHWORK FOR THE TOP OF EMBANKMENT IS NOT INCLUDED IN THE BID QUANTITIES. SIDE SLOPES DO NOT REQUIRE OVERBUILD.

- ACCESS NOTES:**
- CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET B002. COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREA.
 - NO POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA.
 - RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
 - SEE SHEET B002 FOR PROPOSED HAUL ROUTES AND ACCESS FROM STAGING AREA TO CONSTRUCTION AREAS. CONTRACTOR RESPONSIBLE FOR TREE TRIMMING AND CLEARING ALONG EXISTING TRAILS AS REQUIRED.

DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
STREAM CENTERLINE	
NORMAL WATER LEVEL	
PRINCIPAL SPILLWAY	
RIP RAP	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	
EXISTING WETLAND	

ESTIMATED BMP 17 QUANTITIES:

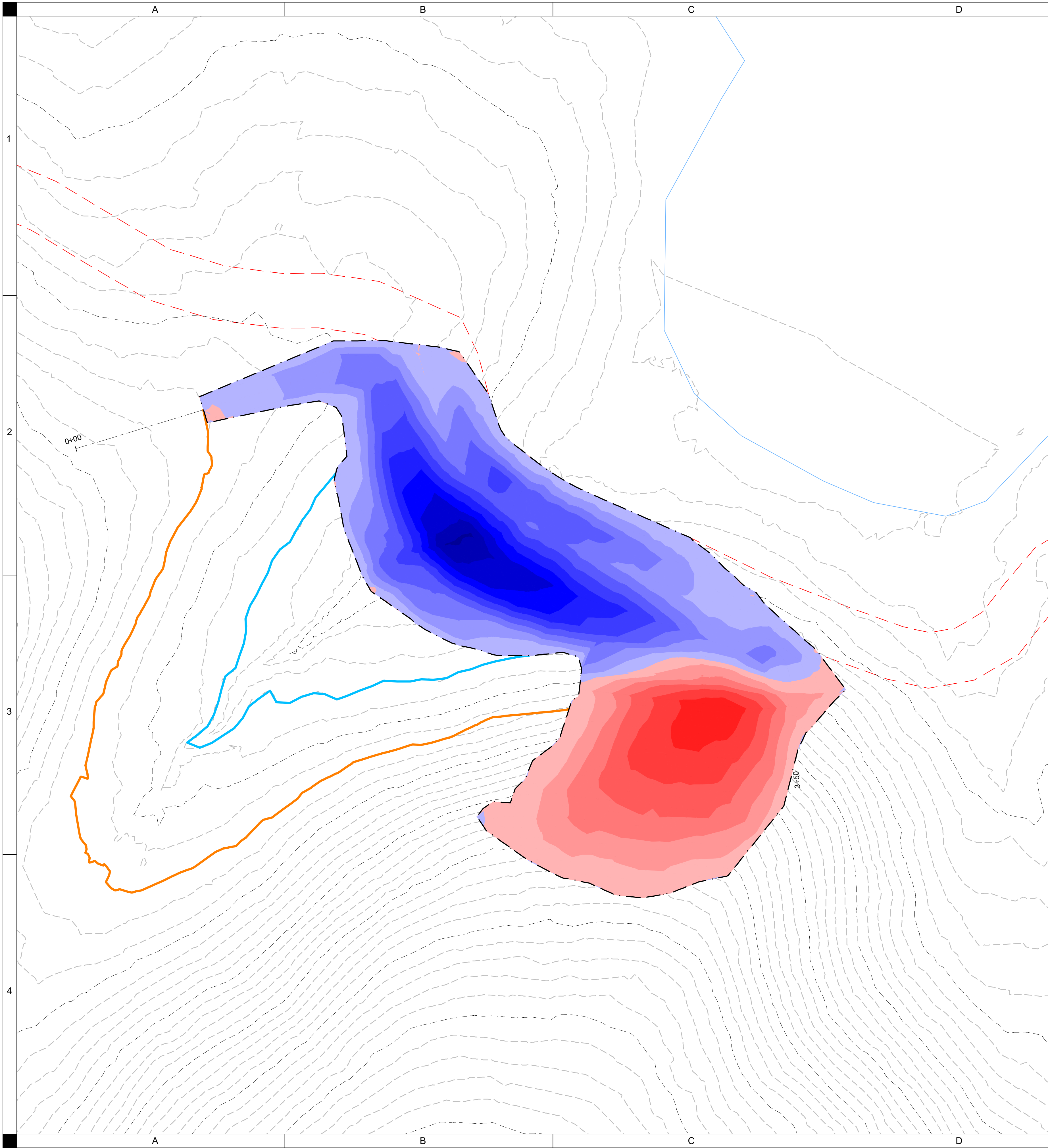
OVER-EXCAVATION, CORE TRENCH	410	CY
EARTHFILL, EMBANKMENT & CORE TRENCH FILL	1,870	CY
TOPSOIL, STRIP, STOCKPILING & RESPREAD	354	CY
10" CMP, OUTLET PIPE	77	LF
AGRIDRAIN INLET WATER CONTROL STRUCTURE, 5' HEIGHT, 10" CONNECTIONS	1	LS
RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	25	TON
SILT FENCE	320	LF
TEMP SEEDING, BORROW AND EMBANKMENT	0.5	AC



DRAWN:	GHK
APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	08/18/2023
PROJECT NO.:	4213030
FIELD BOOK:	--
CLIENT NO.:	--

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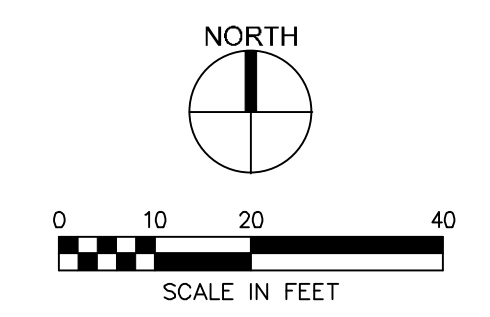
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EARTHWORK TABLE		
	CUT (CY)	FILL + 20% (CY)
OVER-EXCAVATION, CORE TRENCH	410	0
EARTHFILL, EMBANKMENT FILL AND CORE TRENCH	506	1870
IMPORT - FROM STREAM STABILIZATION EXCAVATION	954	0
TOTAL	1870	1870

*A SHRINKAGE FACTOR OF 20% IS ASSUMED FOR FILL.

ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-6	-5	[Red]
CUT	-5	-4	
CUT	-4	-3	
CUT	-3	-2	
CUT	-2	-1	[Light Red]
CUT	-1	0	
FILL	0	1	[Light Blue]
FILL	1	2	
FILL	2	3	[Medium Blue]
FILL	3	4	
FILL	4	5	[Dark Blue]
FILL	5	6	
FILL	6	7	[Darkest Blue]
FILL	7	8	
FILL	8	9	
FILL	9	10	

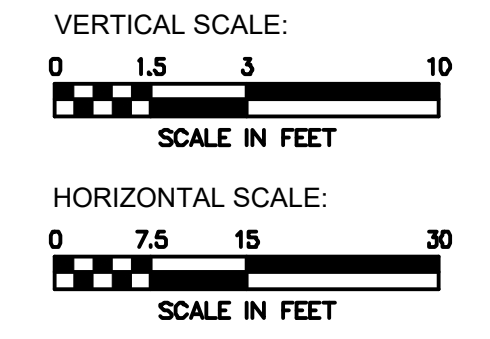
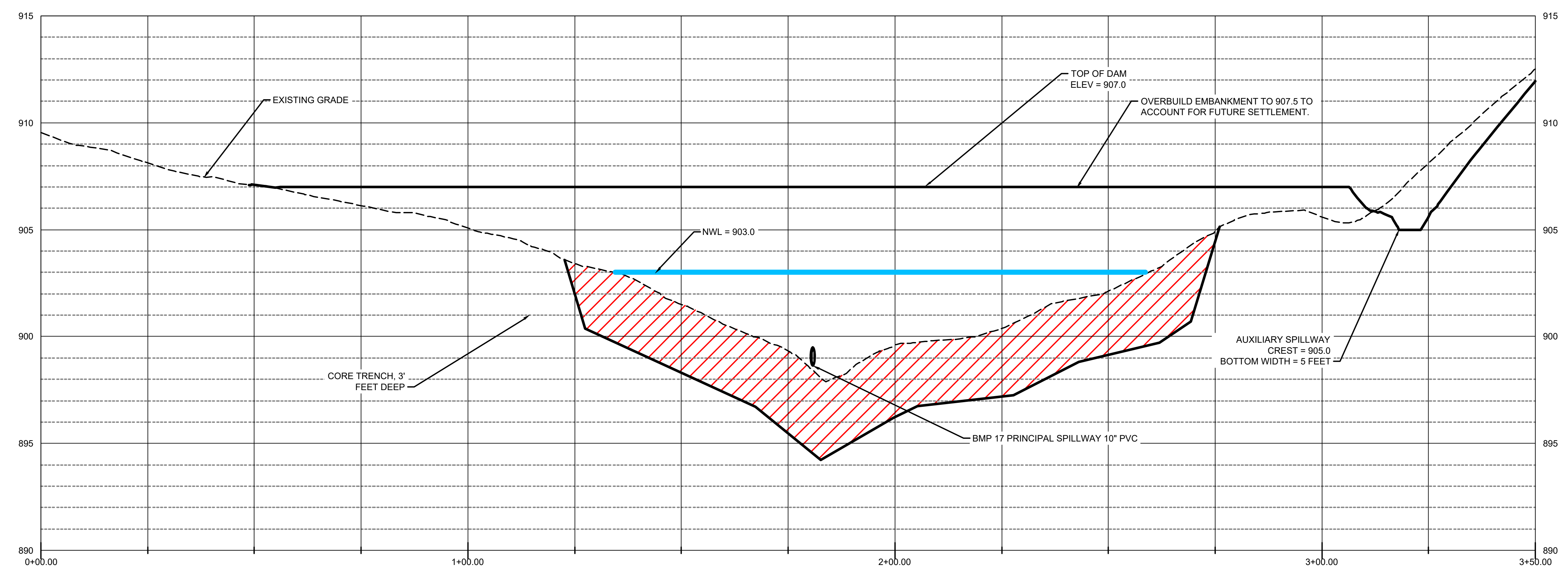
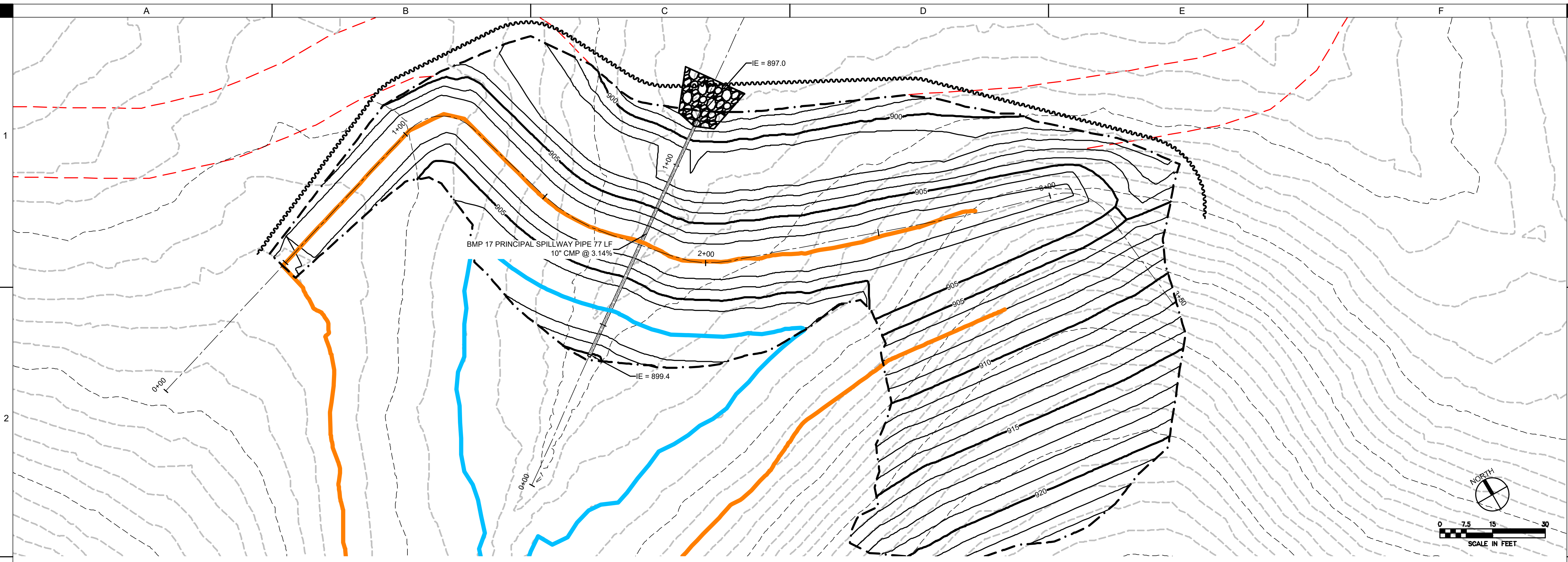


CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

SHIVEHATTERY
 ARCHITECTURE + ENGINEERING
 4125 Westown Pkwy, Suite 100 | West Des Moines, Iowa 50266
 515.223.8104 | www.shivehattery.com
 Iowa | Illinois | Indiana | Nebraska

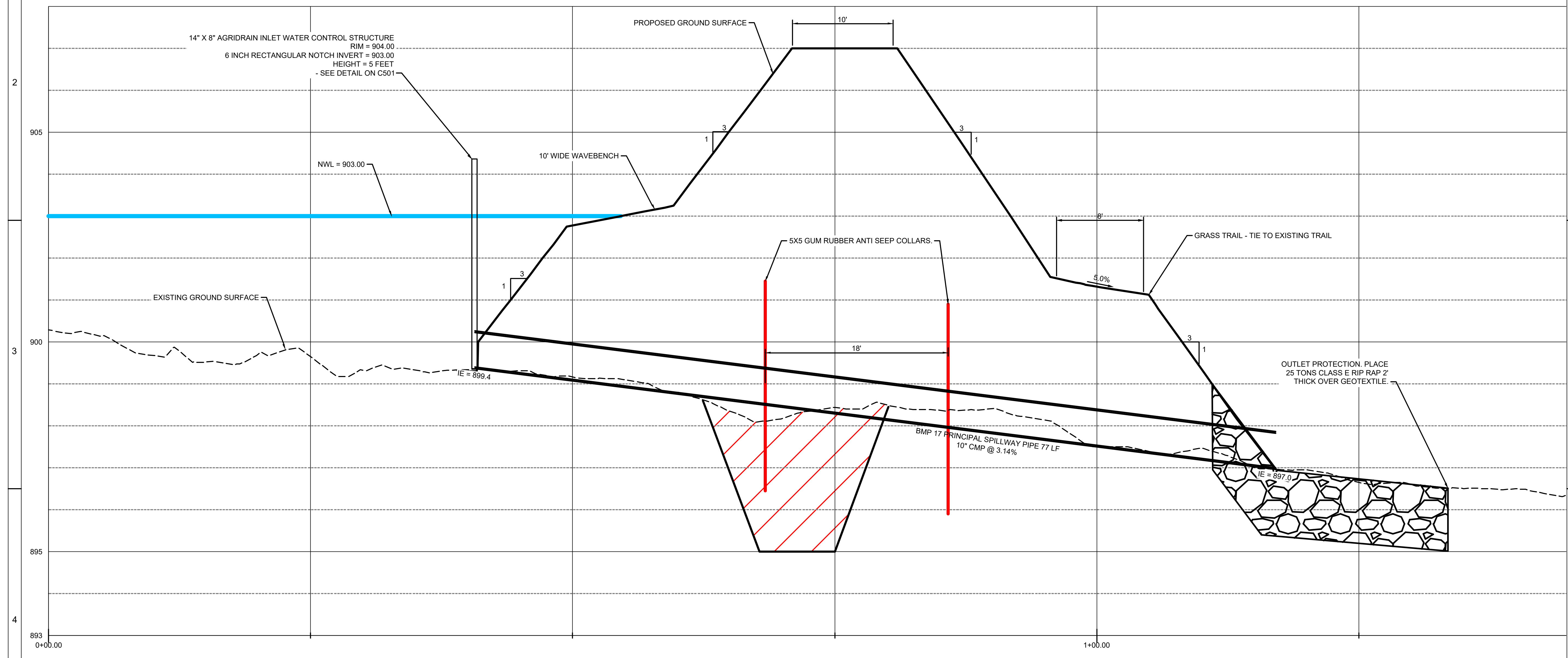
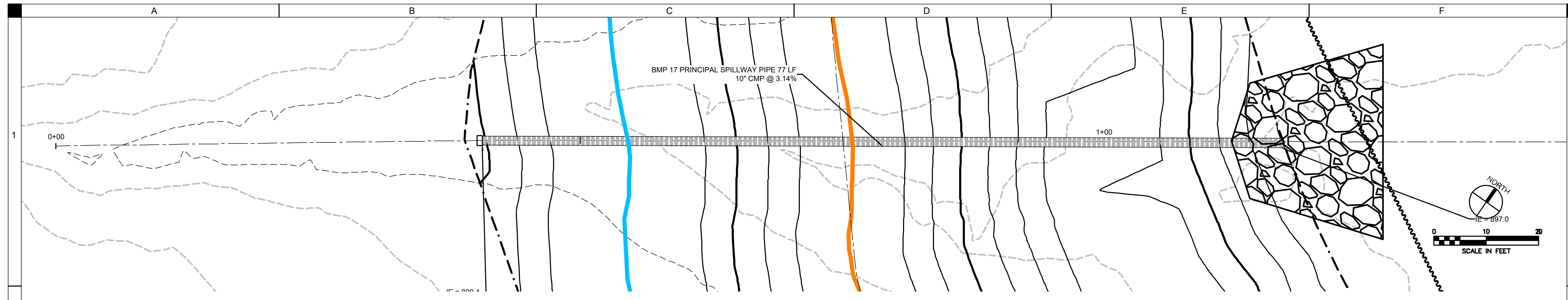
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 DATE: 08/18/2023
 PROJECT NO: 4213030
 FIELD BOOK: --
 CLIENT NO: --

BMP 17 CUT FILL PLAN
B241



DRAWN:	CHK
APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	09/19/2023
PROJECT NO.:	423130
FIELD BOOK:	---
CLIENT NO.:	---

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CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

DRAWN:	CHK
APPROVED:	DJ
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DATE:	09/19/2023
PROJECT NO.:	423830
FIELD BOOK:	---
CLIENT NO.:	---

BMP17 PRINCIPAL SPILLWAY PLAN & PROFILE

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 Plot Date: 09/19/2023 11:18:19 AM

ESTIMATED STREAM STABILIZATION QUANTITIES:

EXISTING BRIDGE, REMOVE, SALVAGE, AND REINSTALL	1	LS
EXCAVATION, STREAMBANK, HAUL TO BMP 17	1,138	CY
TOPSOIL, STRIP, STOCKPILING & RESPREAD	434	CY
RIP RAP, CLASS 'E' WITH GEOTEXTILE FABRIC	310	TON
CHOKE AND CHINK STONE, 1 TO 5 INCH, WELL GRADED.	80	TON
COMPOSITE BENTONITE AGGREGATE, AQUABLOK OR APPROVED EQUAL	5	TON
BOULDERS, ANGULAR, 600 TO 900 LB (EACH), 2.5' x 1.5' x 1' SIZE	80	TONS
RECP, 400G COIR MAT	175	SY
BANK STABILIZATION, TYPE 2B RECP	2,425	SY
BANK STABILIZATION, WILLOW AND DOGWOOD STAKES, HARVEST ON SITE	1,000	EACH
TEMPORARY SEEDING	0.6	AC

- EARTHWORK NOTES:**
- STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN GRADING LIMITS. RESPREAD TOPSOIL IN ALL STRIPPED AREAS.
 - MAXIMUM SIDE SLOPES OF ALL EXCAVATED AREAS TO BE 3:1 OR FLATTER.
 - CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN GRADING LIMITS PLUS 20' OFFSET WHERE NEEDED. COORDINATE WITH OWNER AND ENGINEER. BRUSH MAY BE BURNED AND BURIED ON SITE. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO NOVEMBER 1ST TO MARCH 31ST.
 - SOILS FROM EXCAVATION SUITABLE FOR EMBANKMENT CONSTRUCTION SHALL BE HAULED AND USED FOR BMP 17 CONSTRUCTION.
 - A 20% SHRINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE.
- ACCESS NOTES:**
- CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET B002. COORDINATE WITH OWNER FOR ADDITIONAL CONSTRUCTION STAGING AREA.
 - NO POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA.
 - RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
 - SEE SHEET B002 FOR PROPOSED HAUL ROUTES AND ACCESS FROM STAGING AREA TO CONSTRUCTION AREAS. CONTRACTOR RESPONSIBLE FOR TREE TRIMMING AND CLEARING ALONG EXISTING TRAILS AS REQUIRED.

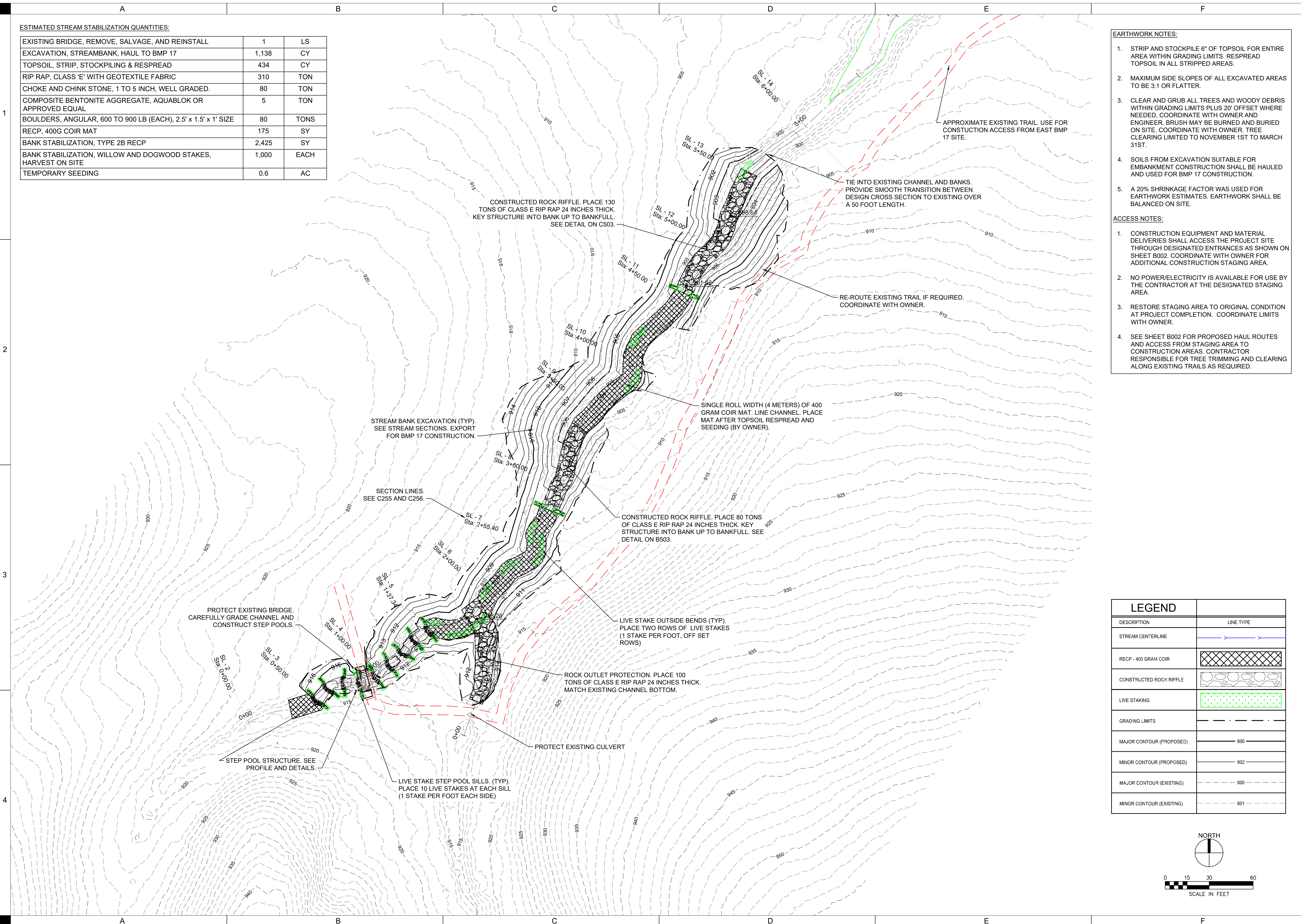


CASEY LAKE RESTORATION
BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

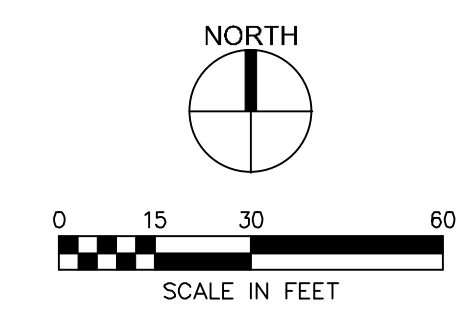
DRAWN: GHK
APPROVED: DJJ
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 08/18/2023
PROJECT NO: 4213030
FIELD BOOK: --
CLIENT NO: --

IN STREAM GRADE STABILIZATION GRADING PLAN

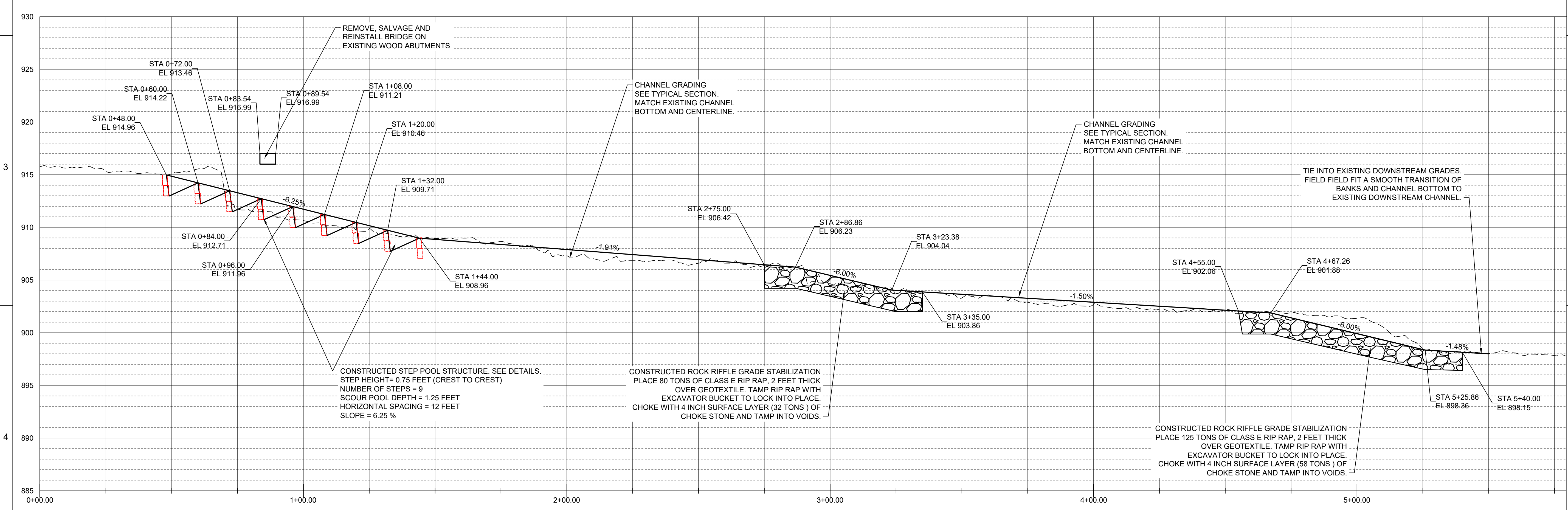
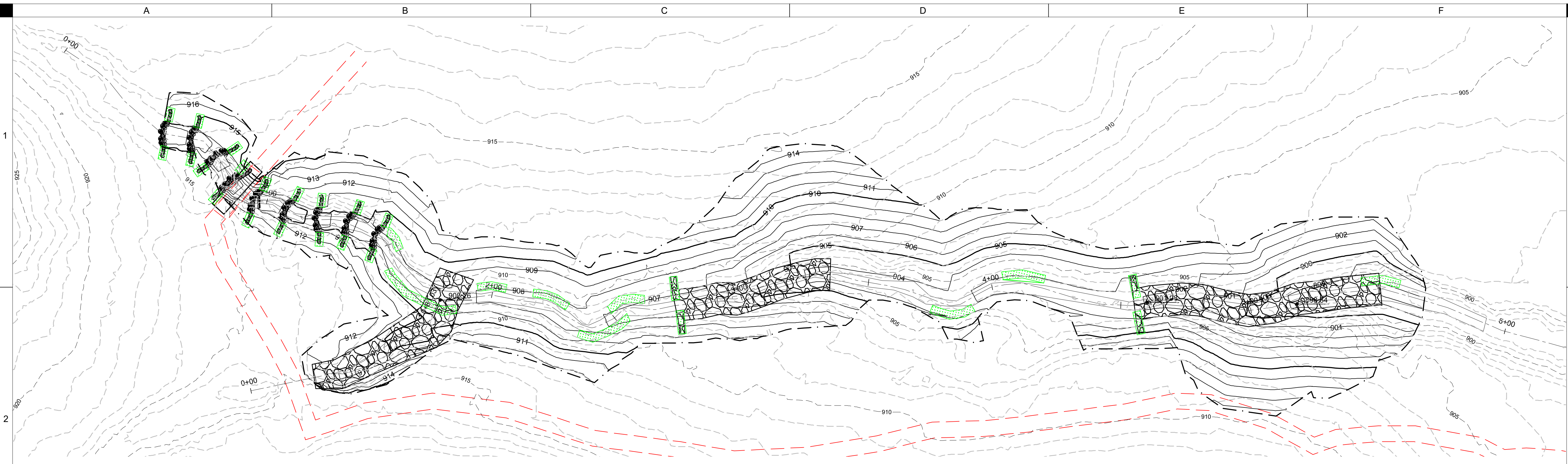
B250



LEGEND	
DESCRIPTION	LINE TYPE
STREAM CENTERLINE	
RECP - 400 GRAM COIR	
CONSTRUCTED ROCK RIFFLE	
LIVE STAKING	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	



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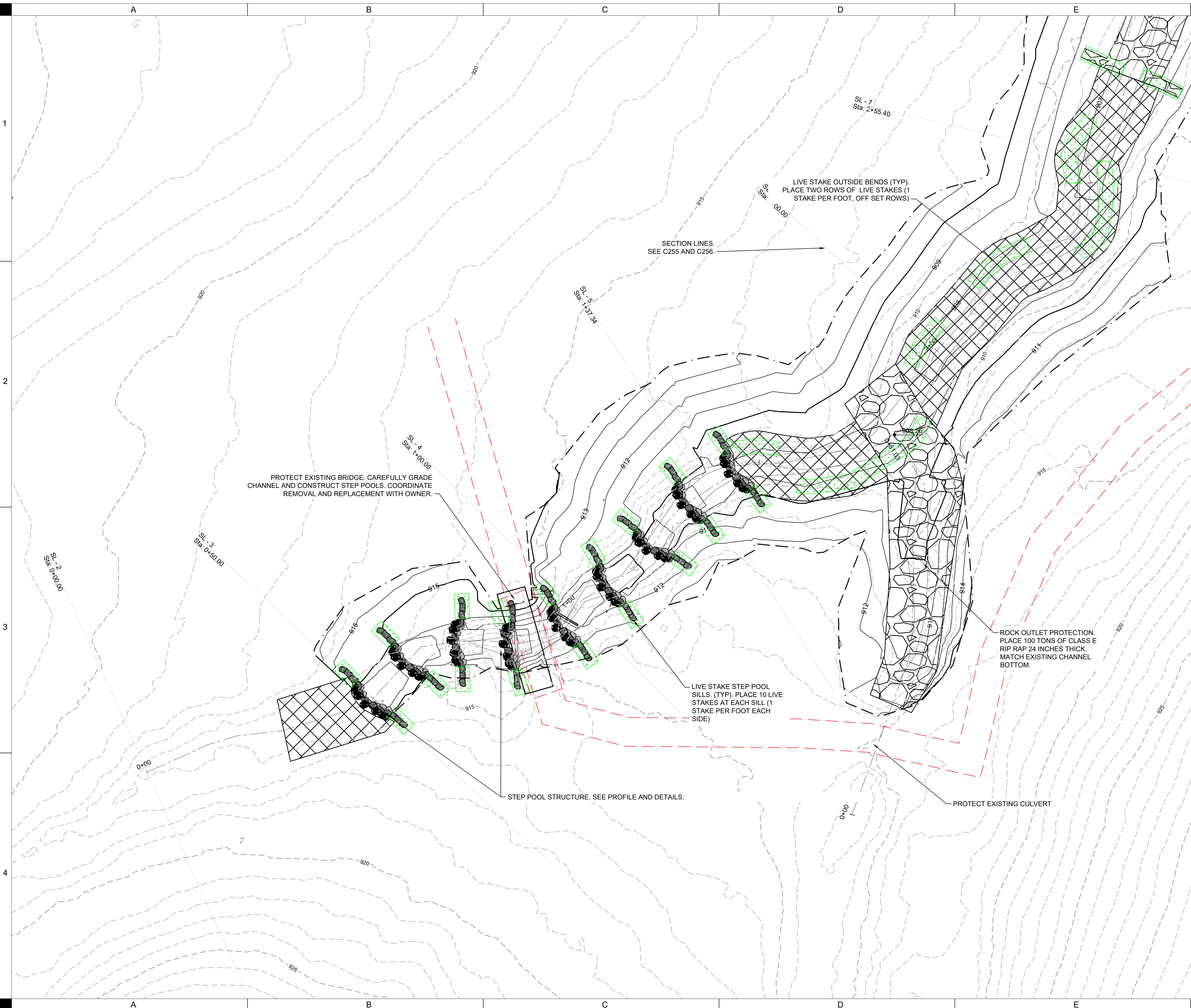
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CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

DRAWN:	GHK
APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	08/18/2023
PROJECT NO.:	4213030
FIELD BOOK:	--
CLIENT NO.:	--

STREAM PROFILE



PROTECT EXISTING BRIDGE. CAREFULLY GRADE CHANNEL AND CONSTRUCT STEP POOLS. COORDINATE REMOVAL AND REPLACEMENT WITH OWNER.

SECTION LINES. SEE C255 AND C256.

LIVE STAKE OUTSIDE BENDS (TYP). PLACE TWO ROWS OF LIVE STAKES (1 STAKE PER FOOT, OFF SET ROWS)

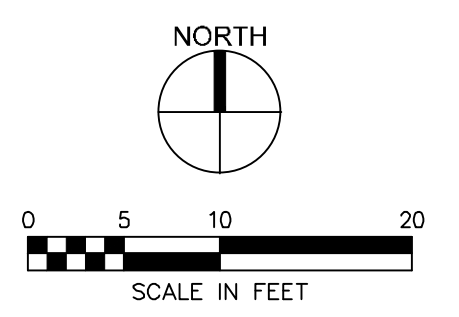
LIVE STAKE STEP POOL SILLS. (TYP). PLACE 10 LIVE STAKES AT EACH SILL (1 STAKE PER FOOT EACH SIDE)

ROCK OUTLET PROTECTION. PLACE 100 TONS OF CLASS E RIP RAP 24 INCHES THICK. MATCH EXISTING CHANNEL BOTTOM.

STEP POOL STRUCTURE. SEE PROFILE AND DETAILS.

PROTECT EXISTING CULVERT

DESCRIPTION	LINE TYPE
STREAM CENTERLINE	
RECP - 400 GRAM COIR	
CONSTRUCTED ROCK RIFFLE	
LIVE STAKING	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	



CASEY LAKE RESTORATION

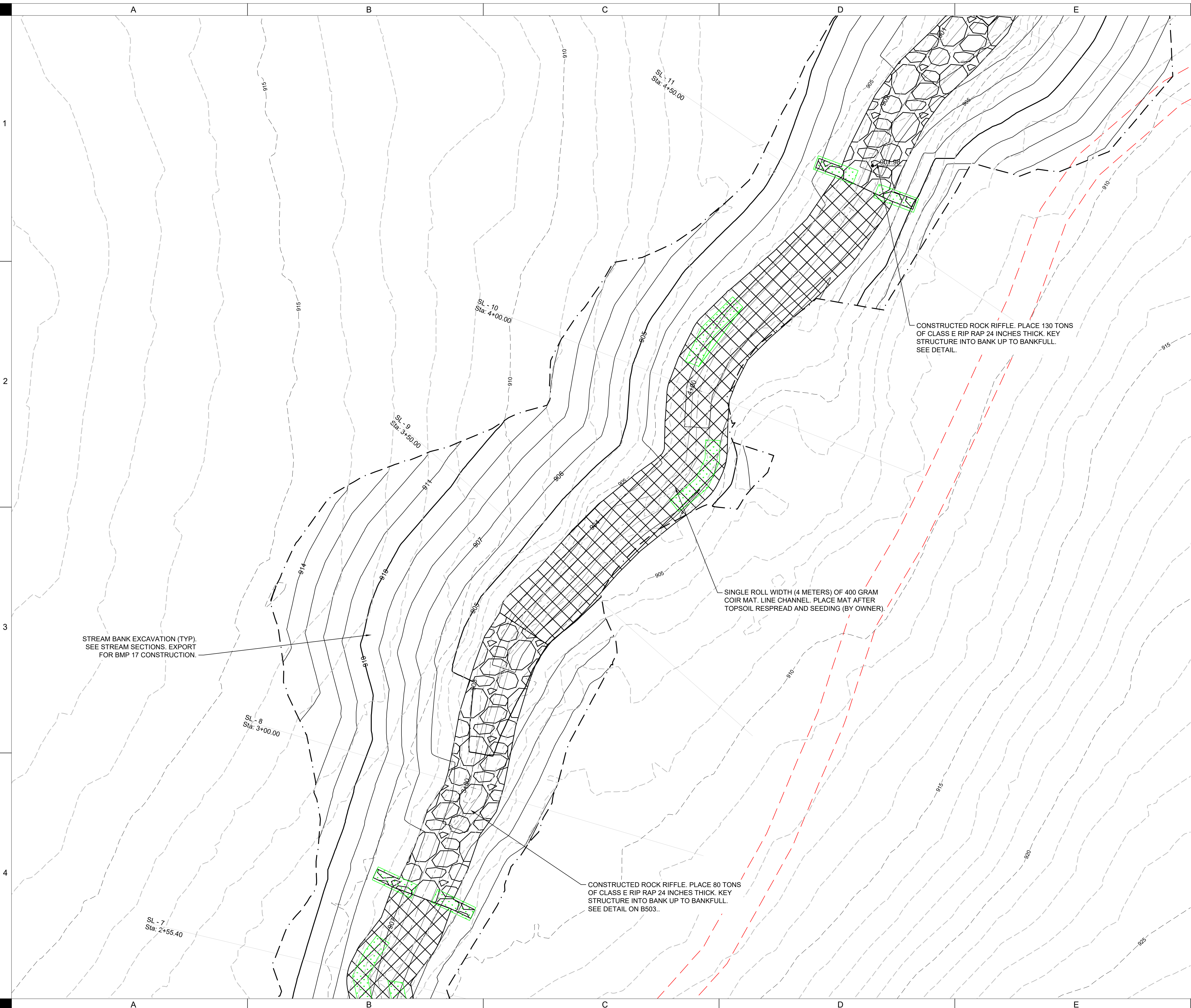
BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

DRAWN: GHK
 APPROVED: DJJ
 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 08/18/2023
 PROJECT NO: 4213030
 FIELD BOOK: --
 CLIENT NO: --

IN STREAM GRADE STABILIZATION GRADING PLAN

B252

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STREAM BANK EXCAVATION (TYP).
SEE STREAM SECTIONS. EXPORT
FOR BMP 17 CONSTRUCTION.

SL - 7
Sta: 2+55.40

SL - 8
Sta: 3+00.00

SL - 9
Sta: 3+50.00

SL - 10
Sta: 4+00.00

SL - 11
Sta: 4+50.00

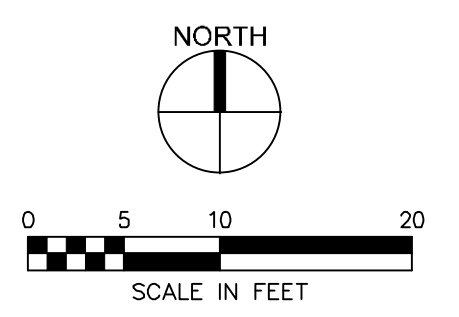
SINGLE ROLL WIDTH (4 METERS) OF 400 GRAM
COIR MAT. LINE CHANNEL. PLACE MAT AFTER
TOPSOIL RESPREAD AND SEEDING (BY OWNER).

CONSTRUCTED ROCK RIFFLE. PLACE 80 TONS
OF CLASS E RIP RAP 24 INCHES THICK. KEY
STRUCTURE INTO BANK UP TO BANKFULL.
SEE DETAIL ON B503.

CONSTRUCTED ROCK RIFFLE. PLACE 130 TONS
OF CLASS E RIP RAP 24 INCHES THICK. KEY
STRUCTURE INTO BANK UP TO BANKFULL.
SEE DETAIL.

- EARTHWORK NOTES:**
1. STRIP AND STOCKPILE 6" OF TOPSOIL FOR ENTIRE AREA WITHIN GRADING LIMITS. RESPREAD TOPSOIL IN ALL STRIPPED AREAS.
 2. MAXIMUM SIDE SLOPES OF ALL EXCAVATED AREAS TO BE 3:1 OR FLATTER.
 3. CLEAR AND GRUB ALL TREES AND WOODY DEBRIS WITHIN GRADING LIMITS PLUS 20' OFFSET WHERE NEEDED. COORDINATE WITH OWNER AND ENGINEER. BRUSH MAY BE BURNED AND BURIED ON SITE. COORDINATE WITH OWNER. TREE CLEARING LIMITED TO OCTOBER 1ST TO MARCH 31ST.
 4. SOILS FROM EXCAVATION SUITABLE FOR EMBANKMENT CONSTRUCTION SHALL BE HAULED AND USED FOR BMP 17 CONSTRUCTION.
 5. A 20% SHRINKAGE FACTOR WAS USED FOR EARTHWORK ESTIMATES. EARTHWORK SHALL BE BALANCED ON SITE.
 6. TOPSOIL IS IN ADDITION TO THE EARTHWORK QUANTITIES LISTED IN THE TABLE ON SHEET C202.

LEGEND	
DESCRIPTION	LINE TYPE
STREAM CENTERLINE	
RECP - 400 GRAM COIR	
CONSTRUCTED ROCK RIFFLE	
LIVE STAKING	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	800
MINOR CONTOUR (PROPOSED)	802
MAJOR CONTOUR (EXISTING)	800
MINOR CONTOUR (EXISTING)	801



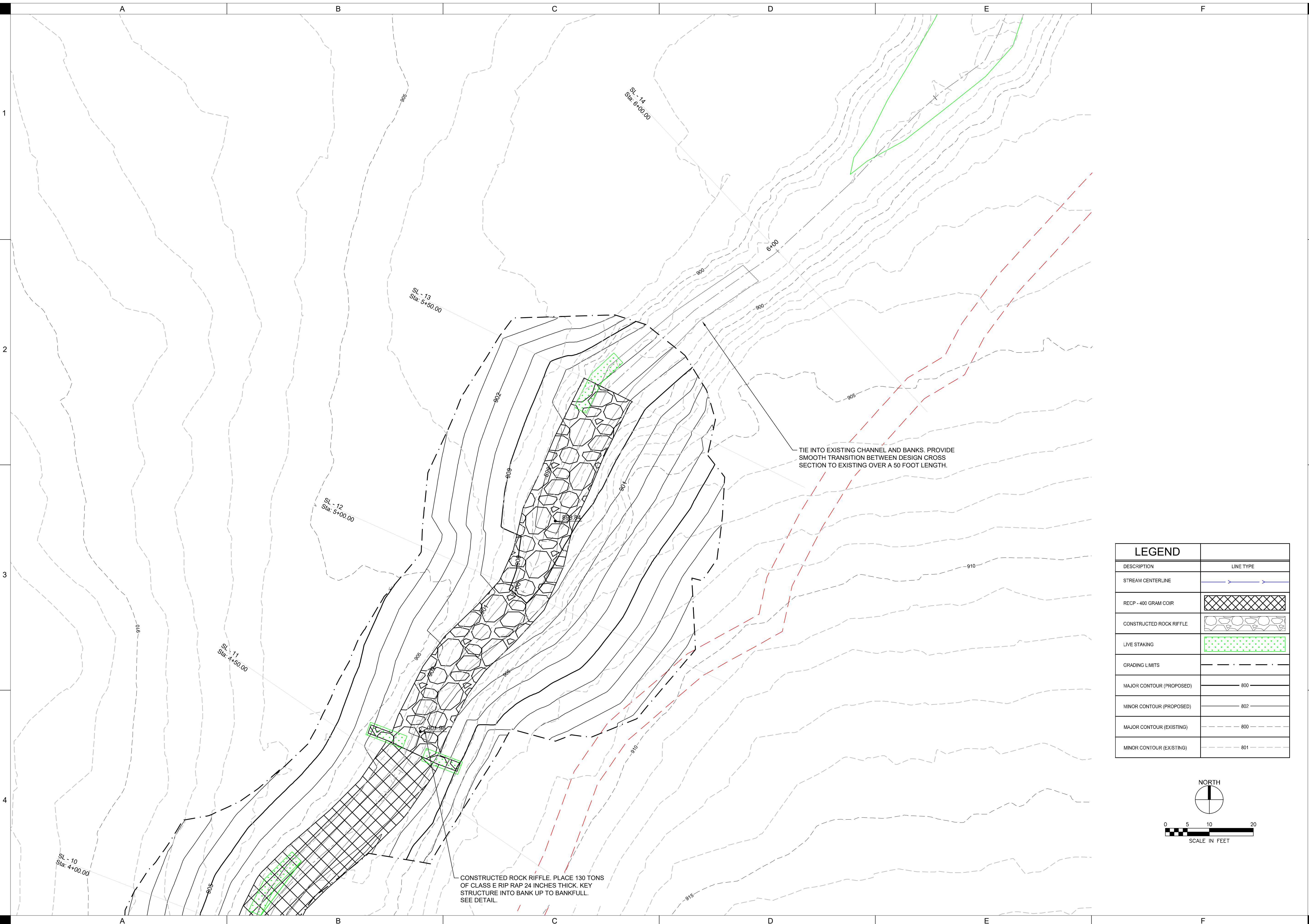
CASEY LAKE RESTORATION
BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

DRAWN: GHK
 APPROVED: DJJ
 ISSUED FOR: CONSTRUCTION DOCUMENTS
 DATE: 08/18/2023
 PROJECT NO: 4213030
 FIELD BOOK: --
 CLIENT NO: --

IN STREAM GRADE STABILIZATION GRADING PLAN
B253

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 4125 Westown Pkwy, Suite 100 | West Des Moines, Iowa 50266
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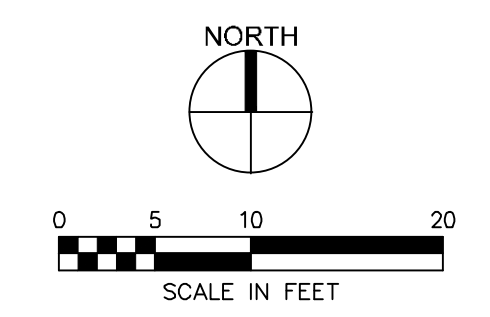
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TIE INTO EXISTING CHANNEL AND BANKS. PROVIDE SMOOTH TRANSITION BETWEEN DESIGN CROSS SECTION TO EXISTING OVER A 50 FOOT LENGTH.

CONSTRUCTED ROCK RIFFLE. PLACE 130 TONS OF CLASS E RIP RAP 24 INCHES THICK. KEY STRUCTURE INTO BANK UP TO BANKFULL. SEE DETAIL.

LEGEND	
DESCRIPTION	LINE TYPE
STREAM CENTERLINE	
RECP - 400 GRAM COIR	
CONSTRUCTED ROCK RIFFLE	
LIVE STAKING	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	800
MINOR CONTOUR (PROPOSED)	802
MAJOR CONTOUR (EXISTING)	800
MINOR CONTOUR (EXISTING)	801



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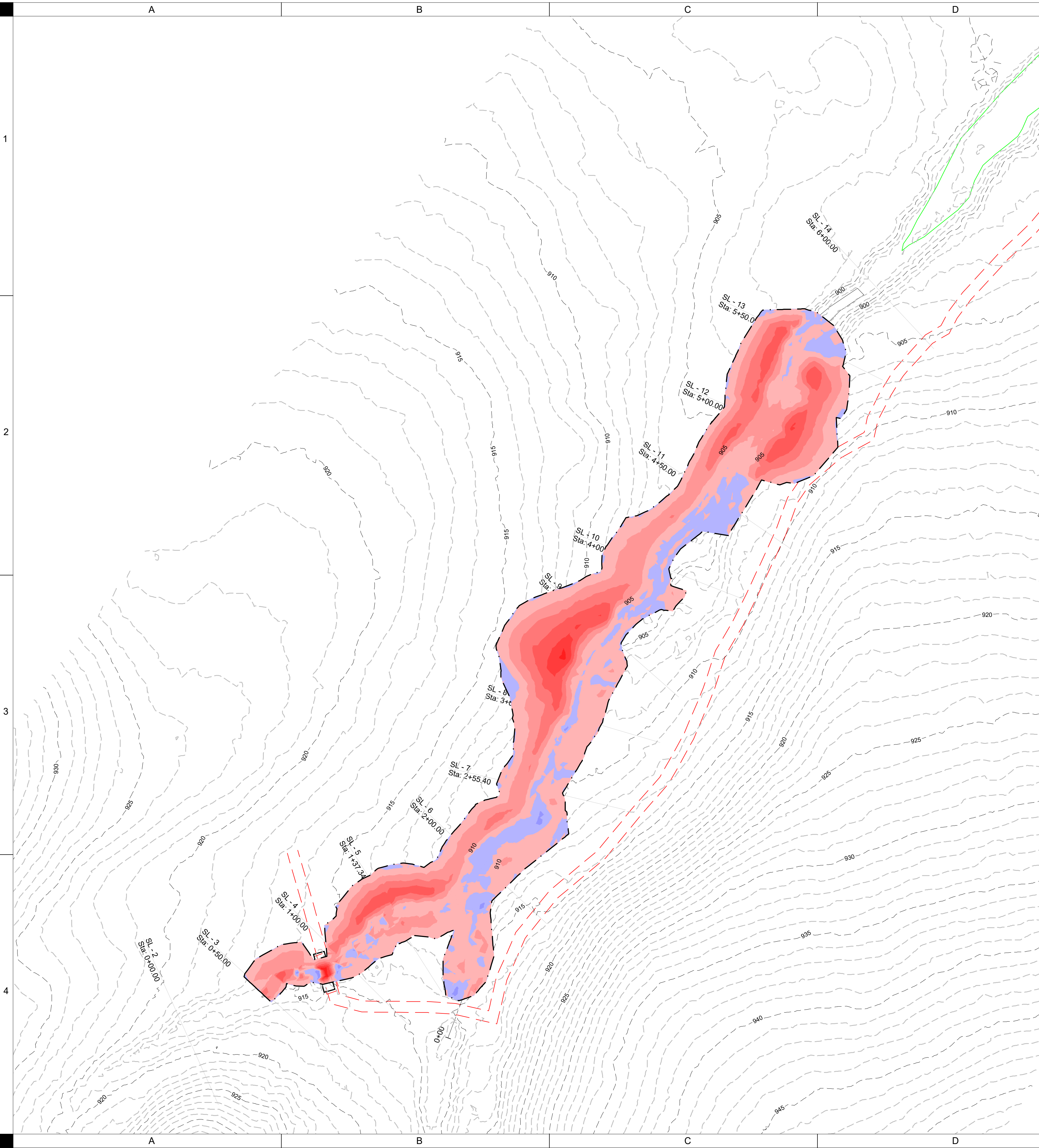
CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

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IN STREAM GRADE
 STABILIZATION
 GRADING PLAN

B254

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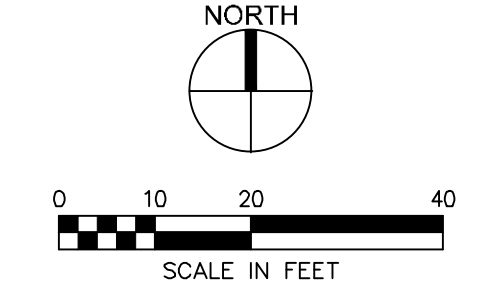


EARTHWORK TABLE		
	CUT (CY)	FILL + 20% (CY)
STREAM BANK GRADING AND EXCAVATION, HAULED TO BMP 17 FOR EMBANKMENT CONSTRUCTION	954	35

*A SHRINKAGE FACTOR OF 20% IS ASSUMED FOR FILL.

