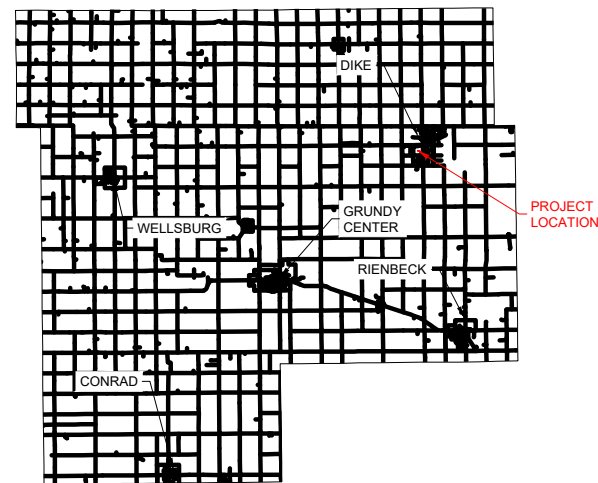
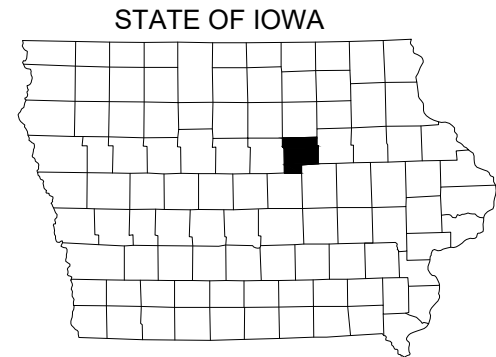
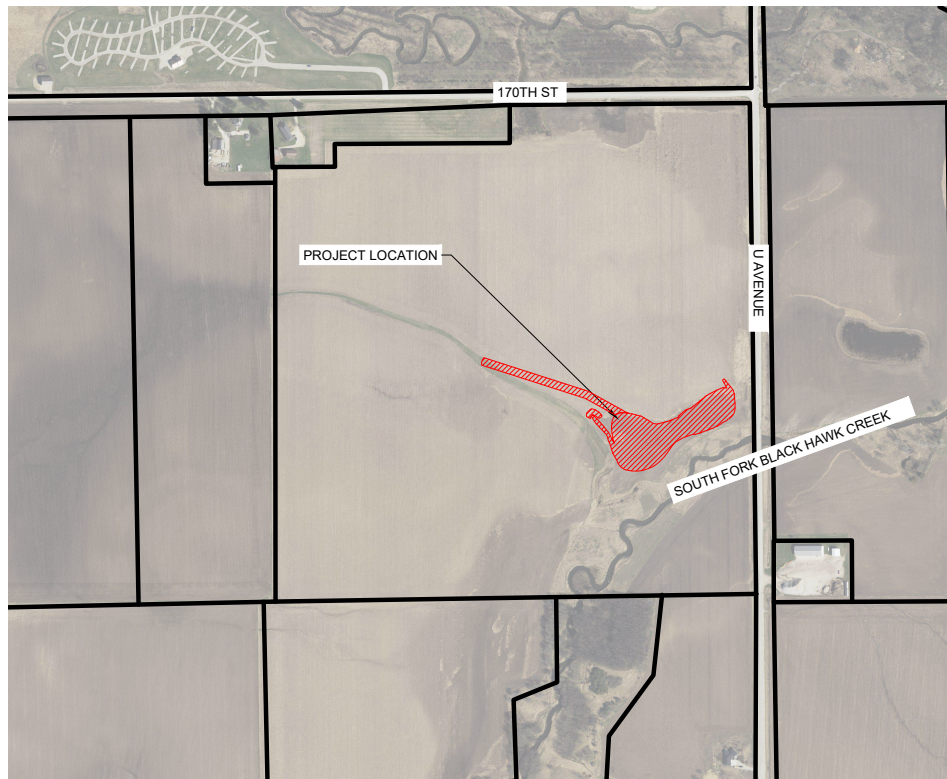


# GRU881507A-FP WETLAND IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP GRUNDY COUNTY, IA



GRUNDY COUNTY



Sheet List Table	
Sheet Number	Sheet Title
C000	Cover Sheet
C001	Project Quantities & Notes
CD01	Existing Site Conditions
C201	Grading Plan
C202	Cut Fill Plan
C203	Embankment Plan and Profile
C301	Principal Spillway Plan and Profile
C302	Tile Plan and Profile
C501	Construction Details
C502	Construction Details
C503	Construction Details
C504	Outlet Details
C505	Outlet Details
C506	Outlet Details
C601	Seeding Plan

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

**CONTACT INFORMATION:**

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

LAND OWNER:  
STEVE HENZE  
25622 200<sup>TH</sup> ST,  
GRUNDY CENTER, IOWA 50638  
(319) 939-2941

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP  
MIKE BOURLAND, PE  
502 E. 9TH STREET  
DES MOINES, IA, 50319  
PH: (515) 242-6130



