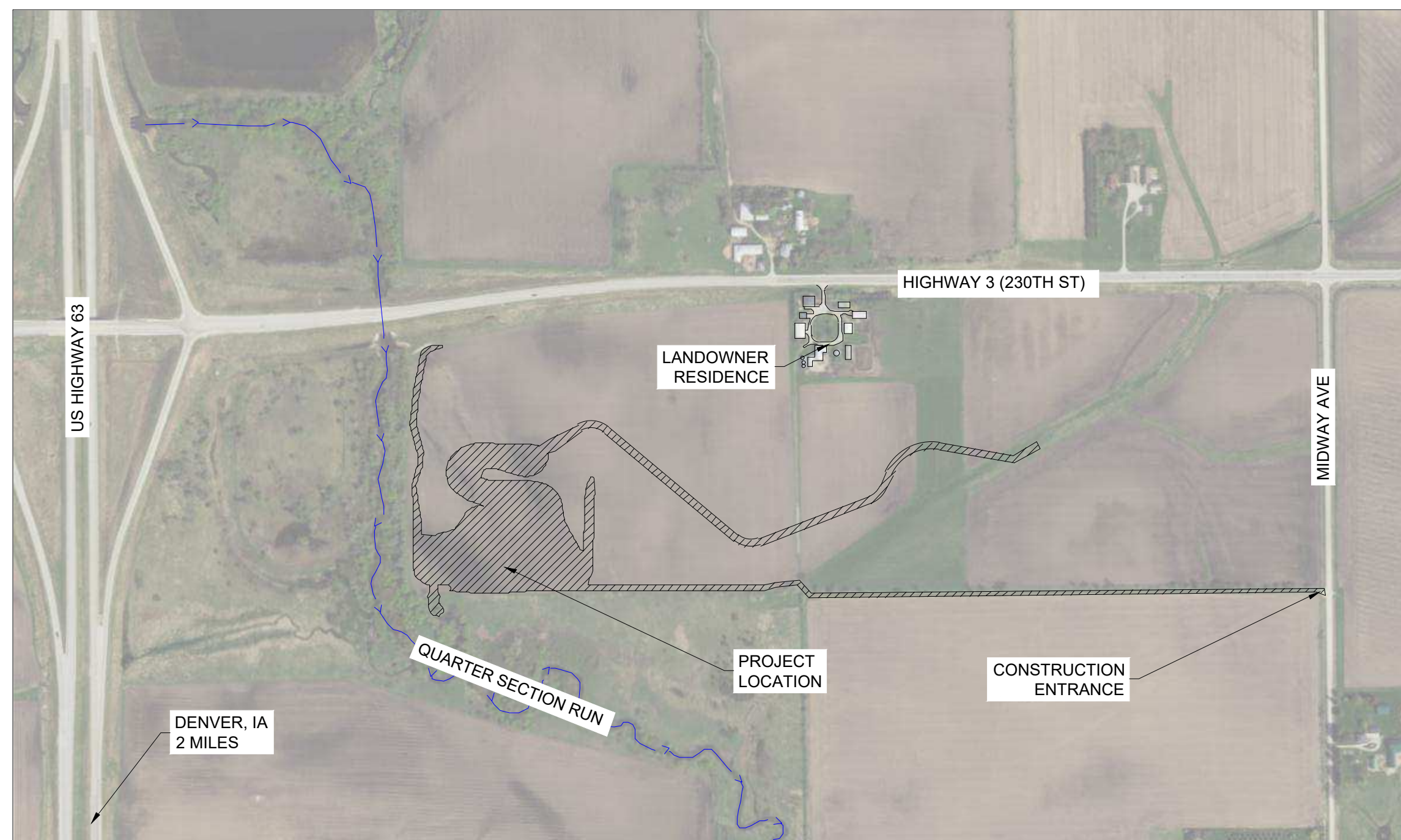
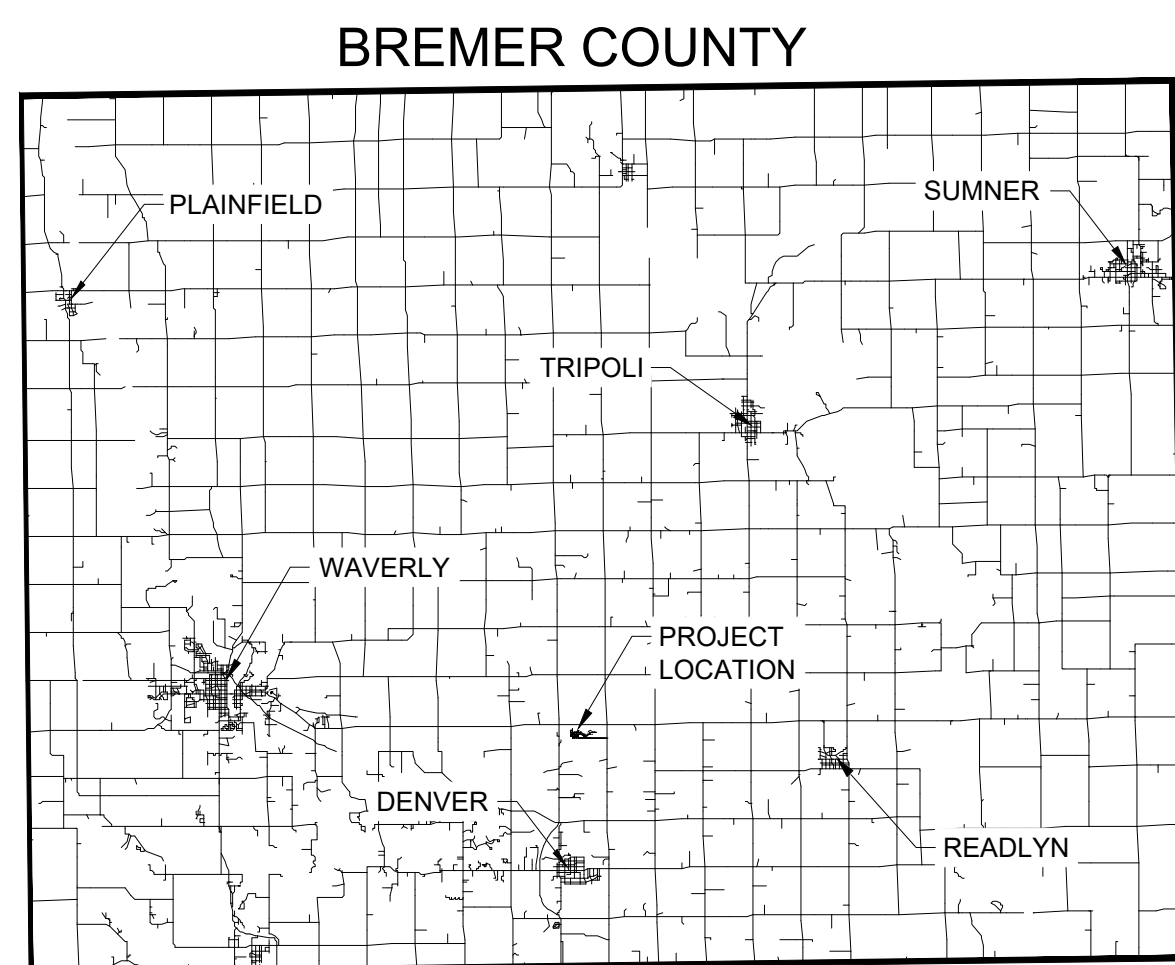
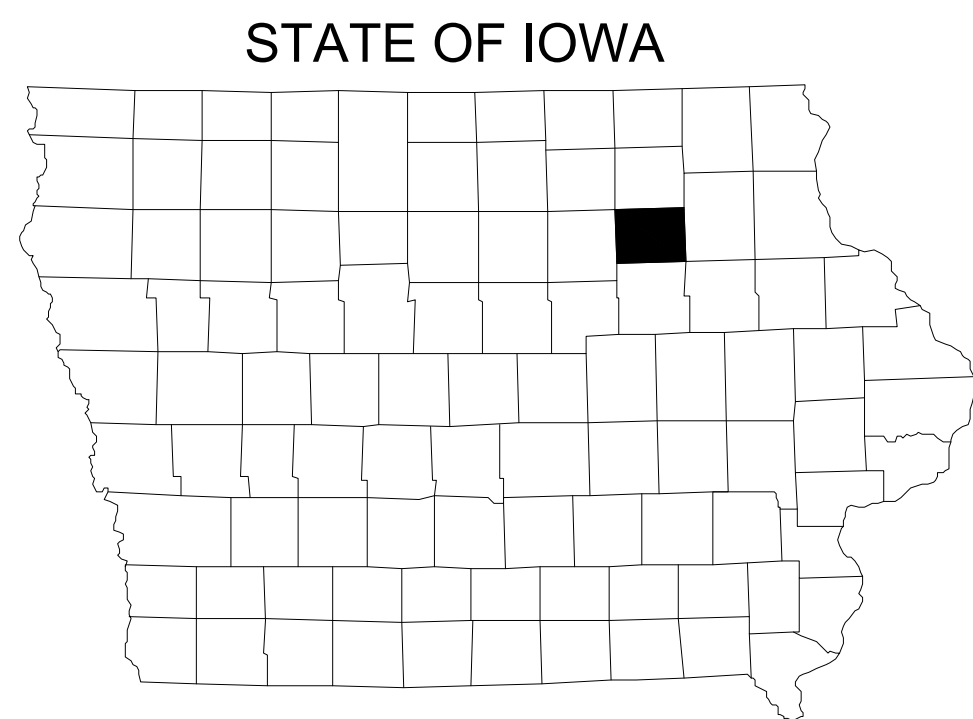


BRE911312B BREMER COUNTY WETLAND IDALS BREMER COUNTY, IA



| Sheet List Table | |
|------------------|---------------------------------------|
| Sheet Number | Sheet Title |
| C000 | COVER SHEET |
| C001 | PROJECT QUANTITIES & NOTES |
| CD01 | EXISTING CONDITIONS AND REMOVALS PLAN |
| C201 | OVERALL SITE PLAN |
| C202 | WETLAND GRADING PLAN |
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| C301 | WETLAND BERM PROFILE |
| C302 | OUTLET CHANNEL PLAN AND PROFILE |
| C303 | WETLAND TILE PLAN AND PROFILE |
| C304 | DRAWDOWN STRUCTURE PLAN & PROFILE |
| C401 | SHEET PILE WEIR |
| C501 | CONSTRUCTION DETAILS |
| C502 | CONSTRUCTION DETAILS |
| C503 | CONSTRUCTION DETAILS |
| C601 | SEEDING PLAN |

CONTACT INFORMATION:

ENGINEER
SHIVE-HATTERY, INC
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FX: (515) 223-0622

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PRIMARY:
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SITE ADDRESS:
2160 230TH ST WAVERLY, IA 50677

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



THE ENGINEERING JOB CLASS IS IV

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

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: **03-06-2024**

Printed or typed name: DANIEL JENSEN
License Number: 25063
My License Renewal Date is: DECEMBER 31, 2025
PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
ALL SHEETS

ESTIMATED QUANTITIES:

| # | ITEM DESCRIPTION | QUANTITY | UNITS |
|----|--|----------|-------|
| 1 | SITE STRIPPING & PREPARATION | 1 | LS |
| 2 | CROP DAMAGE | 0 | AC |
| 3 | STRUCTURE & CHANNEL SEEDING | 2.5 | AC |
| 4 | BUFFER SEEDING | 6.3 | AC |
| 5 | MOBILIZATION AND DEMOBILIZATION | 1 | LS |
| 6 | DRAIN TILE INVESTIGATION AND REMOVAL | 5,603 | LF |
| 7 | STEEL SHEET PILING | 414 | SF |
| 8 | EXCAVATION (GENERAL (P)) | 6,552 | CY |
| 9 | EARTHFILL (GENERAL (P)) | 963 | CY |
| 10 | EARTHFILL (GENERAL DAM (P)) | 3,010 | CY |
| 11 | EARTHFILL (DAM CORE (P)) | 3,527 | CY |
| 12 | EARTHFILL (SCARIFY AND RECOMPACT 12" LAYER OF WETLAND BOTTOM (P)): | 3,432 | CY |
| 13 | TOPSOIL PLACEMENT, 6 INCH | 4,276 | CY |
| 14 | TOPSOIL PLACEMENT, 12 INCH | 3,122 | CY |
| 15 | 8" CORRUGATED POLYETHYLENE PIPE (PERFORATED) | 521 | LF |
| 16 | 12" CORRUGATED PROFILE WALL (DUAL WALL) POLYETHYLENE PIPE | 298 | LF |
| 17 | 18" CORRUGATED PROFILE WALL (DUAL WALL) POLYETHYLENE PIPE | 2,343 | LF |
| 18 | 12" RISER INLET STRUCTURE, HICKENBOTTOM | 1 | EA |
| 19 | 18" CMP DRAWDOWN STRUCTURE | 1 | EA |
| 20 | 48" CMP WATER CONTROL STRUCTURE | 1 | EA |
| 21 | 12" CMP DRAWDOWN WETLAND OUTLET PIPE | 84 | LF |
| 22 | 15" CMP TILE OUTLETS (20 LF EACH) | 1 | EA |
| 23 | 24" CMP TILE OUTLETS (20 LF EACH) | 1 | EA |
| 24 | RIP RAP | 430 | TON |
| 25 | 2" CLEAN STONE | 60 | TON |
| 26 | CONCRETE GROUT | 63 | CY |
| 27 | POLLUTION CONTROL, SILT FENCE | 120 | LF |
| 28 | POLLUTION CONTROL, TYPE 4 RECP | 385 | SY |
| 29 | FENCE REMOVAL | 1 | LS |

WETLAND DESIGN DATA:

| PROJECT ID | BRE911312B-FP | ---- |
|------------------------------|---|-----------|
| LANDOWNERS | TEISINGER, STEVE; ROGERS, JANICE; & KIRCHOFF, KEVIN | ---- |
| PRELIMINARY OR FINAL DESIGN | FINAL DESIGN | ---- |
| DRAINAGE AREA | 409 (TILE); 23.9 (OVERLAND) | ACRES |
| WETLAND POOL AREA | 8.0 | ACRES |
| DEEP WATER AREA (>3 FT DEEP) | 0.2 | ACRES |
| NORMAL POOL ELEVATION | 956.0 | FEET |
| AVERAGE POOL DEPTH | 1.5 | FEET |
| MAXIMUM POOL DEPTH | 4.1 | FEET |
| POOL STORAGE | 11.8 | ACRE-FEET |
| BERM ELEVATION | 958.25 | FEET |
| BERM STORAGE | 36.8 | ACRE-FEET |
| TOTAL EASEMENT AREA | 17.66 | ACRES |

| | | |
|--|--------|-------|
| LENGTH OF BERM | 2179 | FEET |
| AUXILIARY SPILLWAY ELEVATION | NONE | FEET |
| AUXILIARY SPILLWAY WIDTH | NONE | FEET |
| WEIR WIDTH | 20 | FEET |
| DROP HEIGHT | 3 | FEET |
| STILLING BASIN LENGTH | 30 | FEET |
| TIME OF CONCENTRATION | 0.46 | HOURS |
| WEIGHTED RUNOFF CURVE NUMBER | 85 | ---- |
| 25-YEAR STORM DESIGN FLOW | 81 | CFS |
| 100-YEAR STORM DESIGN FLOW | 116 | CFS |
| 100-YEAR FLOOD SURF. ELEVATION | 956.65 | FEET |
| ESTIMATED SEDIMENT STORAGE | 614 | YEARS |
| NOTE: SEDIMENT STORAGE ESTIMATED FROM OVERLAND FLOW AREA. ADDITIONAL SEDIMENTATION IS EXPECTED DURING FLOOD EVENTS THAT WILL REDUCE THE SEDIMENT STORAGE LIFESPAN. | | |

ESTIMATE REFERENCE NOTES:

| ITEM # | SPEC # | DESCRIPTION |
|--------|-----------|--|
| 1 | IA CS-001 | SITE STRIPPING & PREPARATION : THIS ITEM SHALL BE CONSIDERED FULL COMPENSATION TO REMOVE ANY REMAINING TREES, STUMPS, AND BRUSH FROM WITHIN THE GRADING LIMITS, PROPOSED POOL LIMITS, AND ALONG THE CONSTRUCTION ACCESS ROUTE. SEE SHEET CD01. THIS ITEM ALSO INCLUDES THE REMOVAL AND PROPER OFF-SITE DISPOSAL OF ALL WASTE ENCOUNTERED. THE GRANULAR SURFACING AT THE CONSTRUCTION ENTRANCE IS INCLUDED IN THIS BID ITEM. MANAGEMENT OF THE STORM WATER POLLUTION PREVENTION PLAN IS INCLUDED IN THIS BID ITEM. |
| 2 | IA CS-001 | CROP DAMAGE: THIS ITEM CONSISTS OF CROP DAMAGE THAT RESULTS FROM CONSTRUCTION ACTIVITIES. IT IS RECOMMENDED CONTRACTOR REMOVE CORN RESIDUE RATHER THAN KNOCK IT DOWN. PAYMENT FOR CROP DAMAGE WILL BE MADE TO THE NEAREST 0.1 ACRE AS MEASURED BY THE ENGINEER OR THEIR REPRESENTATIVE. THE UNIT RATE FOR CROP DAMAGE WILL BE DETERMINED BY THE DIVISION NEAR THE COMPLETION OF CONSTRUCTION AND ADDED TO THE CONTRACT WITH A CHANGE ORDER. PAYMENT WILL BE MADE TO CONTRACTOR WHO WILL PAY LANDOWNER. |
| 3 | IA CS-006 | STRUCTURE & CHANNEL SEEDING: THIS ITEM INCLUDES SEEDING FOR ALL EMBANKMENT AND TILE COVER BERM AREAS AND INCLUDES SEEDBED PREP, SEEDING, MULCHING, AND FERTILIZER. |
| 4 | IA CS-006 | BUFFER SEEDING: THIS ITEM INCLUDES SEEDING FOR ALL AREAS ABOVE NORMAL POOL AND WITHIN EASEMENT BOUNDARY, EXCLUDING THOSE AREAS WHERE STRUCTURE SEEDING IS SPECIFIED. SEE SEEDING PLAN. NO MULCH OR FERTILIZER SHALL BE APPLIED. |
| 5 | CS-008 | MOBILIZATION AND DEMOBILIZATION: THIS ITEM SHALL BE CONSIDERED FULL COMPENSATION TO MOBILIZE AND DEMOBILIZE THE CONTRACTOR'S FORCES AND EQUIPMENT FOR THE PROJECT. ALL OTHER WORK NECESSARY TO COMPLETE THE PROJECT AS REPRESENTED HEREIN BUT NOT INCLUDED IN THE ITEMS LISTED BELOW SHALL BE INCIDENTAL TO THIS ITEM. |
| 6 | IA CS-009 | DRAIN TILE INVESTIGATION AND REMOVAL: THIS ITEM INCLUDES THE EXPLORATORY EXCAVATIONS REQUIRED TO LOCATE AND REMOVE TILES SHOWN ON THE PLANS. THIS IS FULL COMPENSATION FOR EXCAVATION, BACKFILLING, AND REMOVAL OF THE TILE TRENCHES. |
| 7 | IA CS-013 | STEEL SHEET PILING: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF THE SHEET PILING AS DETAILED ON SHEET C401 INCLUDING FIELD WELDING, CUTTING, TRIMMING, WALER, BOLTS, NUTS, AND OTHER APPURTENANCES. |
| 8 | IA CS-021 | EXCAVATION (GENERAL (P)): THIS ITEM INCLUDES THE EXCAVATION OF MATERIAL REQUIRED TO CONSTRUCT THE CORE TRENCH BELOW THE EXISTING GROUND LEVEL, AS DETAILED, ALONG THE CENTERLINE OF THE DAM EMBANKMENT AS WELL AS ESTABLISHING POOL FINAL GRADE. |
| 9 | IA CS-023 | EARTHFILL (GENERAL (P)): THIS ITEM INCLUDES THE AMOUNT OF MATERIAL REQUIRED TO CONSTRUCT THE SUBMERGED BERMS AND ADDITIONAL FILL TO BE PLACED OVER TILE COVER BERMS ALONG WITH TOPSOIL FILL IN AREAS OUTSIDE OF EASEMENT. COHESIVE MATERIAL FOUND DURING GENERAL GRADING AND COMPACTED LINER REMOVAL CAN BE USED FOR THESE AREAS. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR THIS EARTHFILL. SEE SHEET C201 AND C202 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. THE REQUIRED FILL INCLUDES A 25% SHRINKAGE FACTOR. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY. |
| 10 | IA CS-023 | EARTHFILL (GENERAL DAM (P)): THIS ITEM INCLUDES THE EARTHFILL PLACEMENT AND COMPACTION NECESSARY TO CONSTRUCT THE PORTION OF THE EMBANKMENT THAT IS NOT THE EMBANKMENT CORE. COHESIVE MATERIAL FOUND DURING GENERAL GRADING AND COMPACTED LINER CAN BE USED FOR THIS AREA. SAND AND GRAVEL FOUND ON SITE SHALL NOT BE USED FOR FILL IN THESE AREAS. SEE SHEET C201 AND C202 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. THE REQUIRED FILL INCLUDES A 25% SHRINKAGE FACTOR. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY. |
| 11 | IA CS-023 | EARTHFILL (DAM CORE (P)): THIS ITEM INCLUDES THE EARTHFILL PLACEMENT AND COMPACTION NECESSARY TO CONSTRUCT THE EMBANKMENT CORE WITHIN THE EMBANKMENT, INCLUDING THE CORE TRENCH. COHESIVE MATERIAL TAKEN FROM DESIGNATED BORROW AREA SHOULD BE USED FOR THIS AREA. SAND AND GRAVEL SHALL NOT BE USED FOR THIS AREA. SEE SHEET C201 AND C202 FOR LIMITS OF EXCAVATION AND ASSOCIATED FILL. THE REQUIRED FILL INCLUDES A 25% SHRINKAGE FACTOR. MEASUREMENT AND PAYMENT FOR PLACEMENT AND COMPACTION OF ALL FILL MATERIAL IS INCLUDED IN THIS ITEM AND WILL BE PAID BASED ON PLAN QUANTITY. |
| 12 | IA CS-023 | EARTHFILL (SCARIFY AND RECOMPACT 12" LAYER OF WETLAND BOTTOM (P)): THIS ITEM INCLUDES SCARIFICATION AND LOOSENING OF A 12 INCH SURFACE LAYER OF SOIL ON THE WETLAND POOL BOTTOM. MOISTURE CONDITIONING, AND COMPACTION OF THE WETLAND BOTTOM TO FORM A SEAL. CONTRACTOR SHALL REMOVE ROCKS LARGER THAN 6 INCHES. NOTIFY ENGINEER IMMEDIATELY IF SANDY SOILS ARE ENCOUNTERED. ITEM WILL BE PAID BASED ON PLAN QUANTITY. |
| 13 | IA CS-026 | TOPSOIL PLACEMENT, 6 INCH: THIS ITEM INCLUDES THE STRIPPING, SALVAGE, AND STOCKPILE 6" OF EXISTING MATERIAL FROM ALL AREAS TO BE EXCAVATED OR DISTURBED EXCLUDING THE EMBANKMENT FOOTPRINT AND TILE TRENCH OUTSIDE OF THE EASEMENT. RESPREAD TOPSOIL IN ALL AREAS. ITEM WILL BE PAID BASED ON PLAN QUANTITY. |
| 14 | IA CS-026 | TOPSOIL PLACEMENT, 12 INCH: THIS ITEM INCLUDES THE STRIPPING, SALVAGE, AND STOCKPILE 12" OF EXISTING MATERIAL FROM THE EMBANKMENT FOOTPRINT AND PROPOSED 18" TILE TRENCH OUTSIDE OF THE EASEMENT. RESPREAD 12" TOPSOIL IN ALL AREAS. ITEM WILL BE PAID BASED ON PLAN QUANTITY. |
| 15 | IA CS-046 | 8" CORRUGATED POLYETHYLENE PIPE (PERFORATED): THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 8" DUAL-WALL NON-PERFORATED HDPE DRAIN TILE. SEE SHEET C202 FOR LENGTHS, LOCATIONS AND ELEVATIONS. |
| 16 | IA CS-046 | 12" CORRUGATED PROFILE WALL (DUAL WALL) POLYETHYLENE PIPE: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 12" DUAL-WALL NON-PERFORATED HDPE DRAIN TILE. SEE SHEET C202 FOR LENGTHS, LOCATIONS AND ELEVATIONS. |
| 17 | IA CS-046 | 18" CORRUGATED PROFILE WALL (DUAL WALL) POLYETHYLENE PIPE: THIS ITEM INCLUDES THE MATERIAL, EXCAVATION, PLACEMENT, JOINTING, AND BACKFILL OF THE 18" DUAL-WALL NON-PERFORATED HDPE DRAIN TILE. SEE SHEET C202 FOR LENGTHS, LOCATIONS AND ELEVATIONS. |
| 18 | IA CS-046 | 12" RISER INLET STRUCTURE, HICKENBOTTOM: THIS ITEM INCLUDED COSTS FOR MATERIAL AND INSTALLATION OF A 12" HICKENBOTTOM INTAKE AND CONCRETE CONNECTION TO THE EXISTING TILE AS DETAILED. |
| 19 | IA CS-051 | 18" CMP DRAWDOWN STRUCTURE: THIS ITEM INCLUDES COSTS FOR THE MATERIAL AND INSTALLATION OF 18 INCH ALUMINIZED CMP DRAWDOWN STRUCTURE RISER PIPE, TRASH RACK, AND BASE A DETAILED. |
| 20 | IA CS-051 | 48" CMP WATER CONTROL STRUCTURE : THIS ITEM INCLUDES ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE PLACEMENT OF THE 48" CONCRETE RISER STRUCTURE, FOOTING, STEEL, FABRICATION, PIPE CONNECTIONS, AND TRASH RACK. |
| 21 | IA CS-051 | 12" CMP DRAWDOWN WETLAND OUTLET PIPE: THIS ITEM INCLUDES ALL LABOR, EQUIPMENT, AND MATERIALS REQUIRED FOR THE EXCAVATION, PLACEMENT OF THE REINFORCED CONCRETE PIPE, SUPPORT BLOCKS, OUTLET CRADLE, AND BENTONITE BACKFILL. |
| 22 | IA CS-051 | 15" CMP TILE OUTLETS (20 LF EACH): THIS ITEM INCLUDES THE COSTS FOR MATERIAL, EXCAVATION, PLACEMENT, JOINTING, BEDDING, RODENT GUARDS, AND BACKFILLING OF THE 20 LF 8" CMP END SECTION FOR THE PROPOSED FIELD TILE OUTLET TO THE WETLAND. 15" CMP OUTLET SECTIONS ARE FOR 12 INCH TILES. |
| 23 | IA CS-051 | 24" CMP TILE OUTLETS (20 LF EACH): THIS ITEM INCLUDES THE COSTS FOR MATERIAL, EXCAVATION, PLACEMENT, JOINTING, BEDDING, RODENT GUARDS, AND BACKFILLING OF THE 20 LF 10" CMP END SECTION FOR THE PROPOSED FIELD TILE OUTLET TO THE WETLAND. 24" CMP OUTLET SECTIONS ARE FOR 18 INCH TILES. |
| 24 | IA CS-061 | RIP RAP: THIS ITEM INCLUDES THE EXCAVATION AND PLACEMENT OF CLASS 'E' REVETMENT OVER GEOTEXTILE FABRIC AT THE LOCATIONS SHOWN ON THE PLANS. GEOTEXTILE FABRIC IS INCIDENTAL TO THIS ITEM. QUANTITY DETERMINATION IS BASED ON A UNIT WEIGHT OF 105 POUNDS PER CUBIC FOOT. PROVIDE WEIGHT TICKETS TO OWNER'S REPRESENTATIVE. |
| 25 | IA CS-061 | 2" CLEAN STONE: THIS ITEMS INCLUDES PROCUREMENT, PLACEMENT AND SPREADING OF 2 INCH CLEAN STONE AT THE CONSTRUCTION ENTRANCE AND TO RESTORE THE ACCESS DRIVE AFTER TILE TRENCHING. |
| 26 | IA CS-062 | CONCRETE GROUT: GROUT MIX SHALL BE AS SPECIFIED AND SHALL BE PLACED USING A CONCRETE PUMPER. GROUT SHALL FULLY ENCASE THE BOTTOM OF THE RIP RAP BUT NOT FULL TO THE TOP OF THE RIP RAP SO AS TO REDUCE THE ENERGY DISSIPATION CAPABILITIES. GROUT UPSTREAM OF THE WEIR SHALL BE SMOOTH FINISHED 1" BELOW THE CREST. GROUT SHALL ONLY BE PLACED IN THE PRESENCE OF THE ENGINEER. |
| 27 | IA CS-005 | POLLTION CONTROL, SILT FENCE: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF SILT FENCE DITCH CHECKS AS SHOWN ON THE PLANS AND AS DETAILED. |
| 28 | IA CS-005 | POLLTION CONTROL, TYPE 2B RECP: THIS ITEM INCLUDES PROCUREMENT AND INSTALLATION OF TYPE 2B ROLLED EROSION CONTROL PRODUCT. INSTALLATION SHALL BE PER THE MANUFACTURER'S RECOMMENDATIONS. |
| 29 | IA CS-001 | FENCE REMOVAL: THIS ITEM INCLUDES REMOVAL AND PROPER OFF SITE DISPOSAL OF EXISTING FENCING AS SHOWN ON THE PLANS. PROTECT ALL PROPERTY MONUMENTS. CONTRACTOR SHALL REPLACE DAMAGED MONUMENTS AT NO ADDITIONAL COST. MONUMENTS MUST BE SET AND RECORDED BY A PROFESSIONAL LAND SURVEYOR. |

GENERAL NOTES:

- THE LOCATIONS OF UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS PLOTTED ON THIS DRAWING ARE APPROXIMATE ONLY AND WERE OBTAINED FROM RECORDS MADE AVAILABLE TO SHIVE-HATTERY, INC. THERE MAY BE OTHER EXISTING UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS NOT KNOWN TO SHIVE-HATTERY, INC. AND NOT SHOWN ON THIS DRAWING. THE VERIFICATION OF EXISTENCE OF, AND THE DETERMINATION OF THE EXACT LOCATION OF, UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR(S).
- IOWA CODE 480, UNDERGROUND FACILITIES INFORMATION, REQUIRES VERBAL NOTICE TO IOWA ONE-CALL 1-800-292-8989, NOT LESS THAN 48 HOURS BEFORE EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS.
- THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- NO WORK SHALL BE PERFORMED BEYOND THE PROJECT LIMITS WITHOUT PRIOR AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE.
- REPLACE ANY PROPERTY MONUMENTS REMOVED OR DESTROYED BY CONSTRUCTION. MONUMENTS SHALL BE SET BY A LAND SURVEYOR REGISTERED TO PRACTICE IN THE STATE OF IOWA.
- ALL DEBRIS AND TRASH ENCOUNTERED DURING CONSTRUCTION WITHIN THE PROJECT LIMITS, OR DIRECTED BY THE ENGINEER, SHALL BE PROPERLY DISPOSED OF.
- CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION DE-WATERING THAT IS REQUIRED AT NO ADDITIONAL COST TO THE DIVISION.
- REPAIR OR REPLACE DAMAGE TO EXISTING FACILITIES (TILE, UTILITIES, FENCES, ETC.) DESIGNATED TO REMAIN, AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL AREAS DISTURBED BY CONSTRUCTION, INCLUDING STAGING AREAS AND HAUL ROUTES, ARE TO BE REWORKED TO THEIR EXISTING CONDITIONS AND SEEDED AT NO ADDITIONAL COST TO THE DIVISION IF OUTSIDE OF PROJECT LIMITS AND NOT APPROVED BY ENGINEER.
- WORK WHICH DOES NOT CONFORM TO THE REQUIREMENTS OF THE CONTRACT WILL BE CONSIDERED UNACCEPTABLE. UNACCEPTABLE WORK, WHETHER THE RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE MATERIALS, DAMAGE THROUGH CARELESSNESS OR ANY OTHER CAUSE, FOUND TO EXIST PRIOR TO THE FINAL ACCEPTANCE OF THE WORK, SHALL BE REMOVED AND REPLACED IN AN ACCEPTABLE MANNER, AS REQUIRED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.

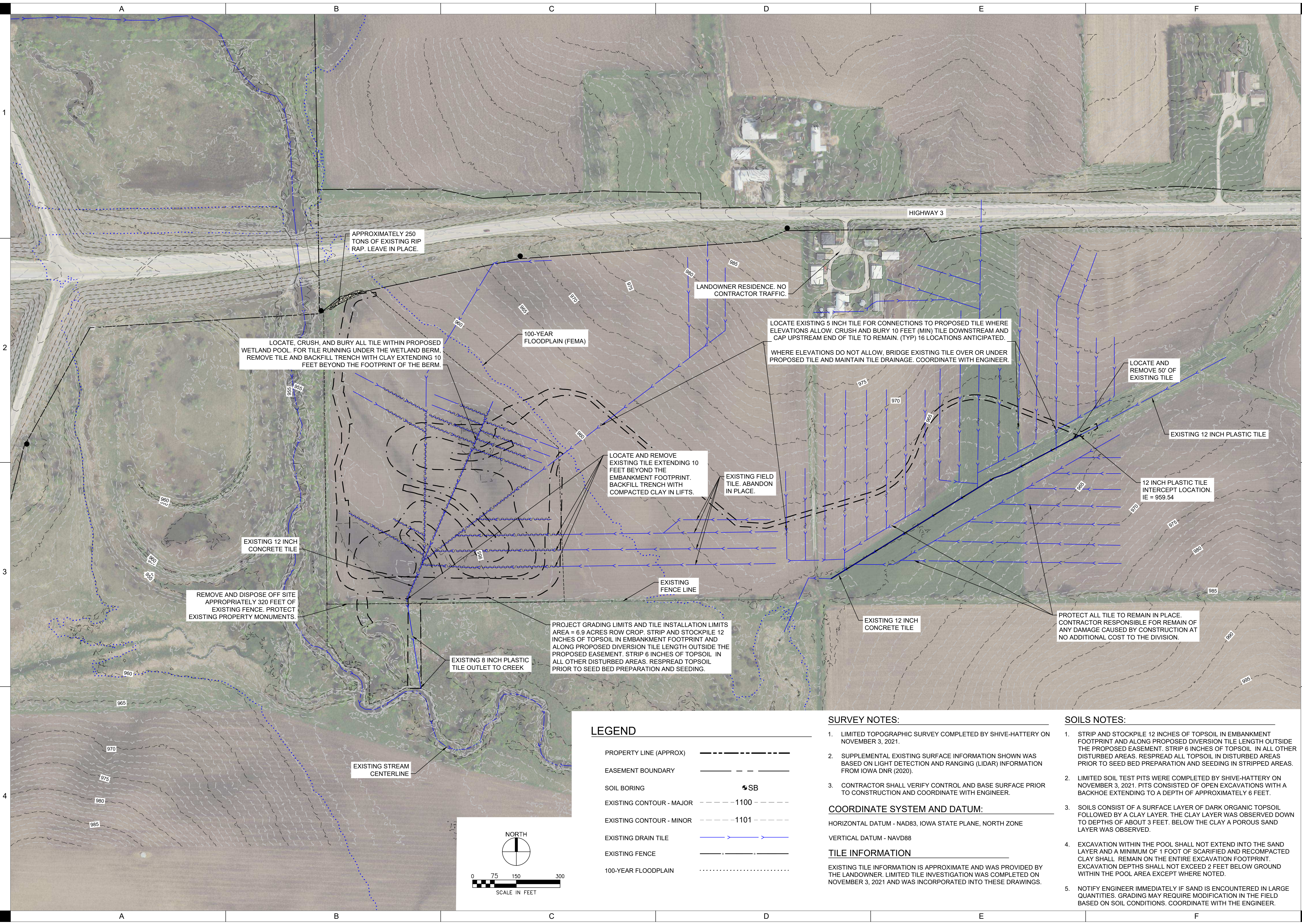
CULTURAL RESOURCES NOTE:

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

- 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 25% WAS ESTIMATED FOR THIS PROJECT. THE CONTRACTOR SHALL MAKE CHANGES IN EARTHWORK AS NEEDED TO ADJUST FOR INACCURACIES INHERENT WITH ESTIMATING THE SHRINKAGE FACTOR. THESE CHANGES SHALL ONLY BE MADE AFTER CONSULTATION AND APPROVAL BY THE ENGINEER AND DIVISION.
- CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISHED GRADE.
- THE CONTRACTOR SHALL KEEP ALL ROADS OPEN TO THROUGH TRAFFIC AT ALL TIMES.
- ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COORDINATED WITH THE GOVERNING AUTHORITY AND SHALL BE DONE IN ACCORDANCE WITH THEIR STANDARDS.
- SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.

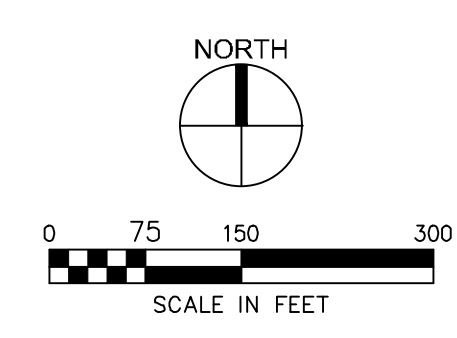


| | |
|--------------|------------------------|
| DRAWN: | GJK |
| APPROVED: | DJ |
| ISSUED FOR: | CONSTRUCTION DOCUMENTS |
| DATE: | 01-19-2024 |
| PROJECT NO.: | 421600 |
| FIELD BOOK: | -- |
| CLIENT NO.: | -- |



LEGEND

| | |
|--------------------------|----------------|
| PROPERTY LINE (APPROX) | --- |
| EASEMENT BOUNDARY | --- |
| SOIL BORING | SB |
| EXISTING CONTOUR - MAJOR | -----1100----- |
| EXISTING CONTOUR - MINOR | -----1101----- |
| EXISTING DRAIN TILE | --->--- |
| EXISTING FENCE | ---o--- |
| 100-YEAR FLOODPLAIN | |



SURVEY NOTES:

- LIMITED TOPOGRAPHIC SURVEY COMPLETED BY SHIVE-HATTERY ON NOVEMBER 3, 2021.
- SUPPLEMENTAL EXISTING SURFACE INFORMATION SHOWN WAS BASED ON LIGHT DETECTION AND RANGING (LIDAR) INFORMATION FROM IOWA DNR (2020).
- CONTRACTOR SHALL VERIFY CONTROL AND BASE SURFACE PRIOR TO CONSTRUCTION AND COORDINATE WITH ENGINEER.

COORDINATE SYSTEM AND DATUM:

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

TILE INFORMATION

EXISTING TILE INFORMATION IS APPROXIMATE AND WAS PROVIDED BY THE LANDOWNER. LIMITED TILE INVESTIGATION WAS COMPLETED ON NOVEMBER 3, 2021 AND WAS INCORPORATED INTO THESE DRAWINGS.

SOILS NOTES:

- STRIP AND STOCKPILE 12 INCHES OF TOPSOIL IN EMBANKMENT FOOTPRINT AND ALONG PROPOSED DIVERSION TILE LENGTH OUTSIDE THE PROPOSED EASEMENT. STRIP 6 INCHES OF TOPSOIL IN ALL OTHER DISTURBED AREAS. RESPREAD ALL TOPSOIL IN DISTURBED AREAS PRIOR TO SEED BED PREPARATION AND SEEDING IN STRIPPED AREAS.
- LIMITED SOIL TEST PITS WERE COMPLETED BY SHIVE-HATTERY ON NOVEMBER 3, 2021. PITS CONSISTED OF OPEN EXCAVATIONS WITH A BACKHOE EXTENDING TO A DEPTH OF APPROXIMATELY 6 FEET.
- SOILS CONSIST OF A SURFACE LAYER OF DARK ORGANIC TOPSOIL FOLLOWED BY A CLAY LAYER. THE CLAY LAYER WAS OBSERVED DOWN TO DEPTHS OF ABOUT 3 FEET. BELOW THE CLAY A POROUS SAND LAYER WAS OBSERVED.
- EXCAVATION WITHIN THE POOL SHALL NOT EXTEND INTO THE SAND LAYER AND A MINIMUM OF 1 FOOT OF SCARIFIED AND RECOMPACTED CLAY SHALL REMAIN ON THE ENTIRE EXCAVATION FOOTPRINT. EXCAVATION DEPTHS SHALL NOT EXCEED 2 FEET BELOW GROUND WITHIN THE POOL AREA EXCEPT WHERE NOTED.
- NOTIFY ENGINEER IMMEDIATELY IF SAND IS ENCOUNTERED IN LARGE QUANTITIES. GRADING MAY REQUIRE MODIFICATION IN THE FIELD BASED ON SOIL CONDITIONS. COORDINATE WITH THE ENGINEER.