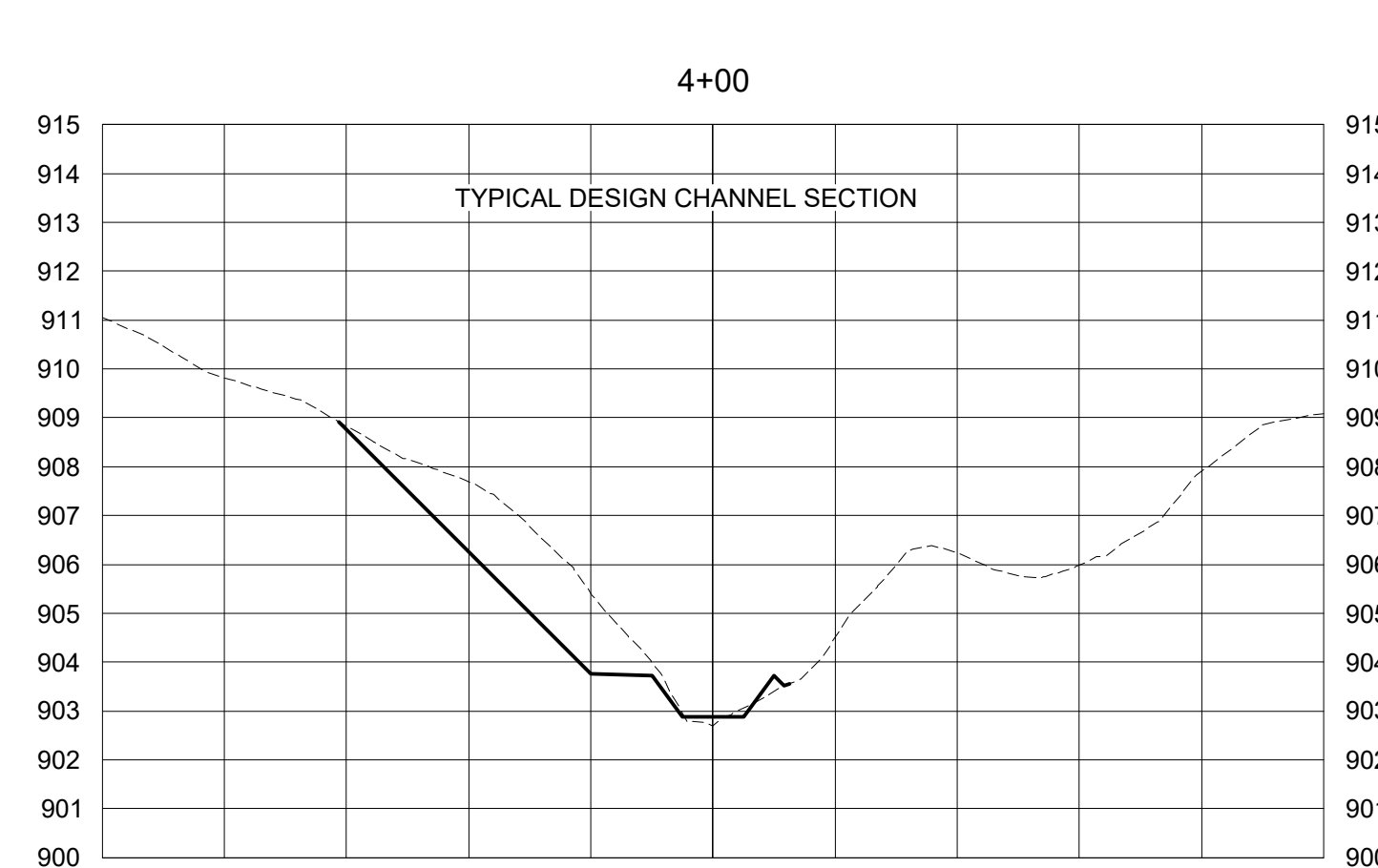
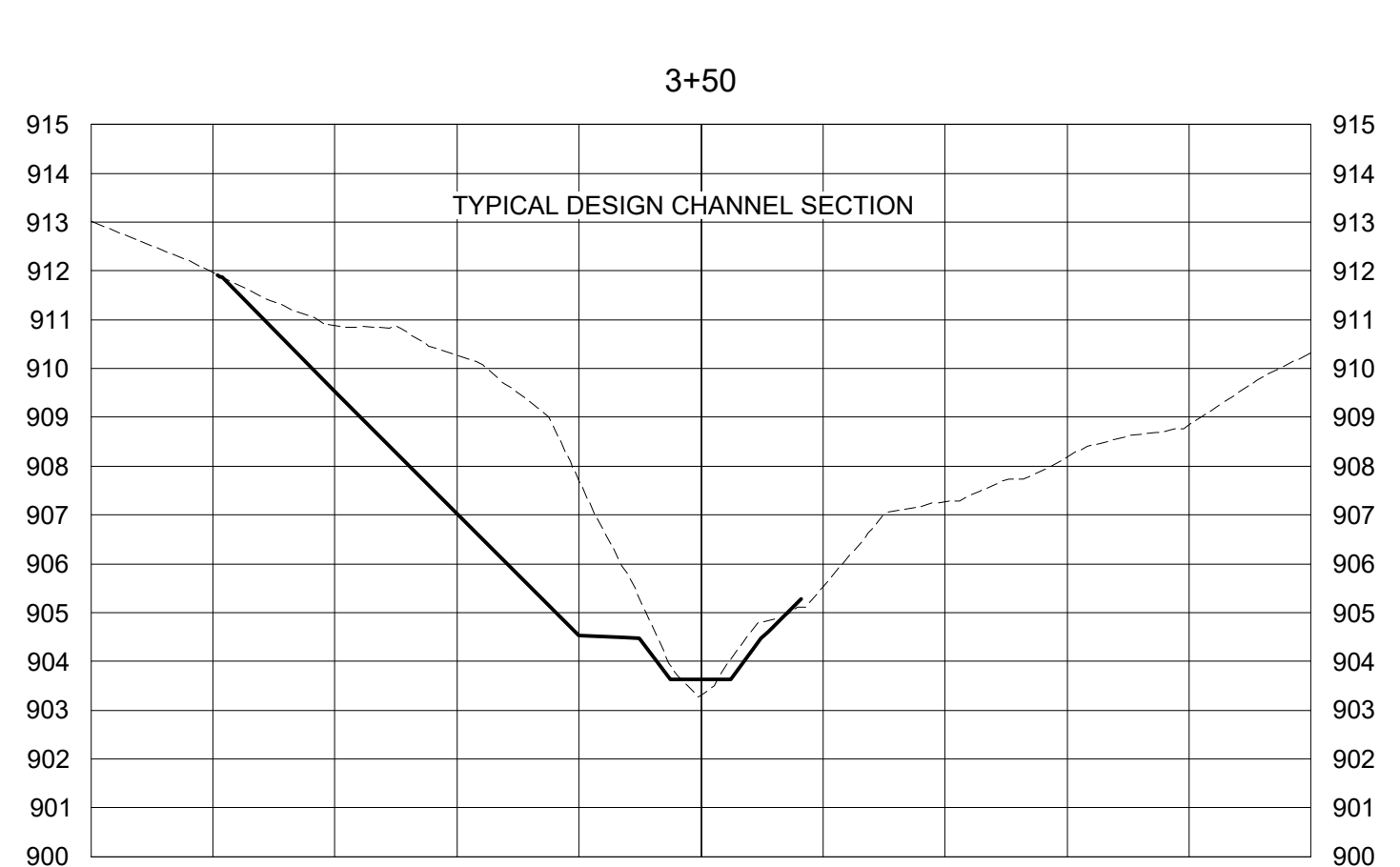
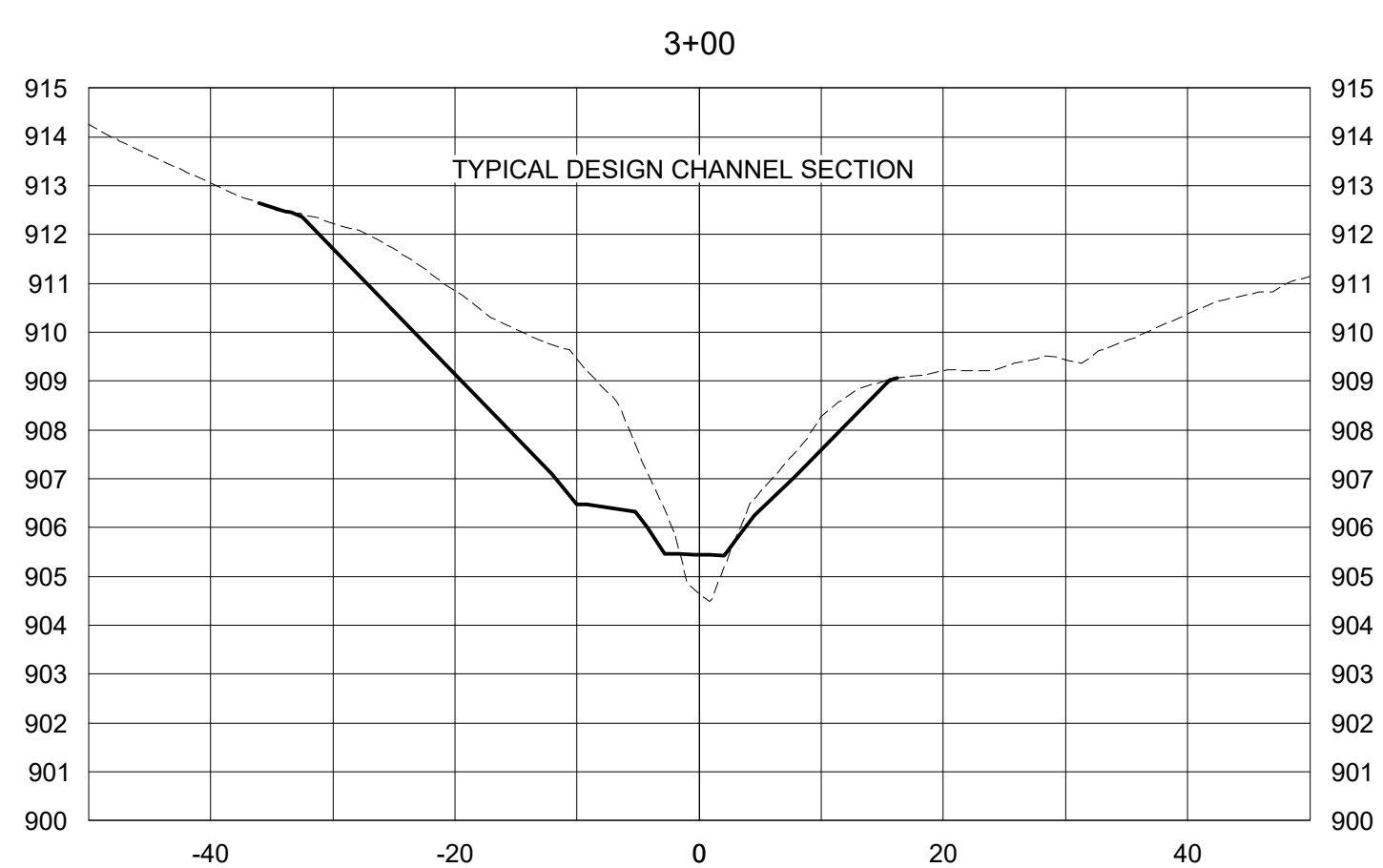
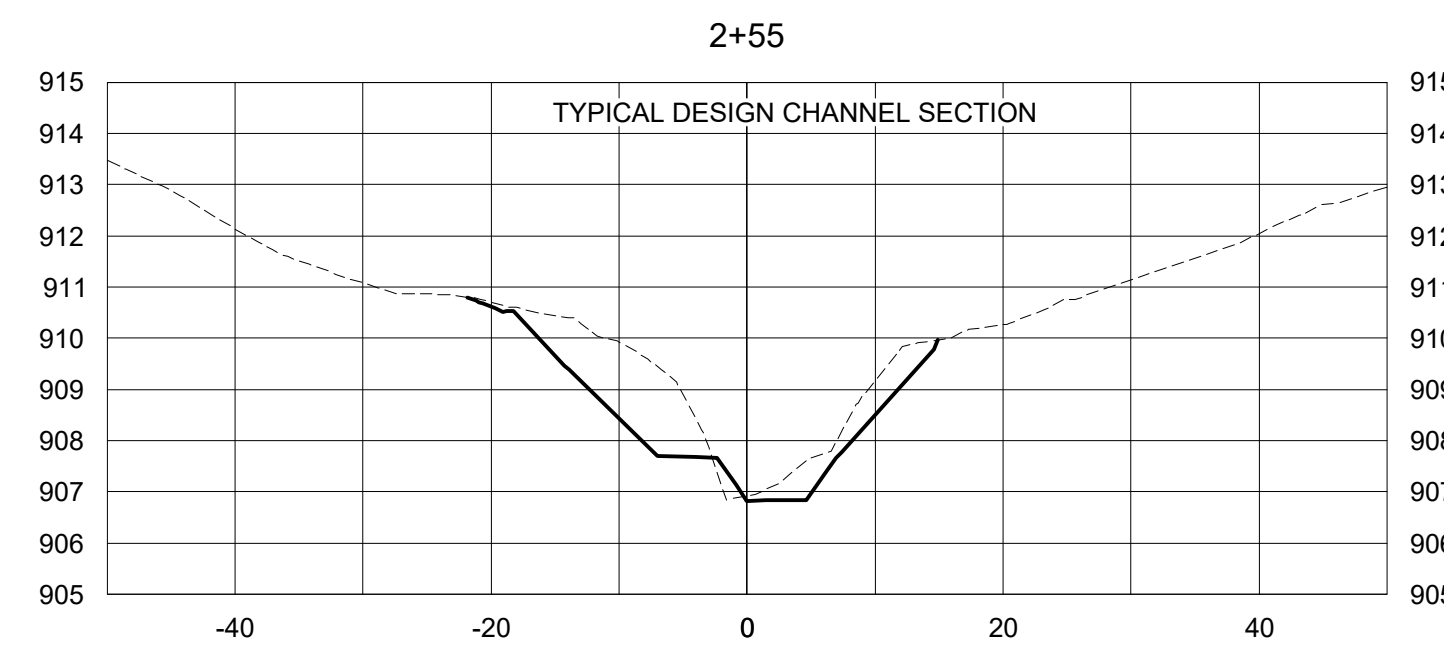
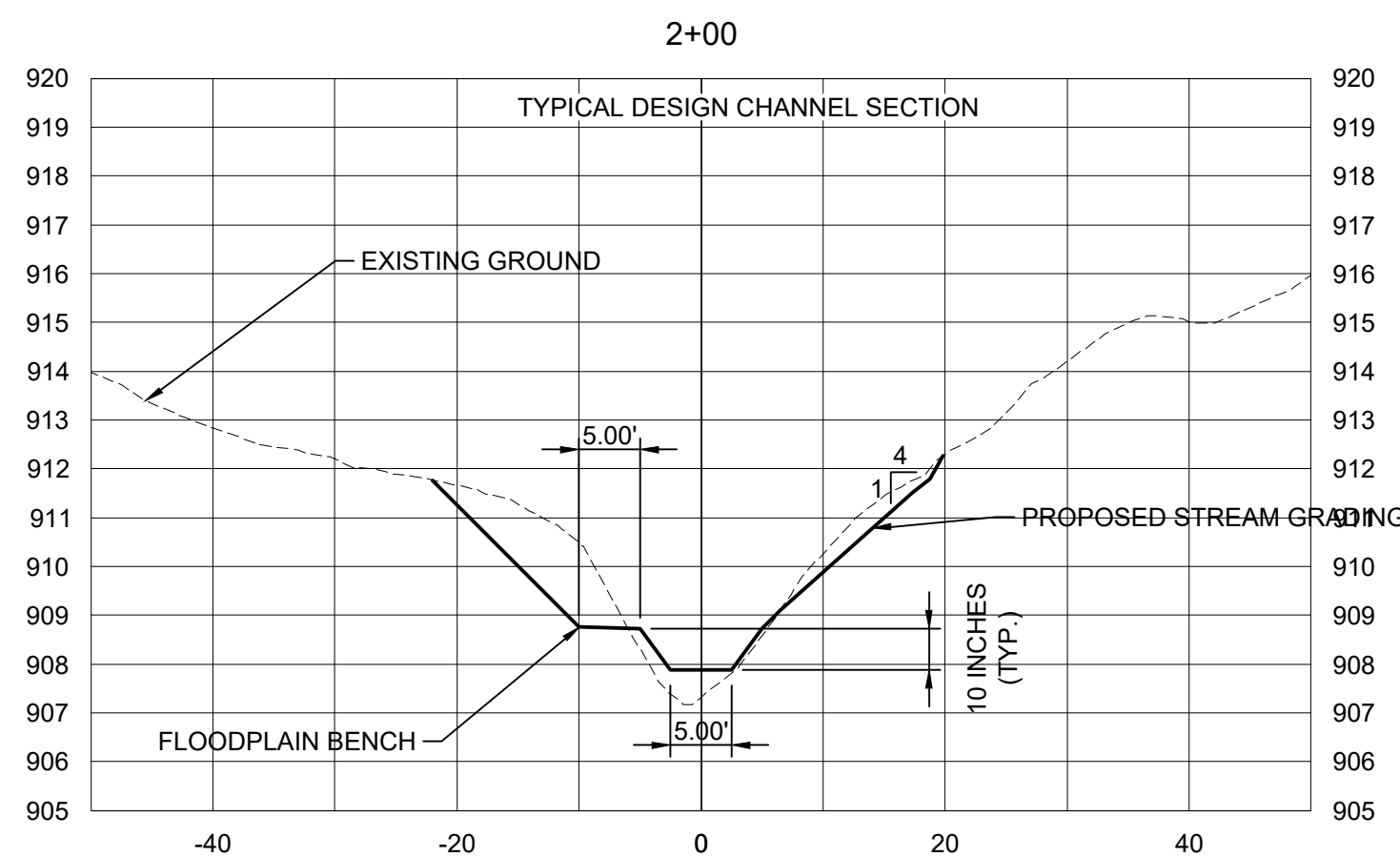
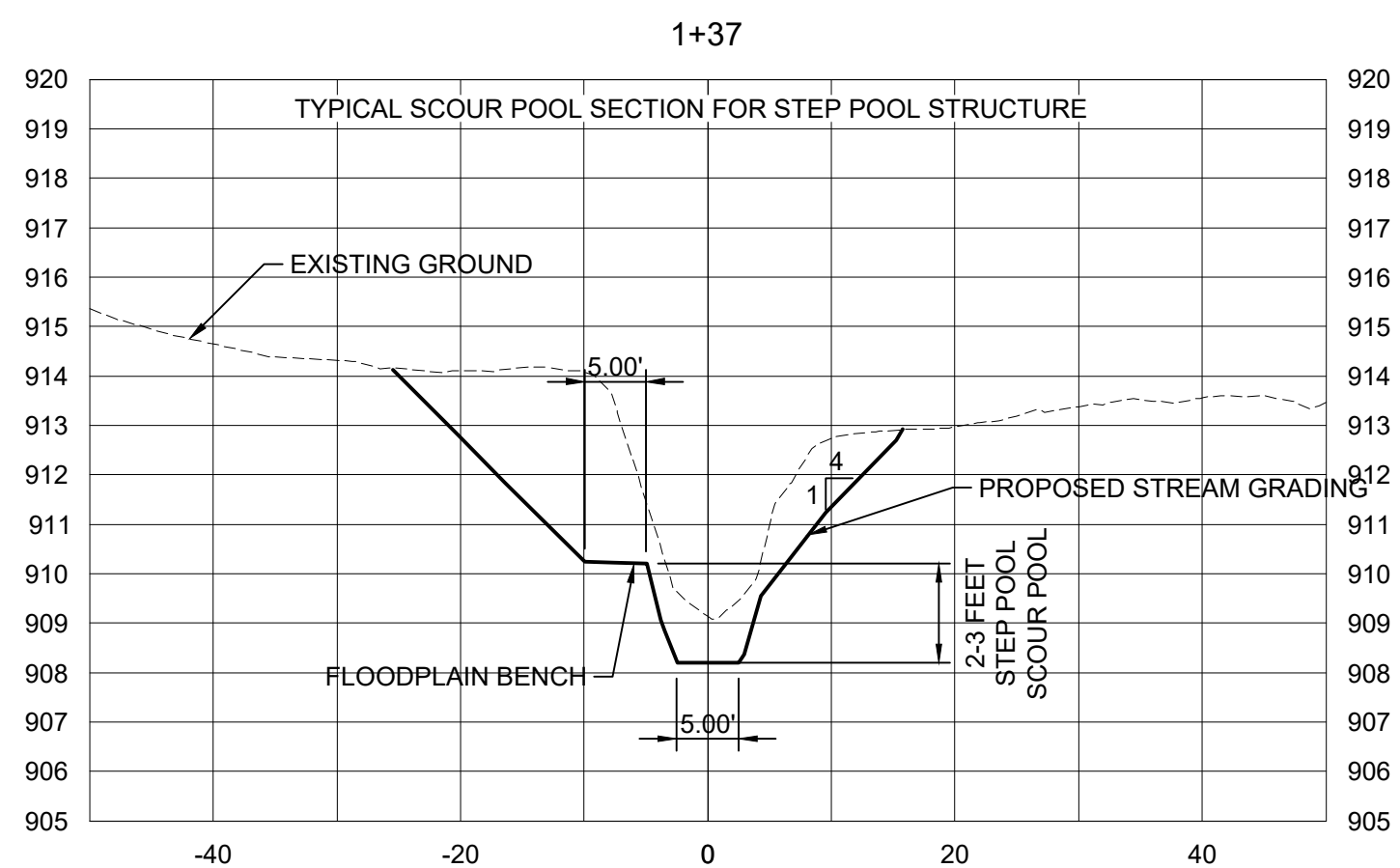
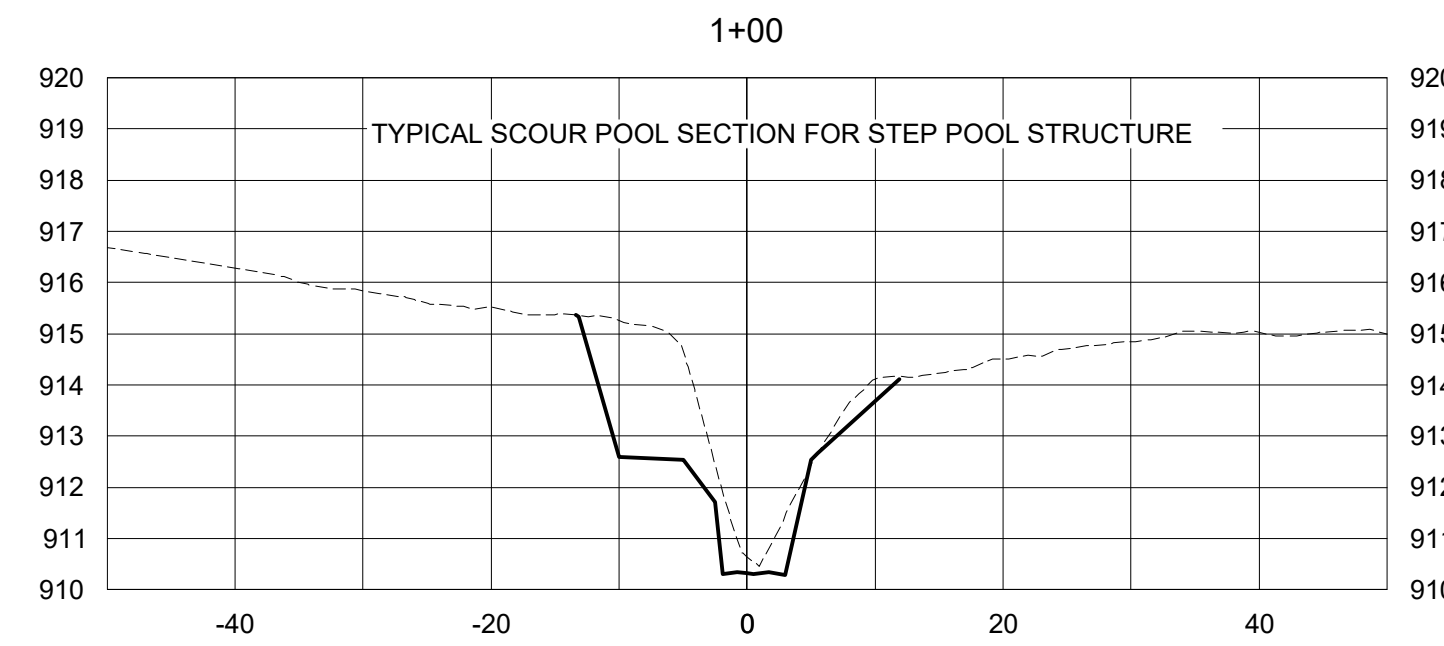
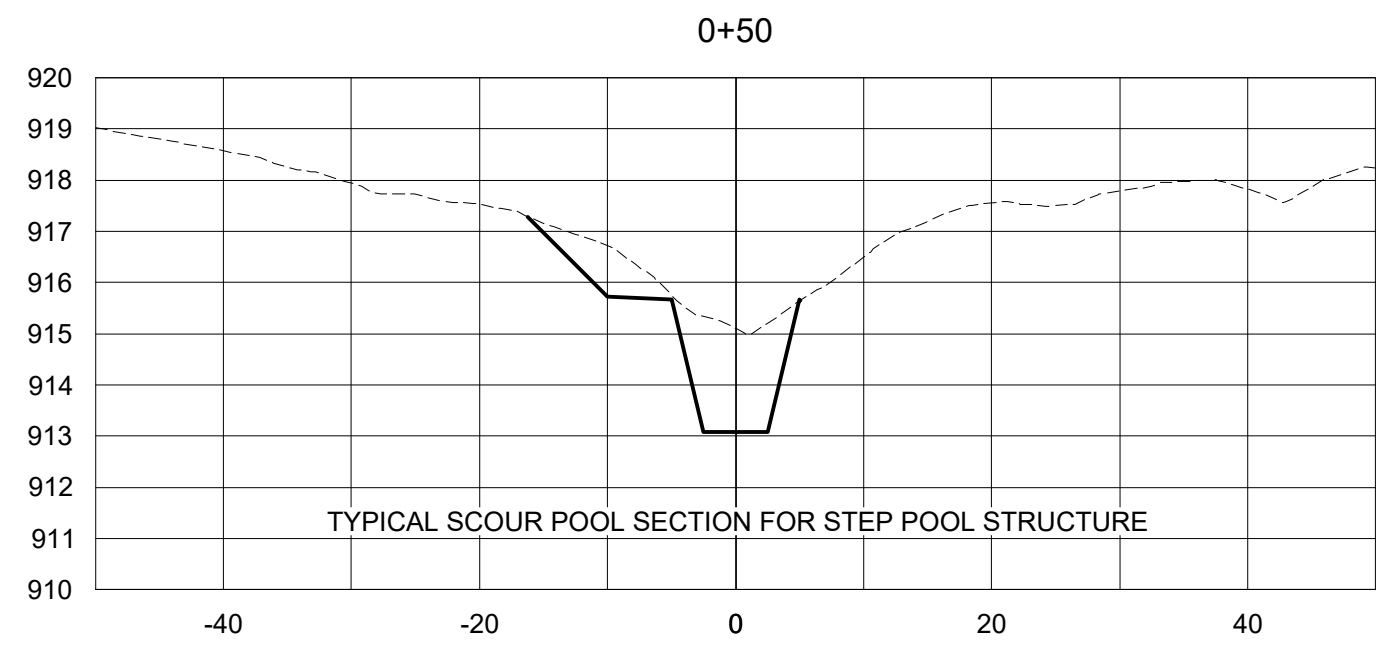
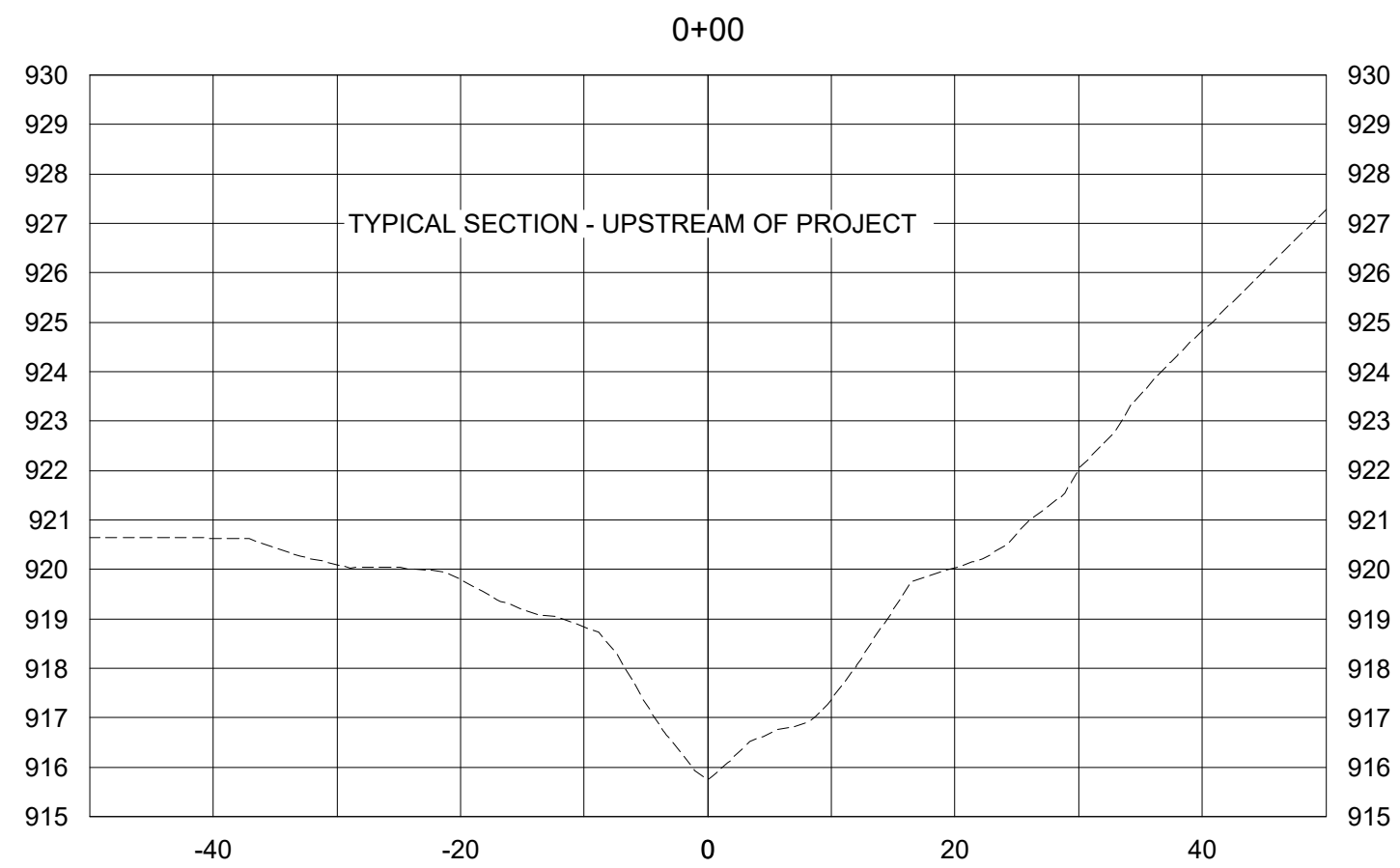
ELEVATIONS TABLE			
CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-6	-5	
CUT	-5	-4	
CUT	-4	-3	
CUT	-3	-2	
CUT	-2	-1	
CUT	-1	0	
FILL	0	1	
FILL	1	2	

LEGEND	
DESCRIPTION	LINE TYPE
TOP OF DAM ELEVATION	
STREAM CENTERLINE	
NORMAL WATER LEVEL	
PRINCIPAL SPILLWAY	
RIP RAP	
GRADING LIMITS	
MAJOR CONTOUR (PROPOSED)	
MINOR CONTOUR (PROPOSED)	
MAJOR CONTOUR (EXISTING)	
MINOR CONTOUR (EXISTING)	
EXISTING WETLAND	

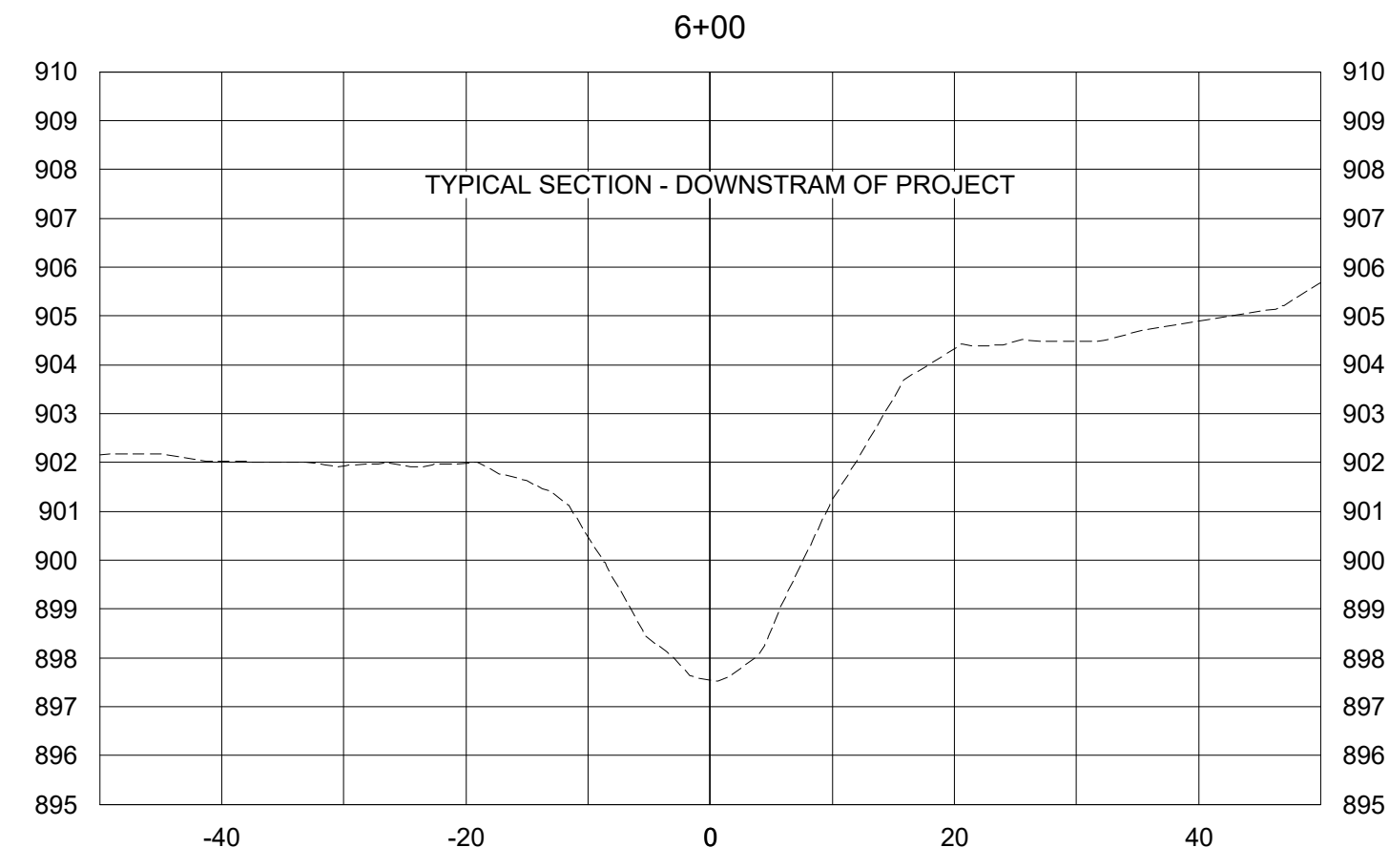
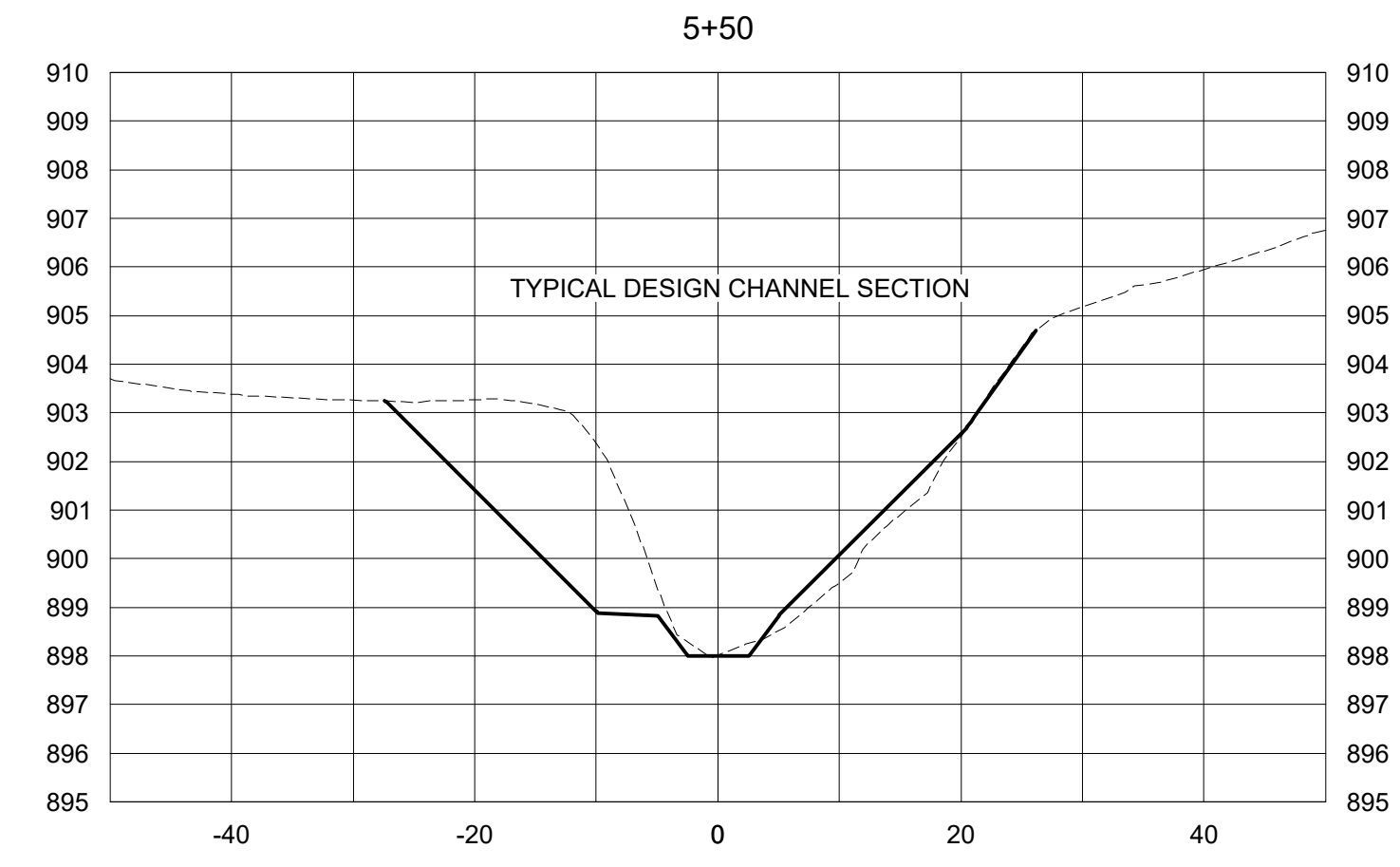
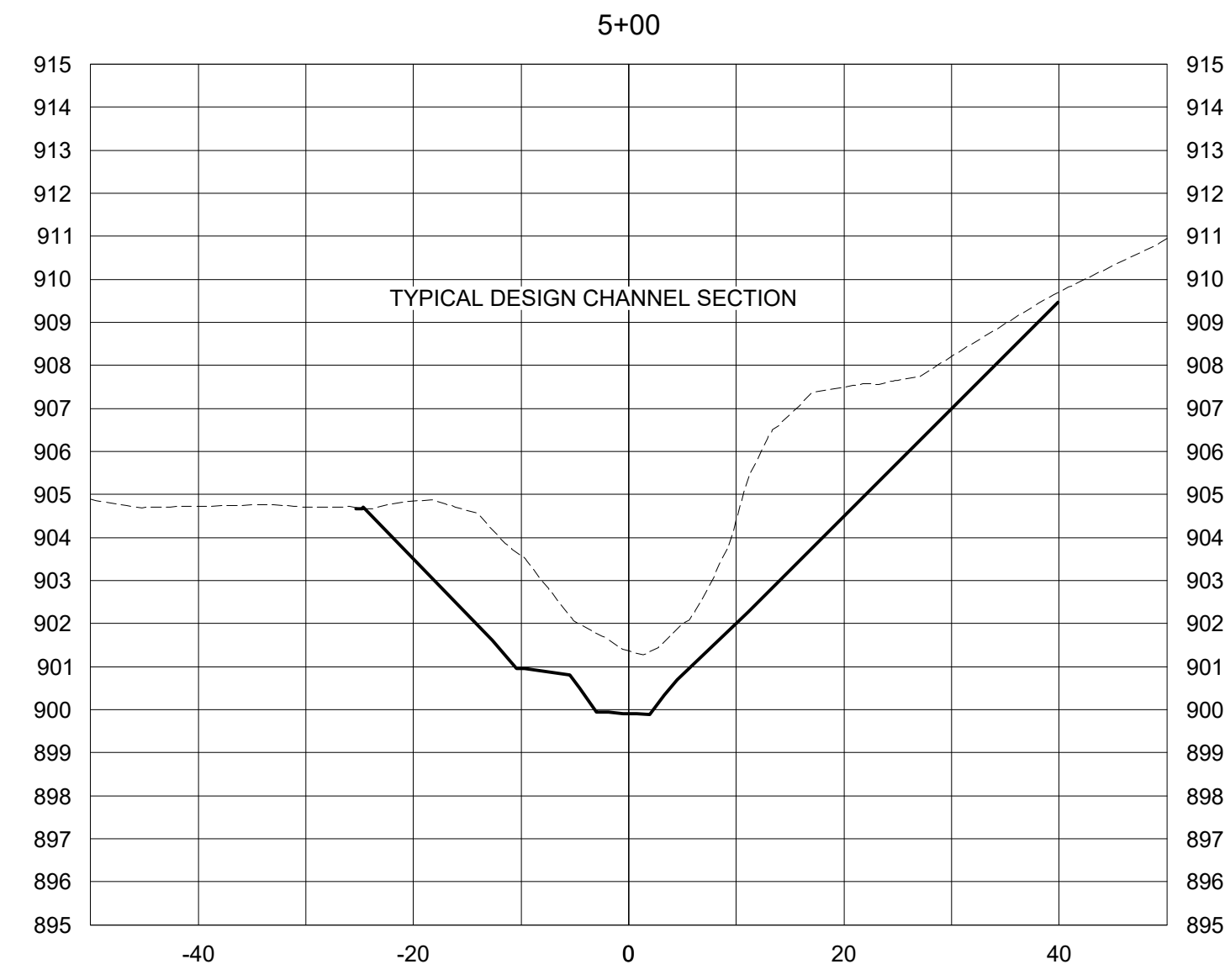
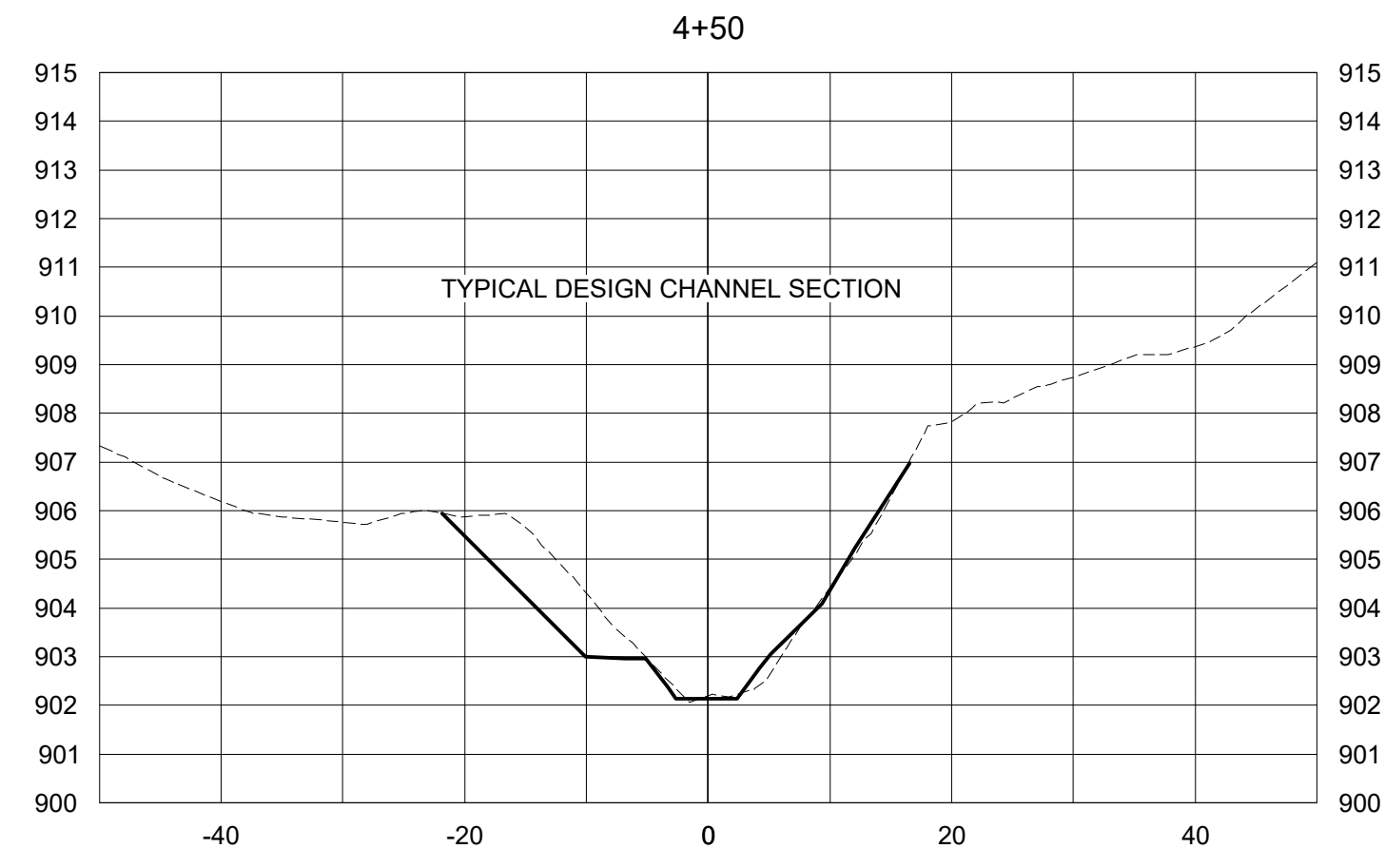


CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

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 APPROVED: DJJ
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 CLIENT NO: --



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DATE:	08/18/2023
PROJECT NO.:	4213030
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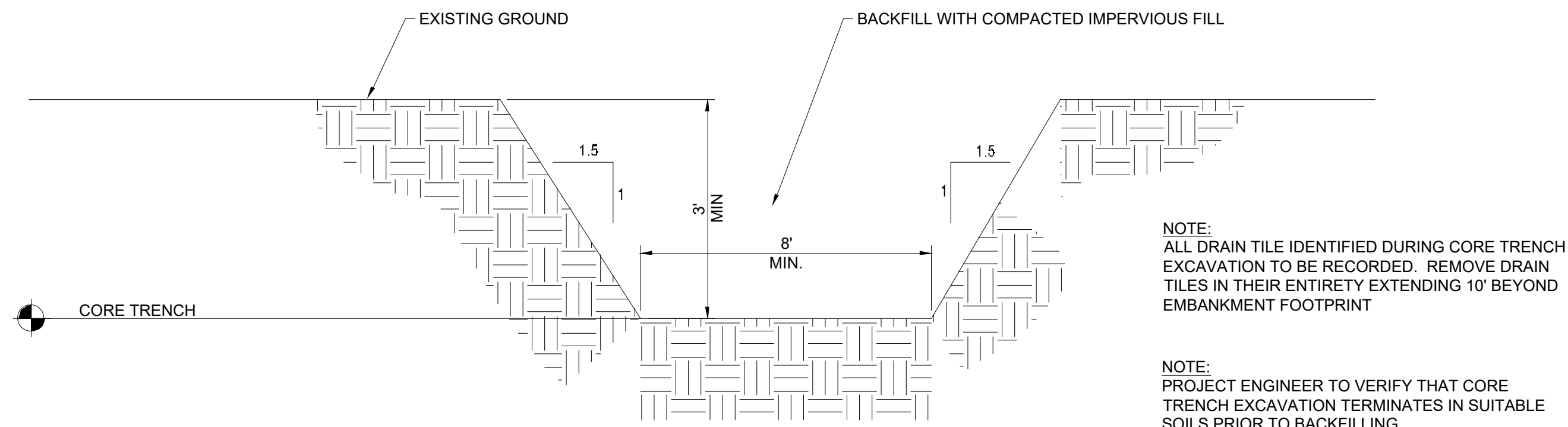


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STREAM SECTIONS

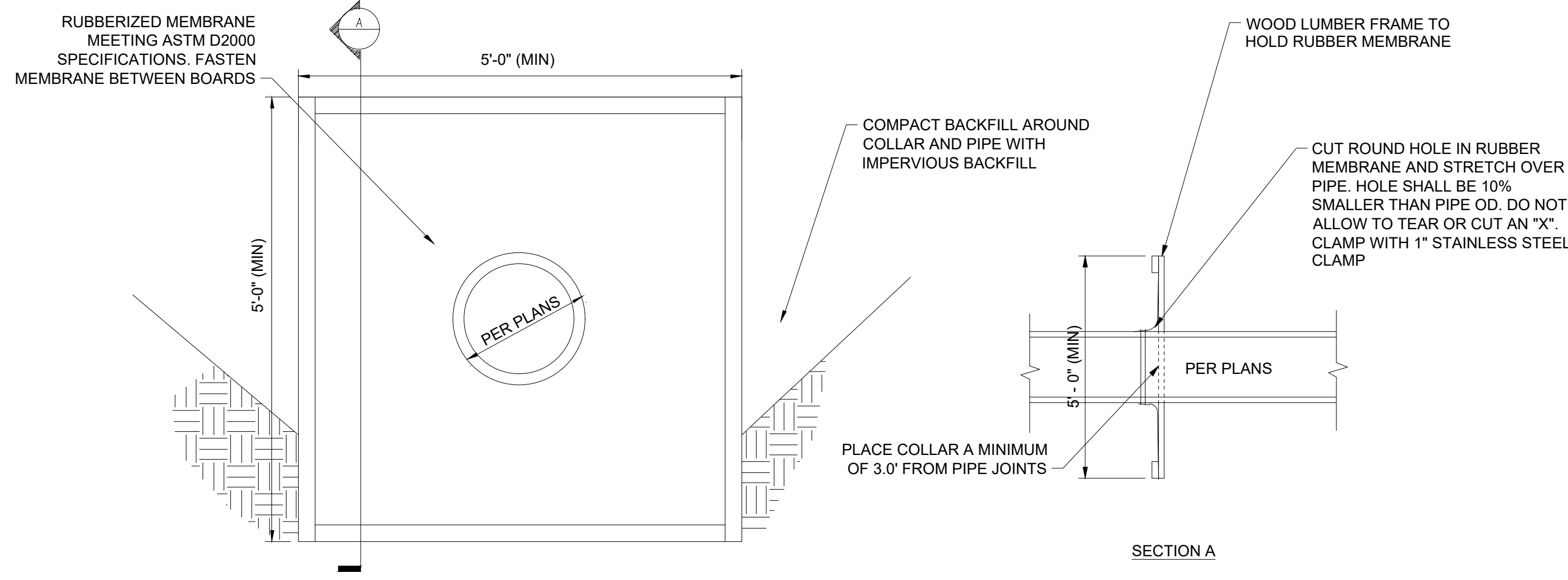
B257



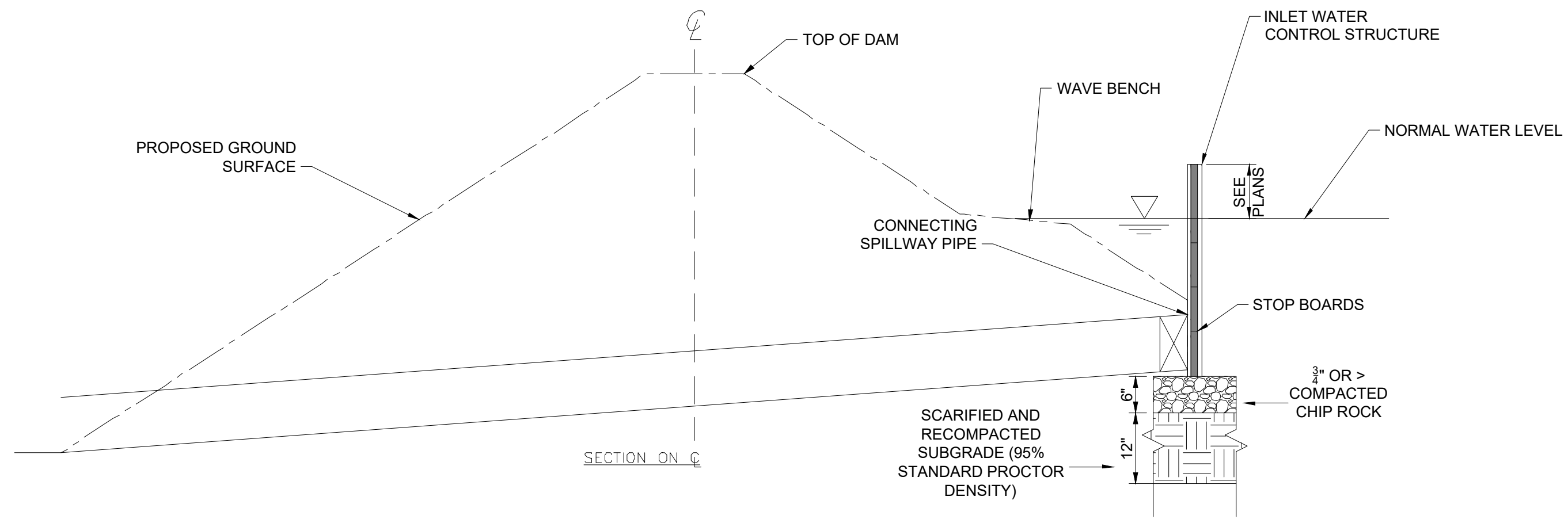
A2 TYPICAL CORE TRENCH SECTION
NOT TO SCALE

NOTE:
ALL DRAIN TILE IDENTIFIED DURING CORE TRENCH EXCAVATION TO BE RECORDED. REMOVE DRAIN TILES IN THEIR ENTIRETY EXTENDING 10' BEYOND EMBANKMENT FOOTPRINT

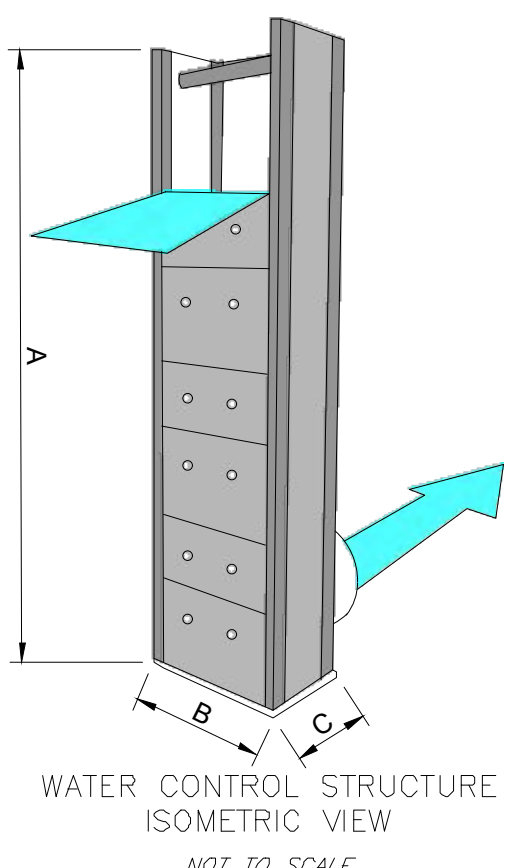
NOTE:
PROJECT ENGINEER TO VERIFY THAT CORE TRENCH EXCAVATION TERMINATES IN SUITABLE SOILS PRIOR TO BACKFILLING.