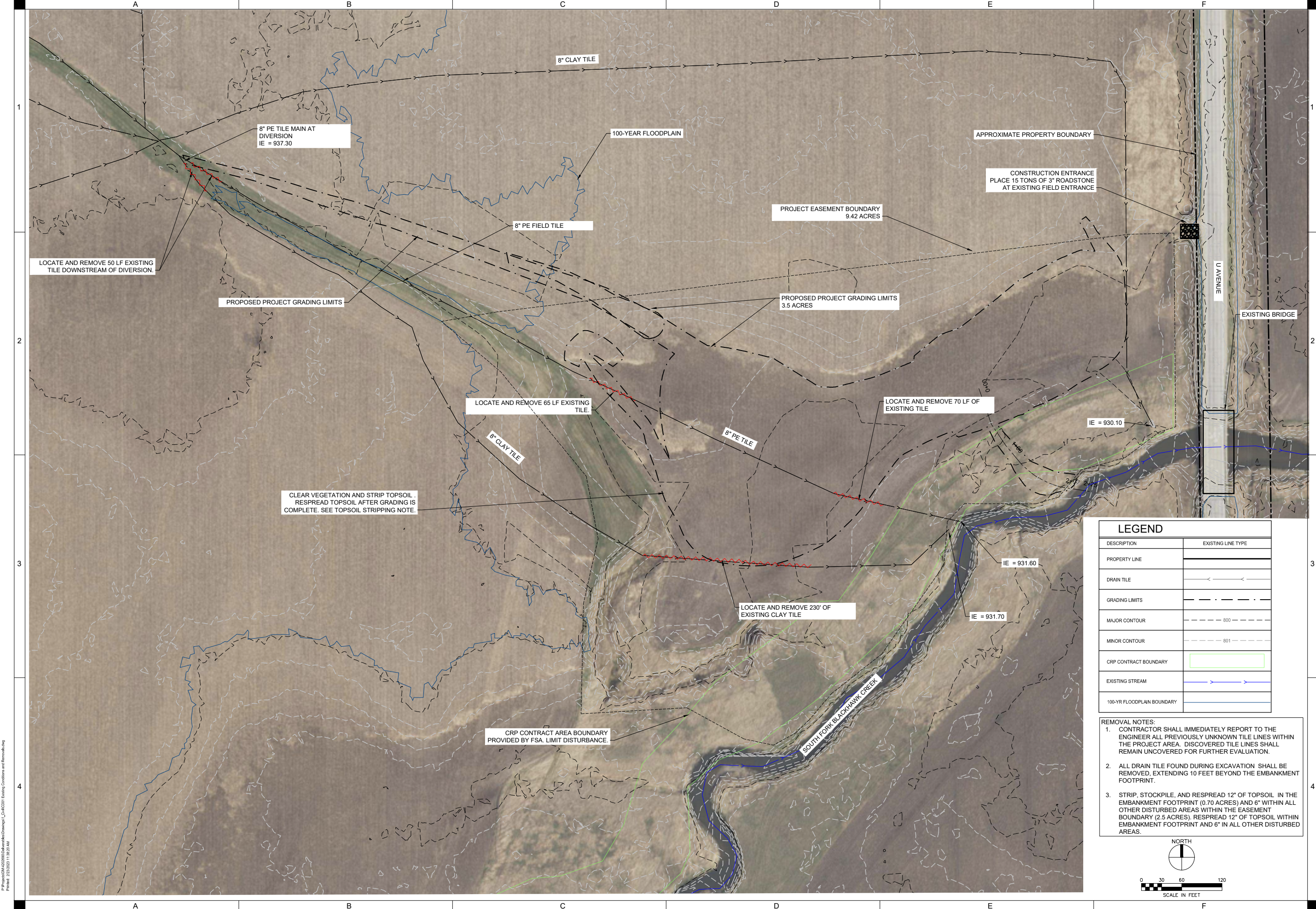
NRCS NEM PART 105 CERTIFICATION  
THE SIGNING PROFESSIONALS HEREBY  
CERTIFY THAT, TO THE BEST OF THEIR  
PROFESSIONAL KNOWLEDGE,  
JUDGEMENT, AND BELIEF, THESE PLANS  
MEET APPLICABLE NRCS STANDARDS.

**CIVIL ENGINEER**



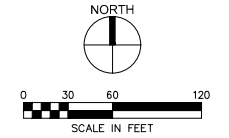
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT DESCRIBED  
BELOW WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL  
SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER  
UNDER THE LAWS OF THE STATE OF IOWA.  
*Dan Jensen* 2-17-2023  
Signature: Date  
Printed or typed name: DANIEL JENSEN  
License Number: 25063  
My License Renewal Date is: DECEMBER 31, 2023  
PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:  
ALL SHEETS





LEGEND	
DESCRIPTION	EXISTING LINE TYPE
PROPERTY LINE	---
DRAIN TILE	→ → →
GRADING LIMITS	---
MAJOR CONTOUR	--- 800 ---
MINOR CONTOUR	--- 801 ---
CRP CONTRACT BOUNDARY	---
EXISTING STREAM	→ → →
100-YR FLOODPLAIN BOUNDARY	---

- REMOVAL NOTES:**
- CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ALL PREVIOUSLY UNKNOWN TILE LINES WITHIN THE PROJECT AREA. DISCOVERED TILE LINES SHALL REMAIN UNCOVERED FOR FURTHER EVALUATION.
  - ALL DRAIN TILE FOUND DURING EXCAVATION SHALL BE REMOVED, EXTENDING 10 FEET BEYOND THE EMBANKMENT FOOTPRINT.
  - STRIP, STOCKPILE, AND RESPREAD 12" OF TOPSOIL IN THE EMBANKMENT FOOTPRINT (0.70 ACRES) AND 6" WITHIN ALL OTHER DISTURBED AREAS WITHIN THE EASEMENT BOUNDARY (2.5 ACRES). RESPREAD 12" OF TOPSOIL WITHIN EMBANKMENT FOOTPRINT AND 6" IN ALL OTHER DISTURBED AREAS.



DRAWN:	ANI
APPROVED:	DJJ
ISSUED FOR:	BIDDING
DATE:	2023-02-17
PROJECT NO.:	4202800
FIELD BOOK:	---
CLIENT NO.:	---

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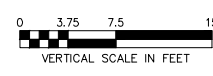
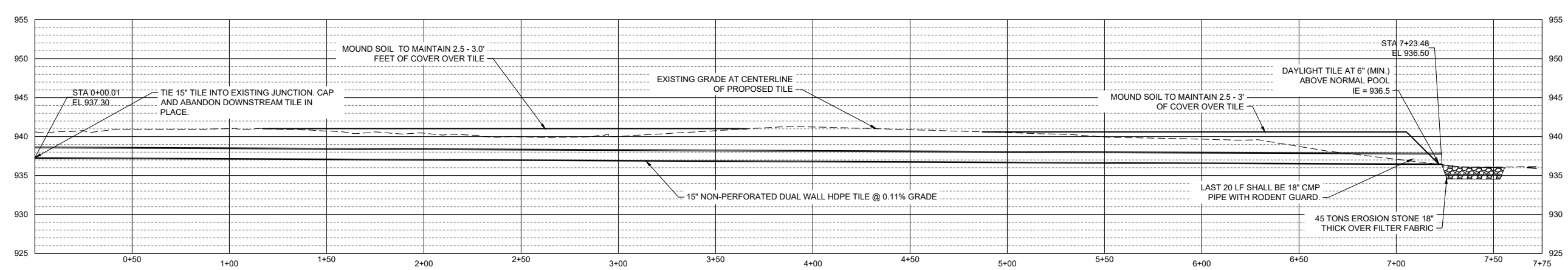
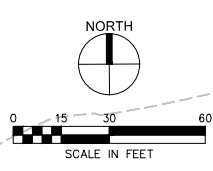
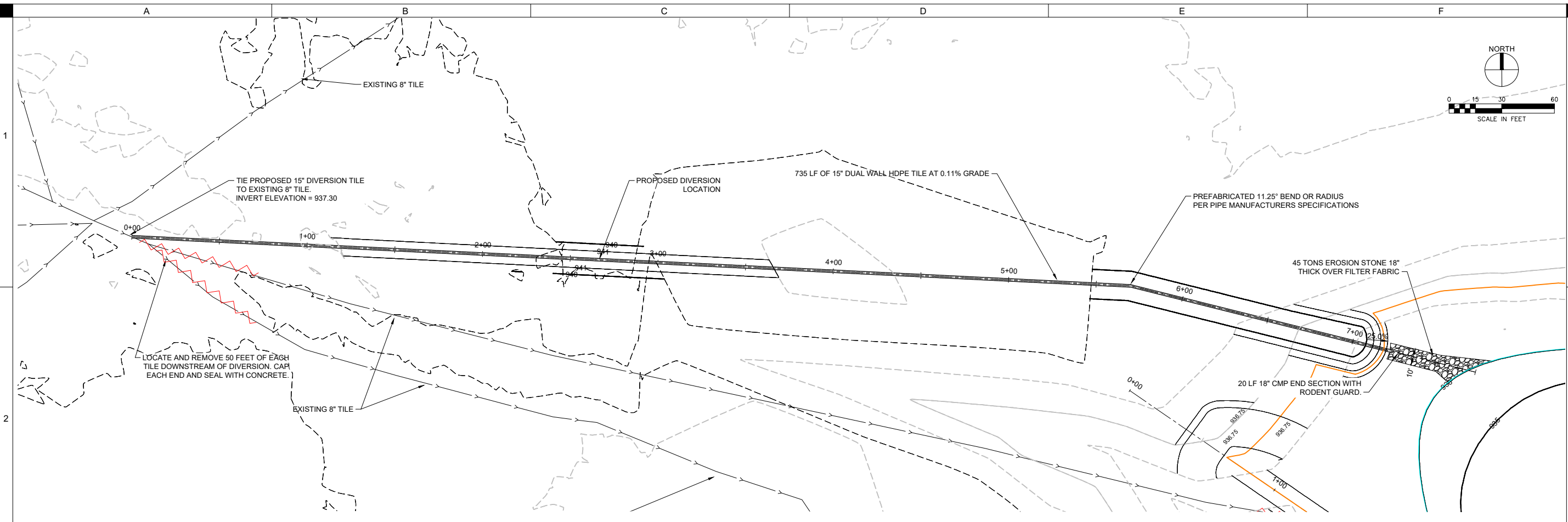