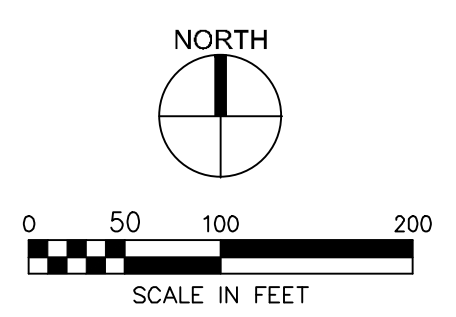
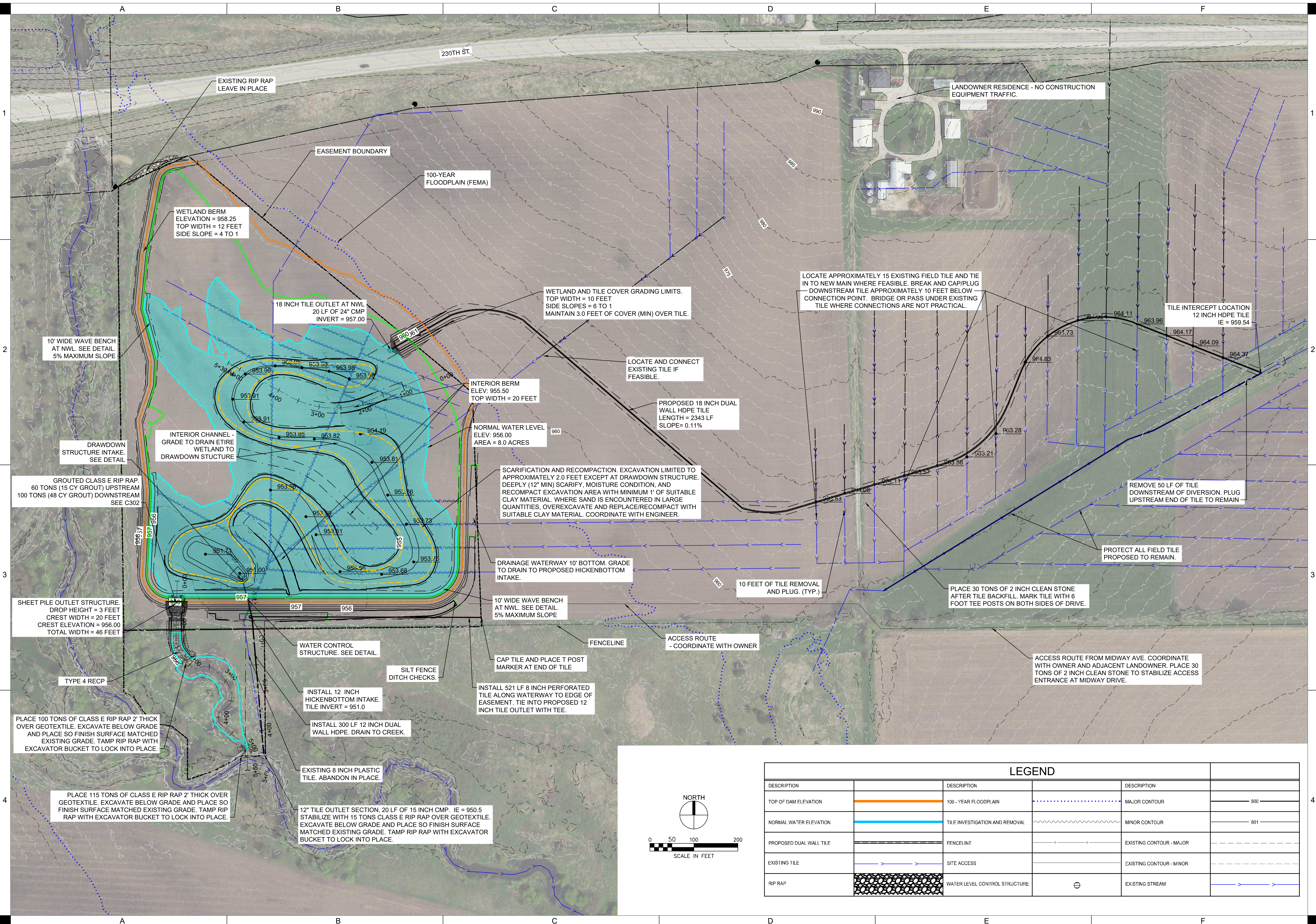
| | |
|--------------|------------------------|
| DRAWN: | GHK |
| APPROVED: | DJ |
| ISSUED FOR: | CONSTRUCTION DOCUMENTS |
| DATE: | 01-19-2024 |
| PROJECT NO.: | 4216000 |
| FIELD BOOK: | --- |
| CLIENT NO.: | --- |

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**BRE911312B BREMER
COUNTY WETLAND**

IDALS
BREMER COUNTY, IA



| LEGEND | | | |
|-------------------------|--|--------------------------------|--|
| DESCRIPTION | | DESCRIPTION | |
| TOP OF DAM ELEVATION | | 100-YEAR FLOODPLAIN | |
| NORMAL WATER ELEVATION | | TILE INVESTIGATION AND REMOVAL | |
| PROPOSED DUAL WALL TILE | | FENCELINE | |
| EXISTING TILE | | SITE ACCESS | |
| RIP RAP | | WATER LEVEL CONTROL STRUCTURE | |
| | | MAJOR CONTOUR | |
| | | MINOR CONTOUR | |
| | | EXISTING CONTOUR - MAJOR | |
| | | EXISTING CONTOUR - MINOR | |
| | | EXISTING STREAM | |

DRAWN: DJJ
APPROVED: DJJ
ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: 01-19-2024
PROJECT NO: 4218000
FIELD BOOK: ---
CLIENT NO: ---

OVERALL SITE PLAN

WETLAND AND TILE COVER GRADING LIMITS.
TOP WIDTH = 10 FEET
SIDE SLOPES = 6 TO 1
MAINTAIN 3.0 FEET OF COVER (MIN) OVER TILE.

18 INCH TILE OUTLET AT NWL
20 LF OF 24" CMP
INVERT = 957.00

10' WIDE WAVE BENCH AT NWL
SEE DETAIL. 5% MAXIMUM SLOPE

INTERIOR BERM ELEV: 955.50
TOP WIDTH = 20 FEET

LOCATE AND CONNECT
EXISTING TILE IF FEASIBLE.

PROPOSED 18 INCH DUAL
WALL HDPE TILE
LENGTH = 2363 LF
SLOPE = 0.11%

NORMAL WATER LEVEL
ELEV: 956.00
AREA = 8.0 ACRES

INTERIOR CHANNEL - GRADE TO
DRAIN ENTIRE WETLAND TO
DRAWDOWN STRUCTURE

SCARIFICATION AND RECOMPACTION. EXCAVATION LIMITED TO APPROXIMATELY 2.0 FEET
EXCEPT AT DRAWDOWN STRUCTURE. DEEPLY (12" MIN) SCARIFY, MOISTURE CONDITION,
AND RECOMPACT EXCAVATION AREA WITH MINIMUM 1' OF SUITABLE CLAY MATERIAL.
WHERE SAND IS ENCOUNTERED IN LARGE QUANTITIES, OVEREXCAVATE AND
REPLACE/RECOMPACT WITH SUITABLE CLAY MATERIAL. COORDINATE WITH ENGINEER.

WHERE EXCAVATION EXCEEDS 2 FEET, CARE SHOULD BE
TAKEN TO MAINTAIN CLAY BOTTOM OF WETLAND. IF SAND IS
ENCOUNTERED, CONTRACTOR SHALL OVEREXCAVATE 2 FEET
AND REPLACE WITH SUITABLE CLAY MATERIAL AND
COMPACT. COORDINATE WITH ENGINEER.

DRAINAGE WATERWAY 10' BOTTOM. GRADE TO
DRAIN TO PROPOSED HICKENBOTTOM INTAKE.

10' WIDE WAVE BENCH
AT NWL. SEE DETAIL.
5% MAXIMUM SLOPE

ACCESS ROUTE -
COORDINATE WITH OWNER

GROUTED CLASS E RIP RAP.
60 TONS (15 CY GROUT) UPSTREAM
100 TONS (48 CY GROUT) DOWNSTREAM
- SEE C302

DRAWDOWN STRUCTURE INTAKE
- SEE DETAIL

INSTALL 525 LF 8 INCH PERFORATED TILE ALONG
WATERWAY TO EDGE OF EASEMENT. TIE INTO
PROPOSED 12 INCH TILE OUTLET WITH TEE.

SHEET PILE OUTLET STRUCTURE.
DROP HEIGHT = 3 FEET
CREST WIDTH = 20 FEET
CREST ELEVATION = 956.00
TOTAL WIDTH = 46 FEET

WATER CONTROL STRUCTURE.
- SEE DETAIL.

SILT FENCE DITCH CHECKS.

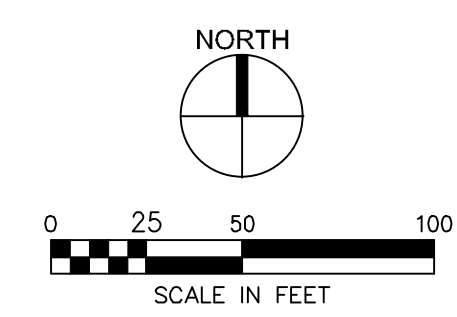
EXISTING 8 INCH PLASTIC
TILE. ABANDON IN PLACE.

INSTALL 12 INCH HICKENBOTTOM
INTAKE. TILE INVERT = 951.0

INSTALL 300 LF 12 INCH DUAL
WALL HDPE. DRAIN TO CREEK.

PLACE 100 TONS OF CLASS E RIP RAP 2' THICK OVER
GEOTEXTILE. EXCAVATE BELOW GRADE AND PLACE SO
FINISH SURFACE MATCHED EXISTING GRADE. TAMP RIP RAP
WITH EXCAVATOR BUCKET TO LOCK INTO PLACE.

TYPE 2B RECP



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COUNTY WETLAND

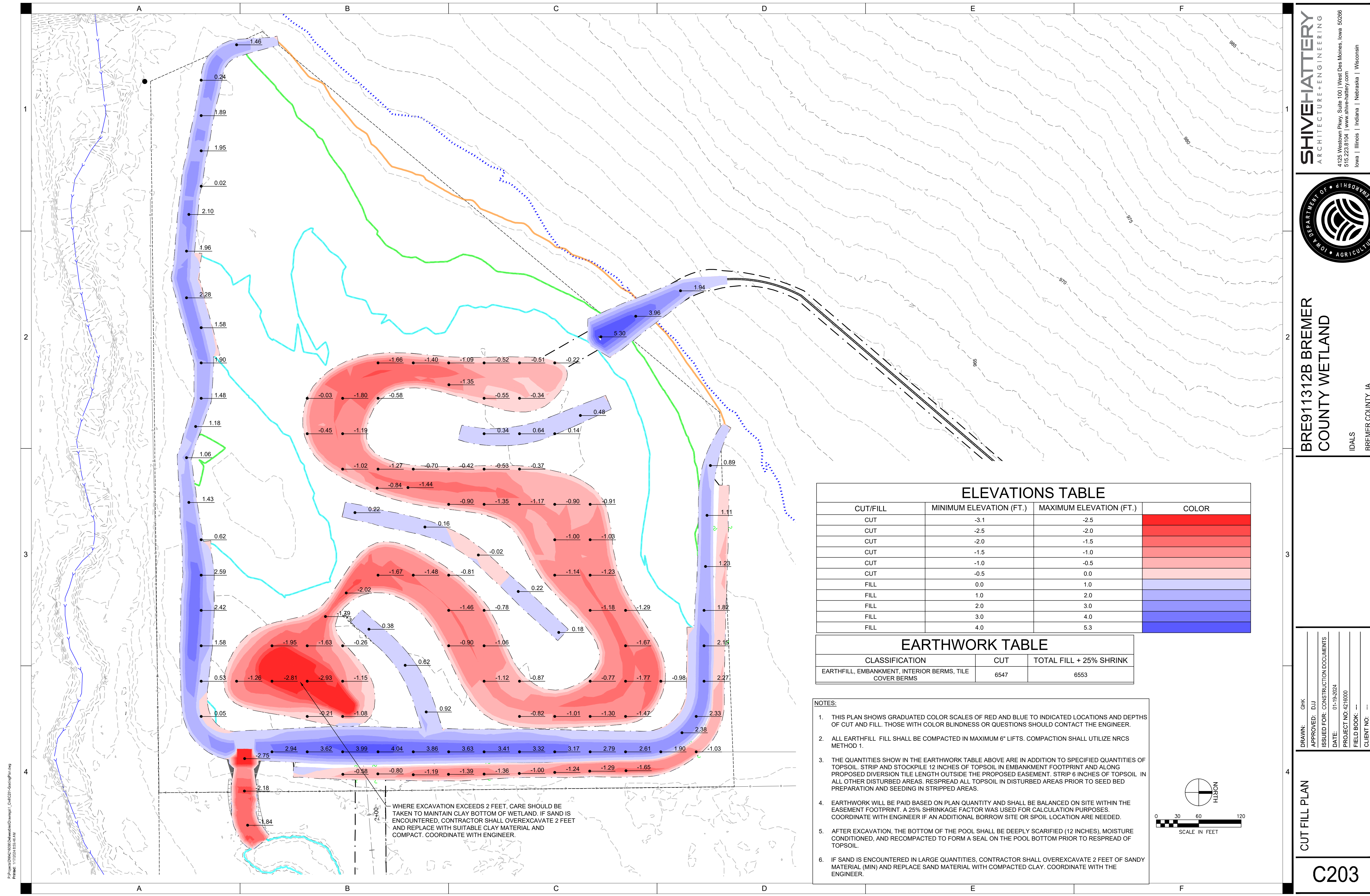
IDALS
BREMER COUNTY, IA

Table with project details: DRAWN: DJJ, APPROVED: DJJ, ISSUED FOR: CONSTRUCTION DOCUMENTS, DATE: 01-19-2024, PROJECT NO: 4218000, FIELD BOOK: --, CLIENT NO: --

WETLAND GRADING
PLAN

C202

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WHERE EXCAVATION EXCEEDS 2 FEET, CARE SHOULD BE TAKEN TO MAINTAIN CLAY BOTTOM OF WETLAND. IF SAND IS ENCOUNTERED, CONTRACTOR SHALL OVEREXCAVATE 2 FEET AND REPLACE WITH SUITABLE CLAY MATERIAL AND COMPACT. COORDINATE WITH ENGINEER.

ELEVATIONS TABLE

| CUT/FILL | MINIMUM ELEVATION (FT.) | MAXIMUM ELEVATION (FT.) | COLOR |
|----------|-------------------------|-------------------------|---------------------|
| CUT | -3.1 | -2.5 | [Red color swatch] |
| CUT | -2.5 | -2.0 | |
| CUT | -2.0 | -1.5 | |
| CUT | -1.5 | -1.0 | |
| CUT | -1.0 | -0.5 | |
| CUT | -0.5 | 0.0 | [Blue color swatch] |
| FILL | 0.0 | 1.0 | |
| FILL | 1.0 | 2.0 | |
| FILL | 2.0 | 3.0 | |
| FILL | 3.0 | 4.0 | |
| FILL | 4.0 | 5.3 | |

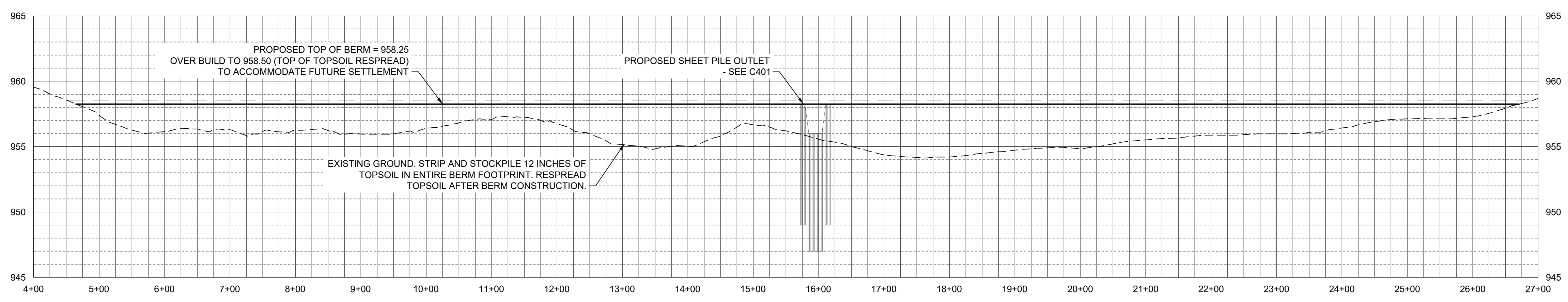
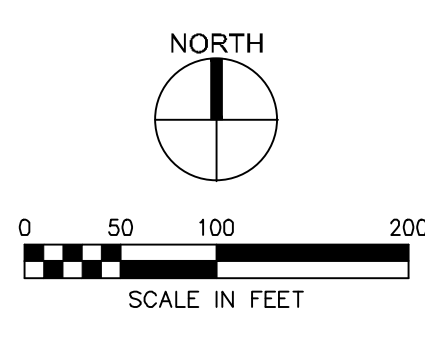
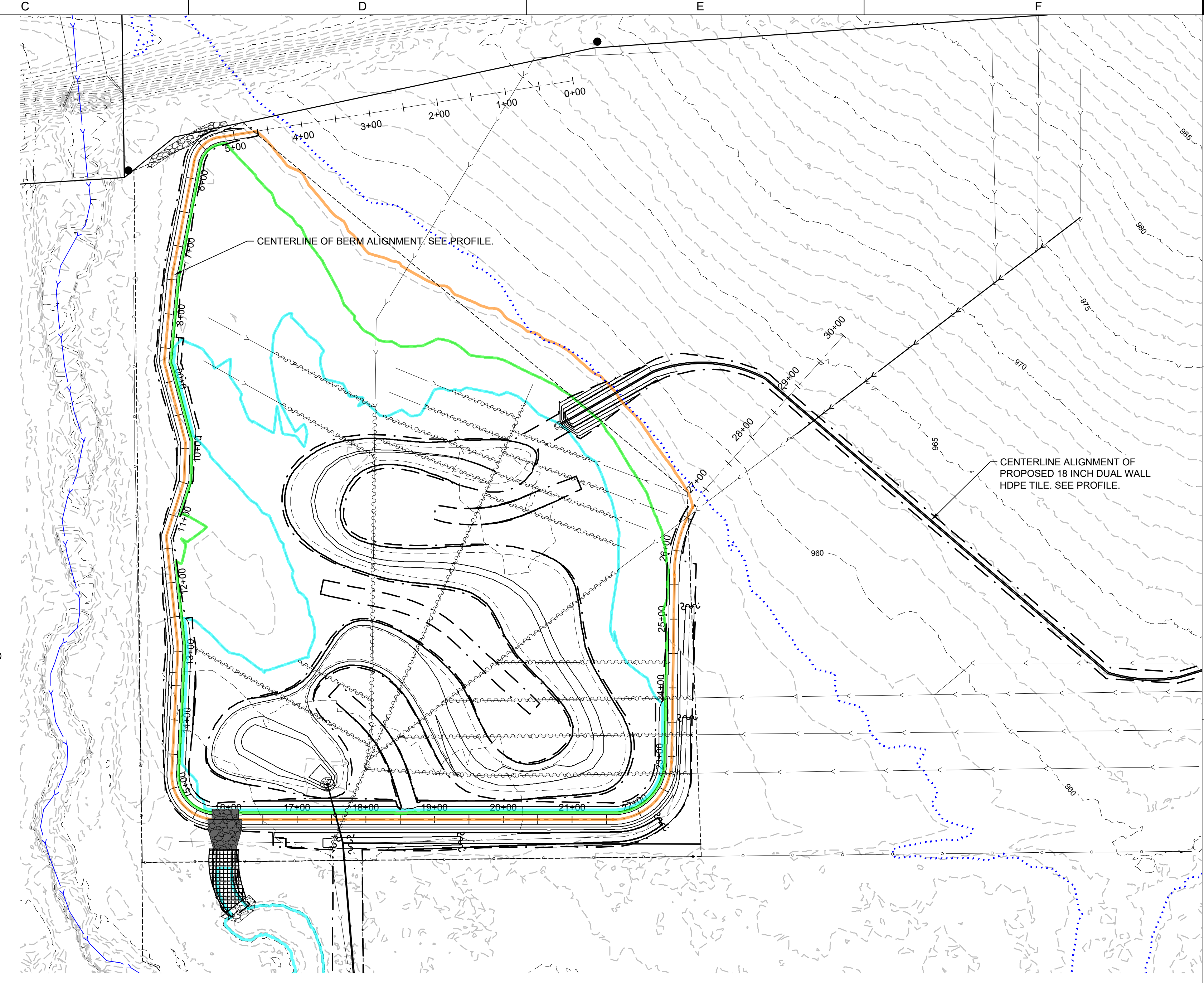
EARTHWORK TABLE

| CLASSIFICATION | CUT | TOTAL FILL + 25% SHRINK |
|---|------|-------------------------|
| EARTHFILL, EMBANKMENT, INTERIOR BERMS, TILE COVER BERMS | 6547 | 6553 |

- NOTES:**
- THIS PLAN SHOWS GRADUATED COLOR SCALES OF RED AND BLUE TO INDICATED LOCATIONS AND DEPTHS OF CUT AND FILL. THOSE WITH COLOR BLINDNESS OR QUESTIONS SHOULD CONTACT THE ENGINEER.
 - ALL EARTHFILL FILL SHALL BE COMPACTED IN MAXIMUM 6" LIFTS. COMPACTION SHALL UTILIZE NRCS METHOD 1.
 - THE QUANTITIES SHOW IN THE EARTHWORK TABLE ABOVE ARE IN ADDITION TO SPECIFIED QUANTITIES OF TOPSOIL, STRIP AND STOCKPILE 12 INCHES OF TOPSOIL IN EMBANKMENT FOOTPRINT AND ALONG PROPOSED DIVERSION TILE LENGTH OUTSIDE THE PROPOSED EASEMENT. STRIP 6 INCHES OF TOPSOIL IN ALL OTHER DISTURBED AREAS. RESPREAD ALL TOPSOIL IN DISTURBED AREAS PRIOR TO SEED BED PREPARATION AND SEEDING IN STRIPPED AREAS.
 - EARTHWORK WILL BE PAID BASED ON PLAN QUANTITY AND SHALL BE BALANCED ON SITE WITHIN THE EASEMENT FOOTPRINT. A 25% SHRINKAGE FACTOR WAS USED FOR CALCULATION PURPOSES. COORDINATE WITH ENGINEER IF AN ADDITIONAL BORROW SITE OR SPOIL LOCATION ARE NEEDED.
 - AFTER EXCAVATION, THE BOTTOM OF THE POOL SHALL BE DEEPLY SCARIFIED (12 INCHES), MOISTURE CONDITIONED, AND RECOMPACTED TO FORM A SEAL ON THE POOL BOTTOM PRIOR TO RESPREAD OF TOPSOIL.
 - IF SAND IS ENCOUNTERED IN LARGE QUANTITIES, CONTRACTOR SHALL OVEREXCAVATE 2 FEET OF SANDY MATERIAL (MIN) AND REPLACE SAND MATERIAL WITH COMPACTED CLAY. COORDINATE WITH THE ENGINEER.

