

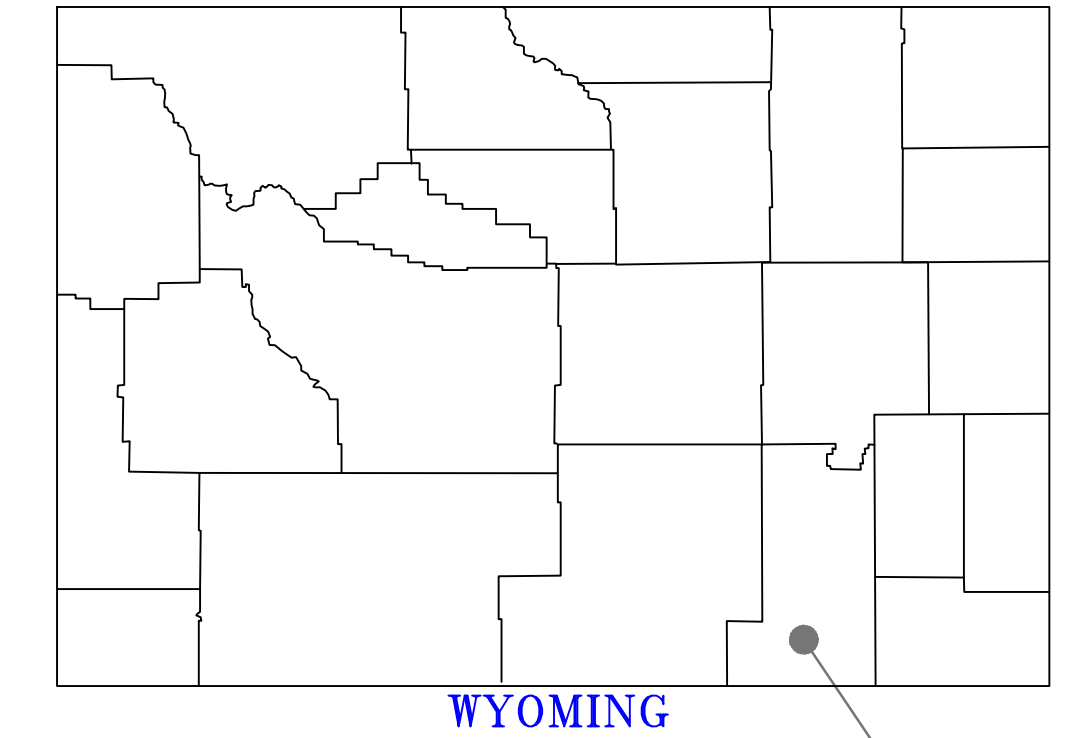


2114 MIDPOINT DRIVE, SUITE 1  
FORT COLLINS, CO 80525

# DUCKS UNLIMITED

PROJECT  
WTCA  
SAND CREEK DIVERSION  
WY-192-100

LOCATED IN SECTIONS 24 & 25,  
OF TOWNSHIP 14 NORTH,  
RANGE 75 WEST, &  
SECTION 19 OF  
TOWNSHIP 14 NORTH,  
RANGE 74 WEST,  
6TH P.M., ALBANY COUNTY,  
WYOMING



WYOMING

PROJECT LOCATION

**SPECIFICATIONS**

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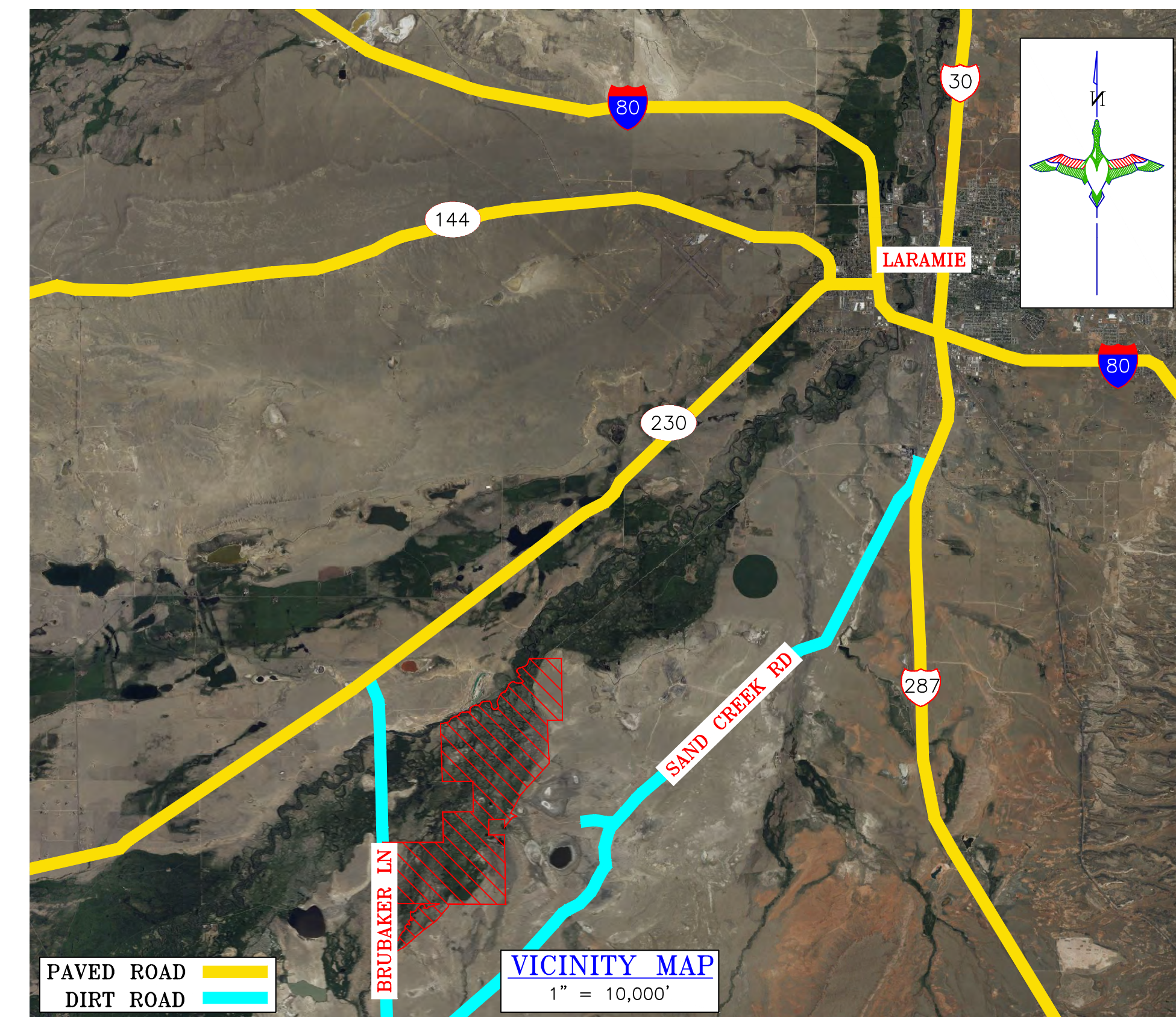
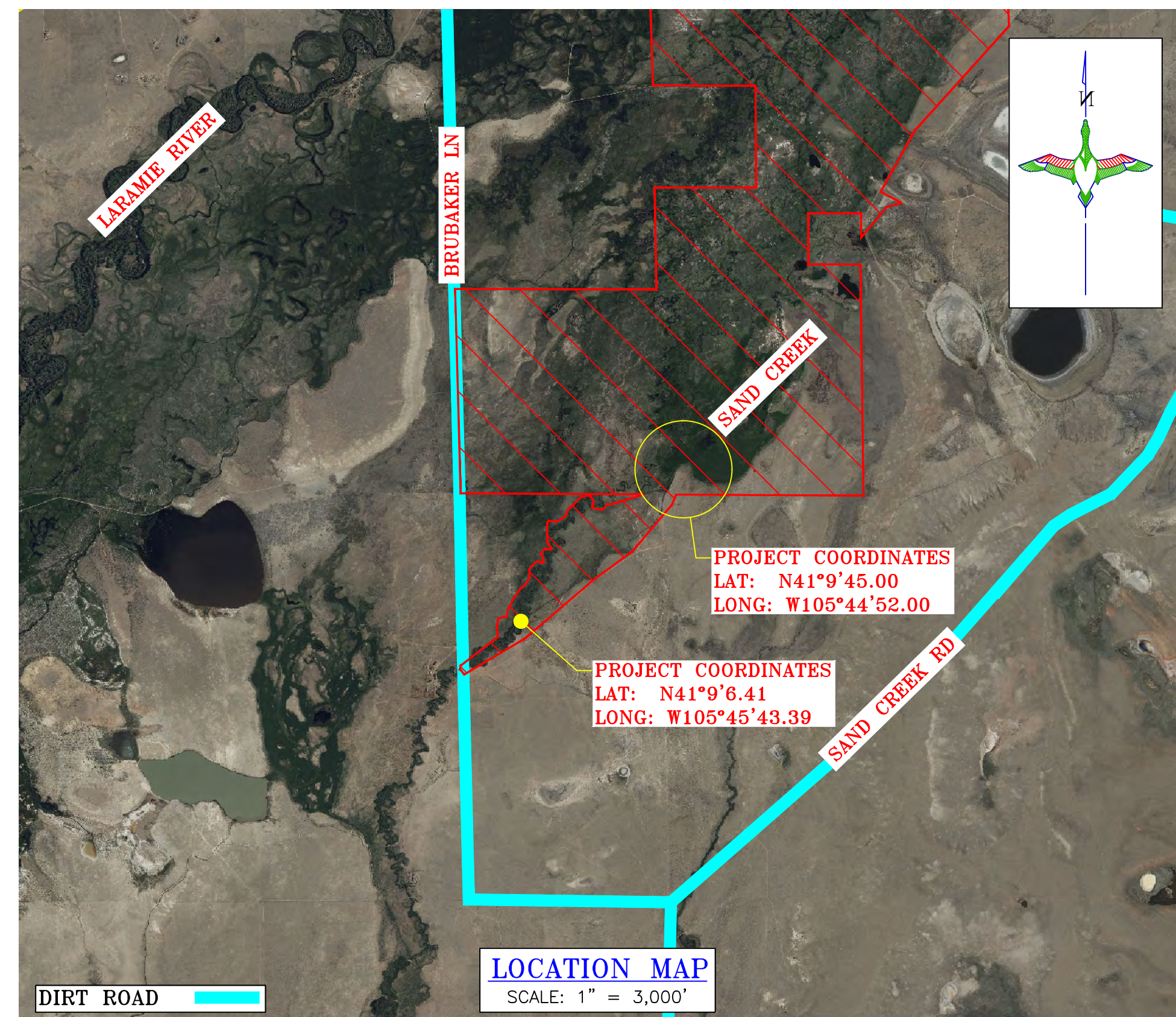
**ESTIMATED QUANTITIES**

<b>MOBILIZATION:</b>	1 L.S.
<b>SITE PREPARATION (TOP SOIL):</b>	1 L.S.
<b>EXCAVATION:</b>	
RICHARDS DIVERSION DITCH (634 L.F.)	61 C.Y.-P
RICHARDS DITCH REGRADE (1,139 L.F.)	40 C.Y.-P
<b>EMBANKMENT CONSTRUCTION:</b>	
SAND CREEK EMB. EXTENSION & REPAIR (1,236 L.F.)	908 C.Y.-P**
(37 C.Y. CUT IS INCIDENTAL TO REPAIR)	
<b>CONSTRUCTED TOPOGRAPHY:</b>	
FILL IN PORTION OF EXISTING COOK DITCH (200 L.F.)	401 C.Y.-P**
RICHARDS DIVERSION DITCH SIDE BERMS (634 L.F.)	61 C.Y.-P**
RICHARDS DITCH NORTHWEST BERM (1,139 L.F.)	98 C.Y.-P**
<b>WATER CONTROL STRUCTURES - SUPPLY &amp; INSTALL:</b>	
48"Ø FRESNO SERIES 6600 MODEL 101C SLIDE GATE (7' TALL)	1 EA.
W/ DUAL CONCRETE HEADWALL (≈18.0 C.Y. CONCRETE)	
& STILLING WELL	
24"Ø FRESNO SERIES 6600 MODEL 101C SLIDE GATE (5' TALL)	2 EA.
W/ CONCRETE HEADWALL & TRASH RACK (≈5.5 C.Y. CONCRETE)	
18"Ø FRESNO 5500 SERIES TOGGLE GATE	1 EA.
W/ STEEL BOX STRUCTURE	
STEEL BOX STRUCTURE W/ STOP LOG GUIDE	1 EA.
STOP LOG STORAGE CONTAINER	1 EA.
<b>MEASURE DEVICE - SUPPLY &amp; INSTALL:</b>	
24" GALVANIZED PARSHALL FLUME W/ WING-WALLS,	2 EA.
TOE PLATES & STILLING WELL	
<b>CULVERTS &amp; PIPE - SUPPLY &amp; INSTALL:</b>	
4'x5' PRE-CAST REINFORCED CONCRETE BOX CULVERT	24 L.F.-A
PRE-CAST REINFORCED CONCRETE WING-WALLS (FOR 4'x5' CULVERT)	2 EA.
4'x4' PRE-CAST REINFORCED CONCRETE BOX CULVERT	35 L.F.-A
4'x4' CAST-IN-PLACE OPEN-TOP CULVERT (≈2 C.Y. CONCRETE)	5 L.F.-A
24"Ø SDR51 PVC PIPE	80 L.F.-A
18"Ø ADS N-12 WT DUAL WALL HDPE PIPE	30 L.F.-A
18"Ø 16 GA. CMP PIPE (STILLING WELLS)	24 L.F.-A
<b>FLEX-A-MAT - SUPPLY &amp; INSTALL:</b>	
16'x40' FLEX-A-MAT	2 EA.
<b>ROCK RIPRAP - SUPPLY &amp; PLACE:</b>	
DU CLASS II ROCK RIPRAP W/FILTER FABRIC	44 C.Y.-P
3/4" MINUS CRUSHED AGGREGATE	14 C.Y.-P
ASTM C33 FINE AGGREGATE	3.5 C.Y.-P
PIT RUN ROCK	24 C.Y.-P
<b>REMOVAL OF EXISTING CULVERTS AND STRUCTURES:</b>	
REMOVAL & OFFSITE DISPOSAL OF EX. PIPE/WCSs/FLUMES	1 L.S.

L.F.-A - PAYMENT WILL BE BASED ON ACTUAL QUANTITY EXCAVATED, FILLED, REGRADED, CLEANED OUT, OR SUPPLIED AND INSTALLED  
C.Y.-P - PAYMENT WILL BE BASED ON THE PLAN QUANTITY LISTED ABOVE.  
\*\* INCLUDES 20% FOR SHRINKAGE.

**PLAN INDEX**

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2. LOCATION OF OVERALL PLAN & CONTROL MAPS
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4. SAND CREEK & RICHARDS DITCH OVERALL PLAN & CONTROL
5. SAND CREEK EMBANKMENT EXTENSION & REPAIR
6. COOK DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 1 OF 2)
7. COOK DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)
8. COOK DITCH PARSHALL FLUME
9. ARMORED SPILLWAY
10. SAND CREEK HEADGATE W/ CONCRETE HEADWALL (SHEET 1 OF 2)
11. SAND CREEK HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)
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15. INFILL PORTION OF EXISTING COOK DITCH
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18. RICHARDS DITCH TURNOUT
19. RICHARDS DIVERSION DITCH
20. RICHARDS DITCH STOPLOG STRUCTURE WITH CULVERT
21. CONTROL POINTS
22. STORMWATER POLLUTION PREVENTION PLAN #1
23. STORMWATER POLLUTION PREVENTION PLAN #2
24. SWPPP NOTES



P.E. SEAL:  
Professional Engineer (Civil)  
KEVIN JAMES WARNER  
15300  
Date: 05/25/2026  
WYOMING

DESIGNED BY: MAK	DRAWN BY: JUW	SURVEYED BY: MAK	CHECKED BY:	APPROVED BY:
DATE:				
REVISION:				
1				
2				
3				
4				
5				
6				
7				
8				

PROJECT:  
WTCA  
SAND CREEK DIVERSION  
TITLE PAGE & LOCATION MAP  
SHEET TITLE:  
TITLE PAGE & LOCATION MAP

DATE: 04/10/2026  
SHEET TITLE:  
TITLE PAGE & LOCATION MAP

SCALES ARE ACCURATE ON 24"X36" SHEET SIZE  
DU PROJECT NUMBER:  
WY-192-100  
SHEET NUMBER:  
1  
SHEET 1 OF 24

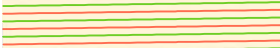
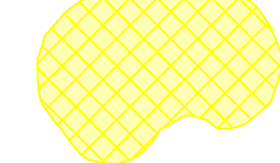
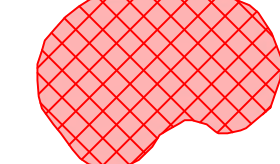
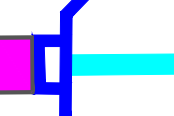
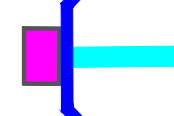
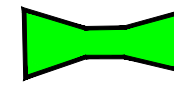


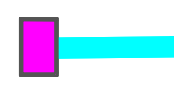





**"BEFORE YOU DIG"**  
BEFORE THE START OF CONSTRUCTION. THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

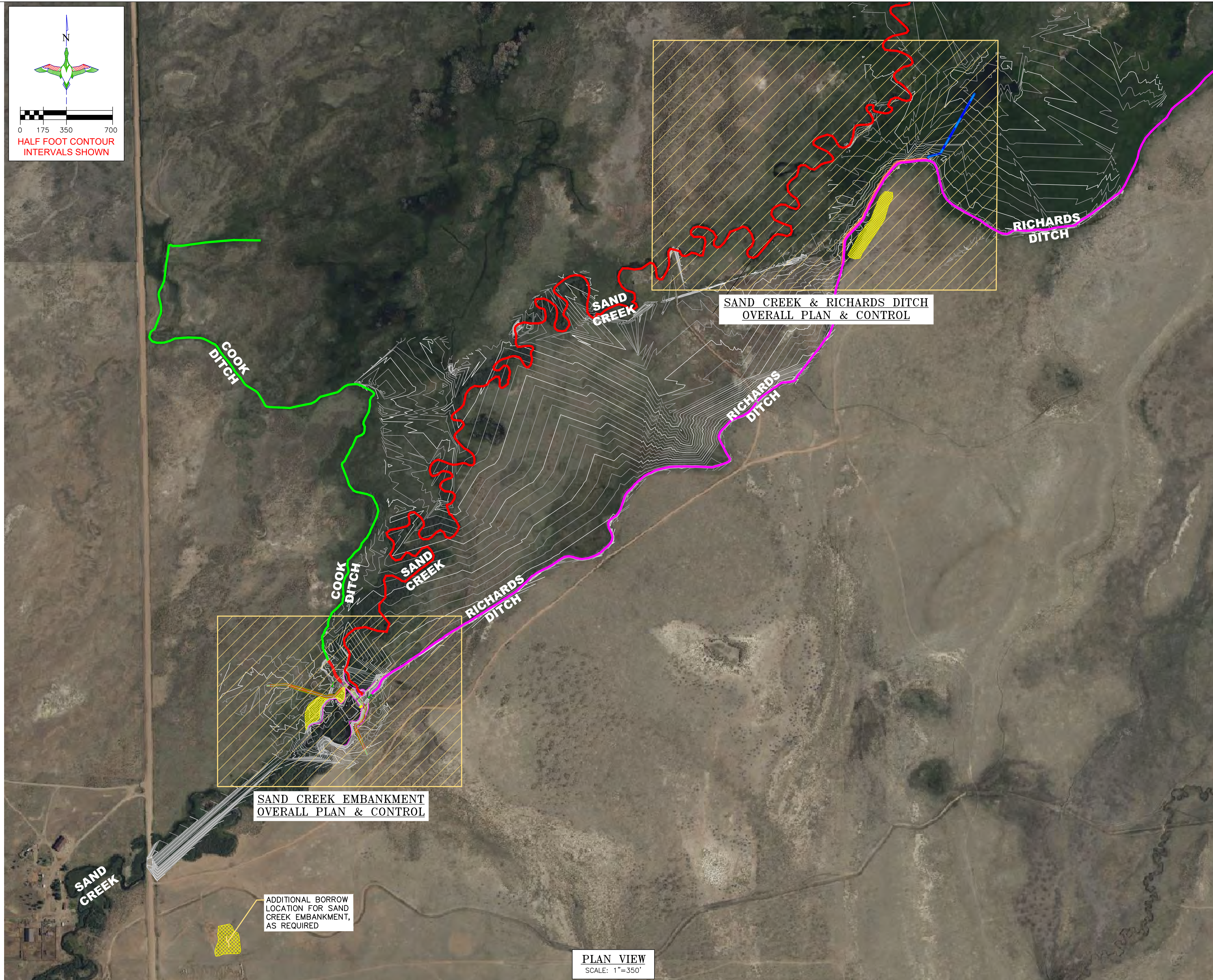
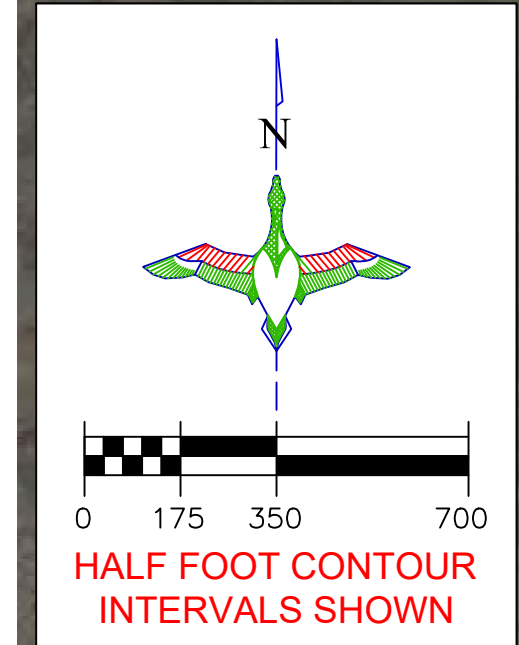
DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

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**LEGEND**

- EMBANKMENT CONSTRUCTION 
- BORROW / SPOILS LOCATION 
- DITCH INFILL 
- HEADGATE W/ CONCRETE STRUCTURE 
- HEADGATE W/ CONCRETE HEADWALL 
- PARSHALL FLUME 
- FLEX-A-MAT 
- REMOVE EXISTING PIPE 
- SLIDEGATE TURNOUT 
- STOPLOG CULVERT 
- CONCRETE CULVERT 
- COOK DITCH 
- SAND CREEK 
- RICHARDS DITCH 



**SAND CREEK EMBANKMENT  
OVERALL PLAN & CONTROL**

**SAND CREEK & RICHARDS DITCH  
OVERALL PLAN & CONTROL**

ADDITIONAL BORROW  
LOCATION FOR SAND  
CREEK EMBANKMENT,  
AS REQUIRED

**PLAN VIEW**  
SCALE: 1"=350'



GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:  
Professional Engineer (Civil)  
KEVIN JAMES WARNER  
15300  
Date  
WYOMING

DESIGNED BY: MAK  
DRAWN BY: JJW  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:  
APPROVED BY:

REVISION:	DATE:	BY:
1		
2		
3		
4		
5		
6		
7		
8		

PROJECT:  
WTCA  
SAND CREEK DIVERSION  
LOCATION OF OVERALL PLAN  
& CONTROL MAPS

DATE: 04/10/2026

SHEET TITLE:  
LOCATION OF  
OVERALL PLAN  
& CONTROL  
MAPS

SCALES ARE ACCURATE ON  
24"x36" SHEET SIZE

DU PROJECT NUMBER:  
WY-192-100

SHEET NUMBER:  
2  
SHEET 2 OF 24

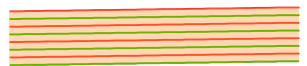
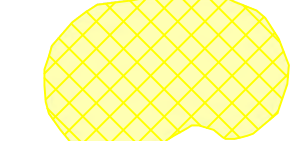
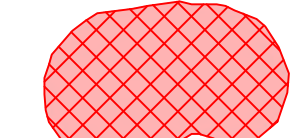
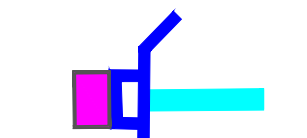
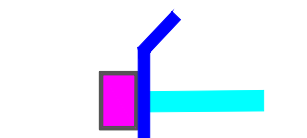



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MICHAEL KUEHNEL, P.E.  
(970) 218-7009

DU CONSTRUCTION ENGINEER:  
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**LEGEND**

- EMBANKMENT CONSTRUCTION 
- BORROW / SPOILS LOCATION 
- DITCH INFILL 
- HEADGATE W/ CONCRETE STRUCTURE 
- HEADGATE W/ CONCRETE HEADWALL 
- PARSHALL FLUME 
- FLEX-A-MAT 
- REMOVE EXISTING PIPE 

**BORROW NOTES:**

1. CONTRACTOR TO BEGIN BORROWING AT AN ELEVATION OF 7,230' FROM THE CREEK-SIDE EDGE AND WORK THEIR WAY INTO THE EXISTING SLOPE. EXCAVATION SHALL CONTINUE AT A FLAT GRADE UNTIL SUFFICIENT MATERIAL HAS BEEN OBTAINED. ONCE BORROW REMOVAL IS COMPLETE, THE CONTRACTOR SHALL TIE INTO THE EXISTING GRADE WITH A 4:1 SLOPE. IF THE DESIGNATED BORROW AREAS DO NOT YIELD THE REQUIRED VOLUME, THE CONTRACTOR SHALL OBTAIN THE REMAINING SOIL FROM THE DESIGNATED BORROW PITS LOCATED TO THE SOUTHWEST, AS SHOWN ON SHEET 2.
2. STRIP AND STOCKPILE APPROX. 4"-6" OF TOPSOIL FROM PROPOSED BORROW AREA. 4"-6" OF TOPSOIL SHALL BE RESPREAD OVER THE ENTIRE BORROW AREA INCLUDING SIDE SLOPES. COST OF TOPSOIL WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION".
3. SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED BORROW AREA SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS.
4. BORROW AREAS ARE TO LOOK NATURAL UPON COMPLETION, MAINTAINING VISUAL APPEALING SLOPES. IDEALLY THESE SLOPES SHALL BE 6:1 OR FLATTER. IN ADDITION BORROW AREAS SHALL MAINTAIN HISTORIC DRAINAGE PATHS AND SHALL DRAIN DURING RUNOFF.
5. BORROW AREAS ARE DEFINED AND THE CONTRACTOR NEEDS APPROVAL FROM THE DU ENGINEER TO BORROW OUTSIDE OF THE DEFINED LIMIT.

**SEEDING NOTES:**

1. DUCKS UNLIMITED WILL BE RESPONSIBLE FOR SEEDING THE EMBANKMENTS, BORROW, AND INFILL AREAS USING AN APPROPRIATE SEED MIX APPROVED BY THE LARAMIE RIVERS CONSERVATION DISTRICT.

**ROAD NOTES:**

1. ALL ROADWAY CONDITIONS AT PROJECT COMPLETION MUST BE MAINTAINED IN SIMILAR OR BETTER CONDITION THAN BEFORE ANY WORK HAS STARTED.

**GALVANIZING AND FIELD WELDING COATING REQUIREMENTS:**

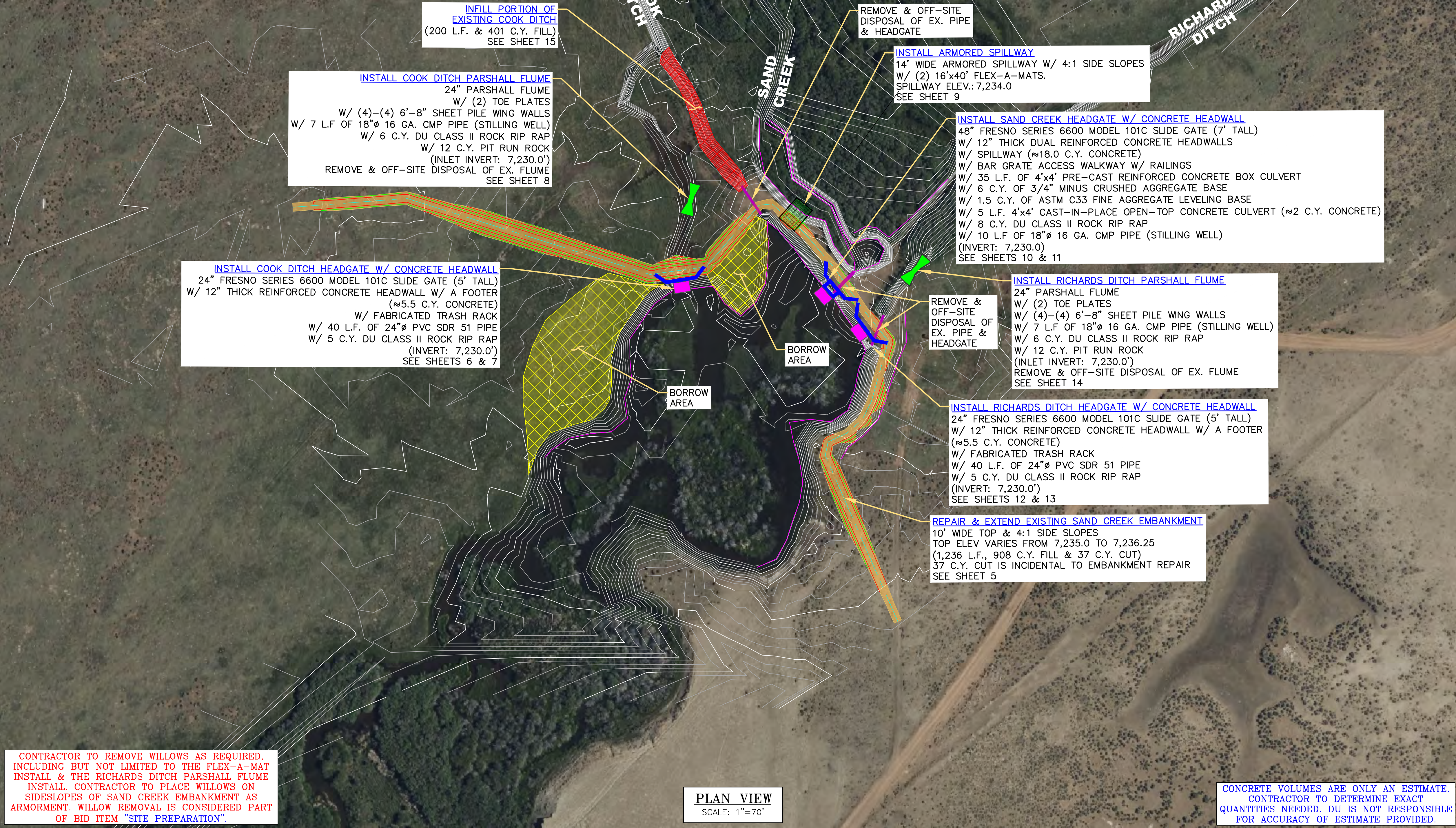
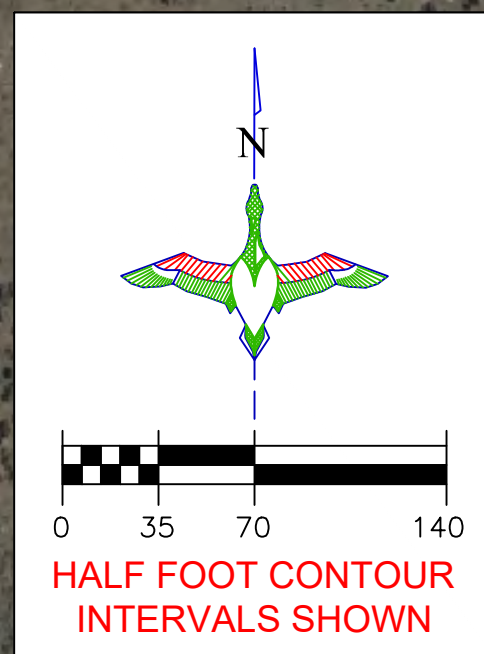
**HOT-DIP GALVANIZING** IS THE PREFERRED CORROSION PROTECTION METHOD FOR ALL STEEL COMPONENTS, IDEALLY PERFORMED **AFTER** SHOP WELDING IS COMPLETED.

ALL UNGALVANIZED STEEL, INCLUDING WELDS, MUST BE HOT-DIP GALVANIZED UNLESS OTHERWISE APPROVED.

FOR ANY FIELD WELDING PERFORMED ON GALVANIZED STEEL, WELDED AREAS SHALL BE CLEANED OF SLAG AND CONTAMINANTS, THEN COATED WITH:

- TWO (2) COATS OF ZINC-RICH PAINT (SUCH AS ZRC OR RUST-OLEUM COLD GALV), ACHIEVING A TOTAL DRY FILM THICKNESS OF 3-4 MILS.
- THE PAINT USED MUST CONTAIN GREATER THAN 90% ZINC CONTENT IN THE DRY FILM.
- THE CONTRACTOR SHALL ENSURE THAT MANUFACTURER'S RECOMMENDED RECOAT TIMES ARE FOLLOWED, TYPICALLY 2 TO 20 HOURS BETWEEN COATS, TO ENSURE PROPER ADHESION AND COATING PERFORMANCE.

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**INFILL PORTION OF EXISTING COOK DITCH**  
(200 L.F. & 401 C.Y. FILL)  
SEE SHEET 15

**INSTALL COOK DITCH PARSHALL FLUME**  
24" PARSHALL FLUME  
W/ (2) TOE PLATES  
W/ (4)-(4) 6'-8" SHEET PILE WING WALLS  
W/ 7 L.F. OF 18"Ø 16 GA. CMP PIPE (STILLING WELL)  
W/ 6 C.Y. DU CLASS II ROCK RIP RAP  
W/ 12 C.Y. PIT RUN ROCK  
(INLET INVERT: 7,230.0')  
REMOVE & OFF-SITE DISPOSAL OF EX. FLUME  
SEE SHEET 8

**INSTALL COOK DITCH HEADGATE W/ CONCRETE HEADWALL**  
24" FRESNO SERIES 6600 MODEL 101C SLIDE GATE (5' TALL)  
W/ 12" THICK REINFORCED CONCRETE HEADWALL W/ A FOOTER (≈5.5 C.Y. CONCRETE)  
W/ FABRICATED TRASH RACK  
W/ 40 L.F. OF 24"Ø PVC SDR 51 PIPE  
W/ 5 C.Y. DU CLASS II ROCK RIP RAP  
(INVERT: 7,230.0')  
SEE SHEETS 6 & 7

REMOVE & OFF-SITE DISPOSAL OF EX. PIPE & HEADGATE

**INSTALL ARMORED SPILLWAY**  
14' WIDE ARMORED SPILLWAY W/ 4:1 SIDE SLOPES  
W/ (2) 16'x40' FLEX-A-MATS.  
SPILLWAY ELEV.: 7,234.0  
SEE SHEET 9

**INSTALL SAND CREEK HEADGATE W/ CONCRETE HEADWALL**  
48" FRESNO SERIES 6600 MODEL 101C SLIDE GATE (7' TALL)  
W/ 12" THICK DUAL REINFORCED CONCRETE HEADWALLS  
W/ SPILLWAY (≈18.0 C.Y. CONCRETE)  
W/ BAR GRATE ACCESS WALKWAY W/ RAILINGS  
W/ 35 L.F. OF 4'x4' PRE-CAST REINFORCED CONCRETE BOX CULVERT  
W/ 6 C.Y. OF 3/4" MINUS CRUSHED AGGREGATE BASE  
W/ 1.5 C.Y. OF ASTM C33 FINE AGGREGATE LEVELING BASE  
W/ 5 L.F. 4'x4' CAST-IN-PLACE OPEN-TOP CONCRETE CULVERT (≈2 C.Y. CONCRETE)  
W/ 8 C.Y. DU CLASS II ROCK RIP RAP  
W/ 10 L.F. OF 18"Ø 16 GA. CMP PIPE (STILLING WELL)  
(INVERT: 7,230.0)  
SEE SHEETS 10 & 11

**INSTALL RICHARDS DITCH PARSHALL FLUME**  
24" PARSHALL FLUME  
W/ (2) TOE PLATES  
W/ (4)-(4) 6'-8" SHEET PILE WING WALLS  
W/ 7 L.F. OF 18"Ø 16 GA. CMP PIPE (STILLING WELL)  
W/ 6 C.Y. DU CLASS II ROCK RIP RAP  
W/ 12 C.Y. PIT RUN ROCK  
(INLET INVERT: 7,230.0')  
REMOVE & OFF-SITE DISPOSAL OF EX. FLUME  
SEE SHEET 14

**INSTALL RICHARDS DITCH HEADGATE W/ CONCRETE HEADWALL**  
24" FRESNO SERIES 6600 MODEL 101C SLIDE GATE (5' TALL)  
W/ 12" THICK REINFORCED CONCRETE HEADWALL W/ A FOOTER (≈5.5 C.Y. CONCRETE)  
W/ FABRICATED TRASH RACK  
W/ 40 L.F. OF 24"Ø PVC SDR 51 PIPE  
W/ 5 C.Y. DU CLASS II ROCK RIP RAP  
(INVERT: 7,230.0')  
SEE SHEETS 12 & 13

**REPAIR & EXTEND EXISTING SAND CREEK EMBANKMENT**  
10' WIDE TOP & 4:1 SIDE SLOPES  
TOP ELEV VARIES FROM 7,235.0 TO 7,236.25  
(1,236 L.F., 908 C.Y. FILL & 37 C.Y. CUT)  
37 C.Y. CUT IS INCIDENTAL TO EMBANKMENT REPAIR  
SEE SHEET 5

**CONTRACTOR TO REMOVE WILLOWS AS REQUIRED, INCLUDING BUT NOT LIMITED TO THE FLEX-A-MAT INSTALL & THE RICHARDS DITCH PARSHALL FLUME INSTALL. CONTRACTOR TO PLACE WILLOWS ON SIDESLOPES OF SAND CREEK EMBANKMENT AS ARMORMENT. WILLOW REMOVAL IS CONSIDERED PART OF BID ITEM "SITE PREPARATION".**

**PLAN VIEW**  
SCALE: 1"=70'

CONCRETE VOLUMES ARE ONLY AN ESTIMATE. CONTRACTOR TO DETERMINE EXACT QUANTITIES NEEDED. DU IS NOT RESPONSIBLE FOR ACCURACY OF ESTIMATE PROVIDED.

**ABBREVIATIONS LIST**

- BTM. = BOTTOM
- C.L. = CENTER LINE
- CMP = CORRUGATED METAL PIPE
- CONC. = CONCRETE
- DIA. = DIAMETER
- E = EASTING COORDINATE OR EAST
- ELEV. = ELEVATION
- EMB. = EMBANKMENT
- EX. = EXISTING
- FES = FLARED END SECTION
- FSL = FULL SERVICE LEVEL
- GA = GAUGE
- INV = INVERT
- LAT = LATITUDE (WGS84)
- LONG = LONGITUDE (WGS84)
- L.F. = LINEAR FEET
- MISC = MISCELLANEOUS
- N = NORTHING COORDINATE OR NORTH
- O.C. = ON CENTER
- P.I. = POINT OF INTERSECTION
- RCP = REINFORCED CONCRETE PIPE
- RD = ROAD
- REQ'D = REQUIRED
- R.O.W. = RIGHT OF WAY
- S = SOUTH
- SDR = STAGE DISCHARGE RECORDER
- UG = UNDERGROUND
- VEG = VEGETATION
- W = WEST OR WITH
- WCS = WATER CONTROL STRUCTURE
- WL = WATER LEVEL
- WS = WATER SHOT

\*NOTE: NOT ALL ABBREVIATIONS IN THIS LIST APPEAR ON THIS SHEET

**"BEFORE YOU DIG"**  
BEFORE THE START OF CONSTRUCTION. THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

**DU DESIGN ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**DU CONSTRUCTION ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



**DUCKS UNLIMITED INC.**  
GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:  
Professional Engineer (Civil)  
KEVIN JAMES WARNER  
15300  
Date  
WYOMING

DESIGNED BY: MAK  
DRAWN BY: JWJ  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:  
APPROVED BY:

DATE:	BY:
REVISION:	
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PROJECT: **WTCA SAND CREEK DIVERSION SAND CREEK EMBANKMENT OVERALL PLAN & CONTROL**

SHEET TITLE: **SAND CREEK EMBANKMENT OVERALL PLAN & CONTROL**

DATE: 04/10/2026

SHEET TITLE: **SAND CREEK EMBANKMENT OVERALL PLAN & CONTROL**

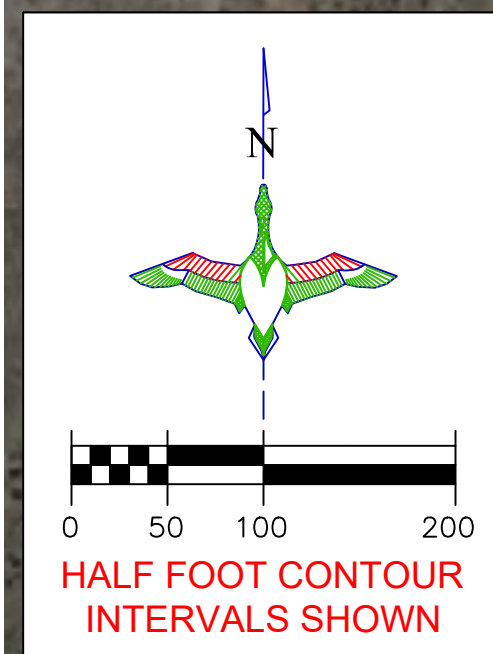
SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER: **WY-192-100**

SHEET NUMBER: **3**  
SHEET 3 OF 24

**LEGEND**

- EMB. CONSTRUCTION/  
EARTHWORK
- DITCH
- BORROW / SPOILS  
LOCATION
- SLIDEGATE TURNOUT
- STOPLOG CULVERT
- CONCRETE  
CULVERT



**BORROW NOTES:**

1. STRIP AND STOCKPILE APPROX. 4"-6" OF TOPSOIL FROM PROPOSED BORROW AREA. 4"-6" OF TOPSOIL SHALL BE RESPREAD OVER THE ENTIRE BORROW AREA INCLUDING SIDE SLOPES. COST OF TOPSOIL WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION".
2. SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED BORROW AREA SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS.
3. BORROW AREAS ARE TO LOOK NATURAL UPON COMPLETION, MAINTAINING VISUAL APPEALING SLOPES. IDEALLY THESE SLOPES SHALL BE 6:1 OR FLATTER. IN ADDITION BORROW AREAS SHALL MAINTAIN HISTORIC DRAINAGE PATHS AND SHALL DRAIN DURING RUNOFF.
4. BORROW AREAS ARE DEFINED AND THE CONTRACTOR NEEDS APPROVAL FROM THE DU ENGINEER TO BORROW OUTSIDE OF THE DEFINED LIMIT.