**GRU881507A-FP WETLAND**

Iowa Department of Agriculture and Land Stewardship  
 Grundy County, IA



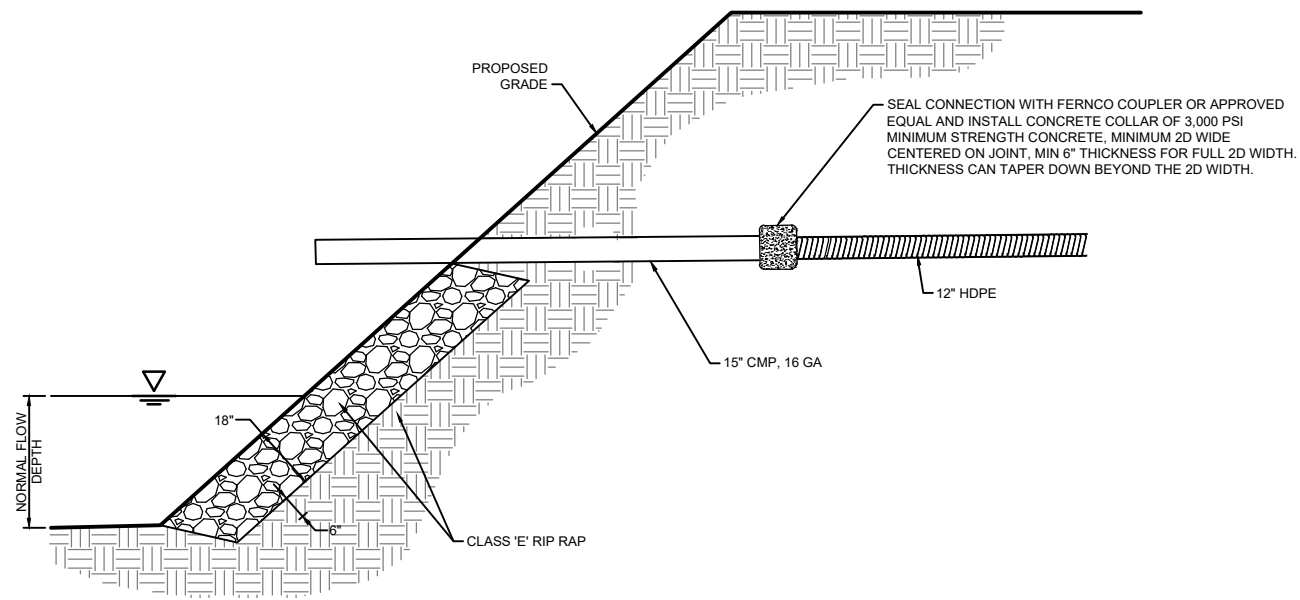
- NOTES:**
- TILE SHALL BE INSTALLED PER NRCS IA-46
  - TILE TRENCH SHALL BE EXCAVATED WITH A PROPERLY SIZED TILE SPOON TO ENSURE HAUNCH SUPPORT.
  - CONTRACTOR RESPONSIBLE FOR FURNISHING AND INSTALLING PREFABRICATED FITTINGS AND APPURTENANCES TO INSTALL TILE AS SHOWN AT NO ADDITIONAL COST TO OWNER.
  - THE CONTRACTOR SHALL FIELD VERIFY ALL THE LOCATIONS, ELEVATIONS, GRADES AND SIZES