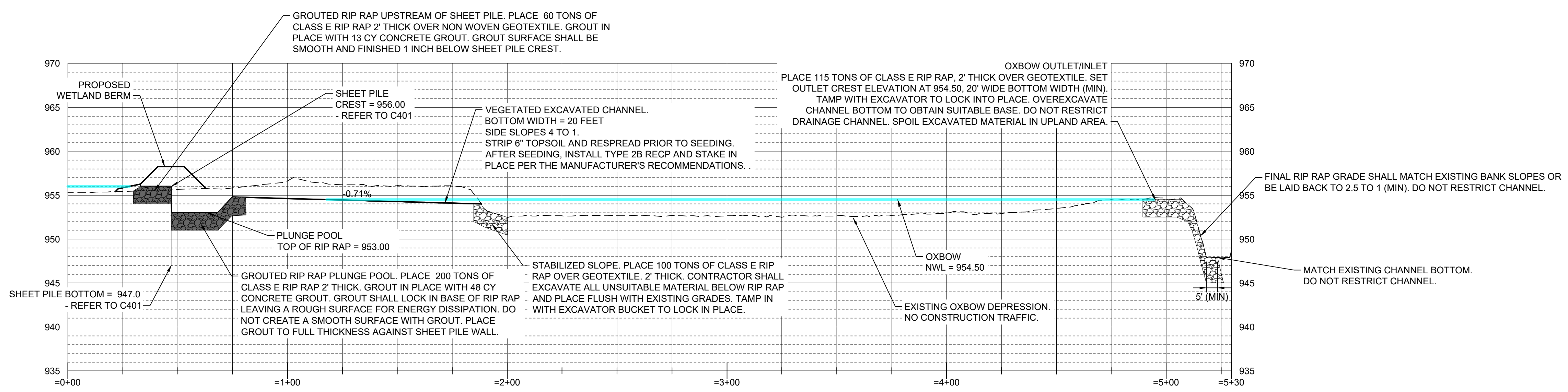
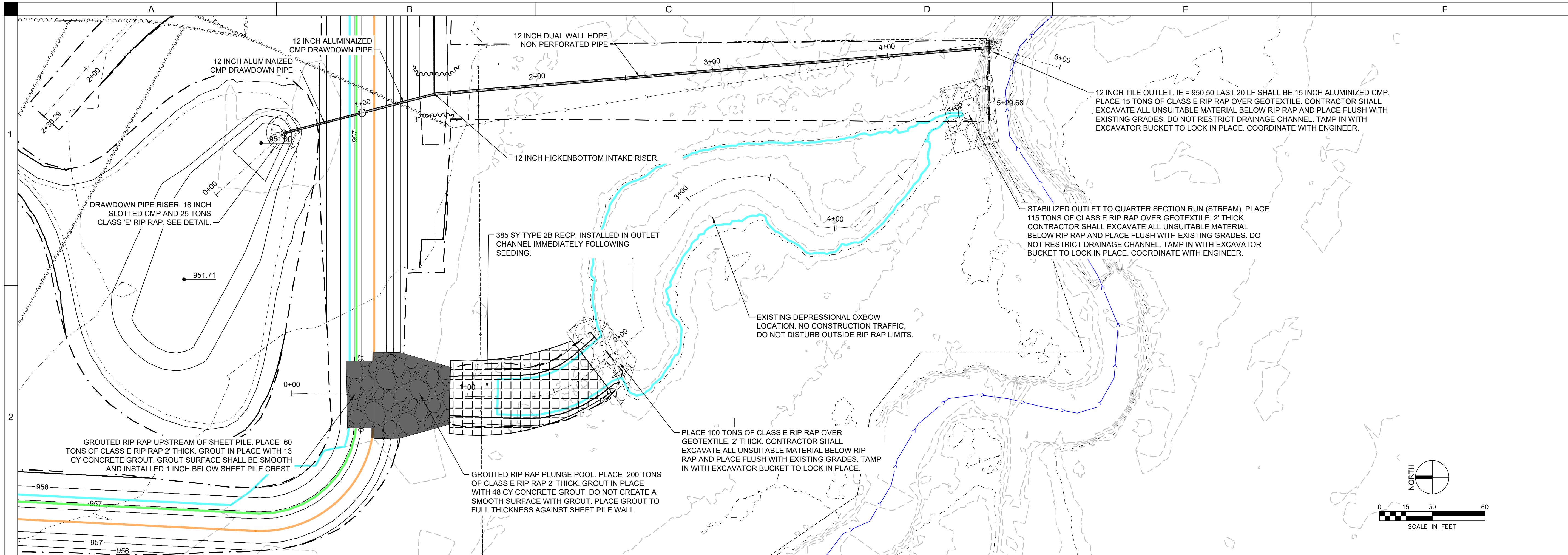


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| CLIENT NO.: | -- |

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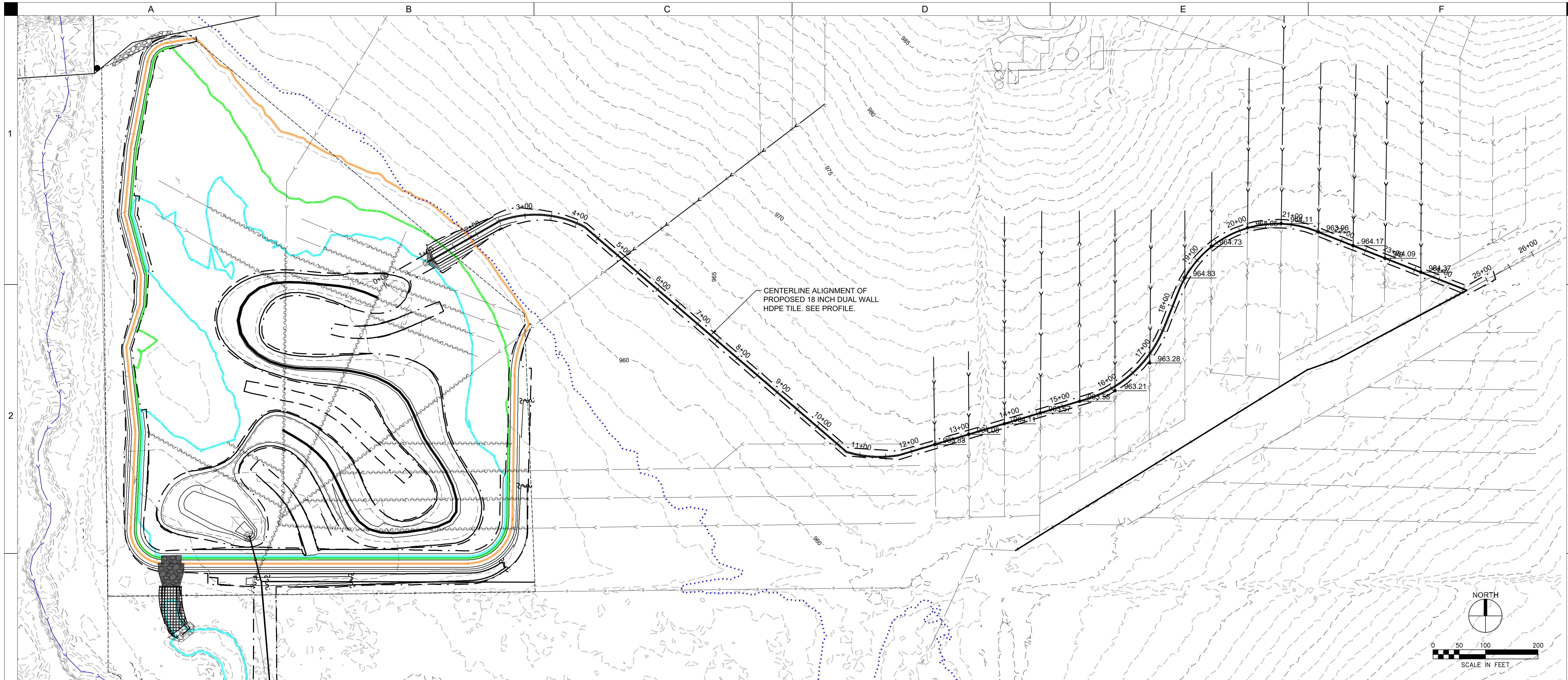
BRE911312B BREMER
 COUNTY WETLAND

IDALS
 BREMER COUNTY, IA

**OUTLET CHANNEL
 PLAN AND PROFILE**

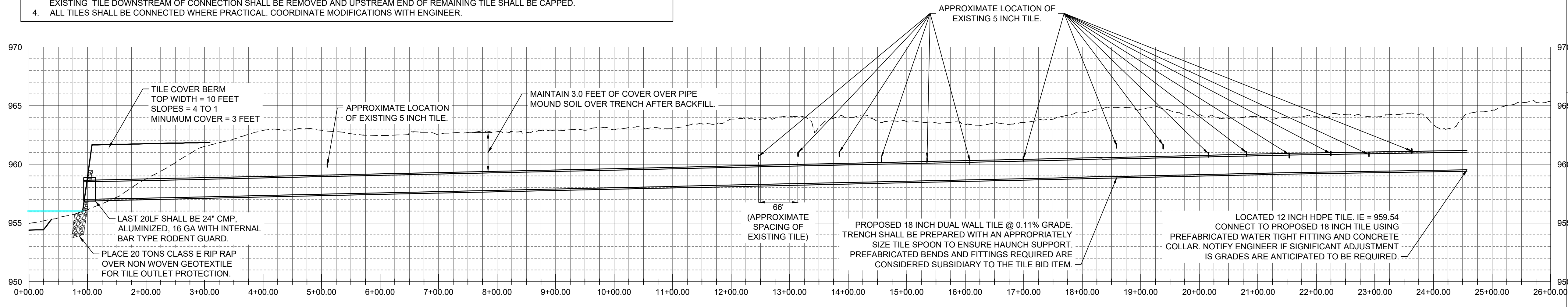
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C302



CENTERLINE ALIGNMENT OF PROPOSED 18 INCH DUAL WALL HDPE TILE. SEE PROFILE.

- TILE CONNECTION NOTES:**
- EXISTING TILE MAP WAS PROVIDED BY THE LANDOWNER. LOCATIONS ARE APPROXIMATE. TILE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
 - BASED ON PROVIDED MAP, 5 INCH TILE WERE NOTED TO BE INSTALLED WITH A DRAIN SPACING OF 4 RODS (66 FEET) AND AT A DEPTH OF APPROXIMATELY 3 FEET.
 - TILE CONNECTIONS SHALL CONSIST OF 20 LF OF NEW 6 INCH TILE TRANSITION FROM EXISTING TILE TO THE PROPOSED 18 INCH TILE. 10 LF (MIN) OF EXISTING TILE DOWNSTREAM OF CONNECTION SHALL BE REMOVED AND UPSTREAM END OF REMAINING TILE SHALL BE CAPPED.
 - ALL TILES SHALL BE CONNECTED WHERE PRACTICAL. COORDINATE MODIFICATIONS WITH ENGINEER.



TILE COVER BERM
TOP WIDTH = 10 FEET
SLOPES = 4 TO 1
MINIMUM COVER = 3 FEET

LAST 20LF SHALL BE 24" CMP,
ALUMINIZED, 16 GA WITH INTERNAL
BAR TYPE RODENT GUARD.
PLACE 20 TONS CLASS E RIP RAP
OVER NON WOVEN GEOTEXTILE
FOR TILE OUTLET PROTECTION.

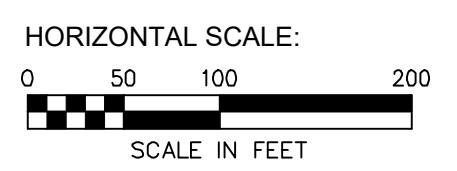
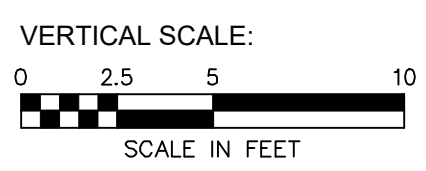
APPROXIMATE LOCATION
OF EXISTING 5 INCH TILE.

MAINTAIN 3.0 FEET OF COVER OVER PIPE
MOUND SOIL OVER TRENCH AFTER BACKFILL.

66'
(APPROXIMATE
SPACING OF
EXISTING TILE)

PROPOSED 18 INCH DUAL WALL TILE @ 0.11% GRADE.
TRENCH SHALL BE PREPARED WITH AN APPROPRIATELY
SIZE TILE SPOON TO ENSURE HAUNCH SUPPORT.
PREFABRICATED BENDS AND FITTINGS REQUIRED ARE
CONSIDERED SUBSIDIARY TO THE TILE BID ITEM.

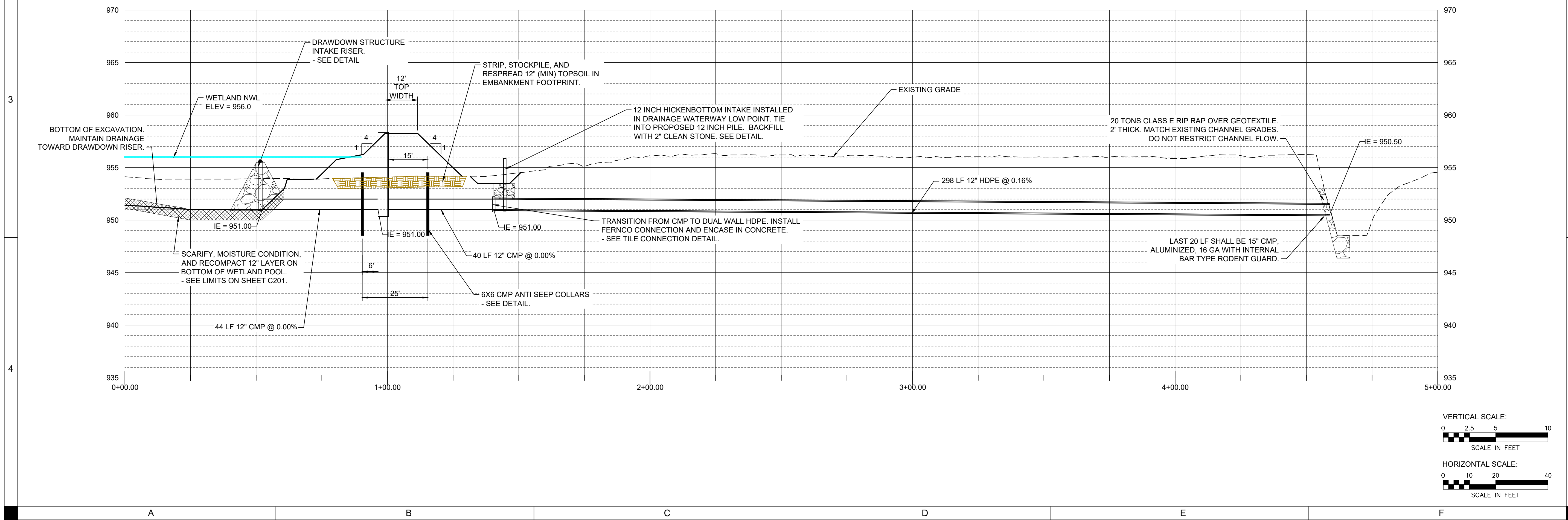
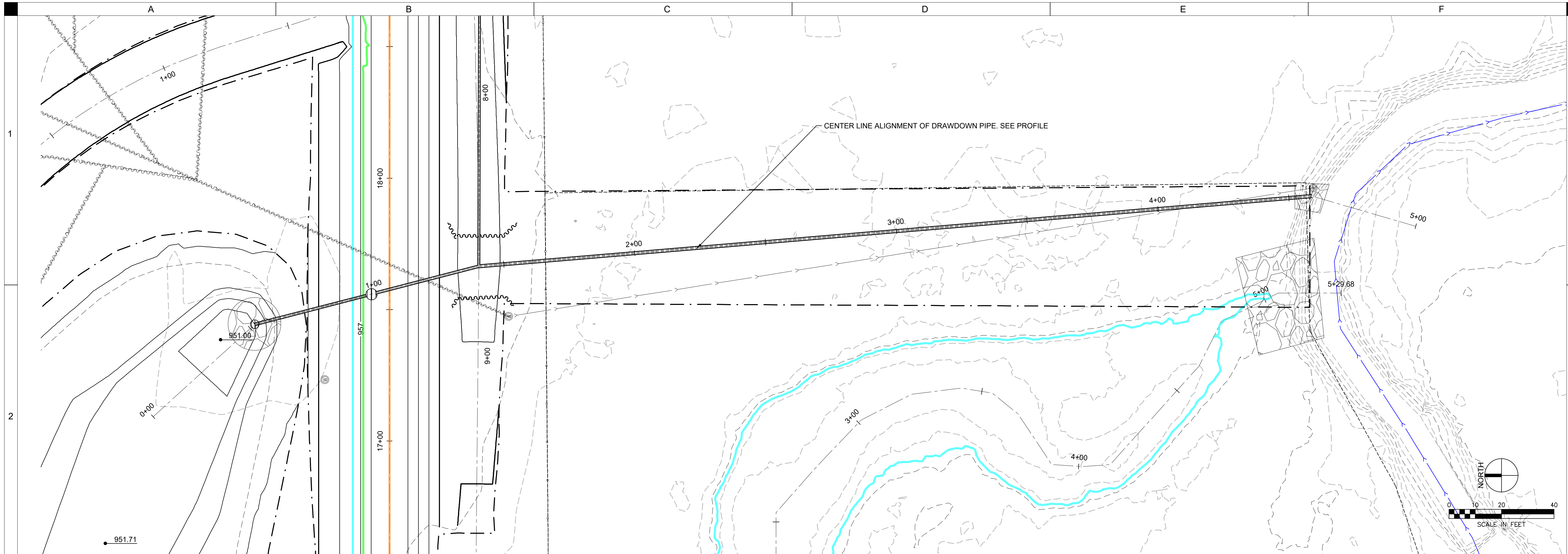
LOCATED 12 INCH HDPE TILE. IE = 959.54
CONNECT TO PROPOSED 18 INCH TILE USING
PREFABRICATED WATER TIGHT FITTING AND CONCRETE
COLLAR. NOTIFY ENGINEER IF SIGNIFICANT ADJUSTMENT
IS GRADES ARE ANTICIPATED TO BE REQUIRED.