**SEEDING NOTES:**

1. DUCKS UNLIMITED WILL BE RESPONSIBLE FOR SEEDING THE EMBANKMENTS, BORROW, AND INFILL AREAS USING AN APPROPRIATE SEED MIX APPROVED BY THE LARAMIE RIVERS CONSERVATION DISTRICT.

**ROAD NOTES:**

1. ALL ROADWAY CONDITIONS AT PROJECT COMPLETION MUST BE MAINTAINED IN SIMILAR OR BETTER CONDITION THAN BEFORE ANY WORK HAS STARTED

**GALVANIZING AND FIELD WELDING COATING REQUIREMENTS:**

**HOT-DIP GALVANIZING** IS THE PREFERRED CORROSION PROTECTION METHOD FOR ALL STEEL COMPONENTS, IDEALLY PERFORMED **AFTER** SHOP WELDING IS COMPLETED. ALL UNGALVANIZED STEEL, INCLUDING WELDS, MUST BE HOT-DIP GALVANIZED UNLESS OTHERWISE APPROVED.

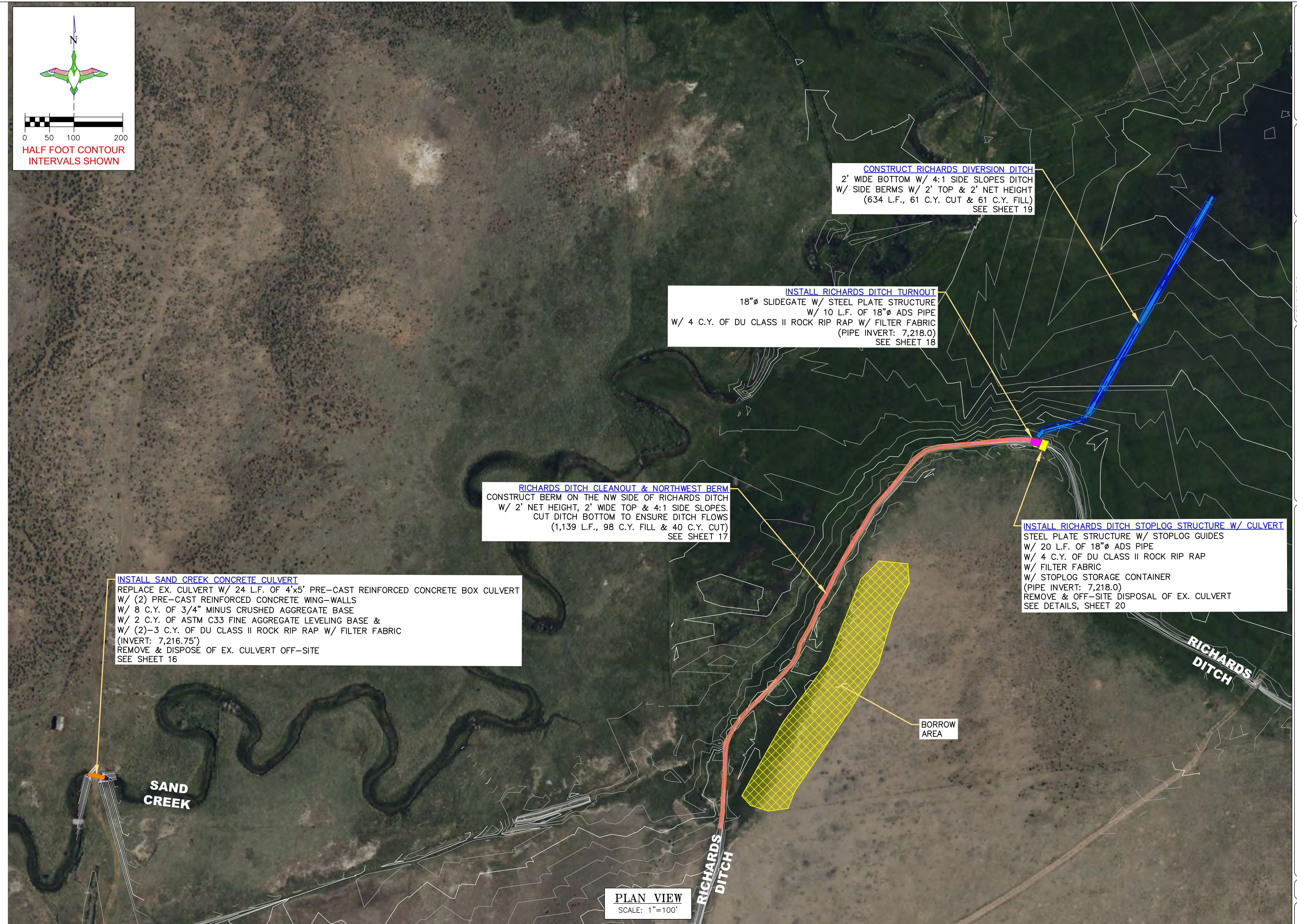
FOR ANY FIELD WELDING PERFORMED ON GALVANIZED STEEL, WELDED AREAS SHALL BE CLEANED OF SLAG AND CONTAMINANTS, THEN COATED WITH:

- TWO (2) COATS OF ZINC-RICH PAINT (SUCH AS ZRC OR RUST-OLEUM COLD GALV), ACHIEVING A TOTAL DRY FILM THICKNESS OF 3-4 MILS.
- THE PAINT USED MUST CONTAIN GREATER THAN 90% ZINC CONTENT IN THE DRY FILM.
- THE CONTRACTOR SHALL ENSURE THAT MANUFACTURER'S RECOMMENDED RECOAT TIMES ARE FOLLOWED, TYPICALLY 2 TO 20 HOURS BETWEEN COATS, TO ENSURE PROPER ADHESION AND COATING PERFORMANCE.

**ENDANGERED TOAD NOTE:**

PRIOR TO COMMENCING WORK IN THIS AREA, THE CONTRACTOR SHALL COORDINATE WITH DU PERSONNEL TO SCHEDULE USFWS PERSONNEL TO CONDUCT TOAD SURVEYS & REMOVE ANY TOAD FOUND ON-SITE.

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**PLAN VIEW**  
SCALE: 1"=100'

**ABBREVIATIONS LIST**

- |                                |                                  |                                |
|--------------------------------|----------------------------------|--------------------------------|
| BTM. = BOTTOM                  | INV = INVERT                     | R.O.W. = RIGHT OF WAY          |
| C.L. = CENTER LINE             | LAT = LATITUDE (WGS84)           | S = SOUTH                      |
| CMP = CORRUGATED METAL PIPE    | LONG = LONGITUDE (WGS84)         | SDR = STAGE DISCHARGE RECORDER |
| CONC. = CONCRETE               | L.F. = LINEAR FEET               | UG = UNDERGROUND               |
| DIA. = DIAMETER                | MISC = MISCELLANEOUS             | VEG = VEGETATION               |
| E = EASTING COORDINATE OR EAST | N = NORTHING COORDINATE OR NORTH | W = WEST OR WITH               |
| ELEV. = ELEVATION              | O.C. = ON CENTER                 | WCS = WATER CONTROL STRUCTURE  |
| EMB. = EMBANKMENT              | P.I. = POINT OF INTERSECTION     | WL = WATER LEVEL               |
| EX. = EXISTING                 | RCP = REINFORCED CONCRETE PIPE   | WS = WATER SHOT                |
| FES = FLARED END SECTION       | RD = ROAD                        |                                |
| FSL = FULL SERVICE LEVEL       | REQ'D = REQUIRED                 |                                |
| GA = GAUGE                     |                                  |                                |
- \*NOTE: NOT ALL ABBREVIATIONS IN THIS LIST APPEAR ON THIS SHEET

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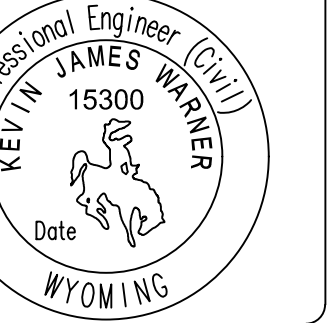
**DU DESIGN ENGINEER:**  
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(970) 218-7009

**DU CONSTRUCTION ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:



DESIGNED BY: MAK  
DRAWN BY: JWJ  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:  
APPROVED BY:

REVISION:	DATE:	BY:
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PROJECT:  
WTCA  
SAND CREEK DIVERSION  
SAND CREEK & RICHARDS DITCH  
OVERALL PLAN & CONTROL

DATE: 04/10/2026

SHEET TITLE:  
SAND CREEK & RICHARDS DITCH  
OVERALL PLAN & CONTROL

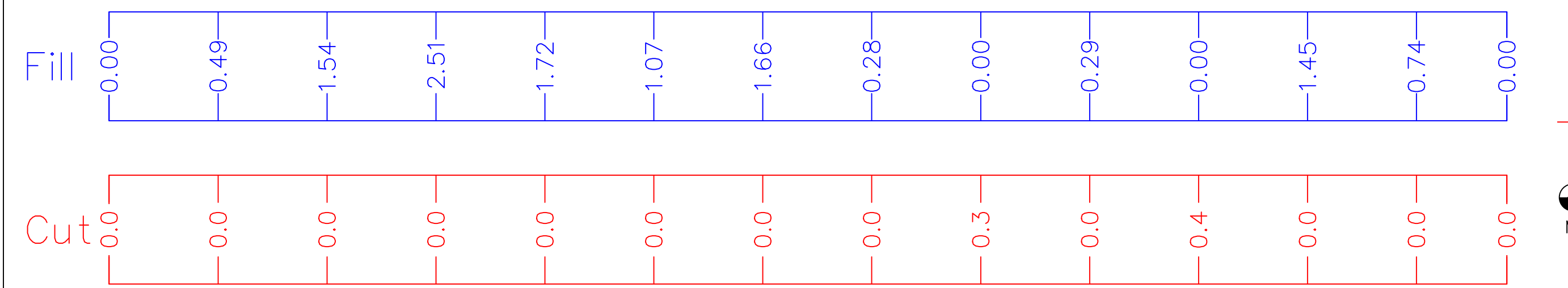
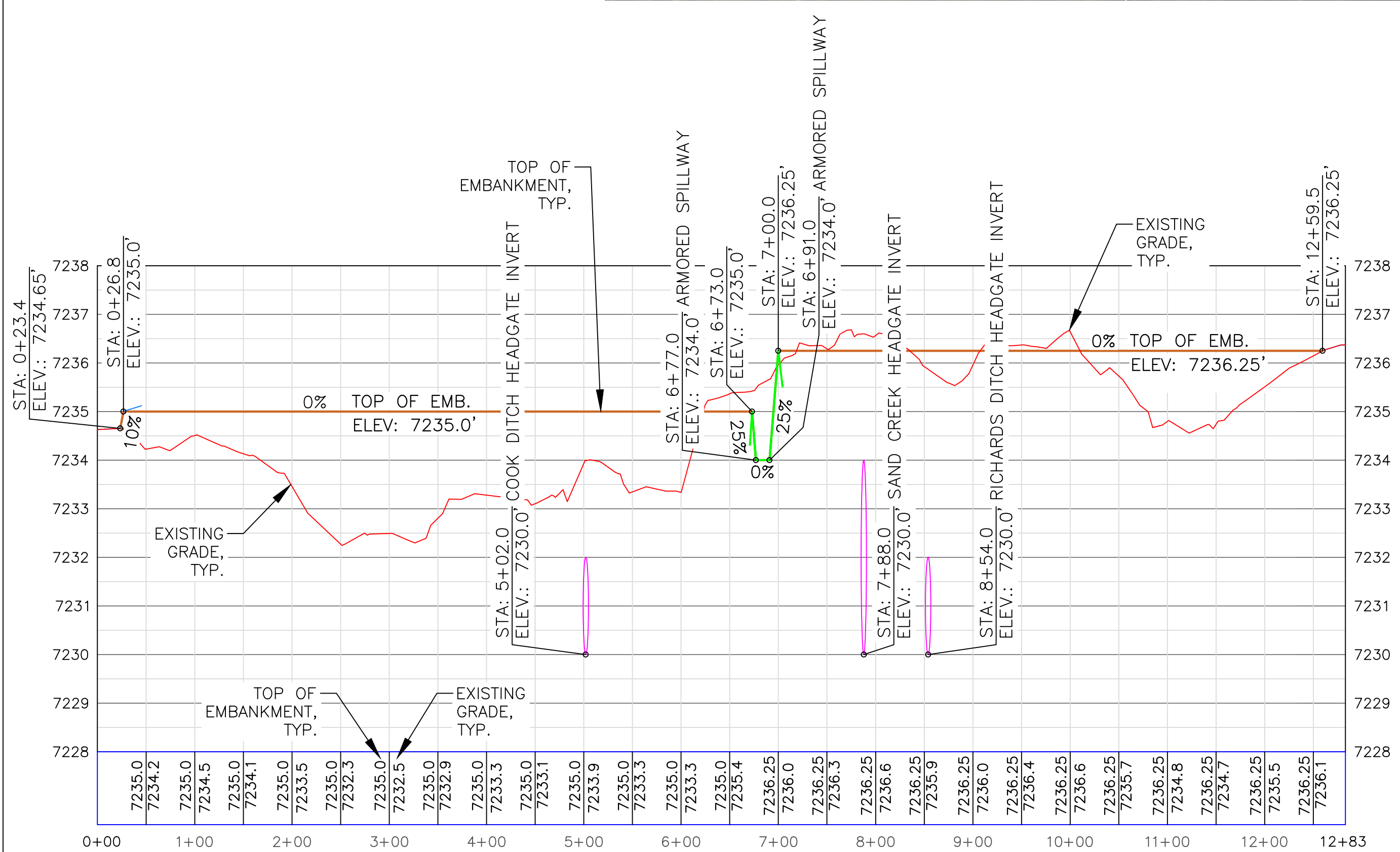
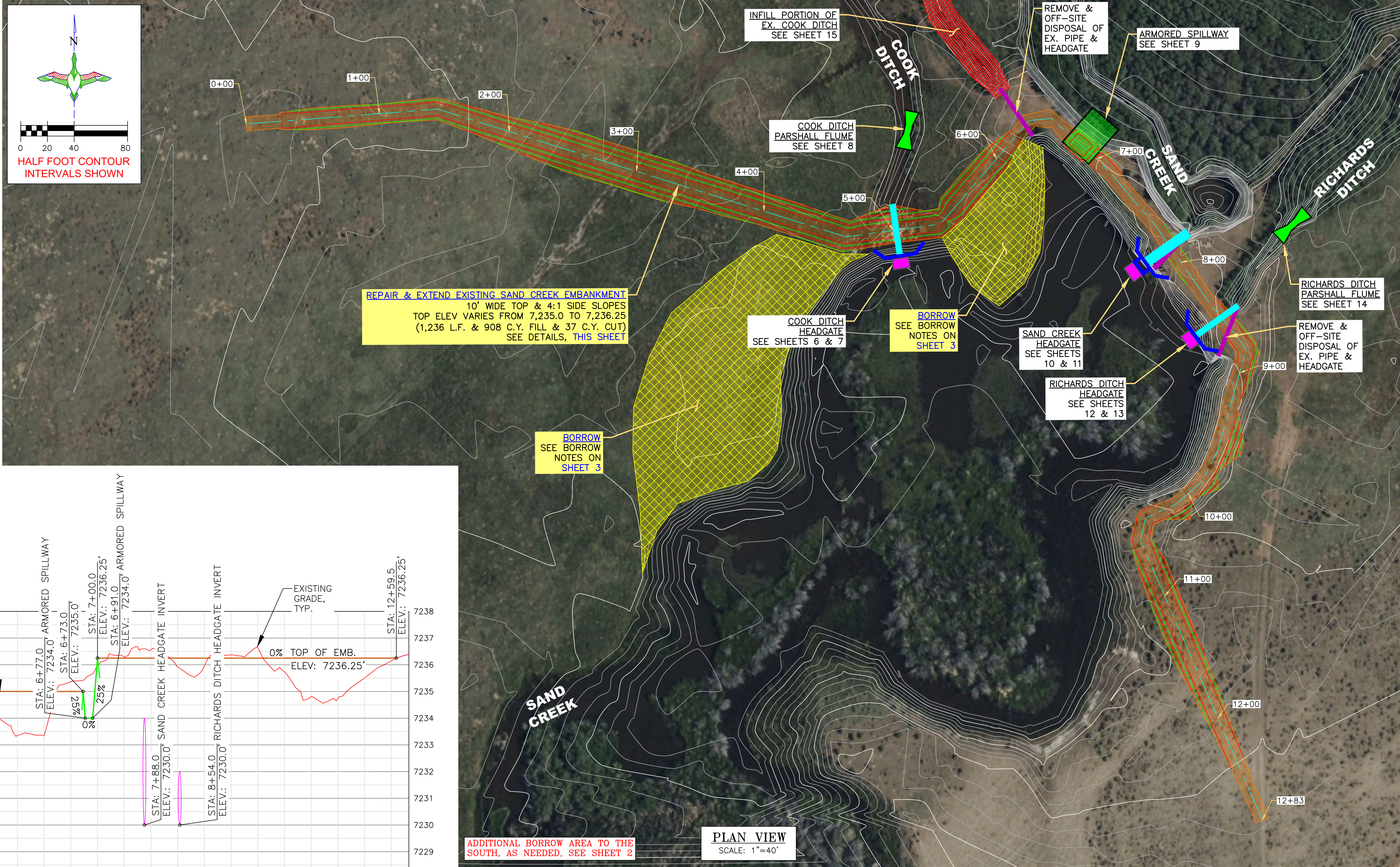
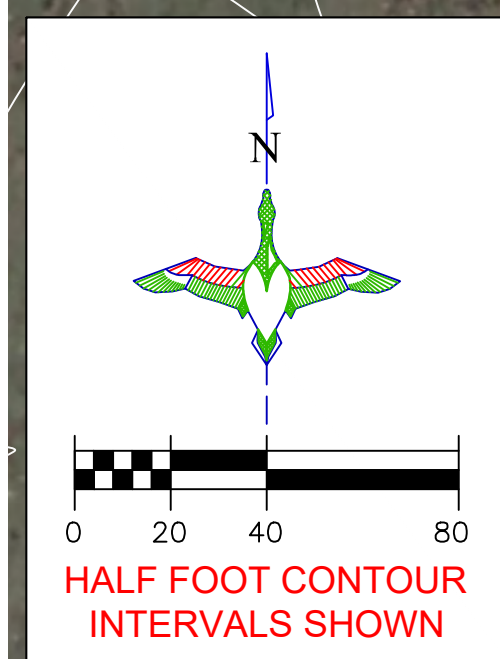
SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER:  
WY-192-100

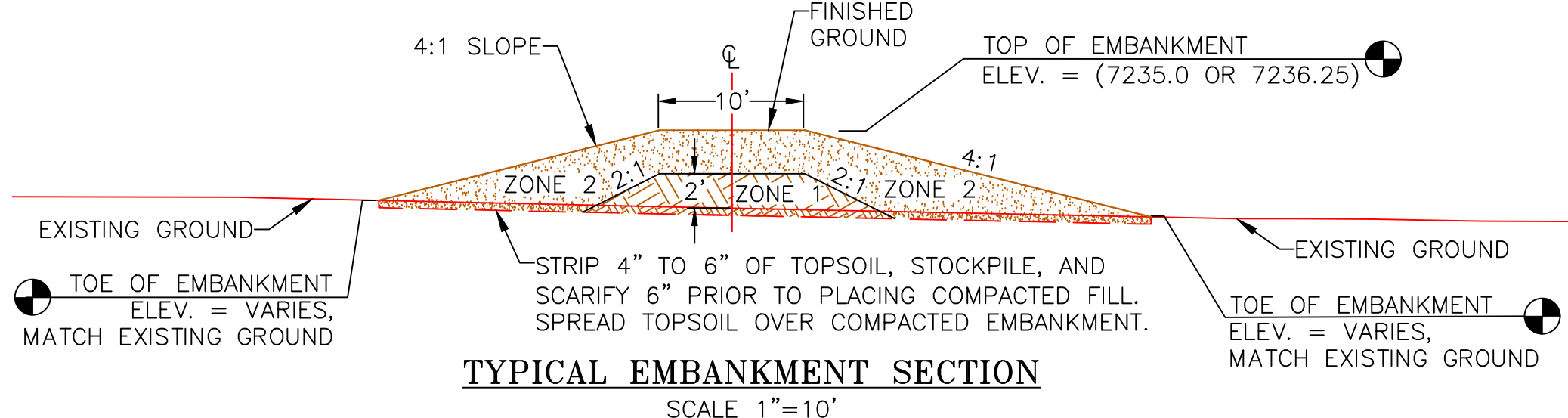
SHEET NUMBER:  
4  
SHEET 4 OF 24

**LEGEND**

- EMBANKMENT CONSTRUCTION
- BORROW / SPOILS LOCATION
- DITCH INFILL
- HEADGATE W/ CONCRETE SPILLWAY & HEADWALL
- HEADGATE W/ CONCRETE HEADWALL
- PARSHALL FLUME
- FLEX-A-MAT
- REMOVE EXISTING PIPE



**SAND CREEK EMBANKMENT EXTENSION & REPAIR PROFILE**  
 HORIZONTAL SCALE: 1"=100'  
 VERTICAL SCALE: 1"=2'



- EMBANKMENT CONSTRUCTION NOTES:**
1. STRIP 4" TO 6" OF TOPSOIL, STOCKPILE, AND SCARIFY 6" PRIOR TO PLACING COMPACTED FILL. SPREAD TOPSOIL OVER COMPACTED EMBANKMENT. COST OF TOPSOIL WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION".
  2. THE EMBANKMENT SUBGRADE MUST BE STABLE, UNIFORMLY GRADED, FREE OF ROCKS, ROOTS, AND OTHER DEBRIS, WITH NO ABRUPT GRADE CHANGES.
  3. EMBANKMENT CORE SHALL BE FROM COMPACTED EARTHEN MATERIAL CONTAINING MINIMAL ORGANIC MATERIAL AND SHALL COMPLY WITH DU SPECIFICATION SECTION 204 "EMBANKMENT CONSTRUCTION."
  4. UTILIZE CLAYEY FILL/BETTER MATERIAL FOR ZONE 1 OF THE EMBANKMENT. ANY GRAVELLY OR HEAVY SAND MATERIAL SHALL BE USED FOR ZONE 2. ORGANIC MATERIAL SHALL BE PLACED ON THE SIDE-SLOPES AS REQ.
  5. EMBANKMENT FILL SHALL BE OBTAINED FROM THE CUT GENERATED FROM THE BORROW LOCATIONS. FILL SHALL BE PLACED IN LIFTS OF NO MORE THAN 8" AND COMPACTED PRIOR TO PLACING SUBSEQUENT LIFTS.
- BORROW NOTES:** SEE SHEET 3  
**SEEDING NOTES:** SEE SHEET 3

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 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

**DU CONSTRUCTION ENGINEER:**  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

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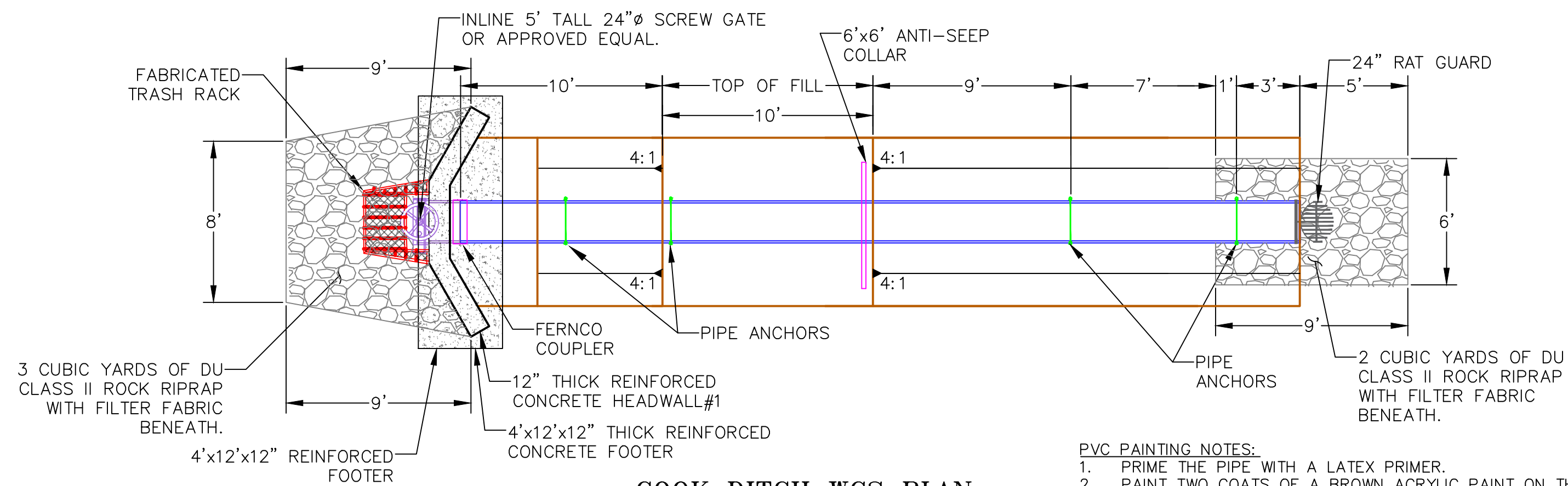
GREAT PLAINS REGIONAL OFFICE  
 P.E. SEAL: KEVIN JAMES WARNER, 15300, WYOMING

DESIGNED BY: MAK  
 DRAWN BY: JWV  
 SURVEYED BY: MAK  
 CHECKED BY:  
 APPROVED BY:

REVISION:	DATE:	BY:
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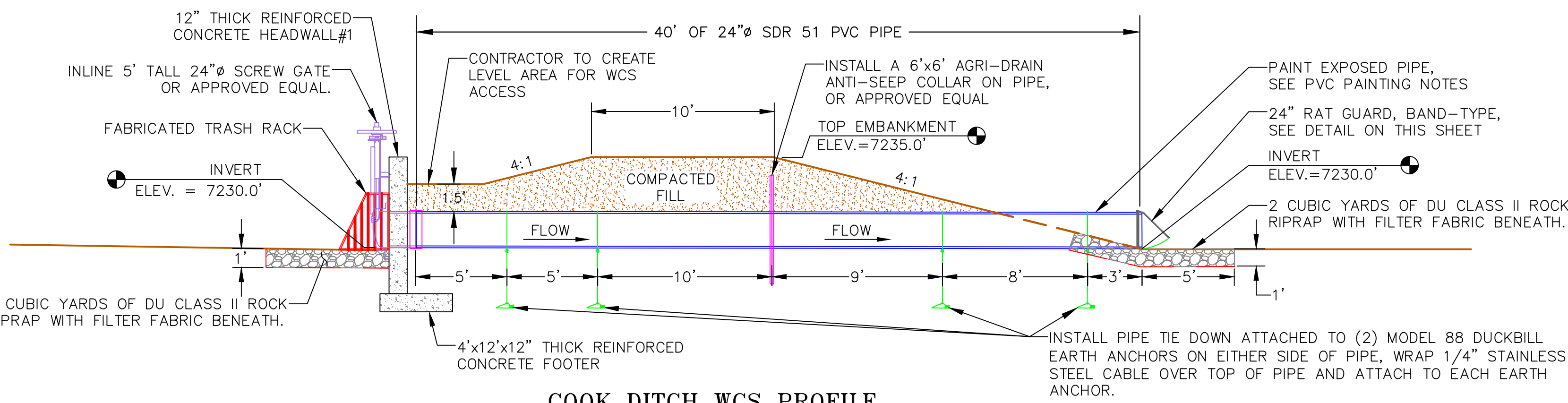
PROJECT: WTCA SAND CREEK DIVERSION  
 SAND CREEK EMBANKMENT EXTENSION & REPAIR  
 SHEET TITLE: SAND CREEK EMBANKMENT EXTENSION & REPAIR

DATE: 04/10/2026  
 SHEET TITLE: SAND CREEK EMBANKMENT EXTENSION & REPAIR  
 DU PROJECT NUMBER: WY-192-100  
 SHEET NUMBER: 5  
 SHEET 5 OF 24

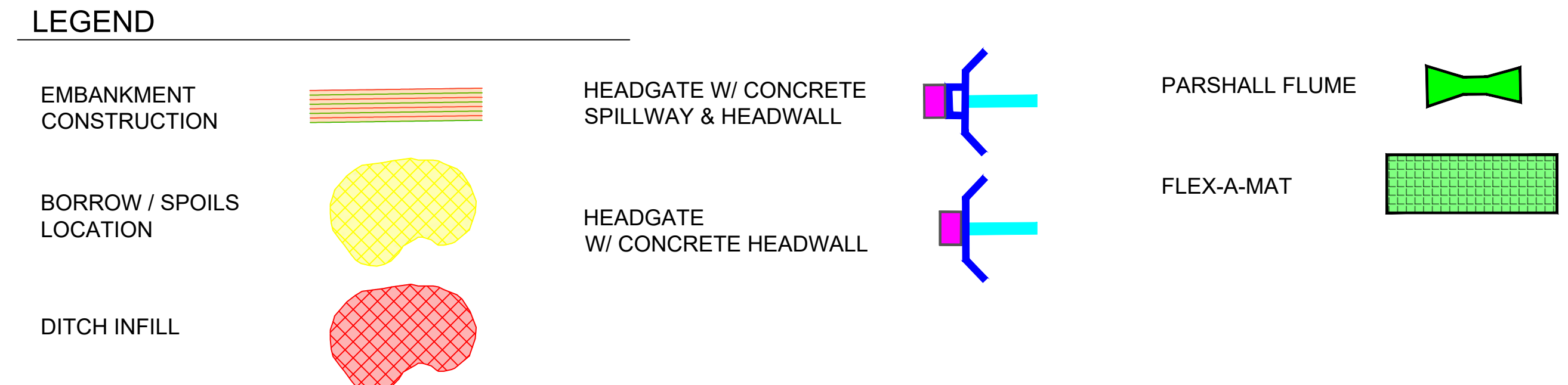
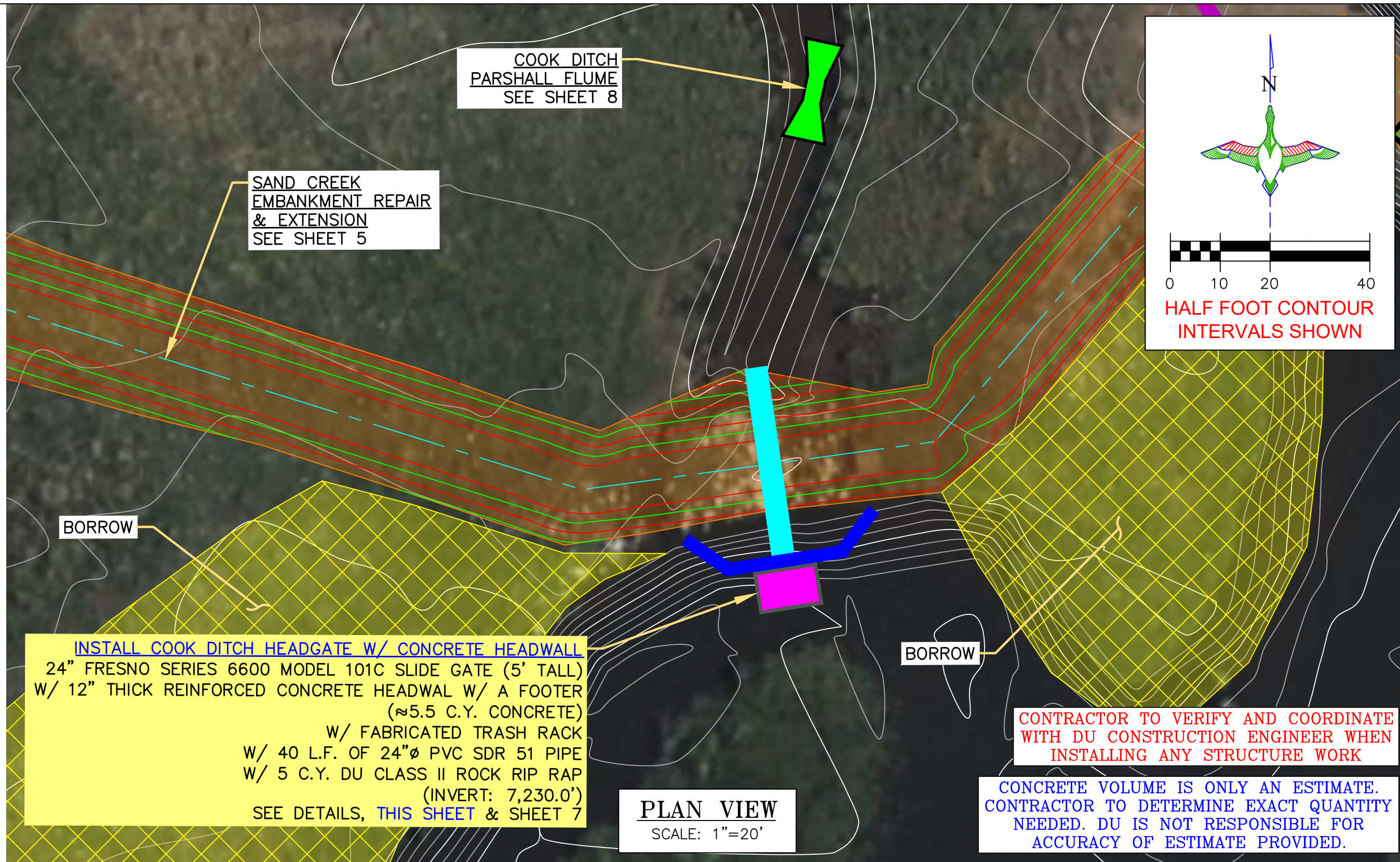


**COOK DITCH WCS PLAN**  
SCALE 1"=5'

- PVC PAINTING NOTES:**
1. PRIME THE PIPE WITH A LATEX PRIMER.
  2. PAINT TWO COATS OF A BROWN ACRYLIC PAINT ON THE EXPOSED PORTIONS OF THE PVC PIPE.
  3. PAINT TO BE SEALED ONTO THE PIPE WITH A CLEAR COAT.



**COOK DITCH WCS PROFILE**  
SCALE 1"=5'

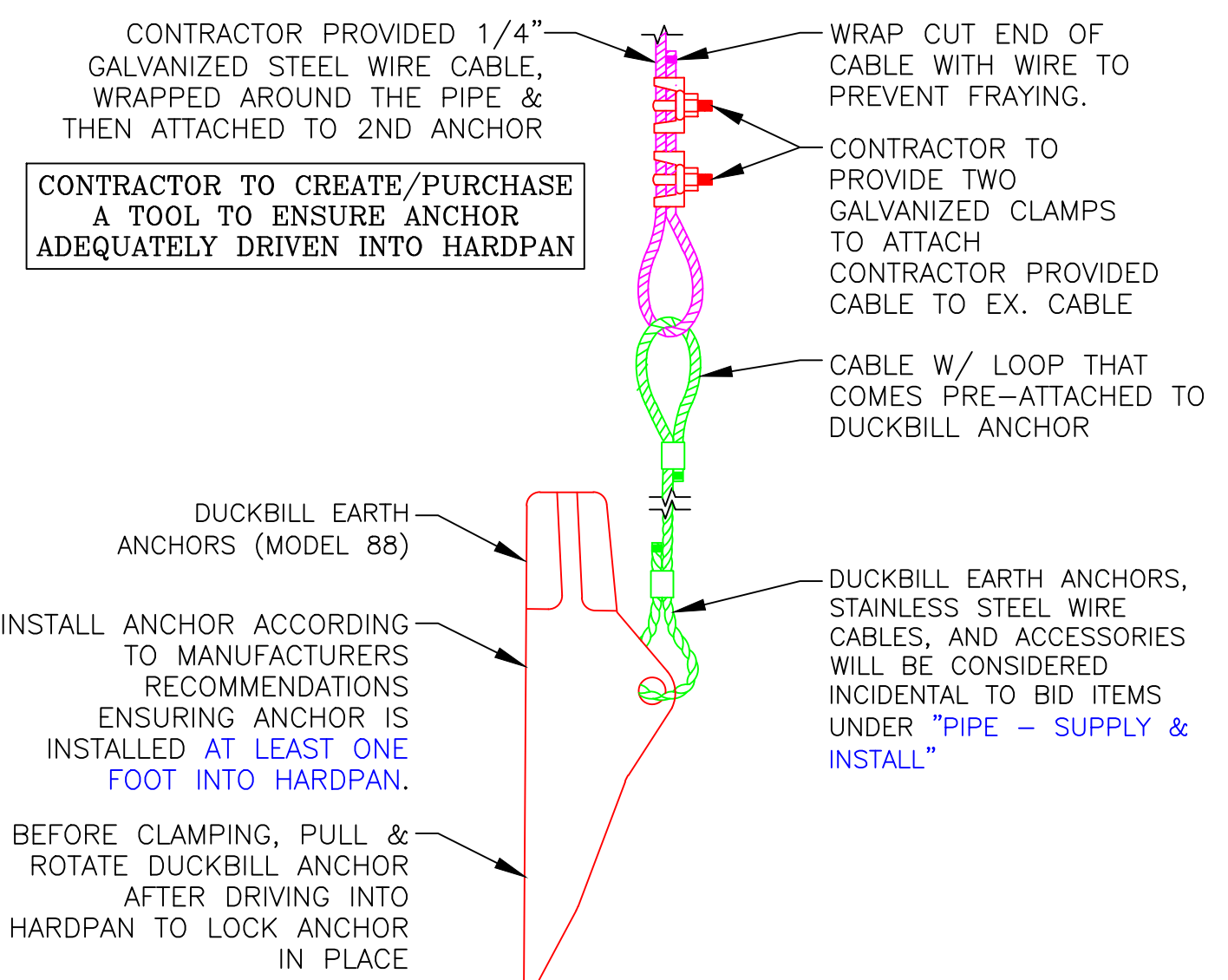


**INSTALL COOK DITCH HEADGATE W/ CONCRETE HEADWALL**  
24" FRESNO SERIES 6600 MODEL 101C SLIDE GATE (5' TALL)  
W/ 12" THICK REINFORCED CONCRETE HEADWALL W/ A FOOTER (≈5.5 C.Y. CONCRETE)  
W/ FABRICATED TRASH RACK  
W/ 40 L.F. OF 24" Ø PVC SDR 51 PIPE (INVERT: 7,230.0')  
W/ 5 C.Y. DU CLASS II ROCK RIP RAP (SEE DETAILS, THIS SHEET & SHEET 7)

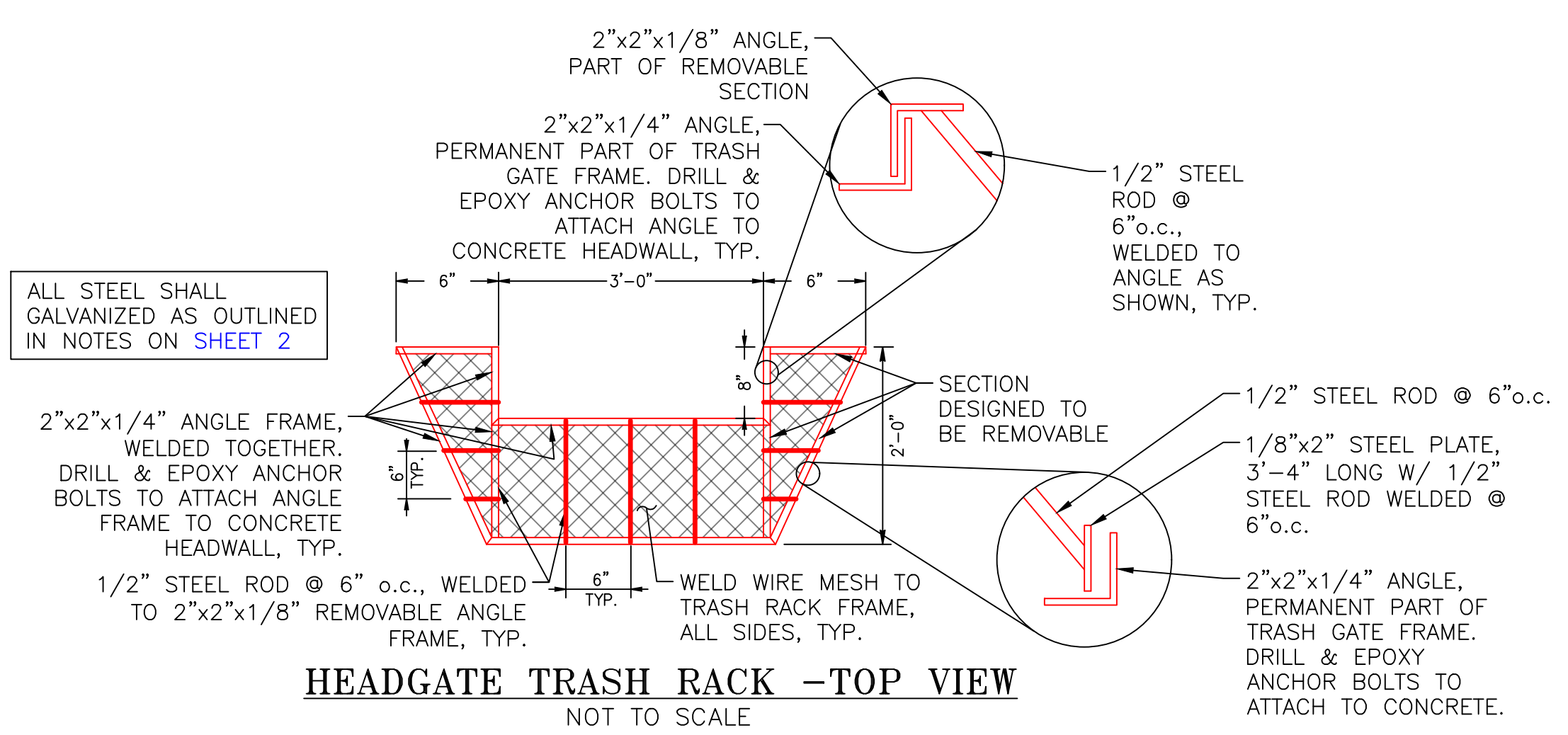
**PLAN VIEW**  
SCALE: 1"=20'