DRAWN:	ANI
APPROVED:	DJJ
ISSUED FOR:	BIDDING
DATE:	2023-02-17
PROJECT NO.:	4202800
FIELD BOOK:	-
CLIENT NO.:	-

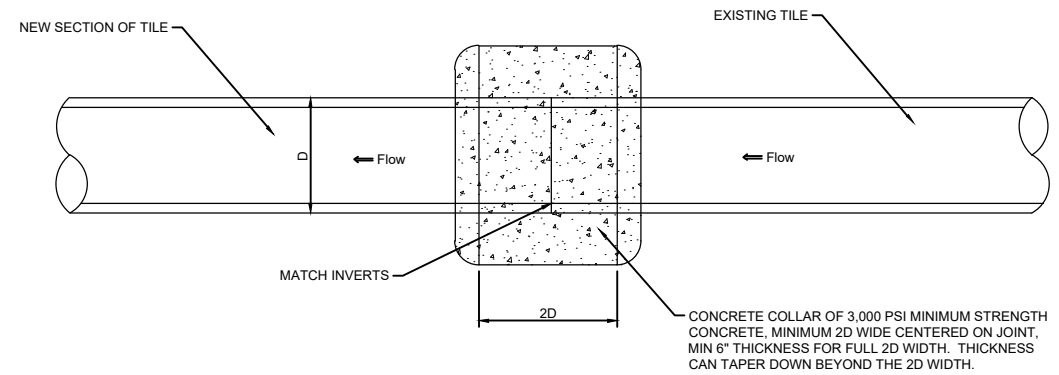
**TILE PLAN AND PROFILE**

**C302**

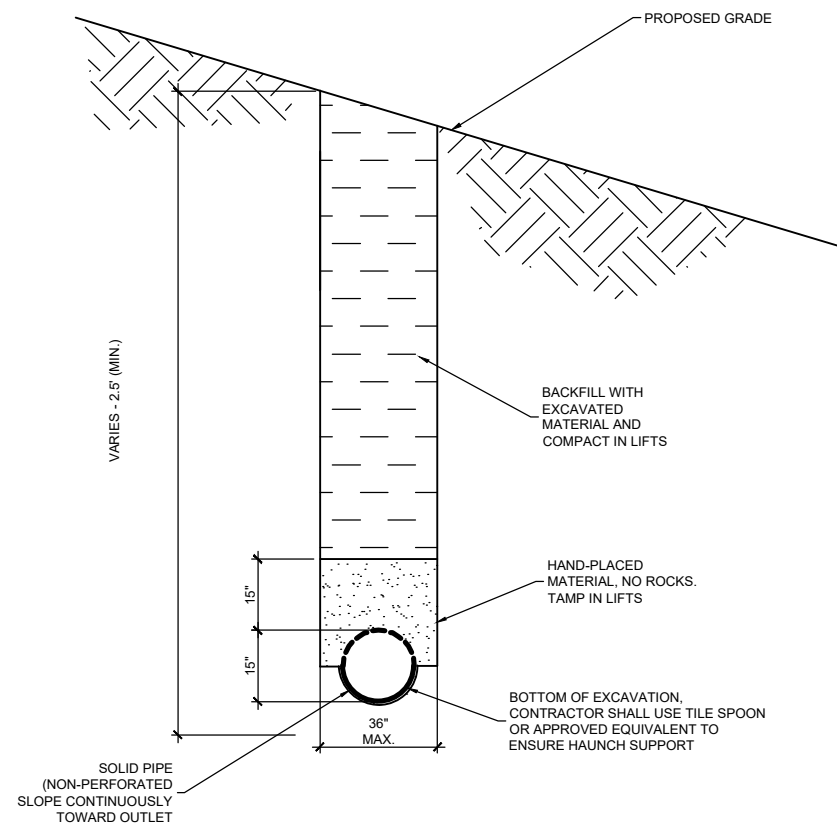
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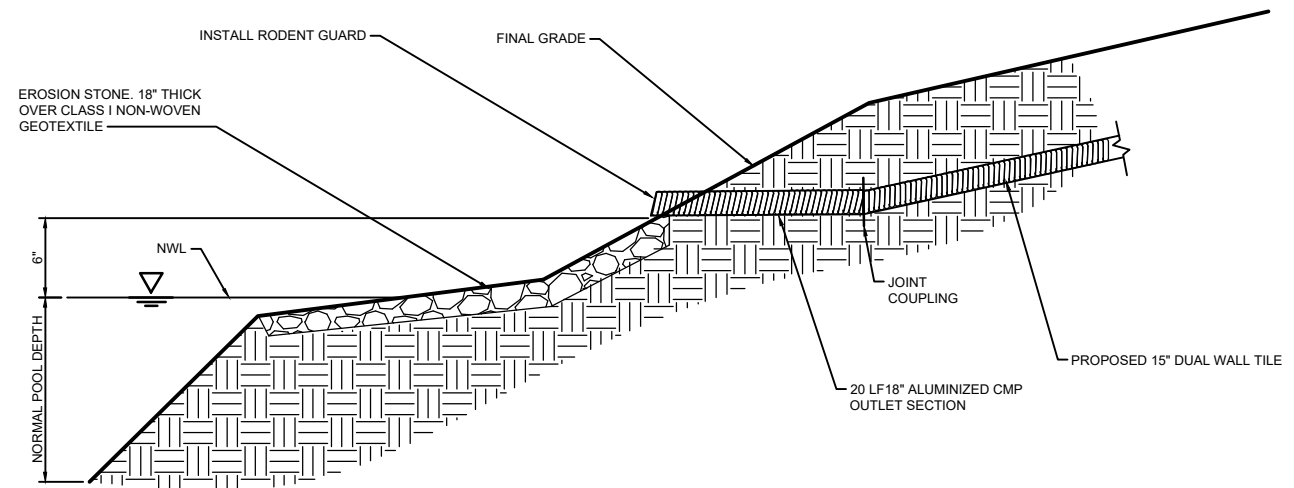
**A1** TILE OUTLET TO BLACK HAWK CREEK  
NOT TO SCALE



**A2** TILE JOINT COUPLING  
NOT TO SCALE

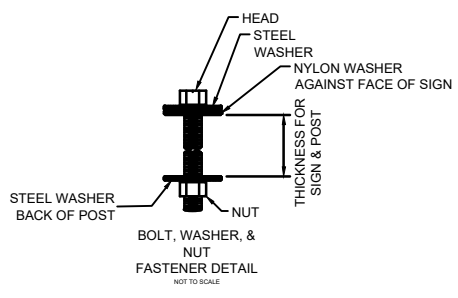
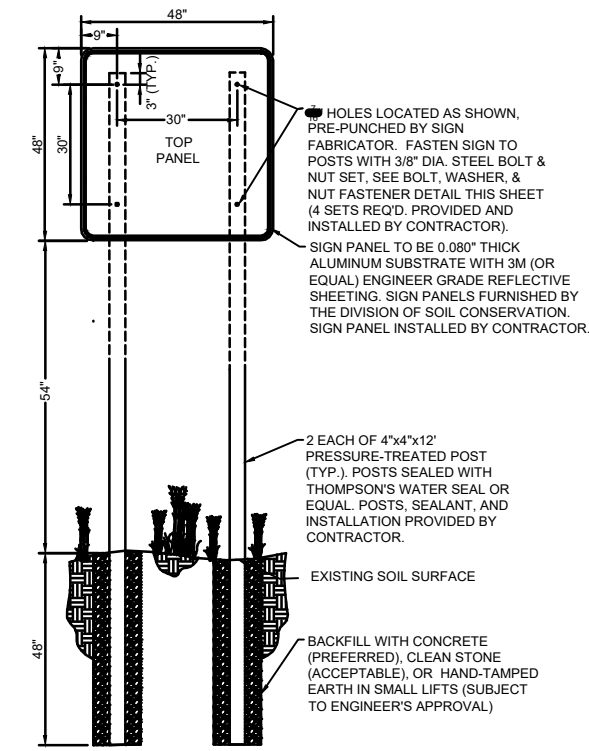


**A3** TILE TRENCH  
NOT TO SCALE



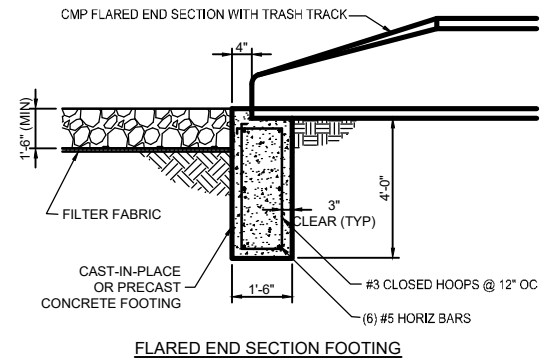
**A4** TILE DAYLIGHT AT WETLAND  
NOT TO SCALE