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| DRAWN: | GJK |
| APPROVED: | DJ |
| ISSUED FOR: | CONSTRUCTION DOCUMENTS |
| DATE: | 01-19-2024 |
| PROJECT NO.: | 421600 |
| FIELD BOOK: | -- |
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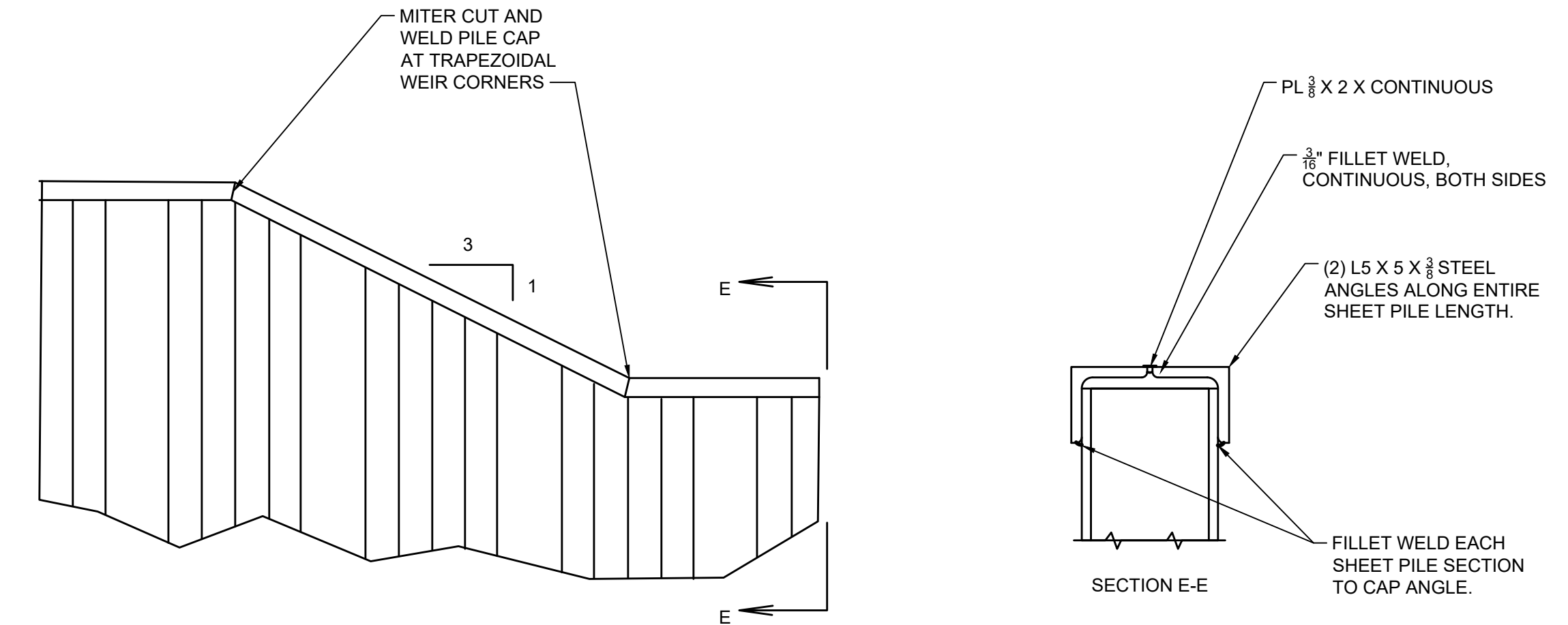
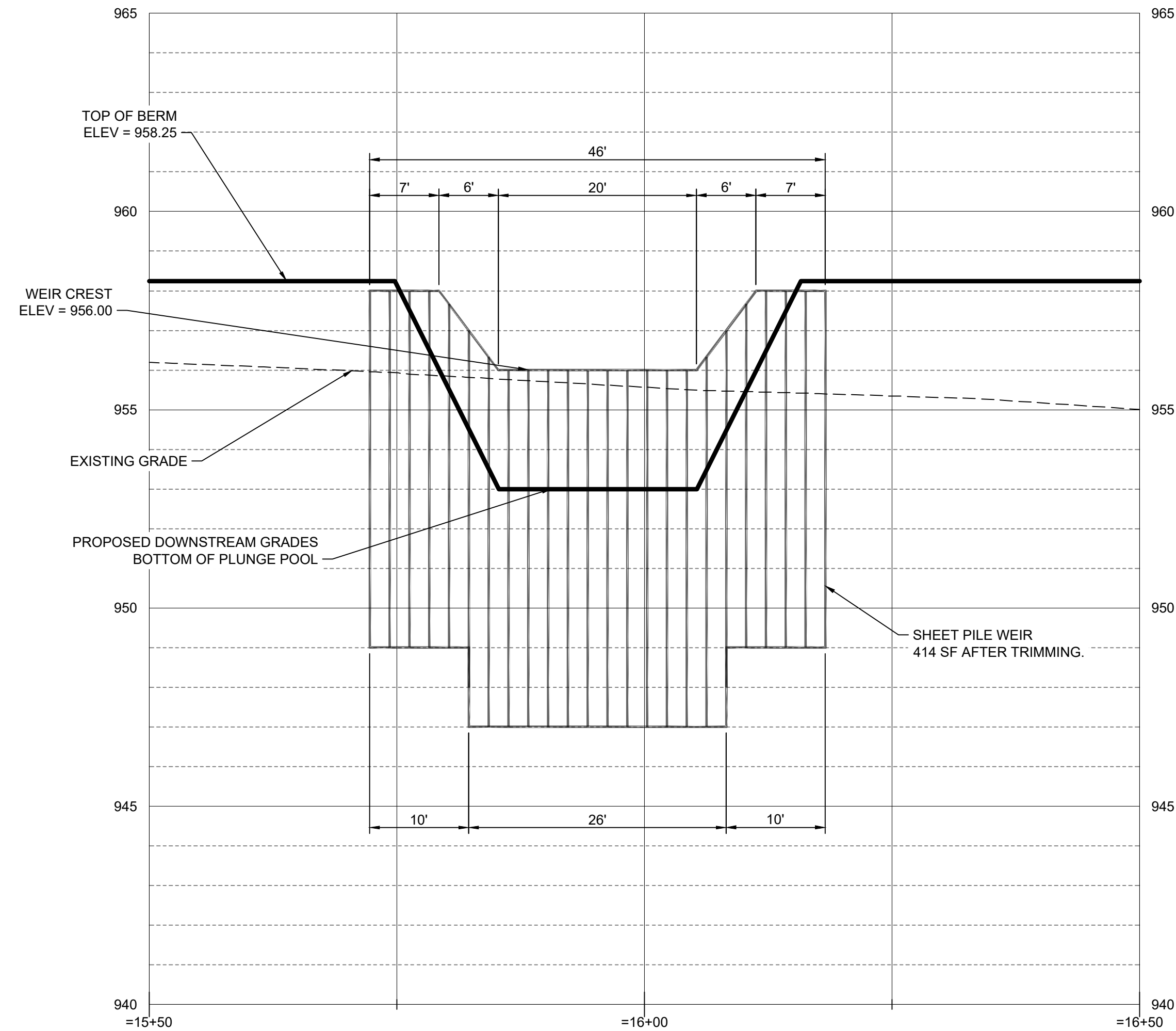
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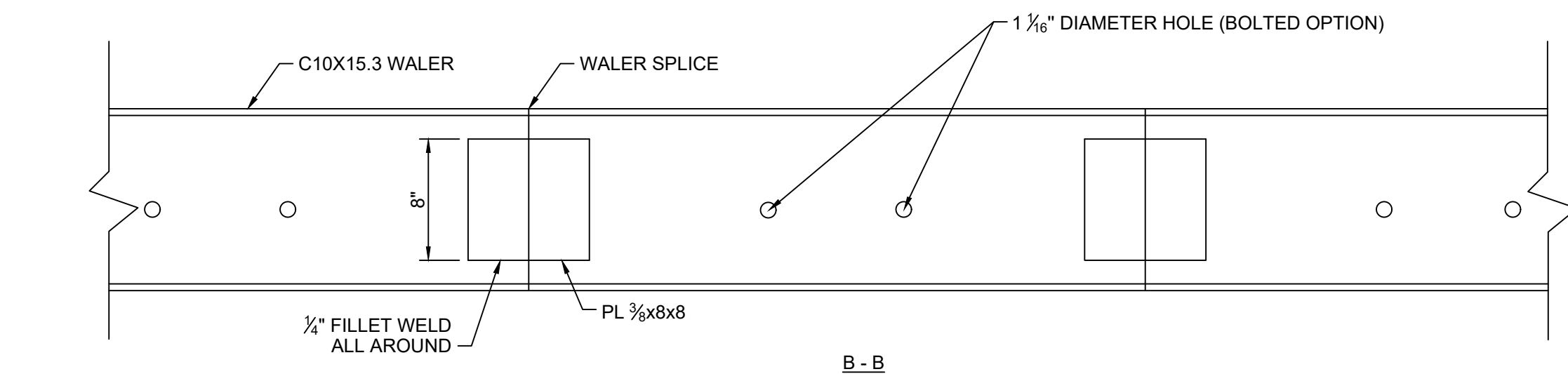
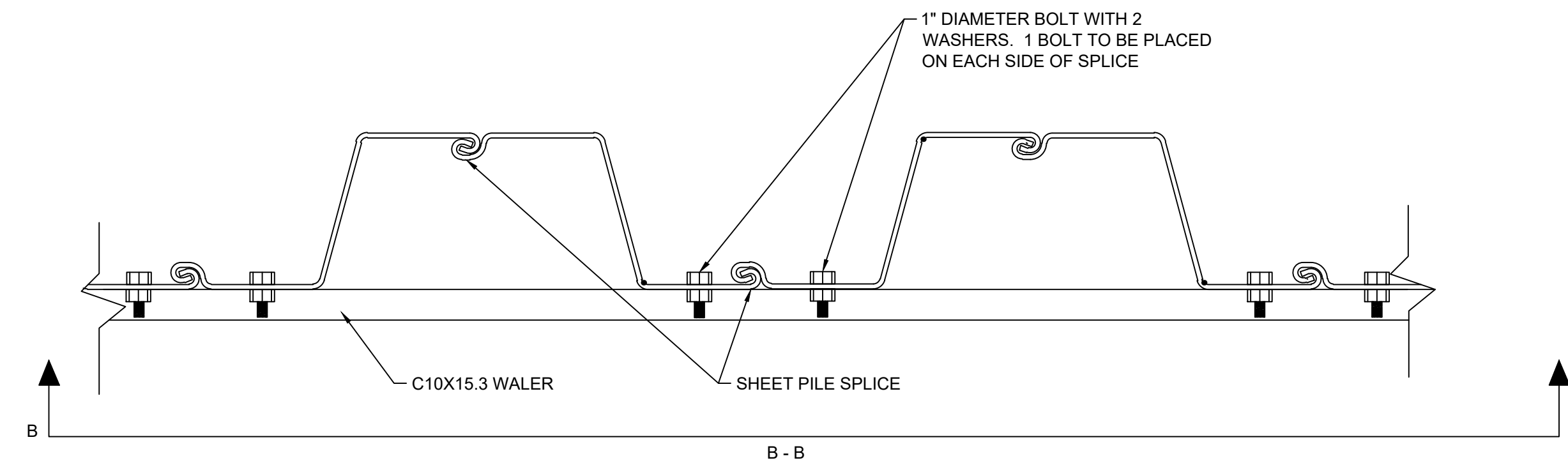
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SHEET PILE GENERAL NOTES:

1. DESIGN SHEET PILE AREA IS 414 SF AFTER TRIMMING
2. SHEET PILING REQUIREMENTS DESIGN BASIS - SKYLINE STEEL/NUCOR SCZ14 OR ENGINEER APPROVED EQUAL
 - 2.1. MINIMUM SECTION MODULUS OF 14.36 IN³ PER FOOT OF WALL.
 - 2.2. MINIMUM GRADE OF STEEL IS 50 KSI
 - 2.3. MINIMUM MOMENT OF INERTIA OF 71.82 IN⁴ PER FOOT OF WALL.
 - 2.4. MINIMUM THICKNESS OF 0.250"
 - 2.5. ALL SHEET PILING SHALL MEET ASTM A-572 GR50.
 - 2.6. ALL BOLTS SHALL MEET ASTM A307 GRADE A.
 - 2.7. ALL WASHERS SHALL MEET ASTM F436.
 - 2.8. ALL NUTS SHALL MEET ASTM A563.
3. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF PROPOSED SHEET PILE SYSTEM FOR APPROVAL BY ENGINEER.
4. SHEET PILE ATTACHMENT TO WALER:
 - 4.1. SHEET PILE/WALER/PILE CAP MAY BE BOLTED OR WELDED. SEE DETAILS FOR OPTIONS.
 - 4.2. BOLTED WALER OPTION
 - 4.2.1. ALL BOLTS WILL BE 1" DIAMETER WITH 2 WASHERS. BOLT SHALL BE EXTENDED AT A MINIMUM OF 3/8" BEYOND THE NUT.
 - 4.2.2. ALL HOLES SHALL BE FIELD DRILLED TO 1 1/16" DIAMETER. TORCH, PLASMA CUTTING, OR OTHER METHODS RESULTING IN AN IMPERFECT HOLE WILL NOT BE PERMITTED.
 - 4.2.3. THE WALER SHALL BE PLACED ON THE DOWNSTREAM SIDE OF THE WEIR.
 - 4.3. WELDED PILE CAP OPTION
 - 4.3.1. AT THE CONTRACTOR'S OPTION, A WELDED PILE CAP MAY BE INSTALLED IN LIEU OF THE BOLTED WALER. SEE PILE CAP OPTION DETAIL.
 - 4.3.2. WELDING SHALL BE IN ACCORDANCE WITH THE STRUCTURAL WELDING CODE, AWS D1.1, LATEST EDITION, AND SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY USING E70XX ELECTRODES.
5. ANY HOLES LEFT IN SHEET PILE SHALL BE CLOSED OFF.
6. AFTER SHEETING AND WALER INSTALLATION, ALL SHEETING IS TO BE CUT TO CONFORM WITH THE 3:1 SIDE SLOPE OF THE WEIR, MEET DESIGN ELEVATIONS, AND TO REMOVE ANY DAMAGE CAUSED BY DRIVING.
7. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATION OF AISC. FABRICATOR SHALL SUBMIT SHOP DRAWINGS AND FABRICATE AFTER ENGINEER'S REVIEW AND APPROVAL.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LIVE LOADS.
9. PROVIDE ALL NECESSARY TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACED DURING CONSTRUCTION.
10. A TEMPORARY BERM TO HOLD / GUIDE SHEETPILE DURING CONSTRUCTION IS RECOMMENDED.
11. NOTIFY ENGINEER IMMEDIATELY IF BEDROCK IS ENCOUNTERED PRIOR TO INSTALLATION OF SHEET PILE TO DESIGN DEPTHS.



WELDED PILE CAP OPTION DETAIL
 A C401 NTS



*NOTE: SHEET PILE BEYOND NOT SHOWN.

BOLTED WALER OPTION DETAIL
 B C401 NTS

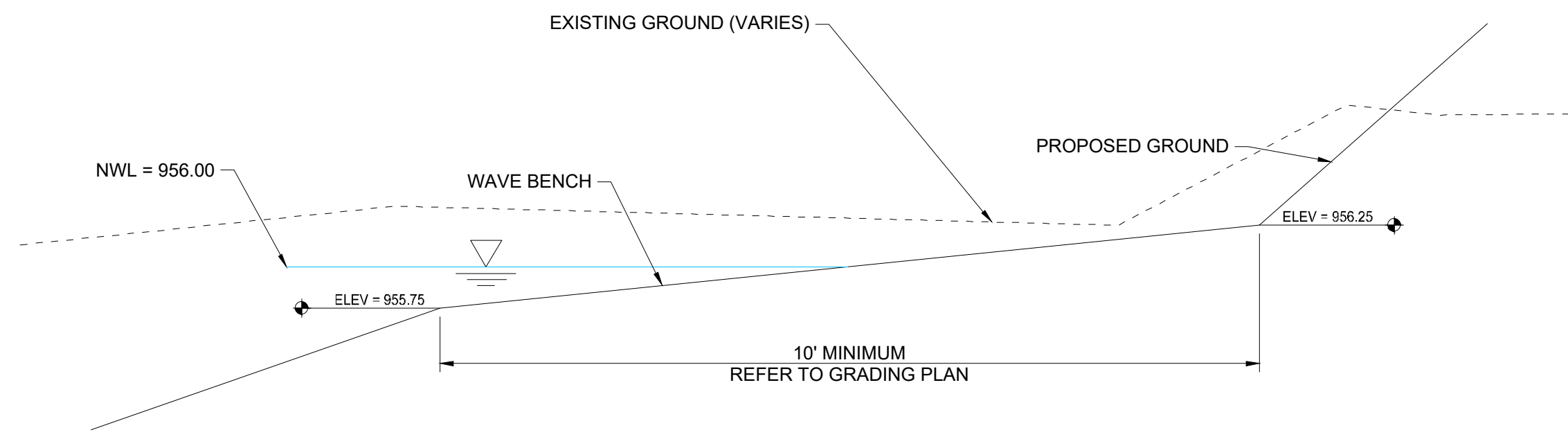
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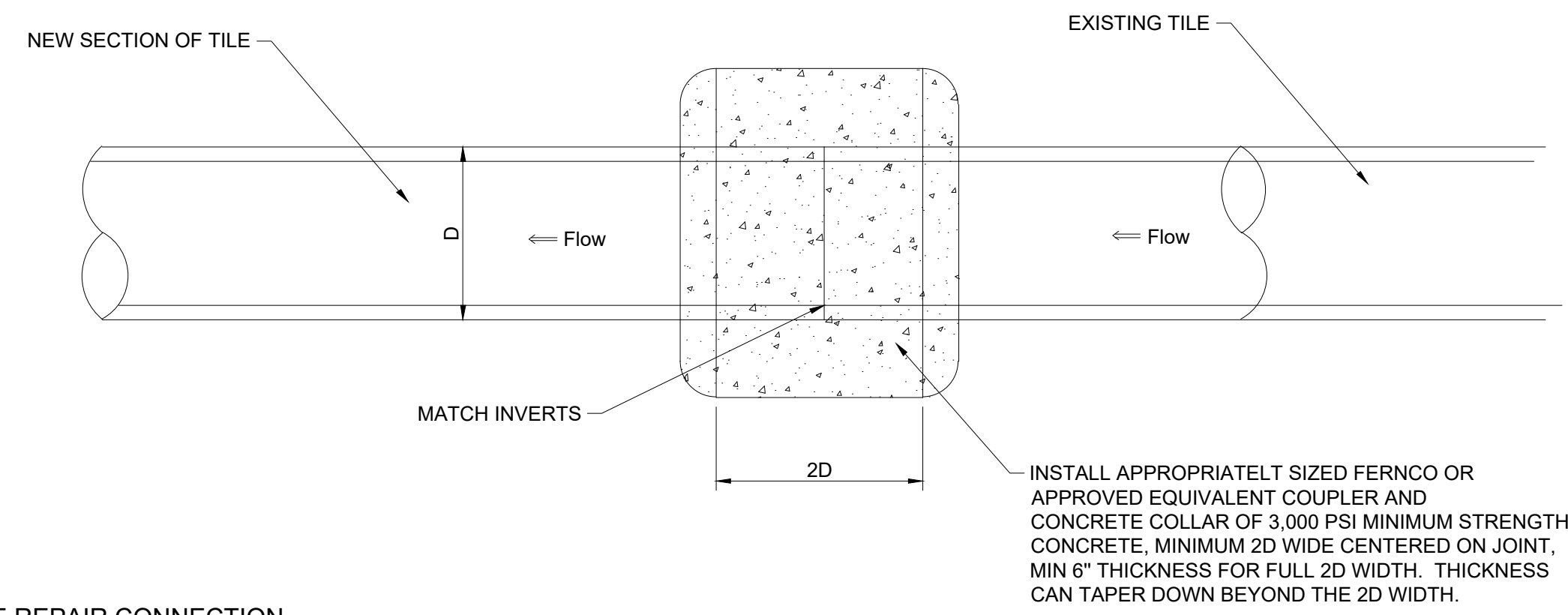
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 IDALS BREMER COUNTY, IA