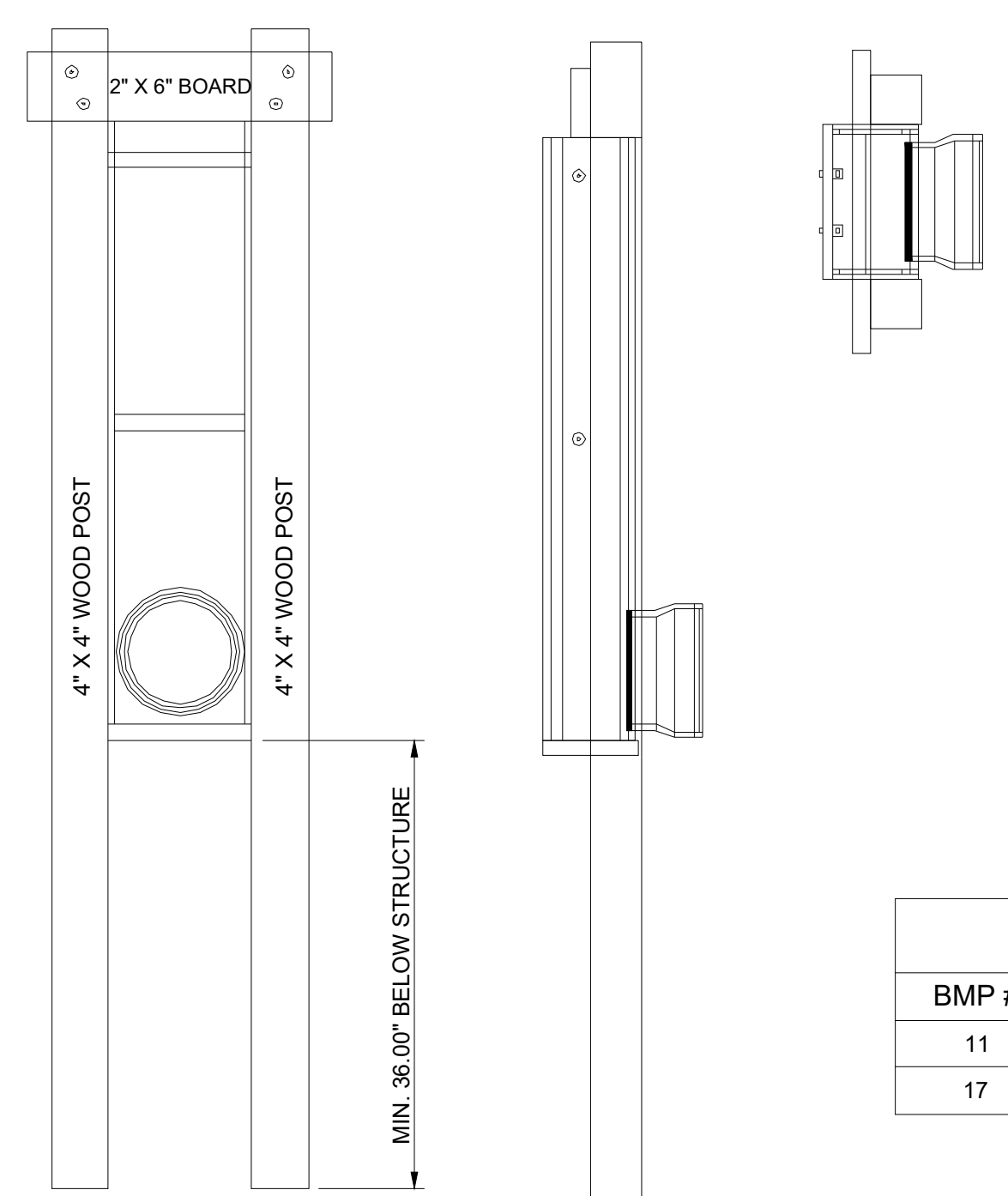
D2 RUBBER MEMBRANE ANTI-SEEPAGE COLLAR - FOR PVC PIPE
NOT TO SCALE



- NOTES:**
1. WATER CONTROL STRUCTURE (WCS) MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATION.
 2. WCS SHALL BE FABRICATED OF PVC WITH INTEGRAL UPSTREAM AND DOWNSTREAM WATER-TIGHT COUPLING CONNECTIONS, CORROSION-RESISTANT STOP BOARDS, ALUMINUM EXTRUSIONS AND STAINLESS STEEL FASTENERS AND APPURTENANCES. ACCEPTABLE MODELS INCLUDE AGRI DRAIN, NYLOPLAST, OR APPROVED EQUAL.
 3. WCS SHALL PROVIDE FLOW CAPACITY EQUAL TO OR GREATER THAN THAT OF ADJACENT PIPE UNDER EXPECTED FLOW CONDITIONS.
 4. STOP BOARDS SHALL PROVIDE A WATER-TIGHT SEAL UNDER 4 FT OF PRESSURE HEAD (MIN.).
 5. STOP BOARD REMOVAL TOOL SHALL BE PROVIDED.
 6. AS AN ALTERNATIVE TO A STOP BOARD STRAIGHT WEIR STRUCTURE, A CIRCULAR INNER STANDPIPE MAY BE PROVIDED WHICH MEETS THE DESIGN FLOW REQUIREMENTS, WITH APPROVAL OF THE ENGINEER (NYLOPLAST STANDPIPE WCS OR EQUAL).
 7. ALL CONNECTIONS SHALL BE WATER-TIGHT.
 8. MARK LOCATION OF EACH STRUCTURE USING POST OR MANUFACTURED MARKER FLAG FOR SAFETY IN THE FIELD.



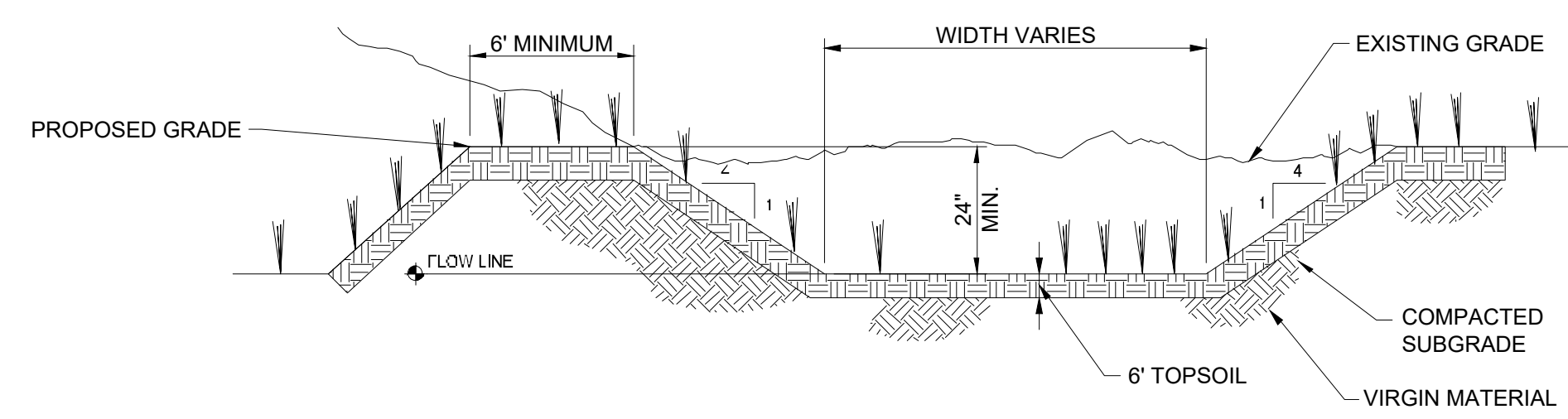
A3 AGRIDRAIN INLET WATER LEVEL CONTROL STRUCTURE
NOT TO SCALE



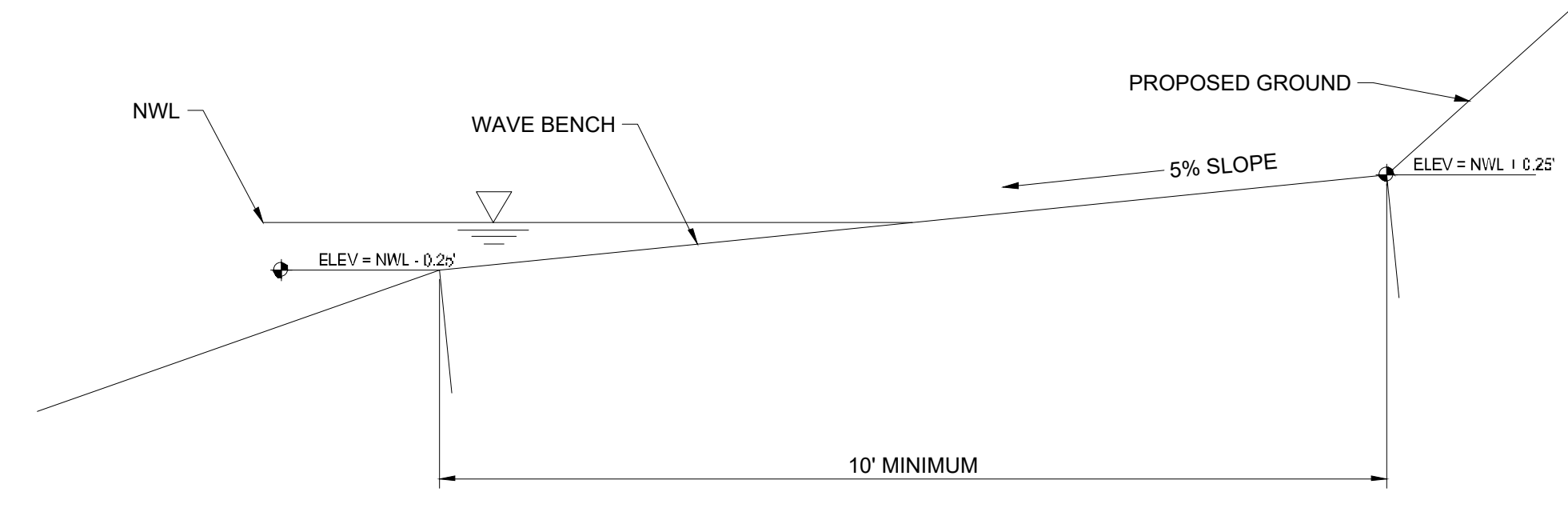
NOTE:
HOLES DUG FOR POST SHOULD BE FILLED WITH CONCRETE.

WATER CONTROL STRUCTURE ANCHORING
NOT TO SCALE

INLET WATER LEVEL CONTROL STRUCTURE				
BMP #	PIPE SIZE (INCH)	"A" HEIGHT (FEET)	"B" WIDTH (INCH)	"C" DEPTH (INCH)
11	6	4	11 1/2	6
17	10	5	14	8



A4 AUXILIARY SPILLWAY
NOT TO SCALE



D4 WAVE PROTECTION BENCH AT NWL
NOT TO SCALE

NOTE:
CONTRACTOR SHALL CONSTRUCT WAVE BENCH AROUND ENTIRE BMP PERIMETER AT NORMAL WATER LEVEL.

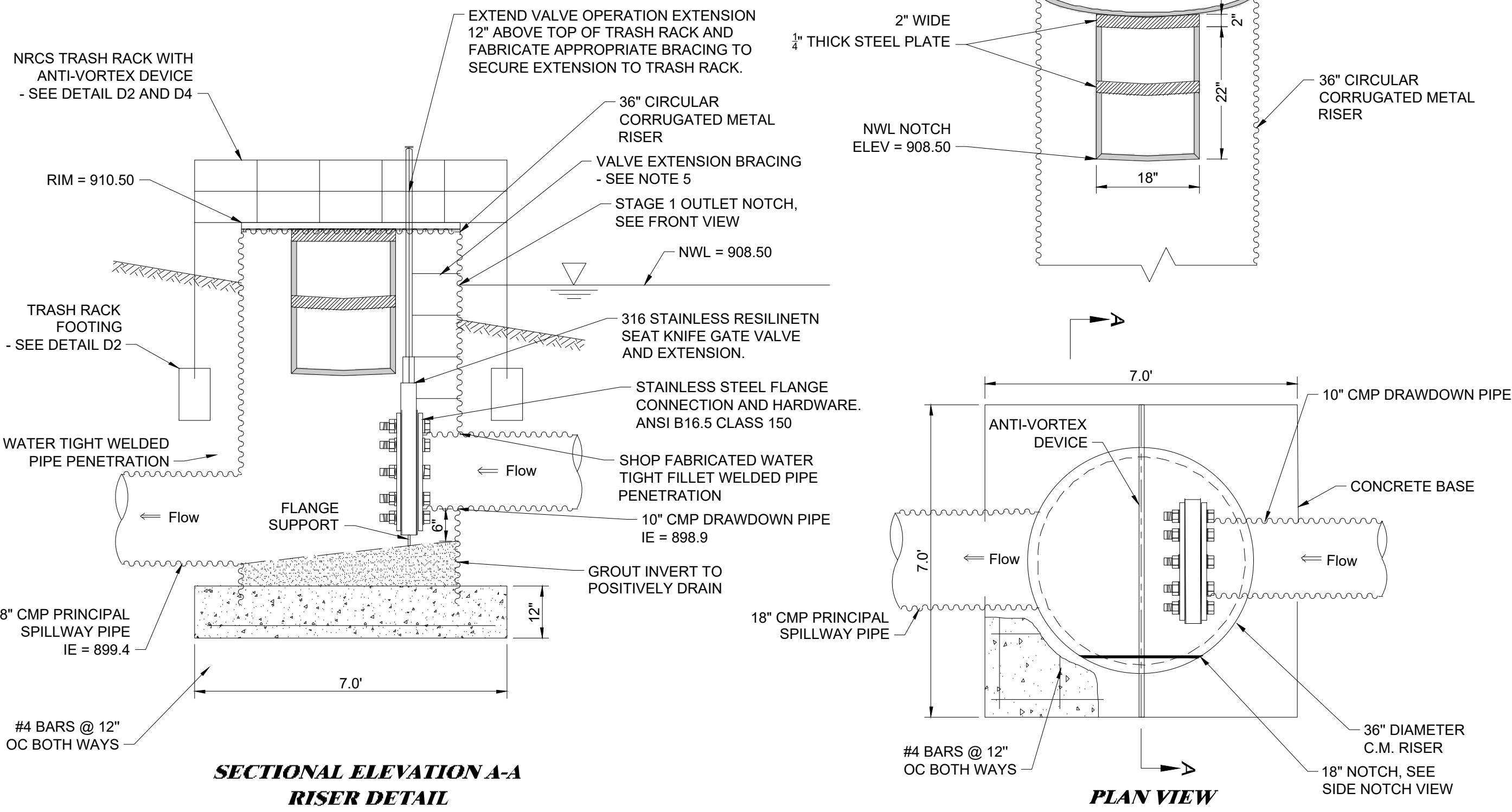
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NOTES:

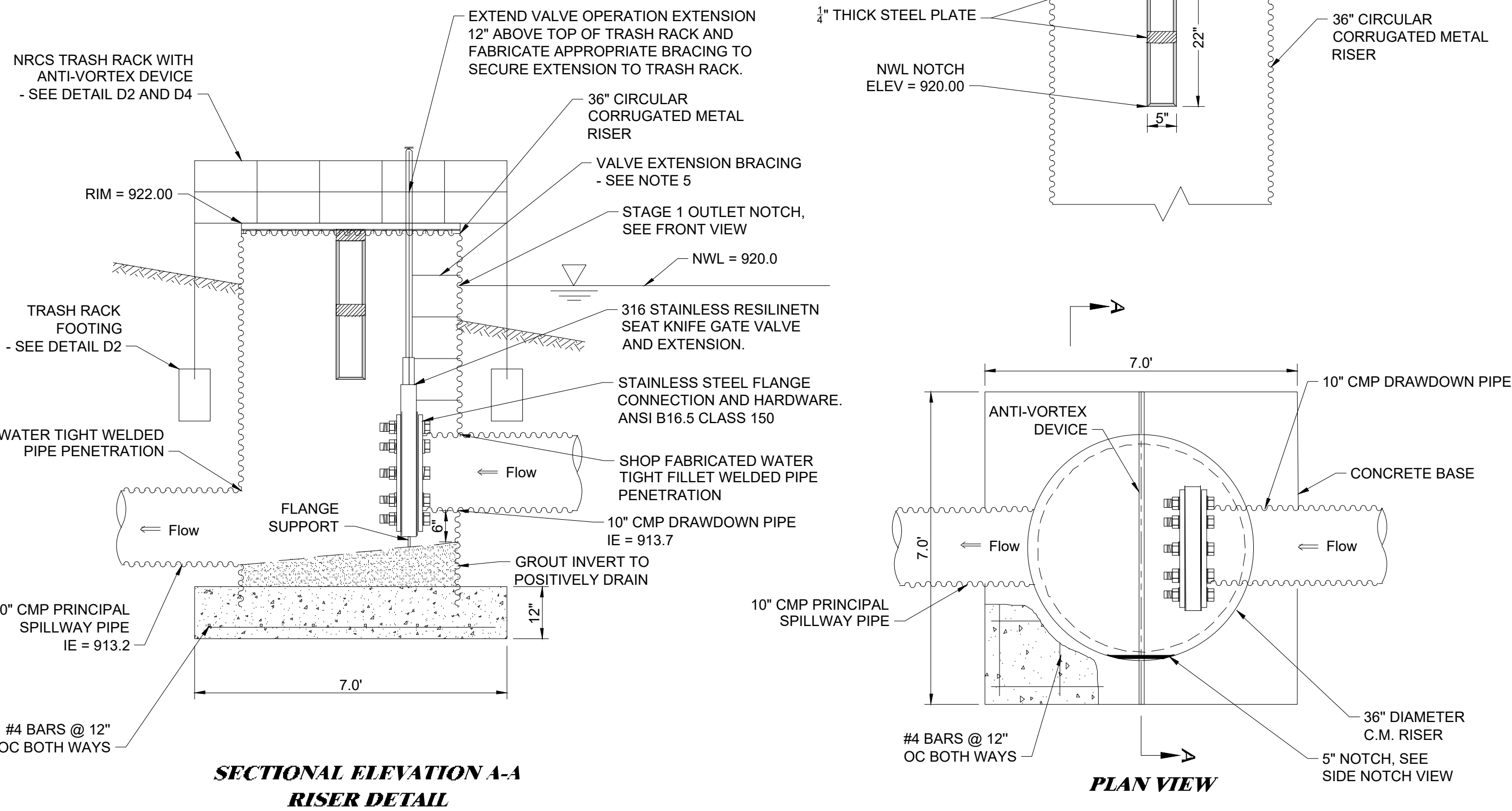
- 1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF CMP RISER
- 2) STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
- 3) CAST BOTTOM 6 INCHES OF RISER INTO CONCRETE BASE.
- 4) OPERATOR OF KNIFE GATE MUST HAVE LOCKABLE OR REMOVABLE HANDLE.
- 5) KNIFE GATE EXTENSION BRACING SHALL BE SECURED TO THE CMP, TRASH RACK AND ANTIVORTEX DEVICE WITH GALVANIZED STEEL BRACING. SUBMIT A SHOP DRAWING SHOWING DETAILS FOR BRACING FOR REVIEW BY THE ENGINEER
- 6) SEE B203 FOR ALL STRUCTURE ELEVATIONS.



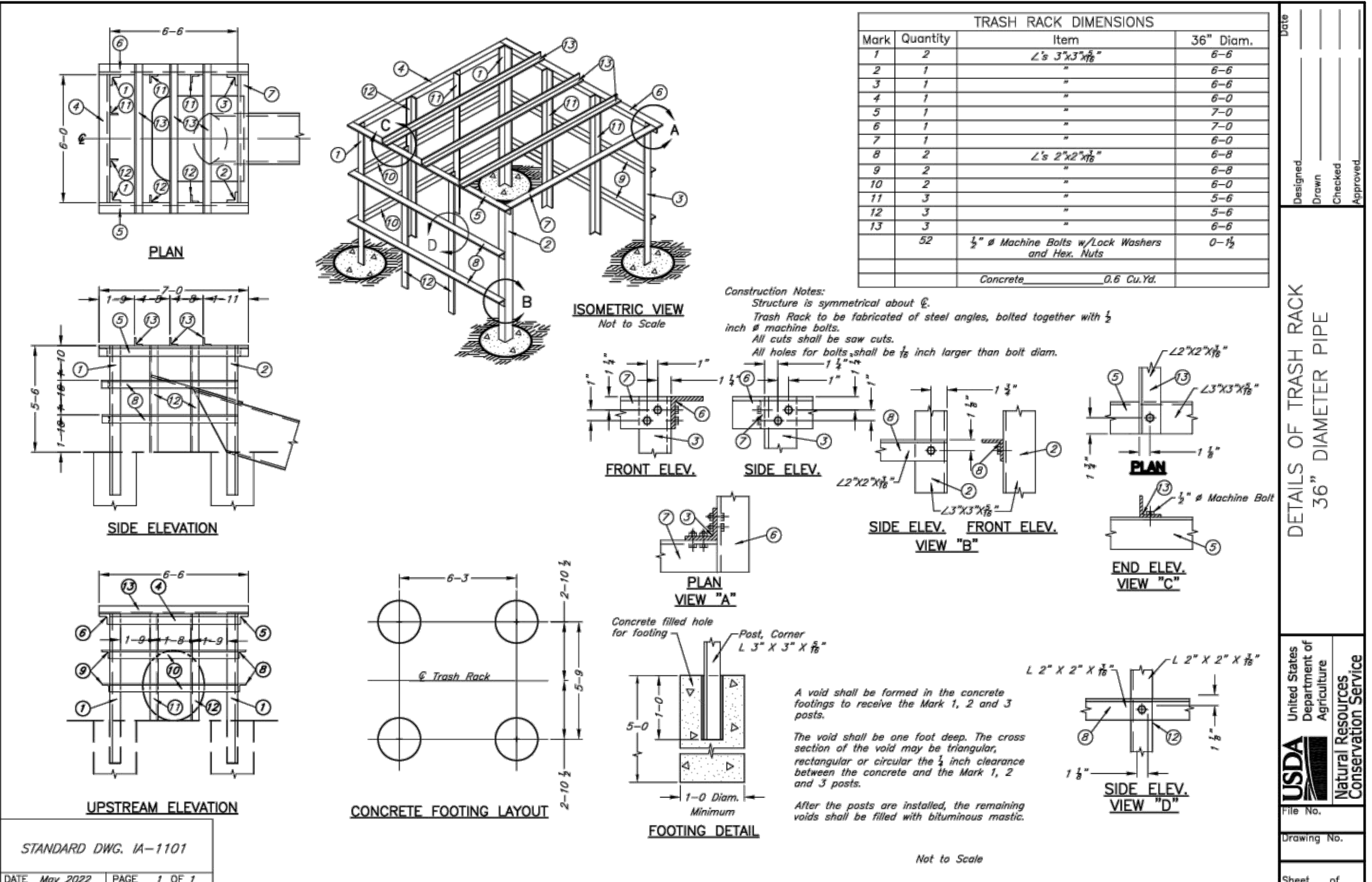
A2 BMP 3 CMP RISER STRUCTURE WITH KNIFE GATE VALVE
NOT TO SCALE

NOTES:

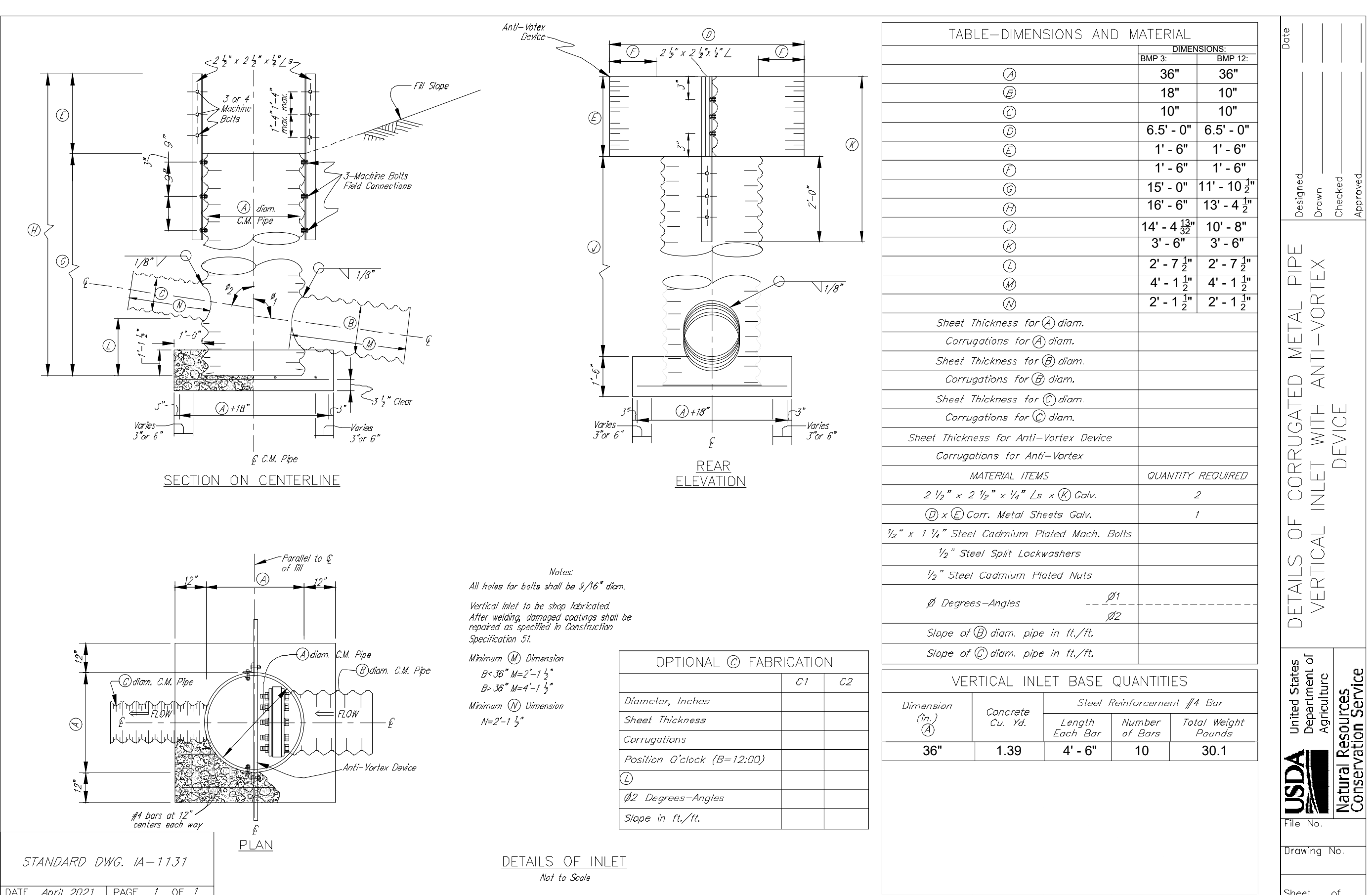
- 1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF CMP RISER
- 2) STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
- 3) CAST BOTTOM 6 INCHES OF RISER INTO CONCRETE BASE.
- 4) OPERATOR OF KNIFE GATE MUST HAVE LOCKABLE OR REMOVABLE HANDLE.
- 5) KNIFE GATE EXTENSION BRACING SHALL BE SECURED TO THE CMP, TRASH RACK AND ANTIVORTEX DEVICE WITH GALVANIZED STEEL BRACING. SUBMIT A SHOP DRAWING SHOWING DETAILS FOR BRACING FOR REVIEW BY THE ENGINEER
- 6) SEE B233 FOR ALL STRUCTURE ELEVATIONS.



A4 BMP 12 CMP RISER STRUCTURE WITH KNIFE GATE VALVE
NOT TO SCALE



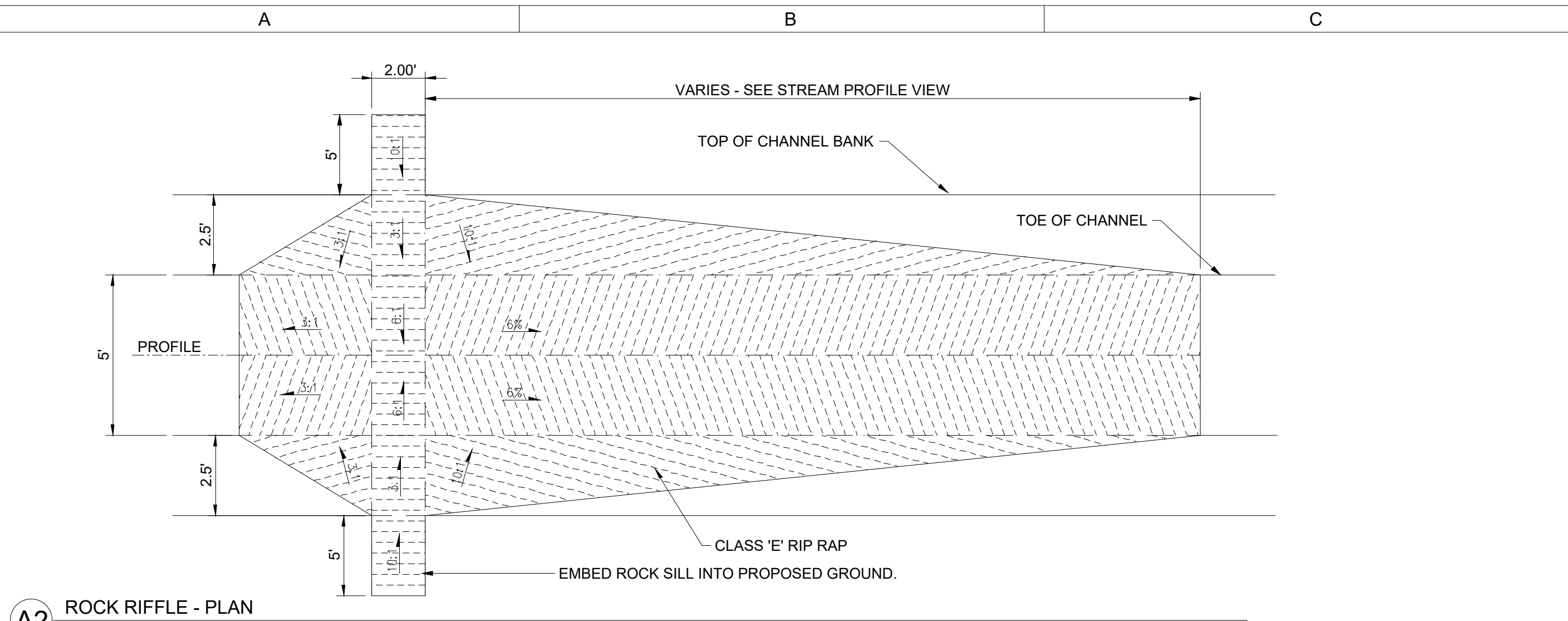
D2 36" CMP RISER TRASH RACK
NOT TO SCALE



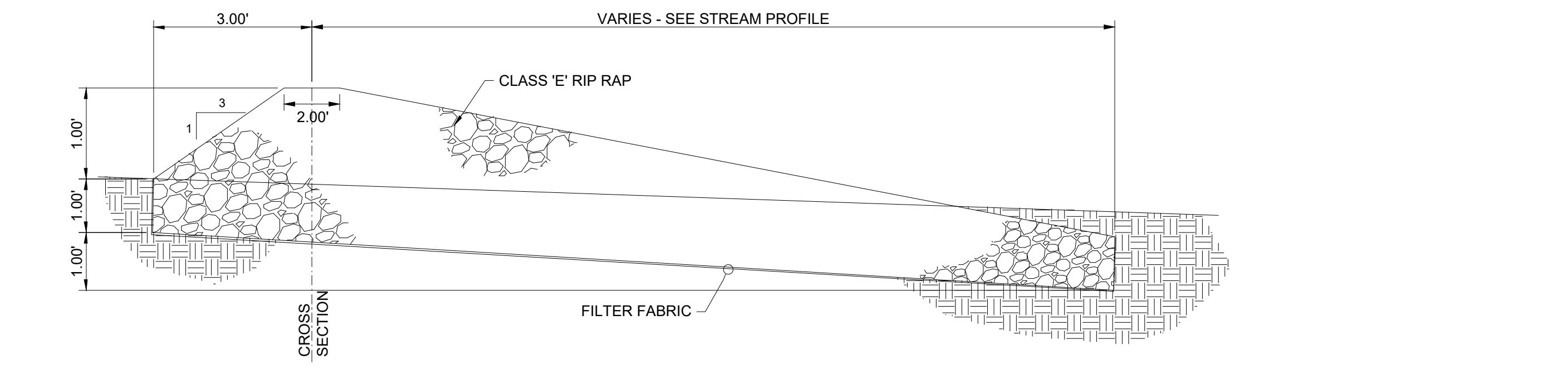
D4 36" CMP RISER ANTI-VORTEX DEVICE
NOT TO SCALE

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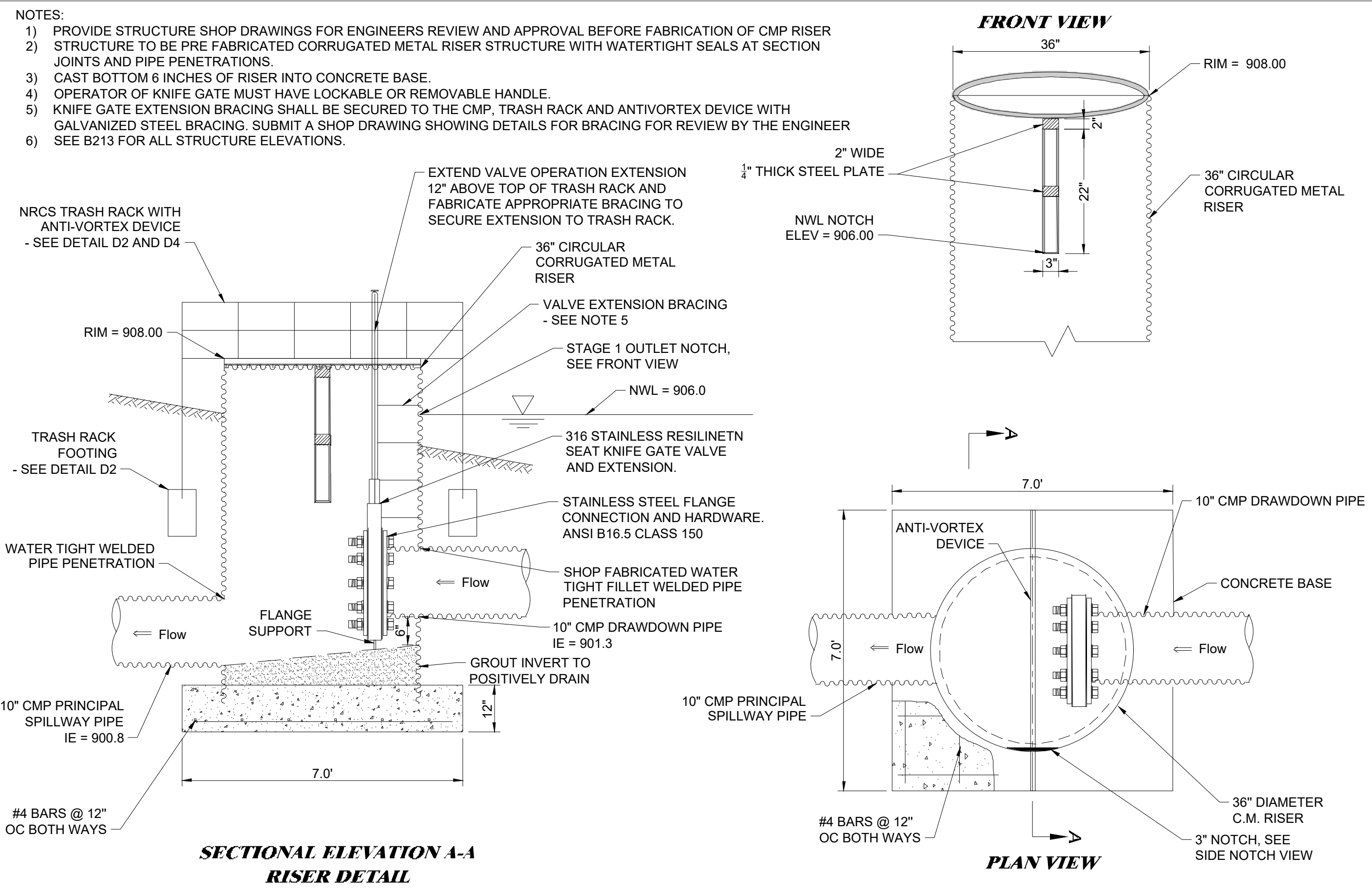




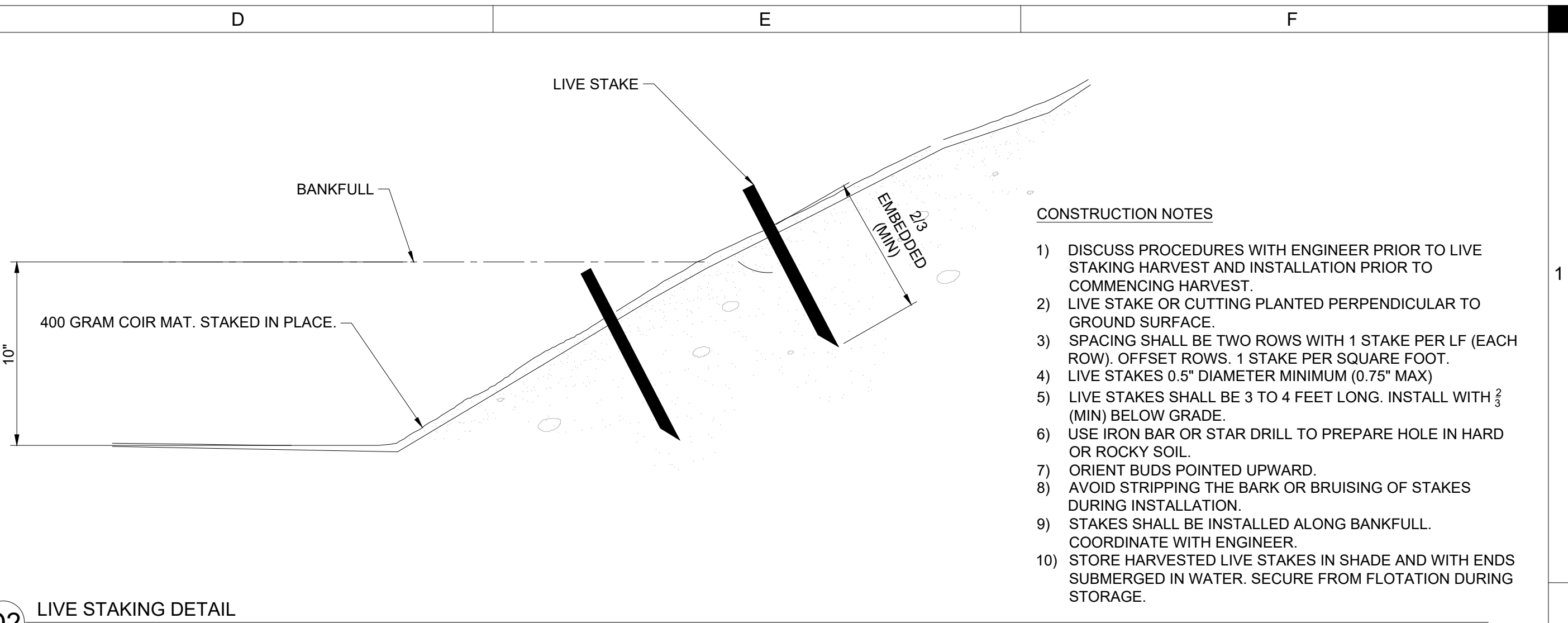
A2 ROCK RIFFLE - PLAN
NOT TO SCALE



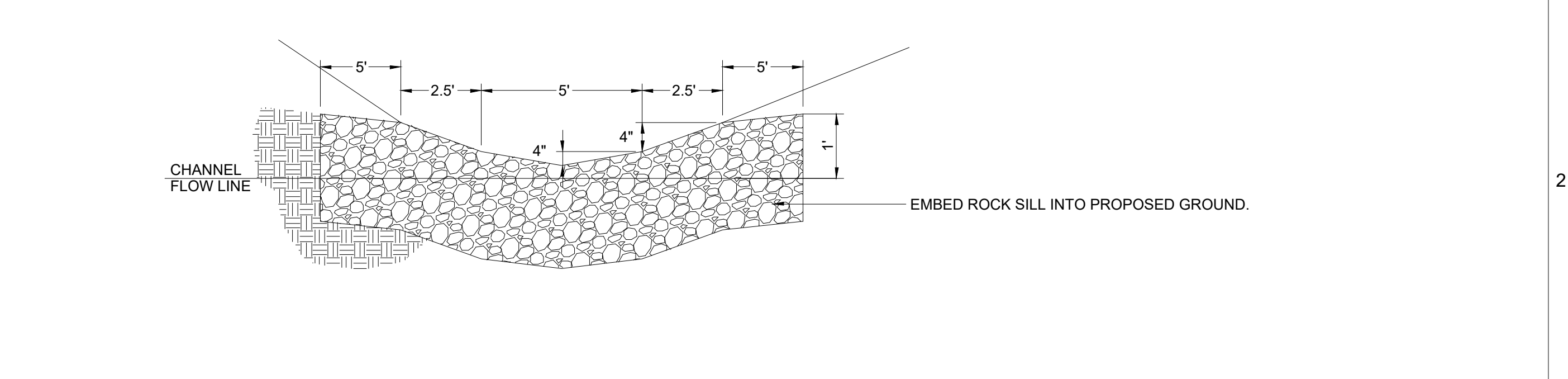
A3 ROCK RIFFLE - PROFILE
NOT TO SCALE



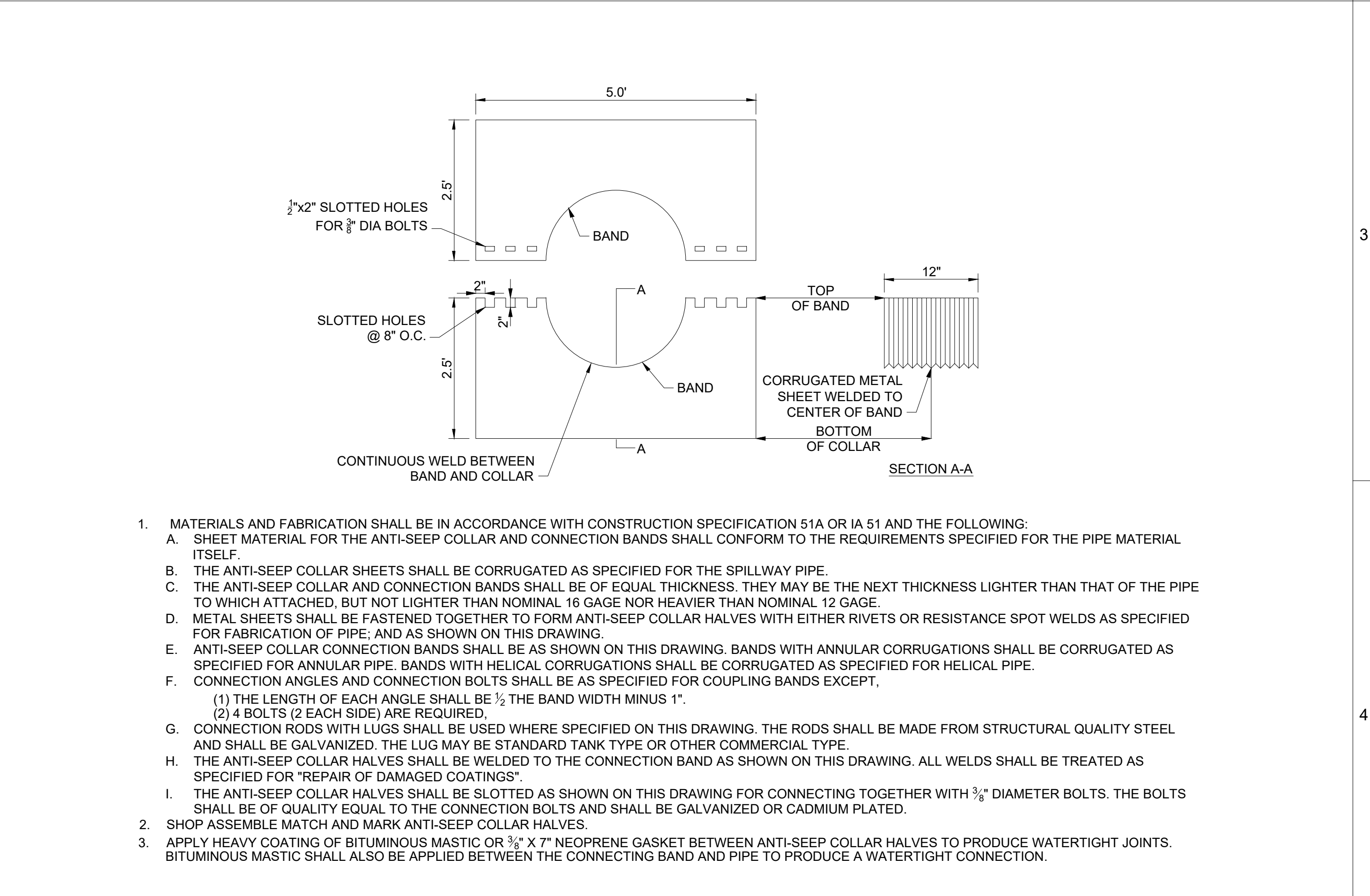
A4 BMP 7 CMP RISER STRUCTURE WITH KNIFE GATE VALVE
NOT TO SCALE



D2 LIVE STAKING DETAIL
NOT TO SCALE



A4 ROCK RIFFLE - CROSS SECTION
NOT TO SCALE



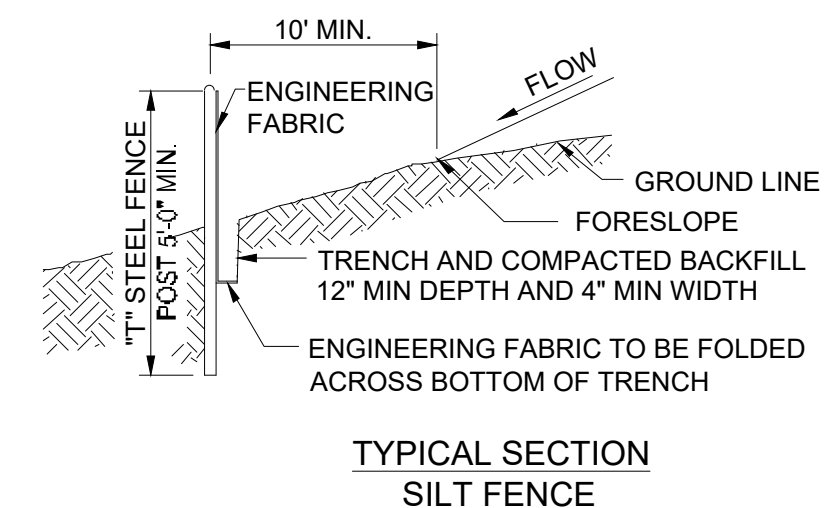
D4 CMP PIPE ANTI-SEEPAGE COLLAR
NOT TO SCALE

- CONSTRUCTION NOTES**
- 1) DISCUSS PROCEDURES WITH ENGINEER PRIOR TO LIVE STAKING HARVEST AND INSTALLATION PRIOR TO COMMENCING HARVEST.
 - 2) LIVE STAKE OR CUTTING PLANTED PERPENDICULAR TO GROUND SURFACE.
 - 3) SPACING SHALL BE TWO ROWS WITH 1 STAKE PER LF (EACH ROW), OFFSET ROWS. 1 STAKE PER SQUARE FOOT.
 - 4) LIVE STAKES SHALL BE 3 TO 4 FEET LONG. INSTALL WITH 3/8 (MIN) BELOW GRADE.
 - 5) USE IRON BAR OR STAR DRILL TO PREPARE HOLE IN HARD OR ROCKY SOIL.
 - 6) ORIENT BUDS POINTED UPWARD.
 - 7) AVOID STRIPPING THE BARK OR BRUISING OF STAKES DURING INSTALLATION.
 - 8) STAKES SHALL BE INSTALLED ALONG BANKFULL. COORDINATE WITH ENGINEER.
 - 9) STORE HARVESTED LIVE STAKES IN SHADE AND WITH ENDS SUBMERGED IN WATER. SECURE FROM FLOTATION DURING STORAGE.