DRAWN:	DJJ
APPROVED:	LTM
ISSUED FOR:	BIDDING
DATE:	2025-02-17
PROJECT NO.:	4202680
FIELD BOOK:	---
CLIENT NO.:	---

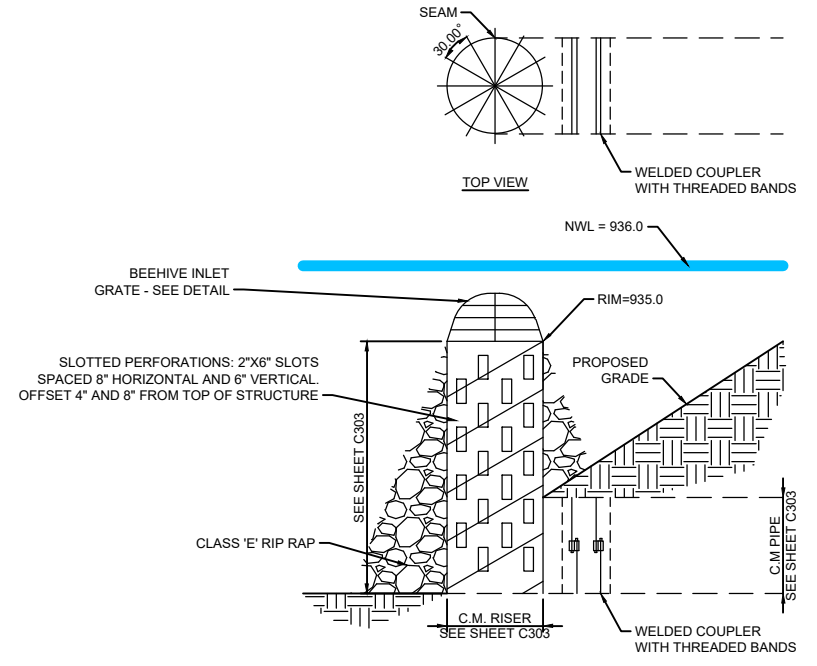
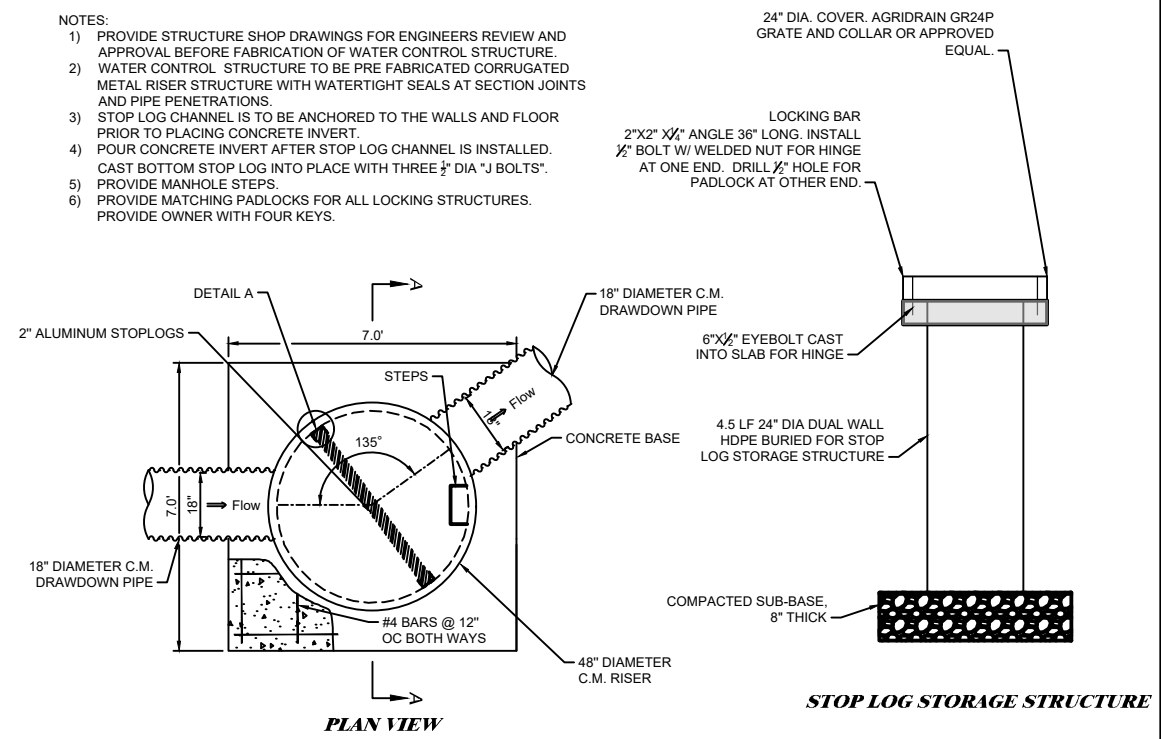
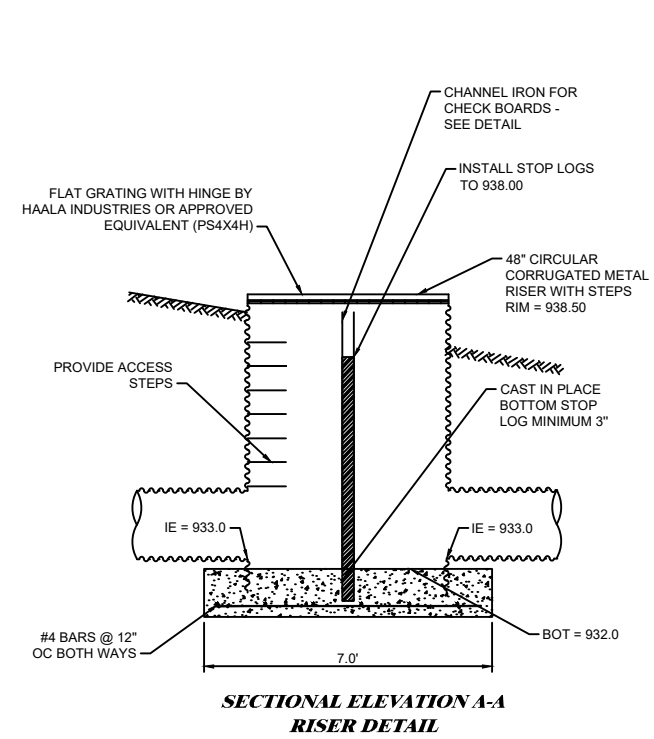


- SIGNAGE NOTES:**
- DIVISION WILL FURNISH SIGN PANEL. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSTS, HARDWARE, AND INSTALLATION.
  - ALL EXPOSED WOOD SHALL BE SEALED WITH THOMPSON'S WATER SEAL OR EQUAL MEETING ASTM D-4448-08.
  - ALL STEEL HARDWARE PIECES SHALL BE GALVANIZED OR RUST RESISTANT.
  - NYLON AND STEEL WASHERS SHALL BE USED AS SHOWN ON THE BOLT, WASHER, NUT FASTENER DETAIL ABOVE.
  - CLEAR UTILITIES WITH IOWA ONE-CALL (800) 292-8989 BEFORE EXCAVATING FOR POSTS.
  - SECURE DIVISION AND LANDOWNER APPROVAL FOR SIGN LOCATION BEFORE INSTALLATION.
  - COSTS FOR POSTS, HARDWARE, WOOD SEALANT AND SIGN INSTALLATION SHALL BE INCIDENTAL TO MOBILIZATION.
  - CONTRACTOR SHALL INSTALL SIGN POSTS USING A PLYWOOD OR OTHER SUITABLE TEMPLATE TO MAINTAIN ACCURATE POST SPACING AND ALIGNMENT DURING BACKFILLING OF THE POST HOLES. TO AVOID BENDING OF THE SIGN PANELS, POSTS SHALL NOT BE INSTALLED OR BACKFILLED WITH SIGN PANELS ATTACHED.
  - ONE (1) PROJECT SIGN IS REQUIRED UNLESS NOTED OTHERWISE.