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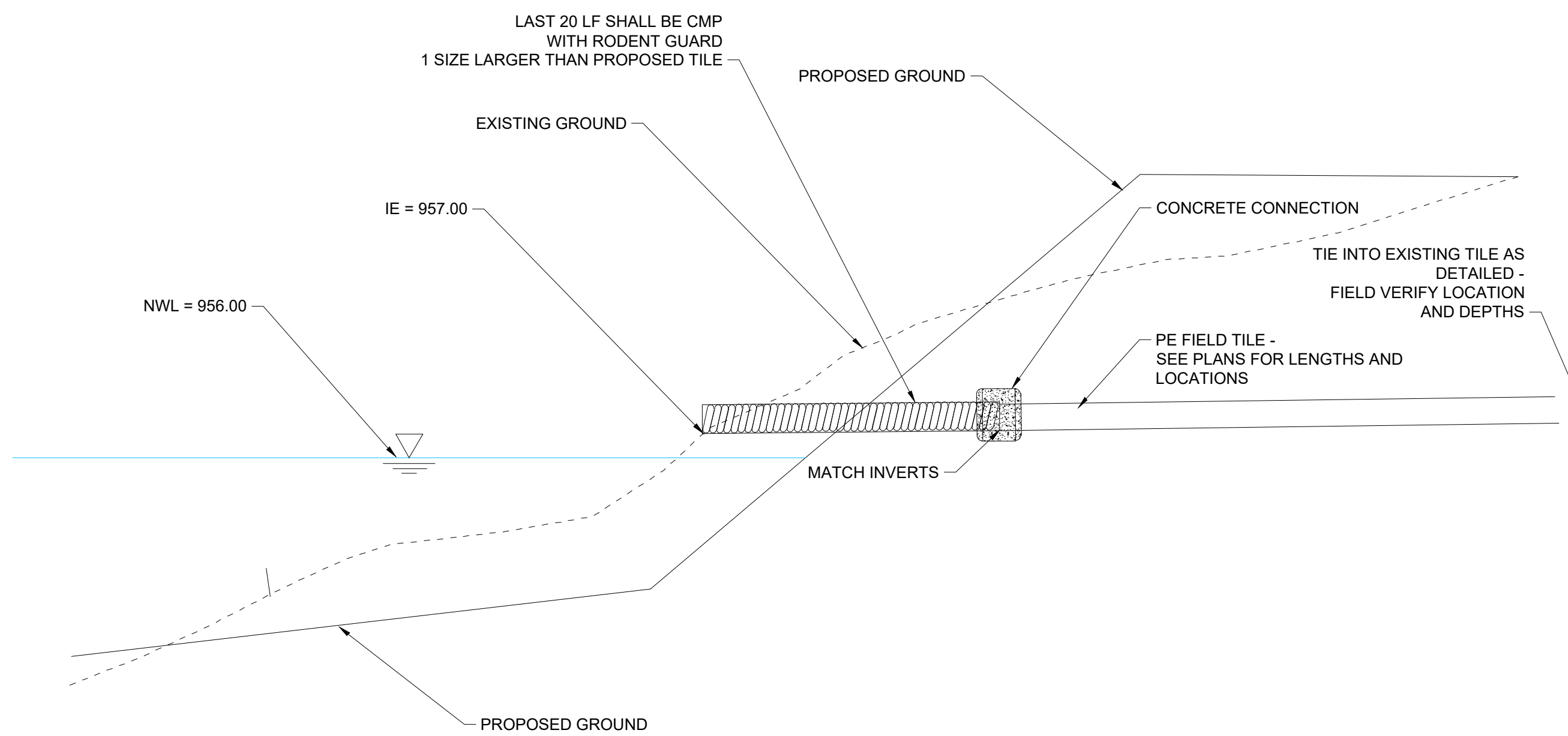
SHEET PILE WEIR
C401



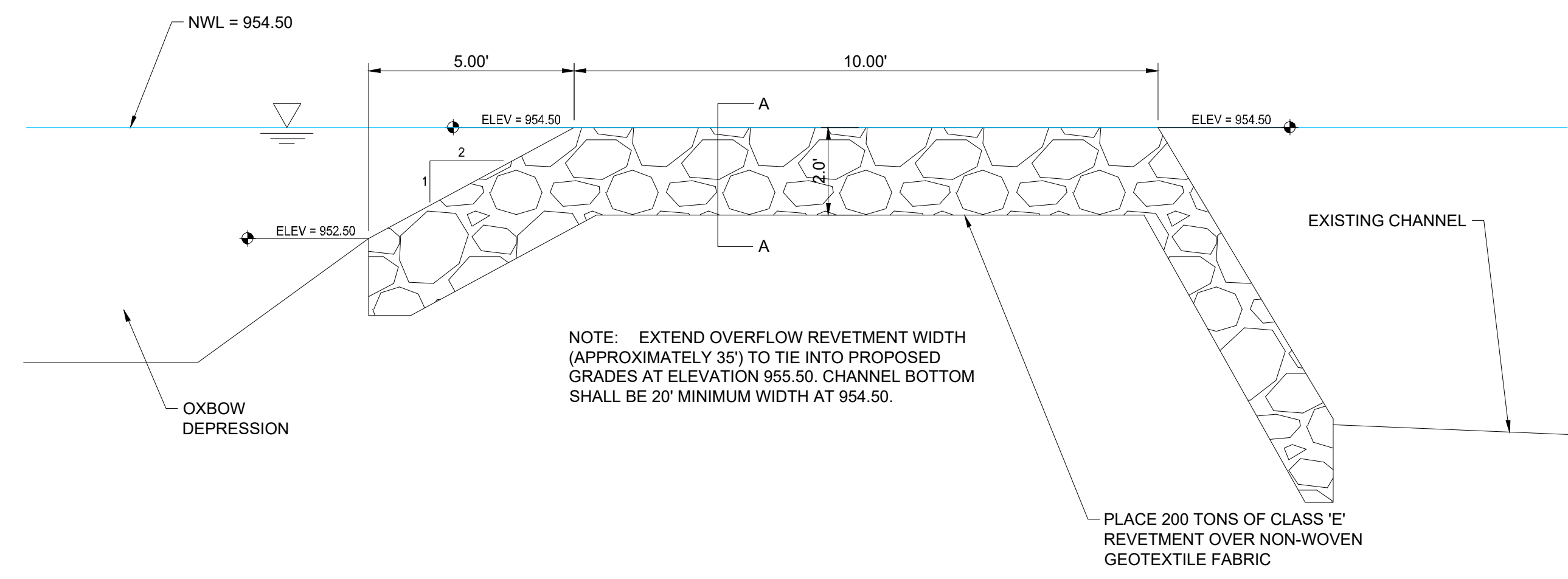
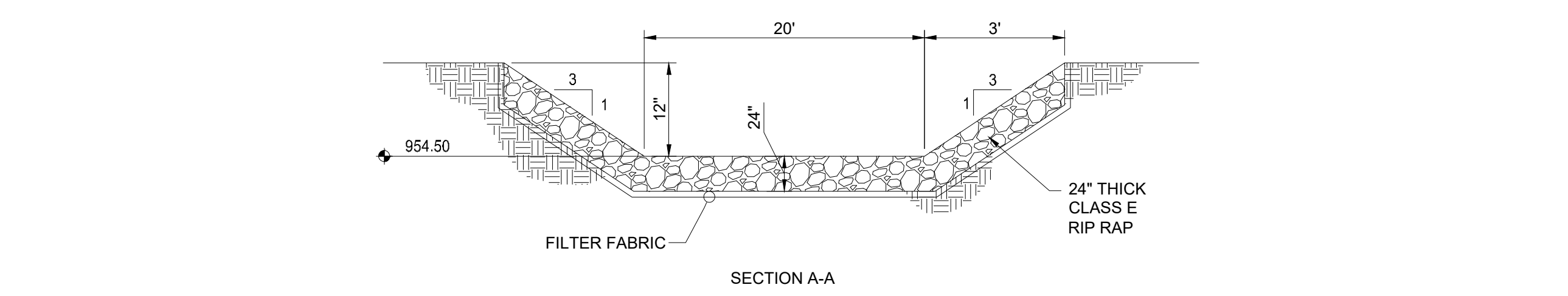
A1 WAVE PROTECTION BENCH AT NWL
NOT TO SCALE



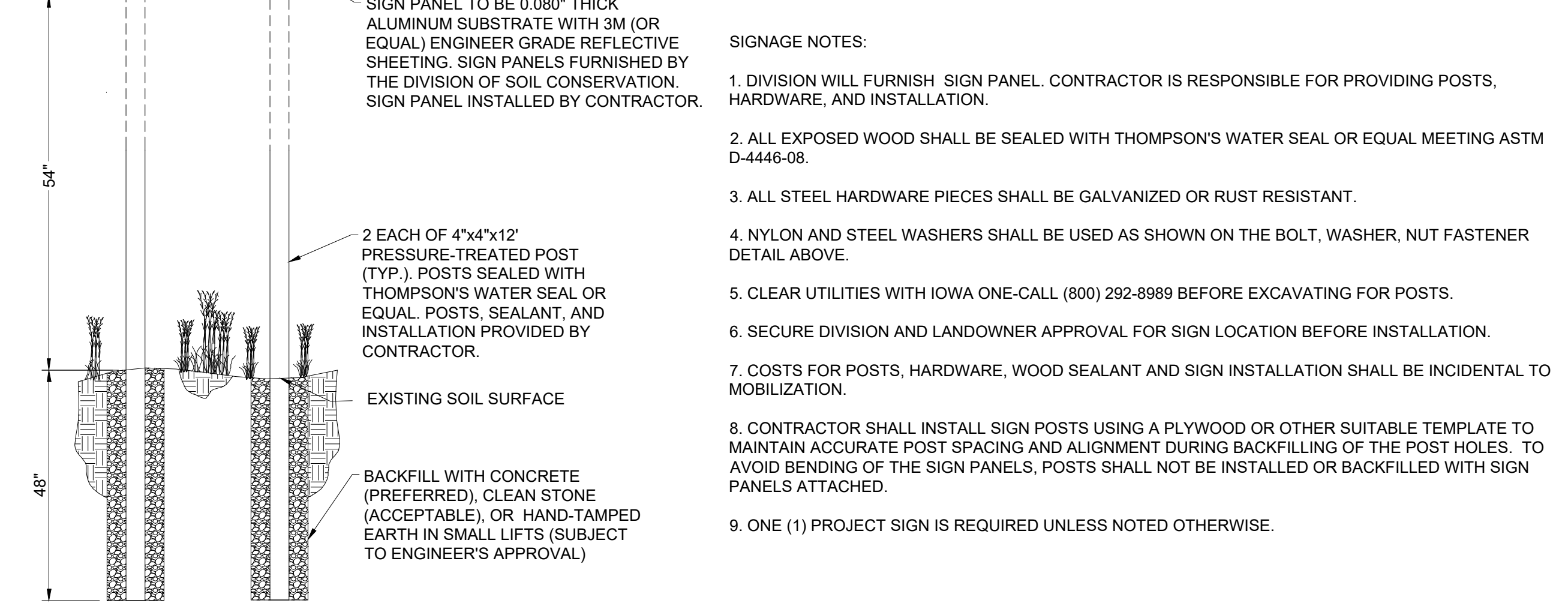
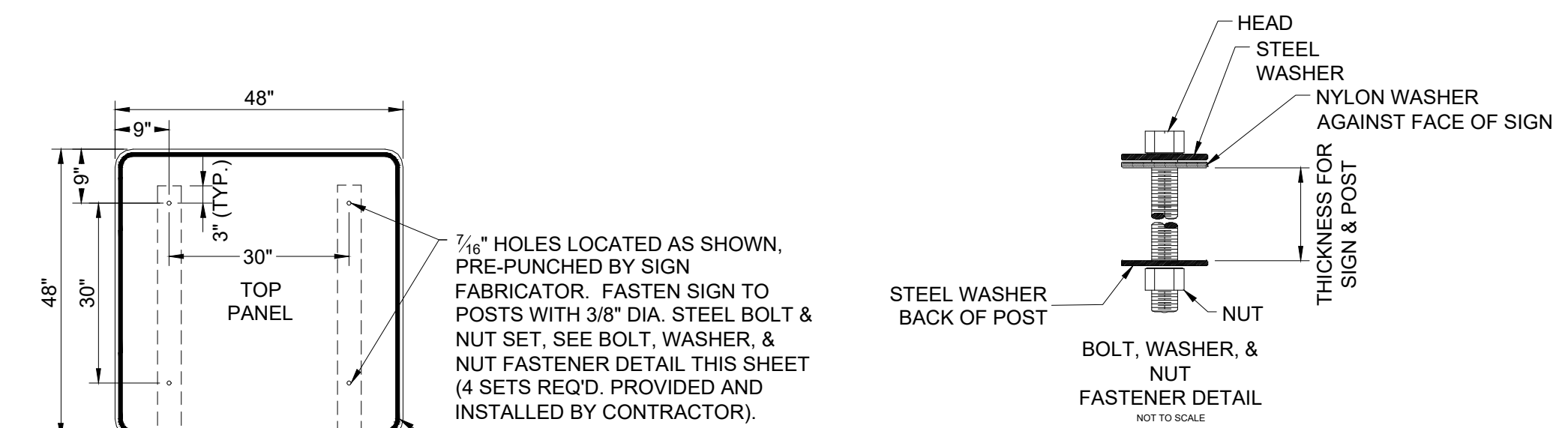
A2 FIELD TILE REPAIR CONNECTION
NOT TO SCALE



A4 TYPICAL TILE DAYLIGHT
NOT TO SCALE



D2 OXBOW OUTLET TO STREAM
NOT TO SCALE

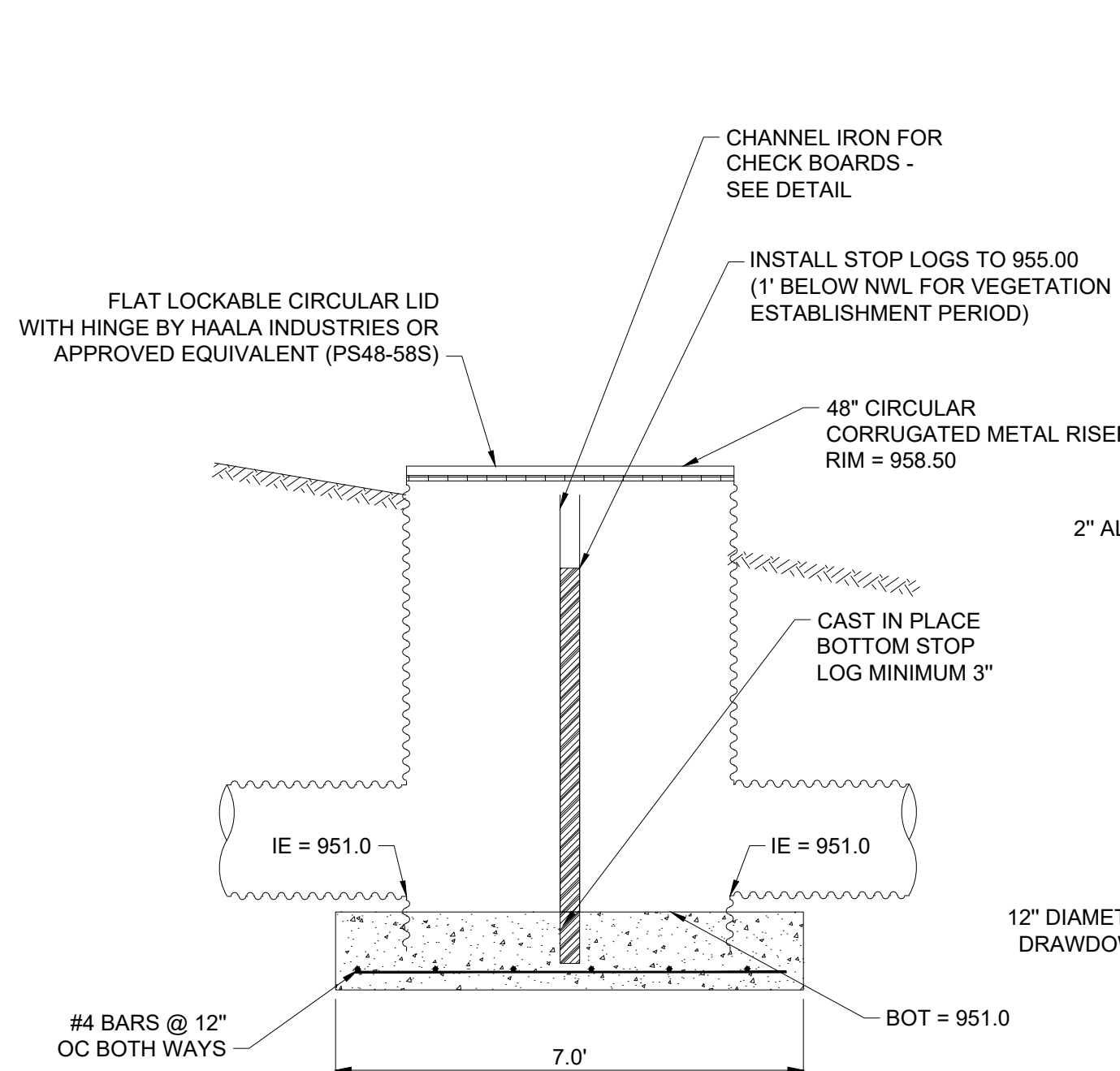


D4 PROJECT SIGN
NOT TO SCALE

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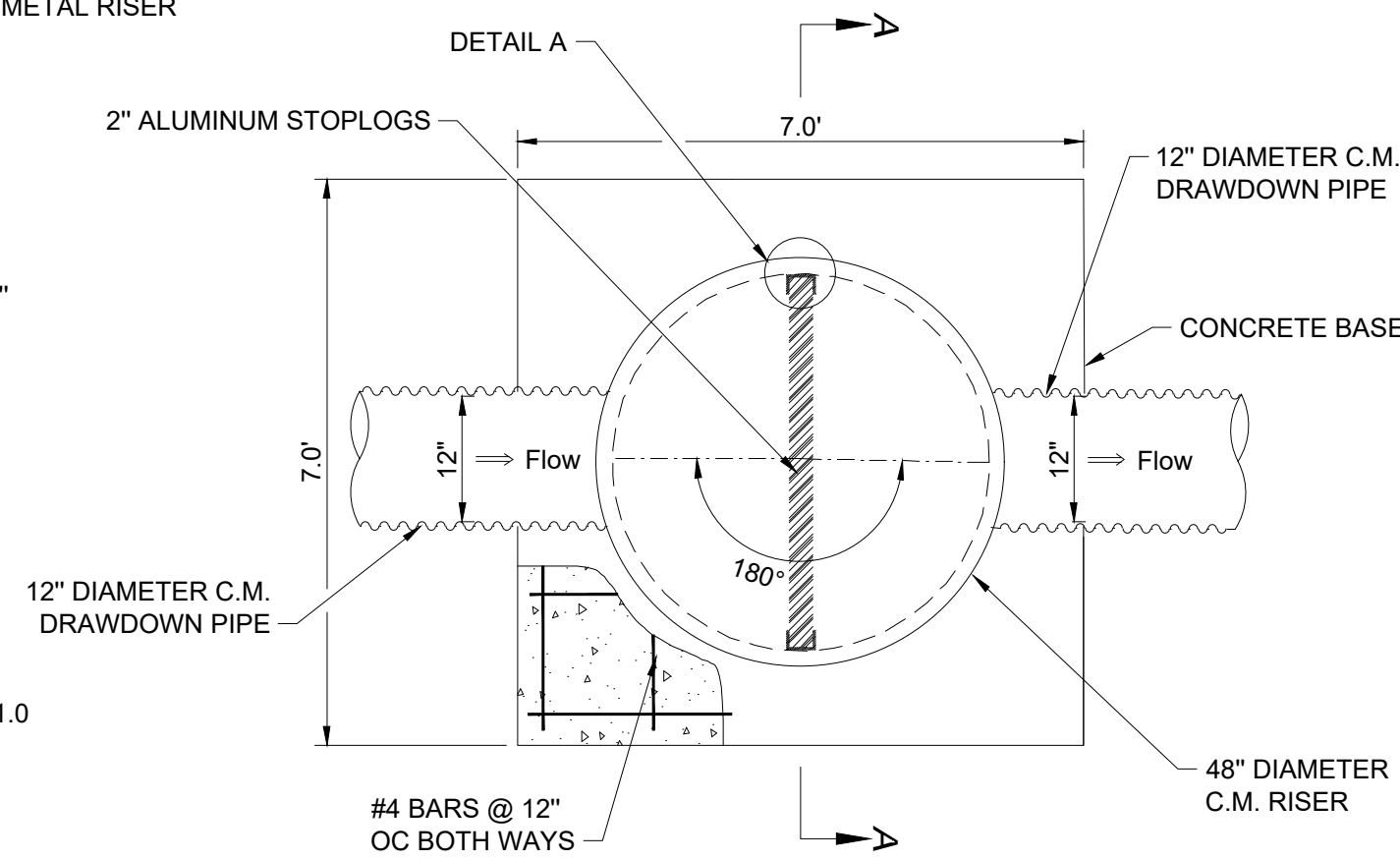