**CONTRACTOR TO VERIFY AND COORDINATE WITH DU CONSTRUCTION ENGINEER WHEN INSTALLING ANY STRUCTURE WORK**

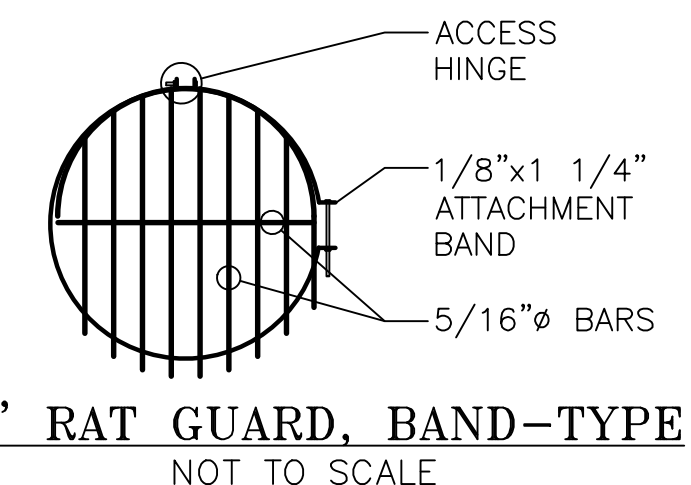
**CONCRETE VOLUME IS ONLY AN ESTIMATE. CONTRACTOR TO DETERMINE EXACT QUANTITY NEEDED. DU IS NOT RESPONSIBLE FOR ACCURACY OF ESTIMATE PROVIDED.**



**DUCKBILL EARTH ANCHOR (MODEL 88) DETAIL**  
NOT TO SCALE

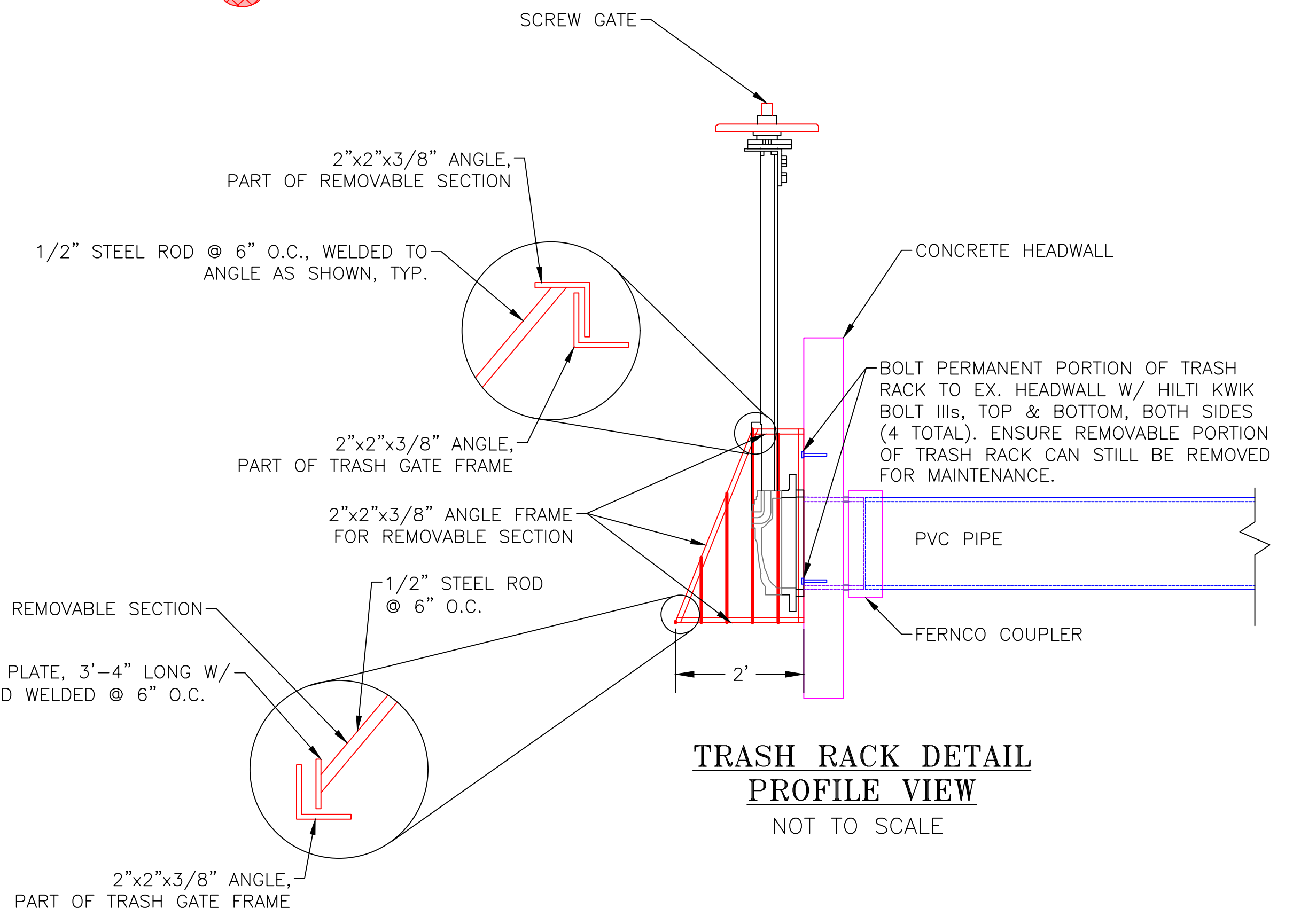


**HEADGATE TRASH RACK -TOP VIEW**  
NOT TO SCALE



**24" RAT GUARD, BAND-TYPE**  
NOT TO SCALE

- RAT GUARD INSTALLATION NOTES:**
1. THE RAT GUARD OR APPROVED EQUAL AND ITS INSTALLATION WILL BE CONSIDERED INCIDENTAL TO BID ITEMS UNDER "CULVERTS & PIPE - SUPPLY & INSTALL".
  2. RAT GUARD TO BE INSTALLED ON THE DOWNSTREAM LOCATION OF THE WCS.
  3. AGRI DRAIN CORP. TELEPHONE NUMBER IS 1-800-232-4742.



**TRASH RACK DETAIL PROFILE VIEW**  
NOT TO SCALE

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**DU CONSTRUCTION ENGINEER:**  
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**DUCKS UNLIMITED INC.**  
GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:  
Professional Engineer (Civil)  
KEVIN JAMES WARNER  
15300  
Date  
WYOMING

DESIGNED BY:	MAK
DRAWN BY:	JWV
SURVEYED BY:	MAK
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	
DATE:	
REVISION:	
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PROJECT:  
**WTCA SAND CREEK DIVERSION**

SHEET TITLE: **COOK DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 1 OF 2)**

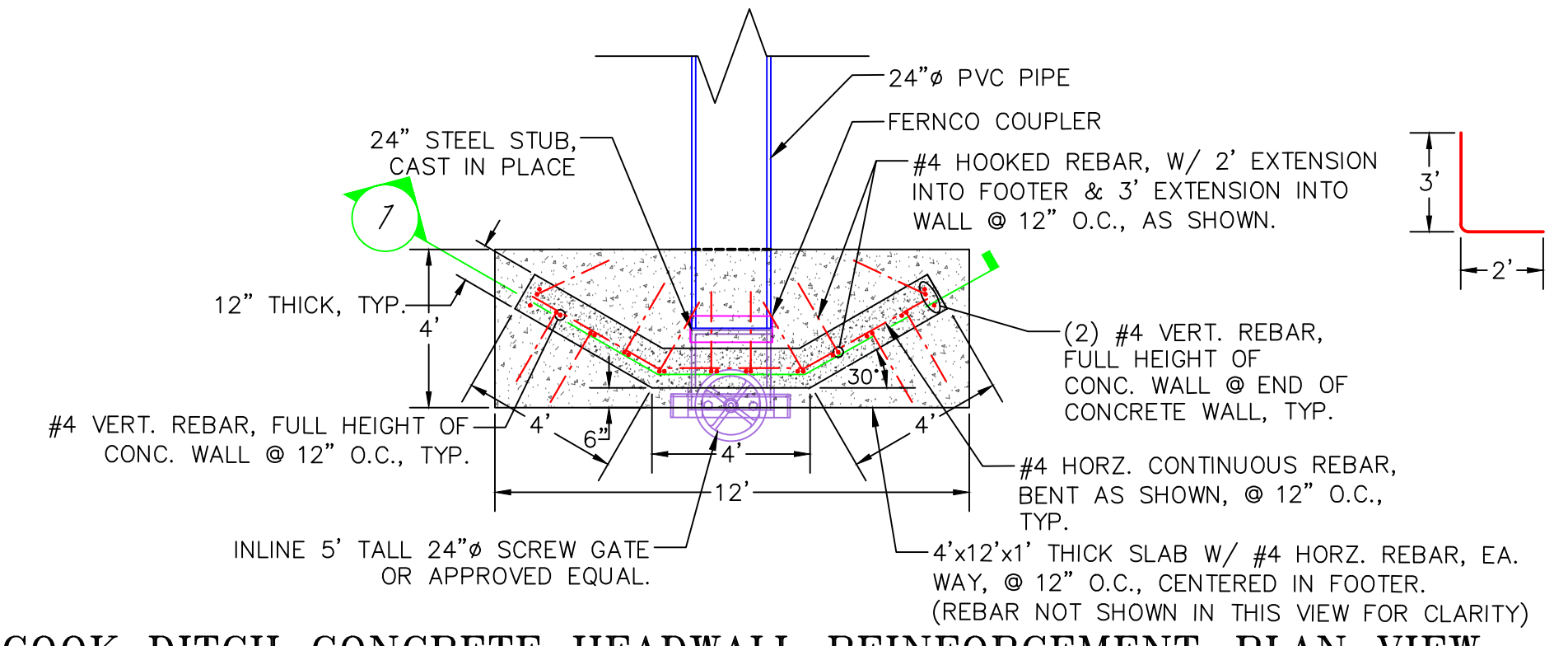
DATE: 04/10/2026

SHEET TITLE:  
**COOK DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 1 OF 2)**

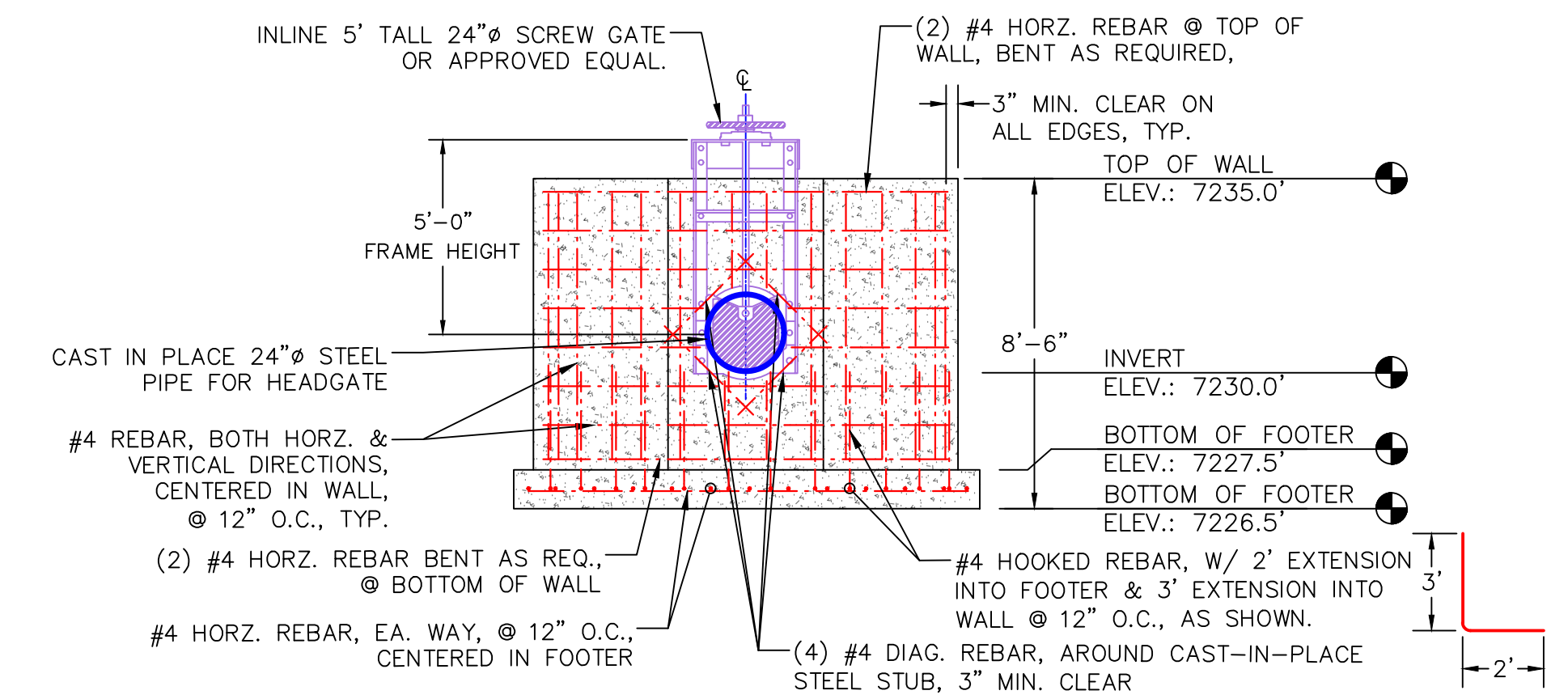
SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER:  
**WY-192-100**

SHEET NUMBER:  
**6**  
SHEET 6 OF 24

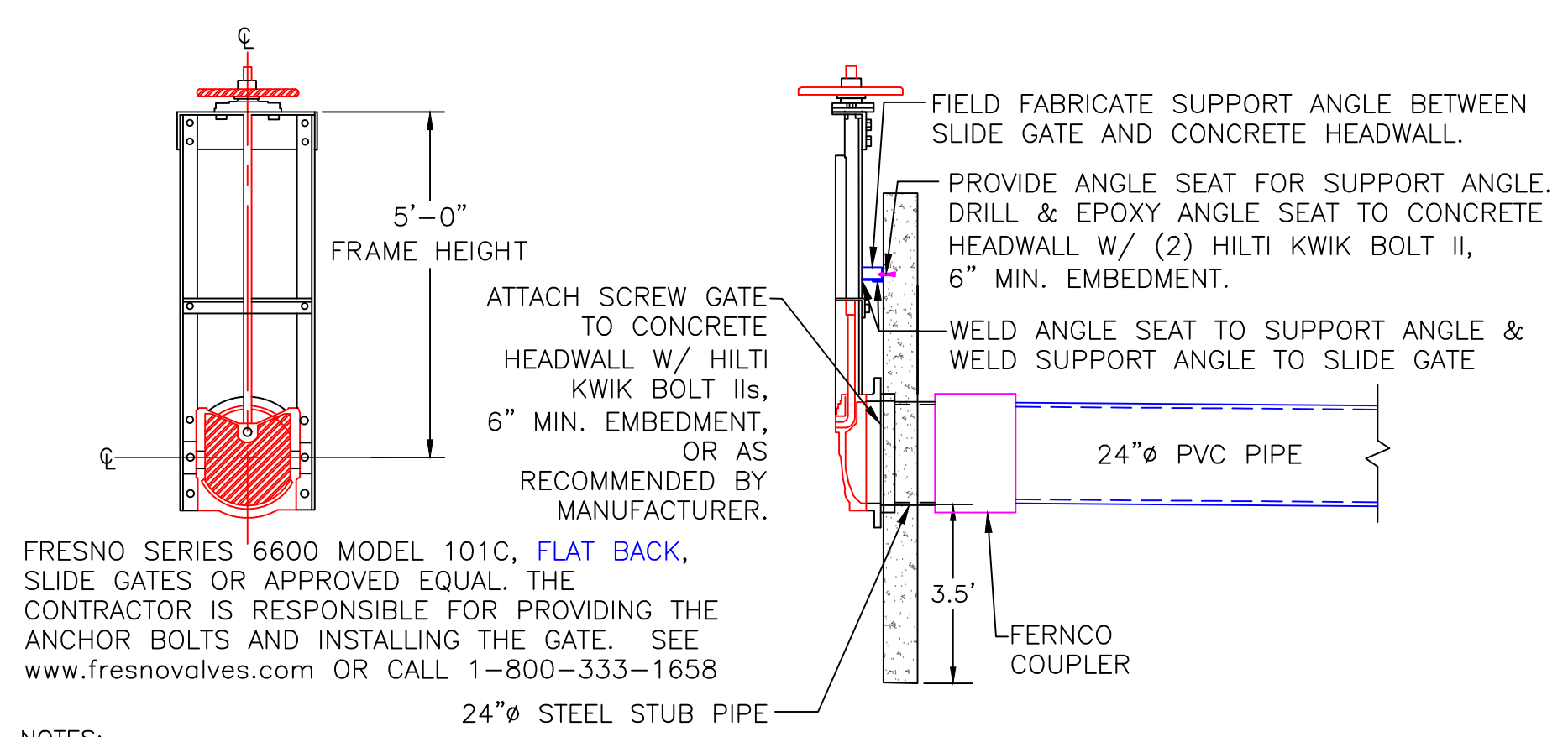


**COOK DITCH CONCRETE HEADWALL REINFORCEMENT-PLAN VIEW**  
 SCALE: 1"=4'



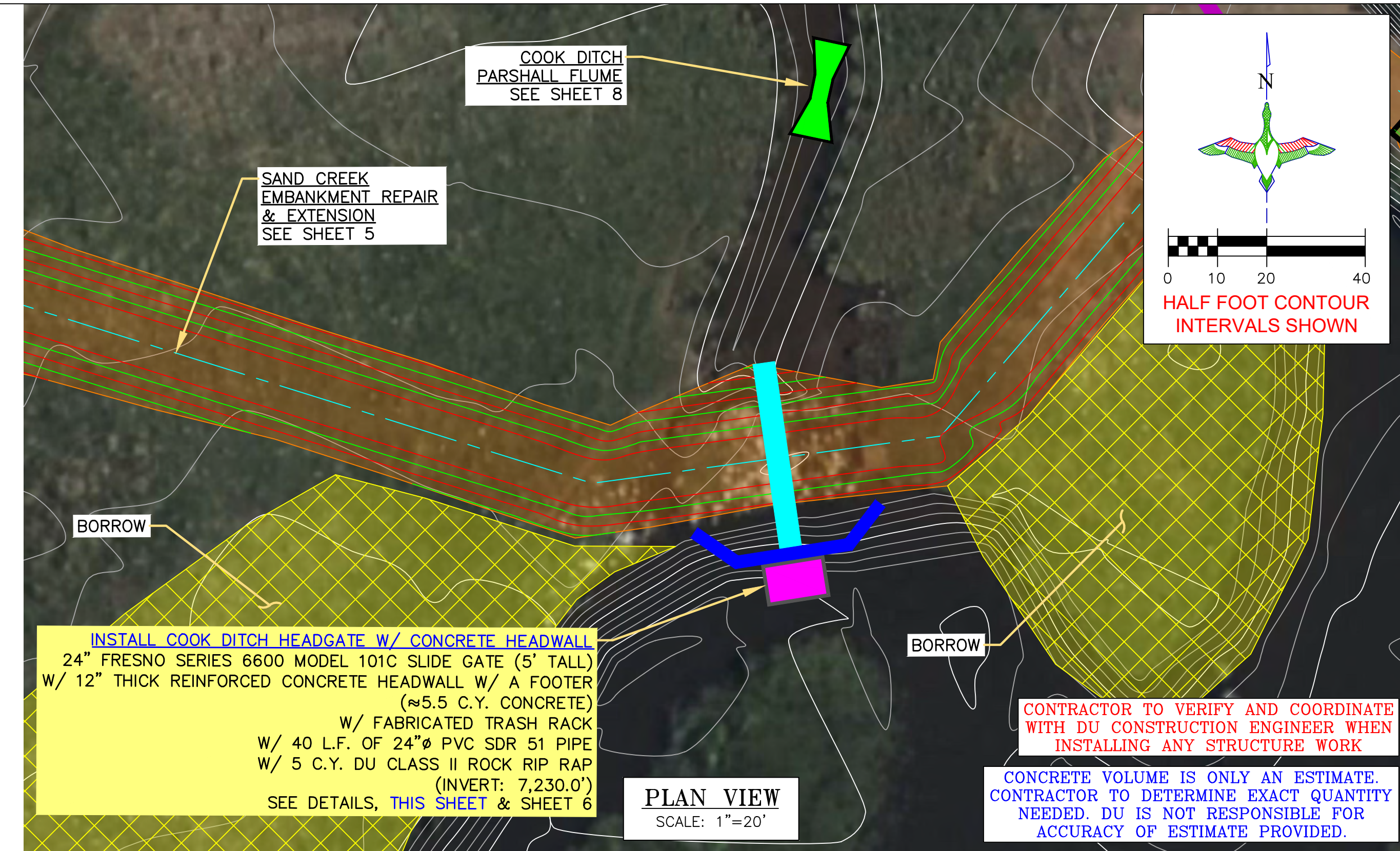
**1 COOK DITCH CONCRETE HEADWALL REINFORCEMENT-FRONT VIEW**  
 SCALE: 1"=4'

- CONCRETE HEADWALL NOTES:**
- PIPE SHALL BE PLACED ON LEVEL SURFACE OF COMPACTED SOIL.
  - COST OF STRUCTURE INSTALLATION SHALL BE PAID AS BID ITEM "CONCRETE HEADWALL STRUCTURE"
  - HEADWALL STRUCTURE SHALL BE 12" THICK REINFORCED CONCRETE
  - ALL WELDS TO BE 1/4" FILLET WELDS.
  - ALL WELDED SEAMS SHALL BE CONTINUOUS AND WATERTIGHT, UNLESS OTHERWISE STATED.
  - ALL STEEL SHALL BE GALVANIZED AS OUTLINED ON SHEET 3, EXCEPT GALVANIZED SHEET PILE.
  - INVERT ELEVATION OF WATER CONTROL STRUCTURES ARE APPROXIMATE AND WILL BE DETERMINED BY DU ENGINEER IN FIELD.
  - STEEL TO PVC FERNCO COUPLER IS CONSIDERED INCIDENTAL TO BID ITEM "CONCRETE HEADWALL STRUCTURE".



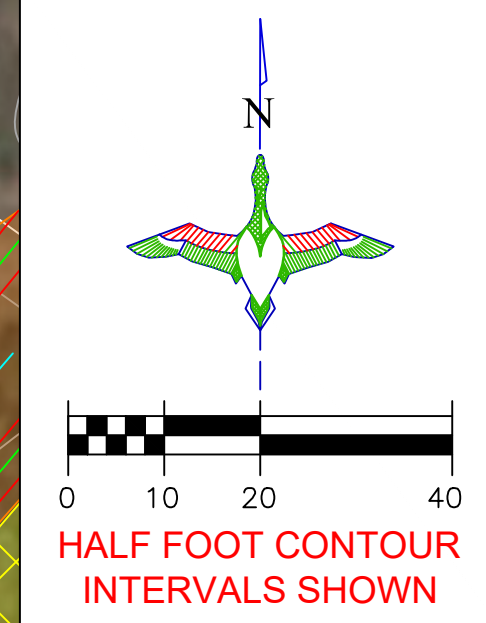
- NOTES:**
- SCREW GATE SLOT SHALL BE SIZED TO ALLOW 1/4" MINIMUM CLEARANCE WITH SCREW GATE FRAME AT EACH SIDE. FACE OF CONCRETE HEADWALL AND SCREW GATE FRAME SHALL BE FLUSH AFTER INSTALLATION.

**24" SCREW GATE DETAIL**  
 NOT TO SCALE



**LEGEND**

EMBANKMENT CONSTRUCTION		HEADGATE W/ CONCRETE SPILLWAY & HEADWALL		PARSHALL FLUME	
BORROW / SPOILS LOCATION		HEADGATE W/ CONCRETE HEADWALL		FLEX-A-MAT	
DITCH INFILL					



**DUCKS UNLIMITED INC.**  
 GREAT PLAINS REGIONAL OFFICE  
 P.E. SEAL:  
 Professional Engineer (Civil)  
 KEVIN JAMES WARNER  
 15300  
 Date  
 WYOMING

DESIGNED BY: MAK  
 DRAWN BY: JUW  
 SURVEYED BY: MAK  
 CHECKED BY:  
 APPROVED BY:  
 APPROVED BY:

REVISION:	DATE:	BY:
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PROJECT: WTCA SAND CREEK DIVERSION  
 SHEET TITLE: COOK DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)

DATE: 04/10/2026

SHEET TITLE: COOK DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

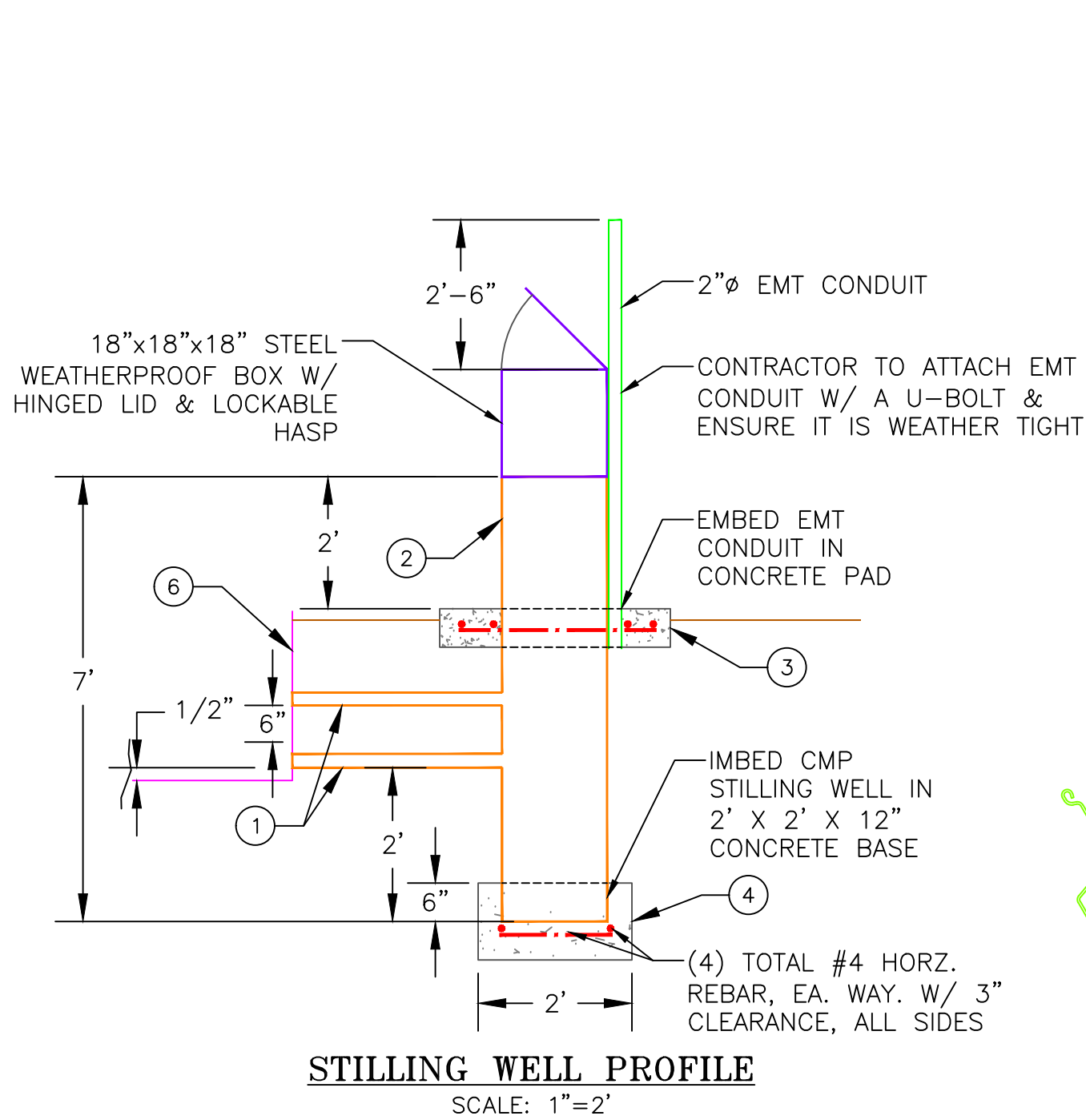
SHEET NUMBER: 7  
 SHEET 7 OF 24

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 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009



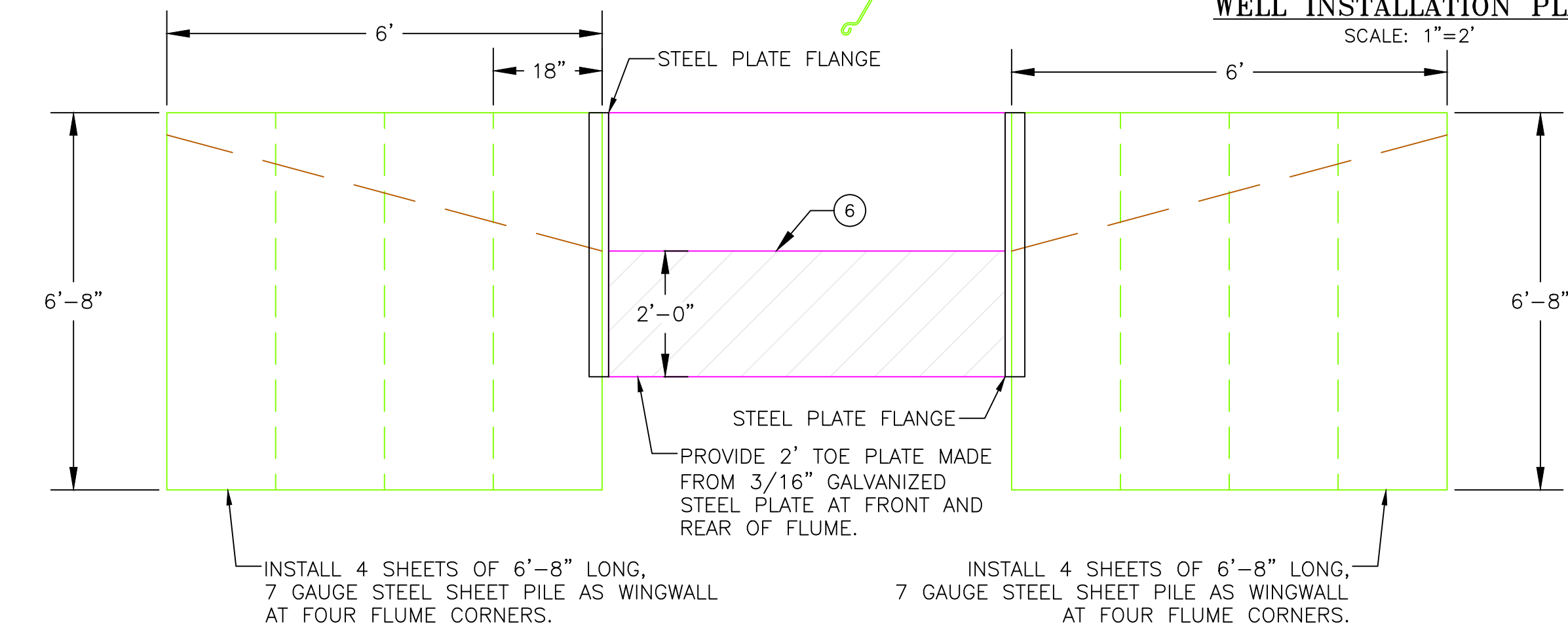
**STILLING WELL PROFILE**  
SCALE: 1"=2"

**NOTES:**

1. DU WILL BE SUPPLYING ALL DISCHARGE RECORDING EQUIPMENT.
2. RIP RAP AND COMPACTED FILL NOT SHOWN IN THIS VIEW.
3. CONVERGING SECTION SHALL BE LEVEL IN BOTH DIRECTIONS.
4. 12"Ø STILLING WELL TO HAVE MINIMUM 2" CLEARANCE FROM FLOAT ASSOCIATED WITH DATA COLLECTOR.
5. ALL COMPONENTS, CONCRETE, FABRICATION, WELDING & INSTALLATION ARE CONSIDERED PART OF BID ITEM "WATER CONTROL STRUCTURES - SUPPLY & INSTALL 24" PARSHALL FLUME W/ WING WALLS"

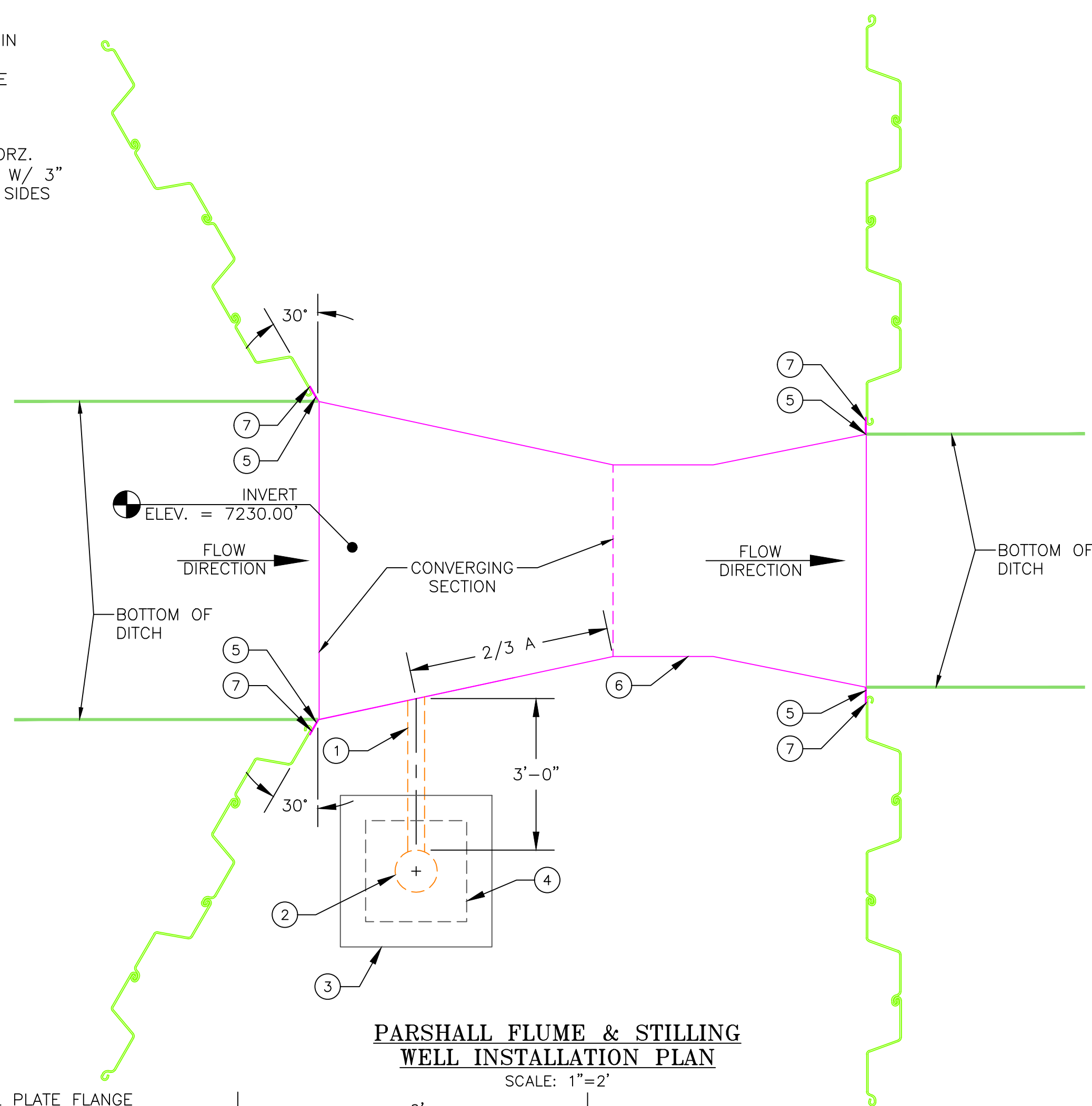
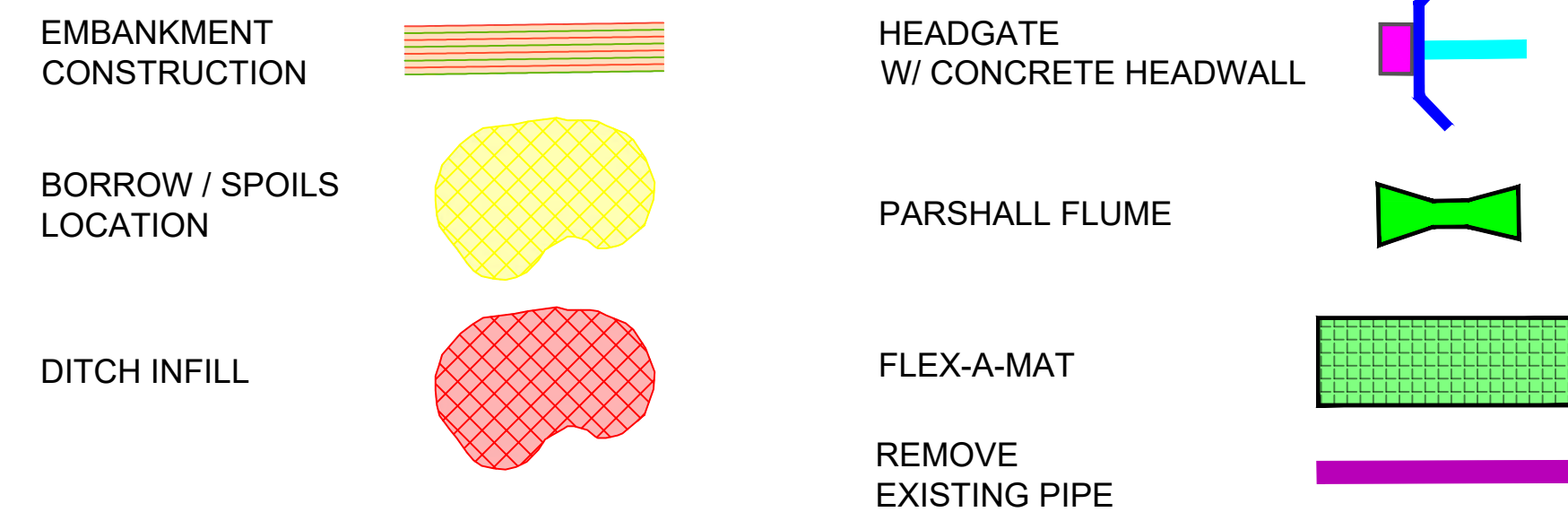
**KEYED NOTES (THIS SHEET)**

- ① WELD 2"Ø SCHEDULE 40 STEEL PIPE CONTINUOUS TO FLUME AND CMP STILLING WELL.
- ② 18"Ø 16 GA. CMP STILLING WELL.
- ③ 3' X 3' X 8" CONCRETE COLLAR SLAB W/ (2) #4 HORZ. REBAR, EA. WAY., W/ 3" CLR. ALL SIDES.
- ④ 2' X 2' X 12" CONCRETE STILLING WELL SLAB. W/ #4 HORZ. REBAR EA. WAY, W/ 3" CLEAR ON ALL SIDES.
- ⑤ 4" WIDE 1/4" THICK STEEL PLATE FLANGE. CONTINUOUS WATERTIGHT WELD TO FLUME REQUIRED. WELD SHEET PILE TO FLANGE CONTINUOUS AND WATERTIGHT.
- ⑥ GALVANIZED STEEL PARSHALL FLUME.
- ⑦ WELD SHEET PILE TO SHEET STEEL NEXT TO PREFABRICATED PARSHALL FLUME. WELDS NEEDS TO BE CONTINUOUS AND WATER TIGHT.