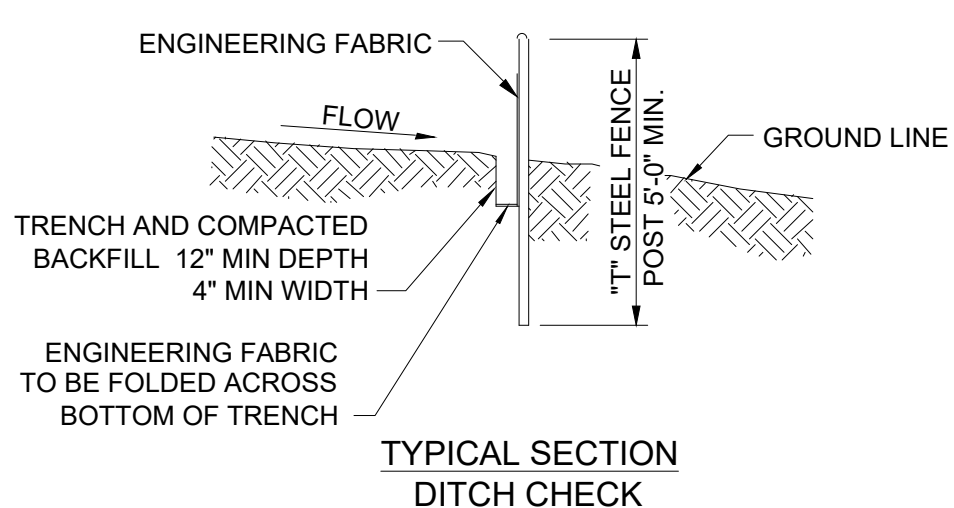
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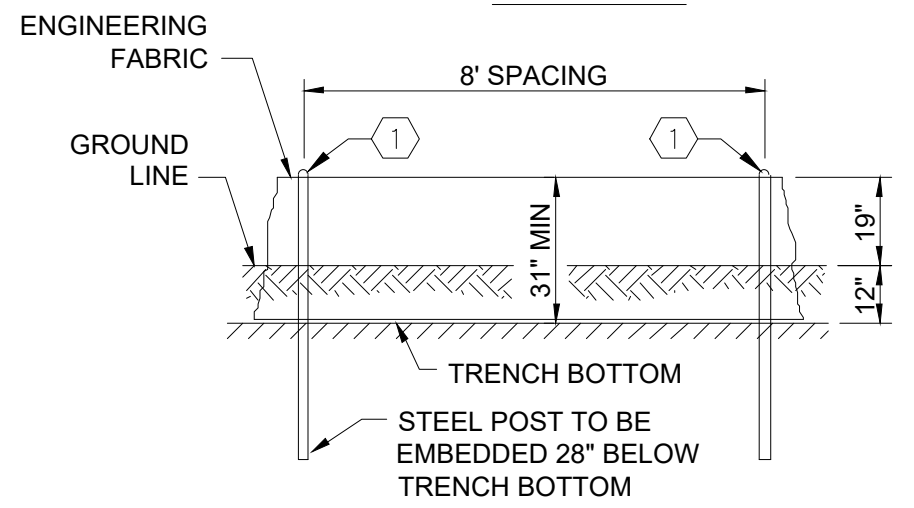
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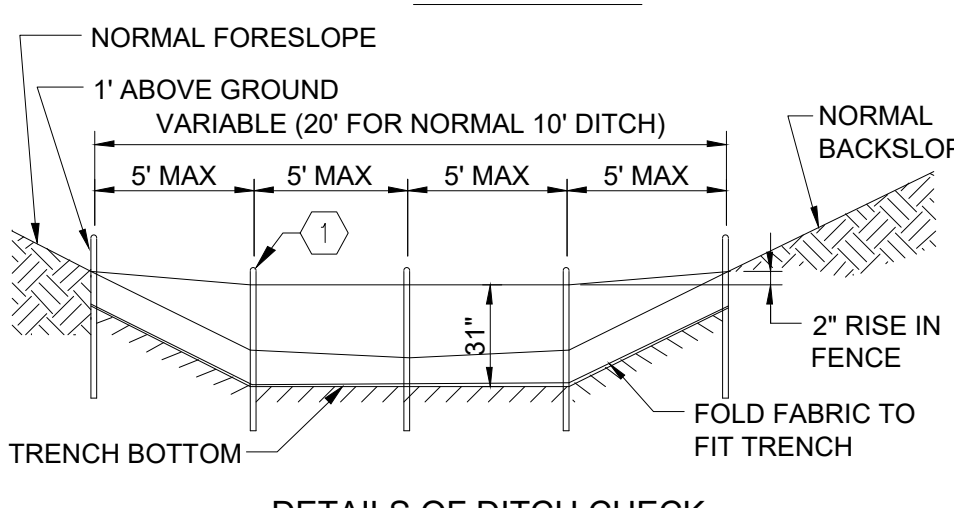
TYPICAL SECTION SILT FENCE



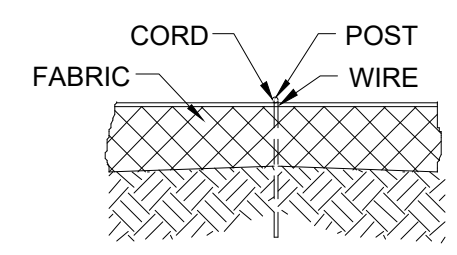
TYPICAL SECTION DITCH CHECK



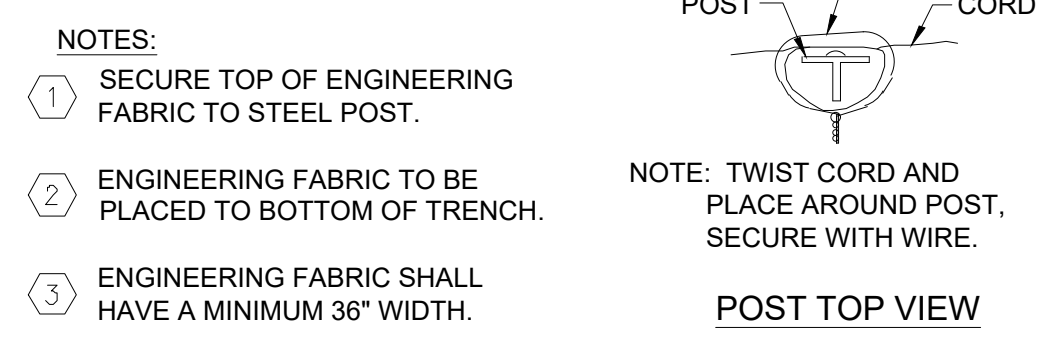
DETAILS OF SILT FENCE



DETAILS OF DITCH CHECK

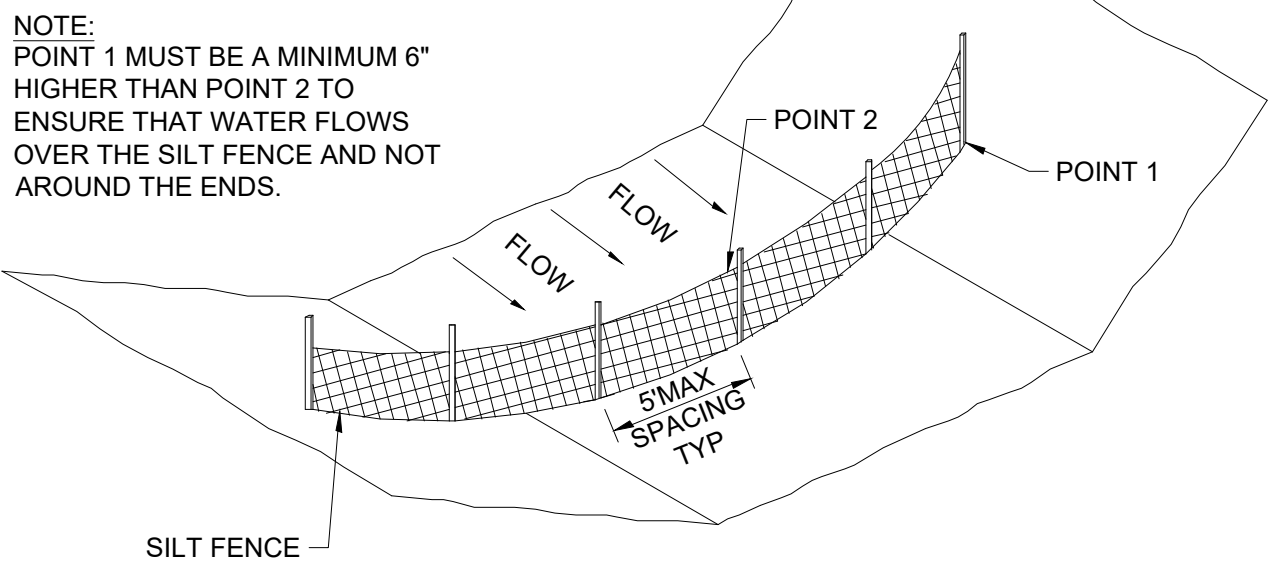


FRONT VIEW

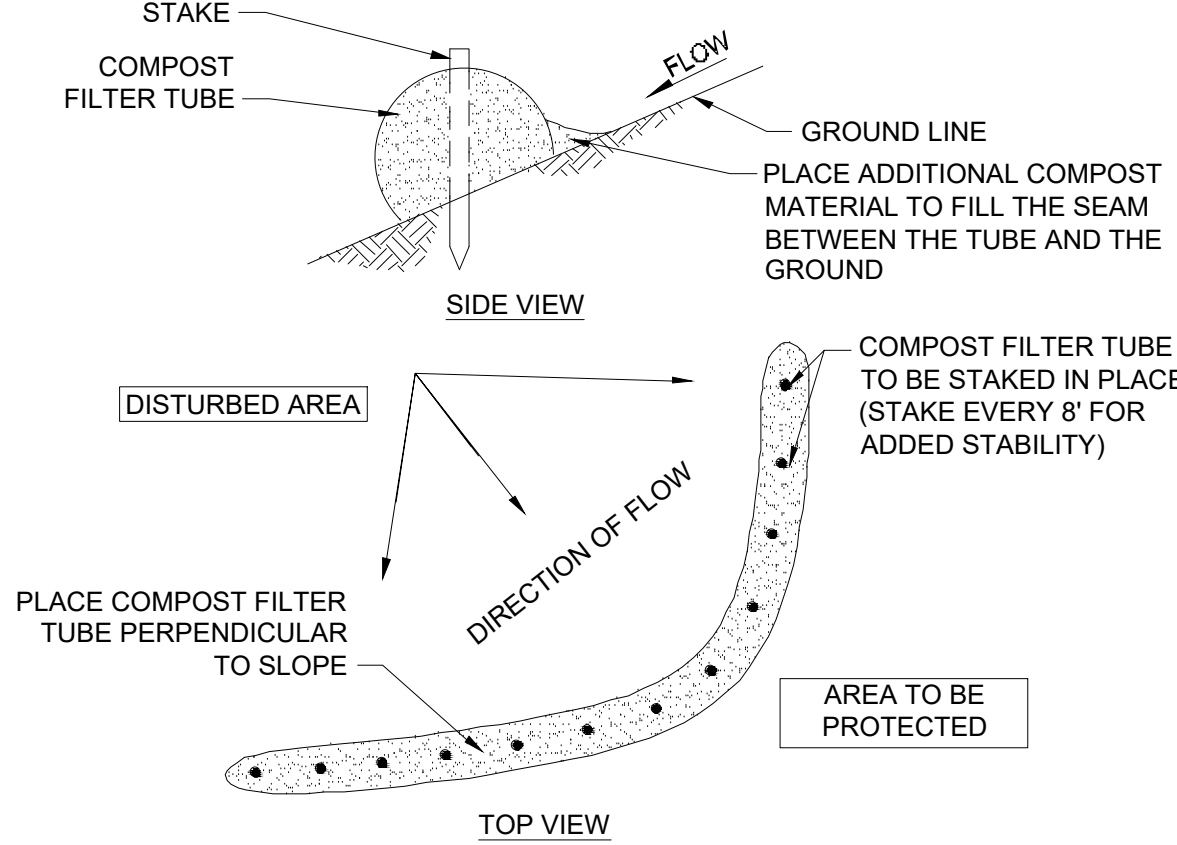


POST TOP VIEW

- 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.



NOTE: POINT 1 MUST BE A MINIMUM 6" HIGHER THAN POINT 2 TO ENSURE THAT WATER FLOWS OVER THE SILT FENCE AND NOT AROUND THE ENDS.



COMPOST FILTER TUBE TO BE STAKED IN PLACE (STAKE EVERY 8' FOR ADDED STABILITY)

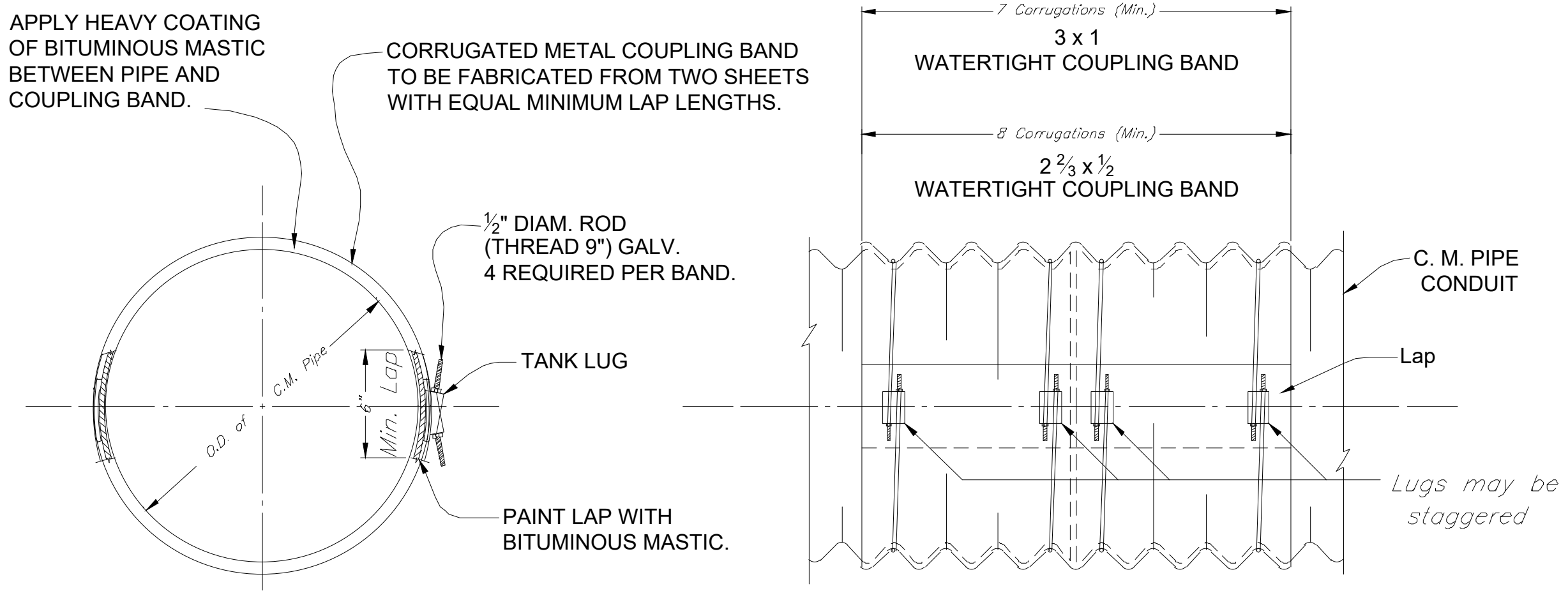
PLACE COMPOST FILTER TUBE PERPENDICULAR TO SLOPE

DIRECTION OF FLOW

AREA TO BE PROTECTED

A2 SILT FENCE NOT TO SCALE

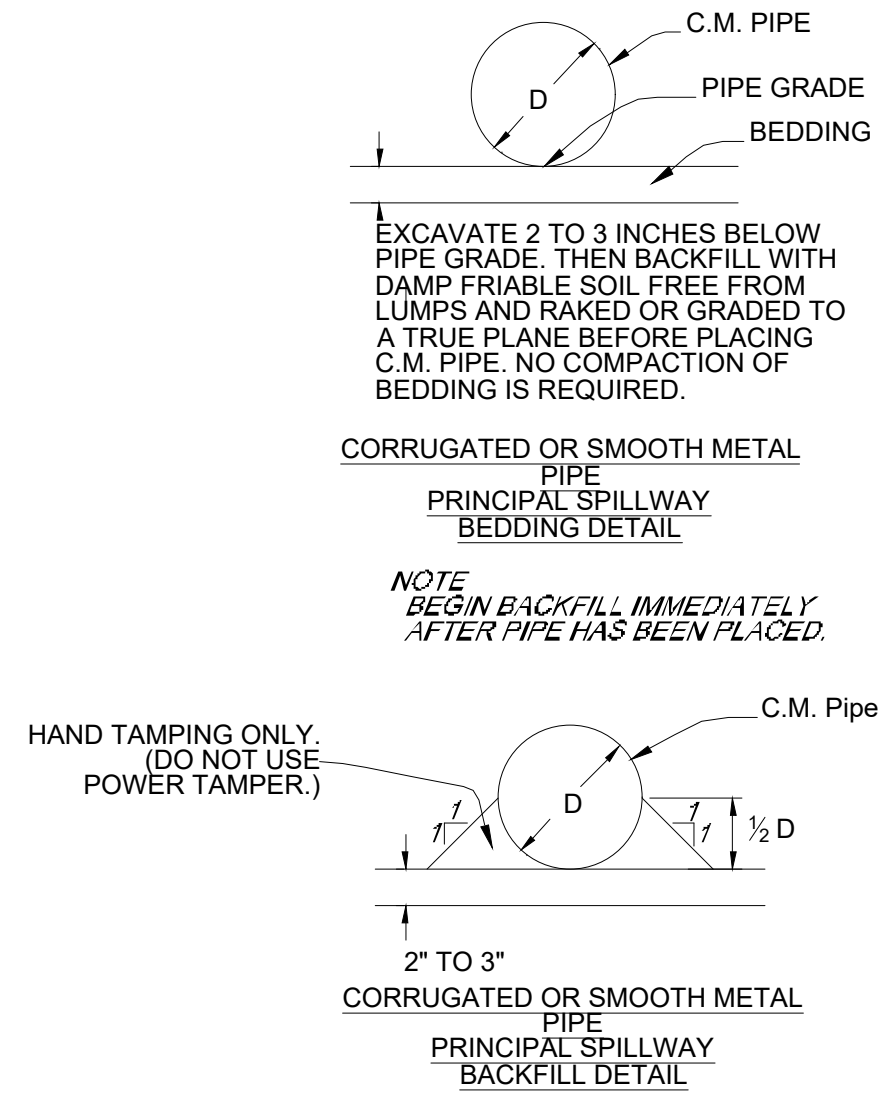
E2 COMPOST FILTER TUBE



- NOTES:
1. SEE SPILLWAY GENERAL LAYOUT DRAWING FOR LOCATION OF WATERTIGHT BANDS.
 2. METAL TREATMENT, THICKNESS, AND COATING OF WATERTIGHT COUPLING BANDS SHALL BE AS SPECIFIED FOR THE PIPE.
 3. RIVETS IN LONGITUDINAL SEAMS OF C.M. PIPE UNDER WATERTIGHT COUPLING BAND SHALL BE FLAT HEAD OR OMITTED AND SEAMS WELDED INSIDE AND OUTSIDE WITH A CONTINUOUS 1/8" FILLET WELD.
 4. ALL WELDED AREAS SHALL BE TREATED AS SPECIFIED FOR "REPAIR OF DAMAGED COATINGS." REFER TO CONSTRUCTION SPECIFICATION 51A OR IA-51.
 5. RODS AND LUGS ON COUPLING BANDS SHALL BE INSTALLED ACCORDING TO THE DRAWING; THE NUTS ON THE RODS SHALL BE TIGHTENED EQUALLY ON EITHER SIDE OF THE LUG AND SHALL BE RETIGHTENED AT LEAST TWICE AFTER INITIAL INSTALLATION. STRIKING EACH ROD SHARPLY WITH A HAMMER AT SEVERAL LOCATIONS AROUND THE CIRCUMFERENCE OF THE ROD WILL HELPTO DRAW THE BAND TIGHTER.

DETAIL OF TANK LUG

A4 CMP WATER TIGHT COUPLING BANDS NOT TO SCALE



EXCAVATE 2 TO 3 INCHES BELOW PIPE GRADE. THEN BACKFILL WITH DAMP FRIABLE SOIL FREE FROM LUMPS AND RAKED OR GRADED TO A TRUE PLANE BEFORE PLACING C.M. PIPE. NO COMPACTION OF BEDDING IS REQUIRED.

CORRUGATED OR SMOOTH METAL PIPE PRINCIPAL SPILLWAY BEDDING DETAIL

NOTE: BEGIN BACKFILL IMMEDIATELY AFTER PIPE HAS BEEN PLACED.

HAND TAMPING ONLY. (DO NOT USE POWER TAMPER.)

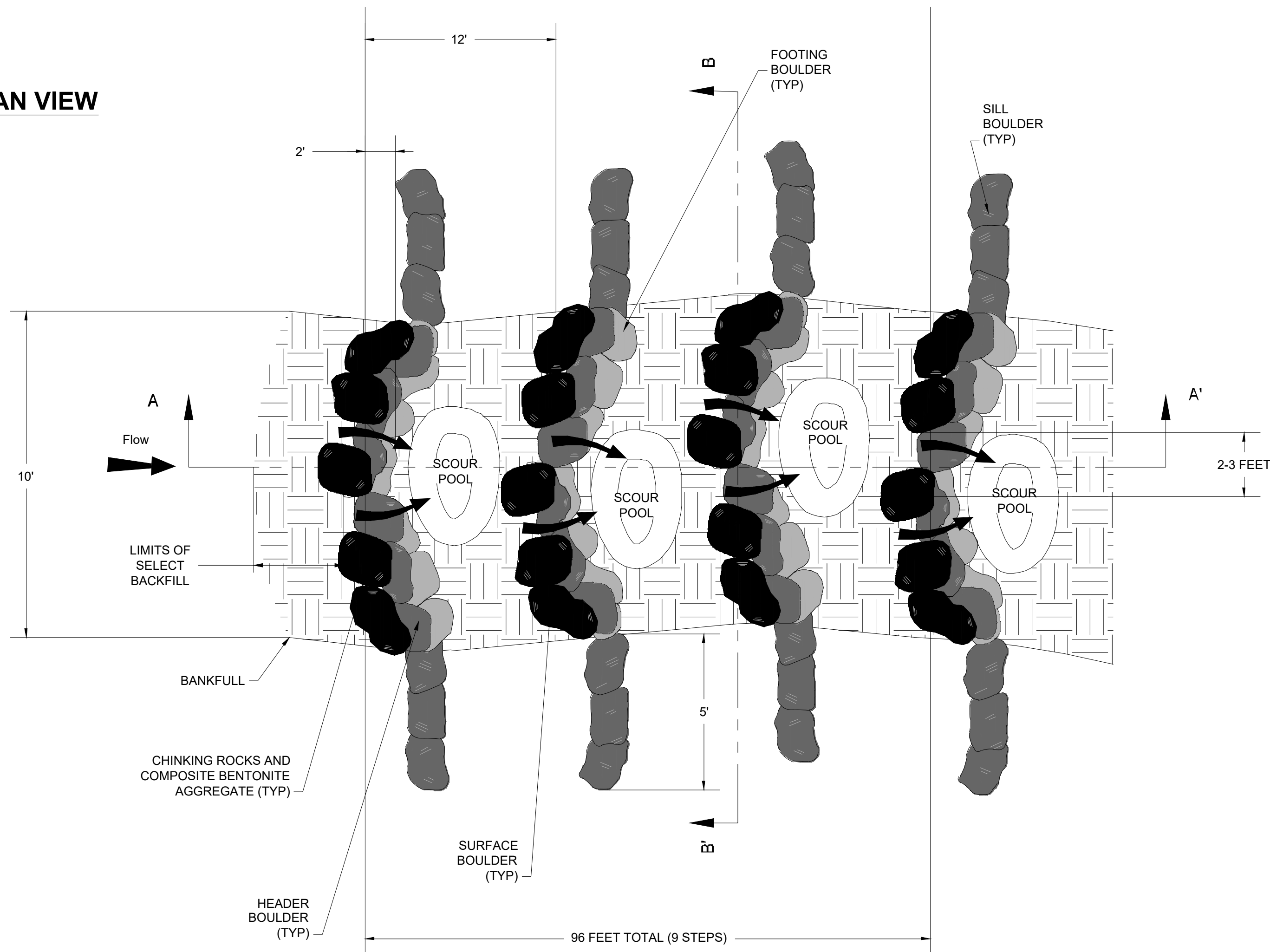
2" TO 3" CORRUGATED OR SMOOTH METAL PIPE PRINCIPAL SPILLWAY BACKFILL DETAIL

E4 CMP PIPE BEDDING (NRCS-1205) NOT TO SCALE

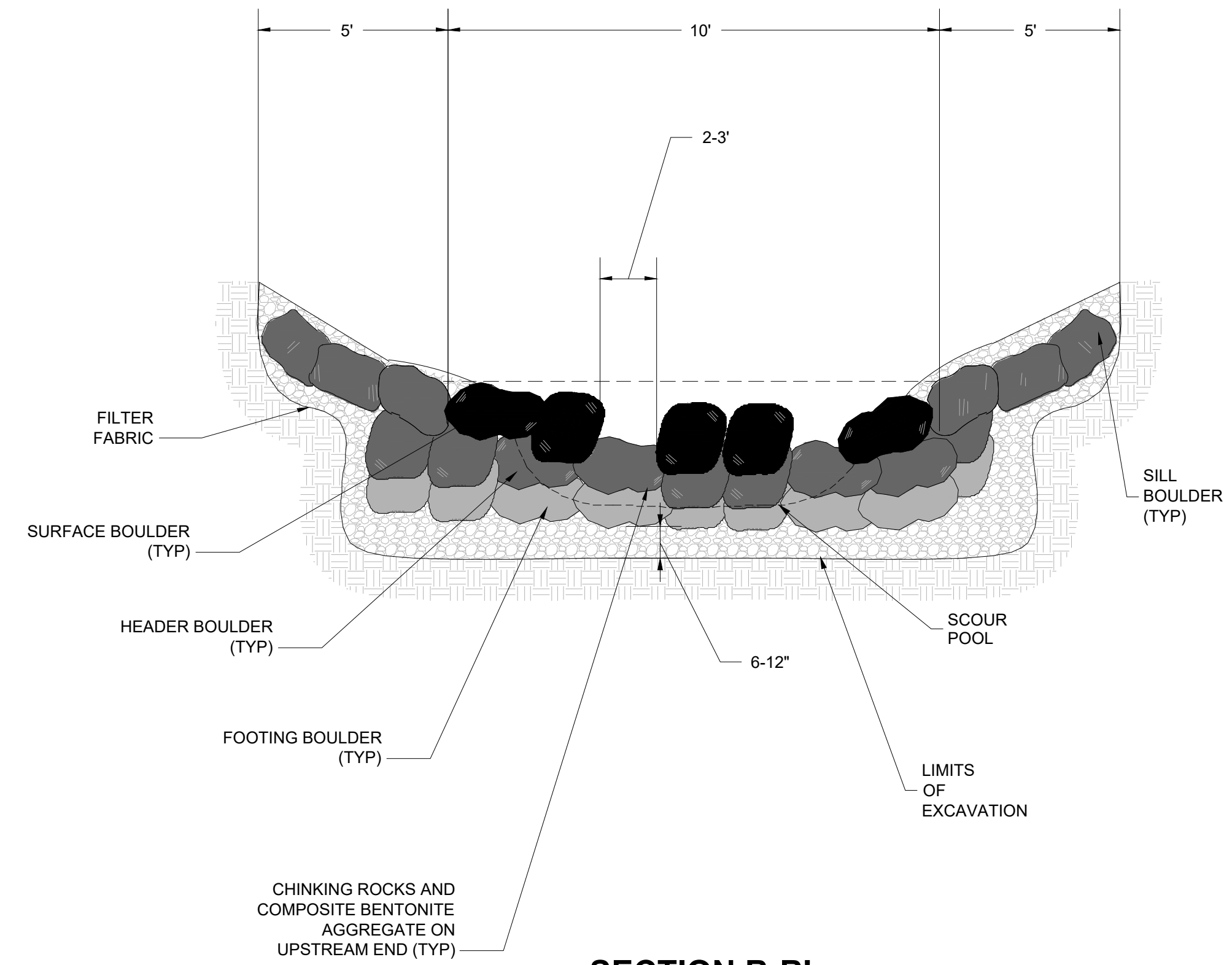


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APPROVED:	DJ
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	09/18/2023
PROJECT NO.:	4213130
FIELD BOOK:	--
CLIENT NO.:	--

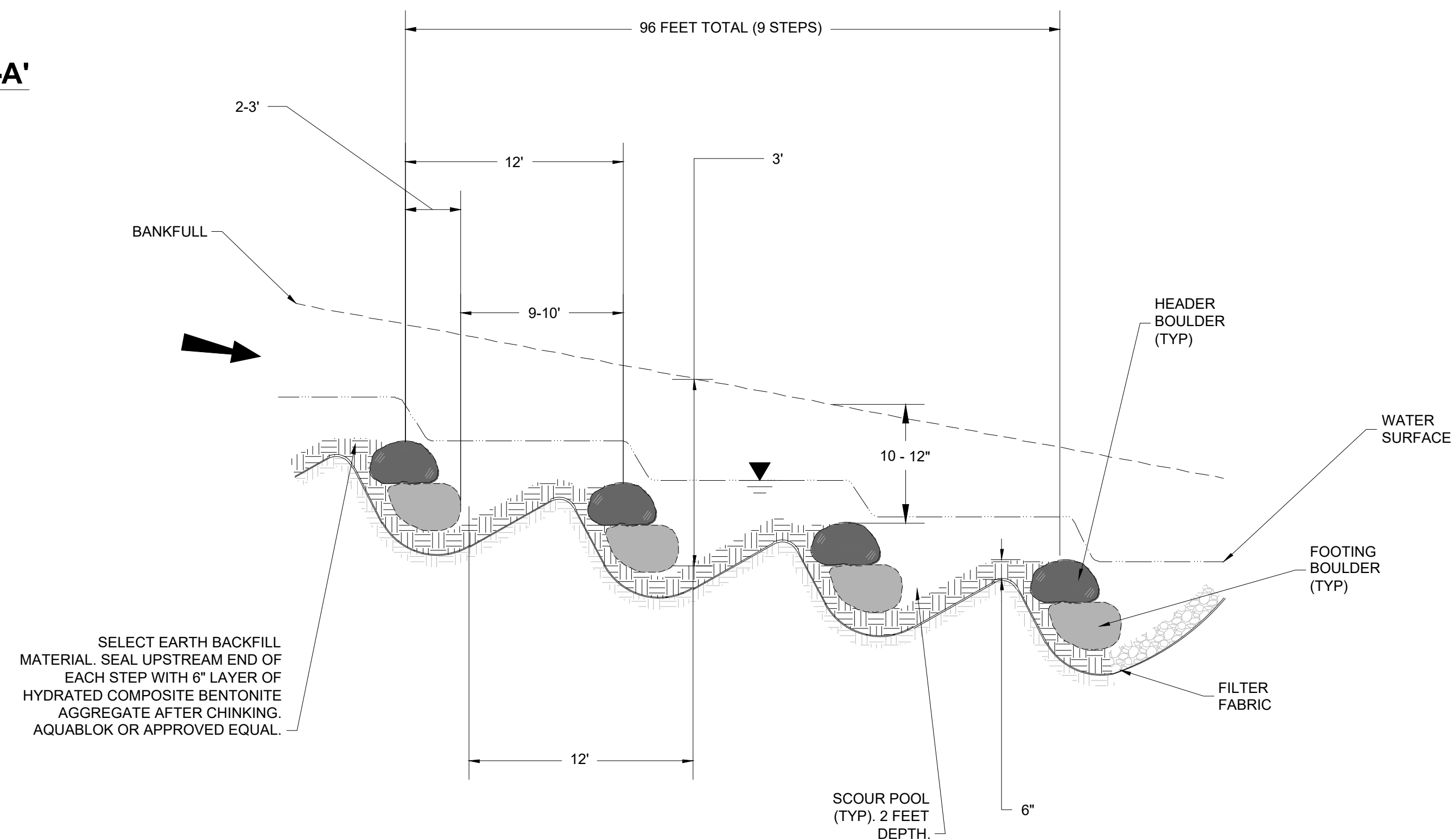
PLAN VIEW



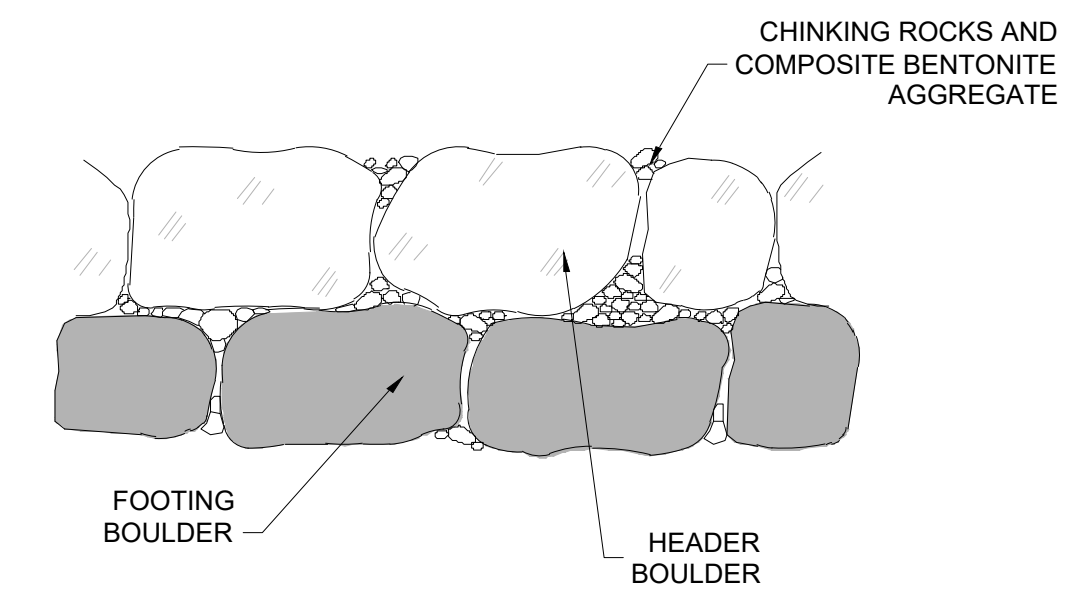
SECTION B-B'



SECTION A-A'



SELECT EARTH BACKFILL MATERIAL. SEAL UPSTREAM END OF EACH STEP WITH 6" LAYER OF HYDRATED COMPOSITE BENTONITE AGGREGATE AFTER CHINKING. AQUABLOK OR APPROVED EQUAL.



CHINKING DETAIL



CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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STEP-POOL DETAILS

B505

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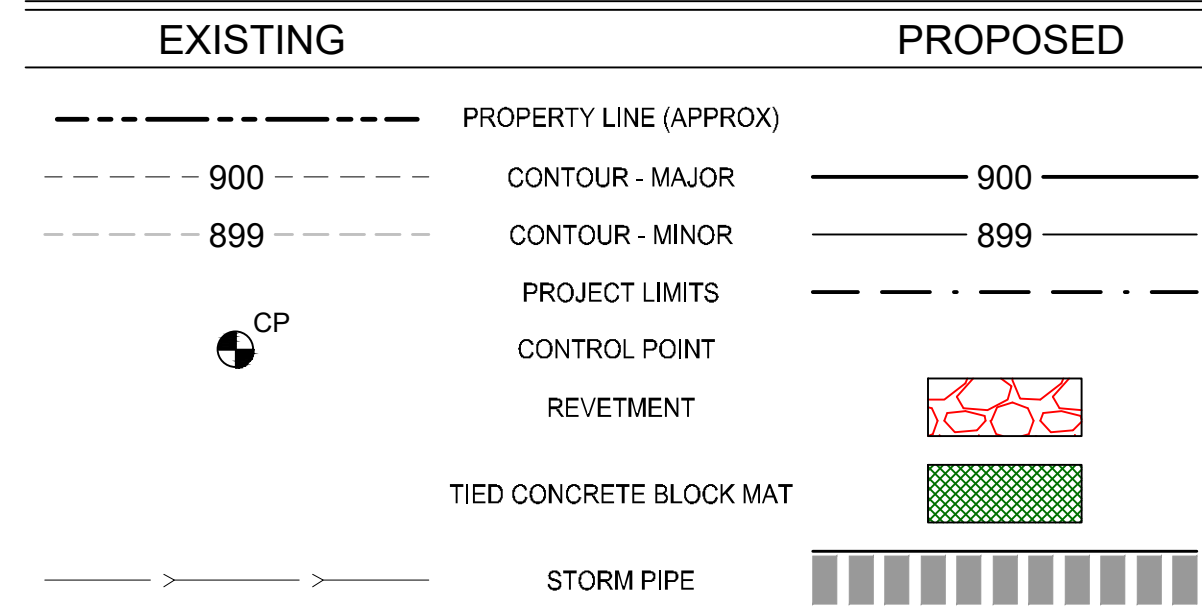
ESTIMATED QUANTITIES:

#	ITEM DESCRIPTION	QUANTITY	UNITS
C1	LAKE DRAWDOWN/DEWATERING	1	LS
C2	EXCAVATION, MECHANICAL DREDGING	138,831	CY
C3	EARTHFILL, EMBANKMENT AND LAKE BOTTOM FILL	33,768	CY
C4	TOPSOIL STRIP, SALVAGE, AND RESPREAD	3,800	CY
C5	RIP RAP, CLASS 'C' - JETTIES AND SHORELINE ARMORING	2,748	TON
C6	SALVAGE EXISTING RIP RAP	480	TON
C7	GRANULAR SURFACING, BOAT LAUNCH AND PARKING AREA	450	TON
C8	TIED CONCRETE BLOCK MAT, SHORELINE ARMORING AND OVERFLOWS, 12' WIDE ROLL	1,828	SY
C9	LAKE RISER STRUCTURE MODIFICATIONS, ALUMINUM BULKHEAD, STOPLOGS, AND 18" X 18" SLIDE GATE	1	LS
C10	12" PPHP PIPE	330	LF
C11	12" HICKENBOTTOM RISER	4	EA
C12	REINFORCED CONCRETE ARCH PIPE, 42" EQUIVALENT (51" X 31")	128	LF
C13	REINFORCED CONCRETE ARCH FLARED END SECTION, 42" EQUIVALENT (51" X 31")	6	EA
C14	STONE TERRACE	1	LS
C15	SHORELINE FISHING NODE, 18" X 10'	4	EA
C16	SEEDING, TYPE 1	4	AC
C17	SEEDING, TYPE 2	6	AC
C18	SEEDING, TYPE 4 (TEMPORARY)	9	AC
C19	EROSION CONTROL SILT FENCE	5,000	LF

ESTIMATE REFERENCE NOTES:

ITEM NO.	DESCRIPTION
1	LAKE DRAWDOWN/DEWATERING: THIS ITEM INCLUDES ALL MATERIALS, LABOR, AND EQUIPMENT REQUIRED TO REMOVE THE EXISTING WOODEN STOPLOGS AND DEWATER THE LAKE THROUGH THE EXISTING WATER CONTROL STRUCTURE. RATE OF DRAWDOWN IN THE LAKE SHALL NOT EXCEED 1 FOOT PER DAY. MANAGEMENT OF FLOW THROUGH THE SITE FOR THE DURATION OF THE PROJECT IS INCIDENTAL TO THIS ITEM.
2	EXCAVATION, MECHANICAL DREDGING: THIS ITEM INCLUDES THE MECHANICAL REMOVAL, HAULING, AND PLACING OF SOFT SEDIMENT AND HARDBOTTOM MATERIAL FROM THE LAKE BED. CONSTRUCTION, MAINTENANCE AND RESTORATION OF HAUL ROUTE IS INCIDENTAL TO THIS ITEM. MATERIAL SHALL BE PLACED IN THE SPOIL AREAS IDENTIFIED ON SHEET C304. SELECT VIRGIN LAKE BED MATERIAL MAY BE USED AS FILL MATERIAL NEEDED FOR THE PROPOSED EMBANKMENTS FOR BMPS 14, 15, AND 16. REFER TO SHEET C301 FOR LAKE BOTTOM GRADING. MEASUREMENT AND PAYMENT ON THE QUANTITY OF SEDIMENT REMOVED WILL CALCULATED BY PRE AND POST DREDGE SURVEYS. SURVEYS WILL BE COMPLETED BY ENGINEER AND PAID FOR BY OWNER. PRE-DREDGE SURVEY WILL BE COMPLETED BY UAS (DRONE) AFTER LAKE IS DRAWN DOWN. THE OVER-EXCAVATION OF 3,297 CY OF SOFT SEDIMENT FROM THE BERM FOOTPRINTS OF BMPS 14, 15, AND 16 AS WELL AS THE OTHER AREAS SHOWN IN FILL IN ZONE 1 OF THE DREDGING FOOTPRINT (JETTIES, MOUNDS, WEST SHORE OF THE NORTH ARM OF THE LAKE) IS INCLUDED IN THIS BID ITEM AND WILL BE PAID AT PLAN QUANTITY.
3	EARTHFILL, EMBANKMENT AND LAKE BOTTOM FILL: THIS ITEM INCLUDES THE FILL MATERIAL REQUIRED TO CONSTRUCT THE PROPOSED EMBANKMENTS FOR THE SPOIL SITES AND BMPS 14, 15, AND 16 AS WELL AS LAKE BOTTOM FILL FOR JETTIES, FISH HABITAT, AND FISHING NODES. THIS ITEM ALSO INCLUDES 3,957 CY OF FILL MATERIAL REQUIRED TO REPLACE THE OVER-EXCAVATED SOFT SEDIMENT FROM THE BERM FOOTPRINTS OF BMPS 14, 15, AND 16 AS WELL AS THE OTHER AREAS SHOWN IN FILL IN ZONE 1 OF THE DREDGING FOOTPRINT (JETTIES, MOUNDS, WEST SHORE OF THE NORTH ARM OF THE LAKE). A SHRINKAGE FACTOR OF 20% HAS BEEN INCLUDED IN THIS NUMBER. THE REQUIRED FILL AMOUNT CAN BE OBTAINED FROM WITHIN THE SPOIL SITE AREAS BEFORE DREDGING COMMENCES OR SELECT VIRGIN MATERIAL IN THE LAKE BED. SEE SHEETS C202-C204.
4	TOPSOIL STRIP, SALVAGE, AND RE-SPREAD: THIS ITEM INCLUDES THE STRIPPING, SALVAGE, STOCKPILE, AND RESPREAD OF 6" OF EXISTING MATERIAL FROM BMP 14, 15, AND 16 FOOTPRINT ABOVE NORMAL WATER LEVEL AND SPOIL SITE BERM FOOTPRINTS. ALL AREAS TO RECEIVE SEED SHALL HAVE A MINIMUM OF 6" OF TOPSOIL PLACED.
5	RIP RAP, CLASS 'C': THIS ITEM INCLUDES THE IOWA DOT GRADATION CLASS 'C' RIP RAP REQUIRED FOR THE STABILIZATION ALONG THE SHORELINE (1,073 TONS), FISHING JETTIES (1,380 TONS), AND WATERSHED BMP OUTLETS (295 TONS). QUANTITIES BASED ON A UNIT WEIGHT OF 105 PCF. NONWOVEN GEOTEXTILE FABRIC IS INCIDENTAL.
6	SALVAGE EXISTING RIP RAP: THIS ITEM INCLUDES LABOR AND EQUIPMENT TO SALVAGE THE EXISTING RIP RAP AND BROKEN CONCRETE ALONG JETTIES AND AT TWO PEDESTRIAN BRIDGE ABUTMENTS OF THE LAKE AND STOCKPILE THE MATERIAL FOR USE BY THE FISH HABITAT CONTRACTOR. COORDINATE STOCKPILE LOCATION WITH OWNER AND ENGINEER. QUANTITY ESTIMATES INCLUDES 15 TONS FROM BMP 15, 15 TONS FROM BMP 16, AND 150 TONS FROM EACH OF THE THREE EXISTING JETTIES. PAYMENT WILL BE BASED ON PLAN QUANTITY.
7	GRANULAR SURFACING, BOAT LAUNCH AND PARKING AREA: THIS ITEM INCLUDES MATERIALS, LABOR AND EQUIPMENT TO INSTALL 3/4" GRANULAR SURFACING 3" THICK AT THE LAKE ACCESS LOCATION AND BOAT RAMP AFTER WORK IN THE LAKE IS COMPLETE. MATERIALS SHALL CONFORM TO IOWA DOT ARTICLE 4120.04, CLASS A CRUSHED STONE. COORDINATE WITH OWNER AND ENGINEER. QUANTITIES BASED ON A UNIT WEIGHT OF 140 PCF. SEE SHEET C601.
8	TIED CONCRETE BLOCK MAT, SHORELINE ARMORING AND OVERFLOWS, 12' WIDE ROLL: THIS ITEM INCLUDES THE COST FOR MATERIALS AND INSTALLATION OF TIED CONCRETE BLOCK MAT AS SHOWN IN THE PLANS. FLEXAMAT FR (FLAME RESISTANT GEOGRID) OR APPROVED EQUAL. 12' WIDE ROLL - REFER TO DETAIL AND SHEET C401. PAYMENT QUANTITY INCLUDES KEY-INS.
9	LAKE RISER STRUCTURE MODIFICATIONS, BULKHEAD, STOPLOGS, AND 15" X 15" SLIDE GATE: THIS ITEM INCLUDES ALL COSTS FOR MATERIAL AND INSTALLATION OF THE STEEL REINFORCED FRP BULKHEAD, STOPLOGS, AND 15" X 15" SLIDE GATE AND RELATED APPURTENANCES BY PLASTIFAB OR APPROVED EQUAL. SEE DETAIL ON SHEET C501.
10	12" PPHP PIPE: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, AND BACKFILL OF THE 12" PPHP PIPE. SEE SHEET C205-208 FOR LENGTHS, LOCATIONS, AND ELEVATIONS.
11	12" HICKENBOTTOM RISER: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, AND BACKFILL OF THE 12" HICKENBOTTOM RISER INTAKE OR APPROVED EQUAL AS SHOWN ON SHEETS C205-208. BAR GUARD TO BE AGRIDRAIN OR APPROVED EQUAL.
12	REINFORCED CONCRETE ARCH PIPE, 42" EQUIVALENT (51" X 31"): THIS ITEM INCLUDES THE COSTS FOR MATERIAL AND PLACEMENT OF THE REINFORCED CONCRETE ARCH PIPE AND BACKFILL. SEE SHEETS C202-204 FOR LENGTHS, LOCATIONS, AND ELEVATIONS.
13	REINFORCED CONCRETE ARCH FLARED END SECTION, 42" EQUIVALENT (51" X 31"): THIS ITEM INCLUDES THE COSTS FOR MATERIAL AND PLACEMENT OF THE REINFORCED CONCRETE ARCH FLARED END SECTIONS, FOOTINGS, AND BACKFILL. TIE FLARED END SECTIONS TO LAST SECTION OF RCP PIPE. SEE SHEETS C202-204 FOR LOCATIONS AND ELEVATIONS. SEE SHEET C503 FOR DETAIL. NO TRASH RACK REQUIRED.
14	STONE TERRACE: THIS ITEM INCLUDES THE LABOR, EQUIPMENT, AND MATERIALS TO INSTALL THE STONE TERRACE AS SHOWN IN THE PLANS AND DETAILS. SEE SHEET C401 FOR LOCATION AND SHEET C504 FOR DETAILS. THIS BID ITEM INCLUDES RECON GRAVITY WALL BLOCK OR APPROVED EQUAL SEAT WALLS AND TERRACES, STEPS, AND 6" STAMPED CONCRETE PATIO. ALL EXCAVATION, STONE BEDDING, BACKFILL, AND STAIN/SEALING ARE INCIDENTAL TO THIS ITEM. THIS ITEM INCLUDES THE INSTALLATION AND ASSEMBLY OF TWO STEEL HANDRAILS.
15	SHORELINE FISHING NODE: THIS ITEM INCLUDES THE LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO CONSTRUCT FISHING NODES AS SHOWN ON SHEET C401 AND DETAILED ON C502. NODES SHALL BE 18" X 10'. BLOCK WALL SHALL BE CONSTRUCTED WITH RECON GRAVITY WALL BLOCK OR APPROVED EQUAL. ALL EXCAVATION, STONE BEDDING, BACKFILL, AND STAIN/SEALING ARE INCIDENTAL TO THIS ITEM.
16	SEEDING, TYPE 1: THIS ITEM INCLUDES SEED, FERTILIZER, AND MULCH FOR THE HAUL ROUTES, TRAIL ACCESS GRADING, AND SURROUNDING THE PROPOSED BMPS AT THE LOCATIONS INDICATED ON SHEET C601.
17	SEEDING, TYPE 2: THIS ITEM INCLUDES SEED, FERTILIZER, AND MULCH FOR THE DAM EMBANKMENT AND SPOIL SITES IN THE AREAS INDICATED ON SHEET C601.
18	SEEDING, TYPE 4 (TEMPORARY): THIS ITEM INCLUDES SEED, FERTILIZER, AND MULCH FOR TEMPORARY SEEDING. COORDINATE AREAS WITH ENGINEER.
19	EROSION CONTROL SILT FENCE: THIS ITEM INCLUDES ALL COSTS ASSOCIATED WITH INSTALLATION, MAINTENANCE, AND REMOVAL OF SEDIMENT FROM DEVICE THROUGHOUT THE PROJECT.

LEGEND



ACCESS NOTES:

- CONSTRUCTION EQUIPMENT AND MATERIAL DELIVERIES SHALL ACCESS THE PROJECT SITE THROUGH DESIGNATED ENTRANCES AS SHOWN ON SHEET C101. UTILIZE DESIGNATED STAGING AREAS FOR PARKING AND STORAGE OF MATERIAL AND EQUIPMENT.
- POWER/ELECTRICITY IS AVAILABLE FOR USE BY THE CONTRACTOR AT THE DESIGNATED STAGING AREA. WEST CONTRACTOR STAGING AREA HAS TWO, 20-AMP CIRCUITS WITH A DUPLEX RECEPTACLE. EAST CONTRACTOR STAGING AREA HAS A SINGLE 20-AMP CIRCUIT WITH RECEPTACLE. RESTORE STAGING AREA TO ORIGINAL CONDITION AT PROJECT COMPLETION. COORDINATE LIMITS WITH OWNER.
- SEE SHEET C101 AND C304 FOR PROPOSED HAUL ROUTES FROM LAKE TO SPOIL SITES. LIMIT CONSTRUCTION EQUIPMENT TO THE FOOTPRINT OF THE LAKE FOR MECHANICAL DREDGING AND SHORELINE ARMORING. LIMITED ACCESS CAN BE MADE FOR PROPOSED LANDSCAPING WORK ALONG THE NORTH SHORELINE. COORDINATE WITH DNR FIELD ENGINEER AND OWNER.