**A2** PROJECT SIGN  
NOT TO SCALE



**D2** FLARED END SECTION FOOTING W/ RIP-RAP  
NOT TO SCALE



**A4** WATER CONTROL STRUCTURE  
NOT TO SCALE

**E4** CORRUGATED METAL RISER  
NOT TO SCALE

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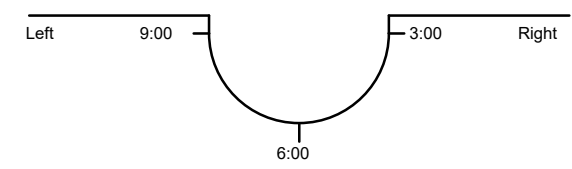
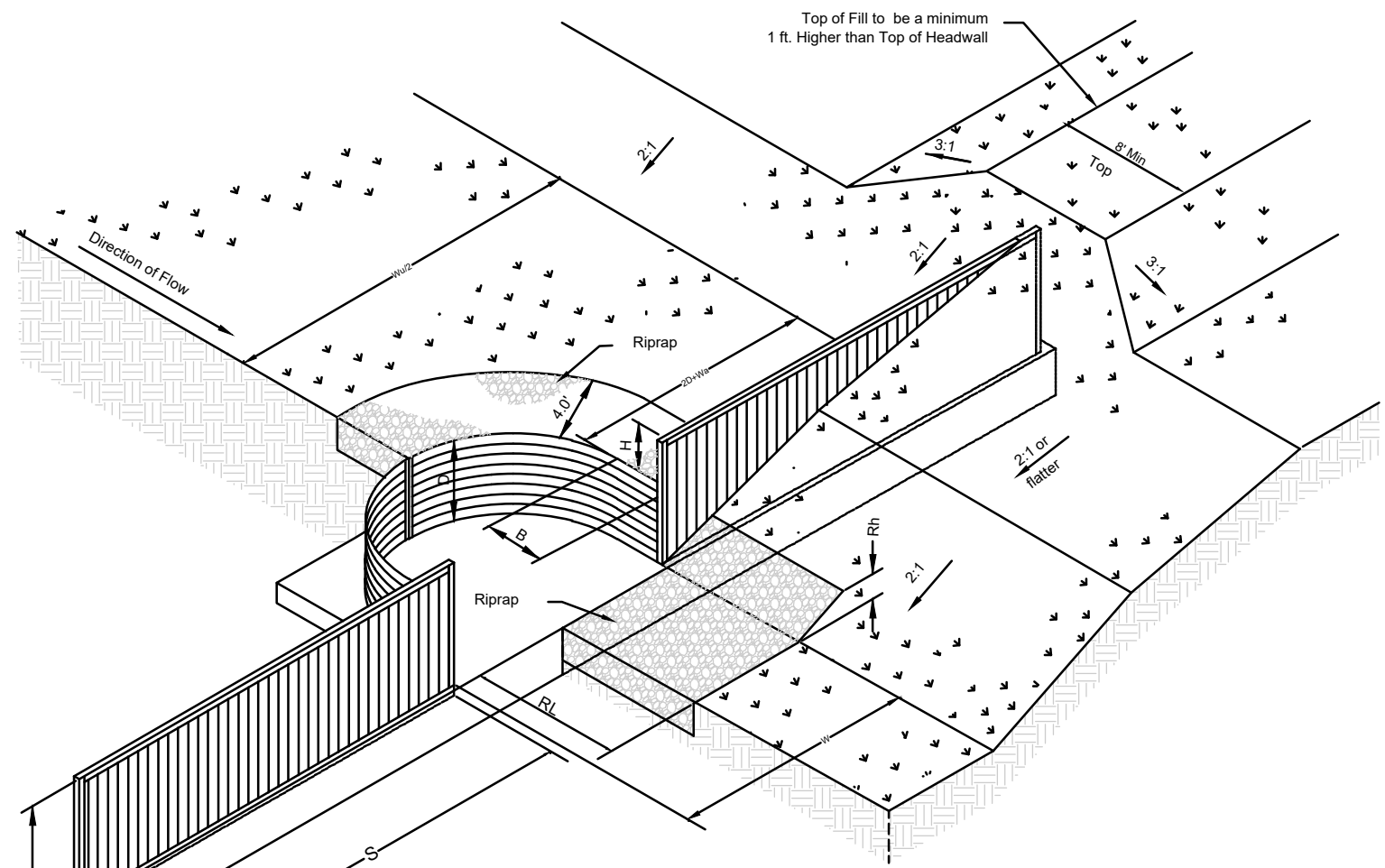
DRAWN:	ANI
APPROVED:	DJ
ISSUED FOR:	BIDDING
DATE:	2023-02-17
PROJECT NO.:	4202680
FIELD BOOK:	---
CLIENT NO.:	---

**CONSTRUCTION DETAILS**

**C502**



DRAWN: DJJ
APPROVED: LTM
ISSUED FOR: BIDDING
DATE: 2025-04-17
PROJECT NO: 422689
FIELD BOOK: -
CLIENT NO: -



**MATERIAL NOTES**

- Concrete shall have a minimum compressive strength at 28 days equal to 3500 psi.
- All reinforcing steel bars shall be Grade 60 - #4 bars.
- Aluminum sheets shall be structural plate (2 1/2" x 9" corrugations) 0.100" thickness and shall be Alloy 5052 conforming to ASTM B 209 or AASHTO M21.
- Aluminum angles shall be Alloy 6061-T6 conforming to ASTM B 308.
- Bolts shall be 3/4" diameter galvanized carbon steel conforming to ASTM A 307.
- Seam sealant shall be knife-grade asphalt mastic or polymer adhesive sealant tape, Manus-Bond 64-A, or equal.