**PARSHALL FLUME INSTALLATION PROFILE**  
SCALE: 1"=2"

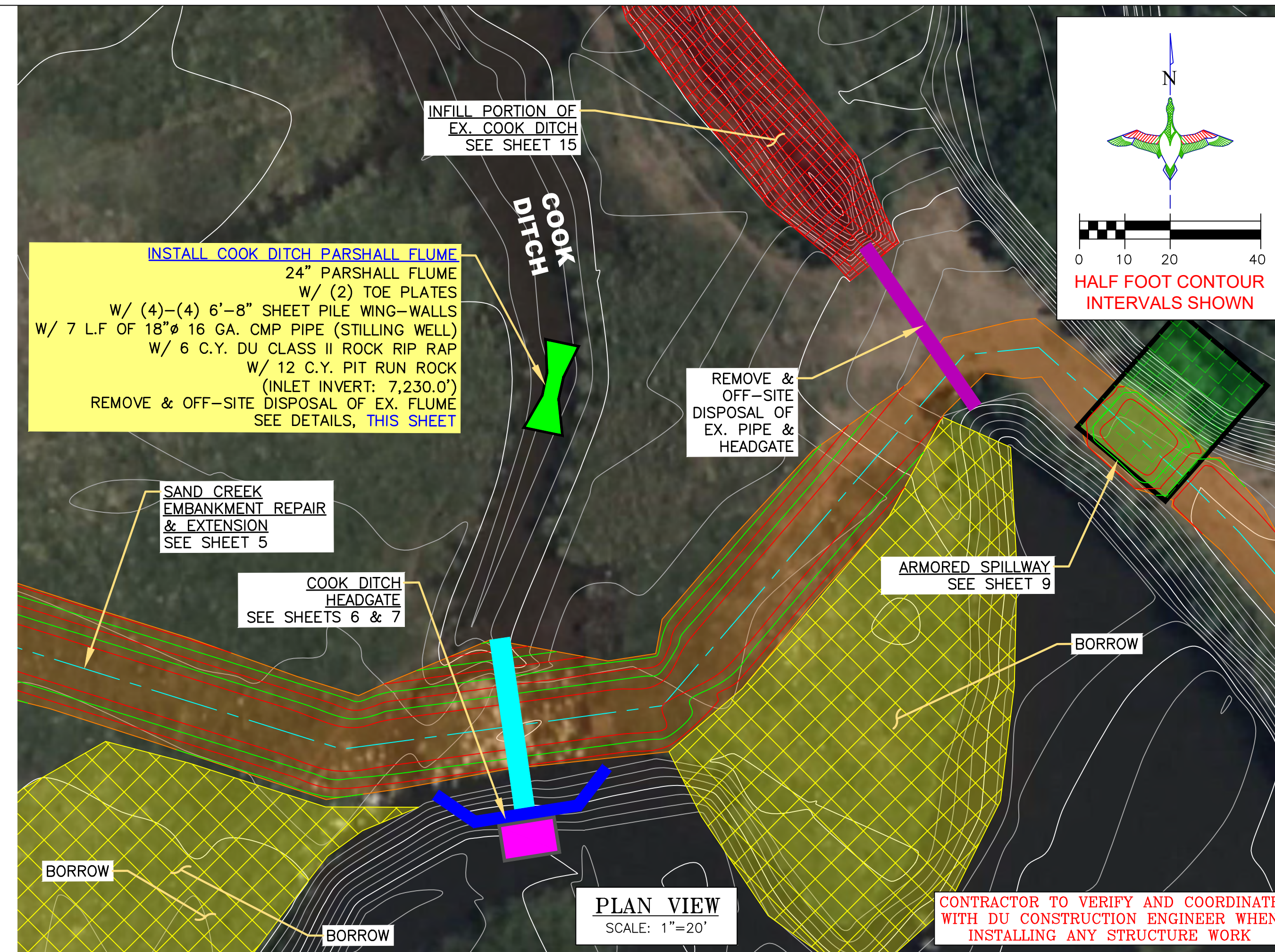
**LEGEND**



**PARSHALL FLUME & STILLING WELL INSTALLATION PLAN**  
SCALE: 1"=2"

**NOTES:**

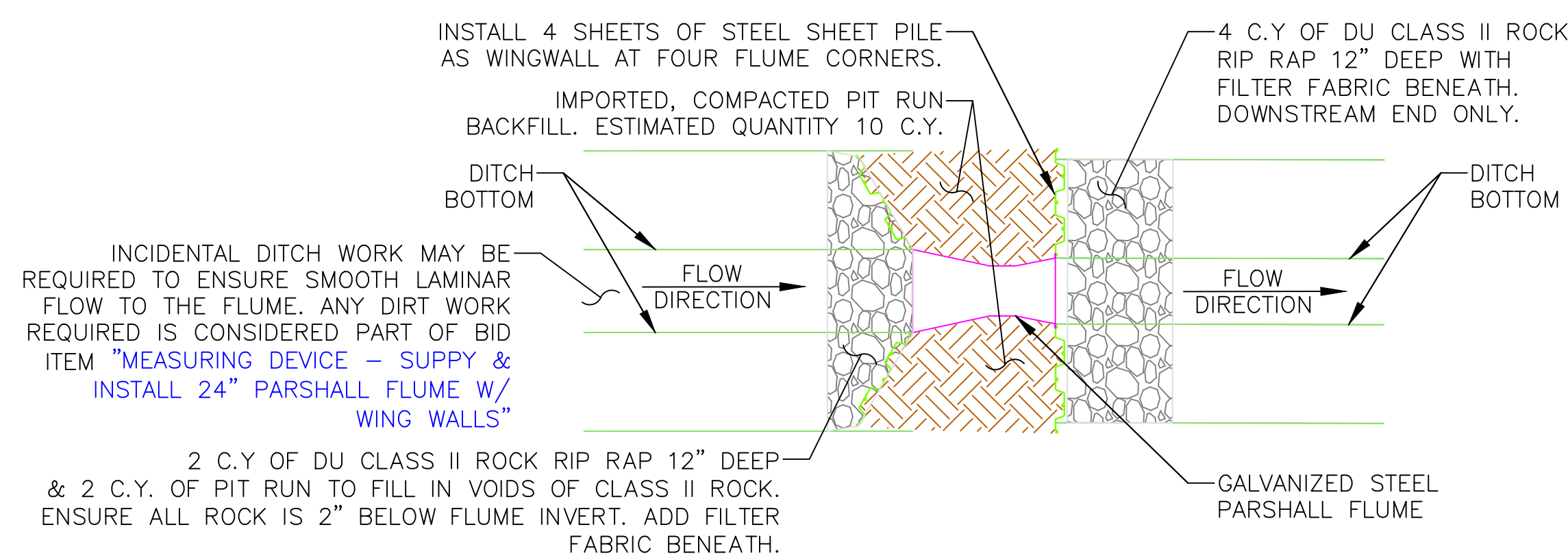
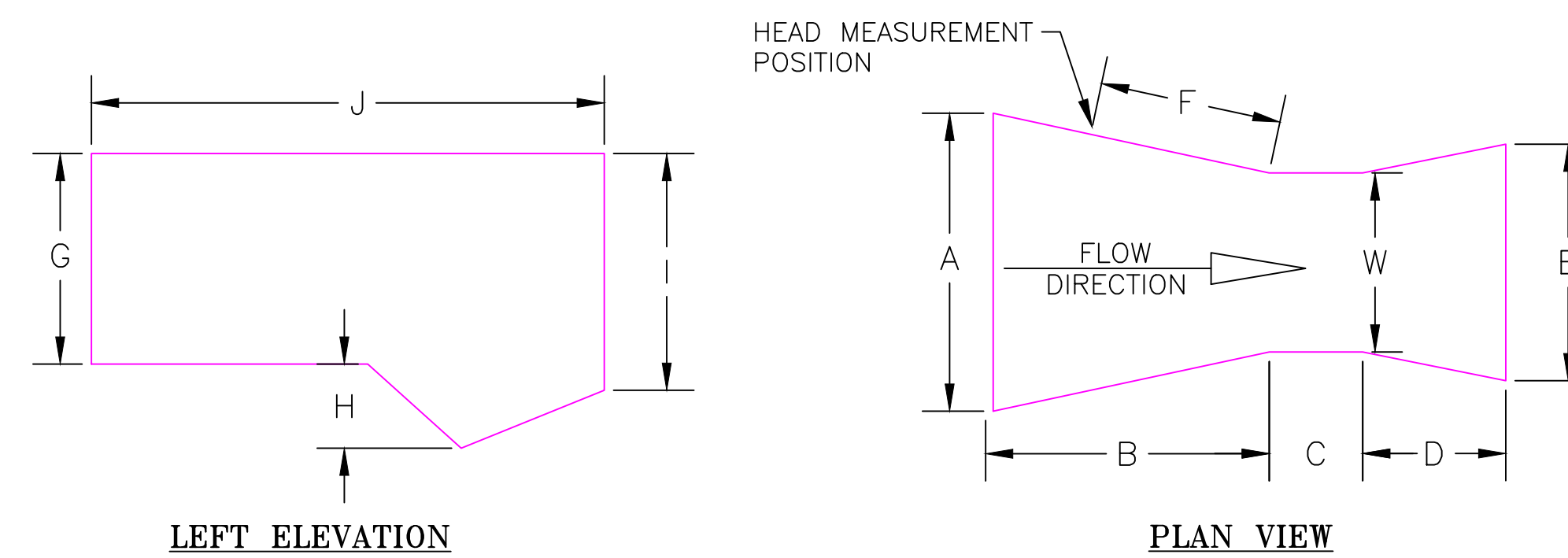
1. ALIGNED DITCH SECTION SHALL BE FLAT GRADED AND MATCH FLUME CENTERLINE ALIGNMENT DIRECTION.
2. STILLING WELL NOT SHOWN IN THIS VIEW.
3. FLUME TO BE SET TO ENSURE AT LEAST 4" FALL AWAY ENSURING NOTHING DOWNSTREAM WILL CAUSE BACKWATER EFFECTS.



**PLAN VIEW**  
SCALE: 1"=20"

**DIMENSIONAL & HYDRRAULIC PARAMETERS OF PARSHALL FLUME**

W	A	B	C	D	E	F	G	H	I	J	MIN FLOW GPM	MAX FLOW GPM	MIN FLOW CFS	MAX FLOW CFS
24"	47 1/2"	58 7/8"	24"	36"	36"	40"	36"	9"	39"	118 7/8"	296	14,853	0.66	33.09



**PARSHALL FLUME INSTALLATION PLAN**  
SCALE: 1"=10"

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**"BEFORE YOU DIG"**  
BEFORE THE START OF CONSTRUCTION. THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

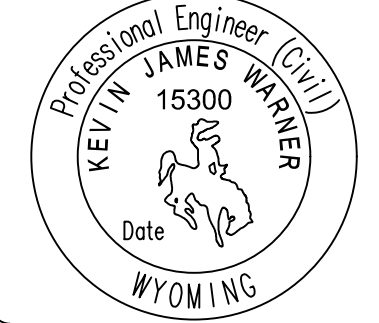
DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:



DESIGNED BY: MAK  
DRAWN BY: JWJ  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:

REVISION:	DATE:	BY:
1		
2		
3		
4		
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PROJECT: WTCA SAND CREEK DIVERSION  
SHEET TITLE: COOK DITCH PARSHALL FLUME

DATE: 04/10/2026

SHEET TITLE: COOK DITCH PARSHALL FLUME

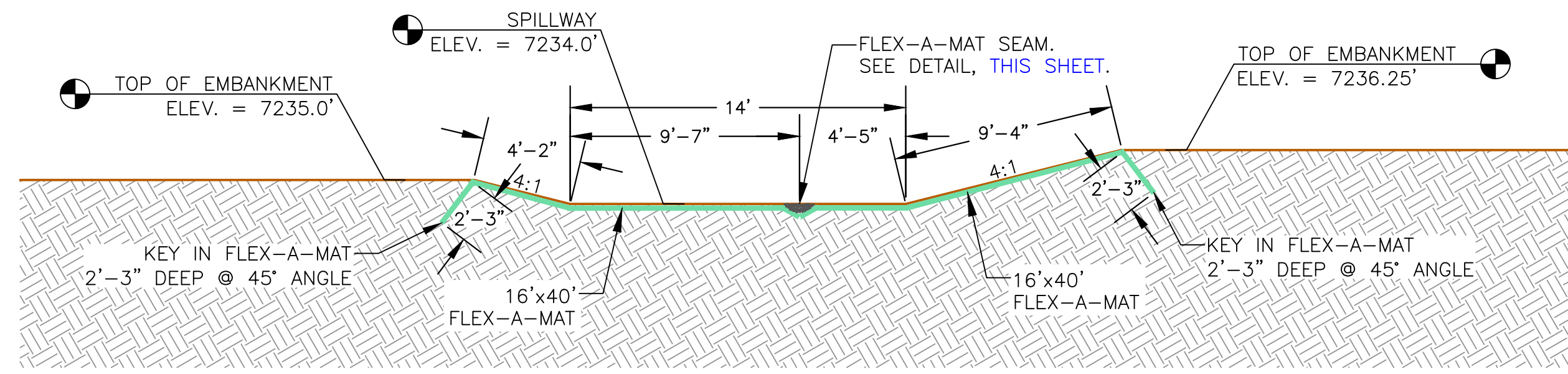
SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

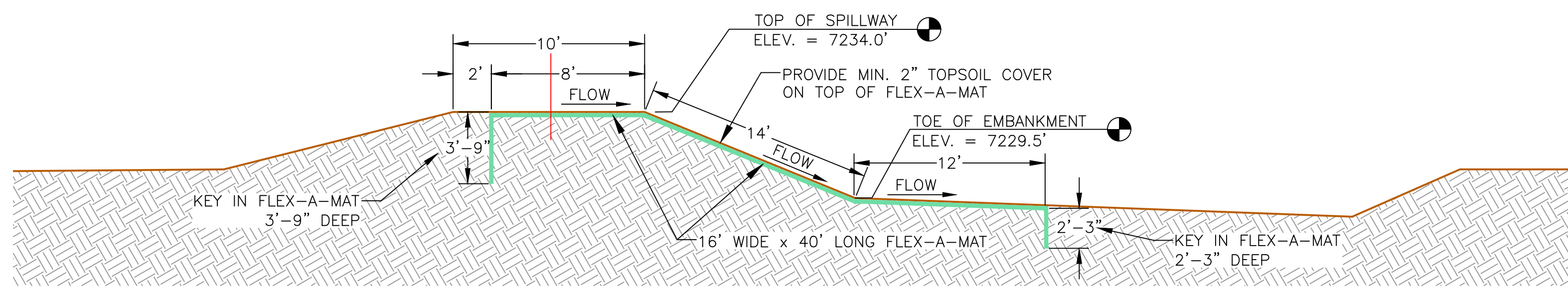
SHEET NUMBER: 8 OF 24

**FLEX-A-MAT INSTALLATION NOTES:**

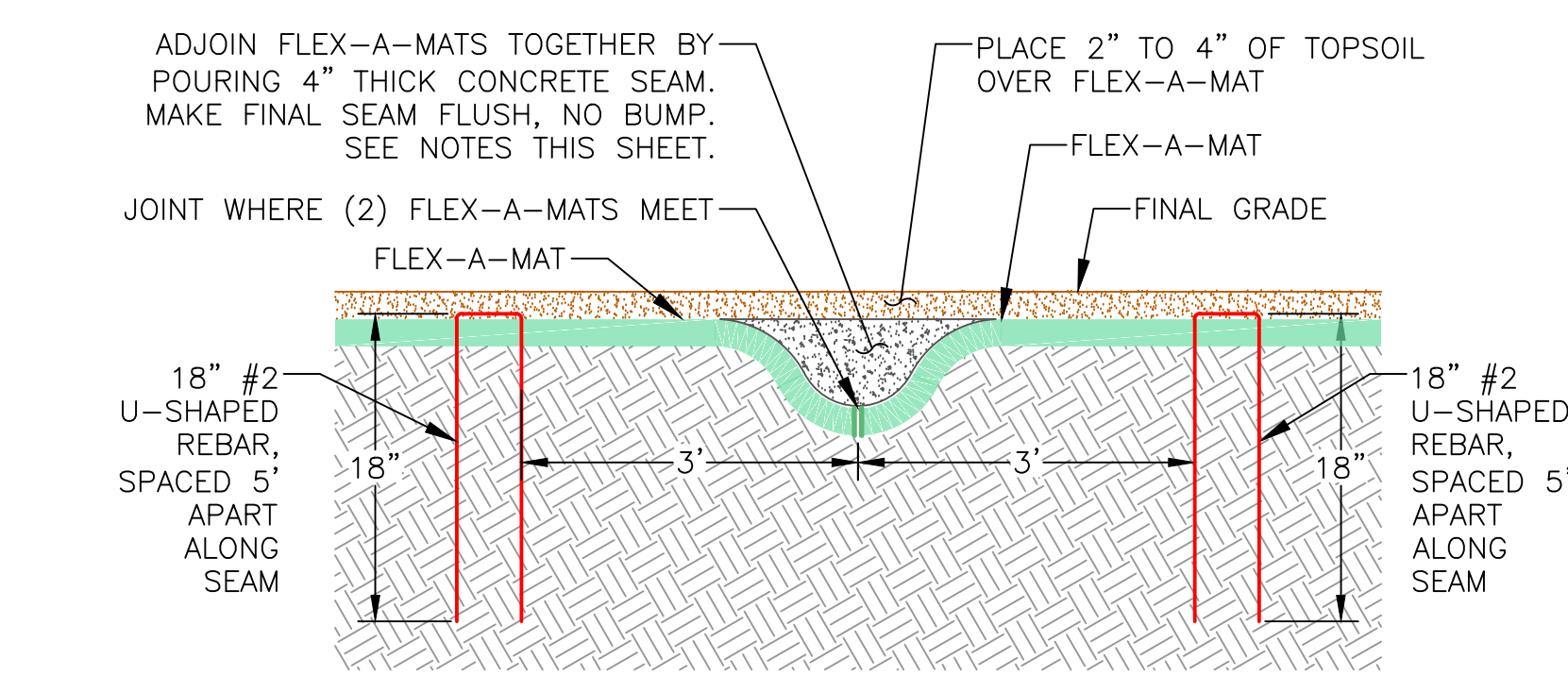
1. THE FLEX-A-MAT SUBGRADE MUST BE STABLE, UNIFORMLY GRADED, FREE OF ROCKS, ROOTS, AND OTHER DEBRIS, WITH NO ABRUPT GRADE CHANGES.
2. THE BANK SIDE EDGE OF FLEX-A-MAT EXPOSED SHALL BE EMBEDDED 2'-3" AT A 45°, AS SHOWN ON THE SECTION. THE ANCHOR TRENCH SHALL BE FILLED AND COMPACTED WITH SUITABLE FILL.
3. ALL SEAMS SHALL BE CONCRETED TOGETHER. CONCRETE TO BE SMOOTHED TO NOT CREATE AN ABNORMAL BUMP IN THE FLOW PATH.
4. INSTALL 18" "U" ANCHORS IN TWO ROWS AT 5' INCREMENTS ON EITHER SIDE OF THE SEAM. INSTALL ANCHORS DIRECTLY BEHIND BLOCKS. "U" ANCHORS CONSIST OF #2 REBAR "U" ANCHOR WITH 18" LEGS. ANCHORS TO BE INSTALLED AS DIRECTED BY ONSITE DU CONSTRUCTION MANAGERS.
5. CONCRETE POURED AT SEAMS IS CONSIDERED INCIDENTAL TO BID ITEM "FLEX-A-MAT"
6. SPREAD 2"-4" OF SOIL OVER MAT TO ENCOURAGE VEGETATION GROWTH.
7. MAKE FINAL GRADE SMOOTH TRANSITION WITH NO ABRUPT GRADE BREAKS.



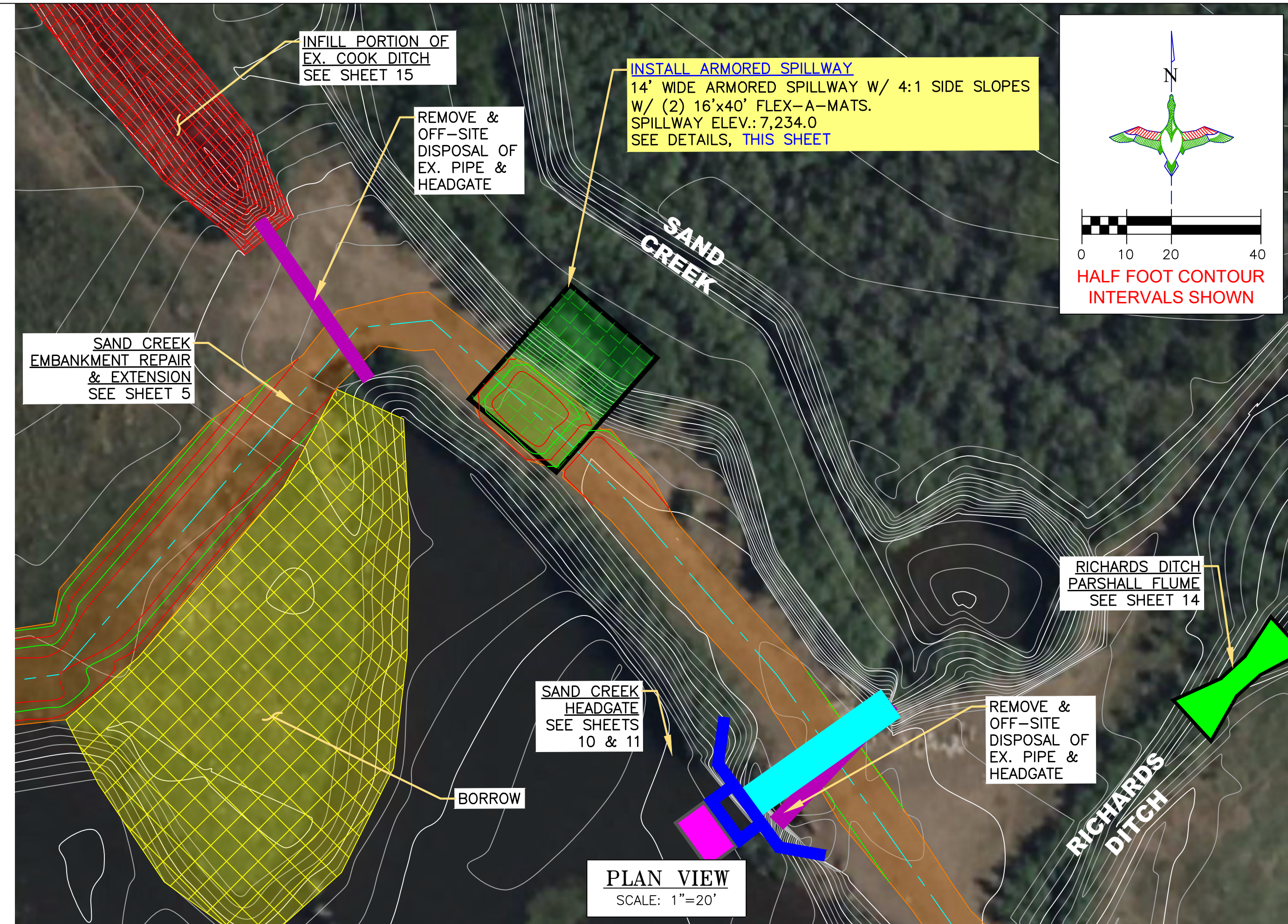
**FLEX-A-MAT SPILLWAY CROSS-SECTION**  
SCALE 1"=5'



**FLEX-A-MAT SPILLWAY SECTION**  
SCALE 1"=5'

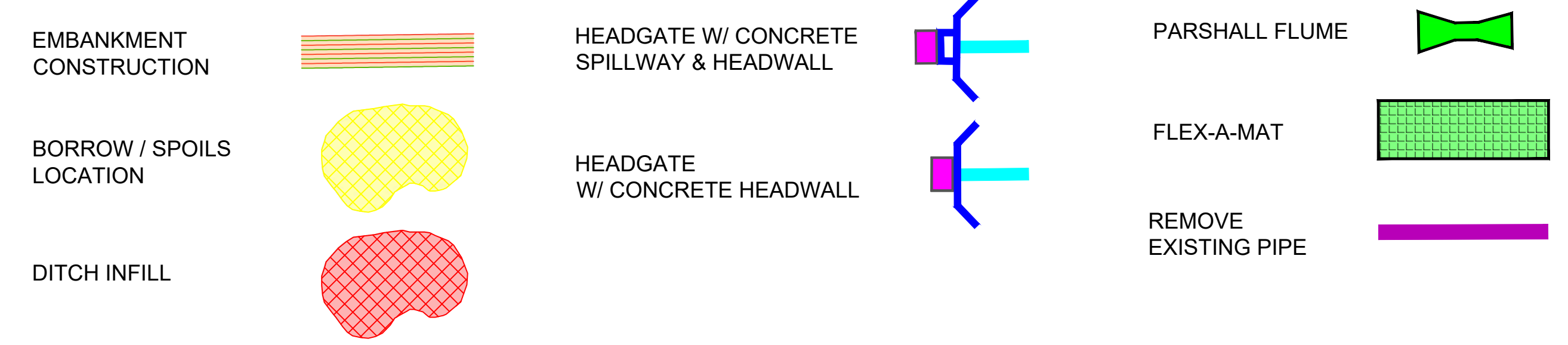


**TYPICAL FLEX-A-MAT SEAM**  
NOT TO SCALE



**PLAN VIEW**  
SCALE: 1"=20'

**LEGEND**

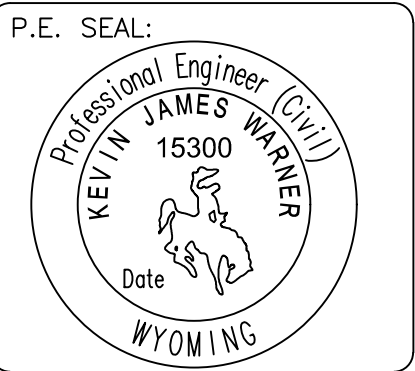


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**"BEFORE YOU DIG"**  
BEFORE THE START OF CONSTRUCTION, THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



DESIGNED BY:	MAK
DRAWN BY:	JJW
SURVEYED BY:	MAK
CHECKED BY:	
APPROVED BY:	
DATE:	

REVISION:	DATE:	BY:
1		
2		
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4		
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PROJECT: WTCA SAND CREEK DIVERSION  
SHEET TITLE: ARMORED SPILLWAY

DATE: 04/10/2026

SHEET TITLE: ARMORED SPILLWAY

SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

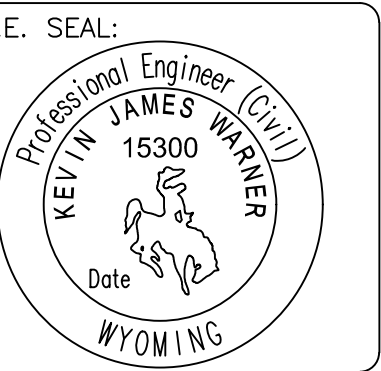
DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 9 OF 24





GREAT PLAINS REGIONAL OFFICE



DESIGNED BY: MAK  
 DRAWN BY: JUW  
 SURVEYED BY: MAK  
 CHECKED BY:  
 APPROVED BY:

REVISION:	DATE:	BY:
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PROJECT: WTCA SAND CREEK DIVERSION  
 SAND CREEK HEADGATE W/  
 CONCRETE HEADWALL (SHEET 2 OF 2)

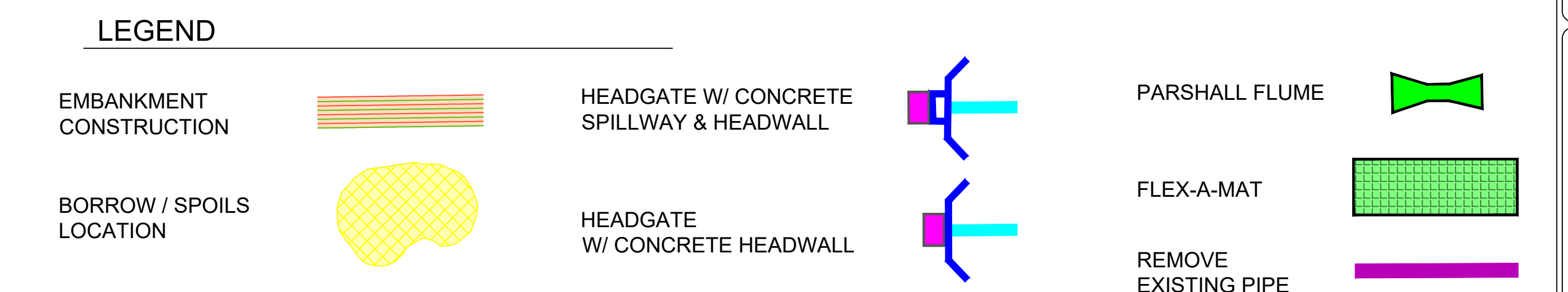
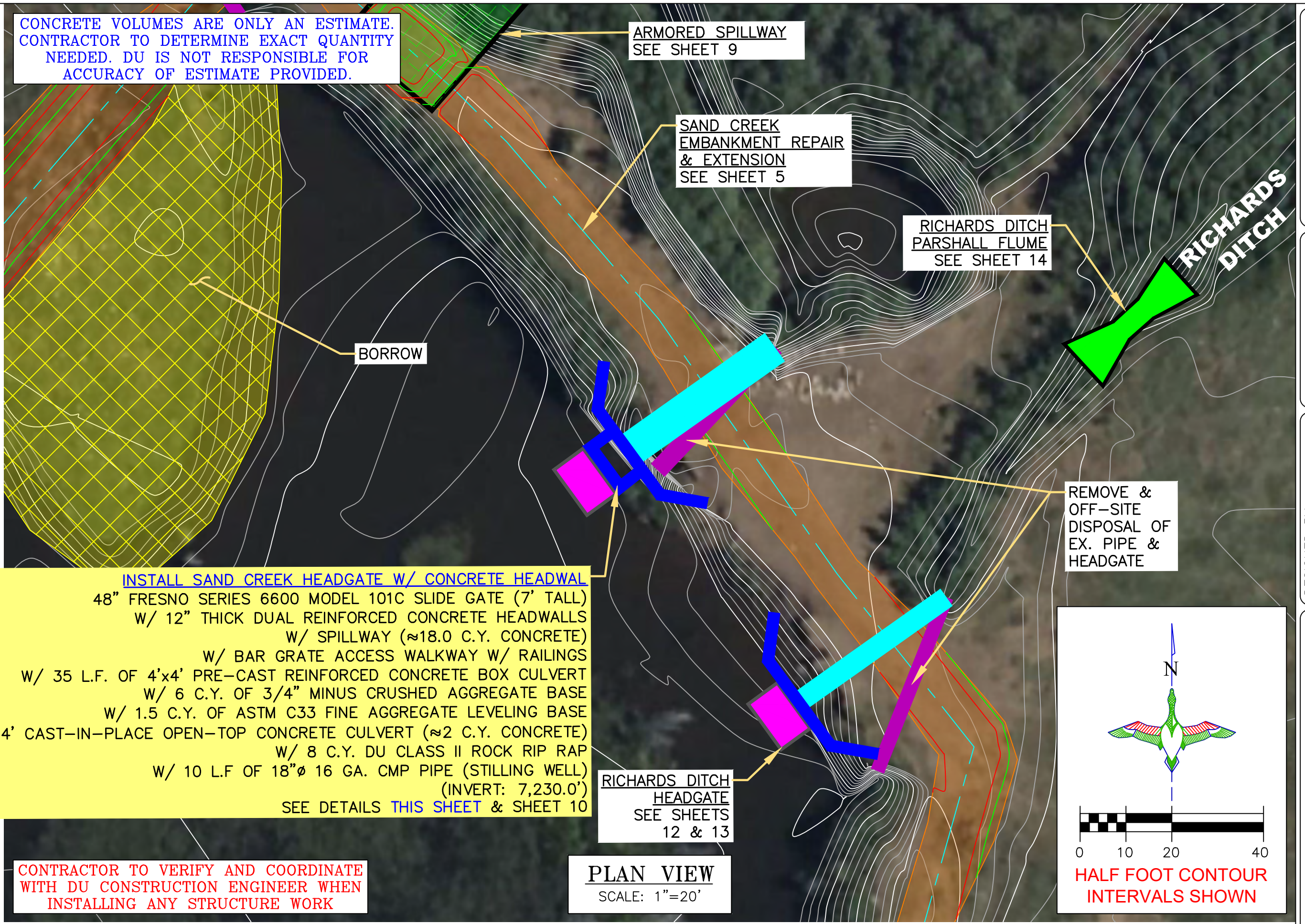
DATE: 04/10/2026

SHEET TITLE: SAND CREEK HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

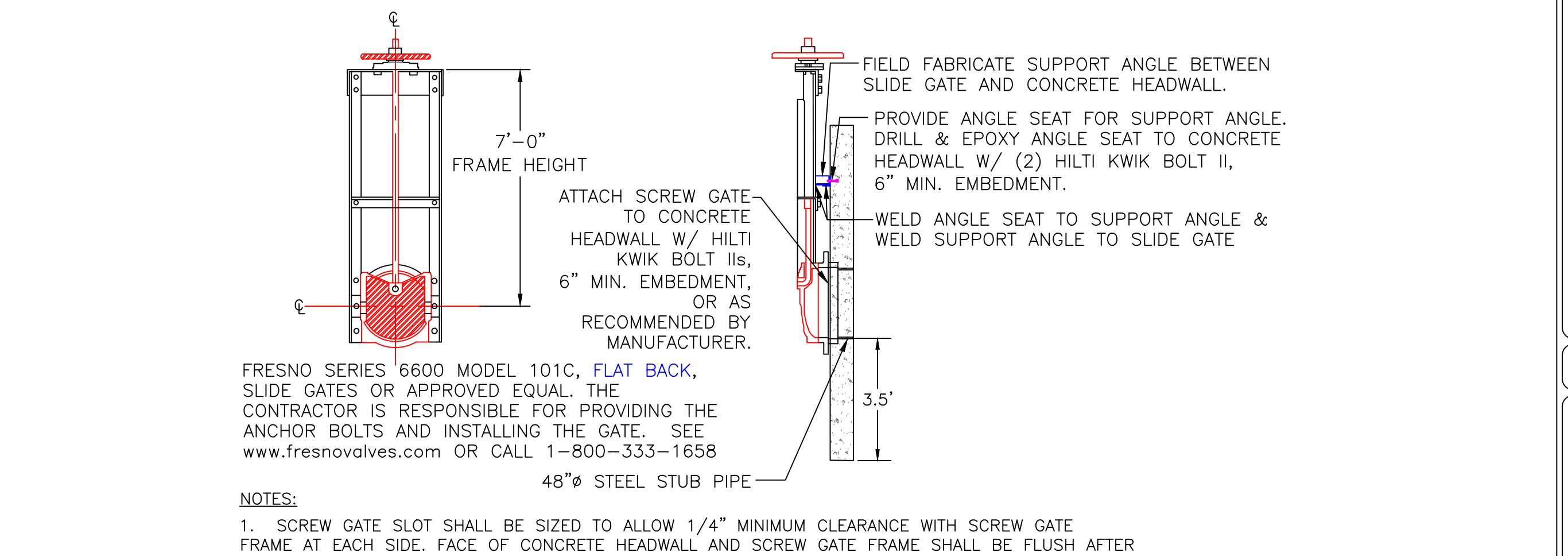
DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 11 SHEET 11 OF 24



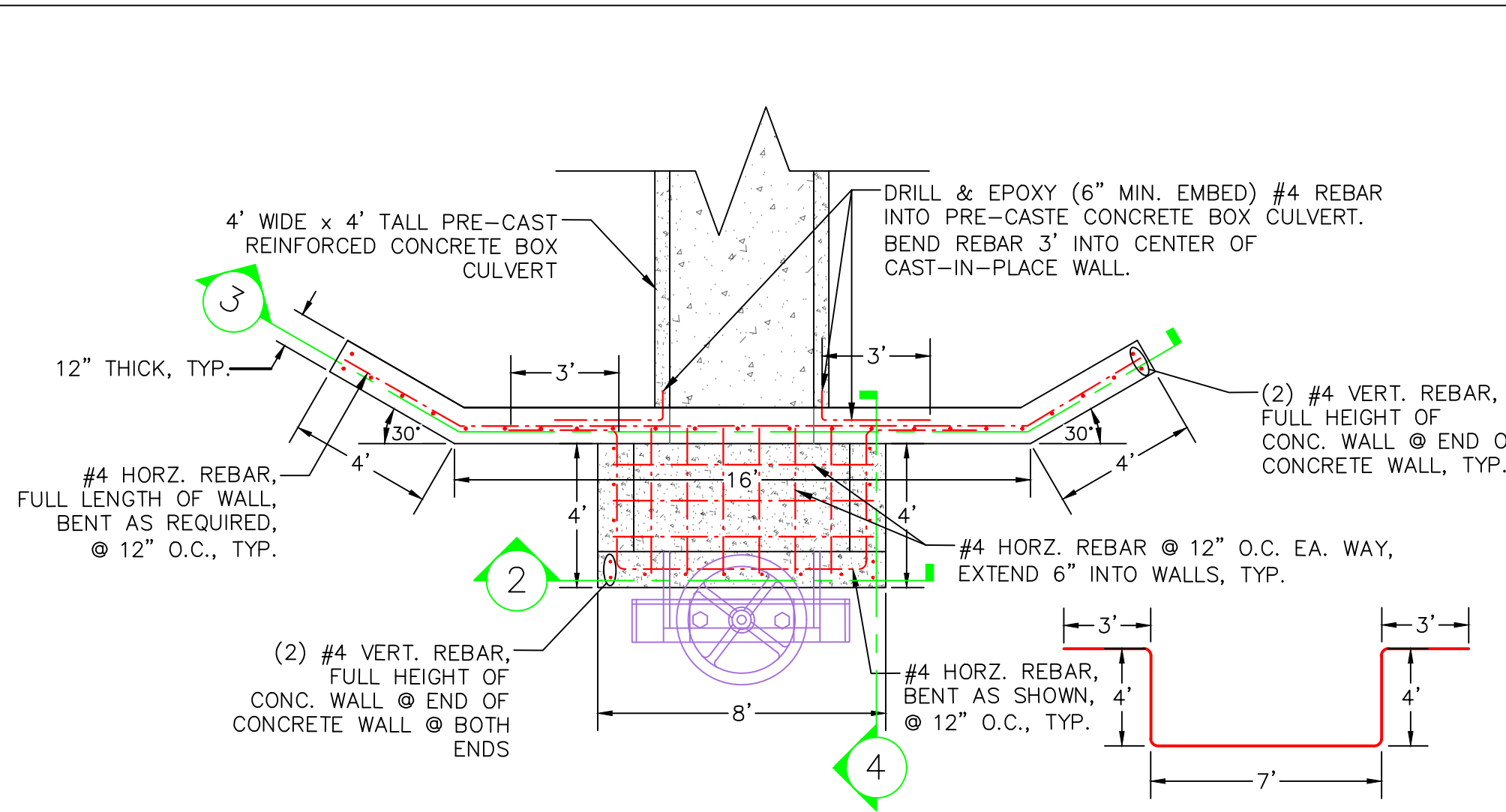
**CONCRETE HEADWALL NOTES:**

- INLET AND OUTLET CULVERTS SHALL BE PLACED ON LEVEL SURFACE OF COMPACTED AGGREGATE.
- COST OF STRUCTURE INSTALLATION SHALL BE PAID AS BID ITEM "CONCRETE HEADWALL STRUCTURE"
- HEADWALL STRUCTURE SHALL BE 12" THICK REINFORCED CONCRETE
- ALL WELDS TO BE 1/4" FILLET WELDS.
- ALL WELDED SEAMS SHALL BE CONTINUOUS AND WATERTIGHT, UNLESS OTHERWISE STATED.
- ALL STEEL SHALL BE GALVANIZED AS OUTLINED ON SHEET 3, EXCEPT GALVANIZED SHEET PILE.
- INVERT ELEVATION OF WATER CONTROL STRUCTURES ARE APPROXIMATE AND WILL BE DETERMINED BY DU ENGINEER IN FIELD.
- STEEL TO PVC FERNCO COUPLER IS CONSIDERED INCIDENTAL TO BID ITEM "CONCRETE HEADWALL STRUCTURE".