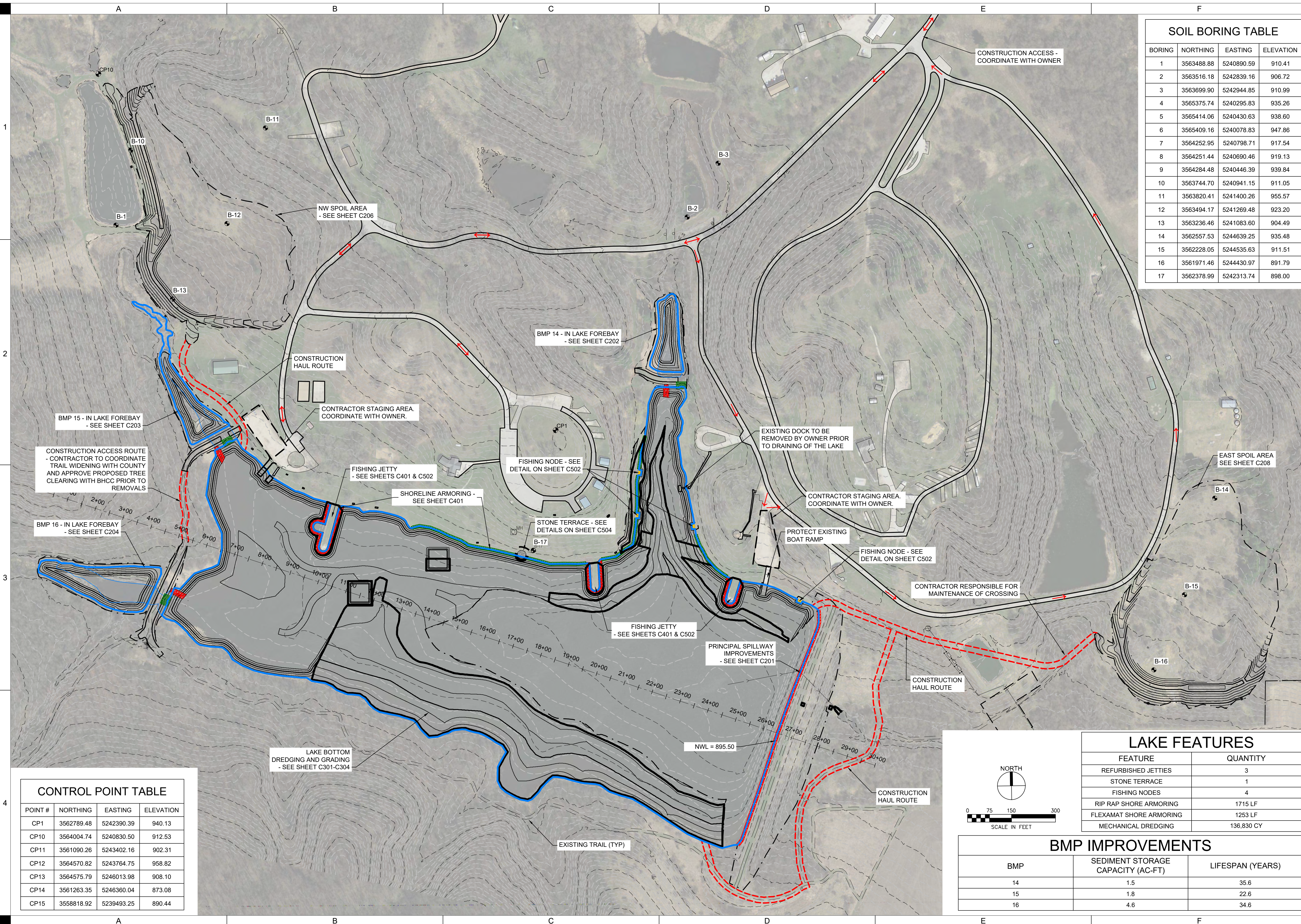
GENERAL NOTES:

- 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.
- 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 OWNER 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.
- CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISHED GRADE.
- THE CONTRACTOR SHALL KEEP ALL ROADS OPEN TO THROUGH TRAFFIC AT ALL TIMES.
- SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.
- THE 2023 EDITION OF THE IOWA STATEWIDE URBAN STANDARD SPECIFICATIONS (SUDAS) SHALL APPLY TO ALL WORK PERFORMED ON THIS PROJECT EXCEPT AS MODIFIED HEREIN.
- CONTRACTOR SHALL VISIT AND INSPECT THE PROJECT AREA AND THOROUGHLY FAMILIARIZE THEMSELVES WITH THE ACTUAL JOB CONDITIONS PRIOR TO THE START OF WORK. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR FROM PERFORMING THE WORK IN ACCORDANCE TO THE PLANS, SPECIFICATIONS, AND CONTRACT.
- ALL WORK SHALL CONFORM TO AND BE CONDUCTED IN ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES OF THE STATE OF IOWA, AND THE UNITED STATES.
- CONTRACTOR SHALL MANAGE AND REPAIR EROSION AND SEDIMENT CONTROL THROUGHOUT THE PROJECT. THE ENGINEER SHALL OBTAIN AND PROVIDE A STORMWATER POLLUTION PREVENTION PLAN UNDER NPDES GENERAL PERMIT NO. 2 REGULATIONS. THE CONTRACTOR SHALL HAVE MATERIALS EQUIPMENT AND LABOR AVAILABLE ON A DAILY BASIS TO INSTALL AND MAINTAIN EROSION CONTROL FEATURES IDENTIFIED IN THE APPROVED SWPPP THROUGHOUT THE PROJECT.
- PROJECT COORDINATES AND ELEVATIONS ARE NAD83, NAVD88, IOWA NORTH STATE PLANE COORDINATES (1401), US SURVEY FEET.
- TREE CLEARING SHALL ONLY TAKE PLACE FROM OCTOBER 1ST THROUGH MARCH 31ST.
- GEOTECHNICAL AND MATERIALS TESTING SERVICES WILL BE OBTAINED AND PAID FOR BY THE OWNER. MOISTURE AND DENSITY TESTING SHALL BE REQUIRED FOR FILL PLACED IN THE EMBANKMENTS FOR THE SPOIL SITES AND FOREBAYS, JETTIES, AND TRAILS. THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTION OF ANY DEFICIENCIES WITH MOISTURE OR DENSITY OF COMPACTED FILL. FILL SHALL BE TESTED ACCORDING TO PROJECT SPECIFICATIONS.
- LIMITED CONSTRUCTION SURVEY/STAKING WILL BE PROVIDED BY THE ENGINEER AND PAID BY THE OWNER. REFER TO PROJECT SPECIFICATION.
- A UNITED STATES ARMY CORPS OF ENGINEERS (USACE) SECTION 404 PERMIT HAS BEEN OBTAINED BY THE OWNER FOR THIS PROJECT.
- AN IOWA DNR FLOODPLAIN AND DAM SAFETY PERMIT HAS BEEN OBTAINED BY THE OWNER FOR THIS PROJECT.

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ISSUED FOR	CONSTRUCTION DOCUMENTS
ISSUE DATE	08/19/2023
PROJECT NUMBER	4213030
FIELD BOOK	



SOIL BORING TABLE

BORING	NORTHING	EASTING	ELEVATION
1	3563488.88	5240890.59	910.41
2	3563516.18	5242839.16	906.72
3	3563699.90	5242944.85	910.99
4	3565375.74	5240295.83	935.26
5	3565414.06	5240430.63	938.60
6	3565409.16	5240078.83	947.86
7	3564252.95	5240798.71	917.54
8	3564251.44	5240690.46	919.13
9	3564284.48	5240446.39	939.84
10	3563744.70	5240941.15	911.05
11	3563820.41	5241400.26	955.57
12	3563494.17	5241269.48	923.20
13	3563236.46	5241083.60	904.49
14	3562557.53	5244639.25	935.48
15	3562228.05	5244535.63	911.51
16	3561971.46	5244430.97	891.79
17	3562378.99	5242313.74	898.00

CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION
CP1	3562789.48	5242390.39	940.13
CP10	3564004.74	5240830.50	912.53
CP11	3561090.26	5243402.16	902.31
CP12	3564570.82	5243764.75	958.82
CP13	3564575.79	5246013.98	908.10
CP14	3561263.35	5246360.04	873.08
CP15	3558818.92	5239493.25	890.44

LAKE FEATURES

FEATURE	QUANTITY
REFURBISHED JETTIES	3
STONE TERRACE	1
FISHING NODES	4
RIP RAP SHORE ARMORING	1715 LF
FLEXAMAT SHORE ARMORING	1253 LF
MECHANICAL DREDGING	136,830 CY

BMP IMPROVEMENTS

BMP	SEDIMENT STORAGE CAPACITY (AC-FT)	LIFESPAN (YEARS)
14	1.5	35.6
15	1.8	22.6
16	4.6	34.6

SHIVE-HATTERY
ARCHITECTURE+ENGINEERING

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

CASEY LAKE RESTORATION

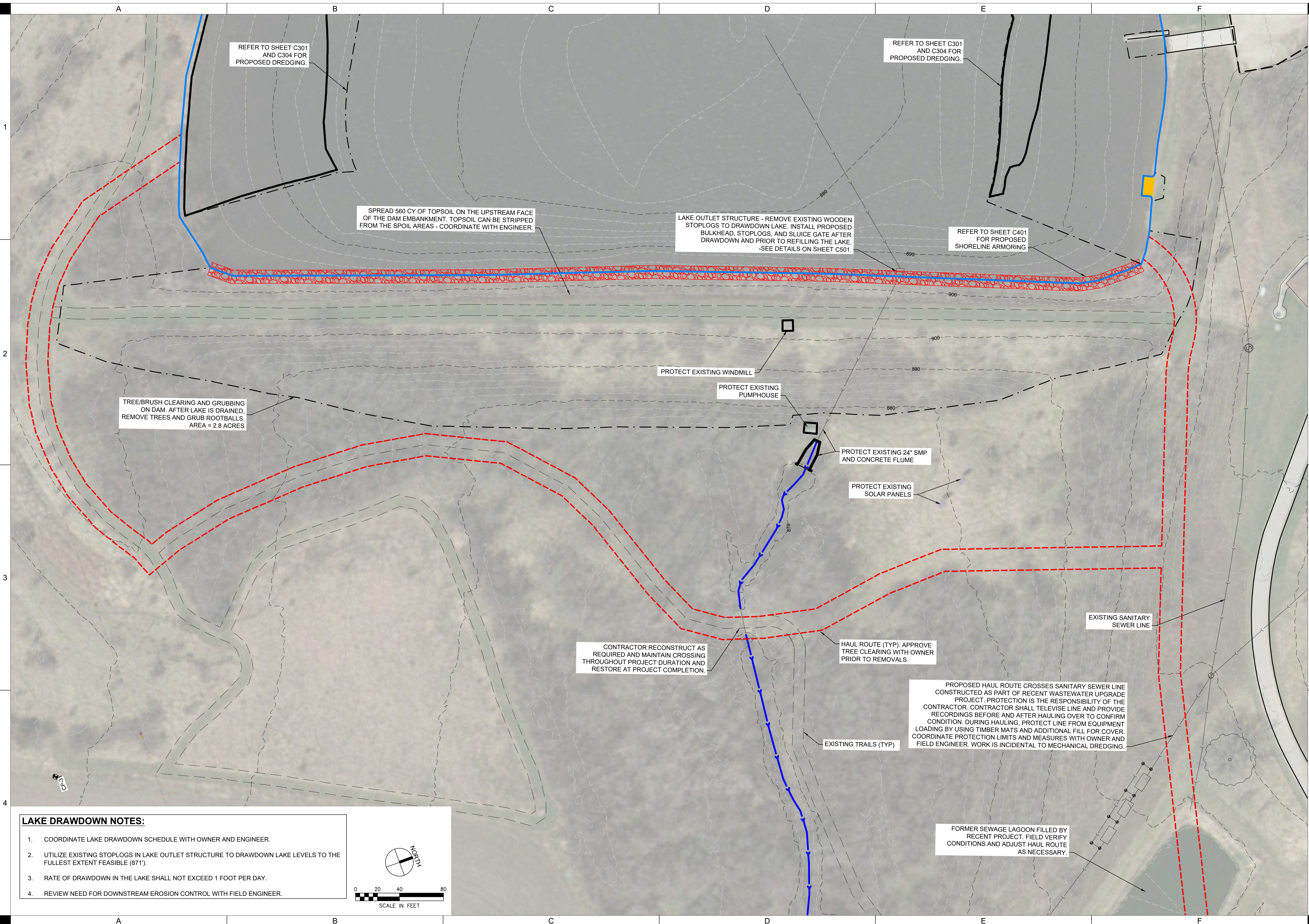
BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

OVERALL IN-LAKE PROJECT PLAN

C002

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APPROVED BY	LTM
ISSUED FOR	CONSTRUCTION DOCUMENTS
ISSUE DATE	08/19/2023
PROJECT NUMBER	4213030
FIELD BOOK	

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REFER TO SHEET C301 AND C304 FOR PROPOSED DREDGING.

REFER TO SHEET C301 AND C304 FOR PROPOSED DREDGING.

SPREAD 560 CY OF TOPSOIL ON THE UPSTREAM FACE OF THE DAM EMBANKMENT. TOPSOIL CAN BE STRIPPED FROM THE SPOIL AREAS - COORDINATE WITH ENGINEER.

LAKE OUTLET STRUCTURE - REMOVE EXISTING WOODEN STOPLOGS TO DRAWDOWN LAKE. INSTALL PROPOSED BULKHEAD, STOPLOGS, AND SLUICE GATE AFTER DRAWDOWN AND PRIOR TO REFILLING THE LAKE. -SEE DETAILS ON SHEET C501.

REFER TO SHEET C401 FOR PROPOSED SHORELINE ARMORING

TREE/BRUSH CLEARING AND GRUBBING ON DAM. AFTER LAKE IS DRAINED, REMOVE TREES AND GRUB ROOTBALLS. AREA = 2.8 ACRES

PROTECT EXISTING WINDMILL

PROTECT EXISTING PUMPHOUSE

PROTECT EXISTING 24" SMP AND CONCRETE FLUME

PROTECT EXISTING SOLAR PANELS

CONTRACTOR RECONSTRUCT AS REQUIRED AND MAINTAIN CROSSING THROUGHOUT PROJECT DURATION AND RESTORE AT PROJECT COMPLETION.

HAUL ROUTE (TYP). APPROVE TREE CLEARING WITH OWNER PRIOR TO REMOVALS.

PROPOSED HAUL ROUTE CROSSES SANITARY SEWER LINE CONSTRUCTED AS PART OF RECENT WASTEWATER UPGRADE PROJECT. PROTECTION IS THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL TELEWISE LINE AND PROVIDE RECORDINGS BEFORE AND AFTER HAULING OVER TO CONFIRM CONDITION. DURING HAULING, PROTECT LINE FROM EQUIPMENT LOADING BY USING TIMBER MATS AND ADDITIONAL FILL FOR COVER. COORDINATE PROTECTION LIMITS AND MEASURES WITH OWNER AND FIELD ENGINEER. WORK IS INCIDENTAL TO MECHANICAL DREDGING.

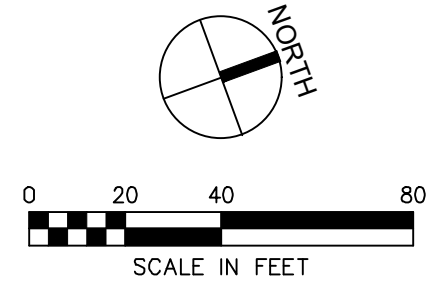
EXISTING SANITARY SEWER LINE

EXISTING TRAILS (TYP)

FORMER SEWAGE LAGOON FILLED BY RECENT PROJECT. FIELD VERIFY CONDITIONS AND ADJUST HAUL ROUTE AS NECESSARY.

LAKE DRAWDOWN NOTES:

- COORDINATE LAKE DRAWDOWN SCHEDULE WITH OWNER AND ENGINEER.
- UTILIZE EXISTING STOPLOGS IN LAKE OUTLET STRUCTURE TO DRAWDOWN LAKE LEVELS TO THE FULLEST EXTENT FEASIBLE (871').
- RATE OF DRAWDOWN IN THE LAKE SHALL NOT EXCEED 1 FOOT PER DAY.
- REVIEW NEED FOR DOWNSTREAM EROSION CONTROL WITH FIELD ENGINEER.



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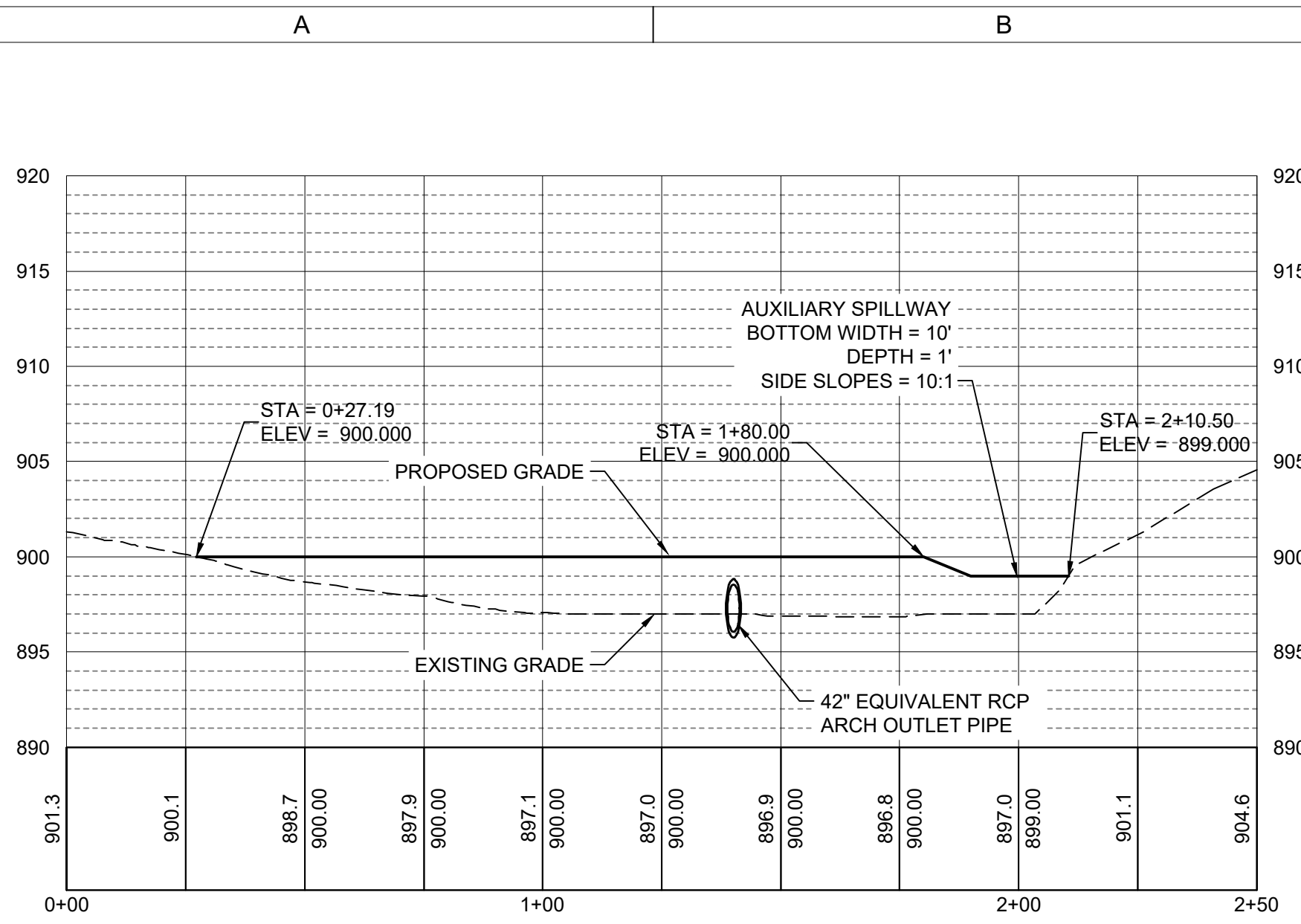
CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

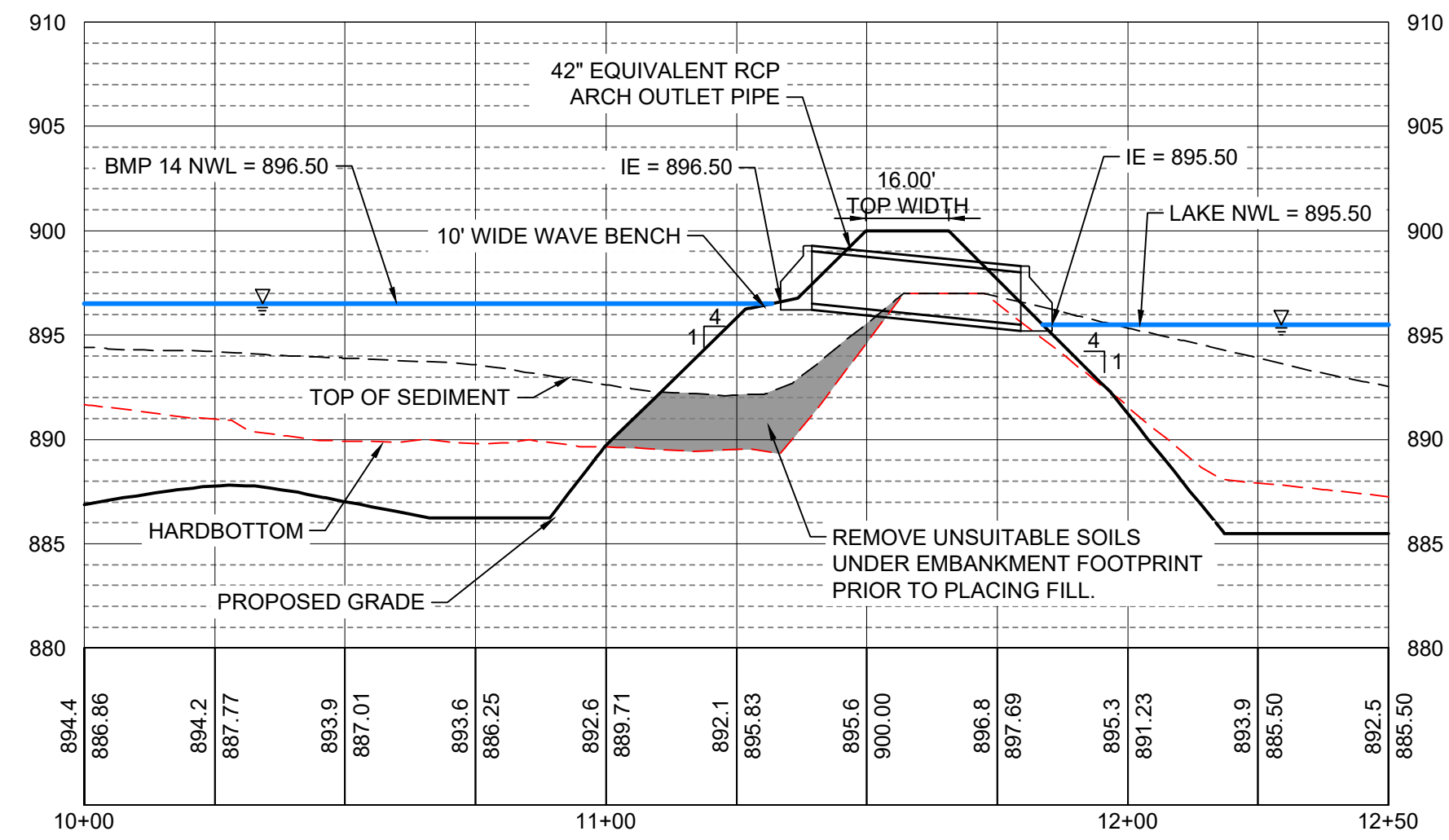
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FIELD BOOK	...

PRINCIPAL SPILLWAY PLAN

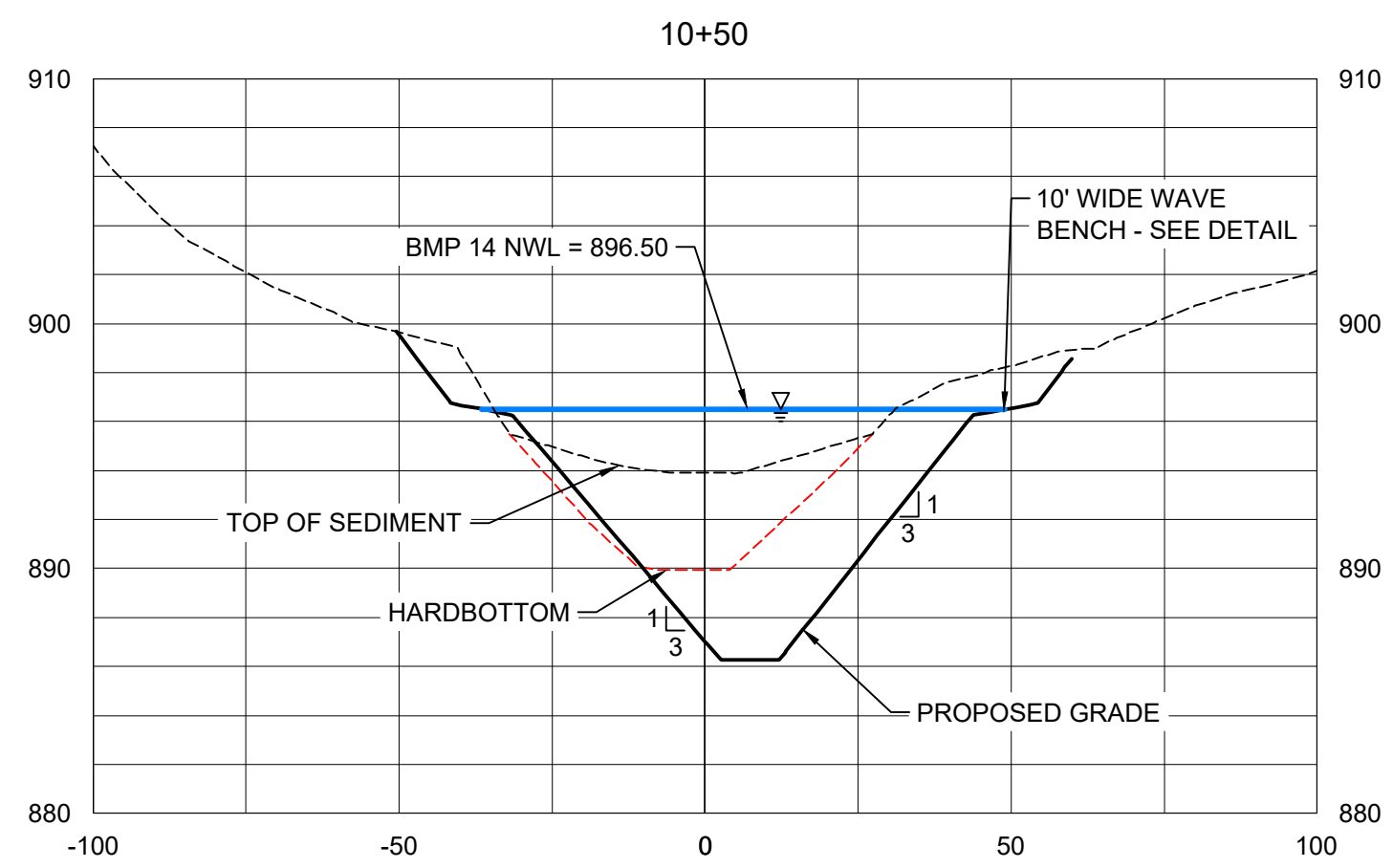
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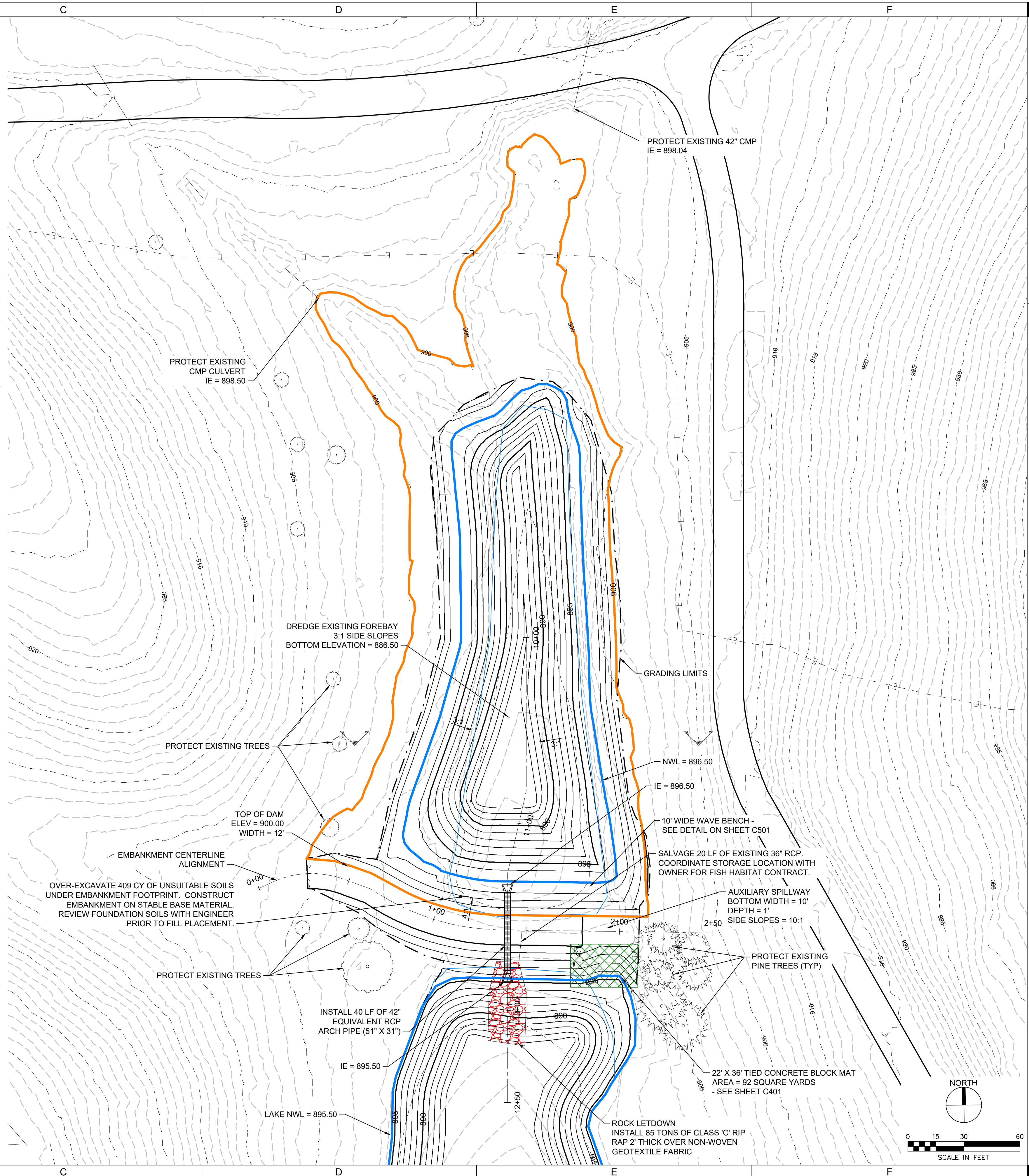
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2 PIPE PROFILE
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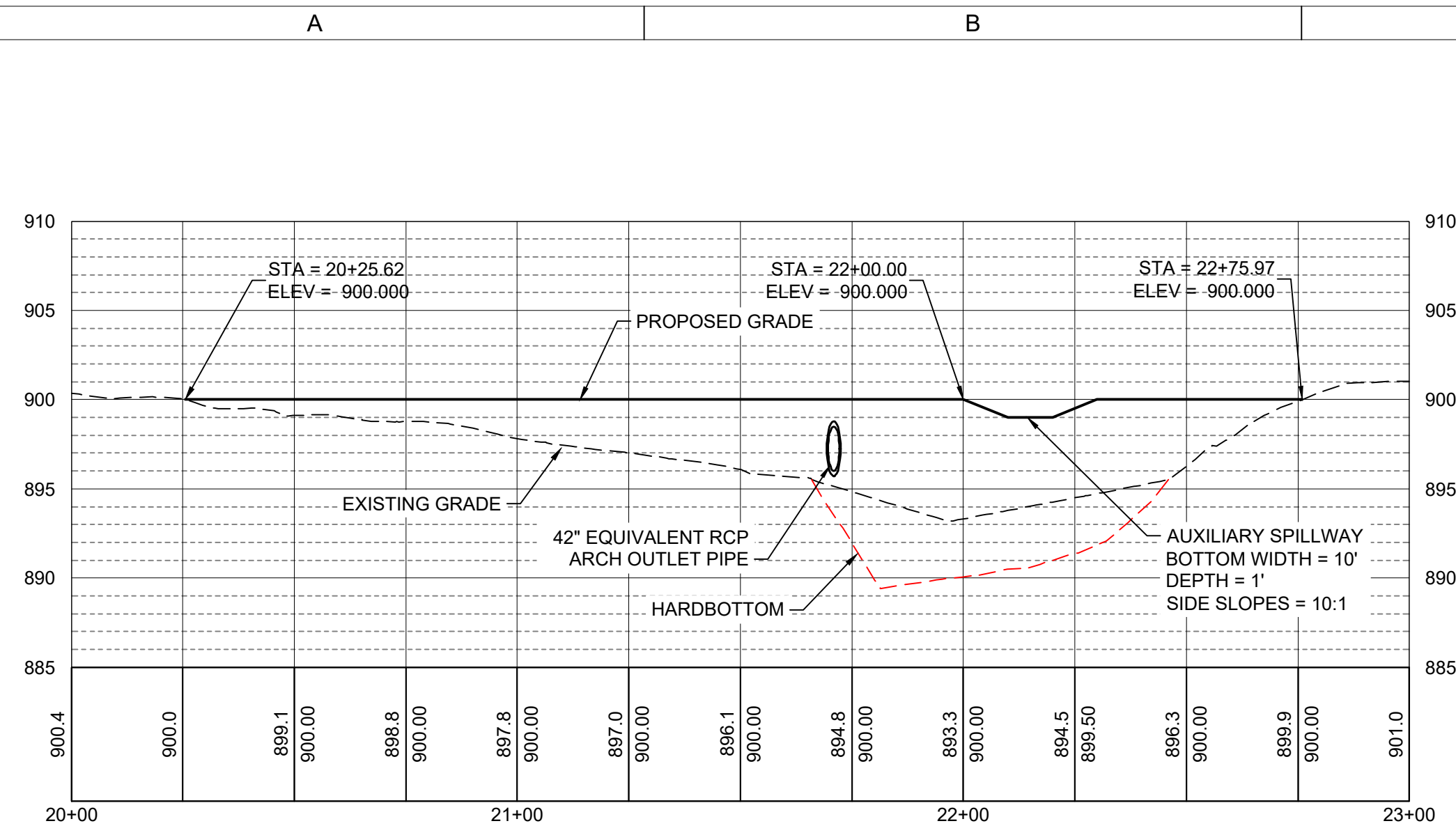


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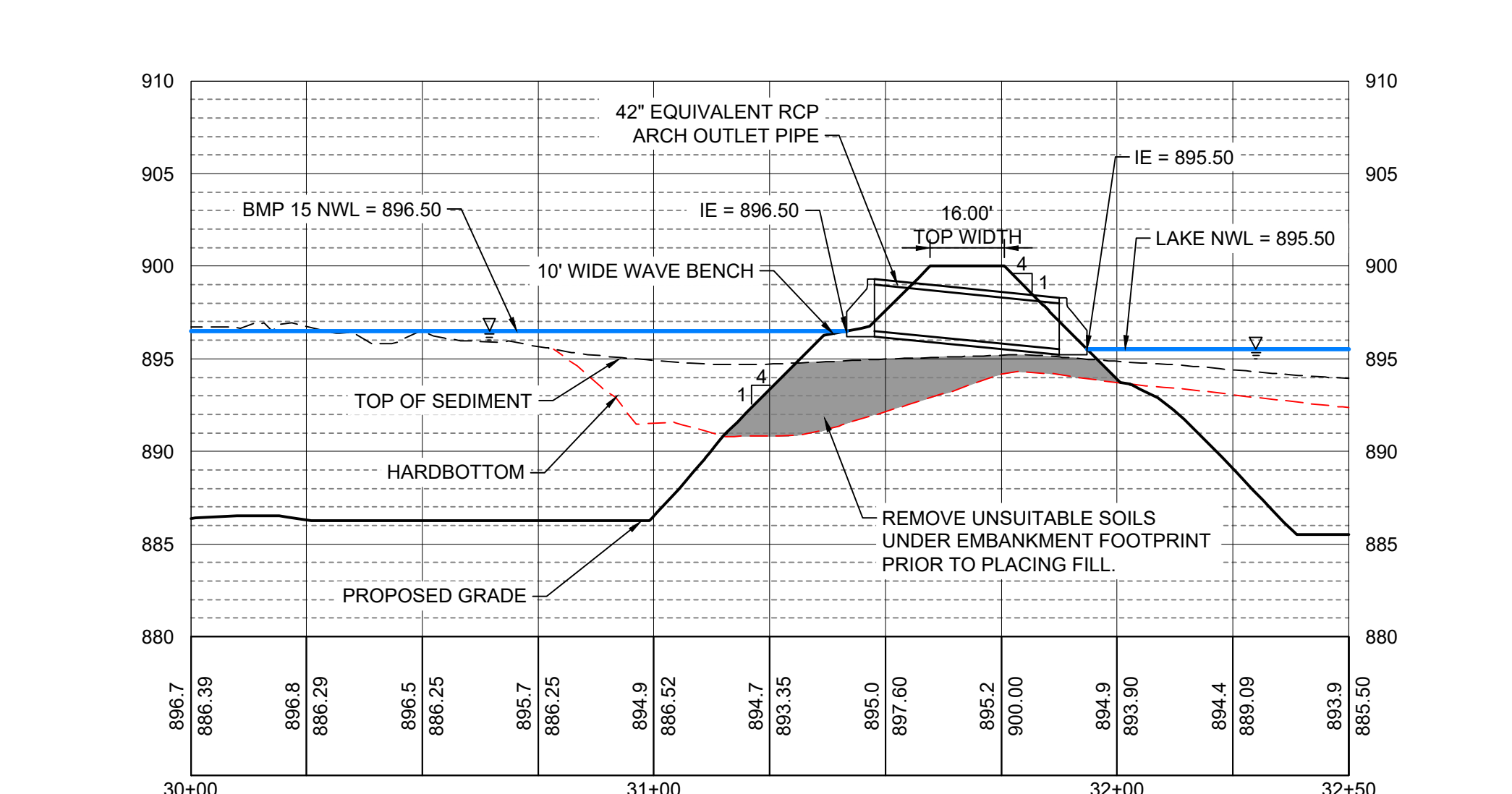


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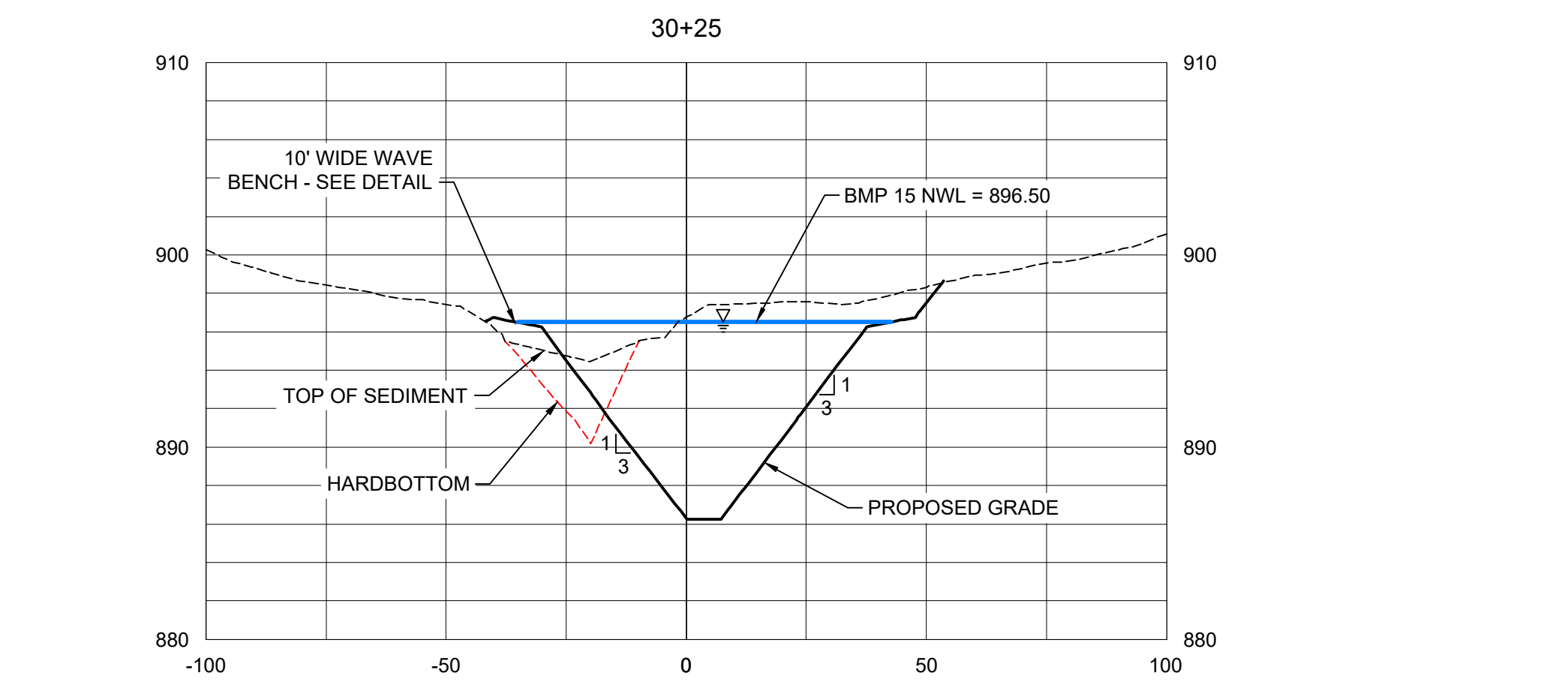
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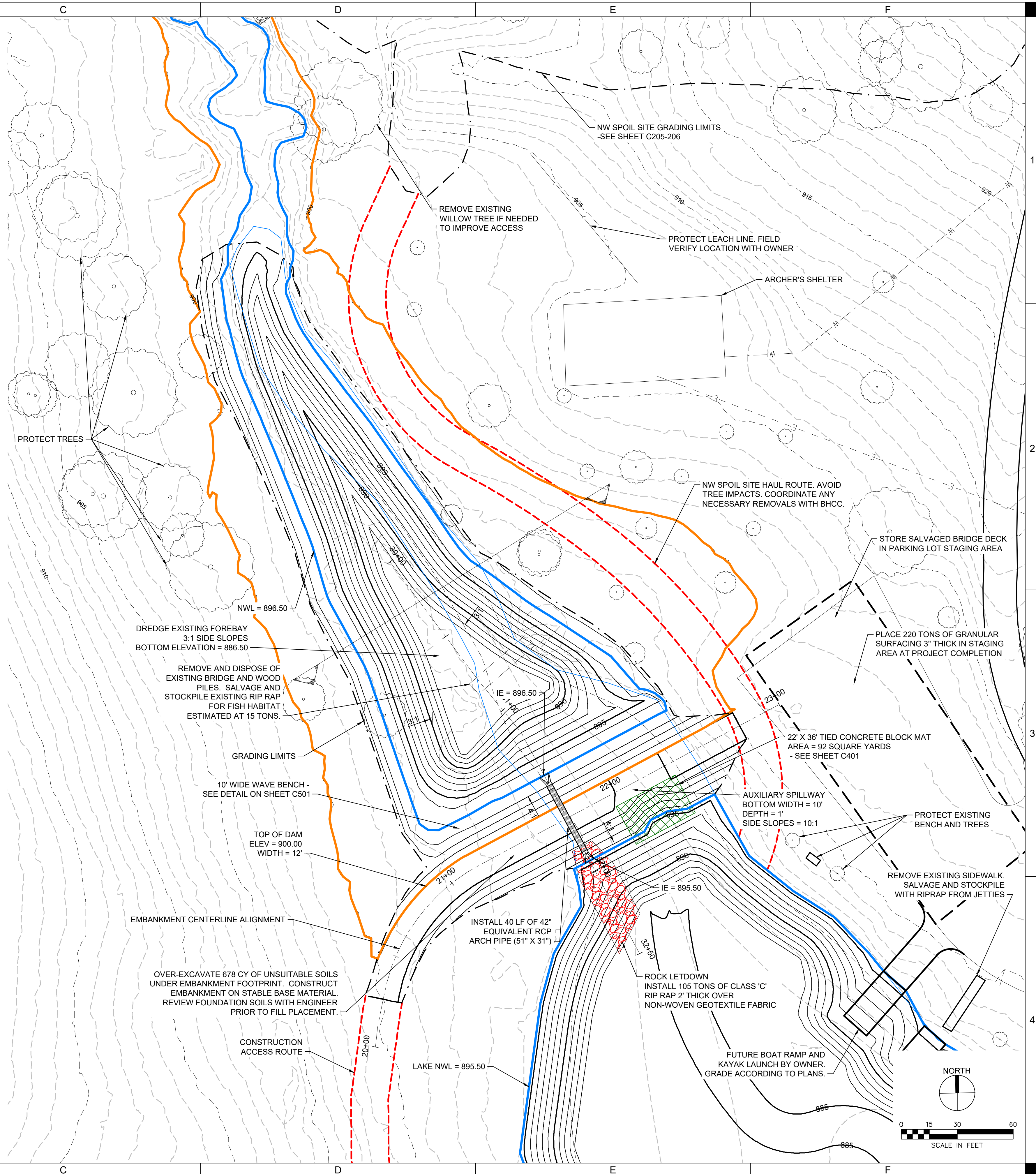
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 HORIZONTAL SCALE: 1" = 30' | VERTICAL SCALE: 1" = 7.5'



2 PIPE PROFILE
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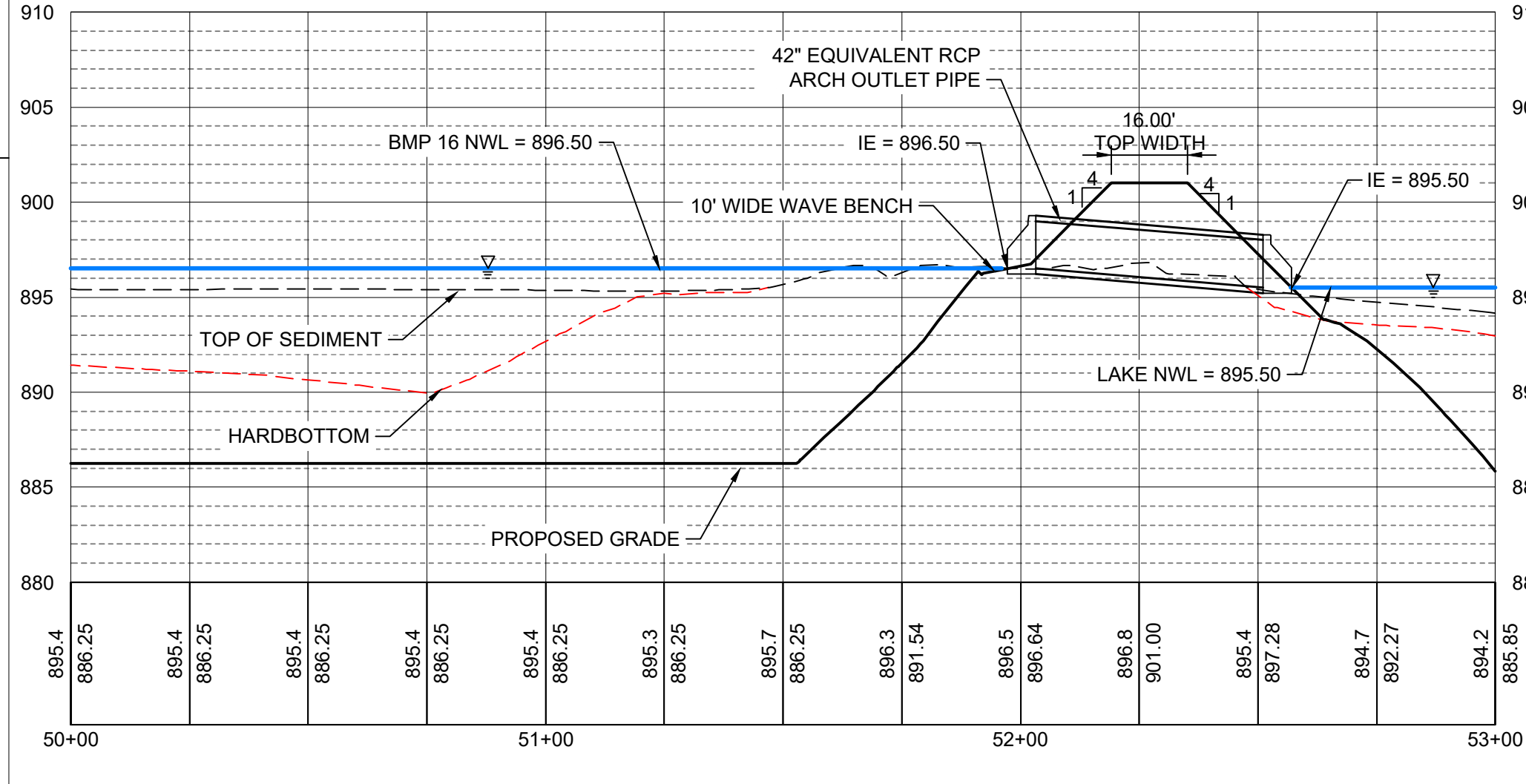
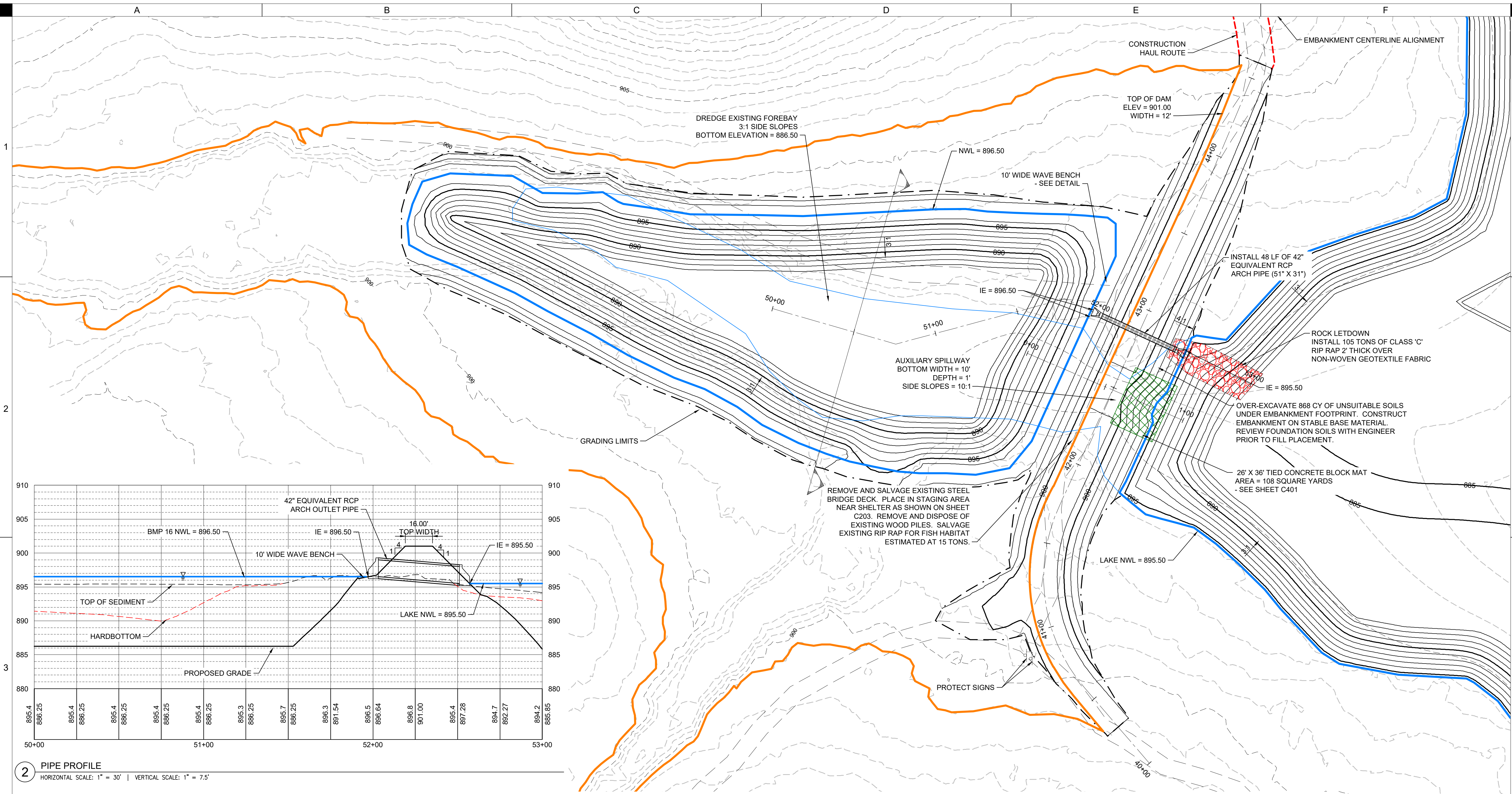