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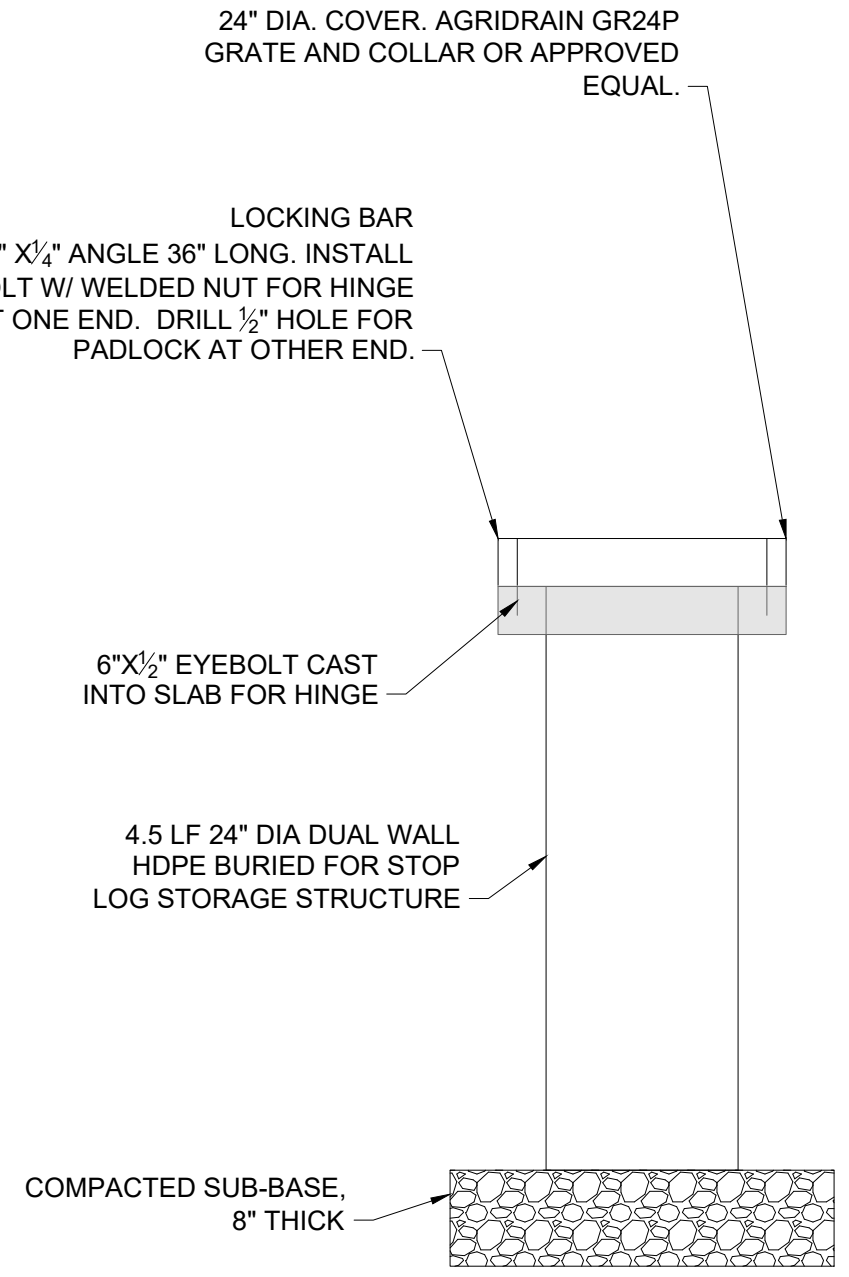


**SECTIONAL ELEVATION A-A
RISER DETAIL**

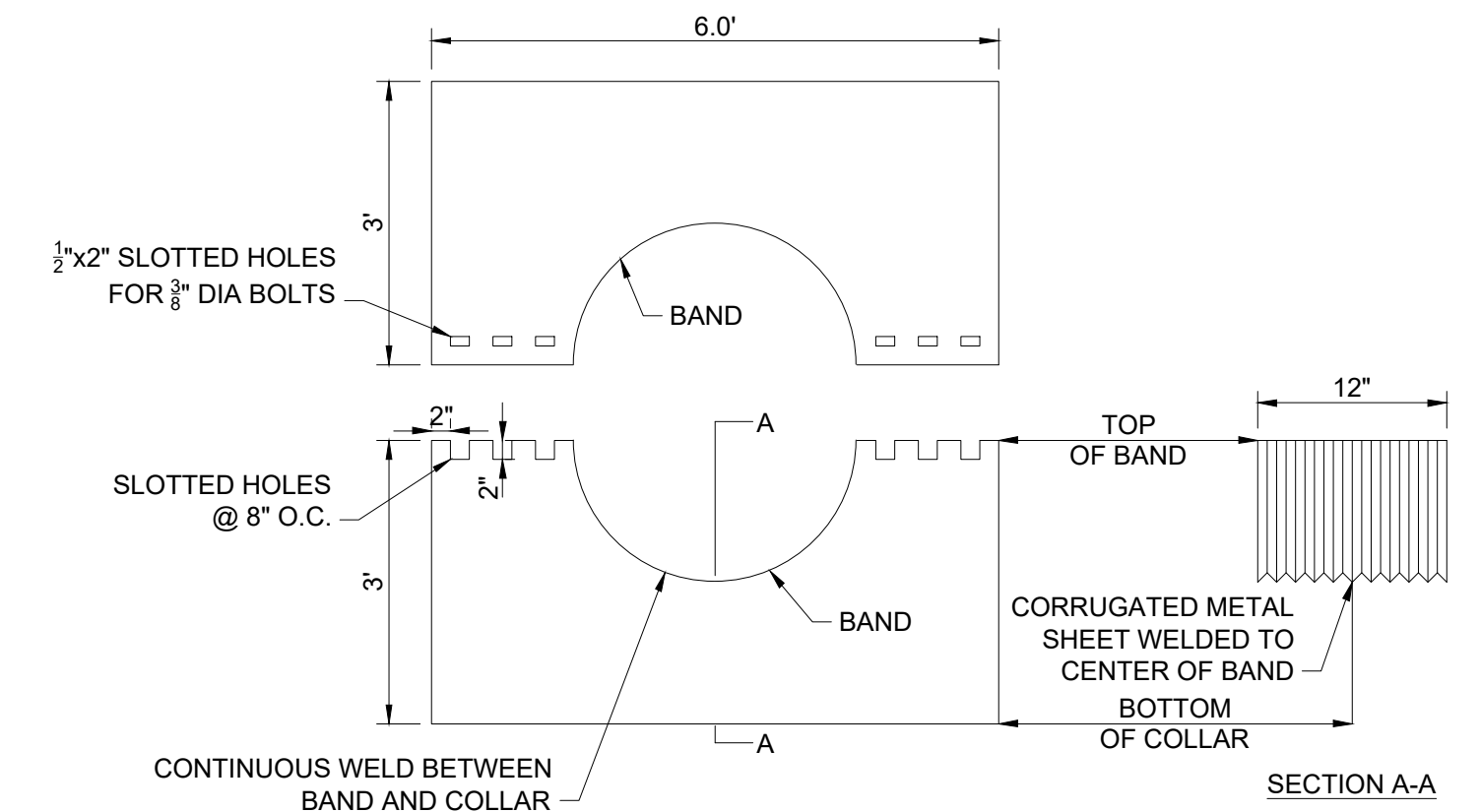
- NOTES:
- 1) PROVIDE STRUCTURE SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION OF WATER CONTROL STRUCTURE.
 - 2) WATER CONTROL STRUCTURE TO BE PRE FABRICATED CORRUGATED METAL RISER STRUCTURE WITH WATERTIGHT SEALS AT SECTION JOINTS AND PIPE PENETRATIONS.
 - 3) STOP LOG CHANNEL IS TO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



PLAN VIEW



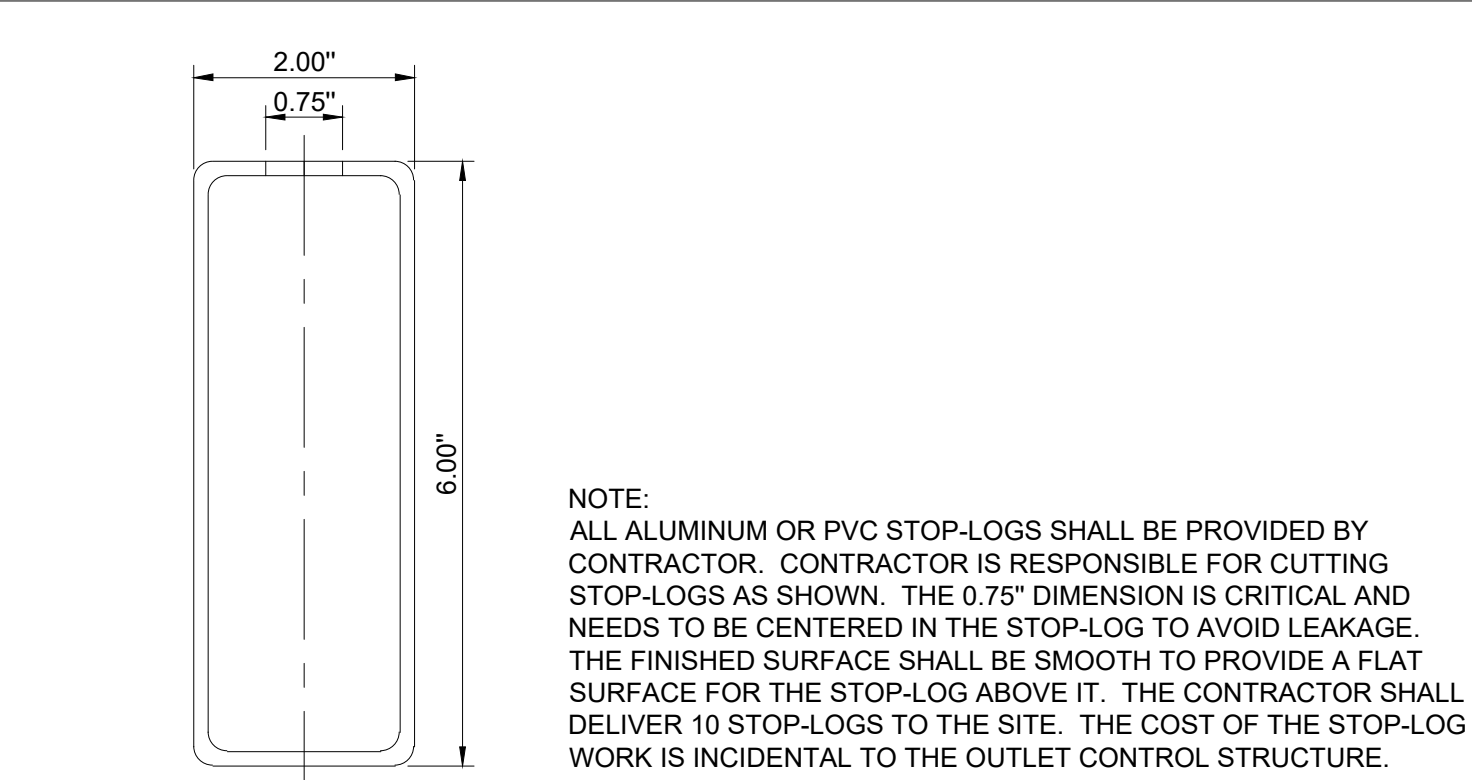
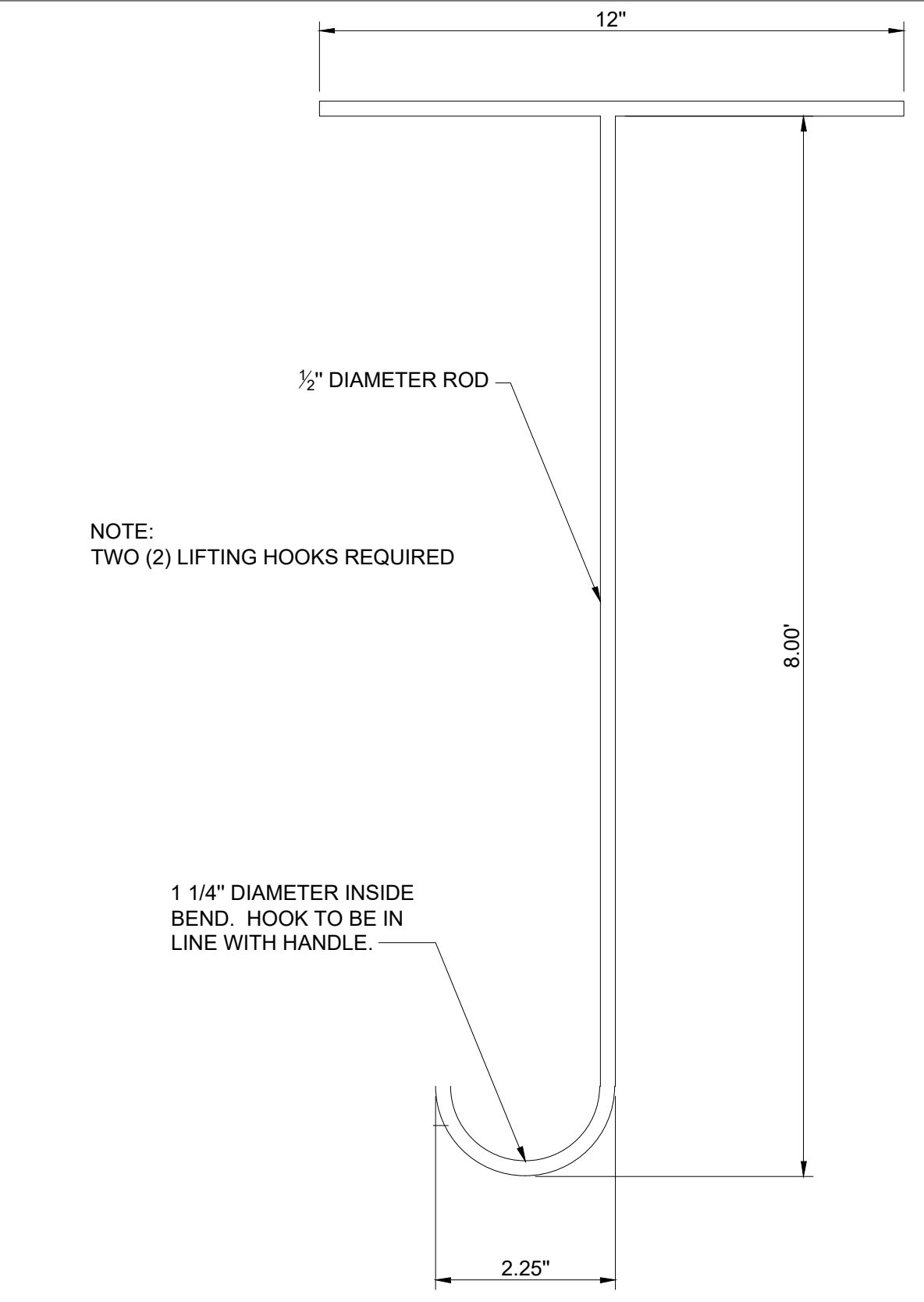
STOP LOG STORAGE STRUCTURE



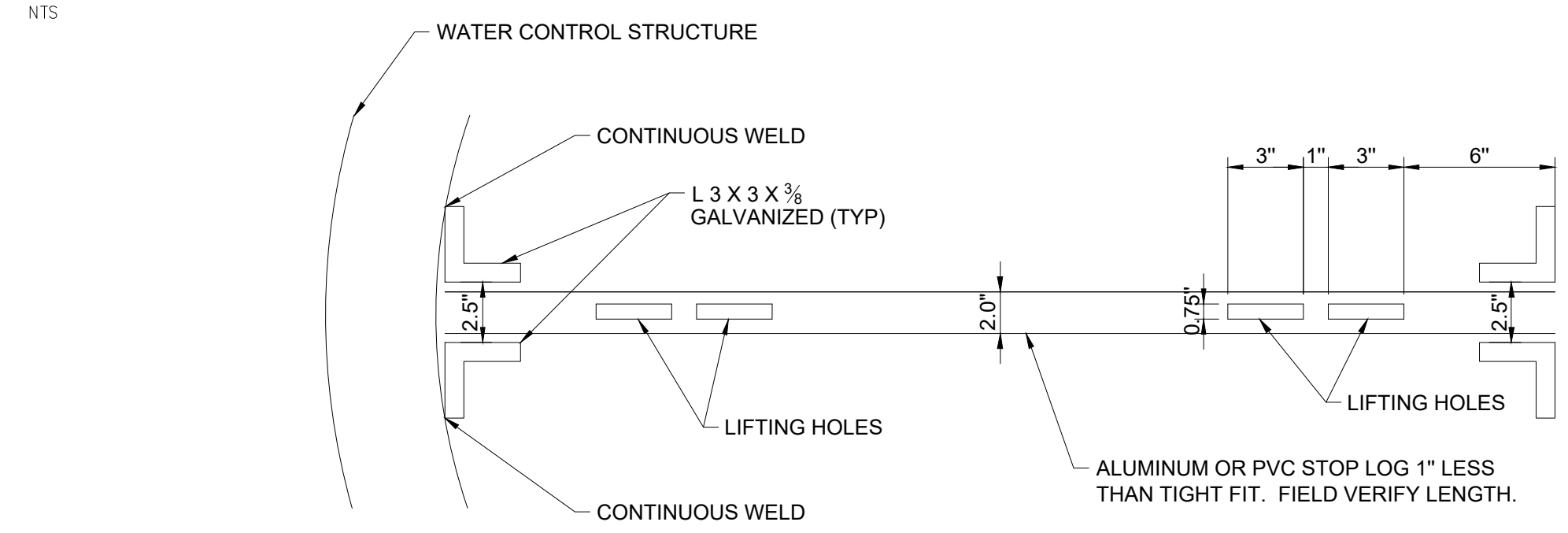
- NOTE:
1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FROM FABRICATOR FOR ENGINEER REVIEW.

E2 CMP ANTI-SEEPAGE COLLAR
NOT TO SCALE

A2 WATER CONTROL STRUCTURE AND APPURTENANCES
NOT TO SCALE

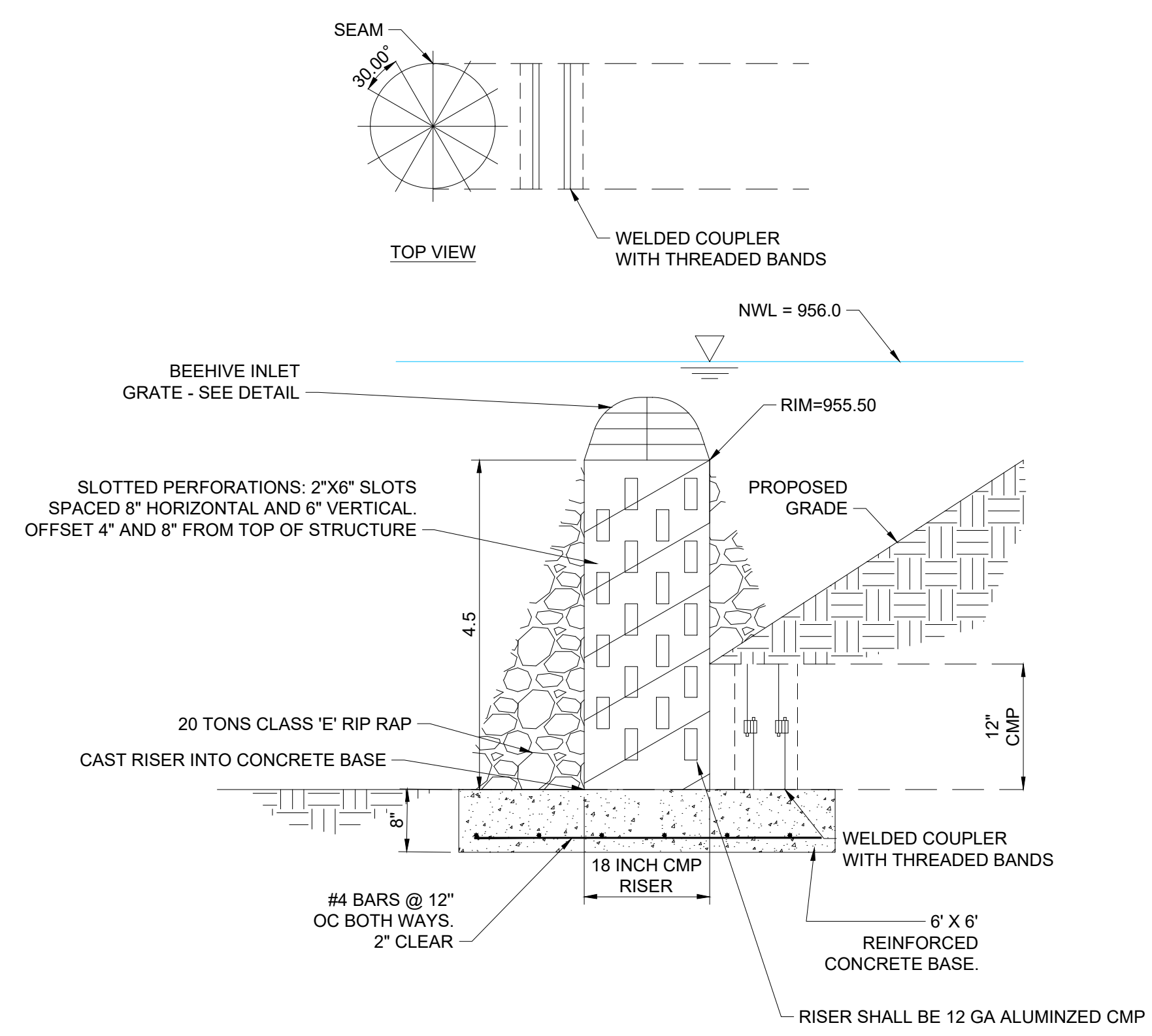


STOP LOG CROSS SECTION



- NOTES:
1. CONTRACTOR TO DRILL 3/8" HOLES IN TOP OF STOP LOG CHANNELS AND PROVIDE TWO (2) PADDLE LOCKS TO LOCK THROUGH CHANNELS TO PREVENT LOGS FROM BEING LIFTED OUT WHEN LOCK IS IN PLACE.
 2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FROM FABRICATOR FOR ENGINEER REVIEW.