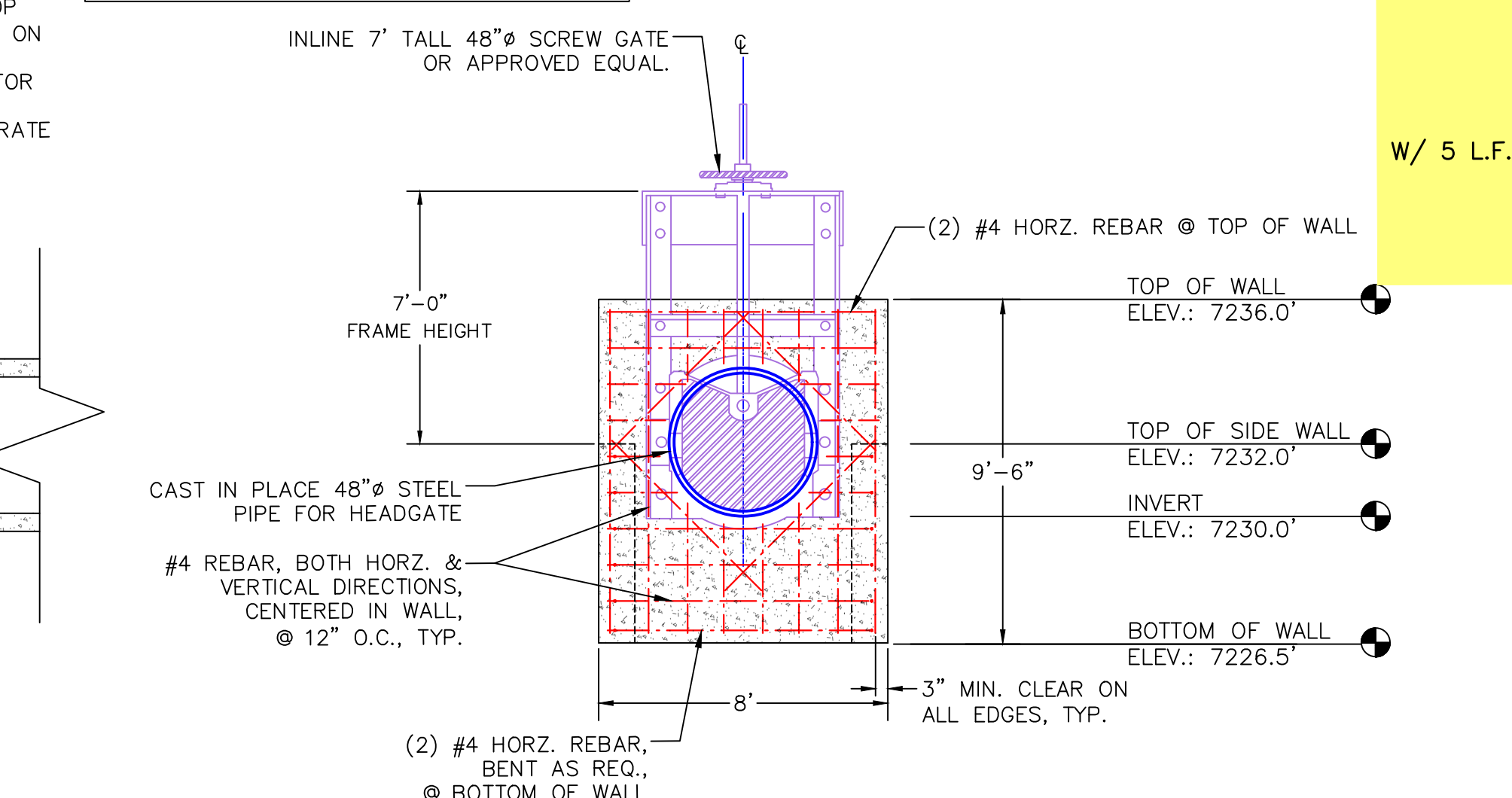
**NOTES:**

- SCREW GATE SLOT SHALL BE SIZED TO ALLOW 1/4" MINIMUM CLEARANCE WITH SCREW GATE FRAME AT EACH SIDE. FACE OF CONCRETE HEADWALL AND SCREW GATE FRAME SHALL BE FLUSH AFTER INSTALLATION.

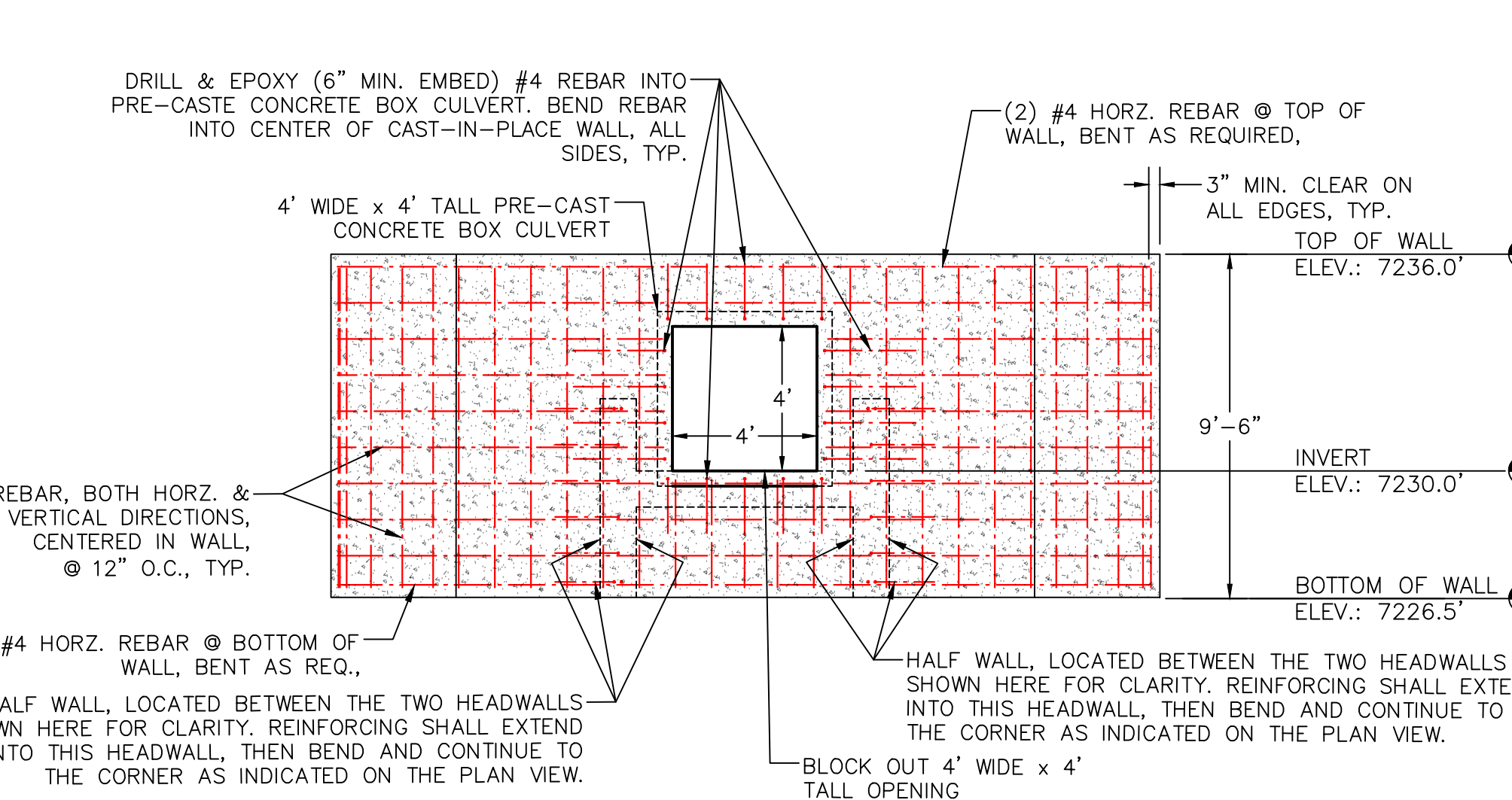


**NOTE:** CONTRACTOR TO PROVIDE WATER-STOP OR DU ENGINEER APPROVED EQUAL IF A COLD JOINT IS REQUIRED TO POUR THE CONCRETE SAND CREEK HEADWALL STRUCTURE.

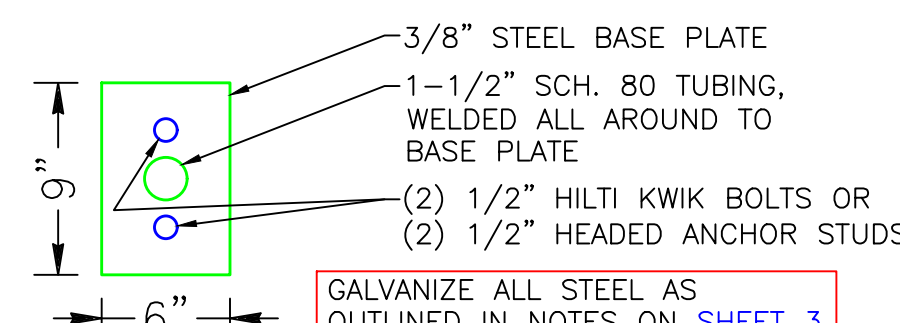
SCALE: 1"=4'



SCALE: 1"=4'

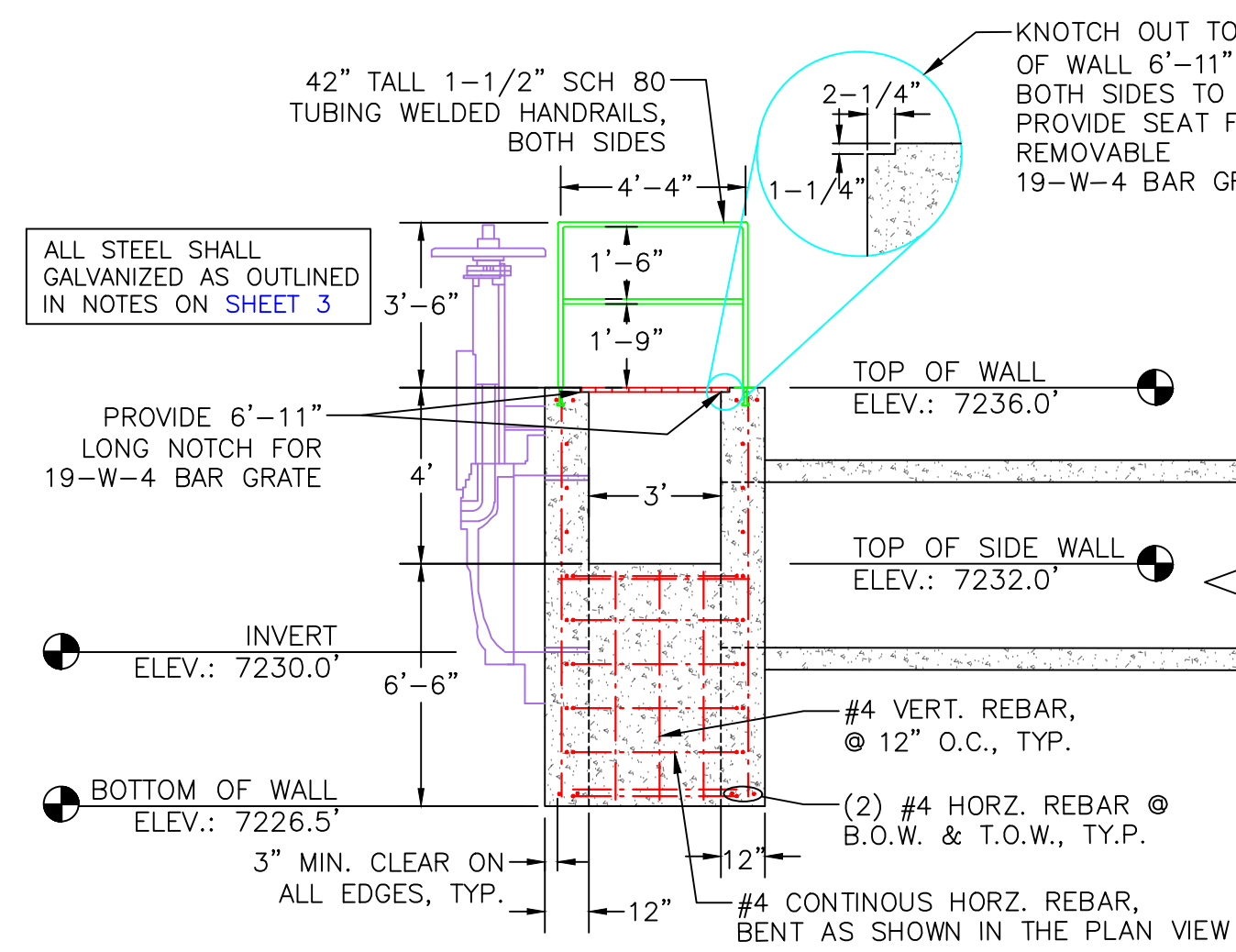


SCALE: 1"=4'



GALVANIZE ALL STEEL AS OUTLINED IN NOTES ON SHEET 3

NOT TO SCALE



SCALE: 1"=4'

**"BEFORE YOU DIG"**

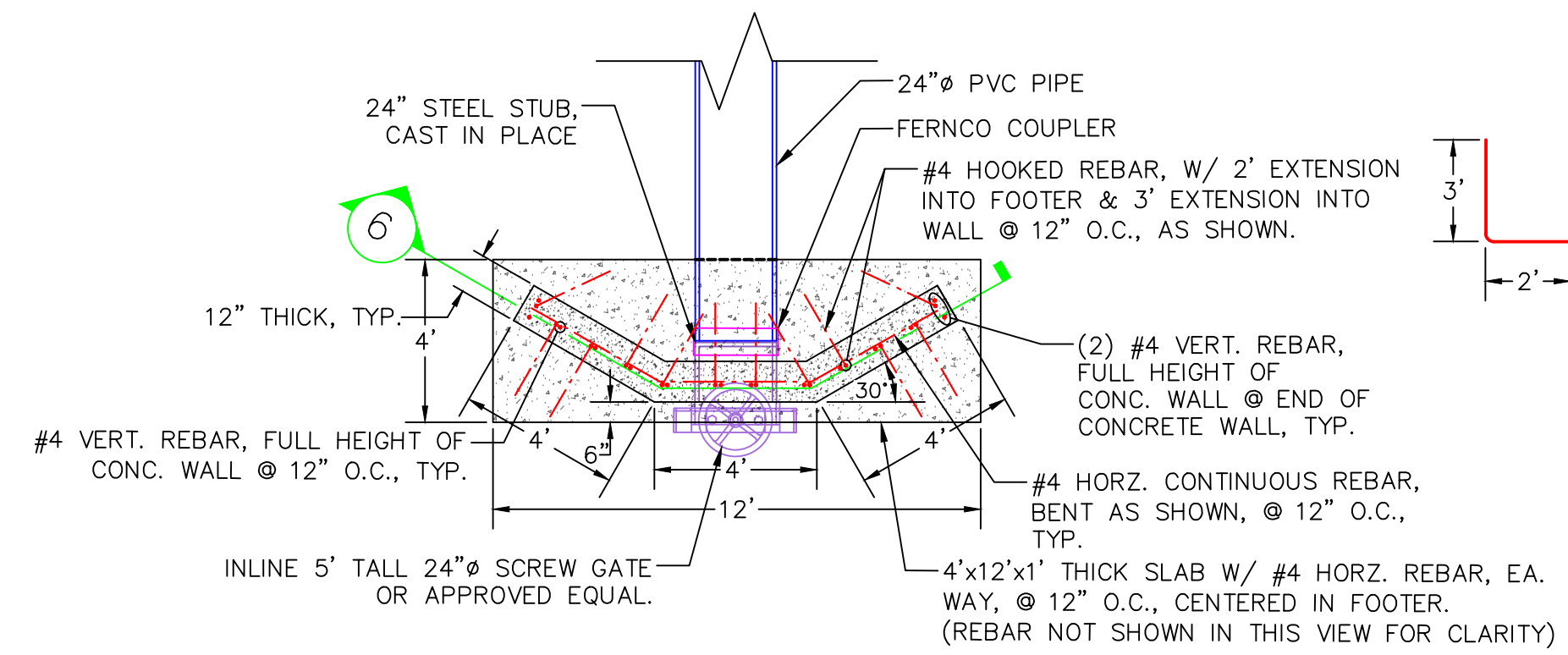
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DU DESIGN ENGINEER:  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

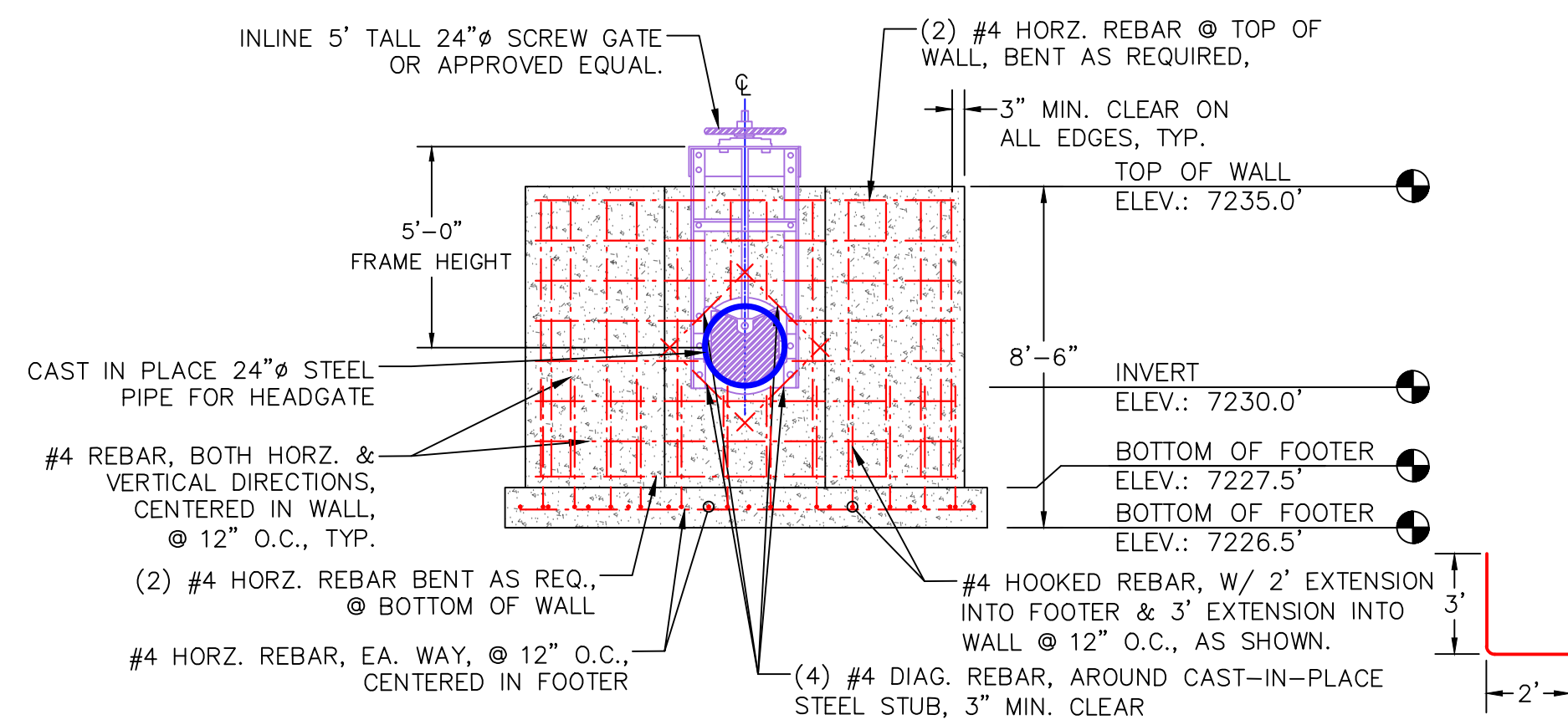
DU CONSTRUCTION ENGINEER:  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

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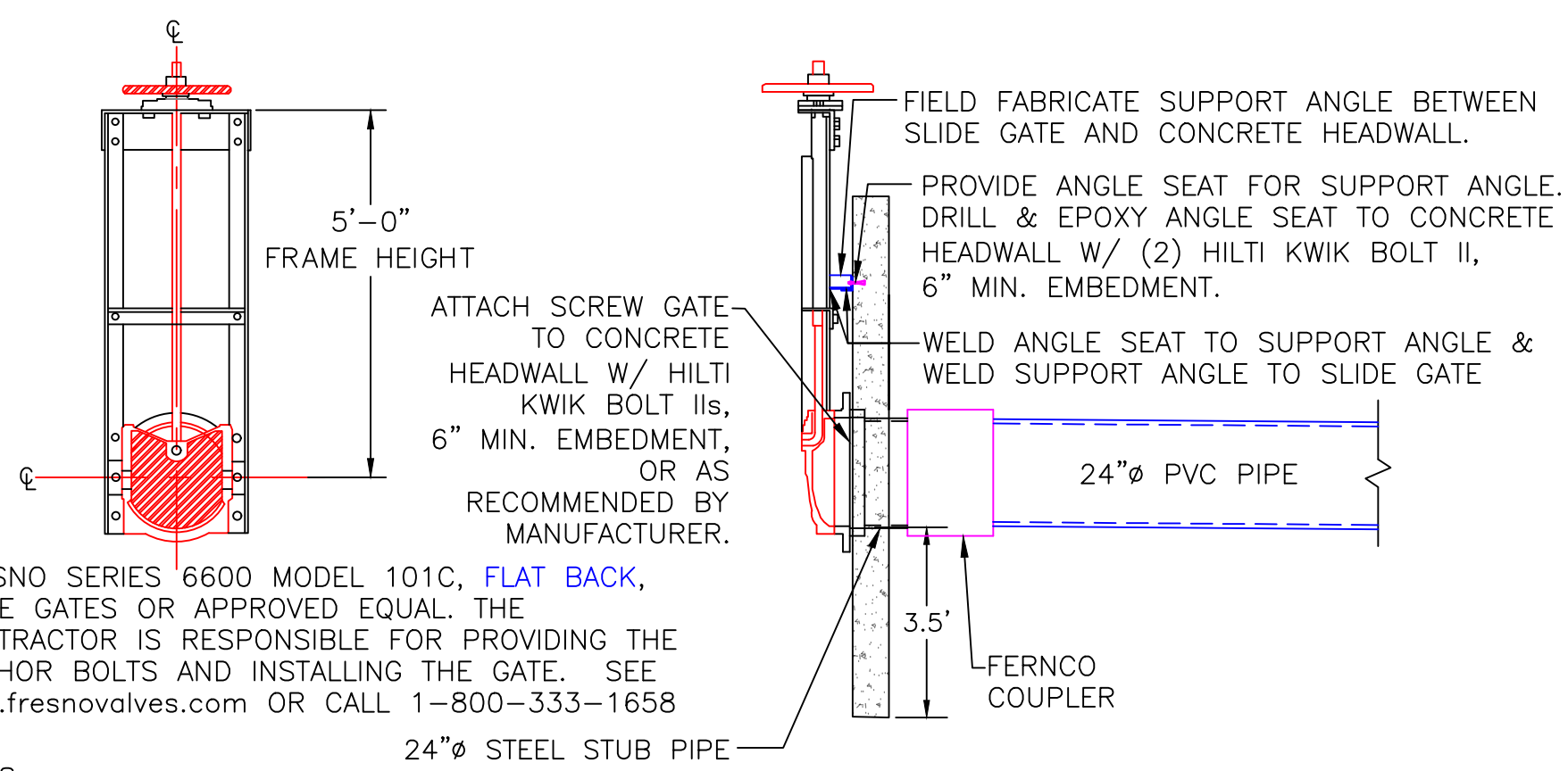
**RICHARDS DITCH CONCRETE HEADWALL  
REINFORCEMENT PLAN VIEW**  
SCALE: 1"=4'



**6 RICHARDS DITCH CONCRETE HEADWALL  
REINFORCEMENT FRONT VIEW**  
SCALE: 1"=4'

**CONCRETE HEADWALL NOTES:**

- PIPE SHALL BE PLACED ON LEVEL SURFACE OF COMPACTED SOIL.
- COST OF STRUCTURE INSTALLATION SHALL BE PAID AS BID ITEM "CONCRETE HEADWALL STRUCTURE"
- HEADWALL STRUCTURE SHALL BE 12" THICK REINFORCED CONCRETE
- ALL WELDS TO BE 1/4" FILLET WELDS.
- ALL WELDED SEAMS SHALL BE CONTINUOUS AND WATERTIGHT, UNLESS OTHERWISE STATED.
- ALL STEEL SHALL BE GALVANIZED AS OUTLINED ON SHEET 3, EXCEPT GALVANIZED SHEET PILE.
- INVERT ELEVATION OF WATER CONTROL STRUCTURES ARE APPROXIMATE AND WILL BE DETERMINED BY DU ENGINEER IN FIELD.
- STEEL TO PVC FERNCO COUPLER IS CONSIDERED INCIDENTAL TO BID ITEM "CONCRETE HEADWALL STRUCTURE".

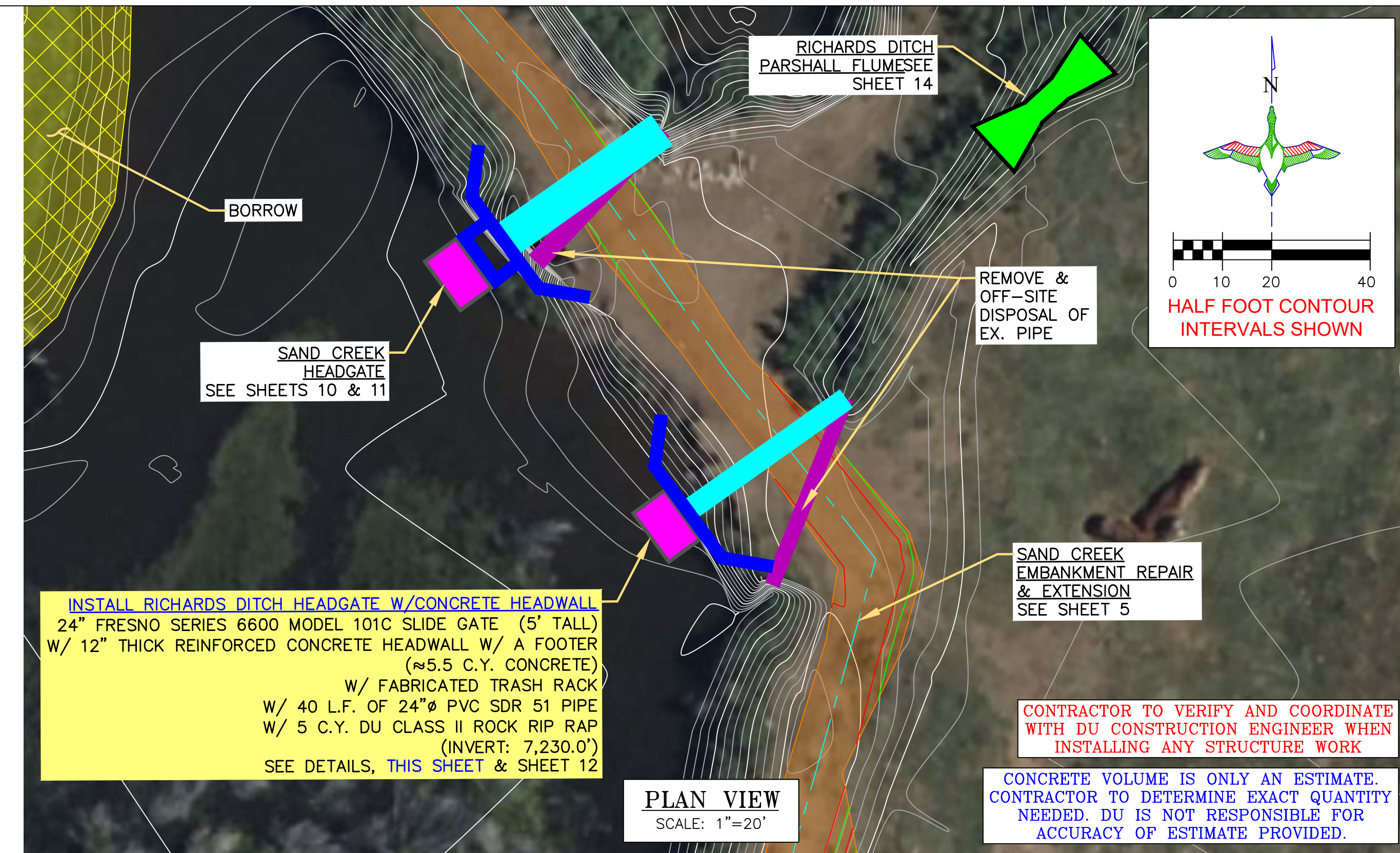


FRESNO SERIES 6600 MODEL 101C, **FLAT BACK**, SLIDE GATES OR APPROVED EQUAL. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE ANCHOR BOLTS AND INSTALLING THE GATE. SEE [www.fresnovalves.com](http://www.fresnovalves.com) OR CALL 1-800-333-1658

**NOTES:**

- SCREW GATE SLOT SHALL BE SIZED TO ALLOW 1/4" MINIMUM CLEARANCE WITH SCREW GATE FRAME AT EACH SIDE. FACE OF CONCRETE HEADWALL AND SCREW GATE FRAME SHALL BE FLUSH AFTER INSTALLATION.

**24"Ø SCREW GATE DETAIL**  
NOT TO SCALE



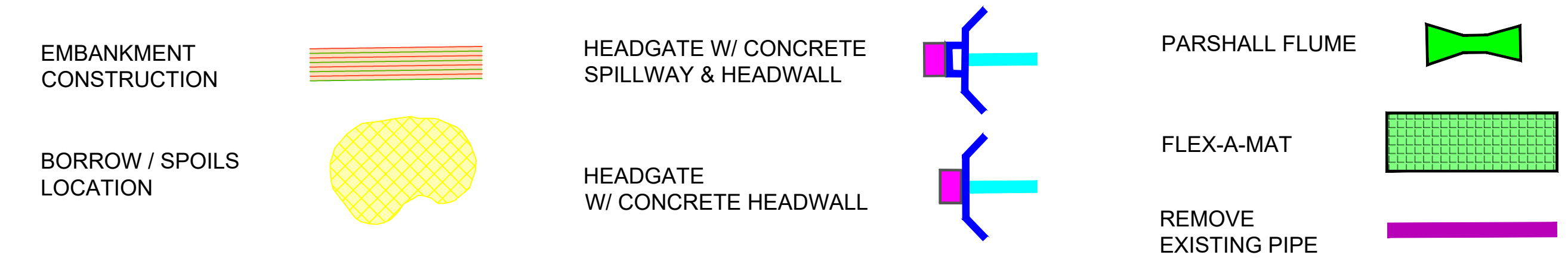
**INSTALL RICHARDS DITCH HEADGATE W/CONCRETE HEADWALL**  
24" FRESNO SERIES 6600 MODEL 101C SLIDE GATE (5' TALL)  
W/ 12" THICK REINFORCED CONCRETE HEADWALL W/ A FOOTER (≈5.5 C.Y. CONCRETE)  
W/ FABRICATED TRASH RACK  
W/ 40 L.F. OF 24"Ø PVC SDR 51 PIPE  
W/ 5 C.Y. DU CLASS II ROCK RIP RAP (INVERT: 7,230.0')  
SEE DETAILS, THIS SHEET & SHEET 12

**PLAN VIEW**  
SCALE: 1"=20'

**CONTRACTOR TO VERIFY AND COORDINATE WITH DU CONSTRUCTION ENGINEER WHEN INSTALLING ANY STRUCTURE WORK**

**CONCRETE VOLUME IS ONLY AN ESTIMATE. CONTRACTOR TO DETERMINE EXACT QUANTITY NEEDED. DU IS NOT RESPONSIBLE FOR ACCURACY OF ESTIMATE PROVIDED.**

**LEGEND**



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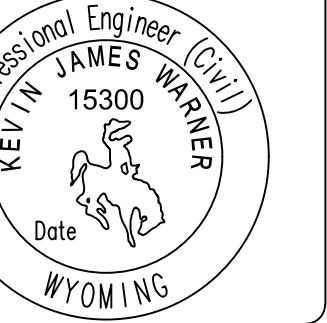
DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:



DESIGNED BY: MAK  
DRAWN BY: JWV  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:

DATE:	
REVISION:	
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PROJECT: WTCA SAND CREEK DIVERSION  
SHEET TITLE: RICHARDS DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)

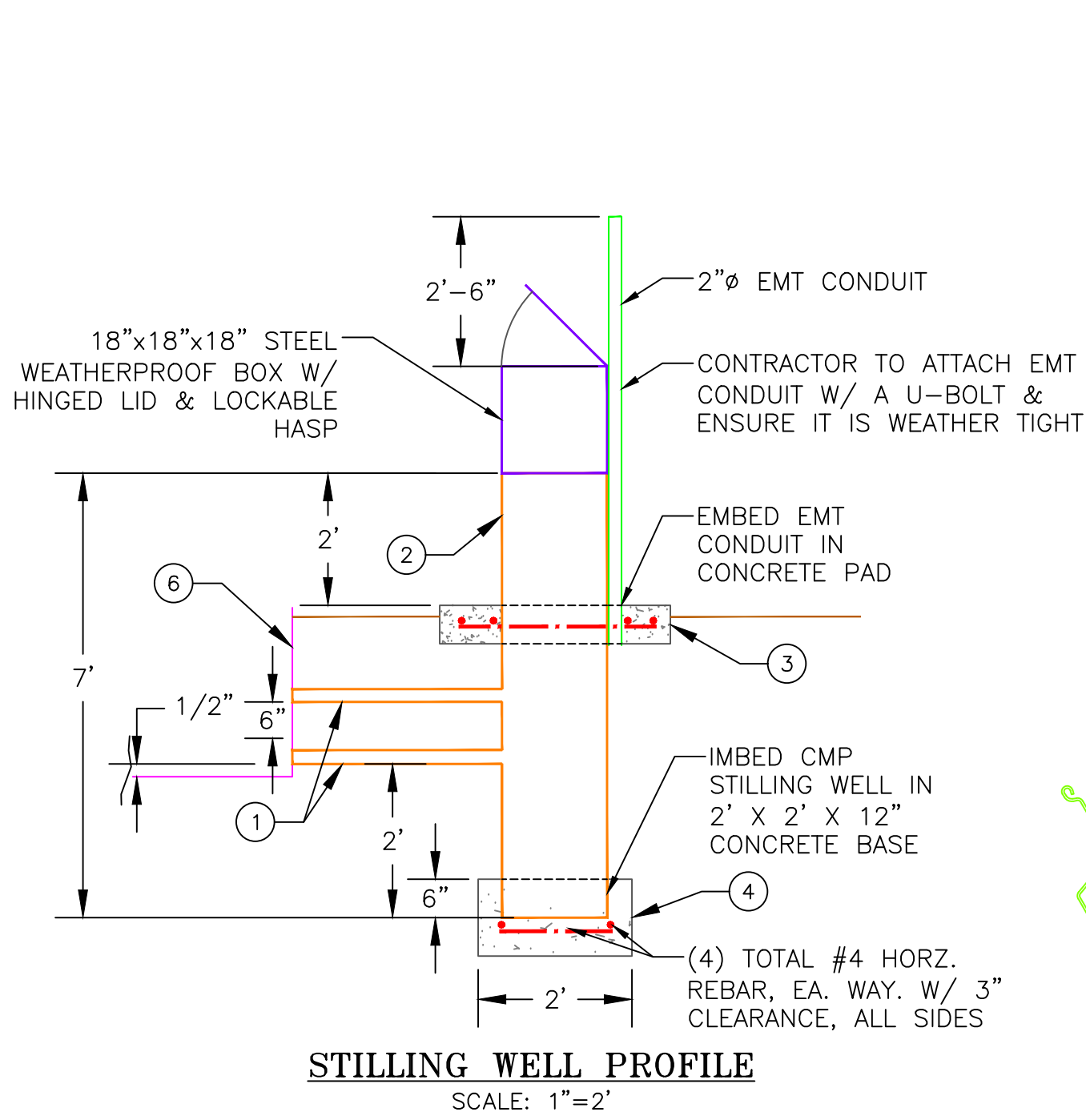
DATE: 04/10/2026

SHEET TITLE: RICHARDS DITCH HEADGATE W/ CONCRETE HEADWALL (SHEET 2 OF 2)

SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 13  
SHEET 13 OF 24

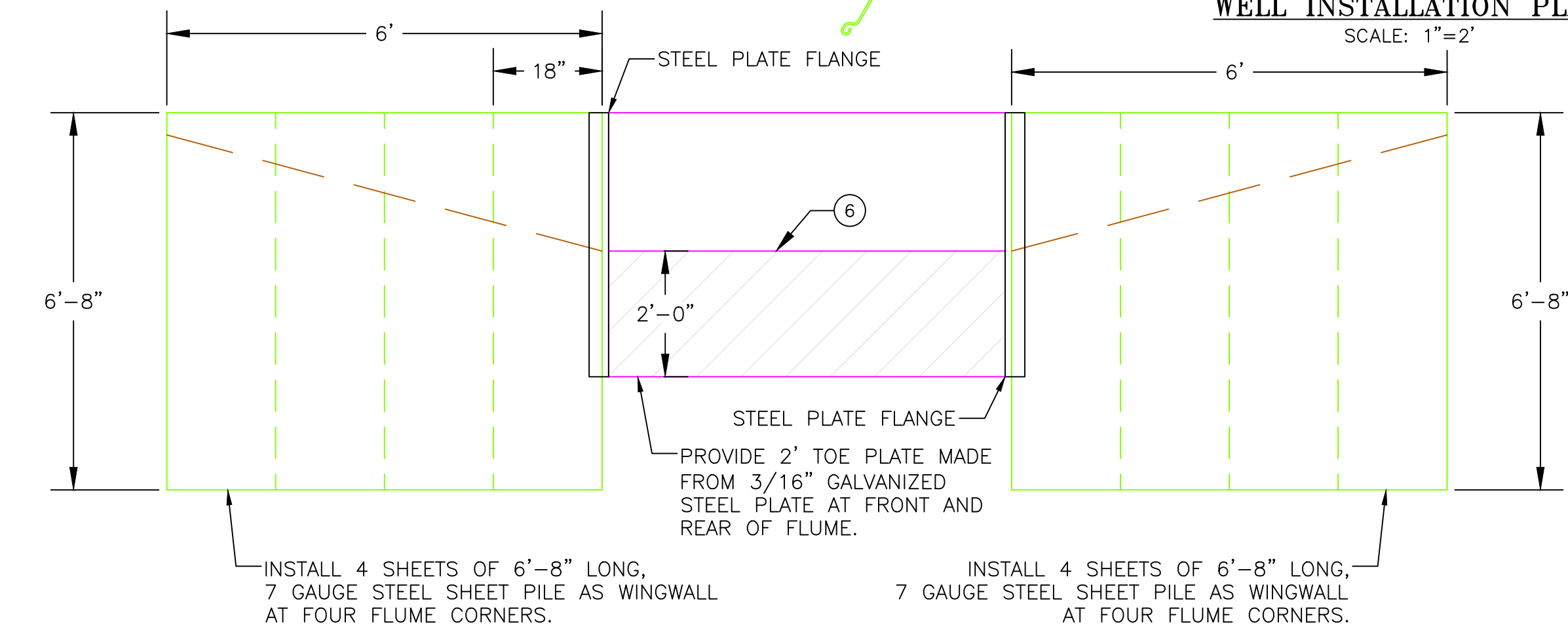


**NOTES:**

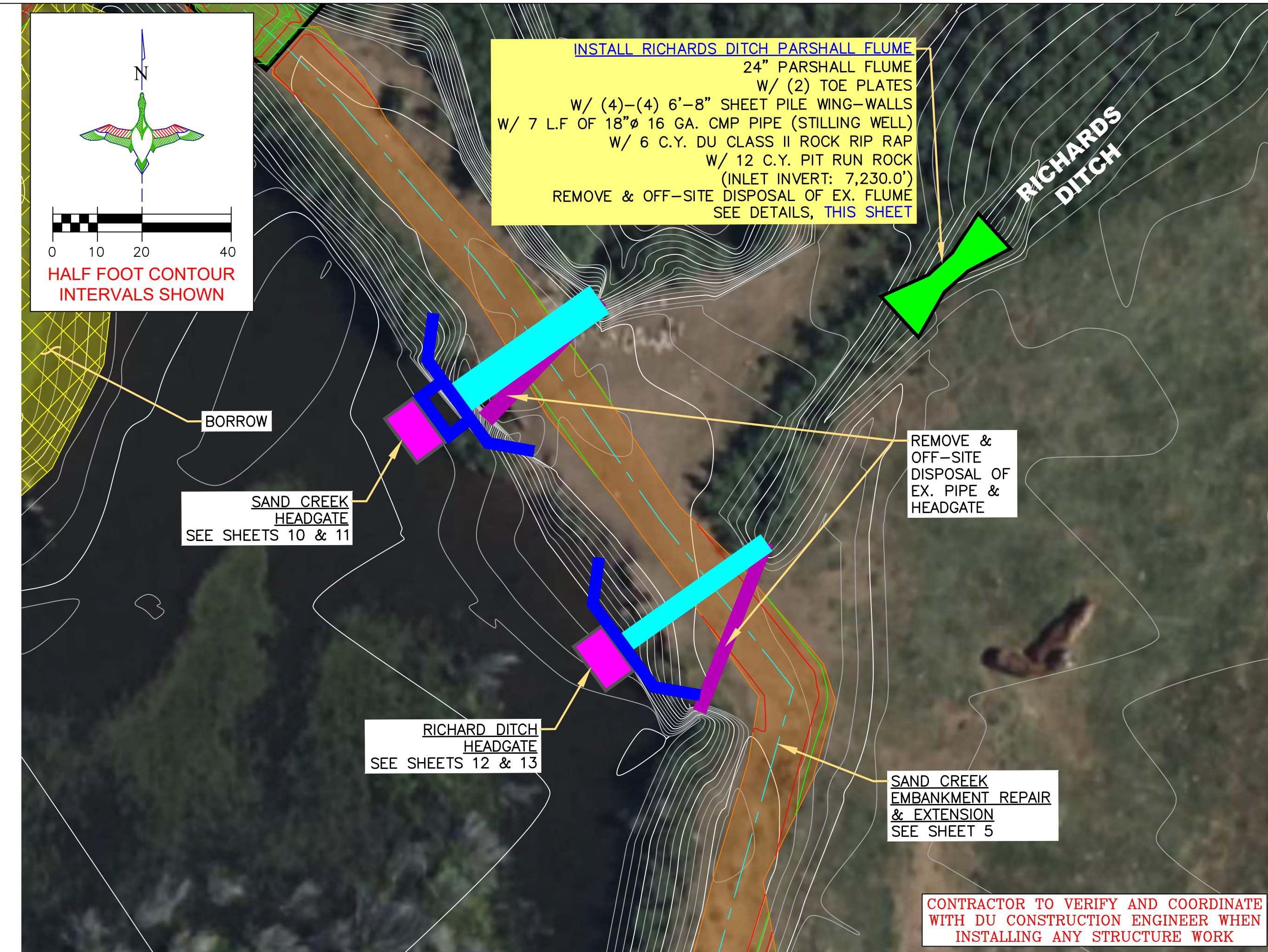
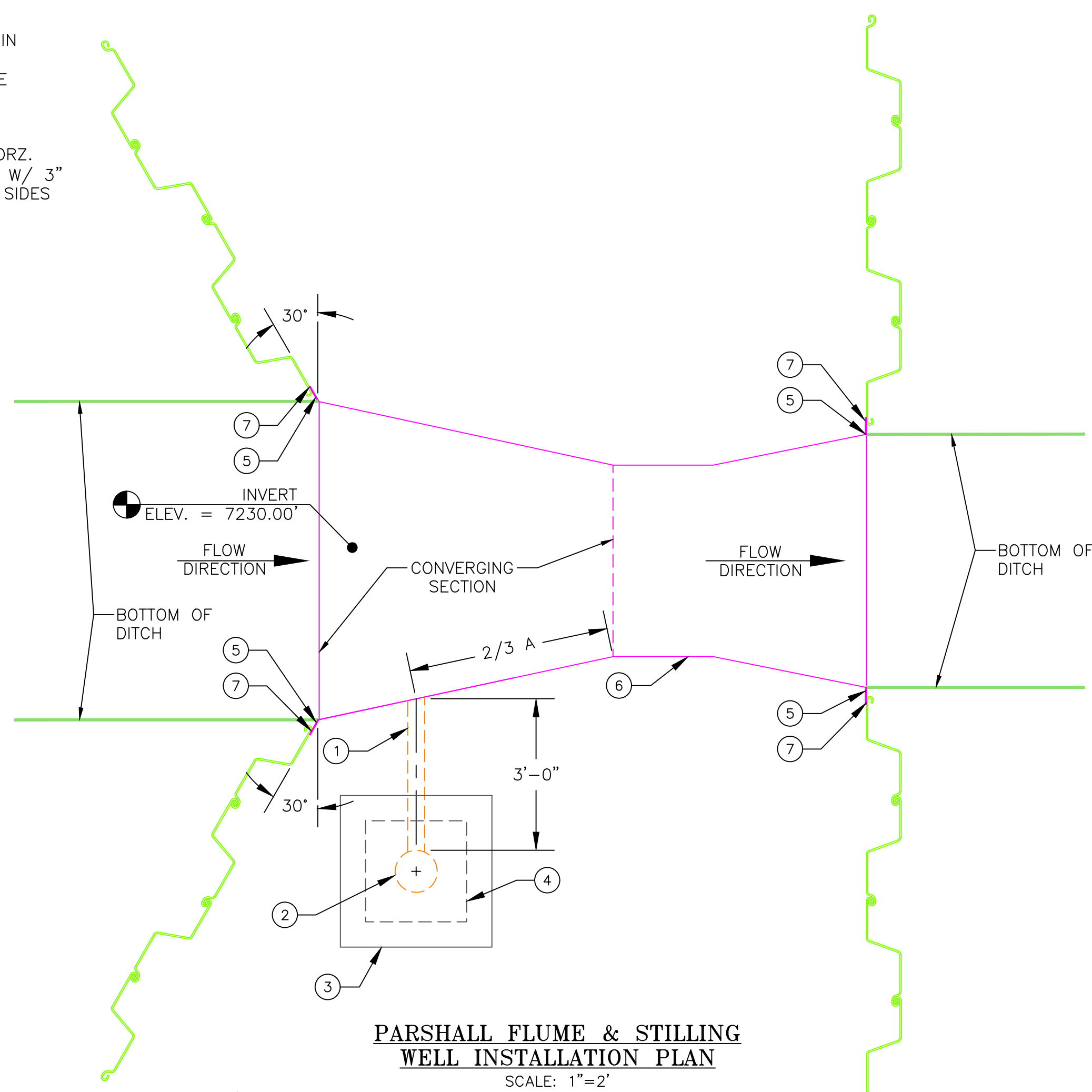
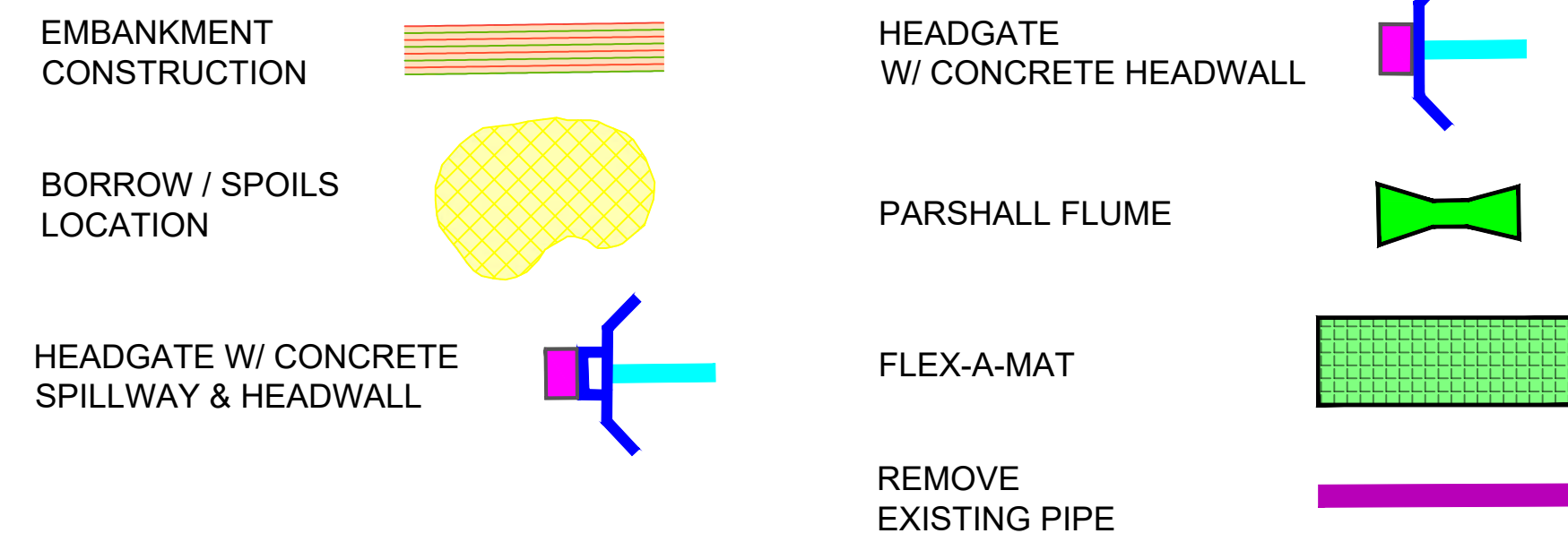
1. DU WILL BE SUPPLYING ALL DISCHARGE RECORDING EQUIPMENT.
2. RIP RAP AND COMPACTED FILL NOT SHOWN IN THIS VIEW.
3. CONVERGING SECTION SHALL BE LEVEL IN BOTH DIRECTIONS.
4. 12"Ø STILLING WELL TO HAVE MINIMUM 2" CLEARANCE FROM FLOAT ASSOCIATED WITH DATA COLLECTOR.
5. ALL COMPONENTS, CONCRETE, FABRICATION, WELDING & INSTALLATION ARE CONSIDERED PART OF BID ITEM "WATER CONTROL STRUCTURES - SUPPLY & INSTALL 24" PARSHALL FLUME W/ WING WALLS"

**KEYED NOTES (THIS SHEET)**

- ① WELD 2"Ø SCHEDULE 40 STEEL PIPE CONTINUOUS TO FLUME AND CMP STILLING WELL.
- ② 18"Ø 16 GA. CMP STILLING WELL.
- ③ 3' X 3' X 8" CONCRETE COLLAR SLAB W/ (2) #4 HORZ. REBAR, EA. WAY., W/ 3" CLR. ALL SIDES.
- ④ 2' X 2' X 12" CONCRETE STILLING WELL SLAB. W/ #4 HORZ. REBAR EA. WAY, W/ 3" CLEAR ON ALL SIDES.
- ⑤ 4" WIDE 1/4" THICK STEEL PLATE FLANGE. CONTINUOUS WATERTIGHT WELD TO FLUME REQUIRED. WELD SHEET PILE TO FLANGE CONTINUOUS AND WATERTIGHT.
- ⑥ GALVANIZED STEEL PARSHALL FLUME.
- ⑦ WELD SHEET PILE TO SHEET STEEL NEXT TO PREFABRICATED PARSHALL FLUME. WELDS NEEDS TO BE CONTINUOUS AND WATER TIGHT.

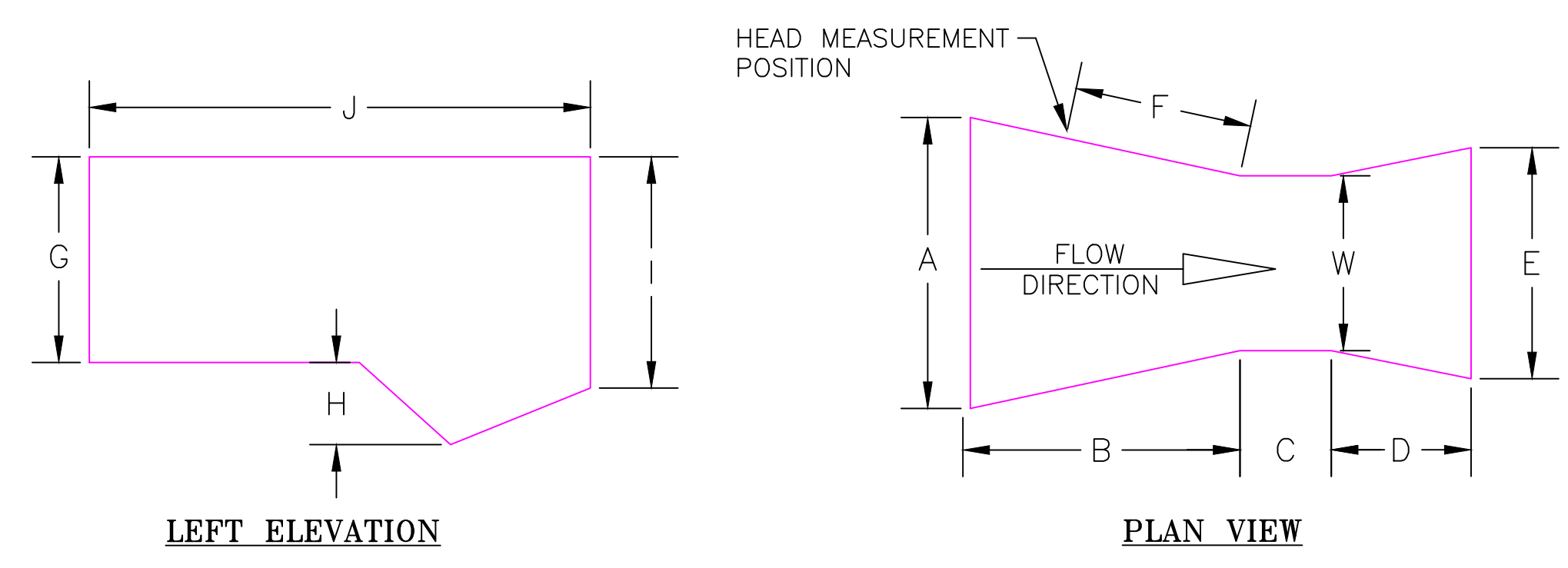


**LEGEND**



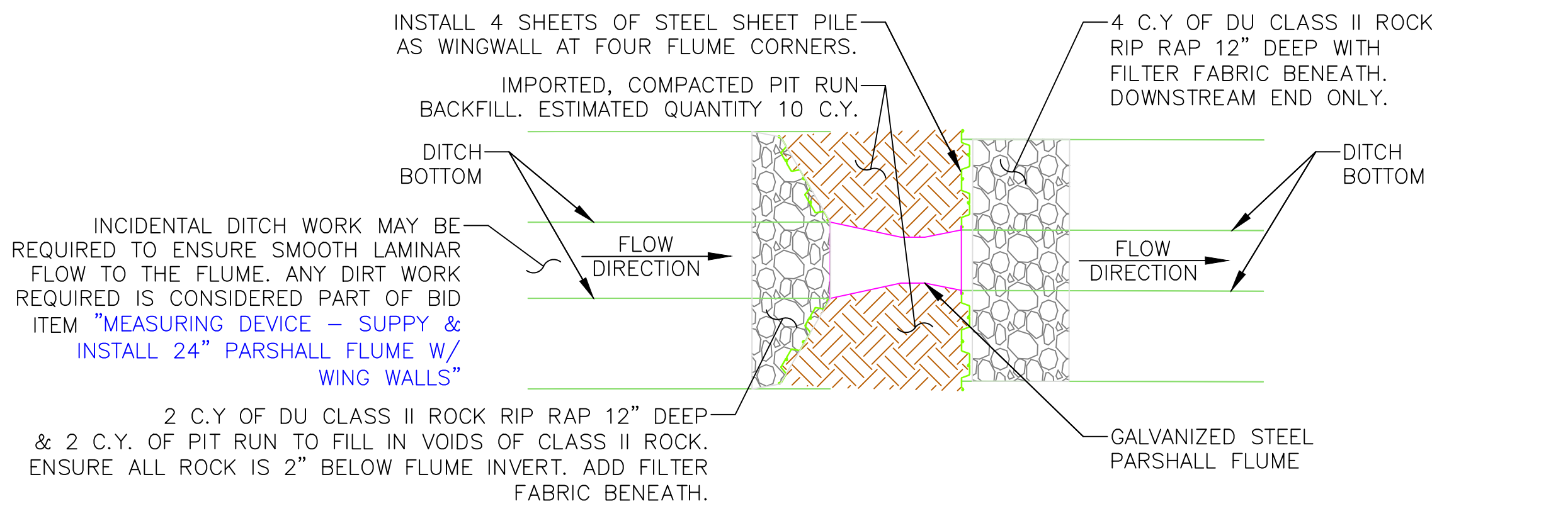
**DIMENSIONAL & HYDRRAULIC PARAMETERS OF PARSHALL FLUME**

W	A	B	C	D	E	F	G	H	I	J	MIN FLOW GPM	MAX FLOW GPM	MIN FLOW CFS	MAX FLOW CFS
24"	47 1/2"	58 7/8"	24"	36"	36"	40"	36"	9"	39"	118 7/8"	296	14,853	0.66	33.09



**NOTES:**

1. ALIGNED DITCH SECTION SHALL BE FLAT GRADED AND MATCH FLUME CENTERLINE ALIGNMENT DIRECTION.
2. STILLING WELL NOT SHOWN IN THIS VIEW.
3. FLUME TO BE SET TO ENSURE AT LEAST 4" FALL AWAY ENSURING NOTHING DOWNSTREAM WILL CAUSE BACKWATER EFFECTS.



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**"BEFORE YOU DIG"**  
BEFORE THE START OF CONSTRUCTION. THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

**DU DESIGN ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**DU CONSTRUCTION ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**DUCKS UNLIMITED INC.**  
GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:  
Professional Engineer (Civil)  
KEVIN JAMES WARNER  
15300  
Date  
WYOMING

DESIGNED BY: MAK  
DRAWN BY: JUW  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:

PROJECT:  
WTCA  
SAND CREEK DIVERSION  
RICHARDS DITCH PARSHALL FLUME

SHEET TITLE:  
RICHARDS DITCH PARSHALL FLUME

DATE:  
04/10/2026

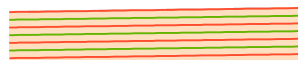
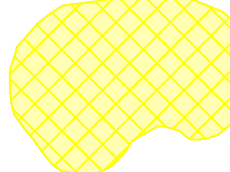
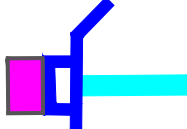
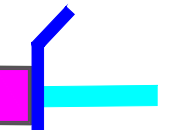
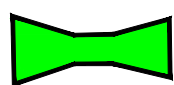
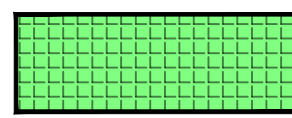

SHEET TITLE:  
RICHARDS DITCH PARSHALL FLUME

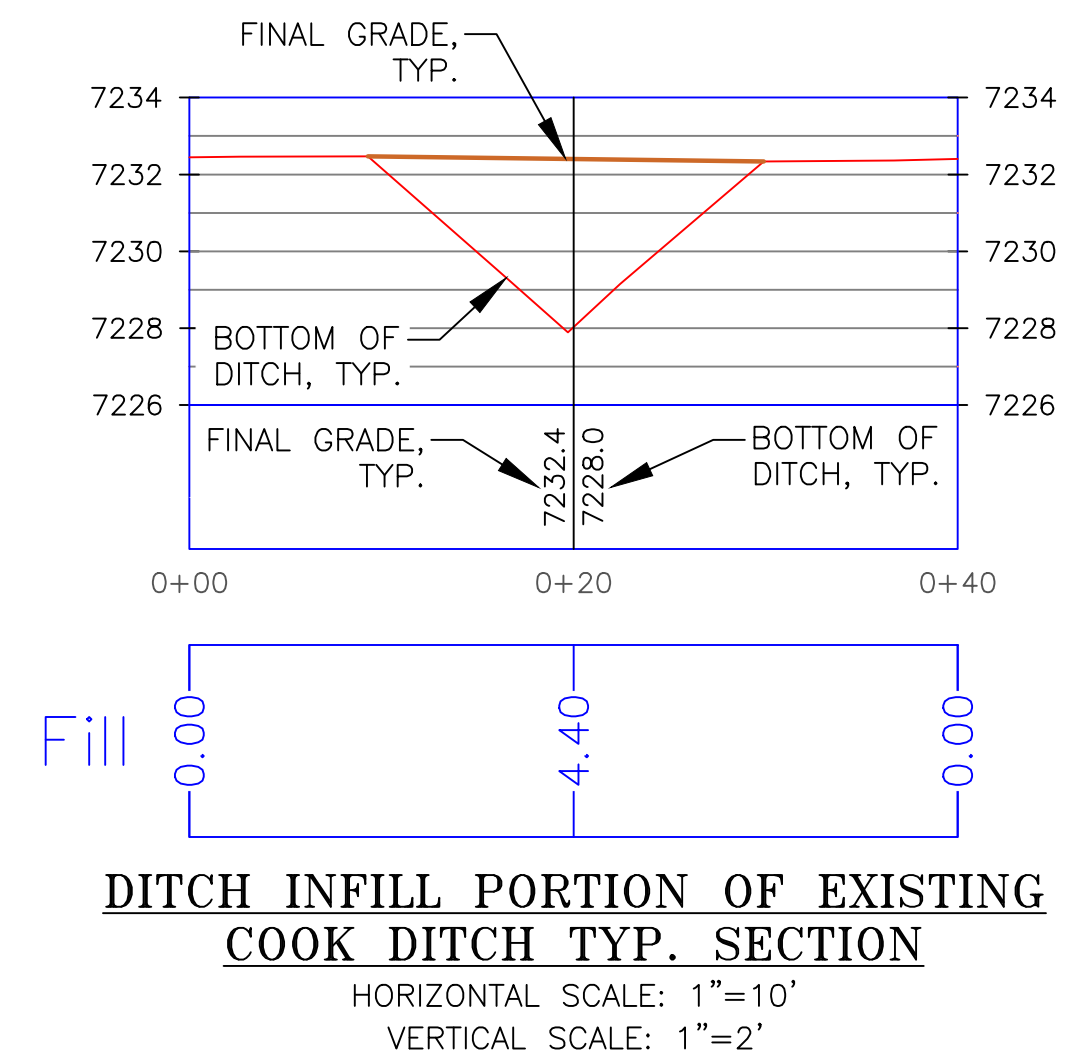
SCALES ARE ACCURATE ON  
24"X36" SHEET SIZE

DU PROJECT NUMBER:  
WY-192-100

SHEET NUMBER:  
14  
SHEET 14 OF 24

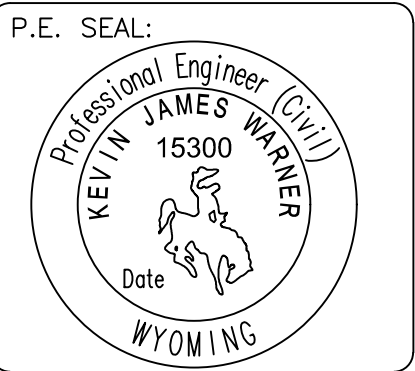
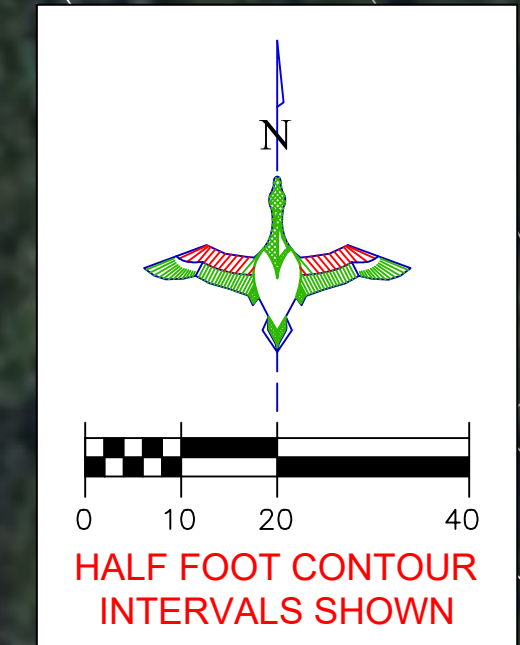
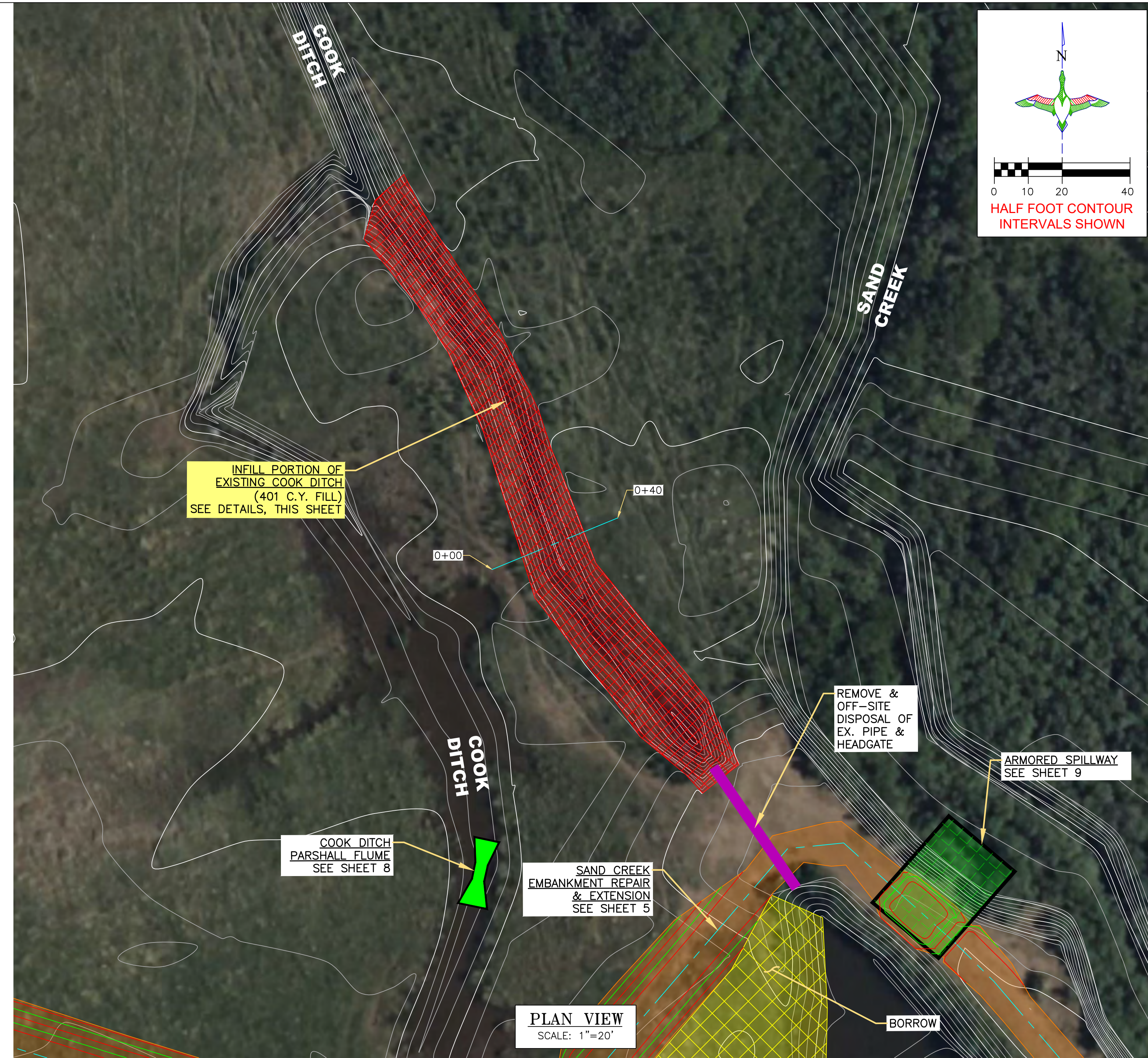
**LEGEND**

- EMBANKMENT CONSTRUCTION 
- BORROW / SPOILS LOCATION 
- HEADGATE W/ CONCRETE SPILLWAY & HEADWALL 
- HEADGATE W/ CONCRETE HEADWALL 
- PARSHALL FLUME 
- FLEX-A-MAT 
- REMOVE EXISTING PIPE 



**INFILL NOTES:**

1. DITCH INFILL SHALL BE OBTAINED FROM THE DESIGNATED BORROW AREAS. FILL SHALL BE PLACED IN **LIFTS** OF NO MORE THAN **8" AND COMPACTED** PRIOR TO PLACING SUBSEQUENT LIFTS.
2. CONTRACTOR TO STRIP & STOCKPILE THE TOPSOIL FROM THE BORROW AREAS & PLACE ON TOP OF DITCH INFILL. THIS DIRTWORK IS CONSIDERED PART OF BID ITEM "SITE PREPARATION".



DESIGNED BY:	MAK
DRAWN BY:	JJW
SURVEYED BY:	MAK
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	

REVISION:	DATE:	BY:
1		
2		
3		
4		
5		
6		
7		
8		

PROJECT: WTCA SAND CREEK DIVERSION  
 SHEET TITLE: INFILL PORTION OF EXISTING COOK DITCH

DATE: 04/10/2026

SHEET TITLE: INFILL PORTION OF EXISTING COOK DITCH

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 15  
SHEET 15 OF 24

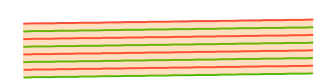

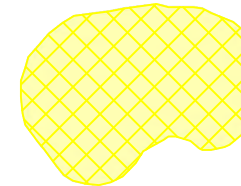

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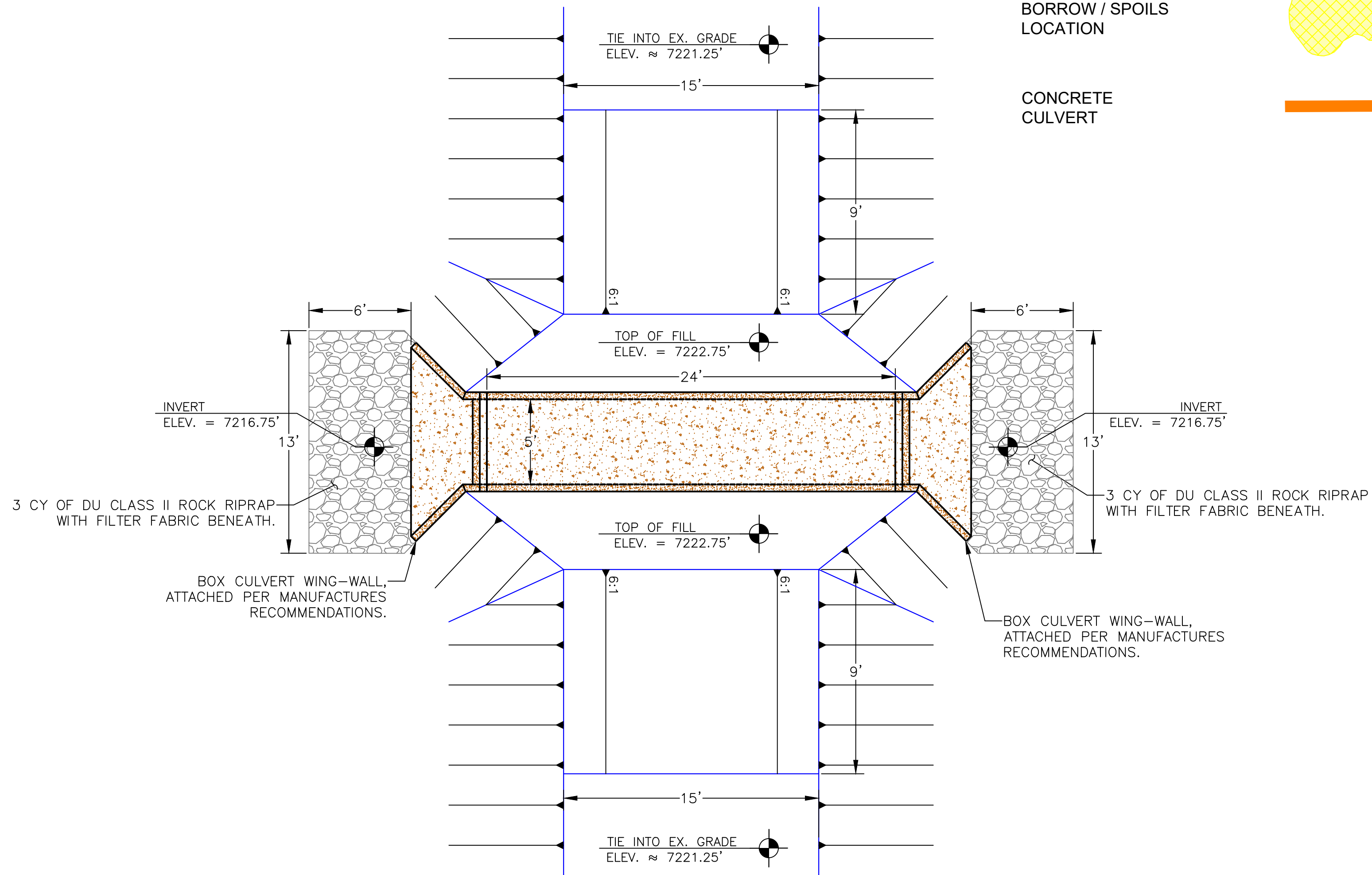
**"BEFORE YOU DIG"**  
 BEFORE THE START OF CONSTRUCTION. THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

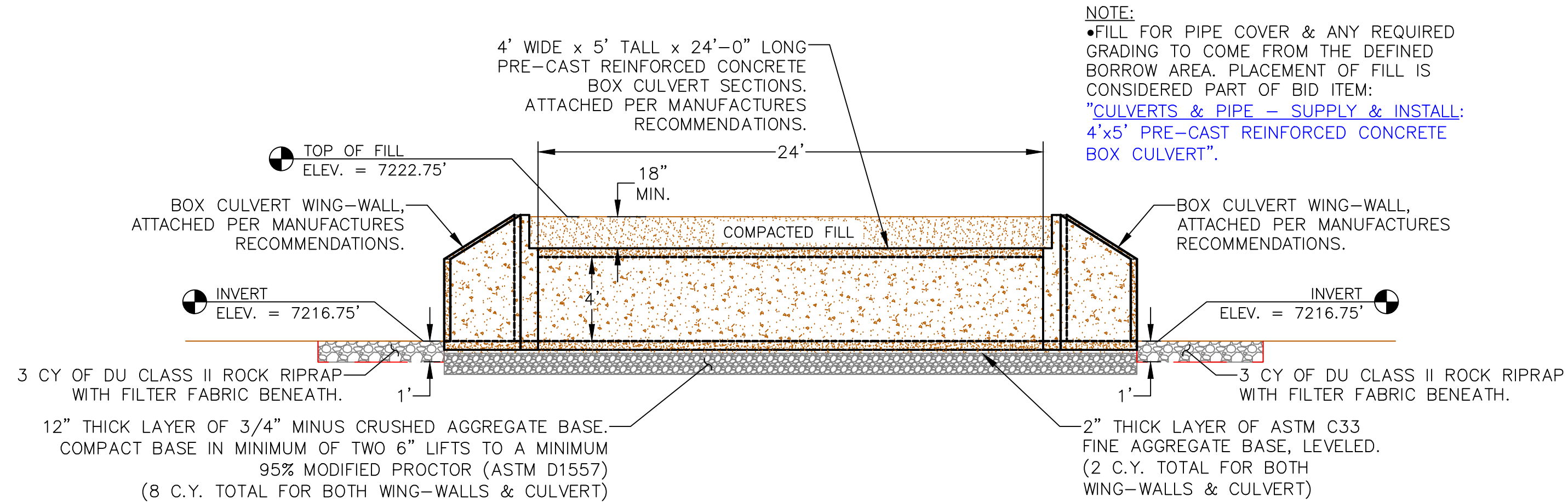
DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**LEGEND**

- EMB. CONSTRUCTION/ EARTHWORK 
- DITCH 
- BORROW / SPOILS LOCATION 
- CONCRETE CULVERT 

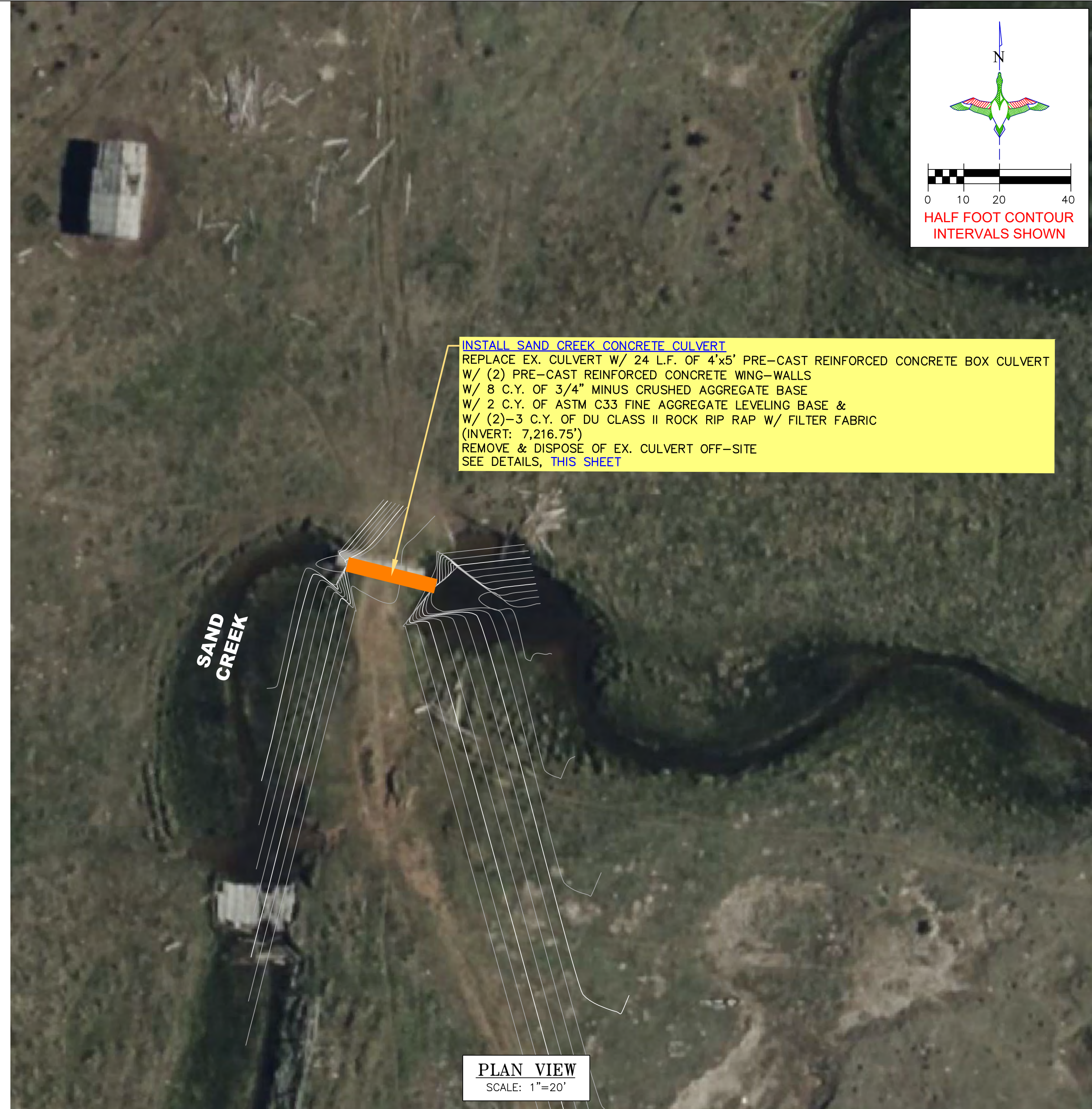


**4'x5' PRE-CAST REINFORCED CONCRETE CULVERT-PLAN VIEW**  
SCALE: 1"=5'

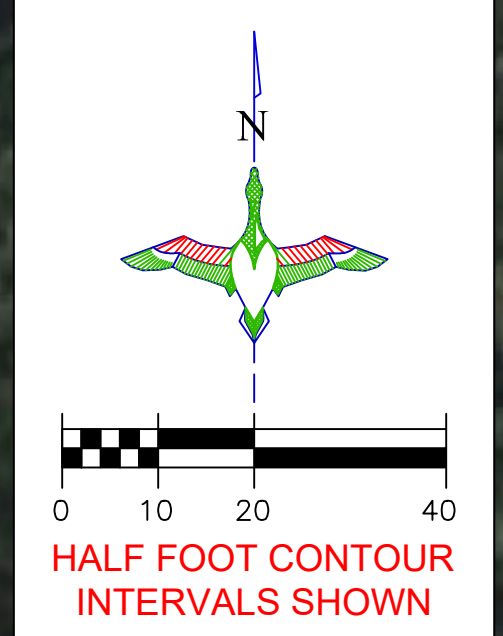


**4'x5' PRE-CAST REINFORCED CONCRETE CULVERT-PROFILE VIEW**  
SCALE: 1"=5'

**INSTALL SAND CREEK CONCRETE CULVERT**  
 REPLACE EX. CULVERT W/ 24 L.F. OF 4'x5' PRE-CAST REINFORCED CONCRETE BOX CULVERT  
 W/ (2) PRE-CAST REINFORCED CONCRETE WING-WALLS  
 W/ 8 C.Y. OF 3/4" MINUS CRUSHED AGGREGATE BASE  
 W/ 2 C.Y. OF ASTM C33 FINE AGGREGATE LEVELING BASE &  
 W/ (2)-3 C.Y. OF DU CLASS II ROCK RIP RAP W/ FILTER FABRIC  
 (INVERT: 7,216.75')  
 REMOVE & DISPOSE OF EX. CULVERT OFF-SITE  
 SEE DETAILS, THIS SHEET

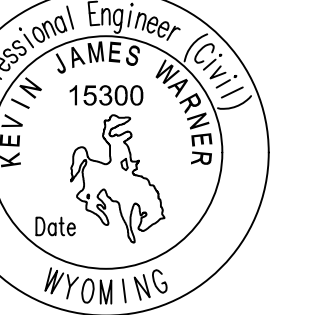


**PLAN VIEW**  
SCALE: 1"=20'



GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:



DESIGNED BY: MAK  
 DRAWN BY: JWJ  
 SURVEYED BY: MAK  
 CHECKED BY:  
 APPROVED BY:  
 APPROVED BY:

REVISION:	DATE:	BY:
1		
2		
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7		
8		

PROJECT: WTCA SAND CREEK DIVERSION  
 SHEET TITLE: SAND CREEK CONCRETE CULVERT

DATE: 04/10/2026

SHEET TITLE: SAND CREEK CONCRETE CULVERT

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 16  
 SHEET 16 OF 24

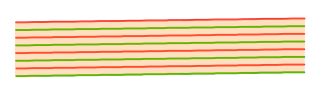

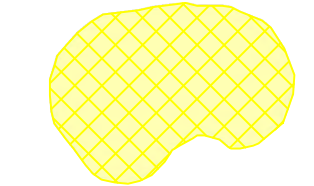
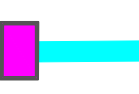

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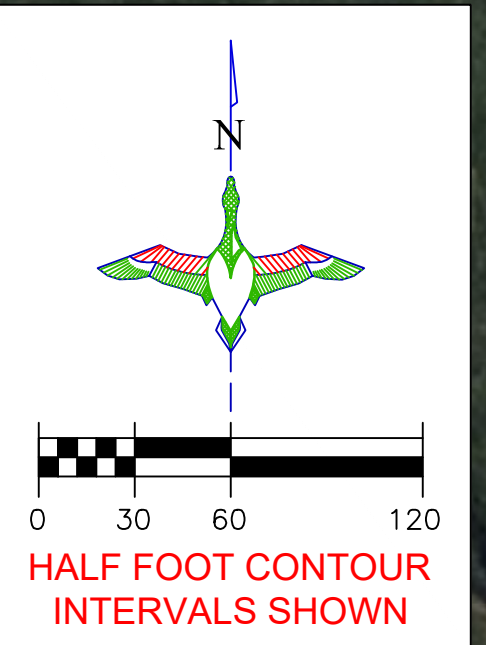
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DU DESIGN ENGINEER:  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