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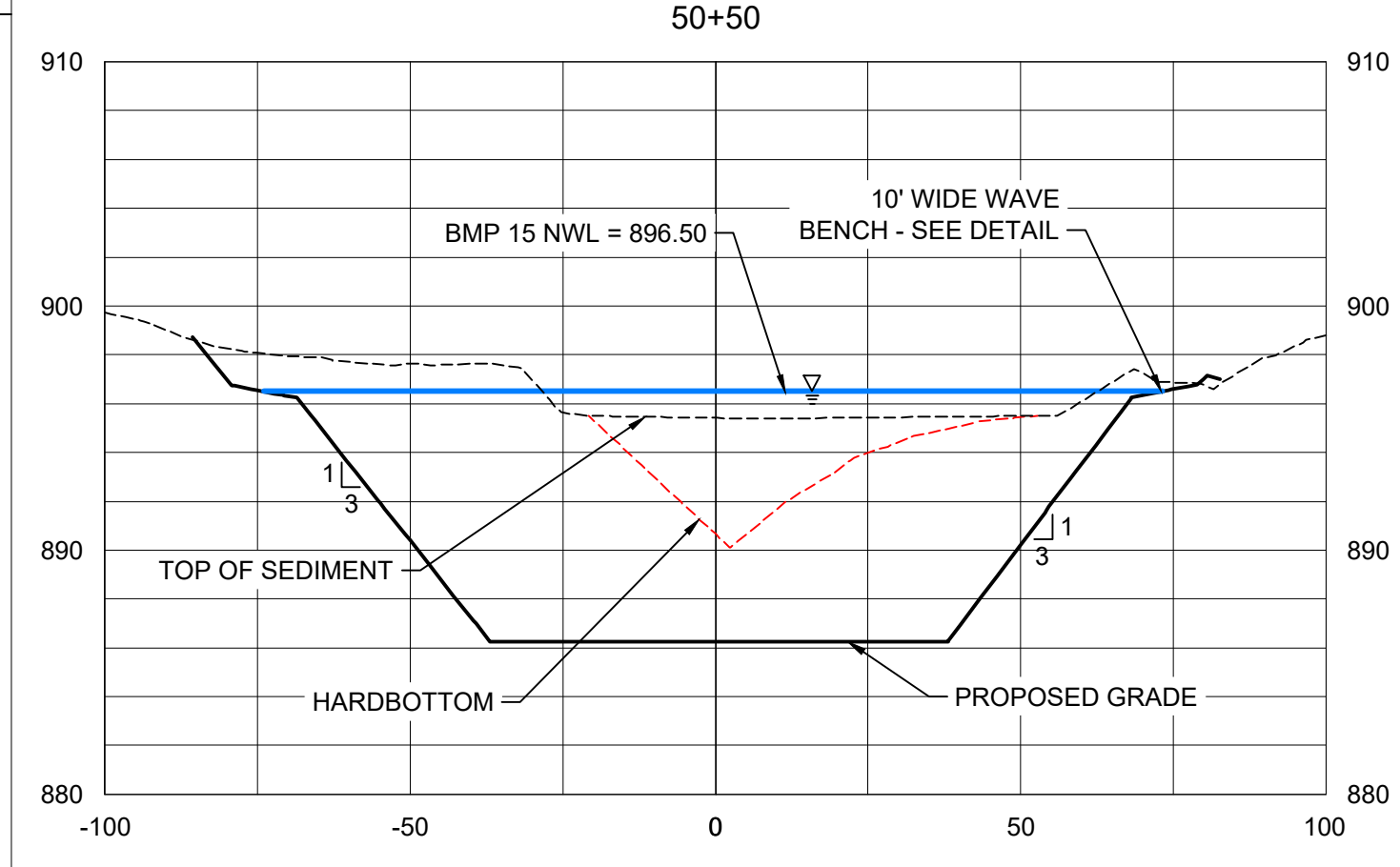


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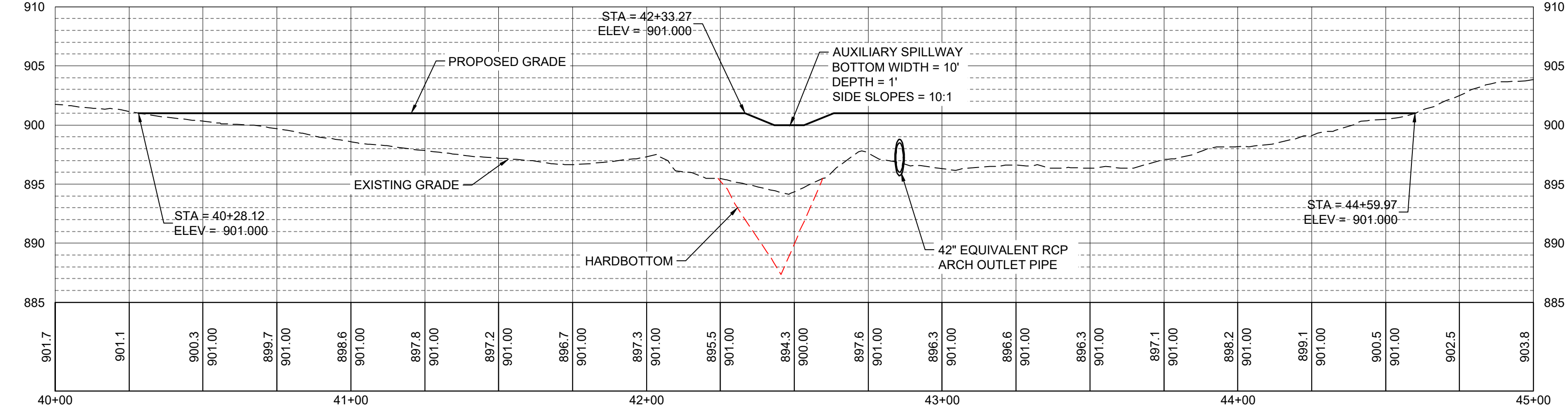
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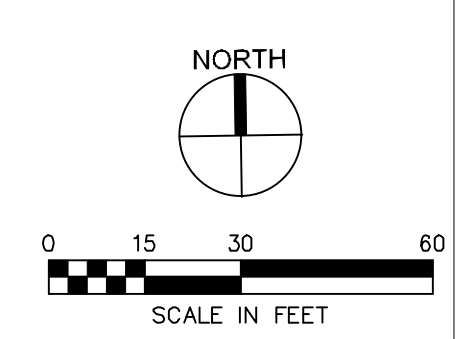
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3 FOREBAY CROSS SECTION
HORIZONTAL SCALE: 1" = 30' | VERTICAL SCALE: 1" = 7.5'



1 EMBANKMENT CENTERLINE PROFILE
HORIZONTAL SCALE: 1" = 30' | VERTICAL SCALE: 1" = 7.5'



CASEY LAKE RESTORATION

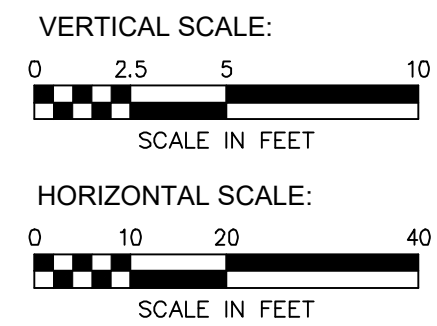
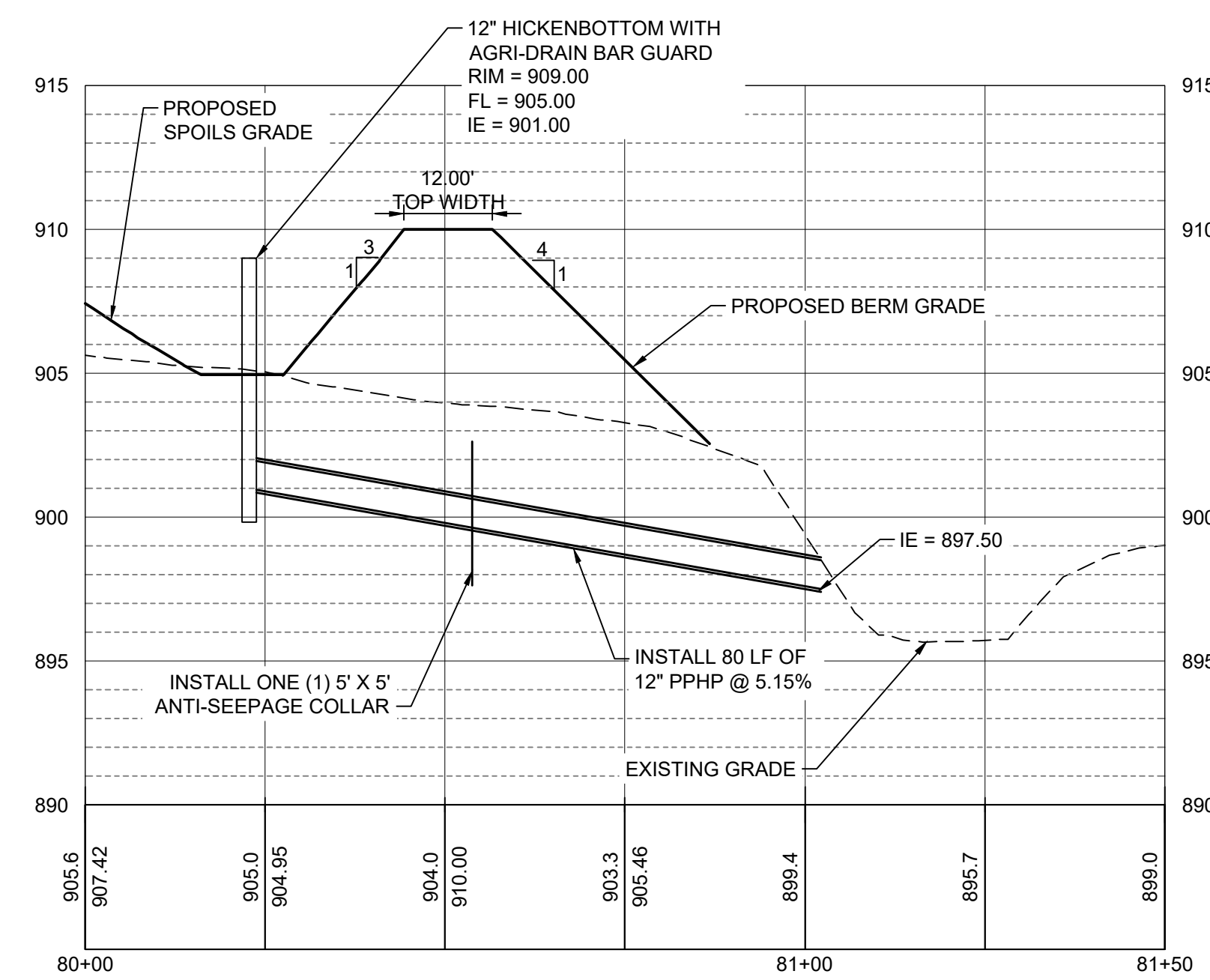
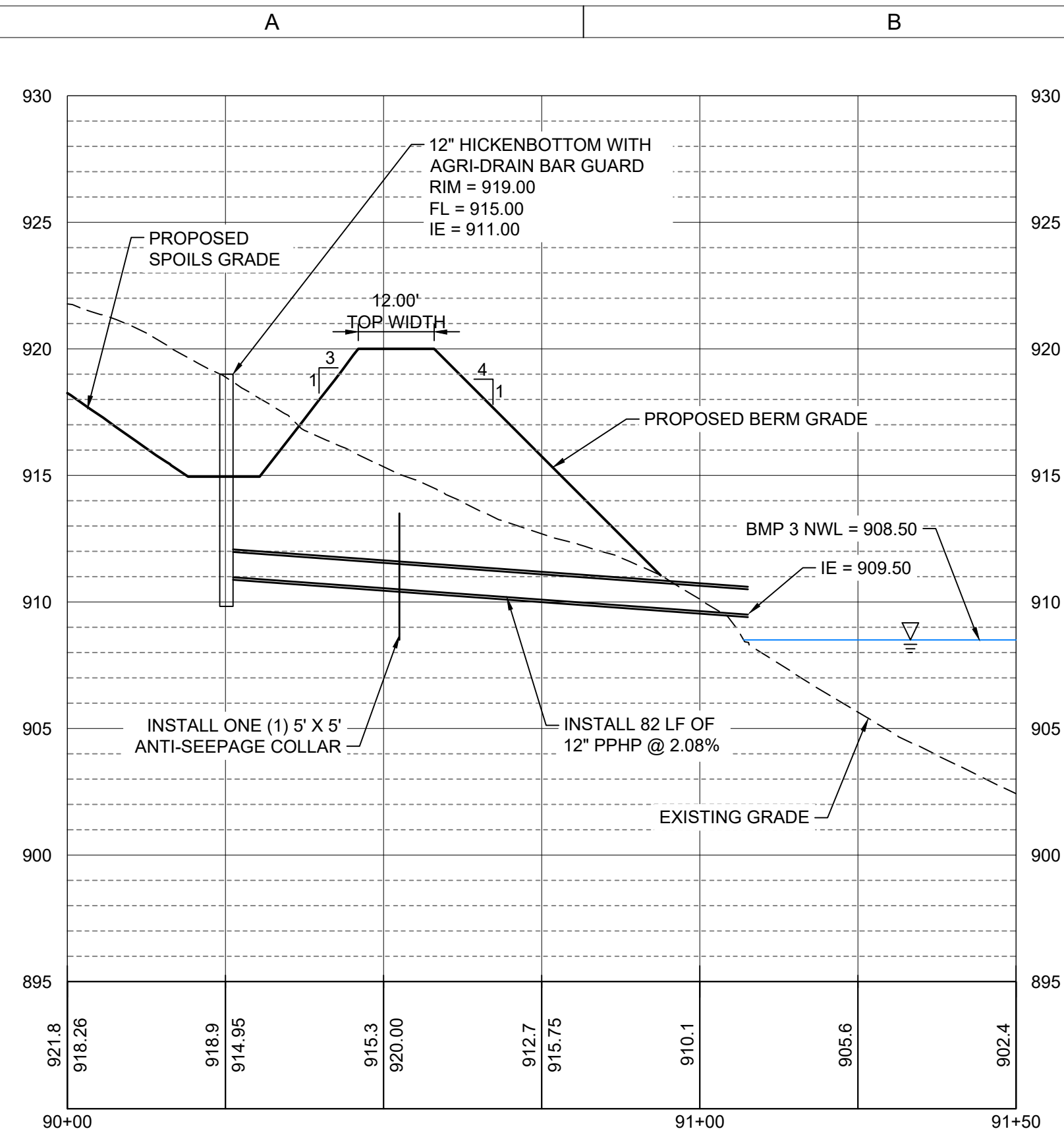
BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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BMP 16 GRADING PLAN

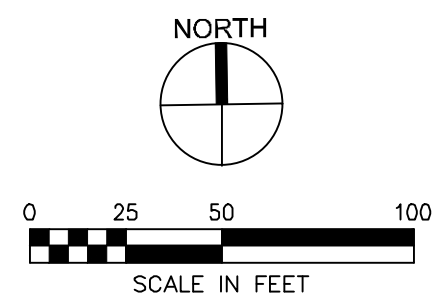
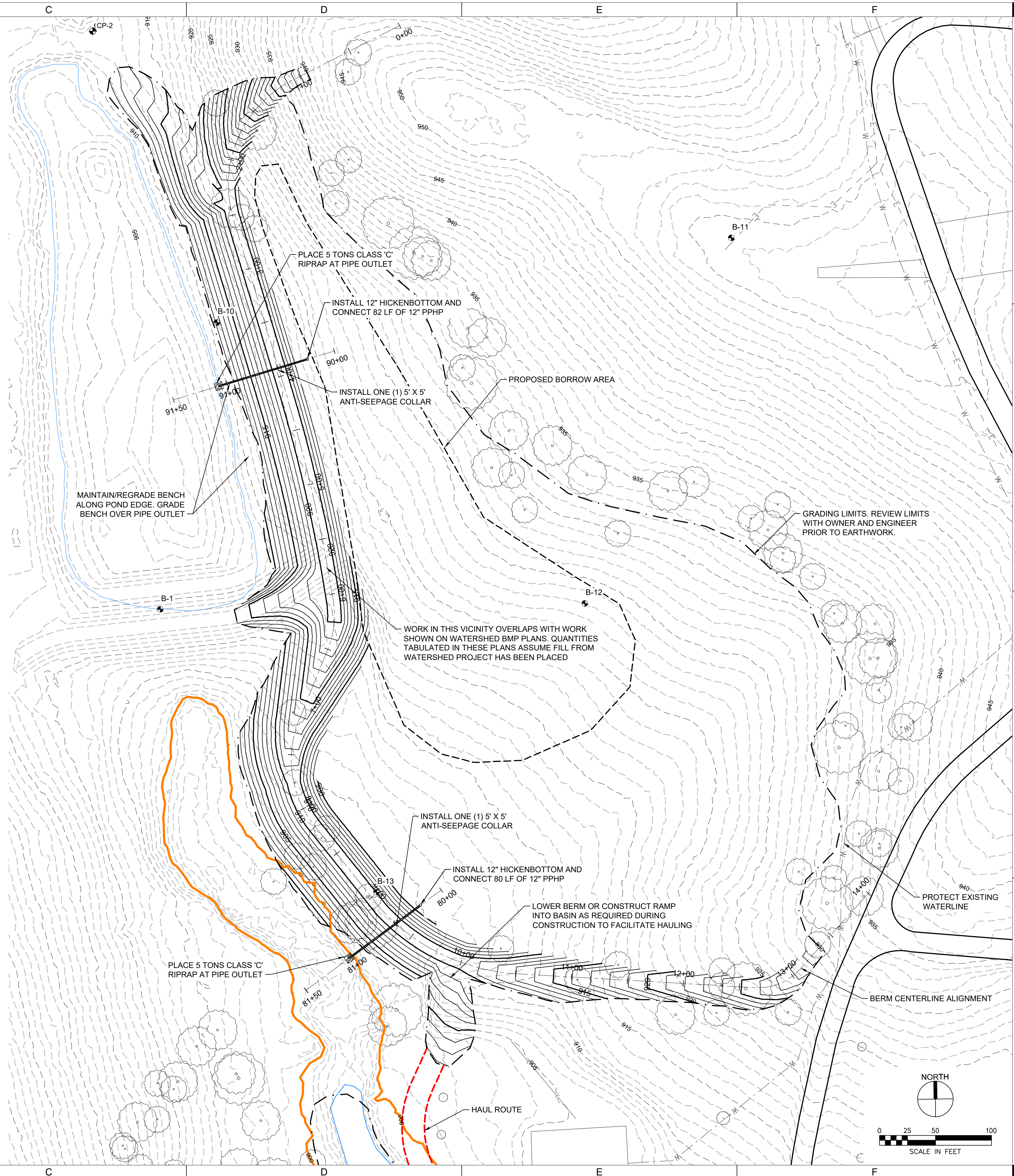
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SPOIL SITE NOTES:

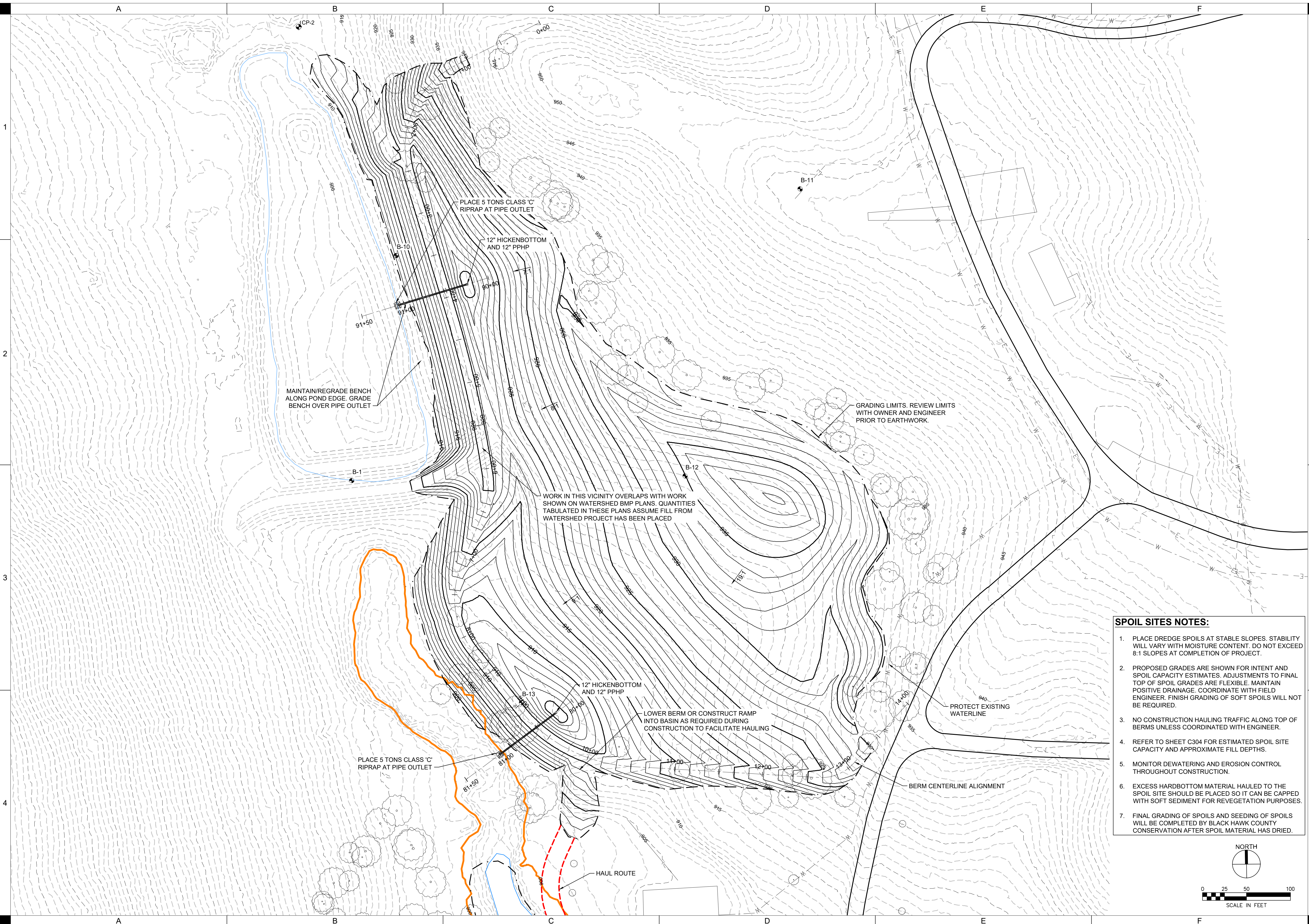
- TREES SHOWN ON THIS SHEET DO NOT REPRESENT ALL TREES IN THE PROJECT AREA. ONLY THOSE MATURE OAKS ALONG THE EDGE OF THE PROPOSED IMPROVEMENTS. CONTRACTOR SHALL VISIT SITE AND FAMILIARIZE THEMSELVES WITH CURRENT CONDITIONS.
- CLEAR, GRUB, AND BURN TREES AND BRUSH BETWEEN NOVEMBER 1-MARCH 31. NO CLEARING ALLOWED OUTSIDE THESE DATES DUE TO ENDANGERED BAT PROTECTION.
- STRIP AND STOCKPILE 6" OF TOPSOIL FROM PROPOSED BERM FOOTPRINT AND RESPREAD ON BERM SLOPES ONCE CONSTRUCTED. AN ESTIMATED QUANTITY OF 1,365 CY IS BASED ON SUFFICIENT MATERIAL BEING SOURCED FROM THE BERM FOOTPRINT. IF ADDITIONAL TOPSOIL IS NEEDED TO RESPREAD ON BERM SLOPES, SOURCE FROM WITHIN BORROW AREA.
- MATERIAL TO CONSTRUCT THE BERM SHALL BE SOURCED FROM WITHIN THE SPOIL SITE LIMITS IN THE DESIGNATED BORROW AREA. CONTRACTOR TO COORDINATE AND GAIN PRIOR APPROVAL FROM THE ENGINEER IF BERM FILL IS SOURCED FROM A DIFFERENT LOCATION.
- AFTER TOPSOIL HAS BEEN STRIPPED FROM THE PROPOSED BERM FOOTPRINT THE CONTRACTOR SHALL SCARIFY THE EXISTING SURFACE TO A DEPTH OF 9" AND RECOMPACT TO 95% STANDARD PROCTOR DENSITY. WORK IS INCIDENTAL TO EARTHFILL BID ITEM.
- FILL SHALL BE PLACED IN NO GREATER THAN 9" LOOSE LIFTS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY WITH A MOISTURE CONTENT RANGE OF -1% TO +4% OF OPTIMUM WATER CONTENT.
- THE CONTRACTOR SHALL SEED THE BERM SLOPES AS SHOWN ON SHEET C601. OWNER TO SEED THE DREDGE SPOILS AREA AT A LATER DATE.



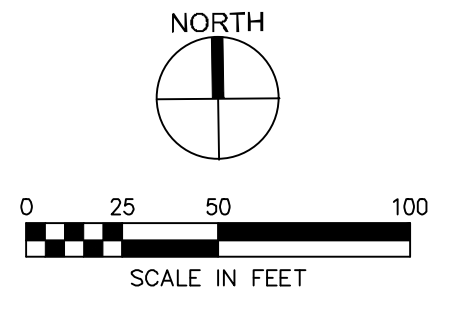
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APPROVED BY	LTM
ISSUED FOR	CONSTRUCTION DOCUMENTS
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PROJECT NUMBER	4213030
FIELD BOOK	...

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- SPOIL SITES NOTES:**
1. PLACE DREDGE SPOILS AT STABLE SLOPES. STABILITY WILL VARY WITH MOISTURE CONTENT. DO NOT EXCEED 8:1 SLOPES AT COMPLETION OF PROJECT.
 2. PROPOSED GRADES ARE SHOWN FOR INTENT AND SPOIL CAPACITY ESTIMATES. ADJUSTMENTS TO FINAL TOP OF SPOIL GRADES ARE FLEXIBLE. MAINTAIN POSITIVE DRAINAGE. COORDINATE WITH FIELD ENGINEER. FINISH GRADING OF SOFT SPOILS WILL NOT BE REQUIRED.
 3. NO CONSTRUCTION HAULING TRAFFIC ALONG TOP OF BERMS UNLESS COORDINATED WITH ENGINEER.
 4. REFER TO SHEET C304 FOR ESTIMATED SPOIL SITE CAPACITY AND APPROXIMATE FILL DEPTHS.
 5. MONITOR DEWATERING AND EROSION CONTROL THROUGHOUT CONSTRUCTION.
 6. EXCESS HARDBOTTOM MATERIAL HAULED TO THE SPOIL SITE SHOULD BE PLACED SO IT CAN BE CAPPED WITH SOFT SEDIMENT FOR REVEGETATION PURPOSES.
 7. FINAL GRADING OF SPOILS AND SEEDING OF SPOILS WILL BE COMPLETED BY BLACK HAWK COUNTY CONSERVATION AFTER SPOIL MATERIAL HAS DRIED.



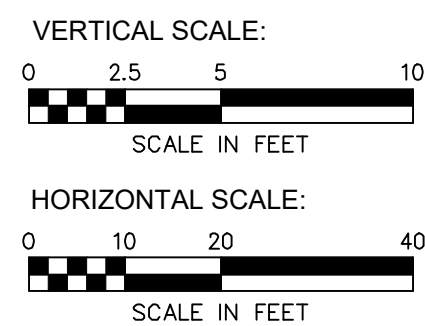
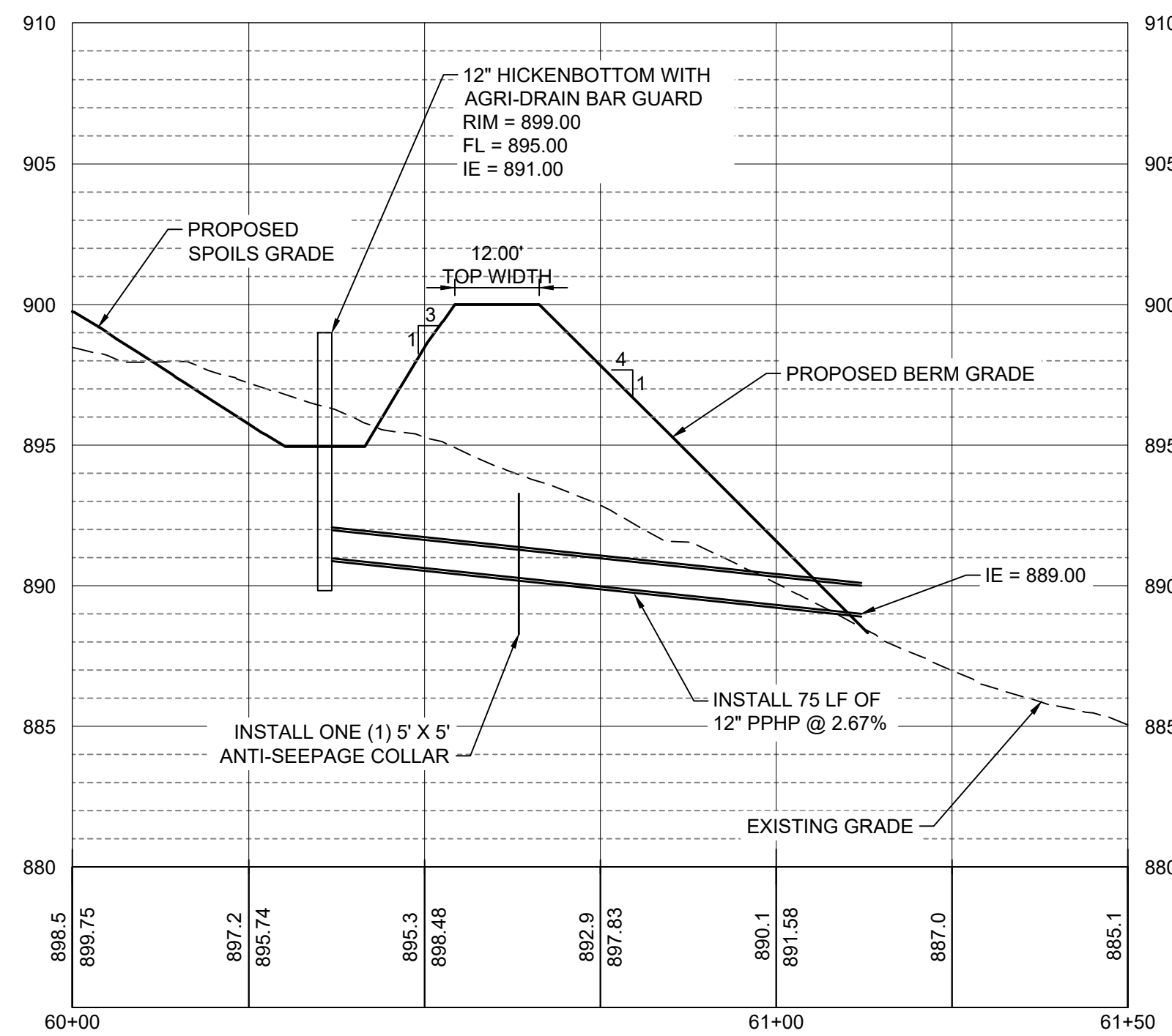
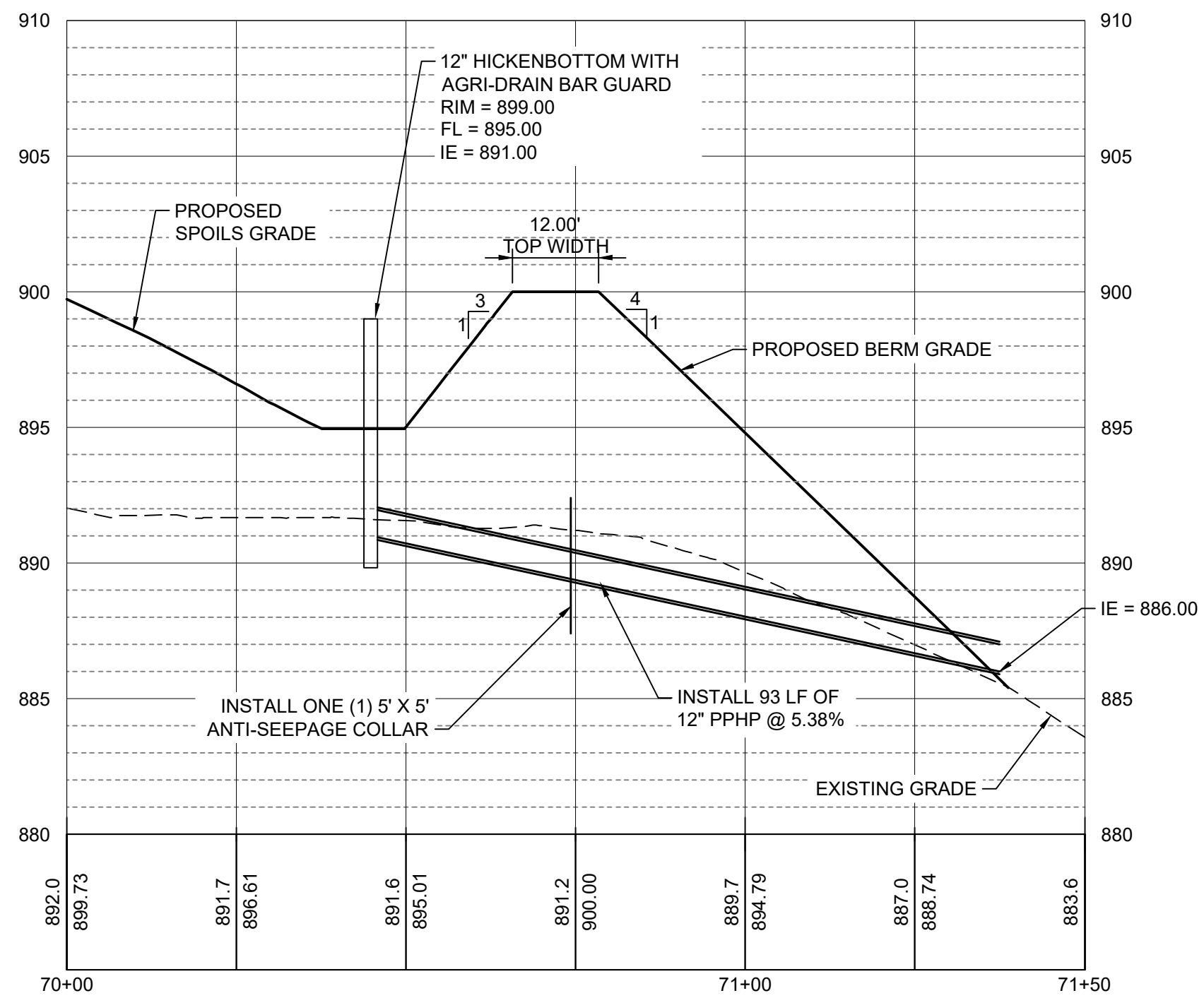
CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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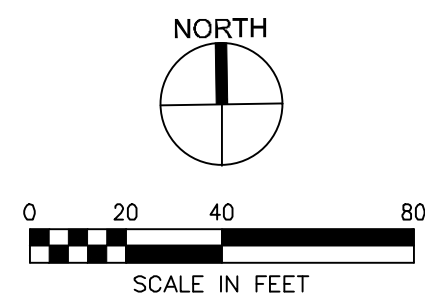
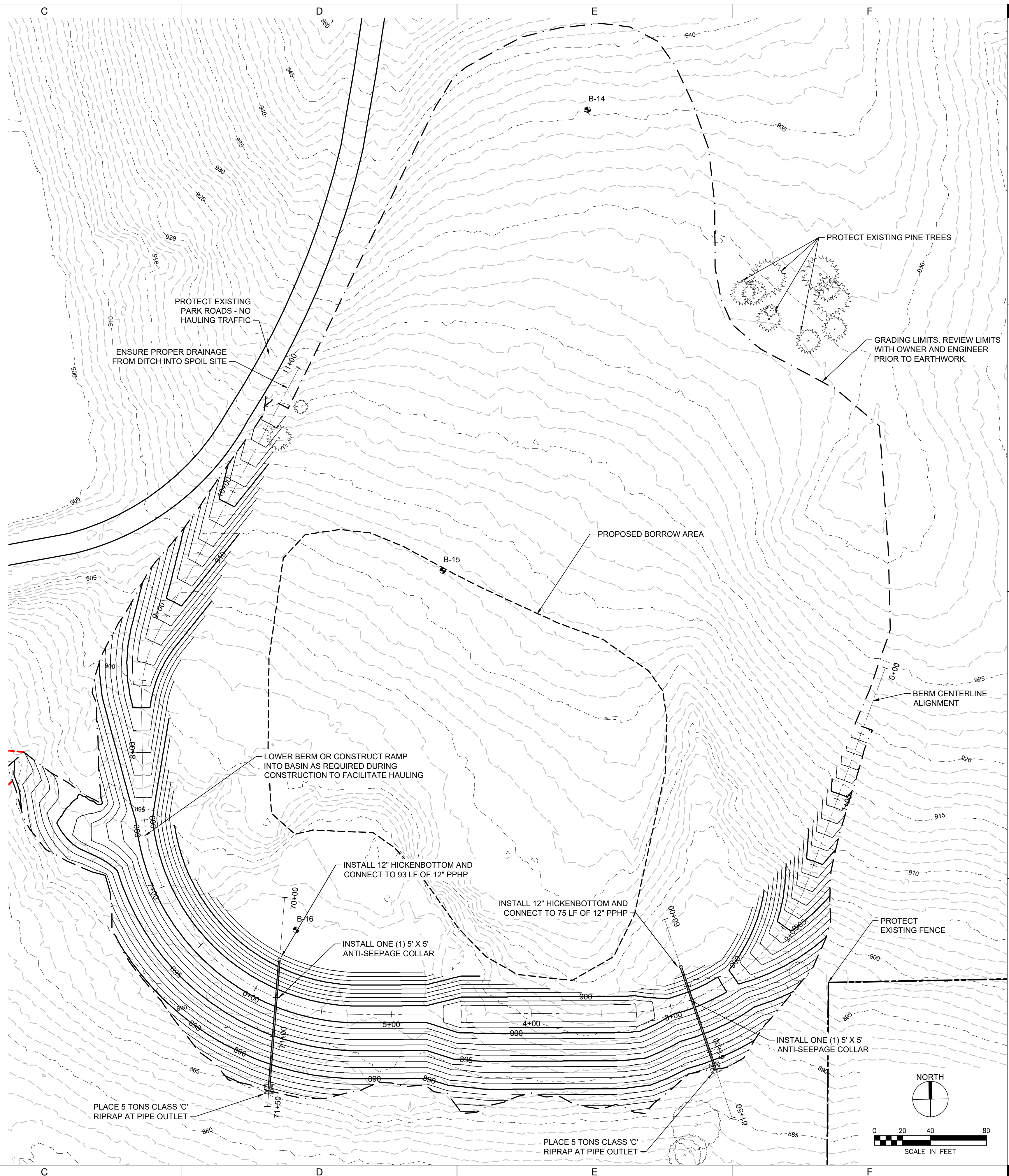
NW SPOILS GRADING PLAN

C206



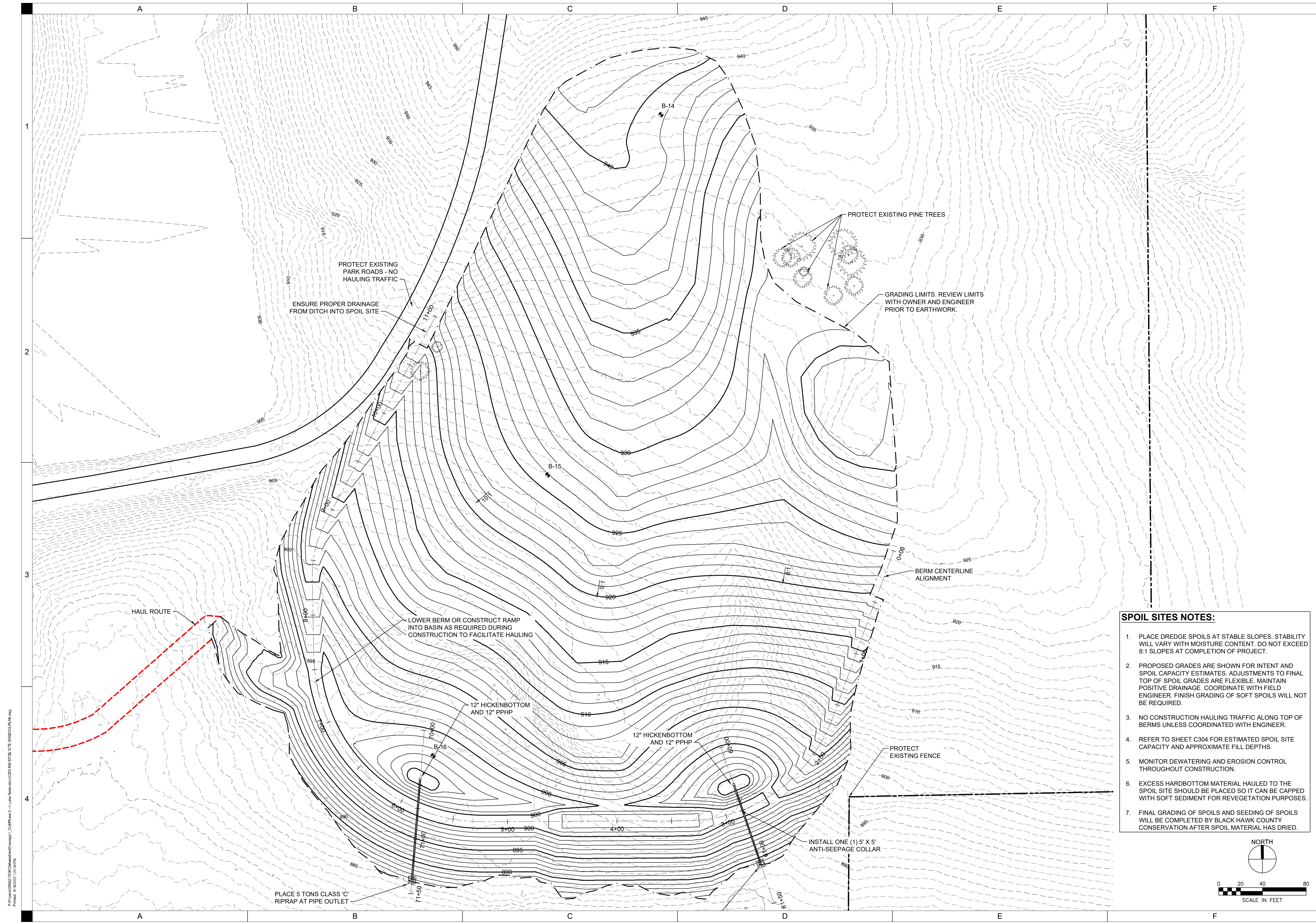
SPOIL SITE NOTES:

- TREES SHOWN ON THIS SHEET DO NOT REPRESENT ALL TREES IN THE PROJECT AREA. CONTRACTOR SHALL VISIT SITE AND FAMILIARIZE THEMSELVES WITH CURRENT CONDITIONS.
- CLEAR, GRUB, AND BURN TREES AND BRUSH BETWEEN NOVEMBER 1-MARCH 31. NO CLEARING ALLOWED OUTSIDE THESE DATES DUE TO ENDANGERED BAT PROTECTION.
- STRIP AND STOCKPILE 6" OF TOPSOIL FROM PROPOSED BERM FOOTPRINT AND RESPREAD ON BERM SLOPES ONCE CONSTRUCTED. AN ESTIMATED QUANTITY OF 1,230 CY IS BASED ON SUFFICIENT MATERIAL BEING SOURCED FROM THE BERM FOOTPRINT. IF ADDITIONAL TOPSOIL IS NEEDED TO RESPREAD ON BERM SLOPES, SOURCE FROM WITHIN BORROW AREA.
- MATERIAL TO CONSTRUCT THE BERM SHALL BE SOURCED FROM WITHIN THE SPOIL SITE LIMITS IN THE DESIGNATED BORROW AREA. CONTRACTOR TO COORDINATE AND GAIN PRIOR APPROVAL FROM THE ENGINEER IF BERM FILL IS SOURCED FROM A DIFFERENT LOCATION.
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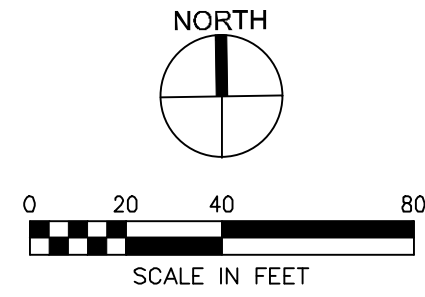


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FIELD BOOK	

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- SPOIL SITES NOTES:**
1. PLACE DREDGE SPOILS AT STABLE SLOPES. STABILITY WILL VARY WITH MOISTURE CONTENT. DO NOT EXCEED 8:1 SLOPES AT COMPLETION OF PROJECT.
 2. PROPOSED GRADES ARE SHOWN FOR INTENT AND SPOIL CAPACITY ESTIMATES. ADJUSTMENTS TO FINAL TOP OF SPOIL GRADES ARE FLEXIBLE. MAINTAIN POSITIVE DRAINAGE. COORDINATE WITH FIELD ENGINEER. FINISH GRADING OF SOFT SPOILS WILL NOT BE REQUIRED.
 3. NO CONSTRUCTION HAULING TRAFFIC ALONG TOP OF BERMS UNLESS COORDINATED WITH ENGINEER.
 4. REFER TO SHEET C304 FOR ESTIMATED SPOIL SITE CAPACITY AND APPROXIMATE FILL DEPTHS.
 5. MONITOR DEWATERING AND EROSION CONTROL THROUGHOUT CONSTRUCTION.
 6. EXCESS HARDBOTTOM MATERIAL HAULED TO THE SPOIL SITE SHOULD BE PLACED SO IT CAN BE CAPPED WITH SOFT SEDIMENT FOR REVEGETATION PURPOSES.
 7. FINAL GRADING OF SPOILS AND SEEDING OF SPOILS WILL BE COMPLETED BY BLACK HAWK COUNTY CONSERVATION AFTER SPOIL MATERIAL HAS DRIED.



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CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

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EAST SPOILS GRADING PLAN

C208



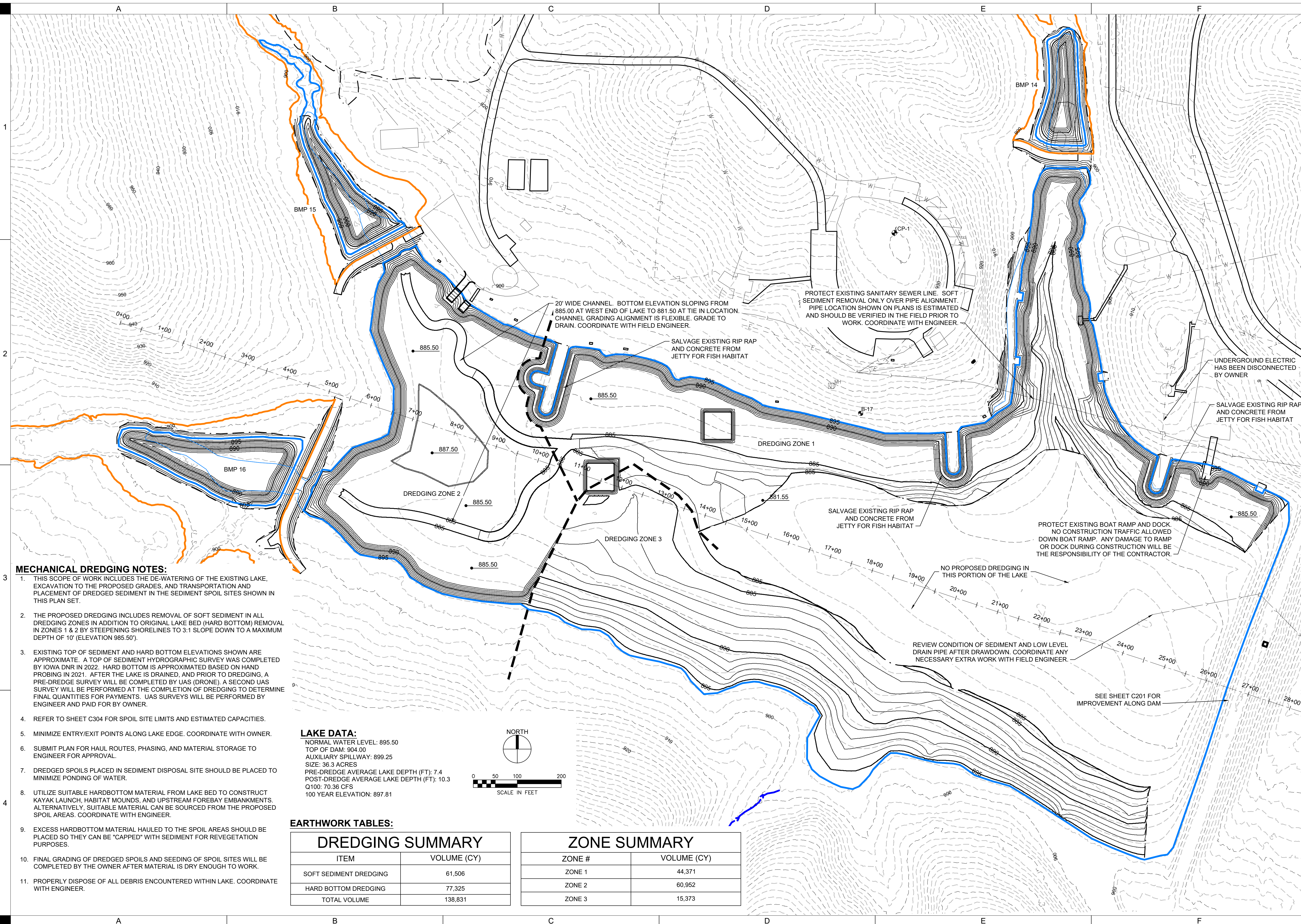
CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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PROJECT NUMBER	4213030
FIELD BOOK	

LAKE BOTTOM
DREDGING AND
GRADING PLAN

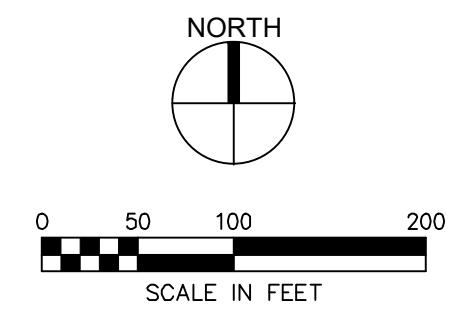
C301



MECHANICAL DREDGING NOTES:

- THIS SCOPE OF WORK INCLUDES THE DE-WATERING OF THE EXISTING LAKE, EXCAVATION TO THE PROPOSED GRADES, AND TRANSPORTATION AND PLACEMENT OF DREDGED SEDIMENT IN THE SEDIMENT SPOIL SITES SHOWN IN THIS PLAN SET.
- THE PROPOSED DREDGING INCLUDES REMOVAL OF SOFT SEDIMENT IN ALL DREDGING ZONES IN ADDITION TO ORIGINAL LAKE BED (HARD BOTTOM) REMOVAL IN ZONES 1 & 2 BY STEEPENING SHORELINES TO 3:1 SLOPE DOWN TO A MAXIMUM DEPTH OF 10' (ELEVATION 985.50').
- EXISTING TOP OF SEDIMENT AND HARD BOTTOM ELEVATIONS SHOWN ARE APPROXIMATE. A TOP OF SEDIMENT HYDROGRAPHIC SURVEY WAS COMPLETED BY IOWA DNR IN 2022. HARD BOTTOM IS APPROXIMATED BASED ON HAND PROBING IN 2021. AFTER THE LAKE IS DRAINED, AND PRIOR TO DREDGING, A PRE-DREDGE SURVEY WILL BE COMPLETED BY UAS (DRONE). A SECOND UAS SURVEY WILL BE PERFORMED AT THE COMPLETION OF DREDGING TO DETERMINE FINAL QUANTITIES FOR PAYMENTS. UAS SURVEYS WILL BE PERFORMED BY ENGINEER AND PAID FOR BY OWNER.
- REFER TO SHEET C304 FOR SPOIL SITE LIMITS AND ESTIMATED CAPACITIES.
- MINIMIZE ENTRY/EXIT POINTS ALONG LAKE EDGE. COORDINATE WITH OWNER.
- SUBMIT PLAN FOR HAUL ROUTES, PHASING, AND MATERIAL STORAGE TO ENGINEER FOR APPROVAL.
- DREDGED SPOILS PLACED IN SEDIMENT DISPOSAL SITE SHOULD BE PLACED TO MINIMIZE PONDING OF WATER.
- UTILIZE SUITABLE HARBOTTOM MATERIAL FROM LAKE BED TO CONSTRUCT KAYAK LAUNCH, HABITAT MOUNDS, AND UPSTREAM FOREBAY EMBANKMENTS. ALTERNATIVELY, SUITABLE MATERIAL CAN BE SOURCED FROM THE PROPOSED SPOIL AREAS. COORDINATE WITH ENGINEER.
- EXCESS HARBOTTOM MATERIAL HAULED TO THE SPOIL AREAS SHOULD BE PLACED SO THEY CAN BE "CAPPED" WITH SEDIMENT FOR REVEGETATION PURPOSES.
- FINAL GRADING OF DREDGED SPOILS AND SEEDING OF SPOIL SITES WILL BE COMPLETED BY THE OWNER AFTER MATERIAL IS DRY ENOUGH TO WORK.
- PROPERLY DISPOSE OF ALL DEBRIS ENCOUNTERED WITHIN LAKE. COORDINATE WITH ENGINEER.