**STRUCTURE DIMENSIONS**

Overfall Height (D)	1.9	ft.
Notch Depth (H)	1.8	ft.
Headwall Height (A)	4.2	ft.
Headwall Length (S)	9.2	ft.
Notch Width (W)	7.0	ft.
Weir Length (L)	14.2	ft.
Straight Portion of Weir (B)	1.5	ft.
Added Upstream Channel Width (Wa)	0.0	ft.
Upstream Channel Bottom Width (Wu)	14.6	ft.
Downstream Riprap Length (RL)	20.0	ft.
Downstream Riprap Height (Rh)	2.0	ft.
Concrete Apron Elevation	934.1	ft.
Weir Crest Elevation	936.0	ft.
Top of Headwall Elevation	937.8	ft.
Auxiliary Spillway Elevation	936.75	ft.
Top of Embankment Elevation	938.8	ft.

**BILL OF MATERIALS**

Item	Quantity	Unit
Aluminum Drop Structure	1	each
Concrete (3500 psi)	4.0	cu.yd.
Reinforcing Steel, Grade 60 - #4 Bars	215	lb.

\*\* Quantity includes covered surfaces only (no allowance for laps, anchorage, etc.)

**STANDARD DWG. IA-1410**

DATE	Nov. 2012	PAGE	1	OF	3
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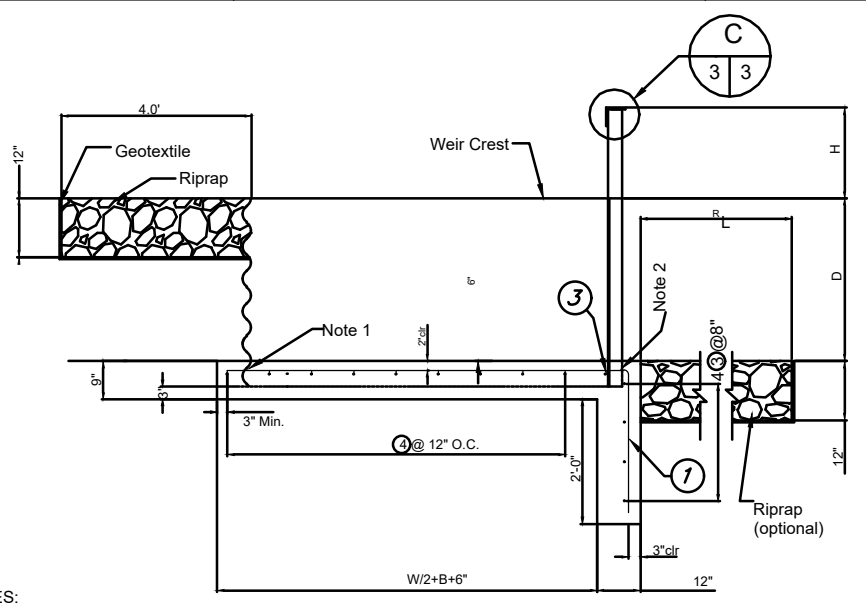


**CONSTRUCTION NOTES**

- Forms are not required for concrete apron or cutoff wall if excavated soil will stand vertically. Side slopes above the top of the concrete shall be 1.5:1 or flatter.
- When necessary, the site shall be dewatered in accordance with Iowa Construction Specification IA-11, Removal of Water. A sump pump and crushed rock may be needed.
- Set aluminum structure to grade and place reinforcing bars. Apply asphalt mastic between aluminum sheets before bolting together. Check elevations of the weir, top of floor and bottom of cutoff trench. Check that the reinforcing steel has the required minimum cover.
- Wrap reinforcing bars with three layers of electrical tape, or equal, where they pass through the aluminum sheets.
- Place the concrete floor and cutoff wall in one continuous pour.
- Backfill around structure with moist soil. Place backfill in 6 inch layers and tamp to a density equivalent to adjacent required earthfill. Remove dry soil from sides of excavations as backfill is placed so that moist soil is tamped against moist soil. Keep backfill approximately level around all parts of the structure.
- Place riprap with geotextile bedding and complete grading and shaping.
- Seed, fertilize and mulch all disturbed areas in accordance with the seeding plan.

**STEEL REINFORCING NOTES:**

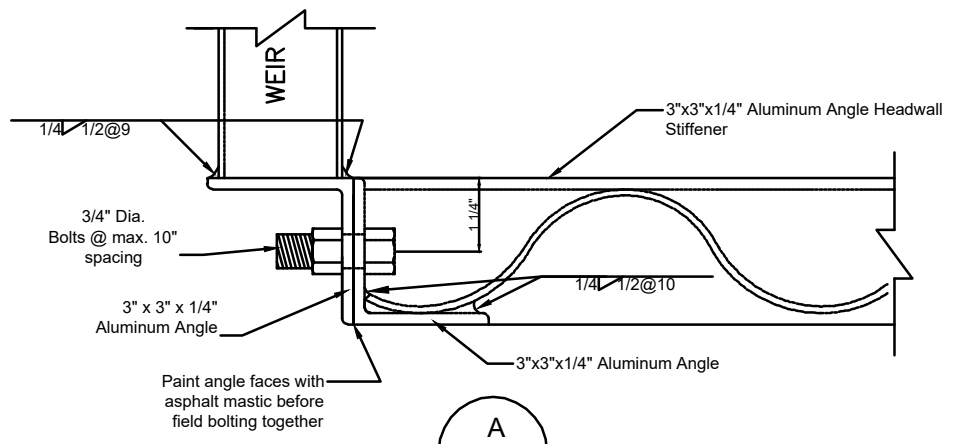
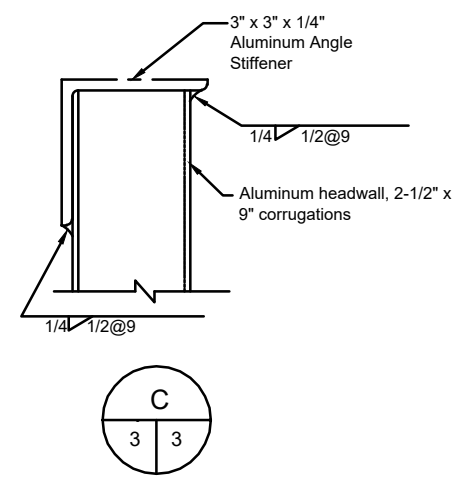
- Radius of bend for Type 20 bar = 2".
- Alternate splice locations for Mark 3 bars may be used at Contractor's option, with Engineer's approval. Minimum splice length is 1'-9".
- Minimum splice length for Mark 4 bars is 1'-4".



NOTES:

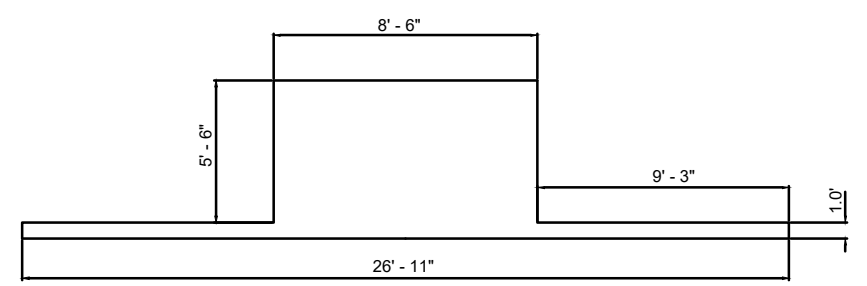
- Field drill 7/8" holes as required in the aluminum structure. Place steel reinforcement through holes. Wrap rebar as described in Construction Note 4.