A4 STOP LOG AND LIFTING HOOK
NOT TO SCALE



E4 CORRUGATED METAL RISER
NOT TO SCALE



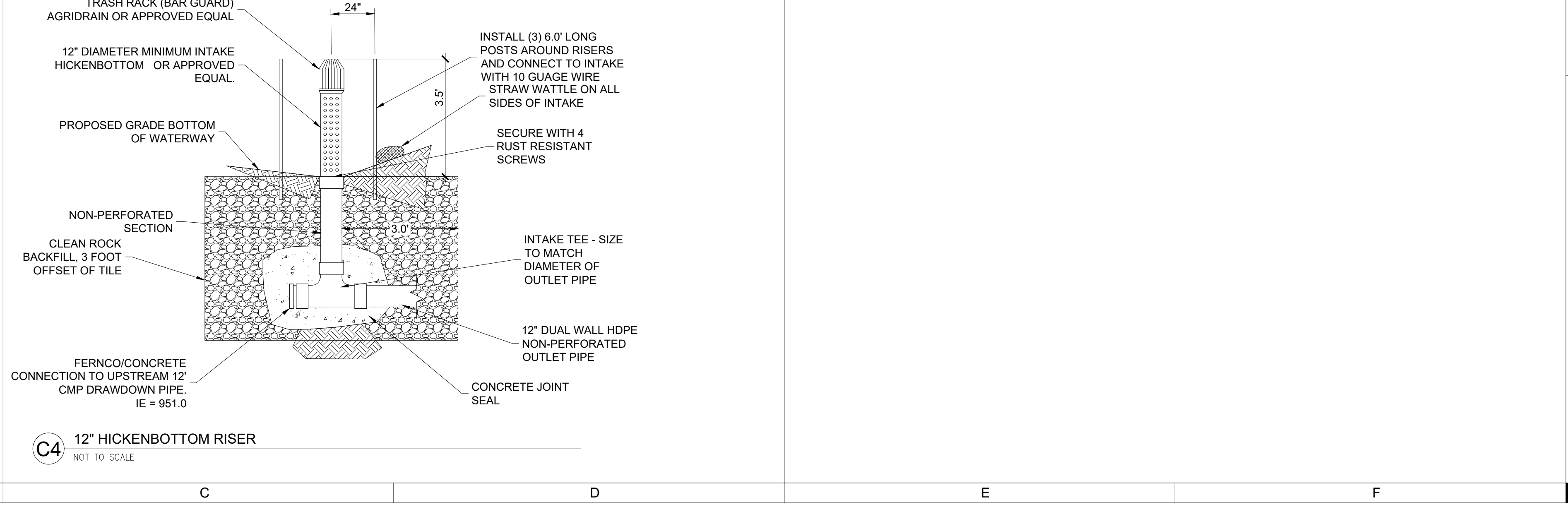
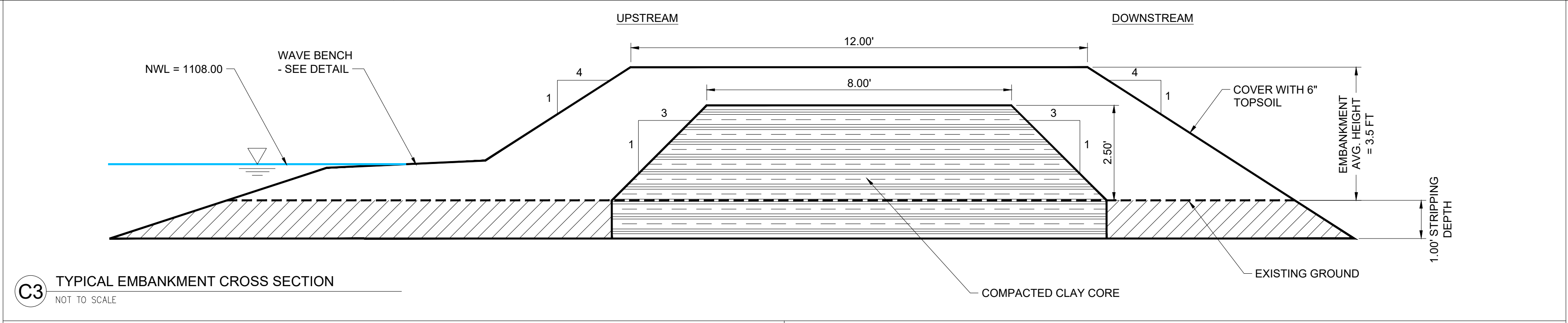
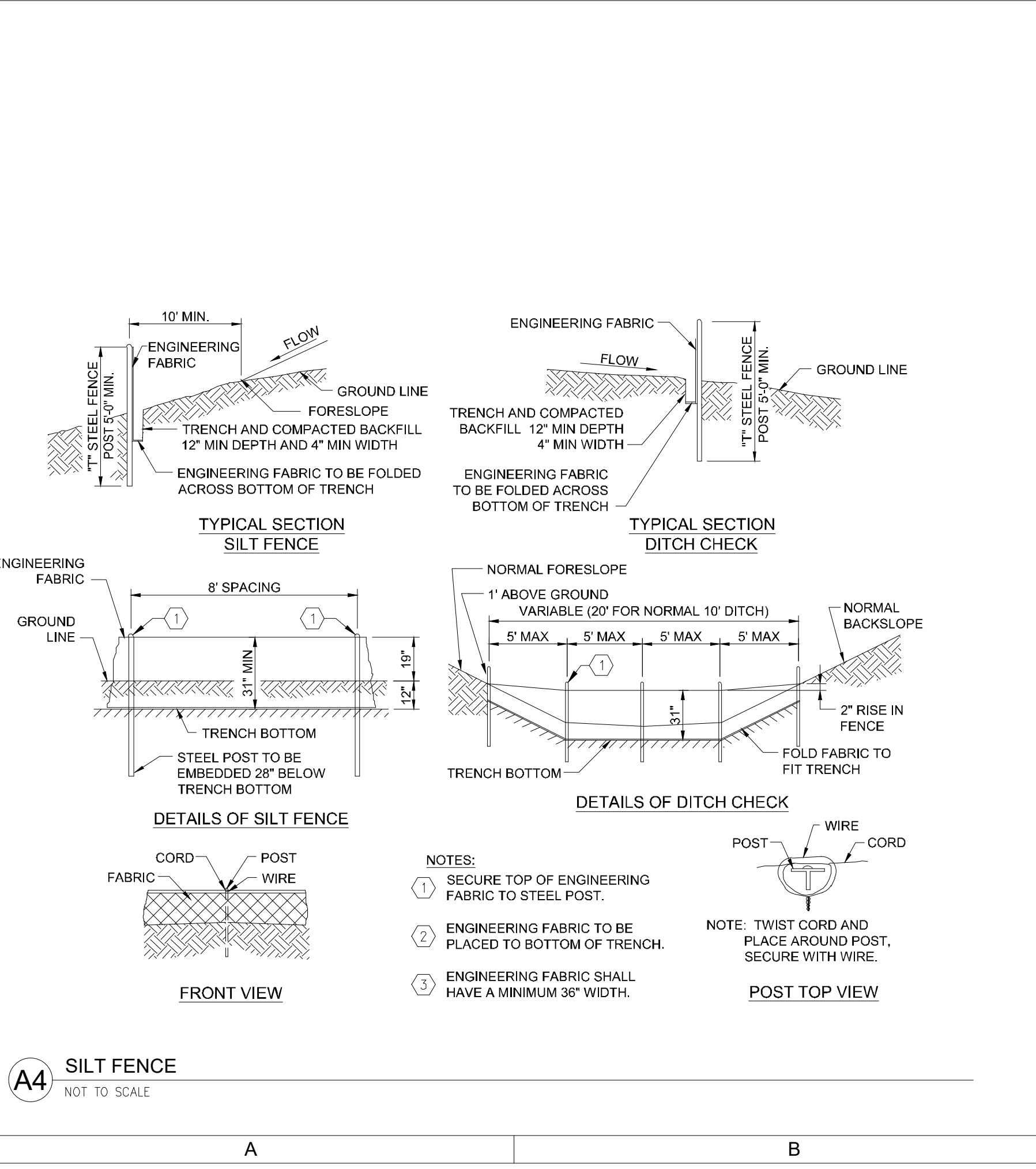
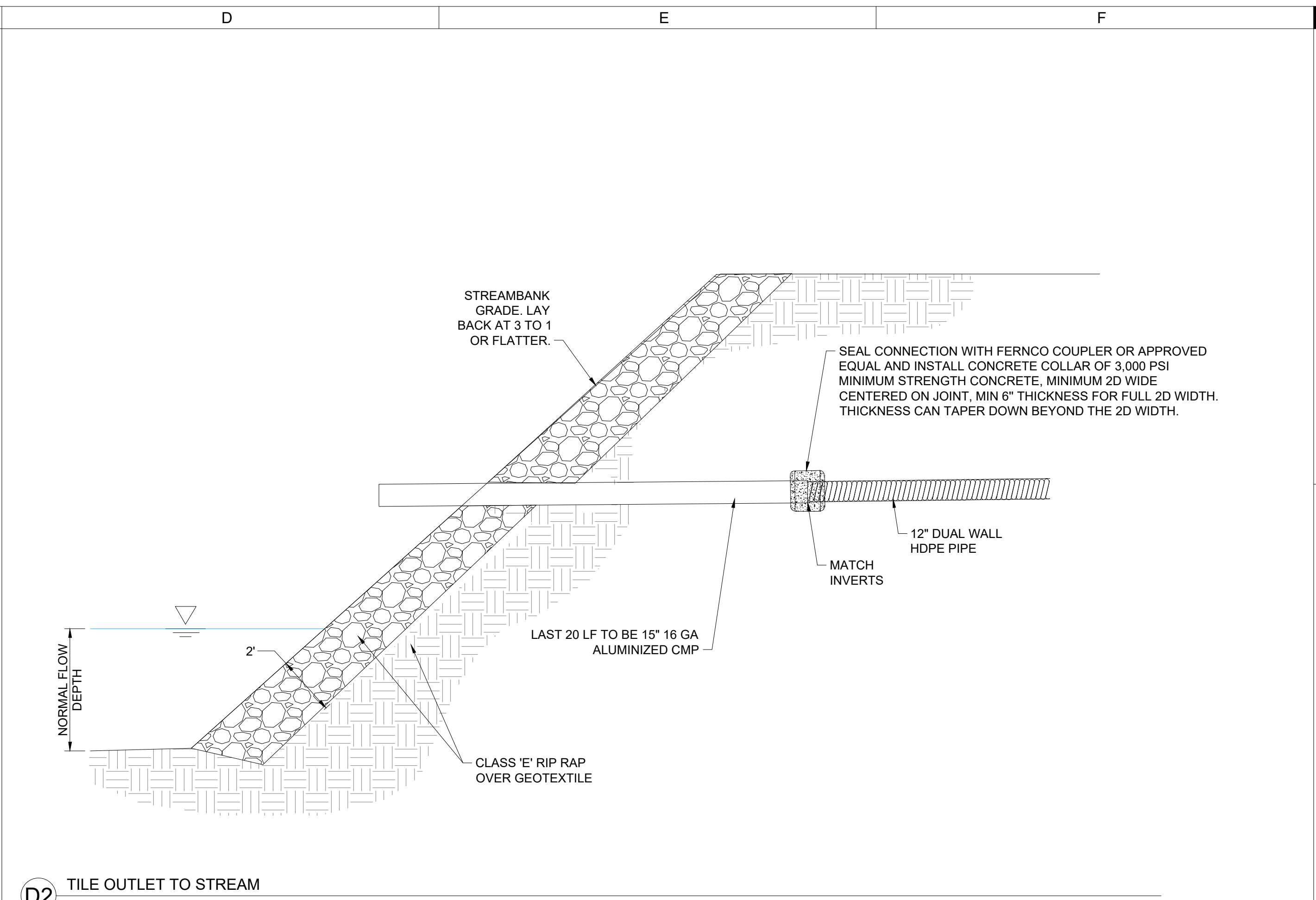
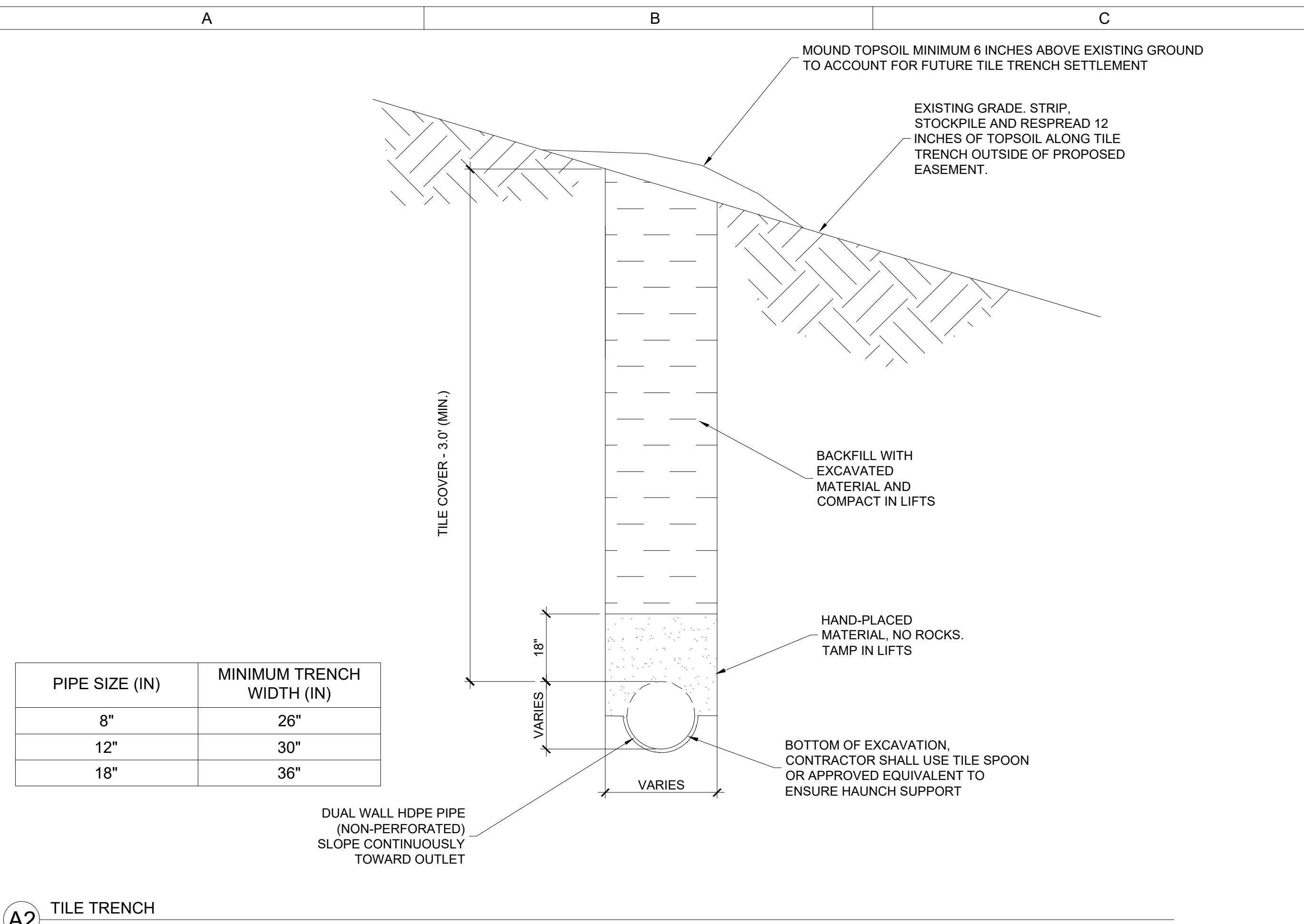
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| DRAWN: | DJJ |
| APPROVED: | DJJ |
| ISSUED FOR: | CONSTRUCTION DOCUMENTS |
| DATE: | 01-19-2024 |
| PROJECT NO: | 4216000 |
| FIELD BOOK: | --- |
| CLIENT NO.: | --- |



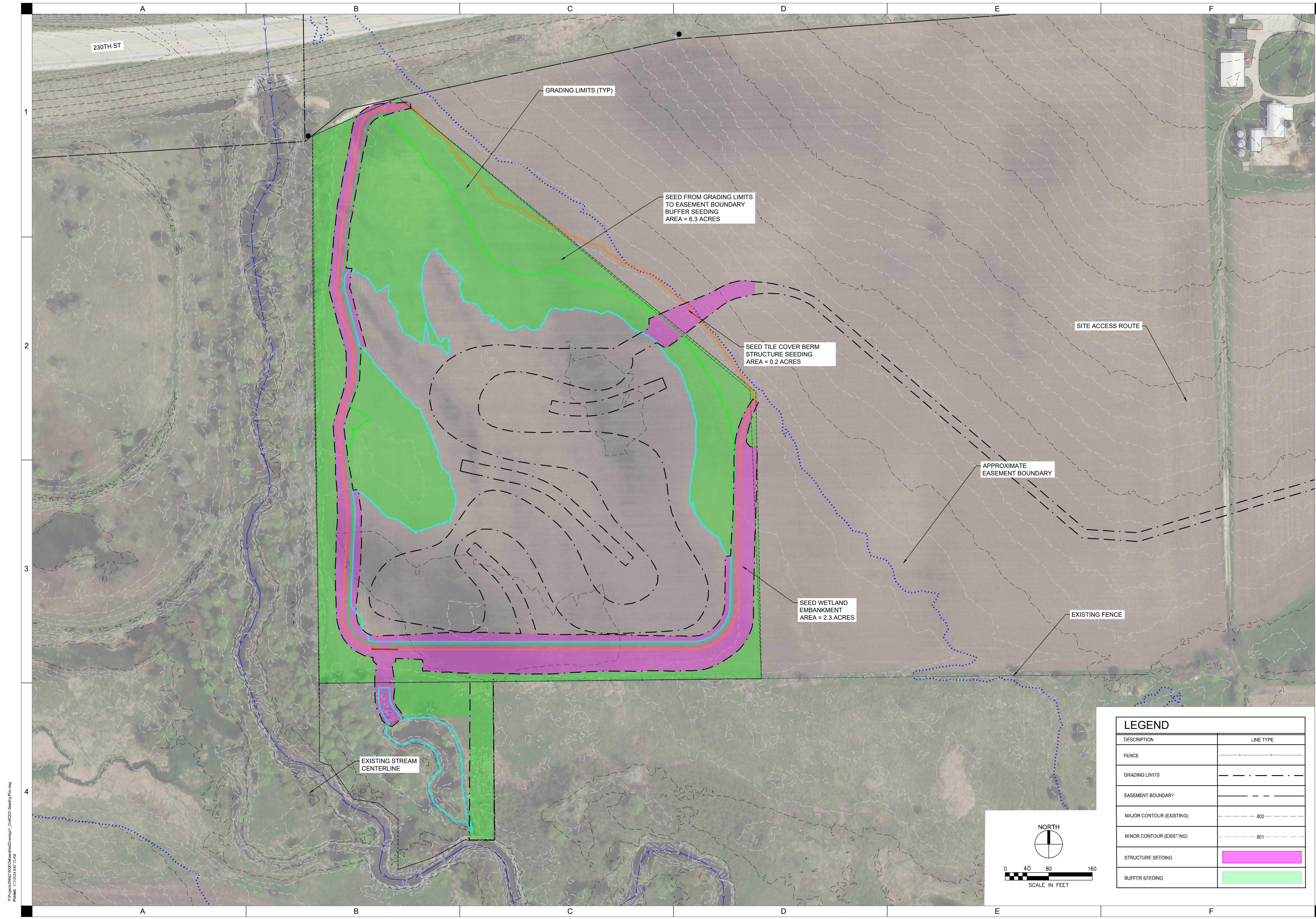
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| FIELD BOOK: | --- |
| CLIENT NO.: | --- |

CONSTRUCTION DETAILS

C503

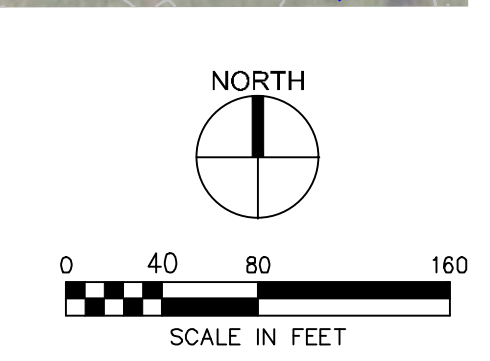


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C:\Users\DKM\OneDrive\Documents\Projects\Bremer\Bremer_C601\Seeding_Plan.dwg
 Plotted: 11/17/2024 8:47:15 AM

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



| | |
|------------------------------------|------------------|
| DRAWN: GHK | APPROVED: DJJ |
| ISSUED FOR: CONSTRUCTION DOCUMENTS | DATE: 01-19-2024 |
| PROJECT NO: 4216000 | FIELD BOOK: --- |
| CLIENT NO: --- | |