LAKE DATA:
 NORMAL WATER LEVEL: 895.50
 TOP OF DAM: 904.00
 AUXILIARY SPILLWAY: 899.25
 SIZE: 36.3 ACRES
 PRE-DREDGE AVERAGE LAKE DEPTH (FT): 7.4
 POST-DREDGE AVERAGE LAKE DEPTH (FT): 10.3
 Q100: 70.36 CFS
 100 YEAR ELEVATION: 897.81

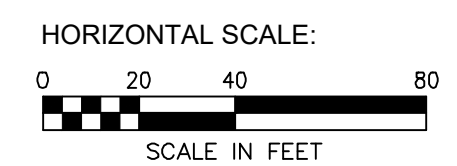
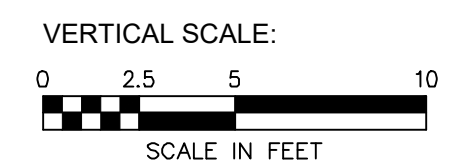
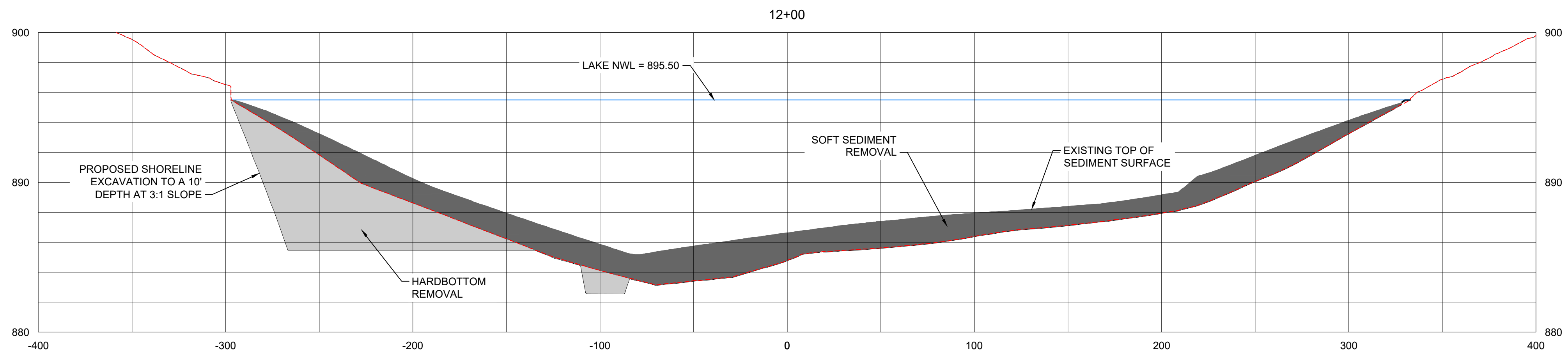
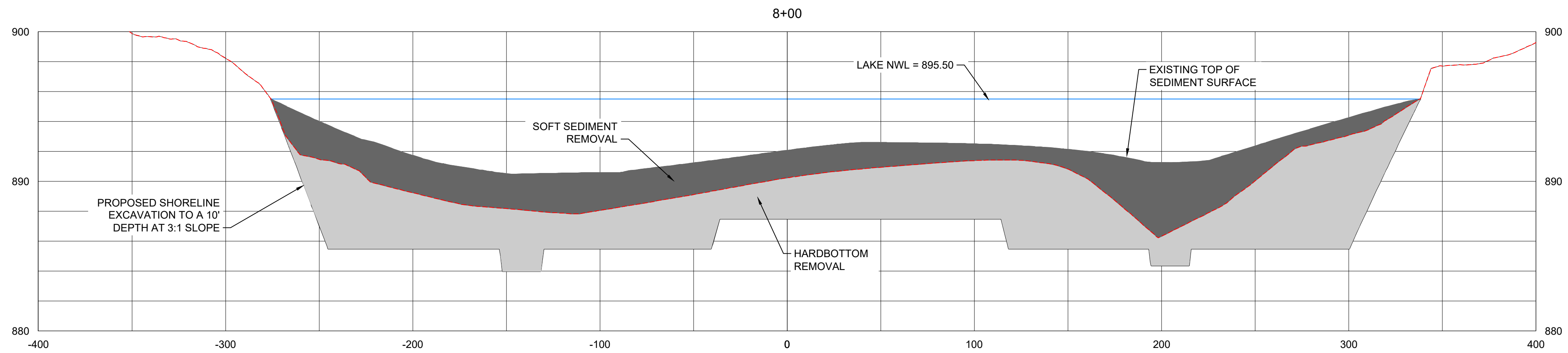
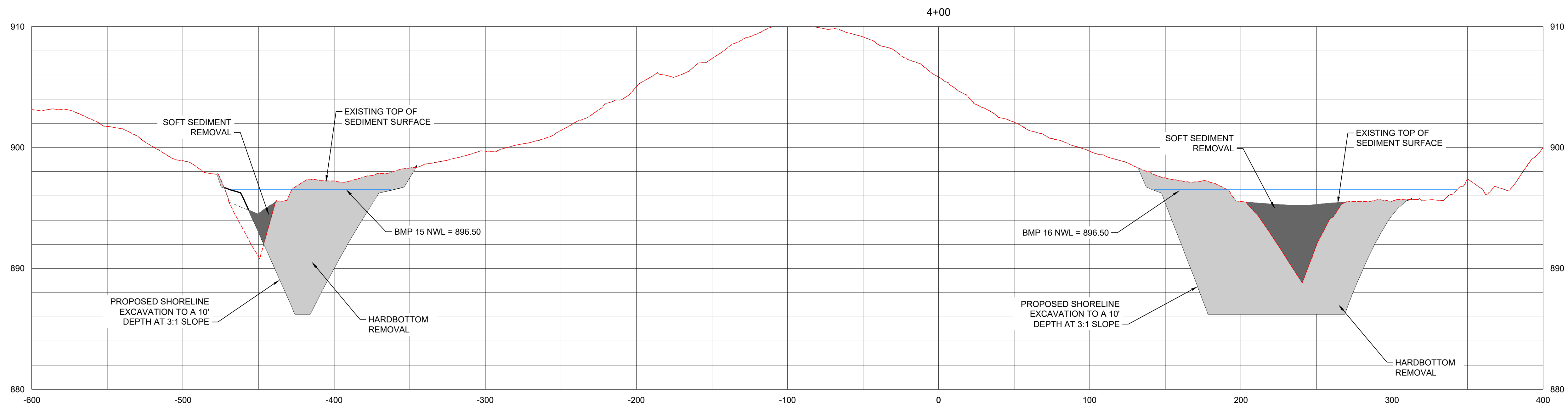


EARTHWORK TABLES:

DREDGING SUMMARY	
ITEM	VOLUME (CY)
SOFT SEDIMENT DREDGING	61,506
HARD BOTTOM DREDGING	77,325
TOTAL VOLUME	138,831

ZONE SUMMARY	
ZONE #	VOLUME (CY)
ZONE 1	44,371
ZONE 2	60,952
ZONE 3	15,373

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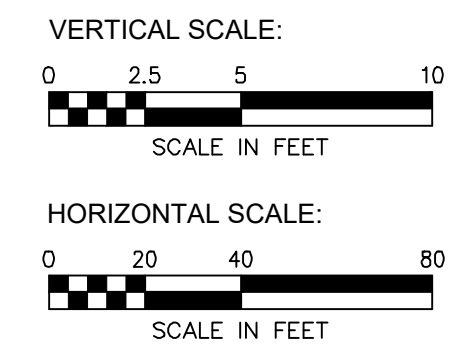
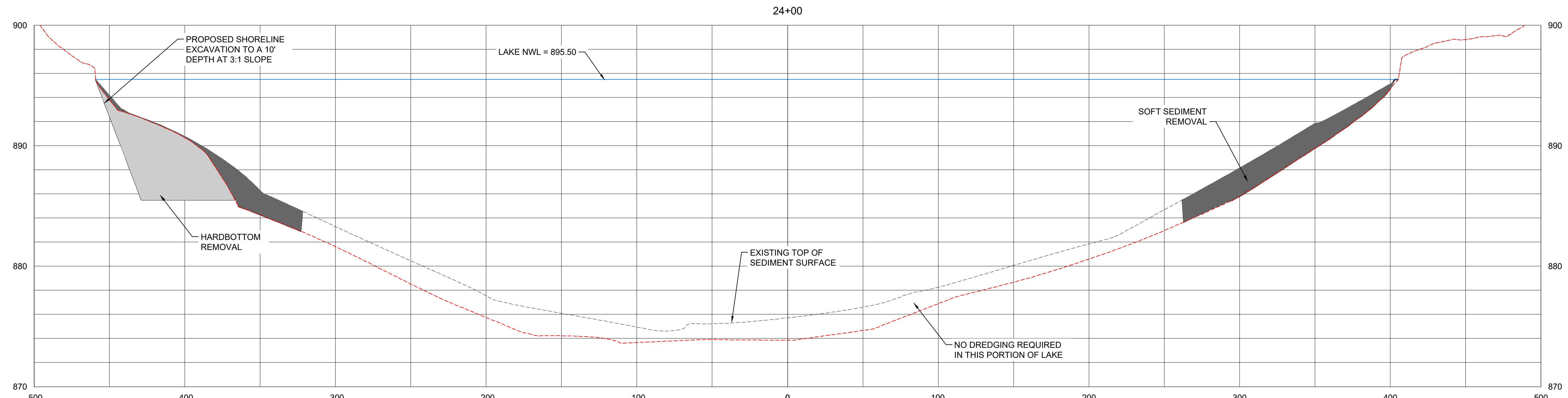
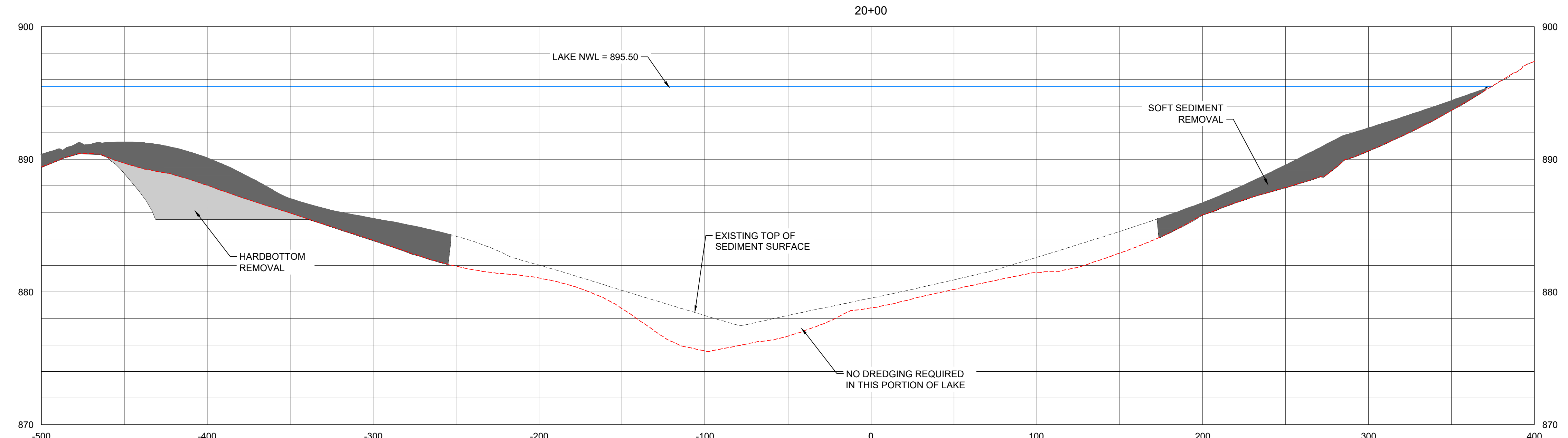
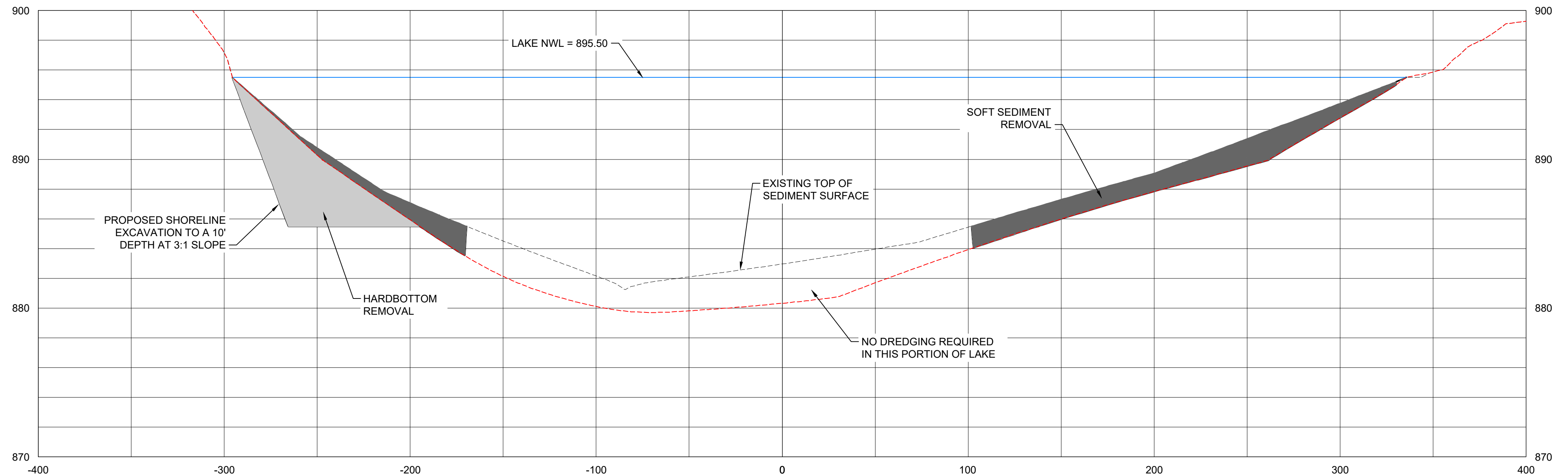
CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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LAKE BOTTOM
CROSS SECTIONS

C302



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CASEY LAKE RESTORATION
 BLACK HAWK COUNTY CONSERVATION
 HICKORY HILLS PARK, TAMA COUNTY

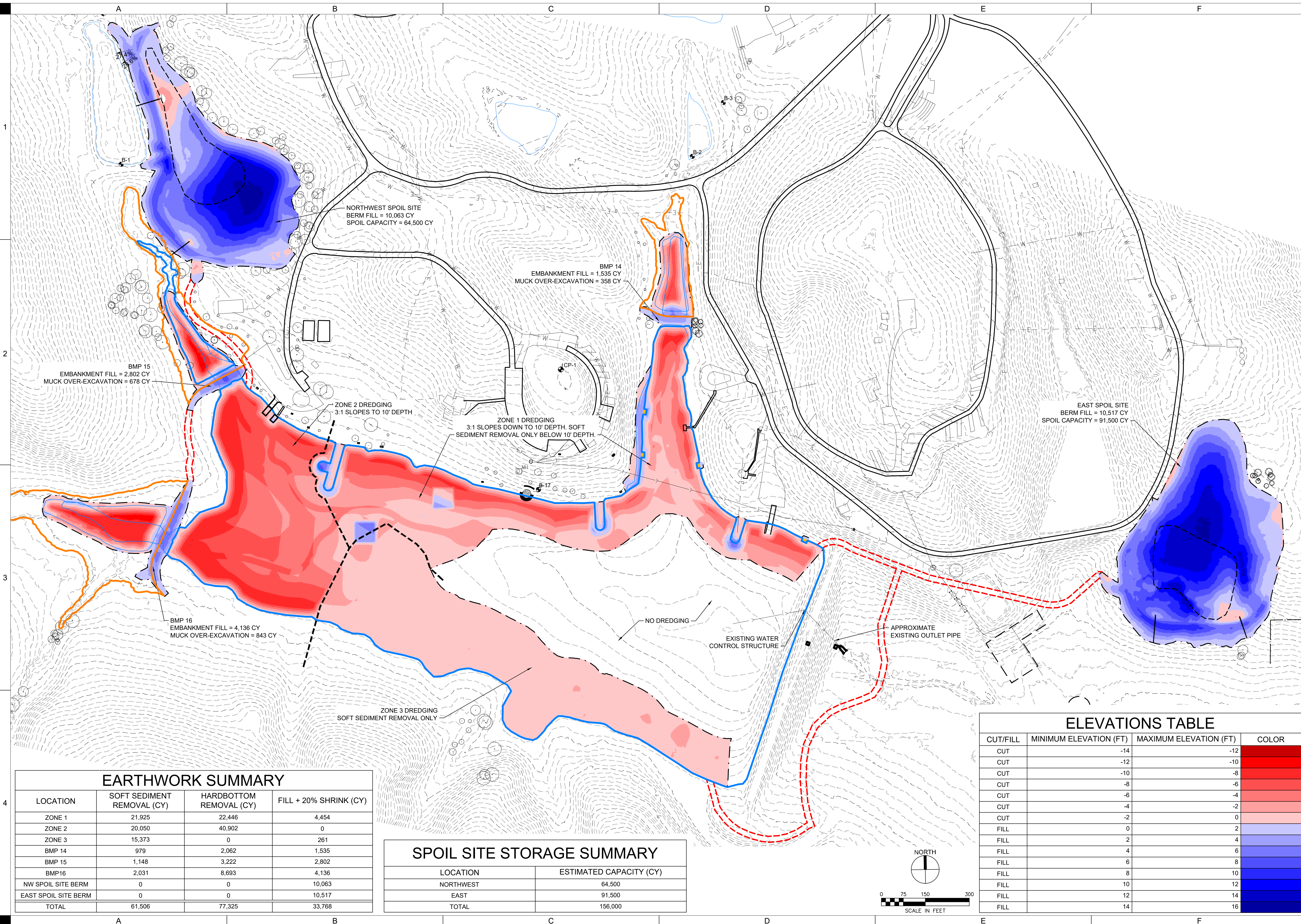
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PROJECT NUMBER	4213030
FIELD BOOK	

LAKE BOTTOM CROSS SECTIONS

C303



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APPROVED: LTM
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 08/18/2023
PROJECT NO: 4213030
FIELD BOOK: --
CLIENT NO: --



EARTHWORK SUMMARY

LOCATION	SOFT SEDIMENT REMOVAL (CY)	HARDBOTTOM REMOVAL (CY)	FILL + 20% SHRINK (CY)
ZONE 1	21,925	22,446	4,454
ZONE 2	20,050	40,902	0
ZONE 3	15,373	0	261
BMP 14	979	2,062	1,535
BMP 15	1,148	3,222	2,802
BMP 16	2,031	8,693	4,136
NW SPOIL SITE BERM	0	0	10,063
EAST SPOIL SITE BERM	0	0	10,517
TOTAL	61,506	77,325	33,768

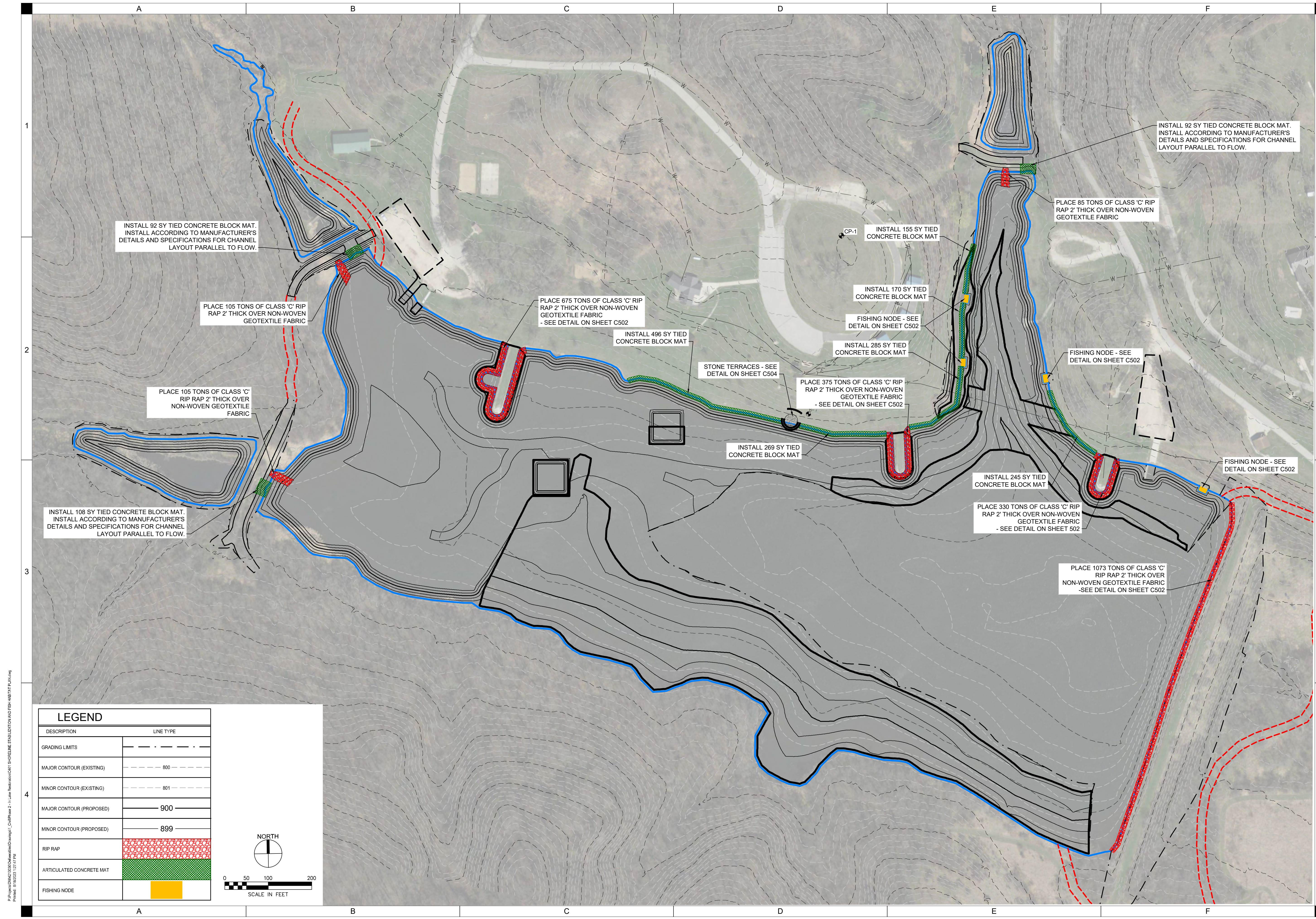
SPOIL SITE STORAGE SUMMARY

LOCATION	ESTIMATED CAPACITY (CY)
NORTHWEST	64,500
EAST	91,500
TOTAL	156,000

ELEVATIONS TABLE

CUT/FILL	MINIMUM ELEVATION (FT)	MAXIMUM ELEVATION (FT)	COLOR
CUT	-14	-12	Dark Blue
CUT	-12	-10	Blue
CUT	-10	-8	Light Blue
CUT	-8	-6	Very Light Blue
CUT	-6	-4	White
CUT	-4	-2	Light Pink
FILL	0	2	White
FILL	2	4	Light Pink
FILL	4	6	Pink
FILL	6	8	Red
FILL	8	10	Dark Red
FILL	10	12	Red
FILL	12	14	Dark Red
FILL	14	16	Dark Red

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INSTALL 92 SY TIED CONCRETE BLOCK MAT. INSTALL ACCORDING TO MANUFACTURER'S DETAILS AND SPECIFICATIONS FOR CHANNEL LAYOUT PARALLEL TO FLOW.

PLACE 105 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC

PLACE 105 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC

INSTALL 108 SY TIED CONCRETE BLOCK MAT. INSTALL ACCORDING TO MANUFACTURER'S DETAILS AND SPECIFICATIONS FOR CHANNEL LAYOUT PARALLEL TO FLOW.

PLACE 675 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC - SEE DETAIL ON SHEET C502

INSTALL 496 SY TIED CONCRETE BLOCK MAT

STONE TERRACES - SEE DETAIL ON SHEET C504

INSTALL 269 SY TIED CONCRETE BLOCK MAT

PLACE 375 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC - SEE DETAIL ON SHEET C502

INSTALL 155 SY TIED CONCRETE BLOCK MAT

INSTALL 170 SY TIED CONCRETE BLOCK MAT

FISHING NODE - SEE DETAIL ON SHEET C502

INSTALL 285 SY TIED CONCRETE BLOCK MAT

FISHING NODE - SEE DETAIL ON SHEET C502

INSTALL 245 SY TIED CONCRETE BLOCK MAT

PLACE 330 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC - SEE DETAIL ON SHEET 502

FISHING NODE - SEE DETAIL ON SHEET C502

PLACE 1073 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC - SEE DETAIL ON SHEET C502

INSTALL 92 SY TIED CONCRETE BLOCK MAT. INSTALL ACCORDING TO MANUFACTURER'S DETAILS AND SPECIFICATIONS FOR CHANNEL LAYOUT PARALLEL TO FLOW.

PLACE 85 TONS OF CLASS 'C' RIP RAP 2' THICK OVER NON-WOVEN GEOTEXTILE FABRIC

LEGEND

DESCRIPTION	LINE TYPE
GRADING LIMITS	---
MAJOR CONTOUR (EXISTING)	----- 800
MINOR CONTOUR (EXISTING)	----- 801
MAJOR CONTOUR (PROPOSED)	----- 900
MINOR CONTOUR (PROPOSED)	----- 899
RIP RAP	[Red pattern]
ARTICULATED CONCRETE MAT	[Green pattern]
FISHING NODE	[Yellow square]

NORTH

0 50 100 200
SCALE IN FEET

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CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

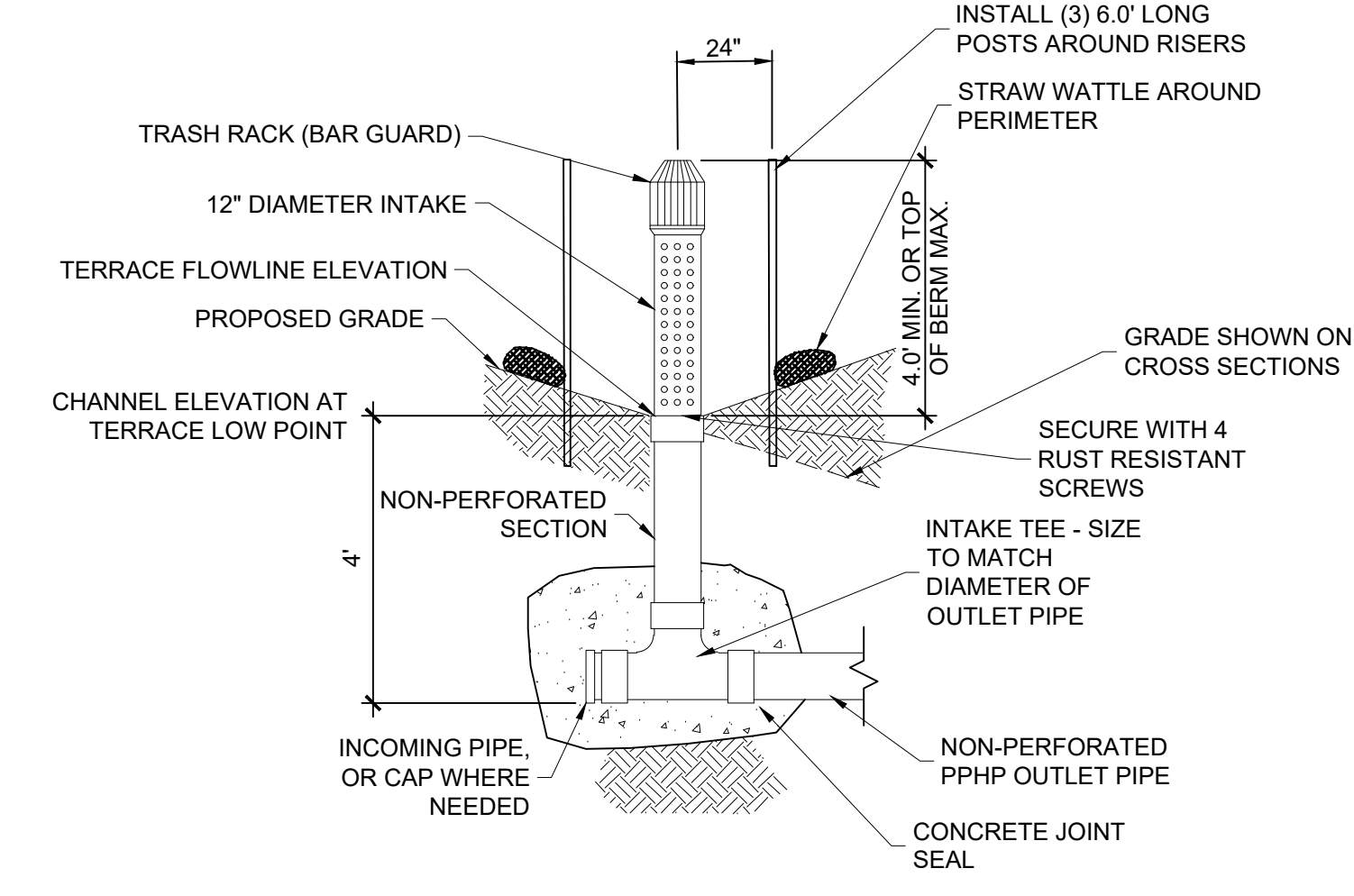
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ISSUED FOR	CONSTRUCTION DOCUMENTS
ISSUE DATE	08/19/2023
PROJECT NUMBER	4213030
FIELD BOOK	---



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APPROVED:	LTM
ISSUED FOR:	CONSTRUCTION DOCUMENTS
DATE:	08/18/2023
PROJECT NO.:	4213030
FIELD BOOK:	---
CLIENT NO.:	---

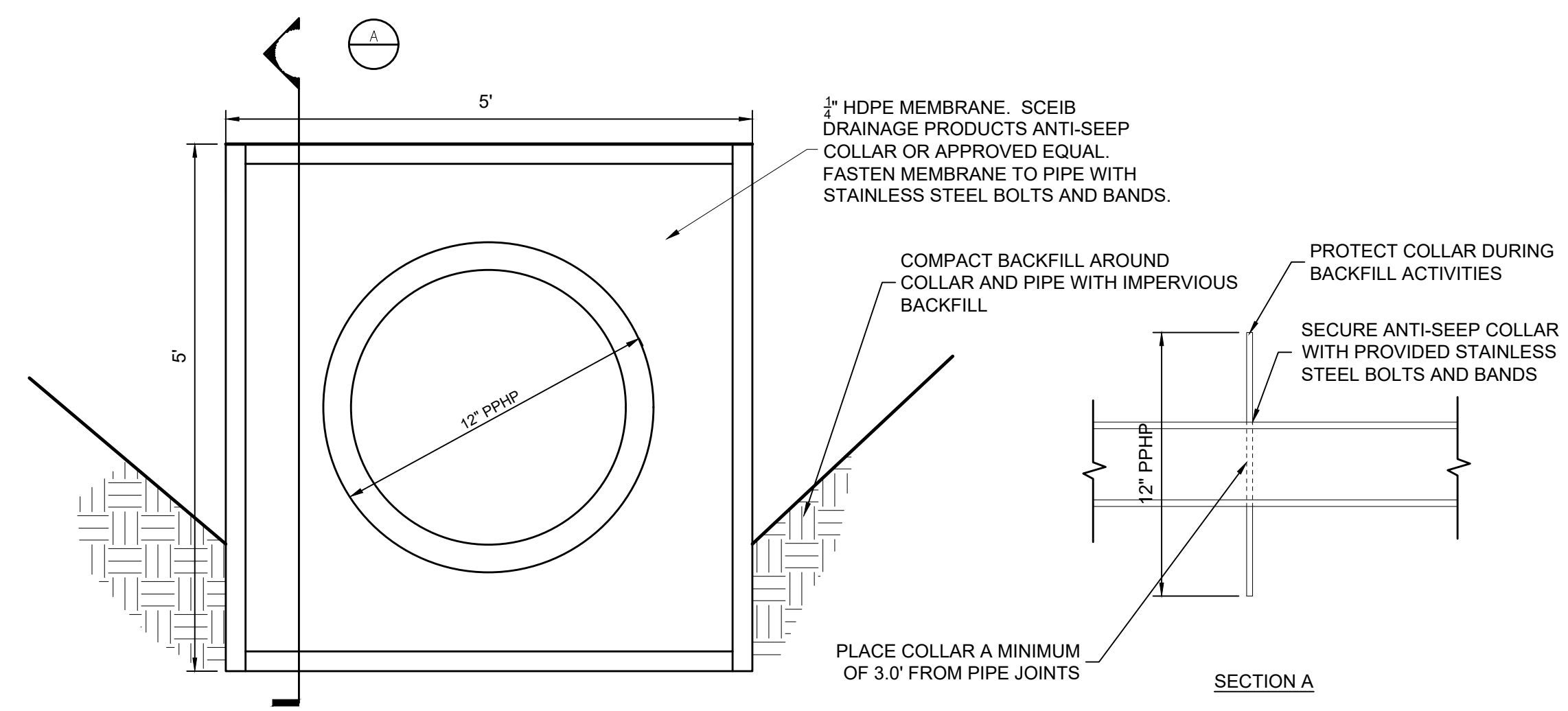
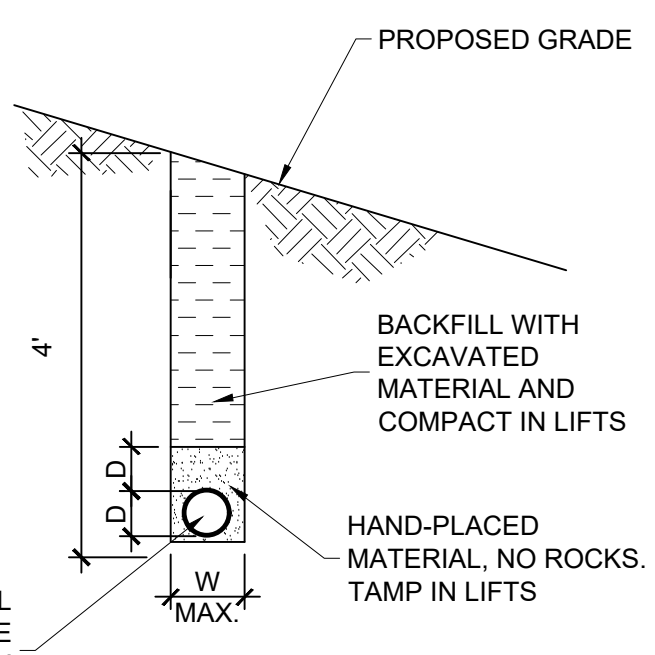
CONSTRUCTION
DETAILS

C501



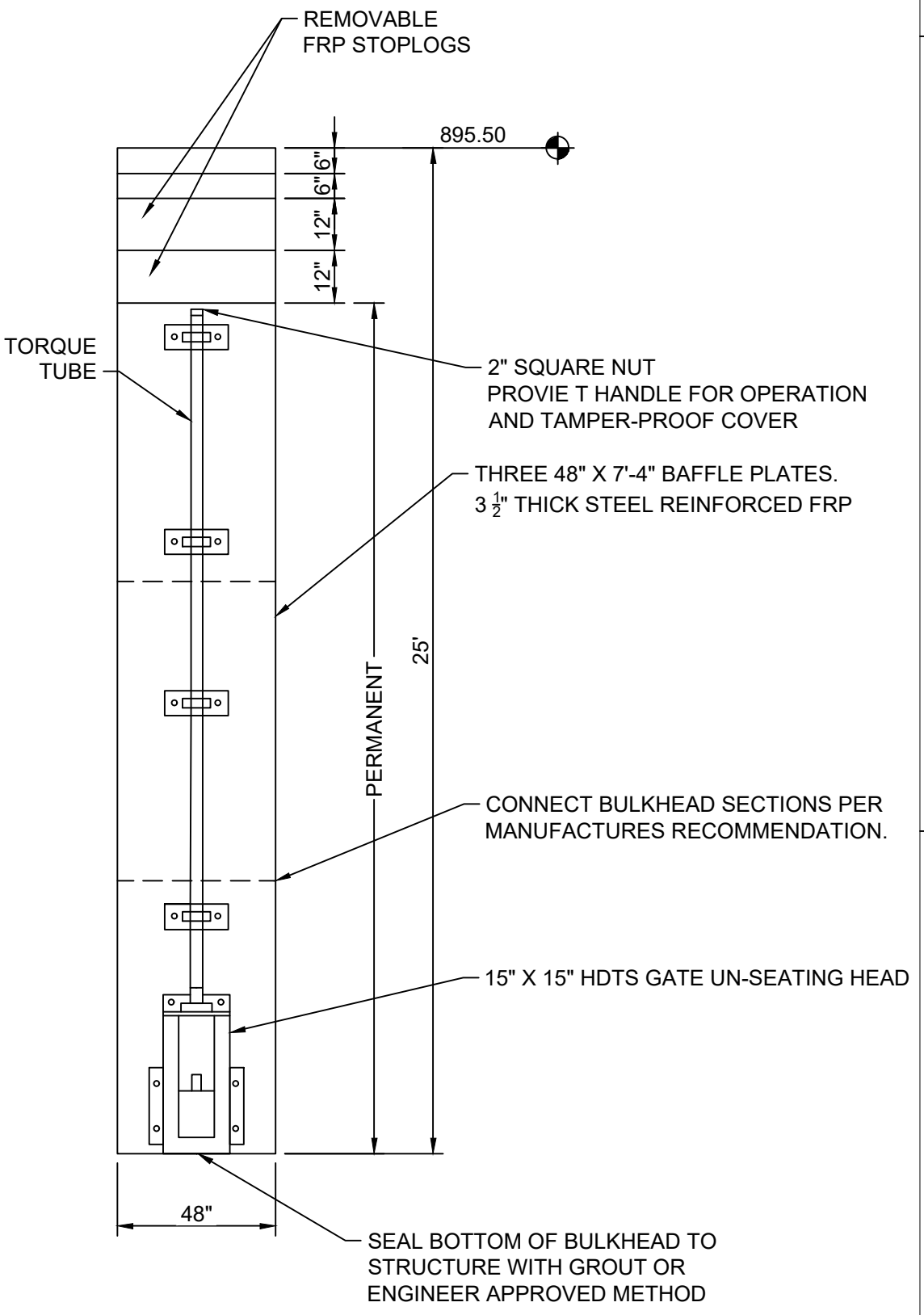
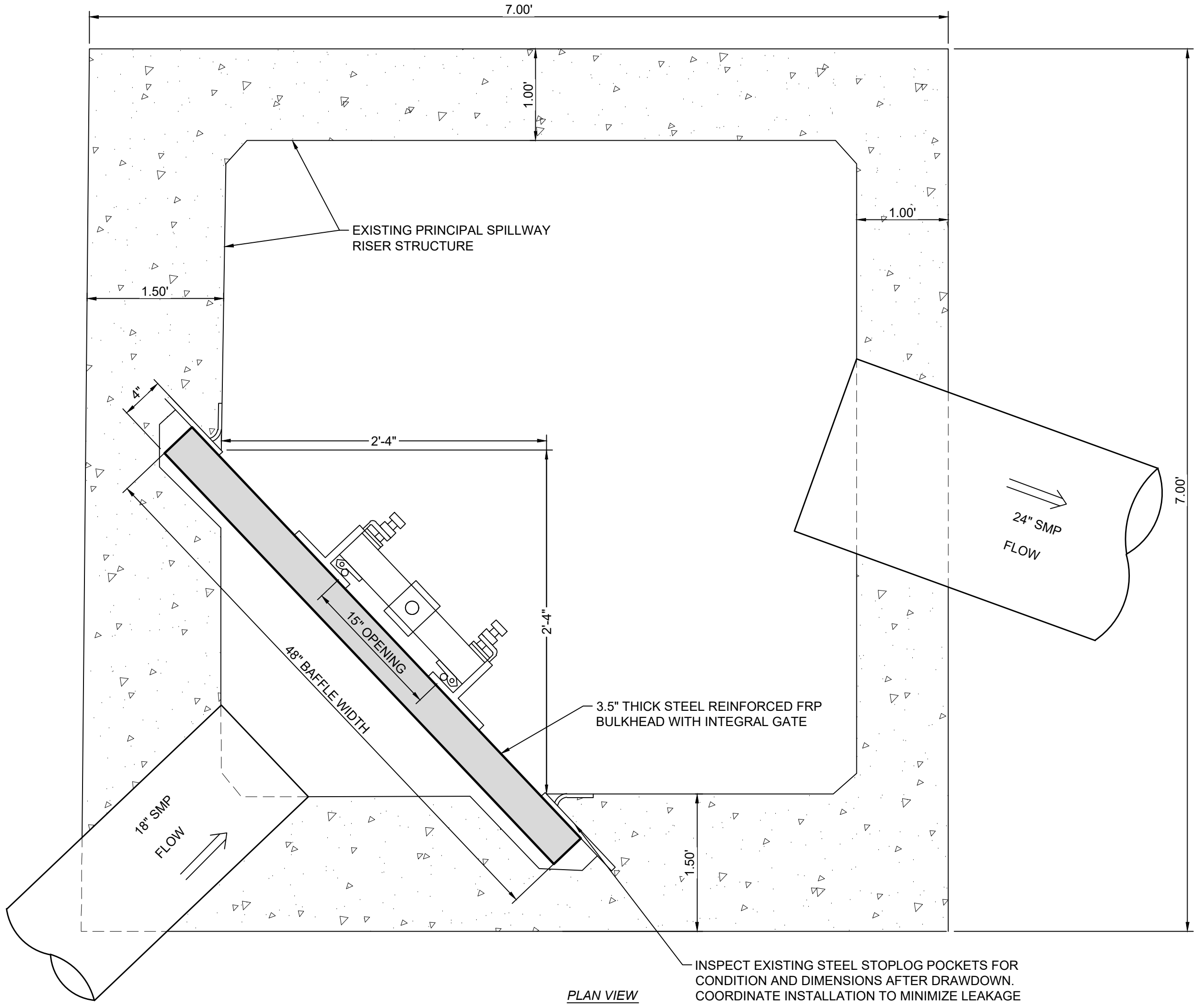
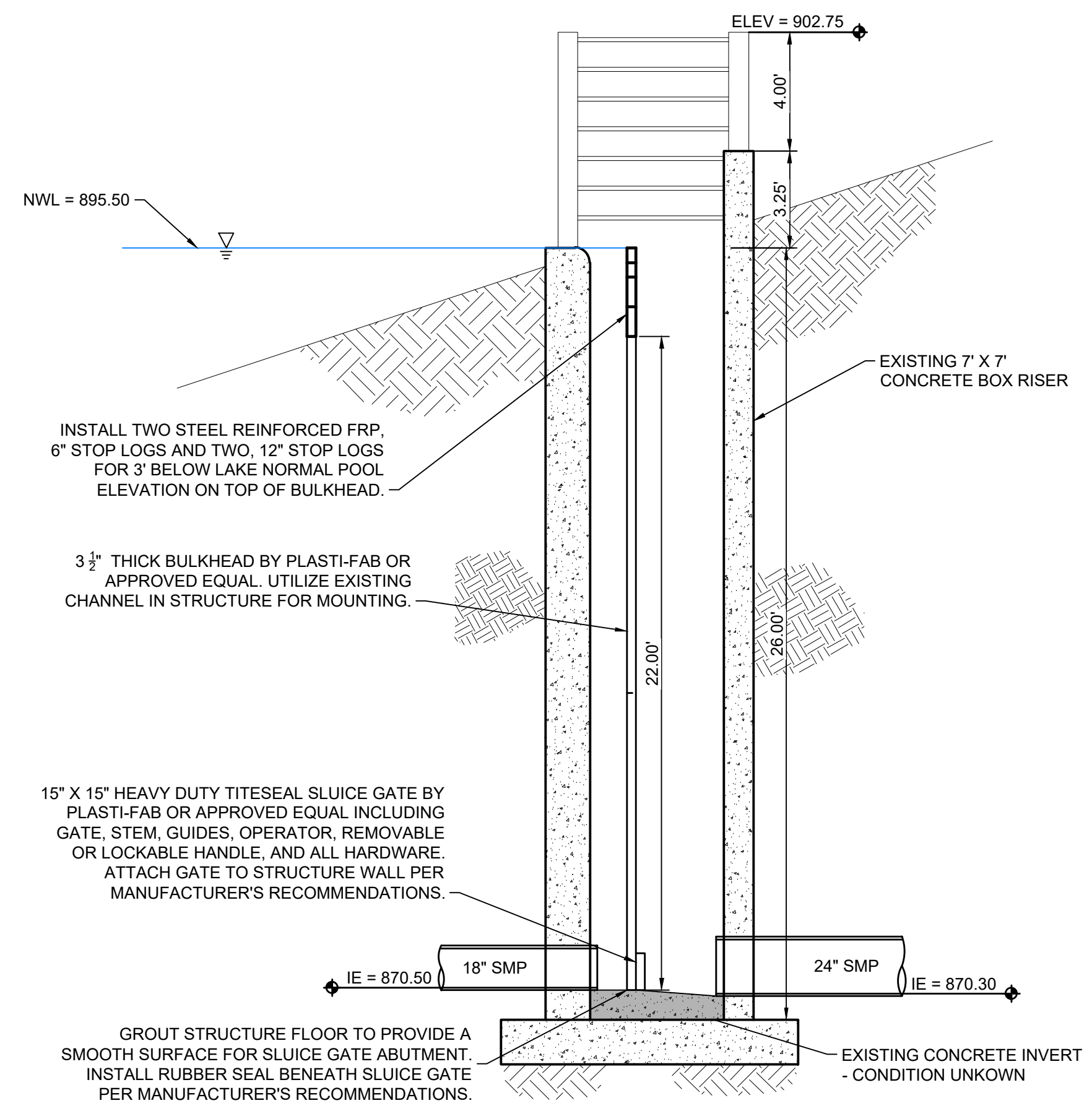
D	W MAX.
4"	24"
8"	24"
10"	24"
12"	36"
18"	36"

NON-PERFORATED DUAL WALL HDPE PIPE
SLOPE CONTINUOUSLY TOWARD OUTLET, 2% MIN.



A2 HICKENBOTTOM RISER
NOT TO SCALE

D2 HDPE ANTI-SEEPAGE COLLAR
NOT TO SCALE



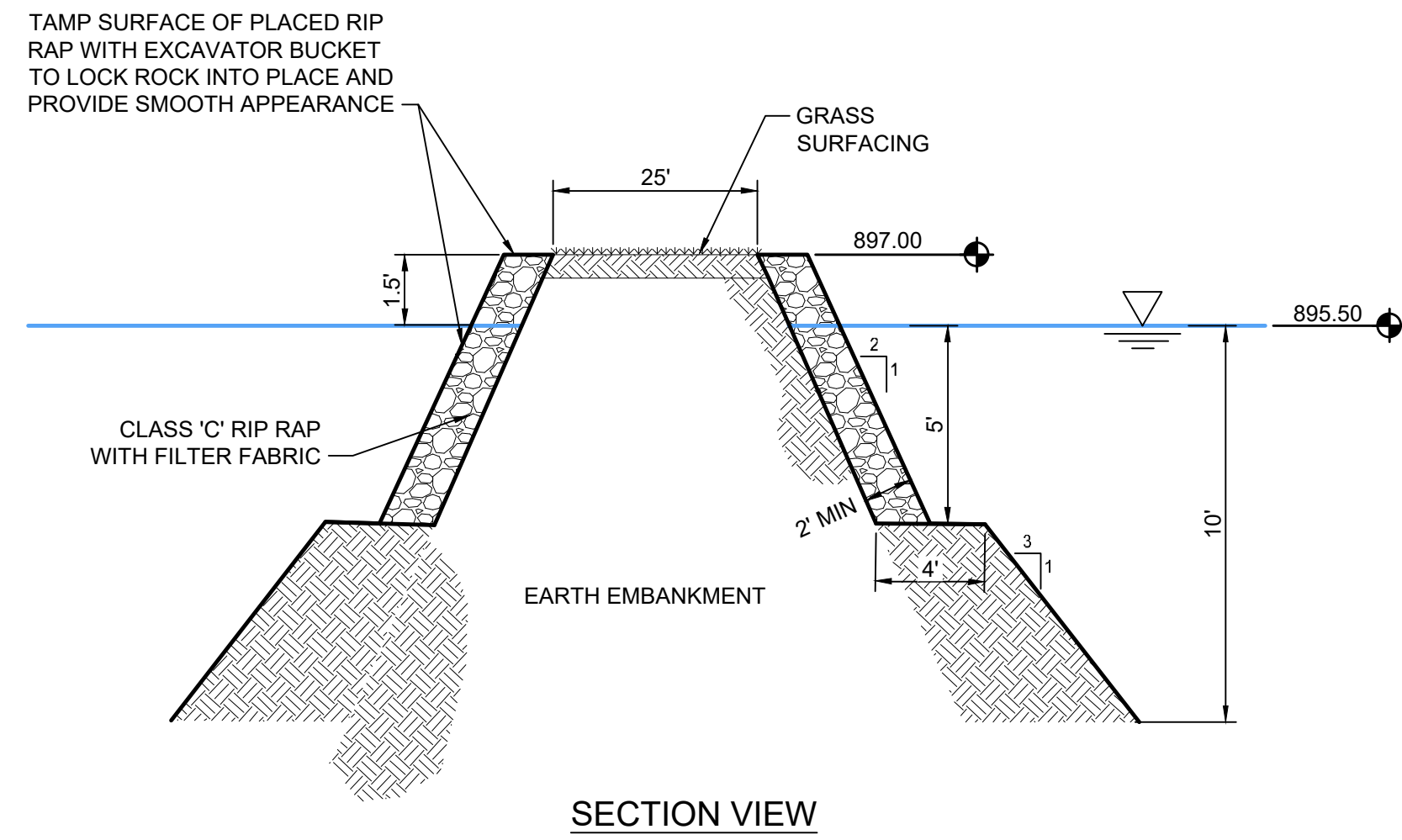
A4 PRINCIPAL SPILLWAY RISER MODIFICATIONS
NOT TO SCALE

BULKHEAD

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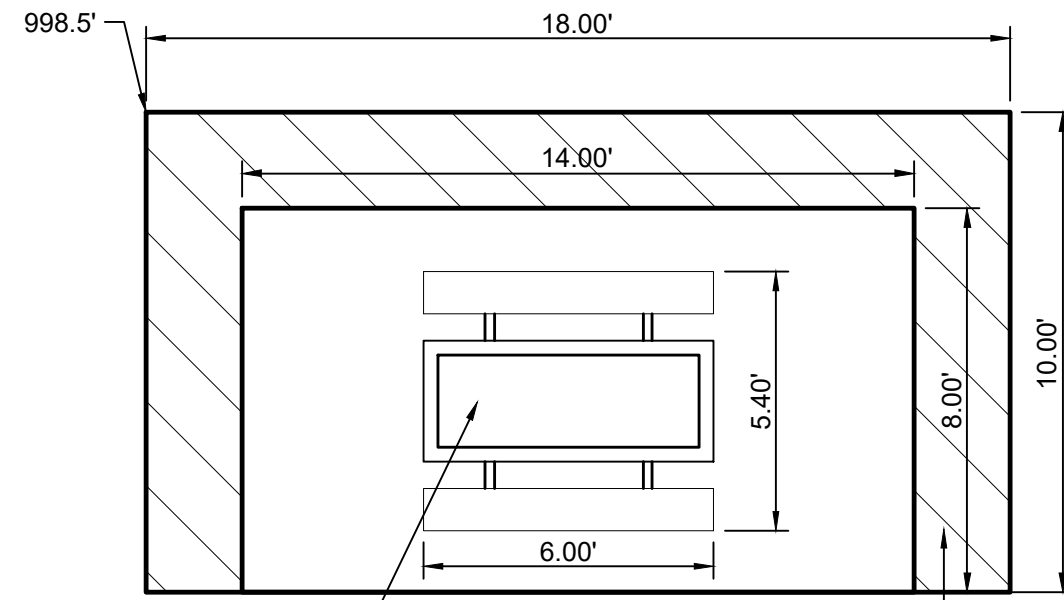
NOTES:

1. REMOVE AND SALVAGE EXISTING CONCRETE ON JETTIES.
2. STRIP TOPSOIL AND EXISTING VEGETATION ON JETTY TOP.
3. PRIOR TO FILL PLACEMENT, SCARIFY EXISTING GRADE TO A DEPTH OF 9" AND RECOMPACT. UTILIZE VIRGIN LAKE BED MATERIAL TO BUILD OUT JETTY WIDTH AND ELEVATION.