SECTION ON CENTERLINE



STANDARD DWG. IA-1410  
DATE Nov. 2012 | PAGE 3 OF 3

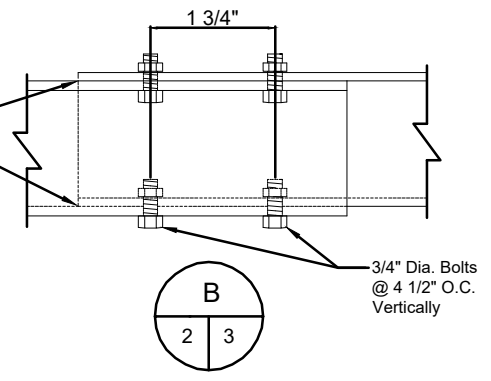
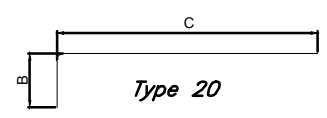
A4 NRCS ALUMINUM "TOEWALL" DROP SPILLWAY  
NOT TO SCALE



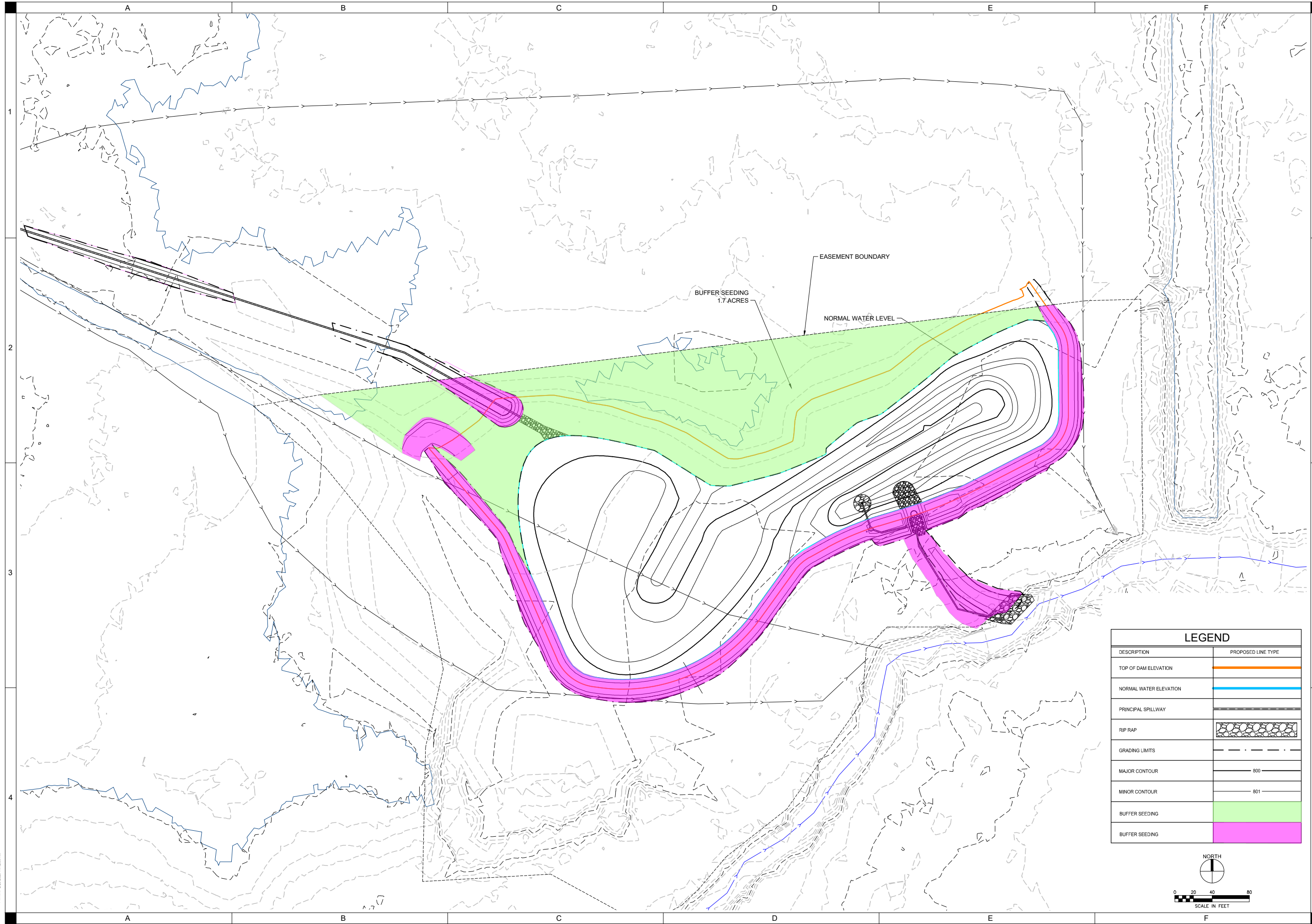
CONCRETE DIMENSIONS SUMMARY

**STEEL SCHEDULE** (All #4 bars)

Mark	Type	B	C	Quantity	Length	Total Length	Quantity Formulas	Length Formulas
1	20	2'-4"	6'-10"	9	9'-2"	82'-6"	W + 2	C Leg = $\frac{W}{2} + B + 1'$
2	Str.	-	-	18	2'-4"	42	2[RoundUp(S - .25')]	Given
3	Str.	-	-	10	14'-2"	141'-8"	Given	$\frac{W}{2} + S + 1.42'$
4	Str.	-	-	7	8	56	RoundUp( $\frac{W}{2} + B + 0.5'$ )	W + 1.0'
Total Length						322'-2"	lin. ft.	
Weight = Total Length x 0.668 lb./lin. ft.						215	lb.	



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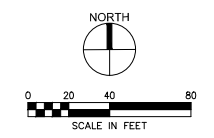


EASEMENT BOUNDARY

BUFFER SEEDING  
1.7 ACRES

NORMAL WATER LEVEL

LEGEND	
DESCRIPTION	PROPOSED LINE TYPE
TOP OF DAM ELEVATION	
NORMAL WATER ELEVATION	
PRINCIPAL SPILLWAY	
RIP RAP	
GRADING LIMITS	
MAJOR CONTOUR	800
MINOR CONTOUR	801
BUFFER SEEDING	
BUFFER SEEDING	



DRAWN: ANI	APPROVED: DJJ
ISSUED FOR: BIDDING	DATE: 2023-02-17
PROJECT NO: 4202800	FIELD BOOK: -
CLIENT NO: -	