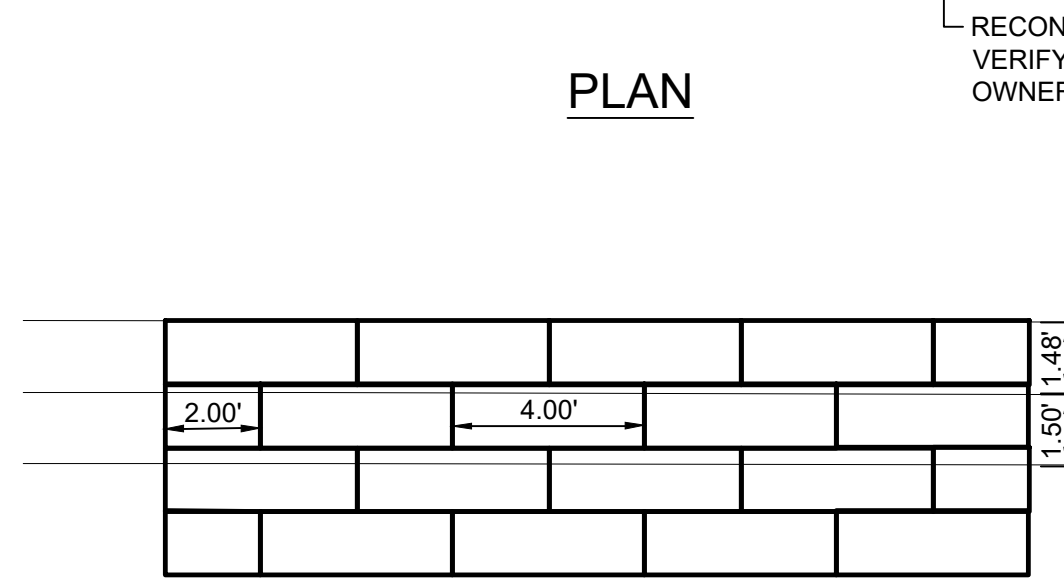


SECTION VIEW

A2 FISHING JETTY
NOT TO SCALE

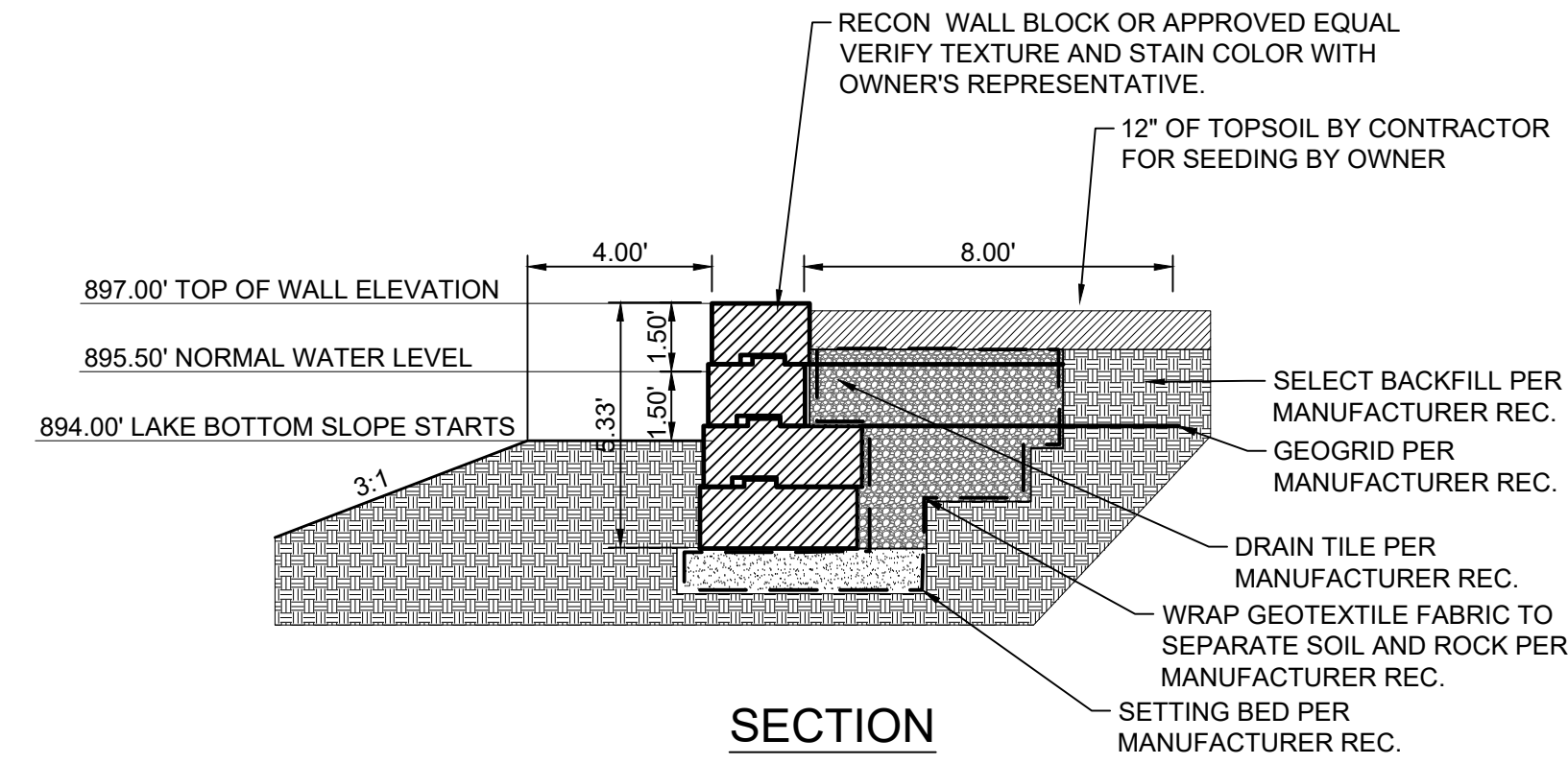


PLAN

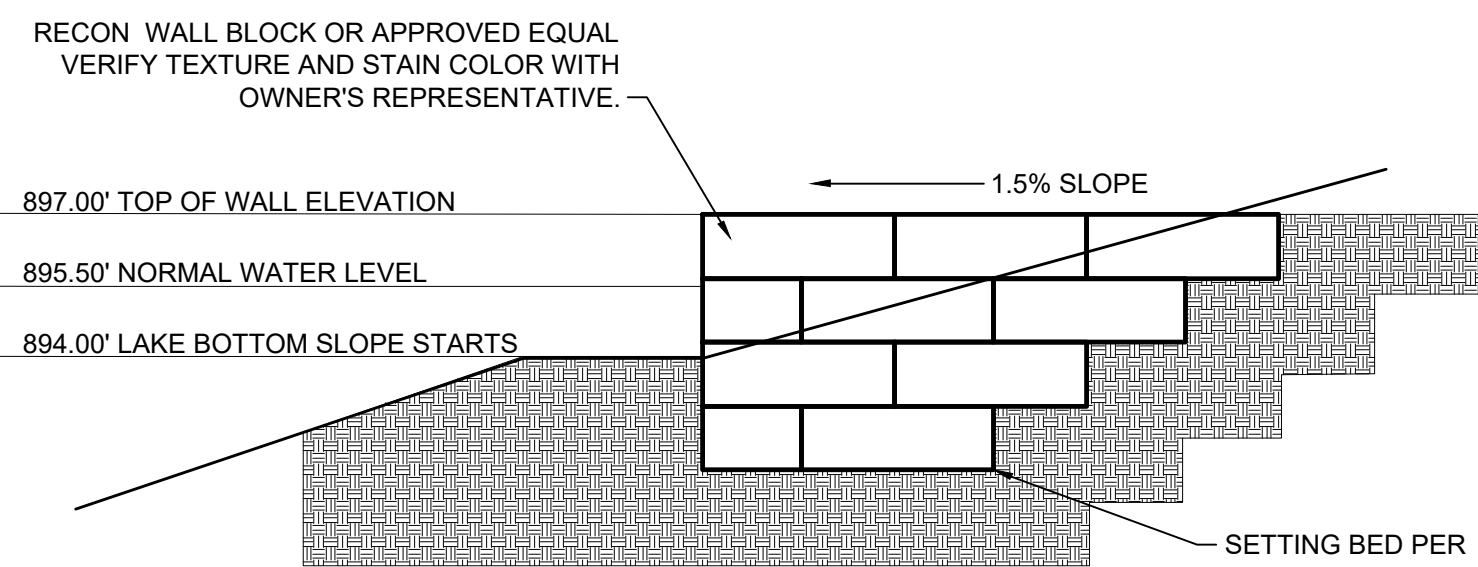


FRONT ELEVATION

C2 FISHING NODES
1" = 4'



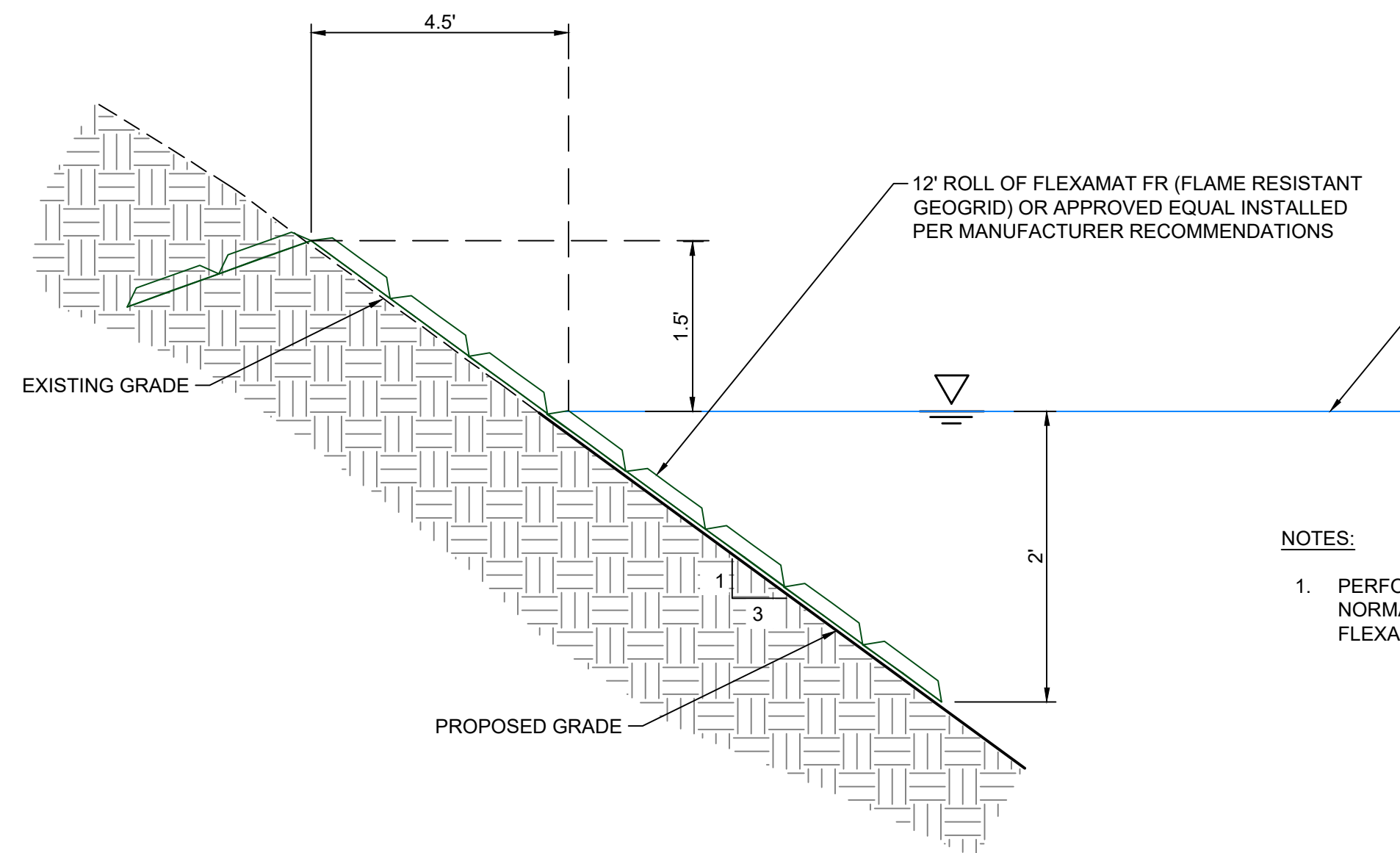
SECTION



SIDE ELEVATION

GENERAL NOTES:

1. RECON WALL BLOCK PRODUCTS OR APPROVED EQUAL: VERIFY TEXTURE WITH BLACK HAWK COUNTY REPRESENTATIVE.
2. INSTALL TO MANUFACTURER'S RECOMMENDATIONS. DRAWINGS SHALL BE ENGINEERED, STAMPED AND DESIGNED BY RECON WALL SYSTEMS, INC. OR APPROVED EQUAL.
3. BLOCK SIZES AND LAYOUT SHOWN ARE FOR REFERENCE ONLY.
4. SUBMIT SHOP DRAWINGS AND DESIGN BY LICENSED PROFESSIONAL ENGINEER. VERIFY WITH RECON WALL SYSTEMS INC.
5. WALL SEALING AND COLOR STAINING REQUIRED AFTER INSTALL. VERIFY SELECTED COLOR OPTIONS WITH BLACK HAWK COUNTY REP. TK PRODUCTS OR APPROVED EQUAL. APPLY TO MANUFACTURER'S RECOMMENDATIONS. TK PRODUCT: 1-800-441-2129

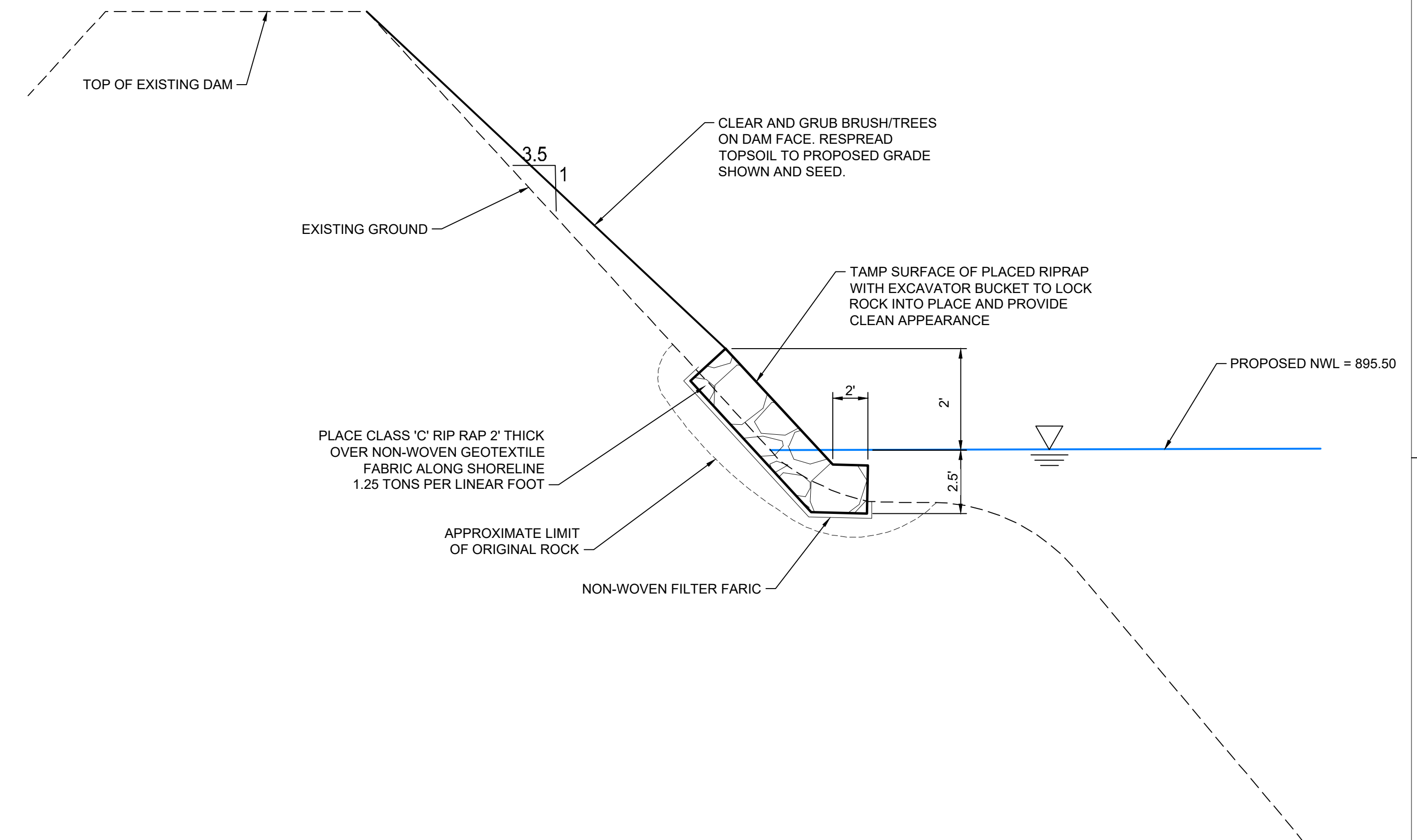


FLEXAMAT DETAIL

A4 FLEXAMAT DETAIL
NOT TO SCALE

NOTES:

1. PERFORM SEED BED PREP AND SEED AREA ABOVE NORMAL WATER LEVEL (ELEV = 895.50') UNDERNEATH FLEXAMAT PRIOR TO FLEXAMAT INSTALLATION.



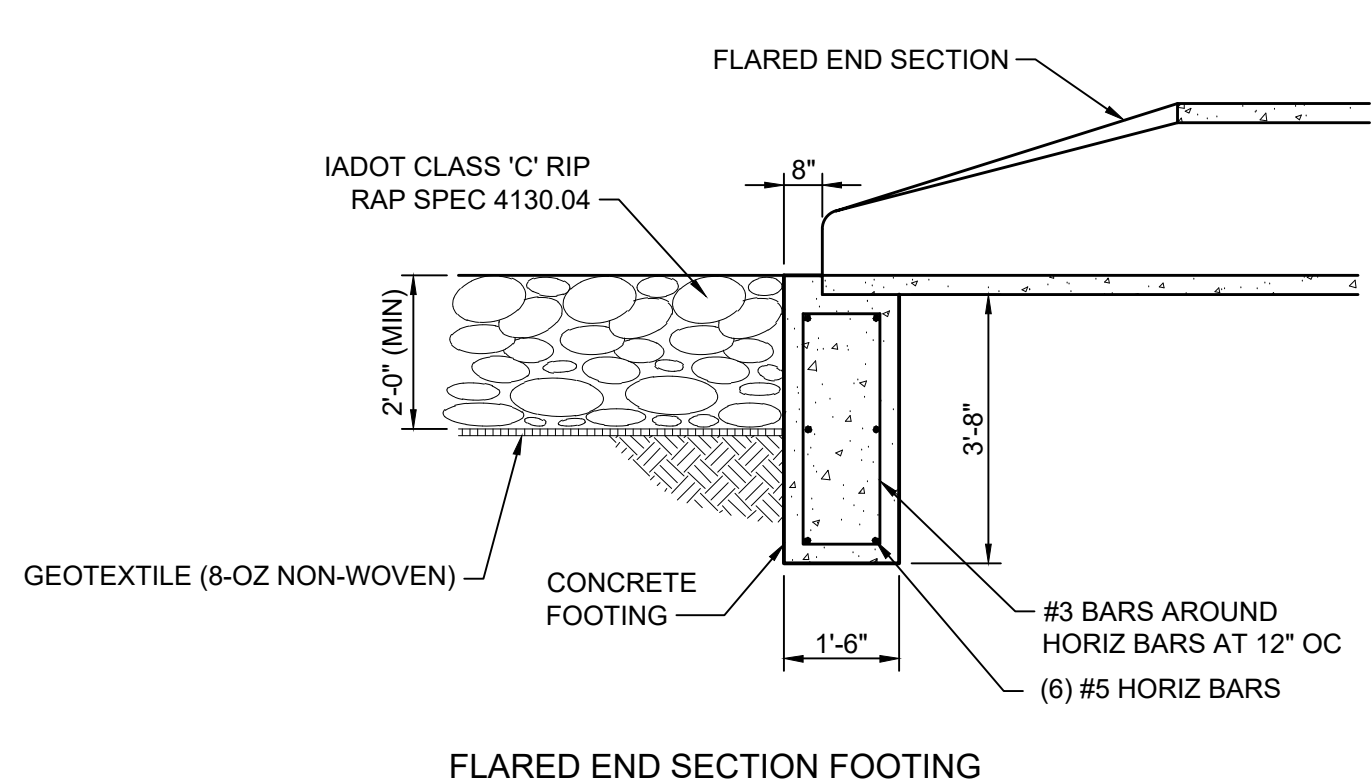
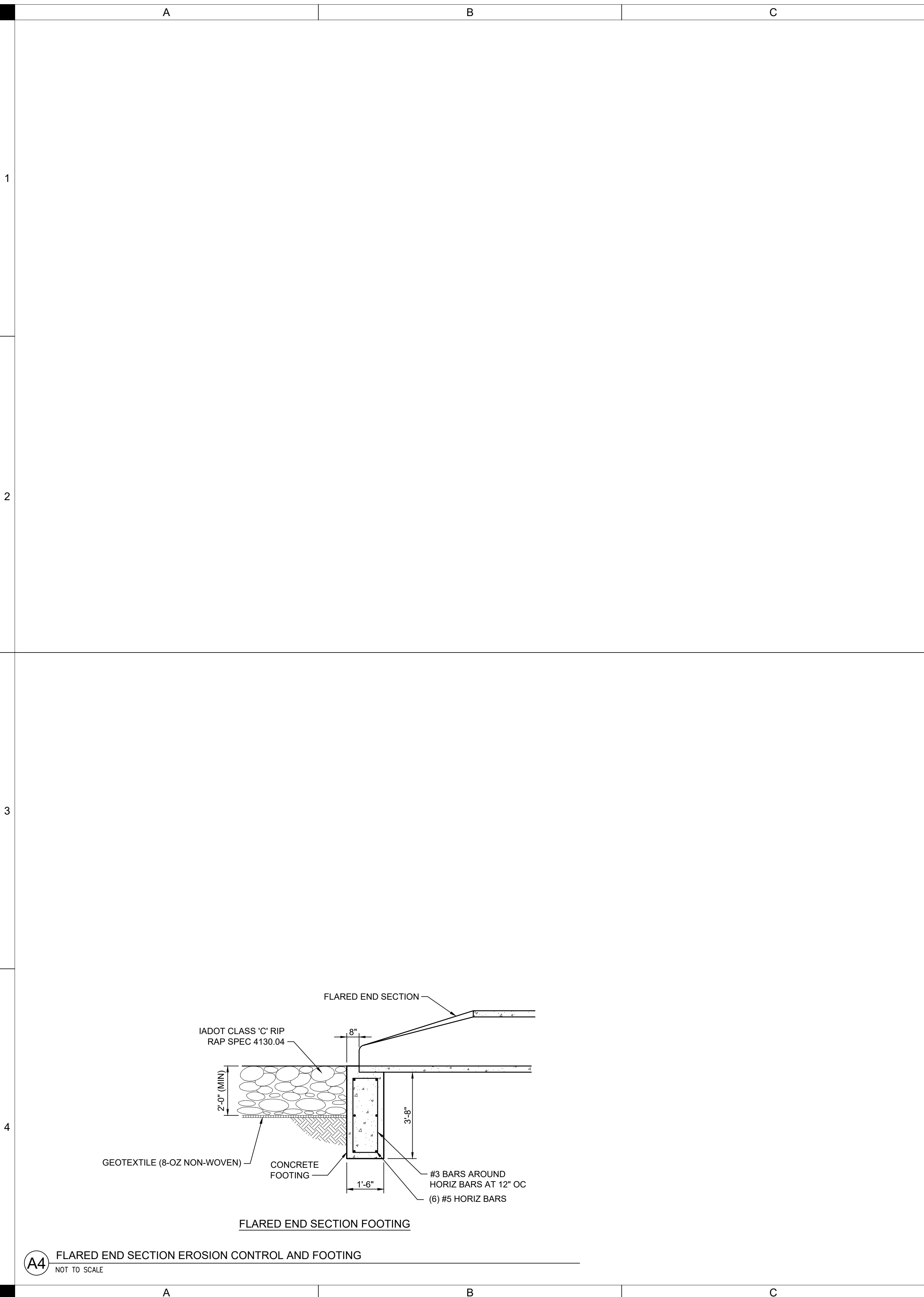
D4 TYPICAL SHORELINE ARMORING
NOT TO SCALE



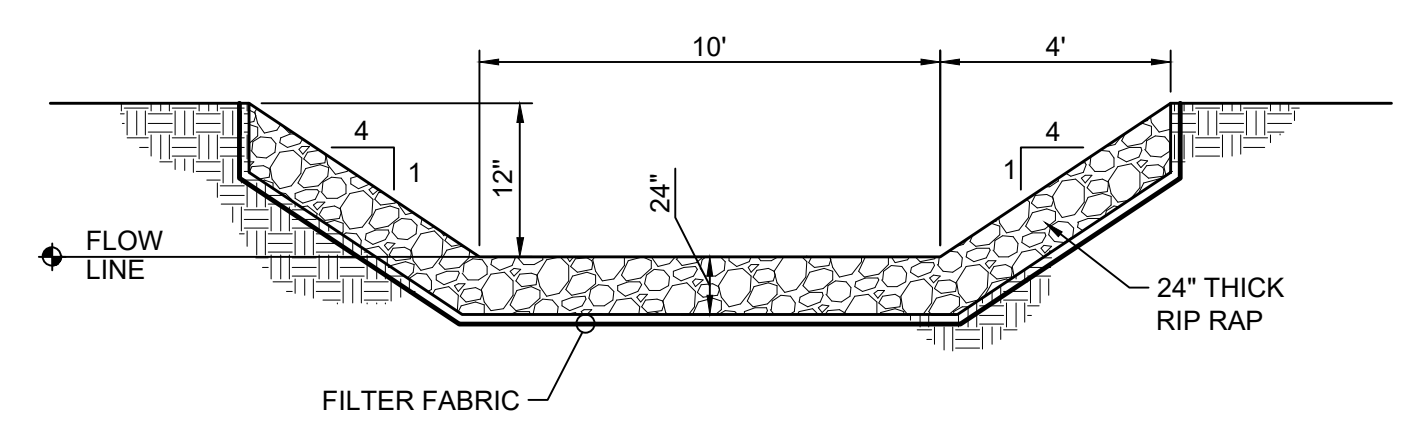
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APPROVED:	LTM
ISSUED FOR:	CONSTRUCTION DOCUMENTS
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FIELD BOOK:	---
CLIENT NO.:	---

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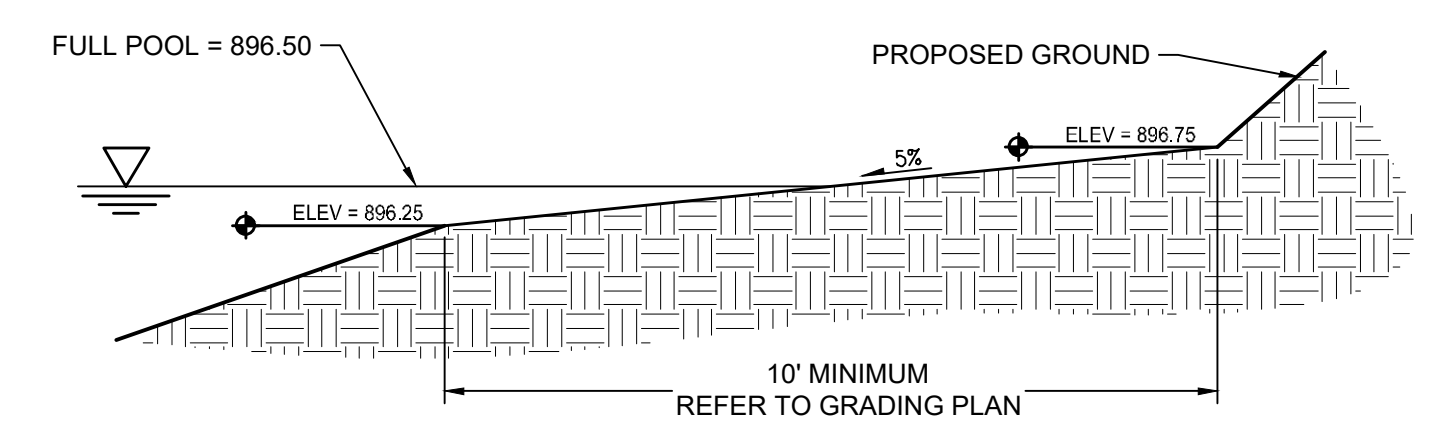
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A4 FLARED END SECTION EROSION CONTROL AND FOOTING
NOT TO SCALE



D2 ROCK LETDOWN (FOREBAYS)
NOT TO SCALE



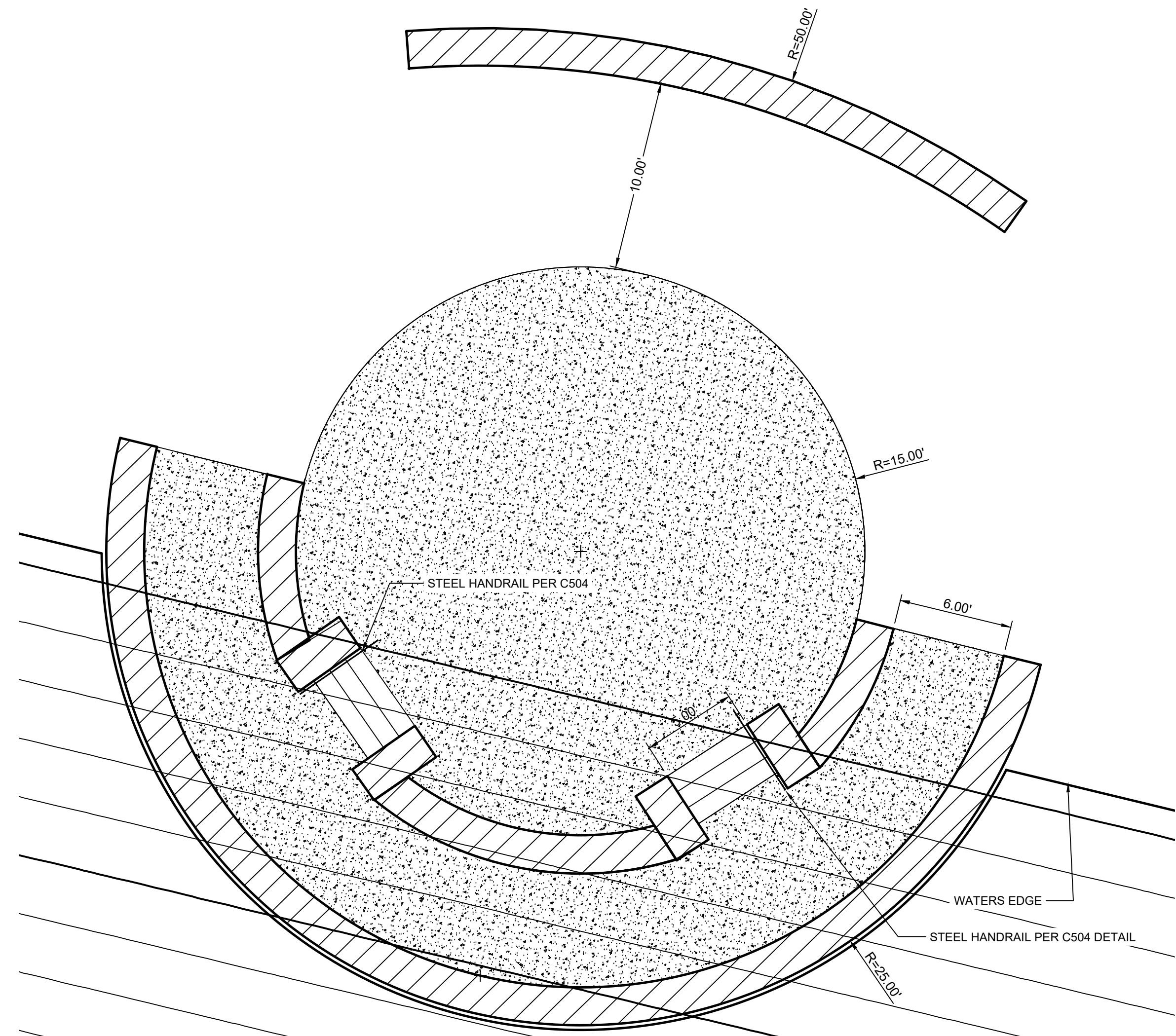
D4 WAVE BENCH
NOT TO SCALE



CASEY LAKE RESTORATION
BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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FIELD BOOK:	---
CLIENT NO.:	---

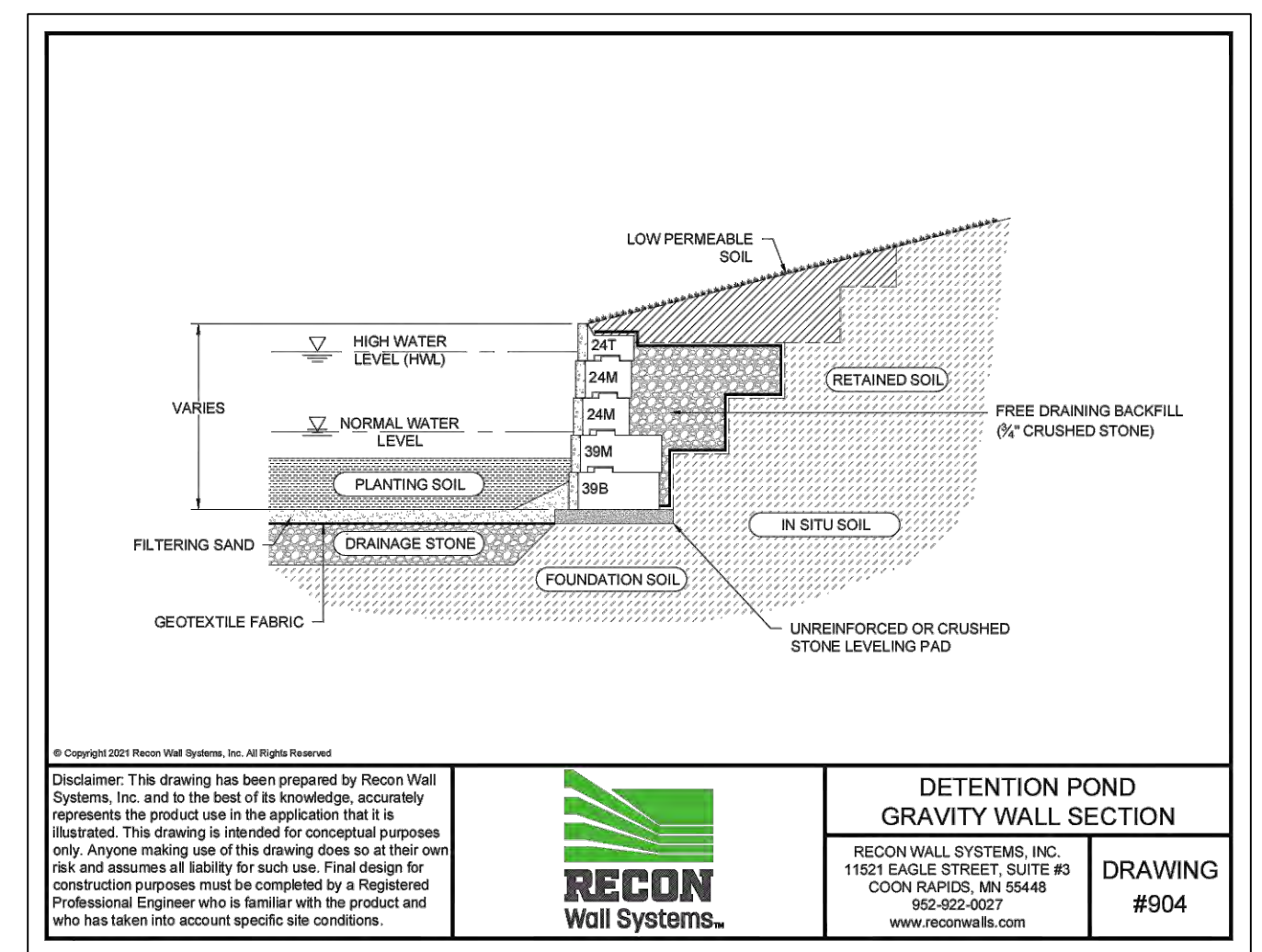
CONSTRUCTION DETAILS
C503



FOR REFERENCE ONLY:
DETAILS SHOW DESIGN INTENT

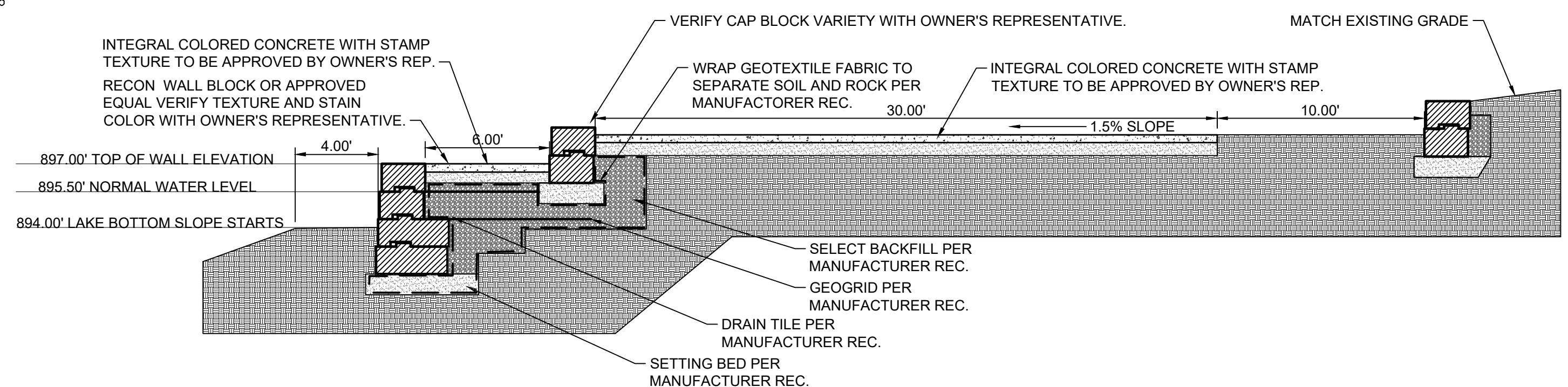
GENERAL NOTES:

1. RECON WALL BLOCK PRODUCTS OR APPROVED EQUAL: VERIFY TEXTURE WITH BLACK HAWK COUNTY REPRESENTATIVE.
2. INSTALL TO MANUFACTURER'S RECOMMENDATIONS. DRAWINGS SHALL BE ENGINEERED, STAMPED AND DESIGNED BY RECON WALL SYSTEMS, INC. OR APPROVED EQUAL.
3. BLOCK SIZES AND LAYOUT SHOWN ARE FOR REFERENCE ONLY.
4. SUBMIT SHOP DRAWINGS AND DESIGN BY LICENSED PROFESSIONAL ENGINEER. VERIFY WITH RECON WALL SYSTEMS INC.
5. WALL SEALING AND COLOR STAINING REQUIRED AFTER INSTALL. VERIFY SELECTED COLOR OPTIONS WITH BLACK HAWK COUNTY REP. TK PRODUCTS OR APPROVED EQUAL. APPLY TO MANUFACTURER'S RECOMMENDATIONS. TK PRODUCT: 1-800-441-2129
6. 6" CONCRETE WITH INTEGRAL COLOR. LARGE NATURAL FLAGSTONE STAMP. VERIFY COLOR AND STAMP SELECTION WITH BLACK HAWK COUNTY REP. SIKA POWDER INTEGRAL COLOR OR APPROVED EQUAL. APPLY TO MANUFACTURER'S RECOMMENDATIONS

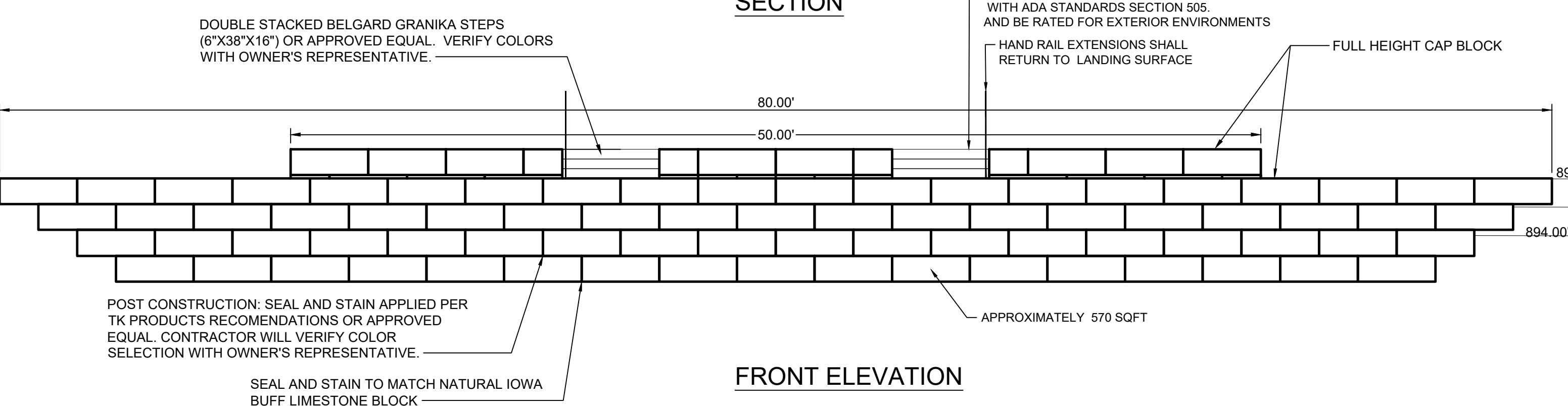


E3 GRAVITY WALL SECTION PER RECON WALL SYSTEMS
NTS

A3 STONE TERRACE PLAN
1" = 5'

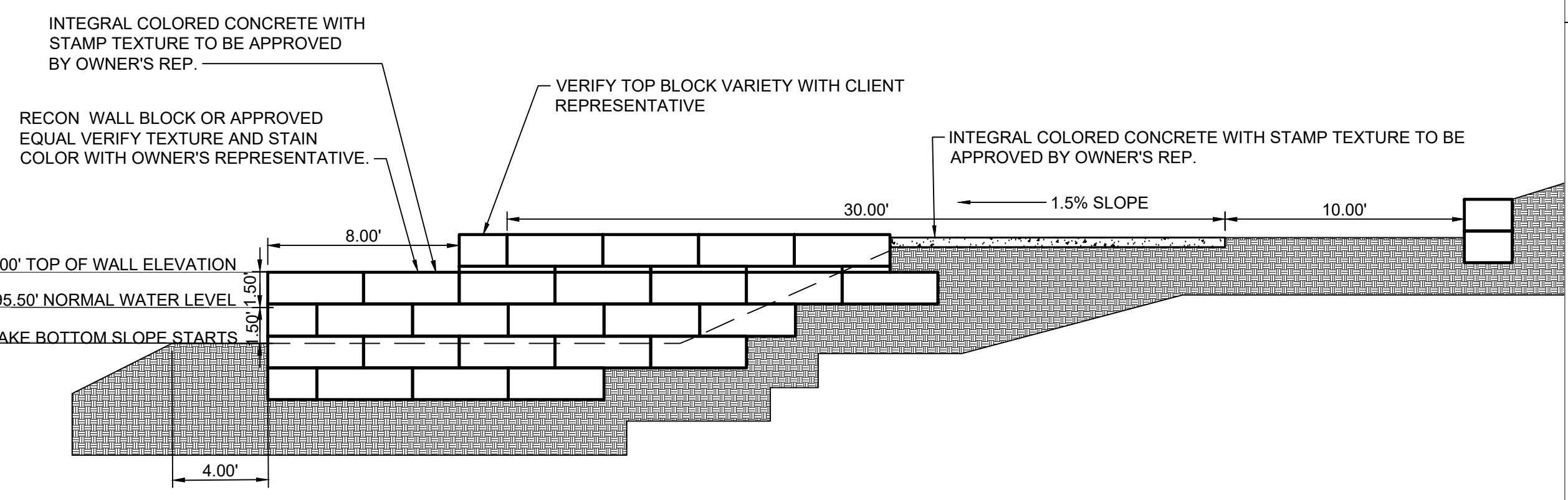


SECTION



FRONT ELEVATION

A4 STONE TERRACE DETAILS
1" = 5'

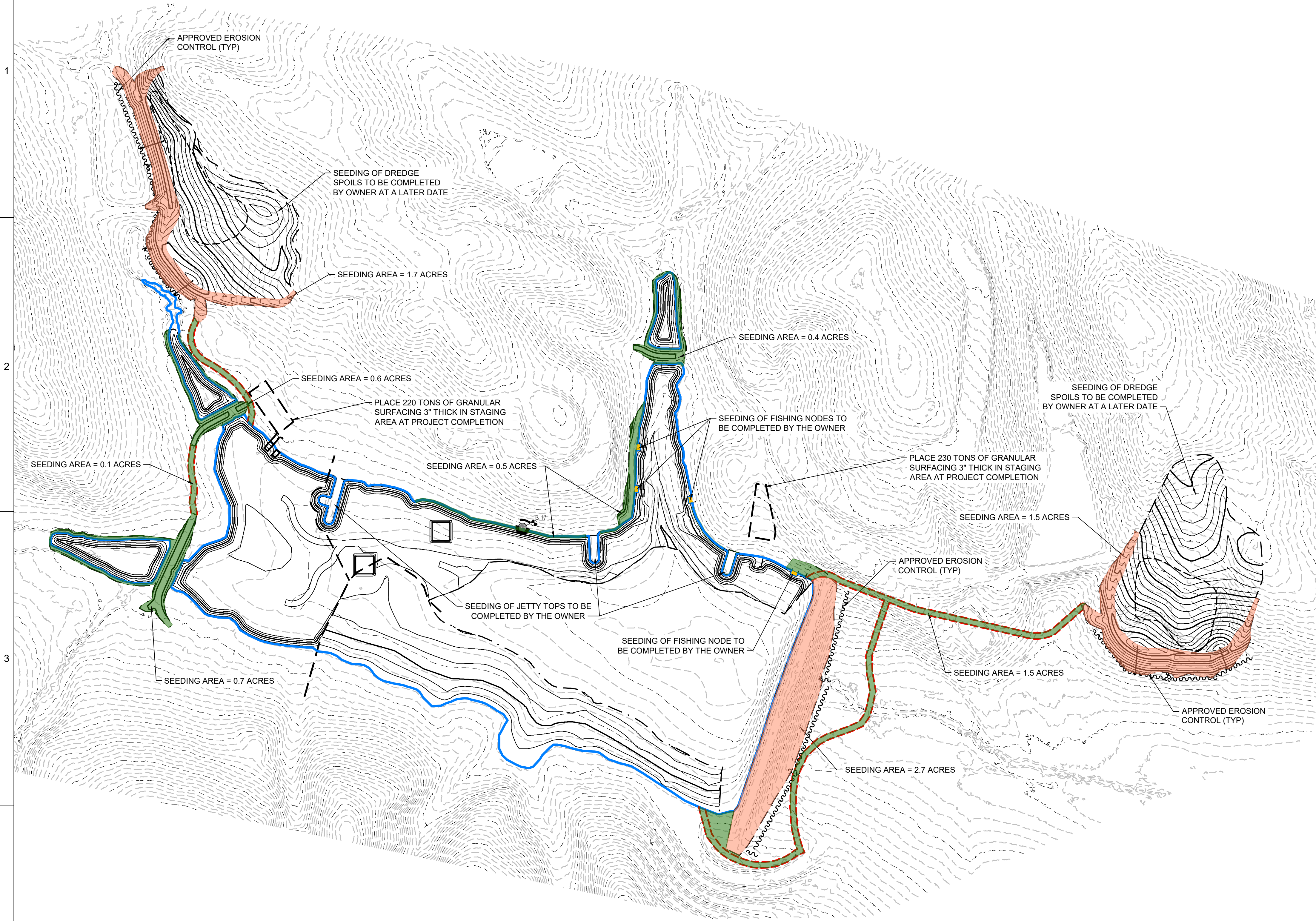


SIDE ELEVATION

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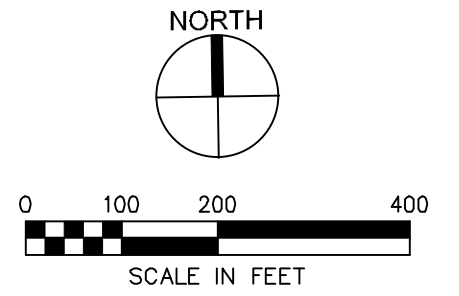
A B C D E F



EROSION AND SEDIMENT CONTROL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEPARTMENT OF NATURAL RESOURCES (DNR) NPDES PERMIT AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS AND REQUIRED CONTAINMENT STRUCTURES. THE CONTRACTOR SHALL PREPARE, IMPLEMENT, MAINTAIN, COMPLETE REQUIRED INSPECTIONS, AND UPDATE THE SWPPP AS REQUIRED TO MEET ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. CONTRACTORS SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THIS PLAN AND THE SWPPP.
3. BEST MANAGEMENT PRACTICES (BMP'S) AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
4. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT.
5. STAGING LOCATION FOR CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE COORDINATED WITH AND APPROVED BY OWNER.
6. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLotation BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
7. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
8. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
9. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
10. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE SEEDDED BY THE CONTRACTOR. THESE AREAS SHALL BE SEEDDED NO LATER THAN 14 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS.
11. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
12. ON-SITE & OFFSITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
13. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
14. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) TO PREVENT EROSION.
15. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.
16. AN UPDATED COPY OF THE SWPPP SHALL BE KEPT ONSITE FOR THE DURATION OF THE PROJECT.
17. ALL SUBCONTRACTORS ENGAGED IN ACTIVITIES AT THE CONSTRUCTION SITE THAT COULD IMPACT STORMWATER MUST BE IDENTIFIED AND COMPLETE A CERTIFICATION STATEMENT PRIOR TO CONSTRUCTION.

LEGEND	
DESCRIPTION	LINE TYPE
GRADING LIMITS	---
MAJOR CONTOUR (EXISTING)	----- 800
MINOR CONTOUR (EXISTING)	----- 801
PROPOSED CONTOUR - MAJOR	----- 1140
PROPOSED CONTOUR - MINOR	----- 1142
TYPE 1 SEEDING	[Green Box]
TYPE 2 SEEDING	[Orange Box]
SILT FENCE	~~~~~



SHIVE-HATTERY
ARCHITECTURE + ENGINEERING

4125 WESTTOWN PKWY, SUITE 100
WEST DES MOINES, IOWA 50266
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BLACK HAWK COUNTY CONSERVATION BOARD

CASEY LAKE RESTORATION

BLACK HAWK COUNTY CONSERVATION
HICKORY HILLS PARK, TAMA COUNTY

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SWPPP PLAN

C601

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