DU CONSTRUCTION ENGINEER:  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

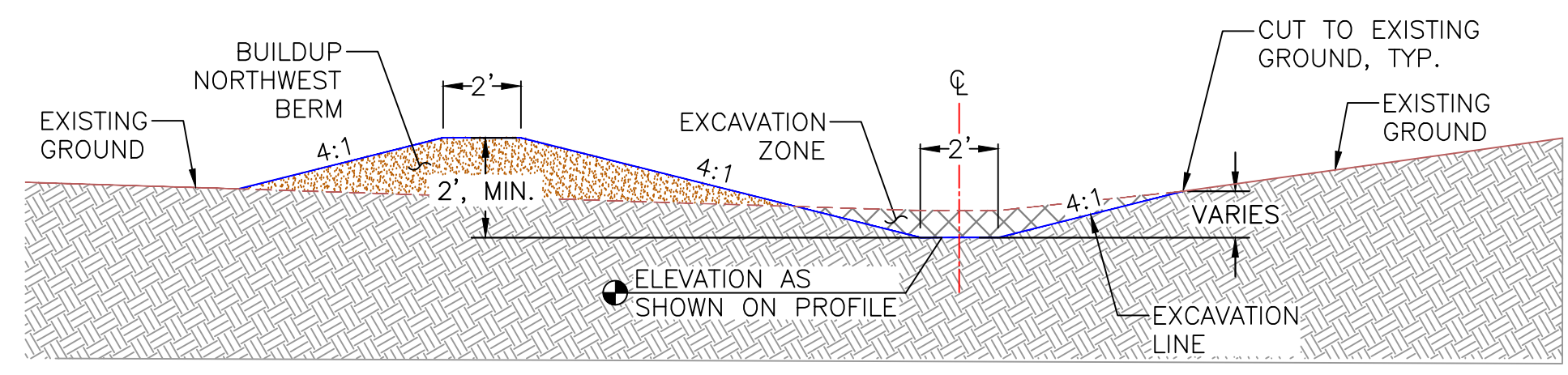
**LEGEND**

- EMB. CONSTRUCTION/ EARTHWORK 
- DITCH 
- BORROW / SPOILS LOCATION 
- SLIDEGATE TURNOUT 
- STOPLOG CULVERT 

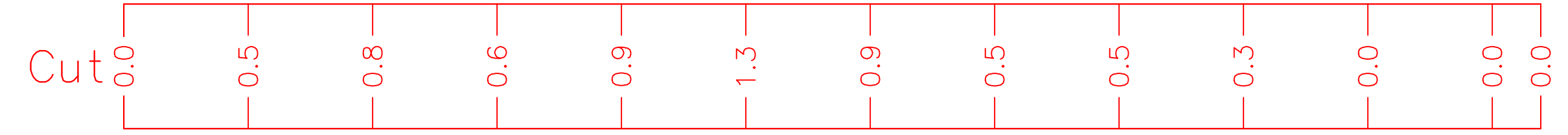
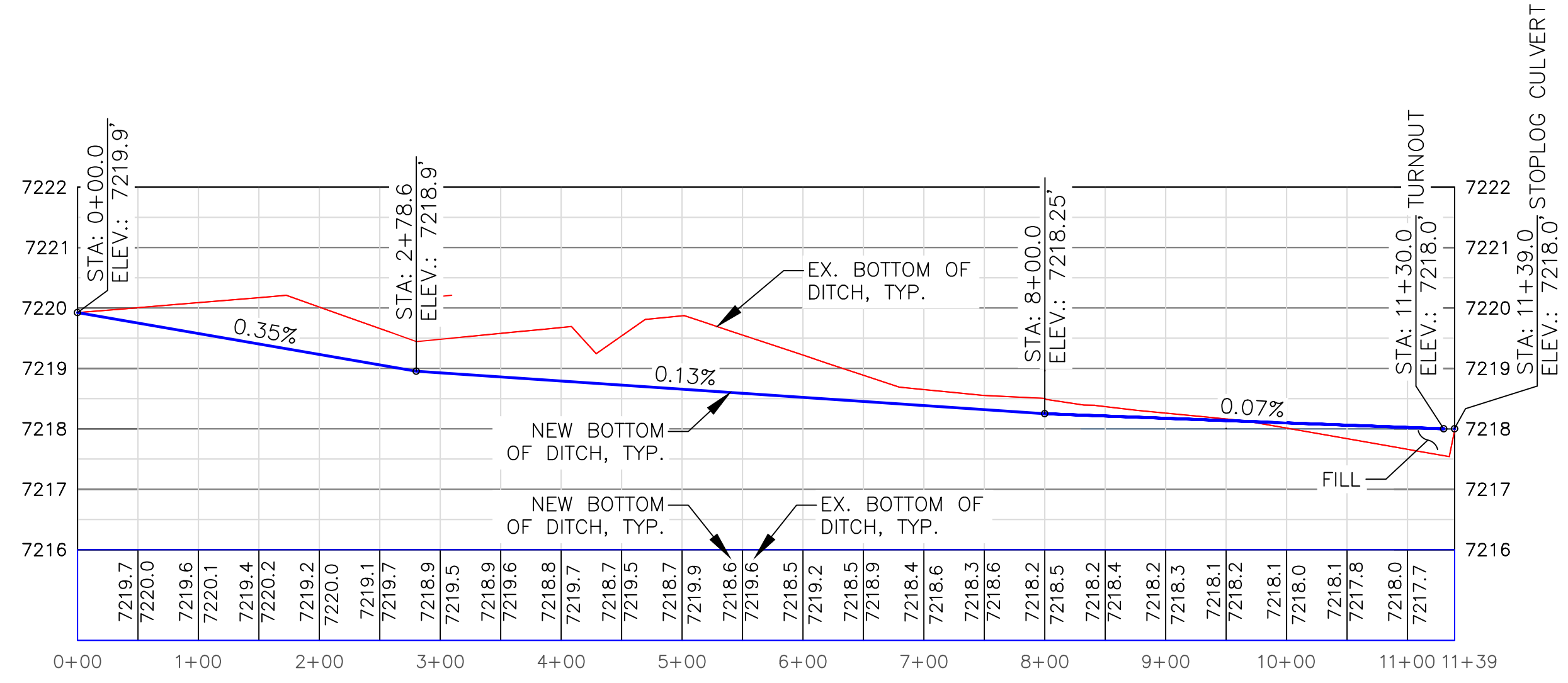


**RICHARDS DITCH CLEANOUT & NORTHWEST BERM**  
 CONSTRUCT BERM ON THE NW SIDE OF RICHARDS DITCH  
 W/ 2' NET HEIGHT, 2' WIDE TOP & 4:1 SIDE SLOPES.  
 CUT DITCH BOTTOM AS SHOWN IN PROFILE TO ENSURE DITCH FLOWS  
 (1,139 L.F., 98 C.Y. FILL & 40 C.Y. CUT)  
 SEE DETAILS, THIS SHEET

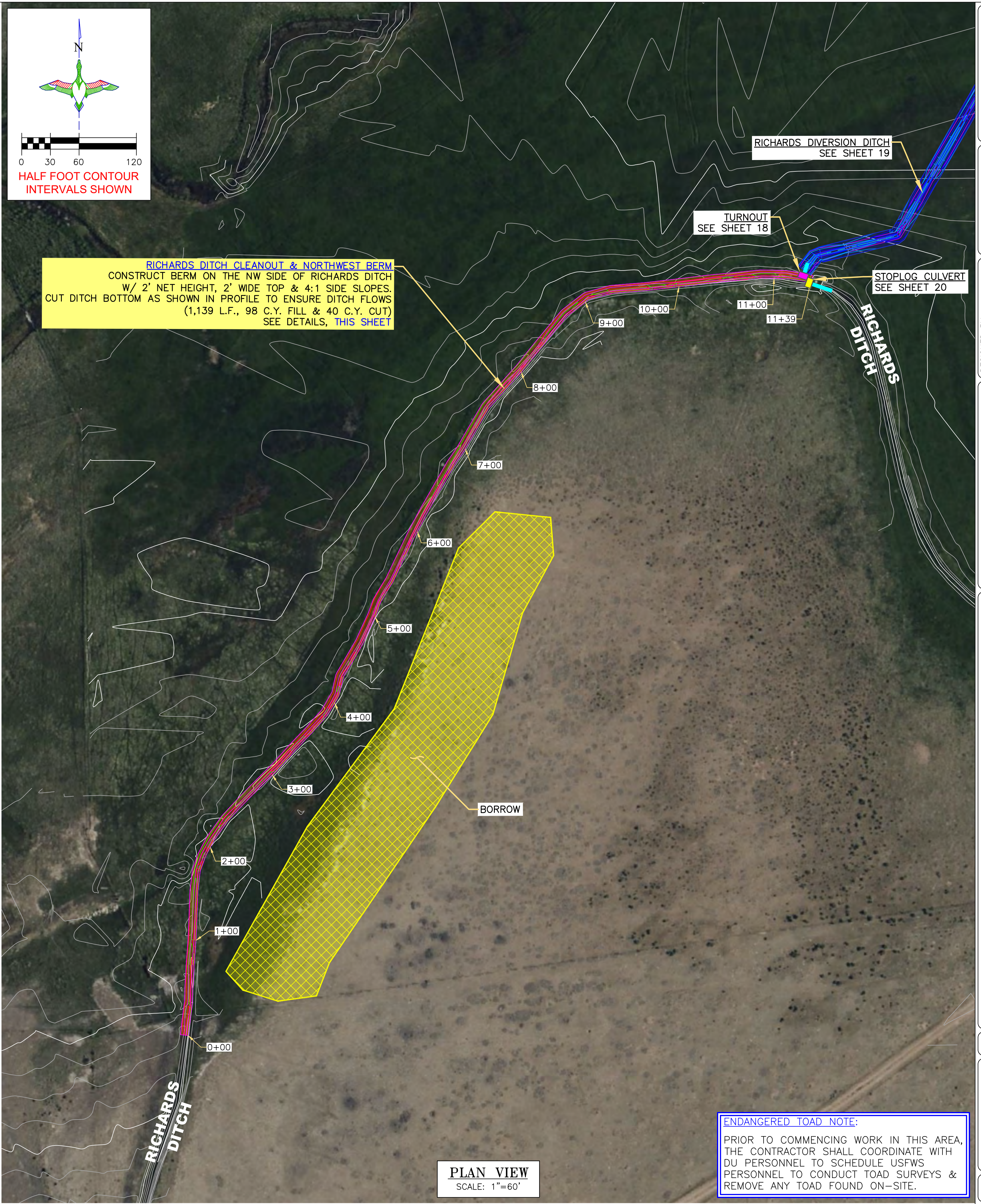
- NOTES:**
- ORGANIC TOPSOIL SHALL BE STRIPPED AND PLACED BACK ALONG THE DITCH SIDE SLOPES AND IS CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION".
  - CUT MATERIAL GENERATED TO BE PLACED ON SIDE BERM.
  - MATERIAL NEEDED FOR SIDE BERM CONSTRUCTION TO BE GENERATED FROM BORROW AREA AS SHOWN ON PLANS. SEE BORROW NOTES, SHEET 4.



**RICHARDS DITCH CLEANOUT & NORTHWEST BERM**  
**TYPICAL SECTION**  
 SCALE: 1"=4'



**RICHARDS DITCH BOTTOM PROFILE VIEW**  
 HORIZONTAL SCALE: 1"=100'  
 VERTICAL SCALE: 1"=2'



**PLAN VIEW**  
 SCALE: 1"=60'

**ENDANGERED TOAD NOTE:**  
 PRIOR TO COMMENCING WORK IN THIS AREA, THE CONTRACTOR SHALL COORDINATE WITH DU PERSONNEL TO SCHEDULE USFWS PERSONNEL TO CONDUCT TOAD SURVEYS & REMOVE ANY TOAD FOUND ON-SITE.



**DUCKS UNLIMITED INC.**  
 GREAT PLAINS REGIONAL OFFICE  
 P.E. SEAL:  
 Professional Engineer (Civil)  
 KEVIN JAMES WARNER  
 15300  
 Date  
 WYOMING

DESIGNED BY: MAK  
 DRAWN BY: JWJ  
 SURVEYED BY: MAK  
 CHECKED BY:  
 APPROVED BY:  
 APPROVED BY:

REVISION:	DATE:	BY:
1		
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PROJECT:  
**WTCA SAND CREEK DIVERSION**  
**SHEET TITLE: RICHARDS DITCH CLEANOUT & NORTHWEST BERM**

DATE: 04/10/2026

SHEET TITLE:  
**RICHARDS DITCH CLEANOUT & NORTHWEST BERM**

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER:  
**WY-192-100**

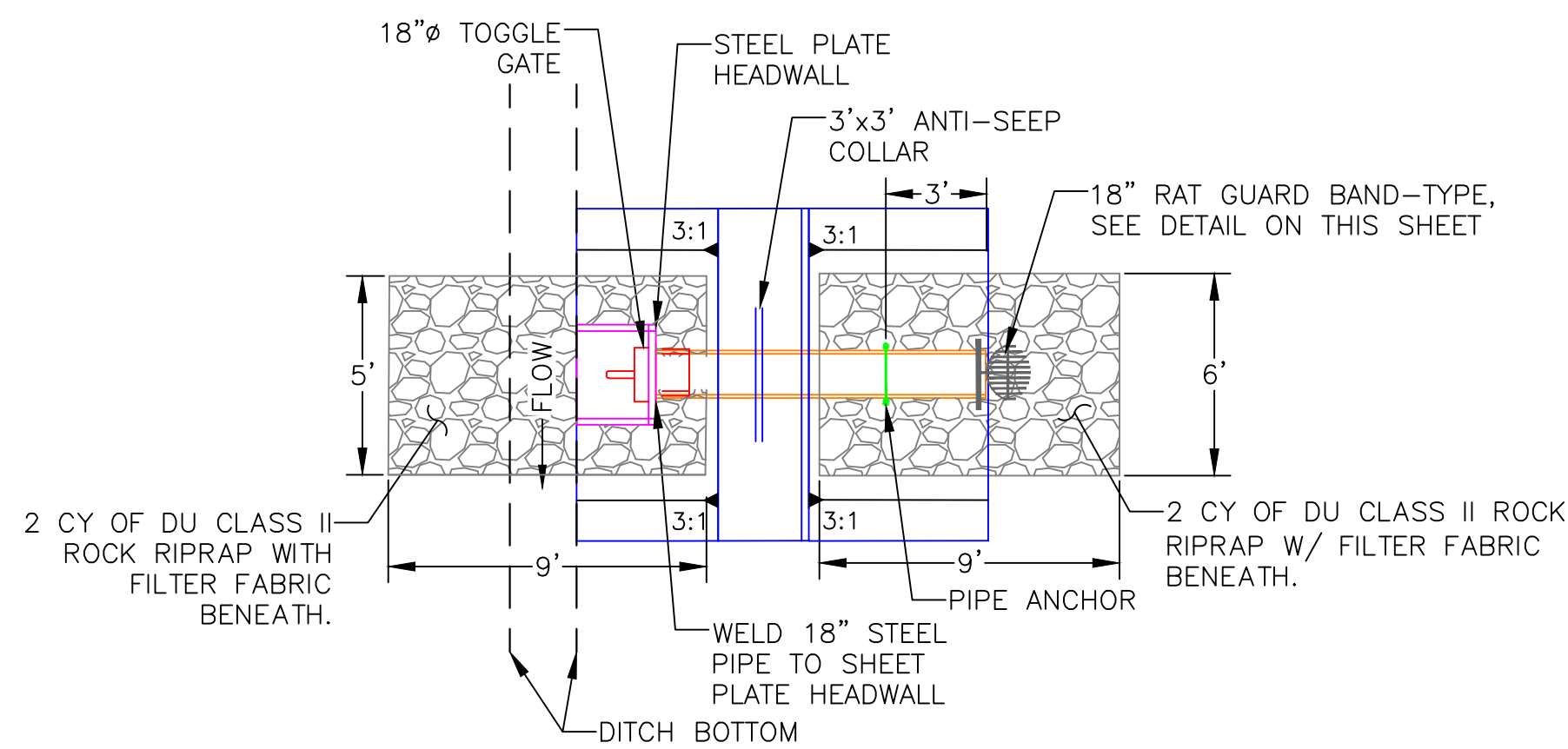
SHEET NUMBER:  
**17**  
 SHEET 17 OF 24

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DU DESIGN ENGINEER:  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009

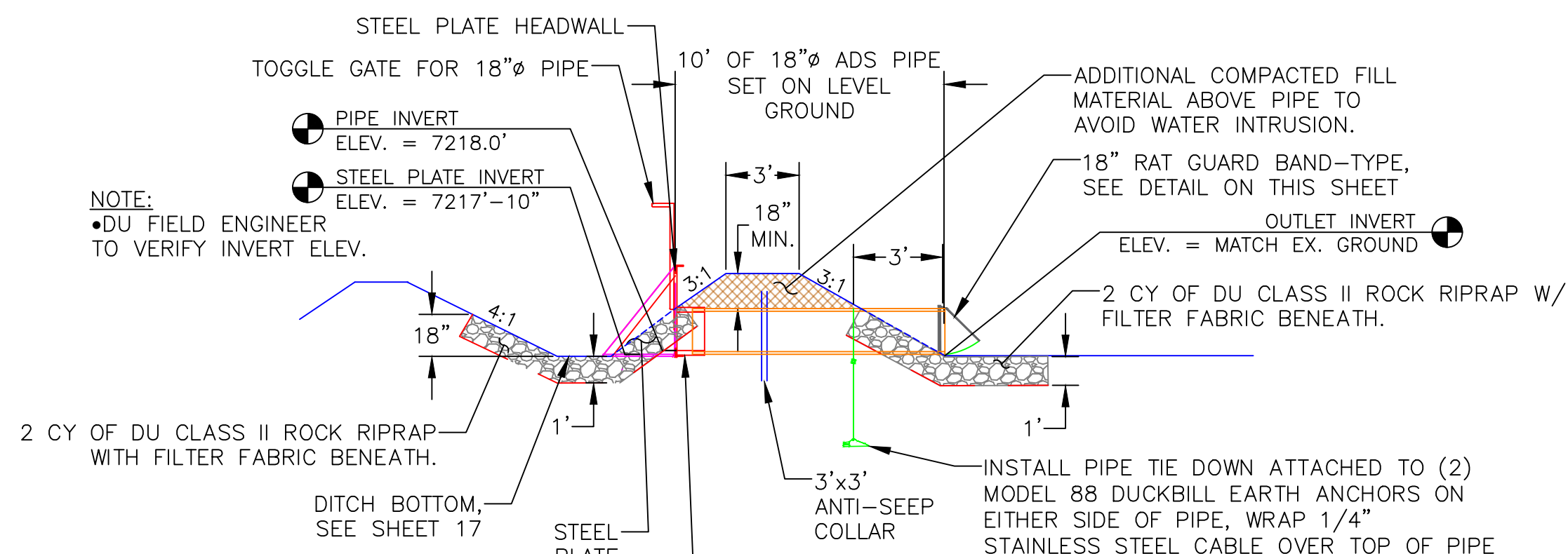
DU CONSTRUCTION ENGINEER:  
 MICHAEL KUEHNEL, P.E.  
 (970) 218-7009



**18" DITCH TURNOUT-PLAN VIEW**  
SCALE: 1"=5'

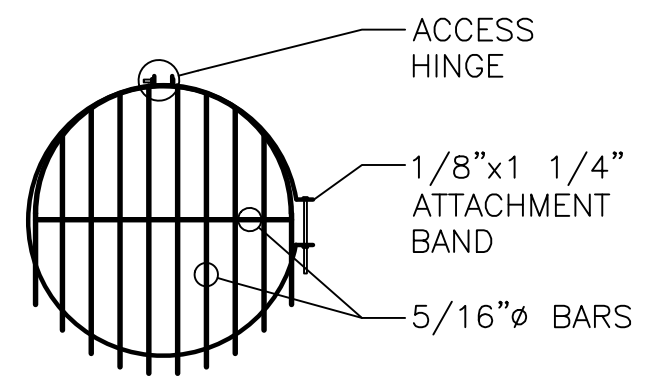
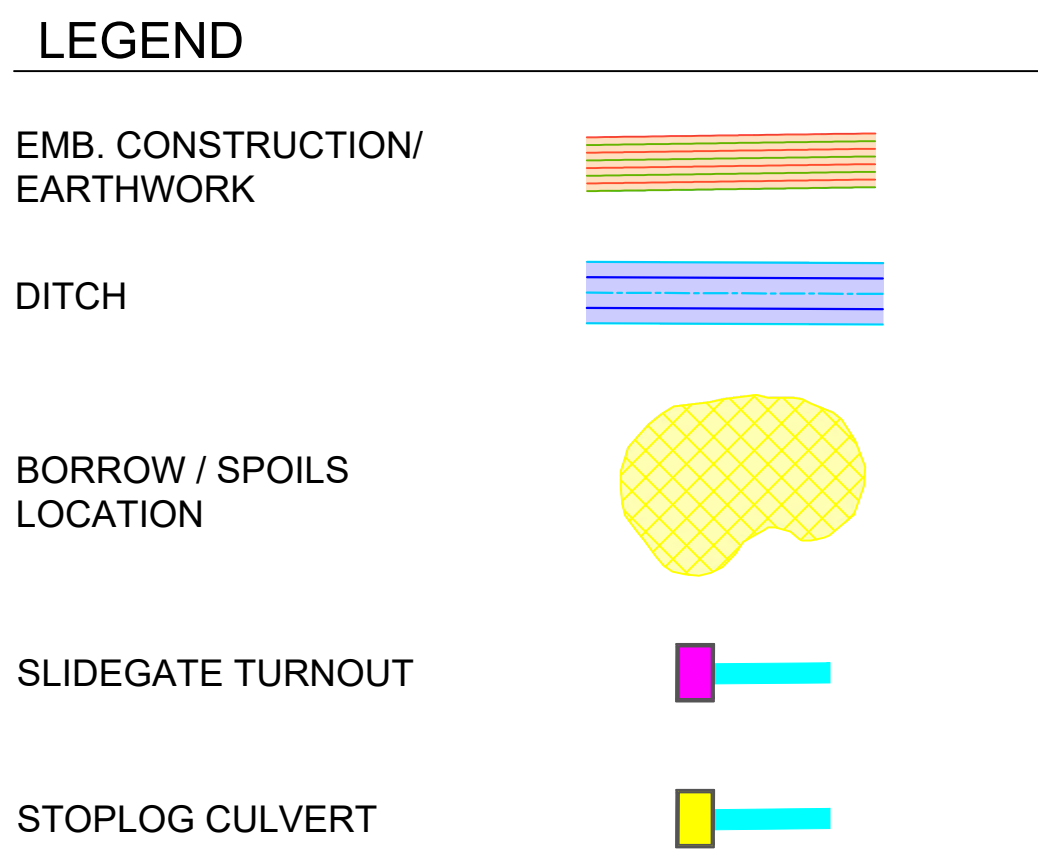
**NOTE:**  
•FILL FOR PIPE COVER TO COME FROM THE DEFINED BORROW AREA. PLACEMENT OF FILL IS CONSIDERED PART OF BID ITEM: "WATER CONTROL STRUCTURES - SUPPLY & INSTALL".

**DUAL WALL HDPE NOTE - ANTI-FLOTATION MEASURES**  
CONTRACTOR SHALL PROVIDE CONTROLLED PERFORATIONS OR SLITS IN THE OUTER (CORRUGATED) WALL ONLY OF DUAL-WALL HDPE PIPE TO MITIGATE FLOTATION.  
PERFORATIONS SHALL:  
•BE MADE WITHOUT PENETRATING THE SMOOTH INNER WALL OF THE PIPE.  
•BE SPACED AND SIZED AS REQUIRED TO ALLOW RELEASE OF TRAPPED AIR.  
•NOT COMPROMISE THE PIPE'S STRUCTURAL INTEGRITY..



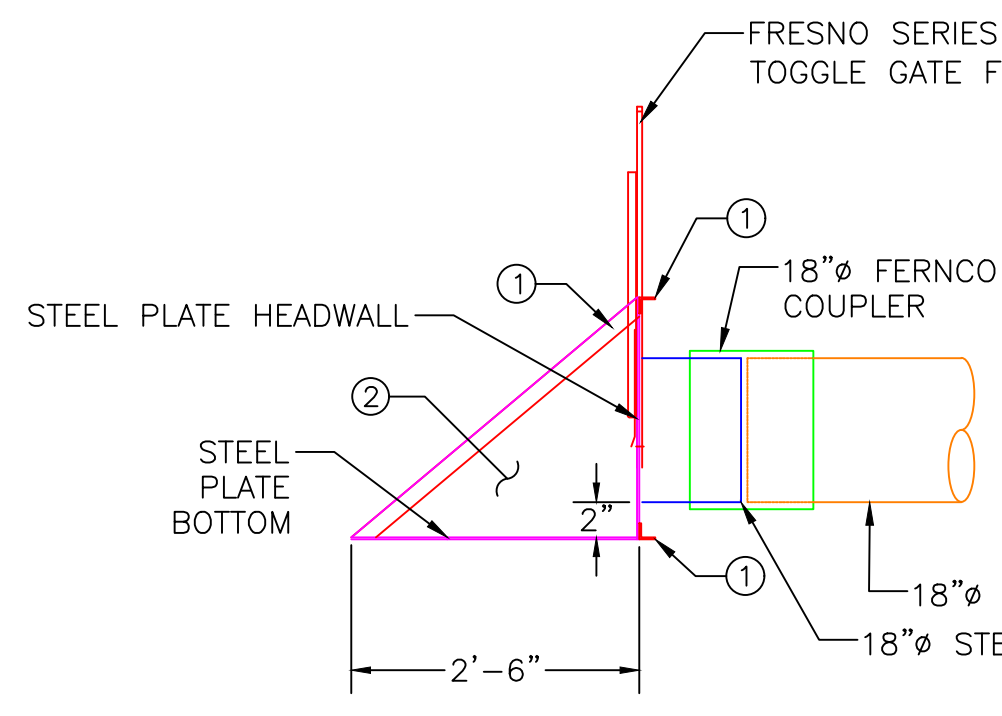
**18" DITCH TURNOUT-PROFILE VIEW**  
SCALE: 1"=5'

**NOTE:**  
•DU FIELD ENGINEER TO VERIFY INVERT ELEV.

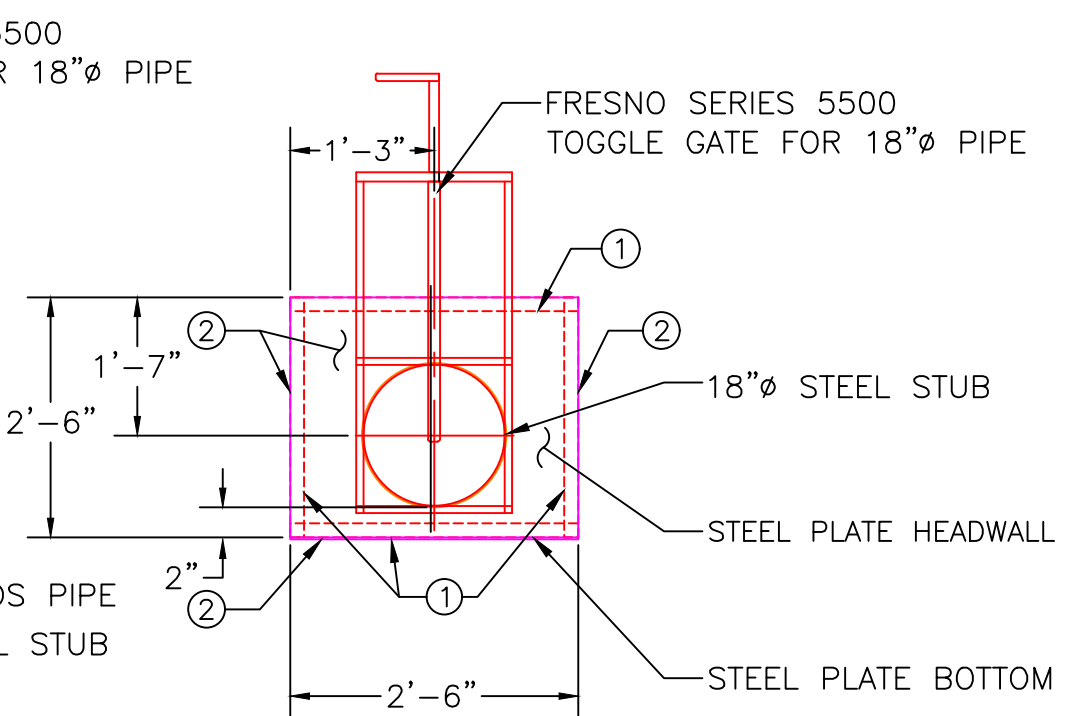


**18" RAT GUARD, BAND-TYPE**  
NOT TO SCALE

**RAT GUARD INSTALLATION NOTES:**  
1. THE RAT GUARD OR APPROVED EQUAL AND ITS INSTALLATION WILL BE CONSIDERED INCIDENTAL TO BID ITEMS UNDER "WATER CONTROL STRUCTURE - SUPPLY & INSTALL".  
2. RAT GUARD TO BE INSTALLED ON THE DOWNSTREAM LOCATION OF THE WCS.  
3. AGRI DRAIN CORP. TELEPHONE NUMBER IS 1-800-232-4742.



**18" DITCH TURNOUT SIDE VIEW**  
SCALE: 1"=2'



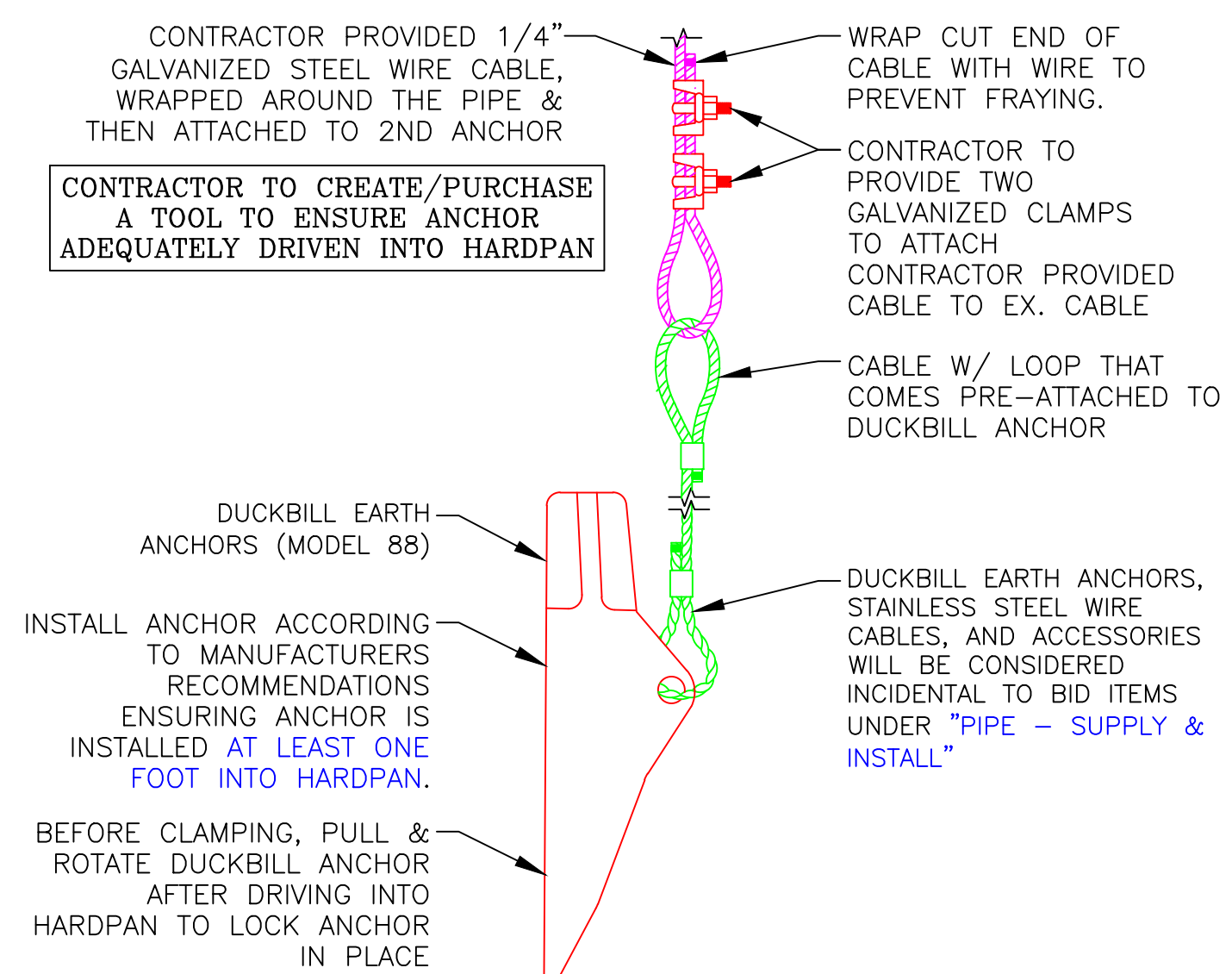
**18" DITCH TURNOUT FRONT VIEW**  
SCALE: 1"=2'

**DITCH TURNOUT NOTES:**

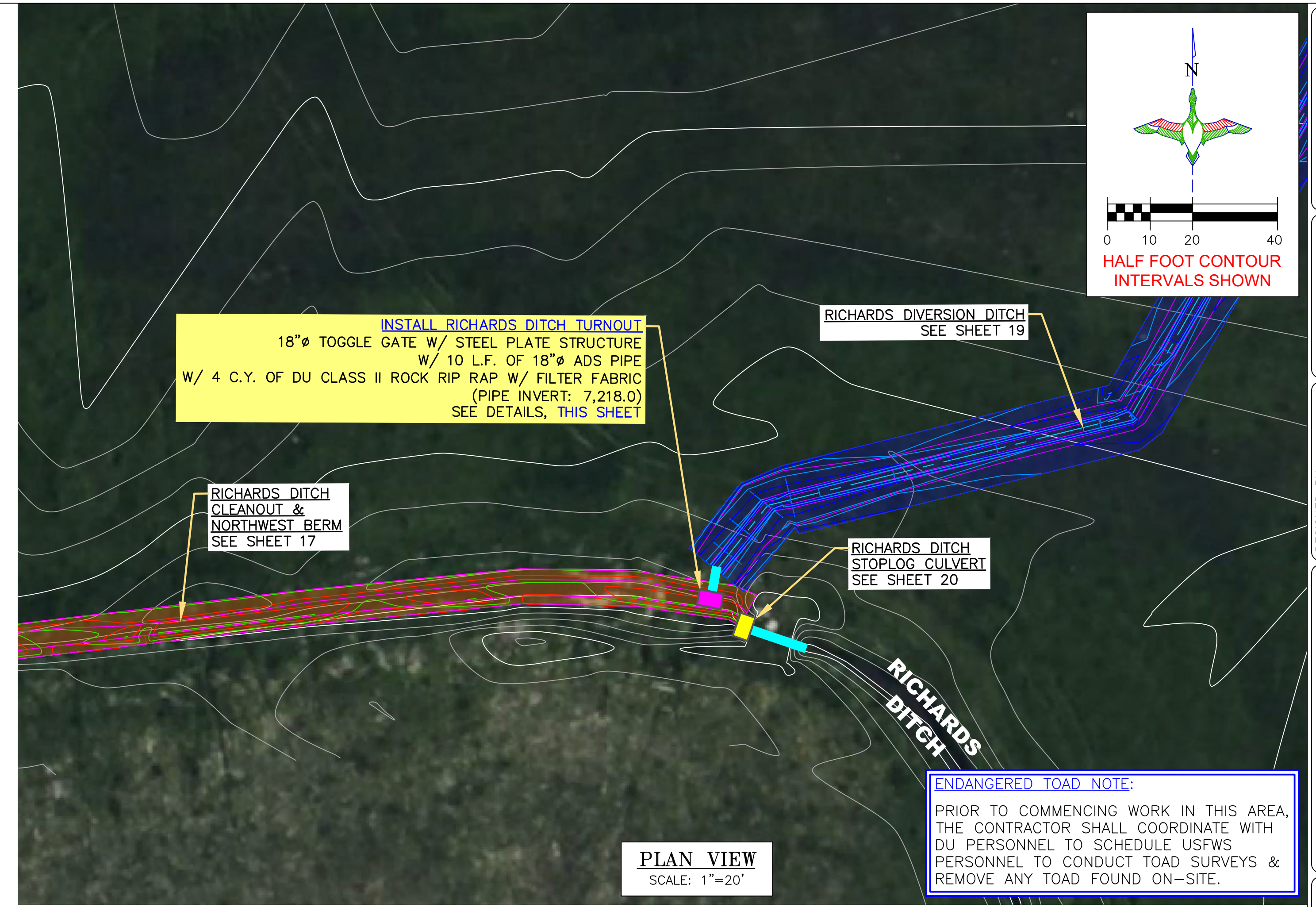
- DITCH TURNOUT SHALL BE FABRICATED WITH 3/16" STEEL PLATE.
- ALL WELDS TO BE 3/16" FILLET WELDS.
- ALL WELDED SEAMS SHALL BE CONTINUOUS AND WATERTIGHT, UNLESS OTHERWISE STATED.
- ALL STEEL SHALL BE GALVANIZED AS OUTLINED ON SHEET 3.
- INVERT ELEVATION OF WATER CONTROL STRUCTURES BE DETERMINED BY ENGINEER IN FIELD.
- SLIDE GATE SHALL BE 5500 SERIES TOGGLE GATE AS MANUFACTURED BY FRESNO INDUSTRIES OR APPROVED EQUAL. INSTALLATION SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS.
- FERNCO COUPLER IS CONSIDERED PART OF BID ITEM "WATER CONTROL STRUCTURES - SUPPLY & INSTALL: 18" FRESNO SERIES 5500 TOGGLE GATE"

**KEYED NOTES (THIS SHEET):**

- ① 2"x2"x3/16" ANGLE BRACE
- ② 3/16" PLATE STEEL STRUCTURE



**DUCKBILL EARTH ANCHOR (MODEL 88) DETAIL**  
NOT TO SCALE



**PLAN VIEW**  
SCALE: 1"=20'

**ENDANGERED TOAD NOTE:**  
PRIOR TO COMMENCING WORK IN THIS AREA, THE CONTRACTOR SHALL COORDINATE WITH DU PERSONNEL TO SCHEDULE USFWS PERSONNEL TO CONDUCT TOAD SURVEYS & REMOVE ANY TOAD FOUND ON-SITE.

DUCKS UNLIMITED INC.  
GREAT PLAINS REGIONAL OFFICE  
P.E. SEAL: KEVIN JAMES WARNER, 15300, WYOMING

DESIGNED BY: MAK  
DRAWN BY: JUV  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:

REVISION:	DATE:	BY:
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PROJECT: WTCA SAND CREEK DIVERSION  
SHEET TITLE: RICHARDS DITCH TURNOUT

DATE: 04/10/2026

SHEET TITLE: RICHARDS DITCH TURNOUT

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 18  
SHEET 18 OF 24

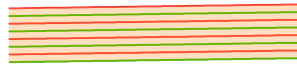
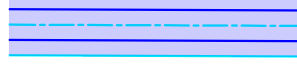
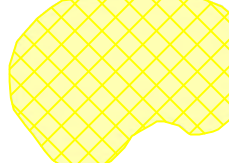


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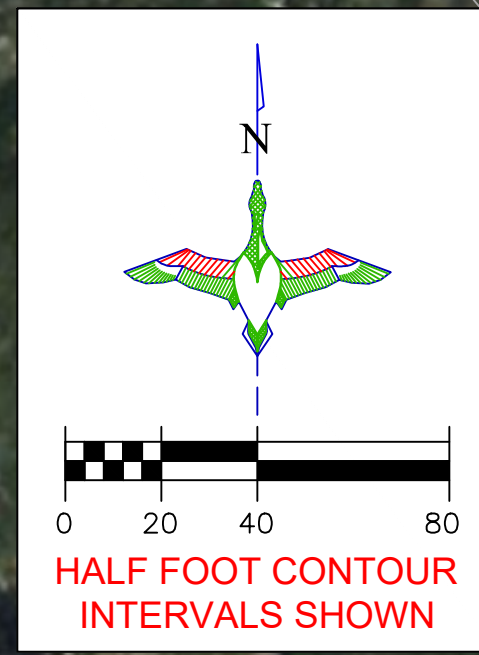
**"BEFORE YOU DIG"**  
BEFORE THE START OF CONSTRUCTION, THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "ONE CALL OF WYOMING" AT 811. A 72 HOUR NOTIFICATION AND FULL DESCRIPTION OF LOCATION IS REQUIRED.

DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

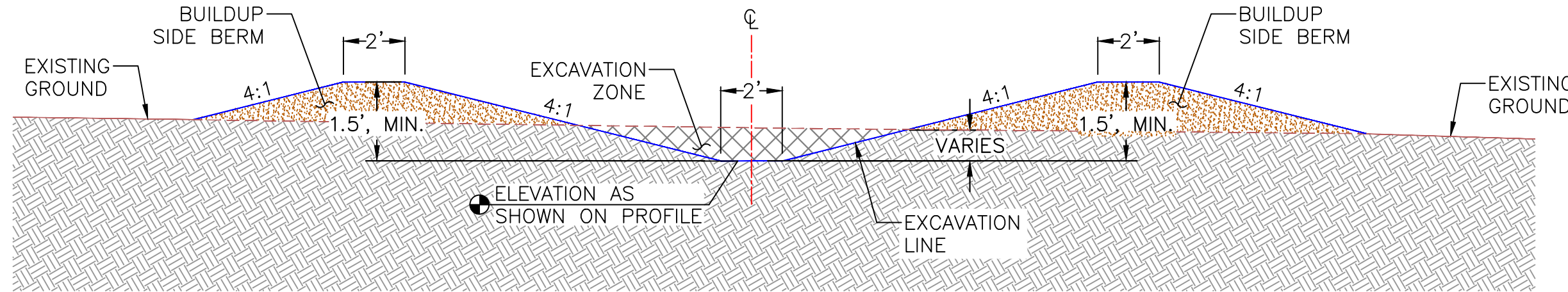
DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**LEGEND**

- EMB. CONSTRUCTION/ EARTHWORK 
- DITCH 
- BORROW / SPOILS LOCATION 
- SLIDEGATE TURNOUT 
- STOPLOG CULVERT 

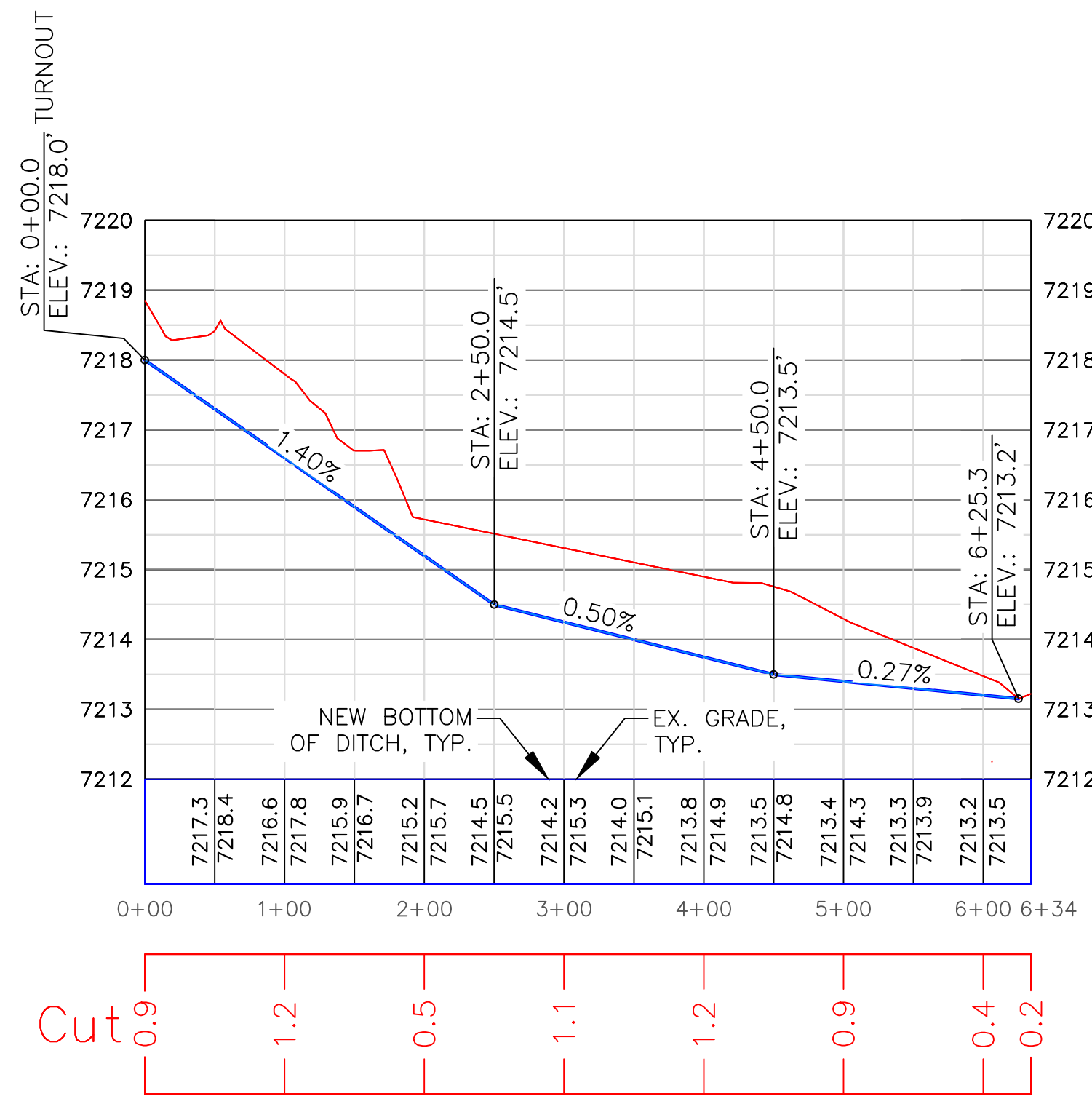


- NOTES:**
- ORGANIC TOPSOIL SHALL BE STRIPPED AND PLACED BACK ALONG THE DITCH SIDE SLOPES AND IS CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION".
  - CUT MATERIAL GENERATED TO BE PLACED ON SIDE BERM.
  - MATERIAL NEEDED FOR SIDE BERM CONSTRUCTION TO BE GENERATED FROM BORROW AREA AS SHOWN ON PLANS. SEE BORROW NOTES, SHEET 4.



**RICHARDS DIVERSION DITCH TYPICAL SECTION**

SCALE: 1"=4'



**RICHARDS DIVERSION DITCH PROFILE VIEW**

HORIZONTAL SCALE: 1"=100'  
VERTICAL SCALE: 1"=2'



**CONSTRUCT RICHARDS DIVERSION DITCH**  
2' WIDE BOTTOM W/ 4:1 SIDE SLOPES DITCH W/ SIDE BERMS W/ 2' TOP & 2' NET HEIGHT (634 L.F., 61 C.Y. CUT & 61 C.Y. FILL) SEE DETAILS, THIS SHEET


RICHARDS DITCH CLEANOUT & NORTHWEST BERM SEE SHEET 17

RICHARDS DITCH STOPLOG CULVERT SEE SHEET 20

TURNOUT SEE SHEET 18

**PLAN VIEW**  
SCALE: 1"=40'

**ENDANGERED TOAD NOTE:**  
PRIOR TO COMMENCING WORK IN THIS AREA, THE CONTRACTOR SHALL COORDINATE WITH DU PERSONNEL TO SCHEDULE USFWS PERSONNEL TO CONDUCT TOAD SURVEYS & REMOVE ANY TOAD FOUND ON-SITE.



**DUCKS UNLIMITED INC.**  
GREAT PLAINS REGIONAL OFFICE  
P.E. SEAL: KEVIN JAMES WARNER, 15300, WYOMING

DESIGNED BY:	MAK
DRAWN BY:	JWV
SURVEYED BY:	MAK
CHECKED BY:	
APPROVED BY:	
APPROVED BY:	

PROJECT: **WTCA SAND CREEK DIVERSION**  
SHEET TITLE: **RICHARDS DIVERSION DITCH**

DATE: 04/10/2026  
SHEET TITLE: **RICHARDS DIVERSION DITCH**  
DU PROJECT NUMBER: **WY-192-100**

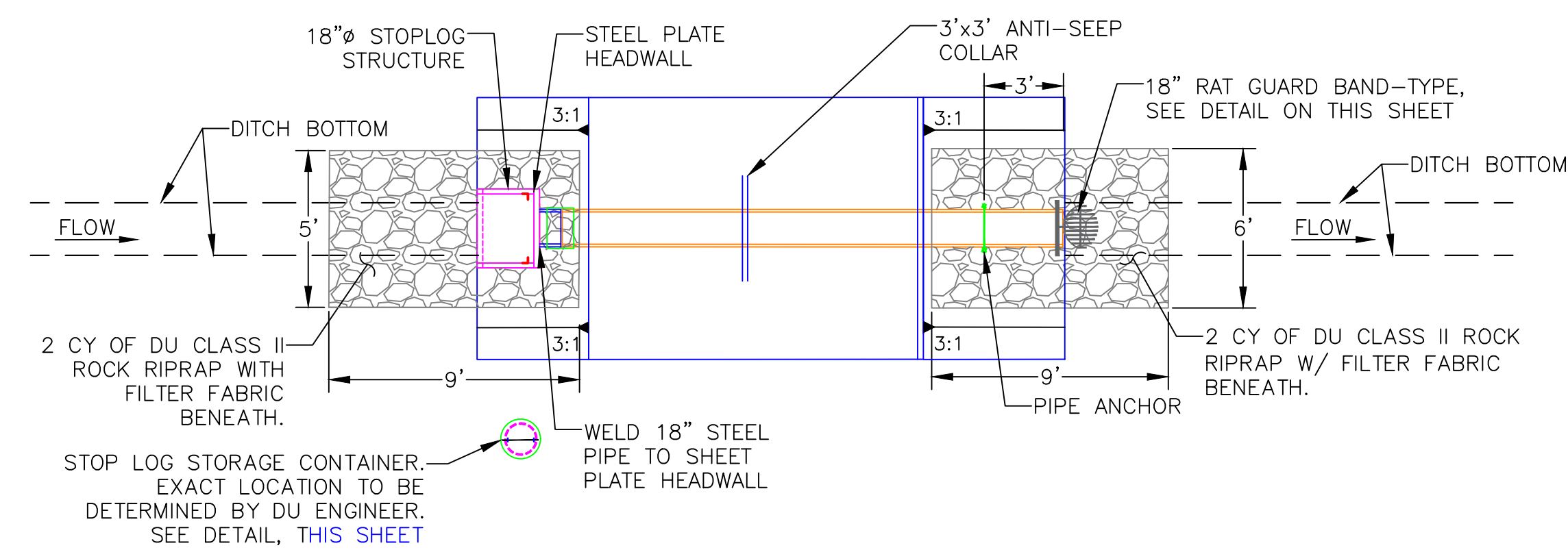
SHEET NUMBER: **19**  
SHEET 19 OF 24

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**"BEFORE YOU DIG"**  
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DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

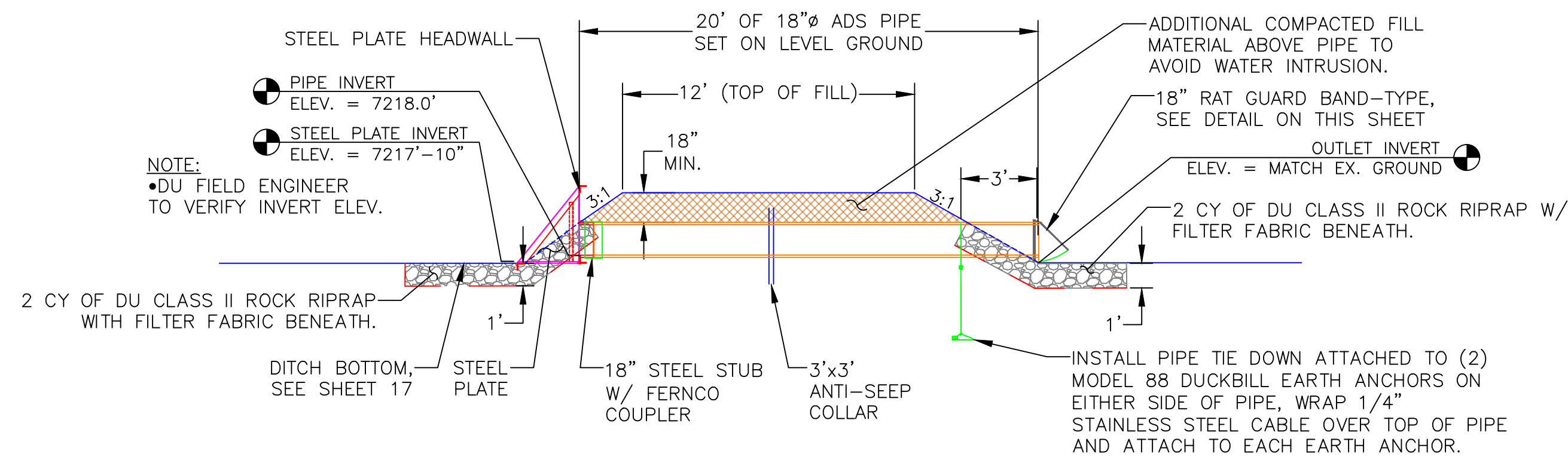
DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



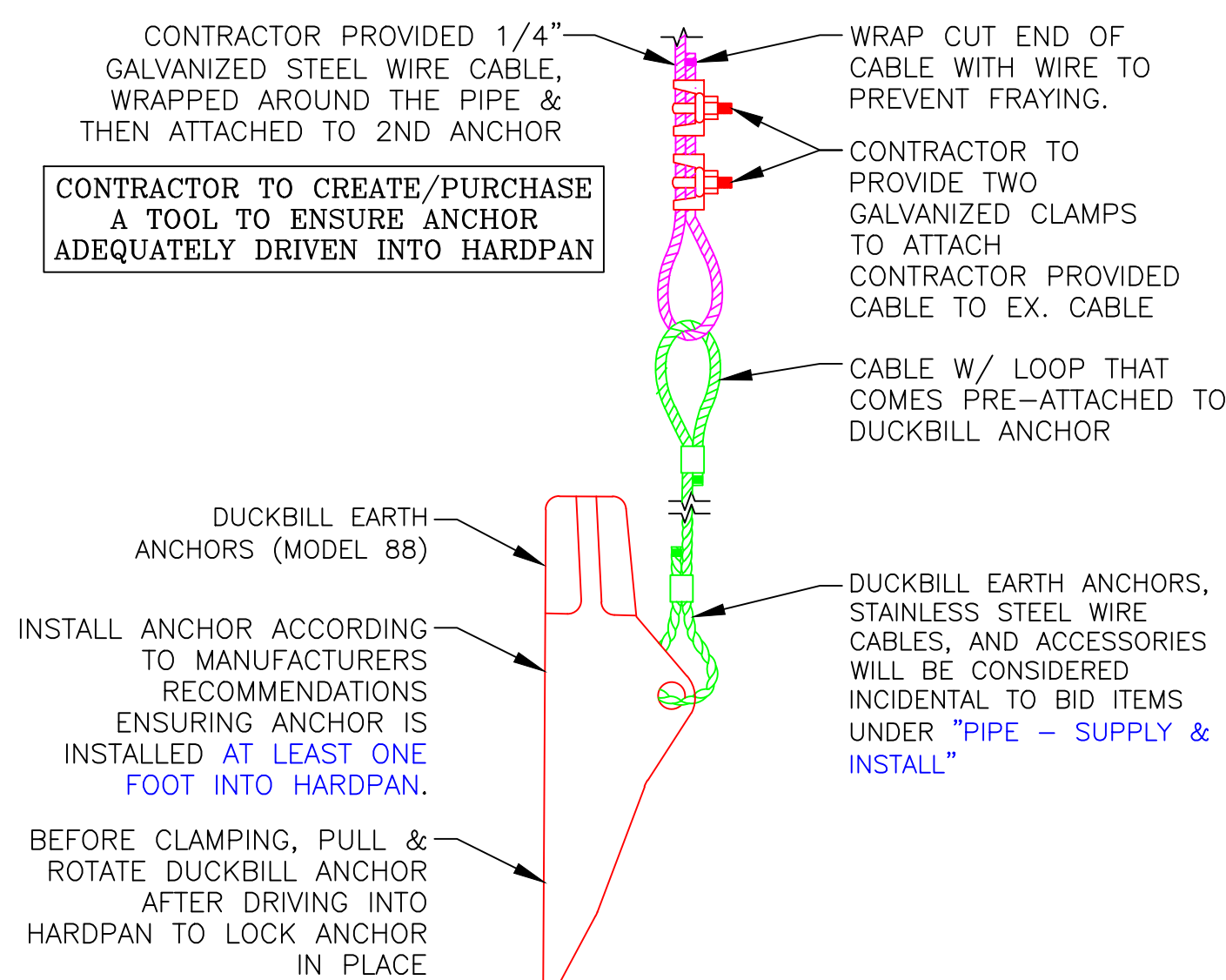
18" STOPLOG STRUCTURE W/ CULVERT-PLAN VIEW  
SCALE: 1"=5'

NOTE:  
• FILL FOR PIPE COVER TO COME FROM THE DEFINED BORROW AREA. PLACEMENT OF FILL IS CONSIDERED PART OF BID ITEM: "WATER CONTROL STRUCTURES - SUPPLY & INSTALL".

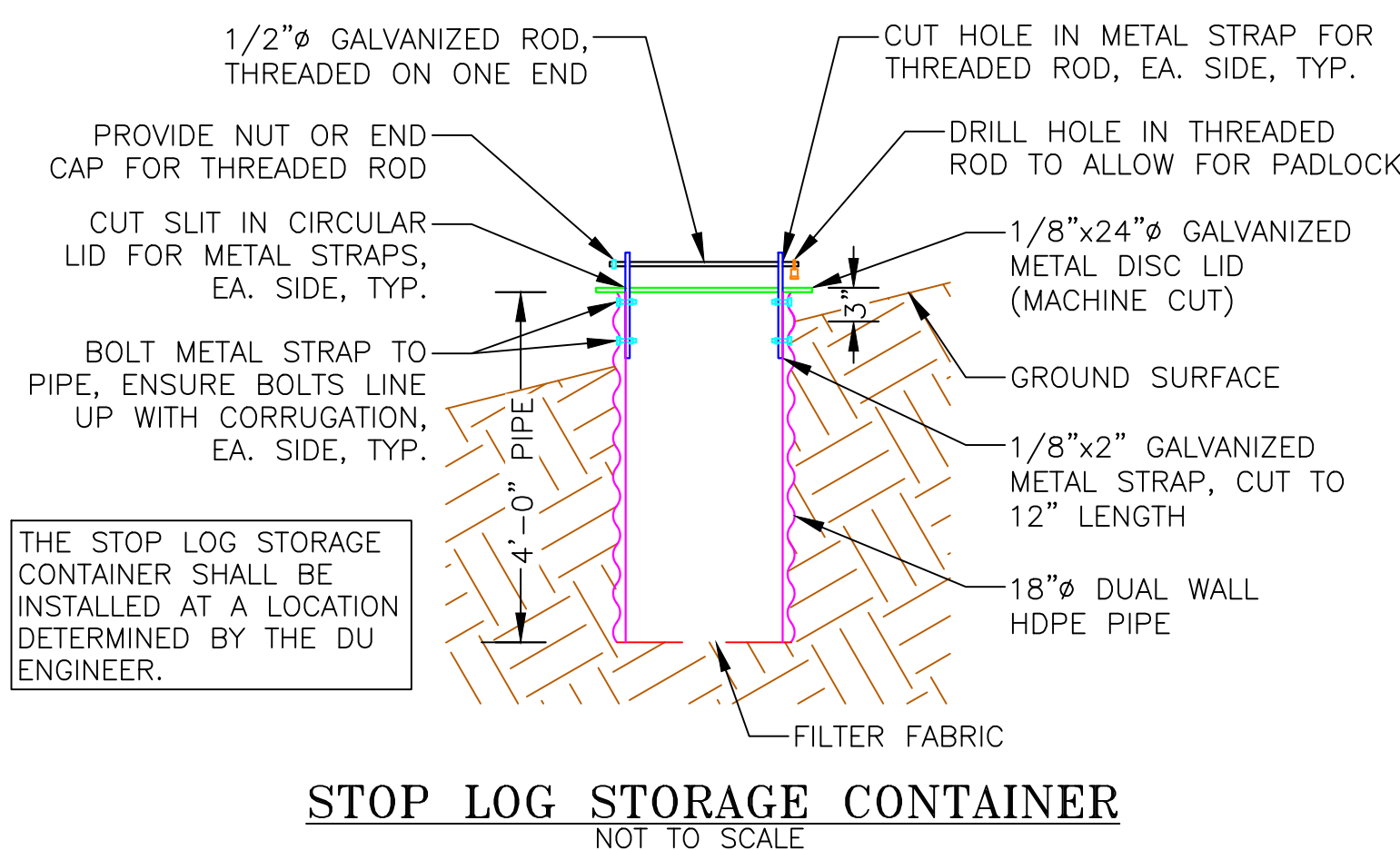
DUAL WALL HDPE ANTI-FLOTATION MEASURES  
CONTRACTOR SHALL PROVIDE CONTROLLED PERFORATIONS OR SLITS IN THE OUTER (CORRUGATED) WALL ONLY OF DUAL-WALL HDPE PIPE TO MITIGATE FLOTATION.  
PERFORATIONS SHALL:  
• BE MADE WITHOUT PENETRATING THE SMOOTH INNER WALL OF THE PIPE.  
• BE SPACED AND SIZED AS REQUIRED TO ALLOW RELEASE OF TRAPPED AIR.  
• NOT COMPROMISE THE PIPE'S STRUCTURAL INTEGRITY.



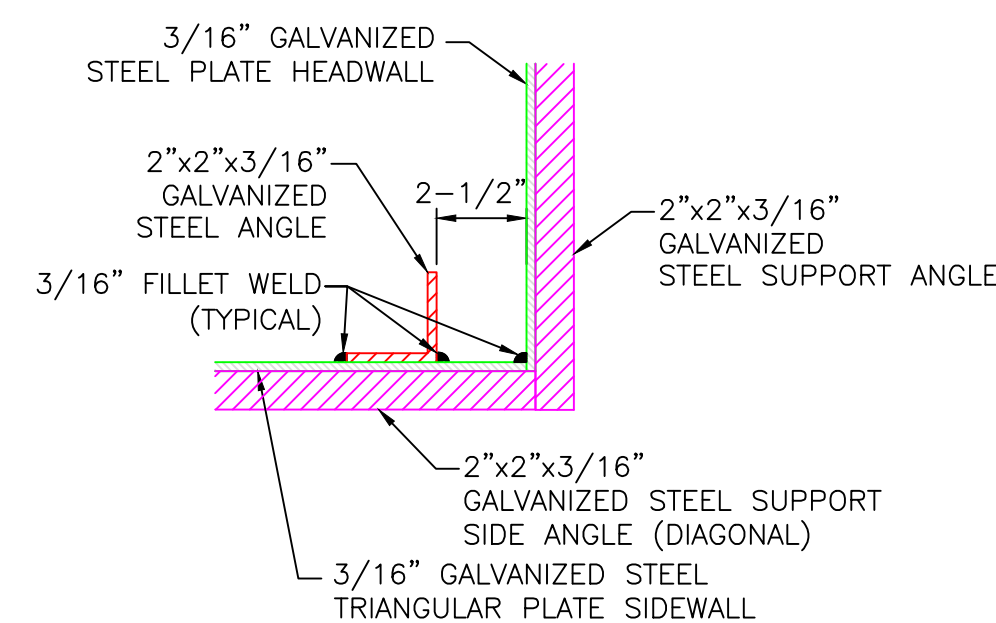
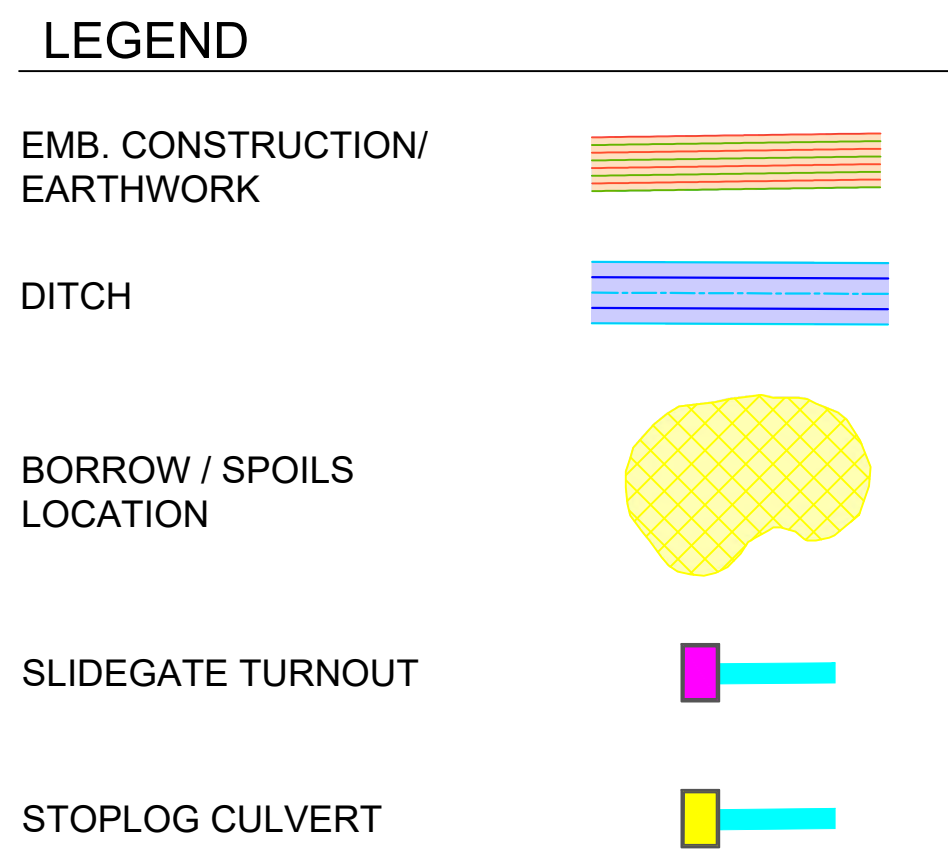
18" STOPLOG STRUCTURE W/ CULVERT-PROFILE VIEW  
SCALE: 1"=5'



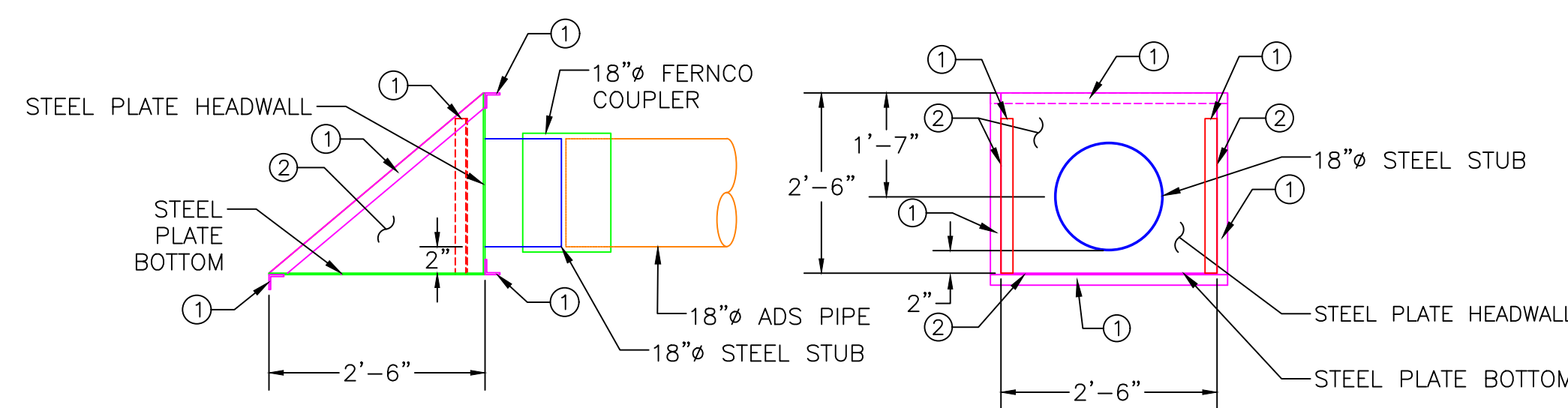
DUCKBILL EARTH ANCHOR (MODEL 88) DETAIL  
NOT TO SCALE



STOP LOG STORAGE CONTAINER NOTES:  
1. THE STOP LOG STORAGE CONTAINER, ALL THE REQUIRED PARTS, AND ITS INSTALLATION WILL BE CONSIDERED PART OF BID ITEM UNDER "WATER CONTROL STRUCTURE - SUPPLY & INSTALL".  
2. ALL METAL PARTS OF THE STOP LOG STORAGE CONTAINER SHALL BE GALVANIZED AS OUTLINED ON SHEET 2.

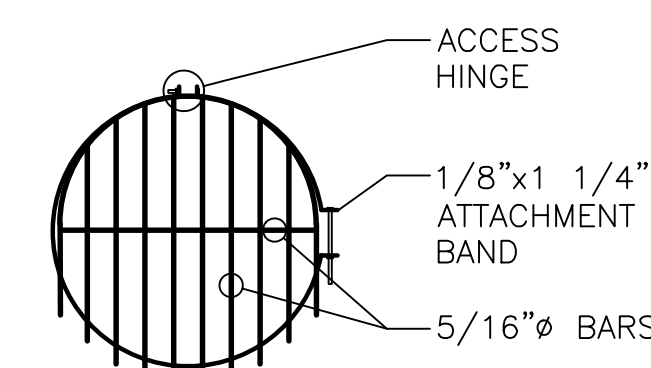


STOP LOG CHANNEL  
DETAIL-TOP VIEW  
NOT TO SCALE



18" STOPLOG STRUCTURE  
SIDE VIEW  
SCALE: 1"=2'

18" STOPLOG STRUCTURE  
FRONT VIEW  
SCALE: 1"=2'

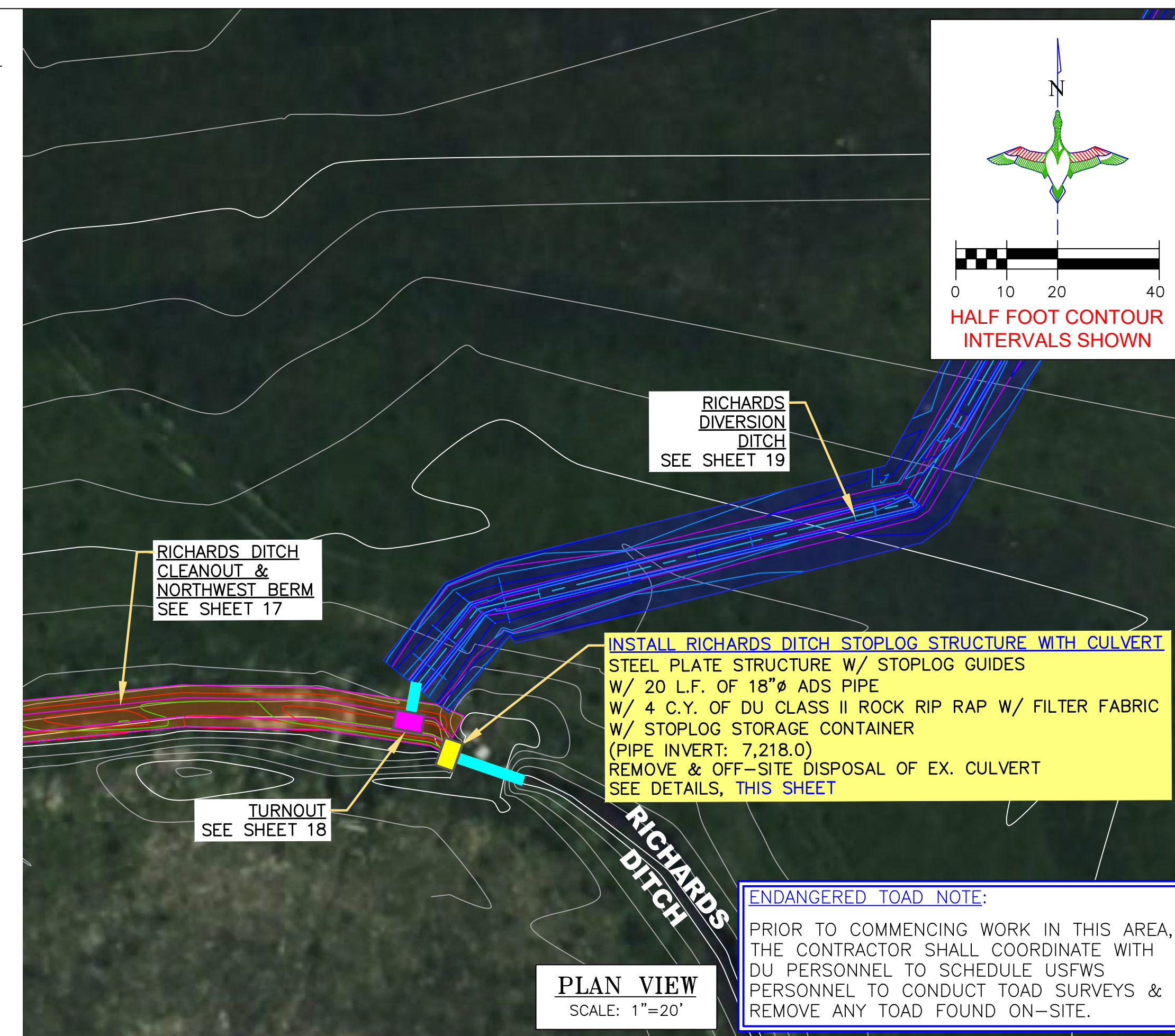


18" RAT GUARD, BAND-TYPE  
NOT TO SCALE

RAT GUARD INSTALLATION NOTES:  
1. THE RAT GUARD OR APPROVED EQUAL AND ITS INSTALLATION WILL BE CONSIDERED INCIDENTAL TO BID ITEMS UNDER "WATER CONTROL STRUCTURE - SUPPLY & INSTALL".  
2. RAT GUARD TO BE INSTALLED ON THE DOWNSTREAM LOCATION OF THE WCS.  
3. AGRI DRAIN CORP. TELEPHONE NUMBER IS 1-800-232-4742.

STOPLOG STRUCTURE NOTES:  
1. STOPLOG STRUCTURE SHALL BE FABRICATED WITH 3/16" STEEL PLATE.  
2. ALL WELDS TO BE 3/16" FILLET WELDS.  
3. ALL WELDED SEAMS SHALL BE CONTINUOUS AND WATERTIGHT, UNLESS OTHERWISE STATED.  
4. ALL STEEL SHALL BE GALVANIZED AS OUTLINED ON SHEET 3.  
5. INVERT ELEVATION OF WATER CONTROL STRUCTURES BE DETERMINED BY ENGINEER IN FIELD.  
6. FERNCO COUPLER IS CONSIDERED PART OF BID ITEM "WATER CONTROL STRUCTURES - SUPPLY & INSTALL: STOPLOG STRUCTURE"  
7. CONTRACTOR TO SUPPLY & CUT AMPLE STOP LOGS FOR STOP LOG STRUCTURE.

KEYED NOTES (THIS SHEET):  
① 2"x2"x3/16" ANGLE BRACE  
② 3/16" PLATE STEEL STRUCTURE



PLAN VIEW  
SCALE: 1"=20'

DUCKS UNLIMITED INC.  
GREAT PLAINS REGIONAL OFFICE  
P.E. SEAL: KEVIN JAMES WARNER 15300  
Date: [Signature]

DESIGNED BY: MAK  
DRAWN BY: JUW  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:  
BY:  
DATE:  
REVISION:

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PROJECT: WTC SAND CREEK DIVERSION  
SHEET TITLE: RICHARDS DITCH STOPLOG STRUCTURE WITH CULVERT

DATE: 04/10/2026  
SHEET TITLE: RICHARDS DITCH STOPLOG STRUCTURE WITH CULVERT  
DU PROJECT NUMBER: WY-192-100  
SHEET NUMBER: 20  
SHEET 20 OF 24

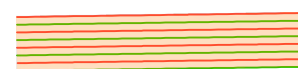
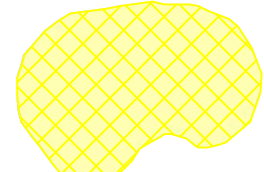
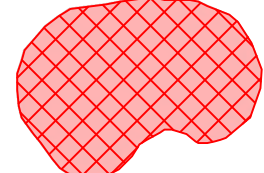
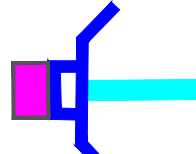
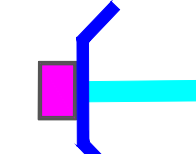

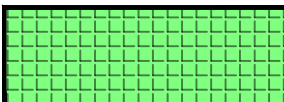

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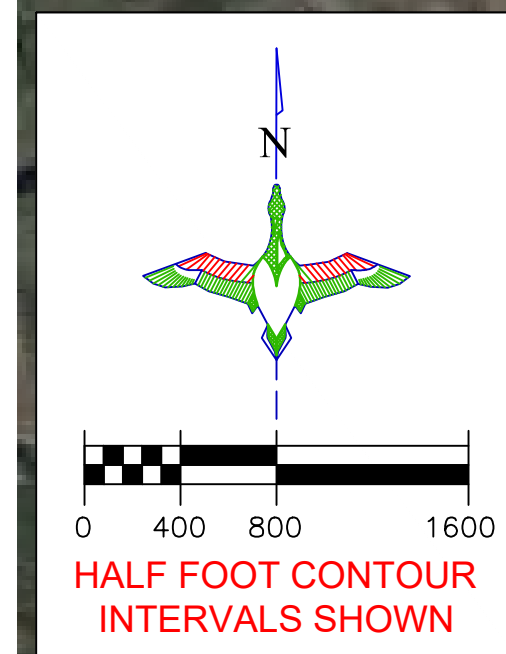
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DU DESIGN ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

DU CONSTRUCTION ENGINEER:  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**LEGEND**

- EMBANKMENT CONSTRUCTION 
- BORROW / SPOILS LOCATION 
- DITCH INFILL 
- HEADGATE W/ CONCRETE STRUCTURE 
- HEADGATE W/ CONCRETE HEADWALL 
- PARSHALL FLUME 
- FLEX-A-MAT 
- REMOVE EXISTING PIPE 



SURVEY CONTROL (DU-526-2024)  
 N: 14,958,619.59  
 E: 1,428,849.06  
 ELEV: 7,234.11  
 LAT: 41°10'59.7779"N  
 LONG: 105°46'8.0543"W

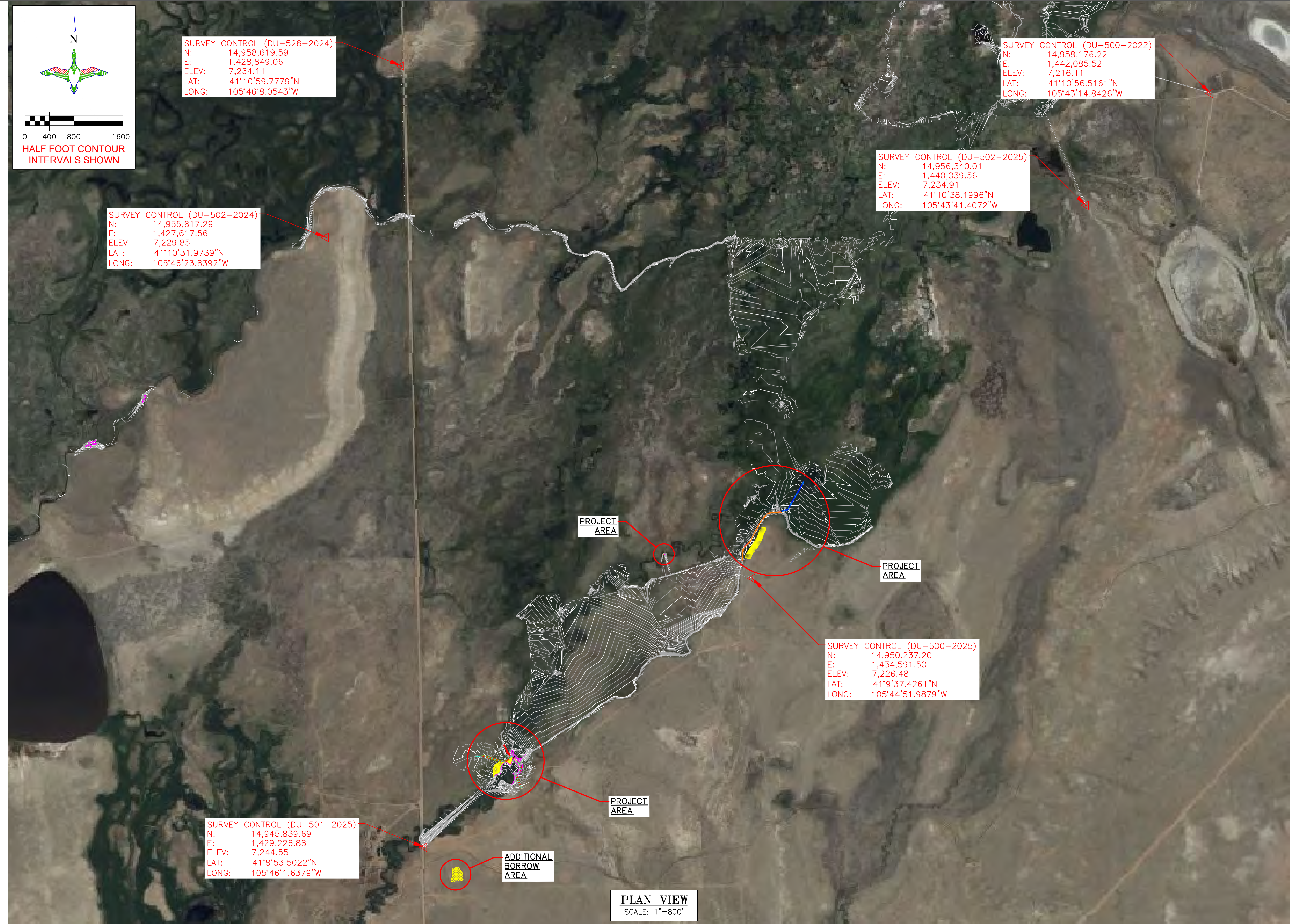
SURVEY CONTROL (DU-500-2022)  
 N: 14,958,176.22  
 E: 1,442,085.52  
 ELEV: 7,216.11  
 LAT: 41°10'56.5161"N  
 LONG: 105°43'14.8426"W

SURVEY CONTROL (DU-502-2025)  
 N: 14,956,340.01  
 E: 1,440,039.56  
 ELEV: 7,234.91  
 LAT: 41°10'38.1996"N  
 LONG: 105°43'41.4072"W

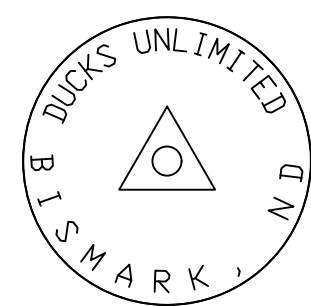
SURVEY CONTROL (DU-502-2024)  
 N: 14,955,817.29  
 E: 1,427,617.56  
 ELEV: 7,229.85  
 LAT: 41°10'31.9739"N  
 LONG: 105°46'23.8392"W

SURVEY CONTROL (DU-501-2025)  
 N: 14,945,839.69  
 E: 1,429,226.88  
 ELEV: 7,244.55  
 LAT: 41°8'53.5022"N  
 LONG: 105°46'1.6379"W

SURVEY CONTROL (DU-500-2025)  
 N: 14,950,237.20  
 E: 1,434,591.50  
 ELEV: 7,226.48  
 LAT: 41°9'37.4261"N  
 LONG: 105°44'51.9879"W



HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION – COORDINATES ARE UTM ZONE 13 GRID COORDINATES IN US FEET [NAD83]. THEY WERE ESTABLISHED FROM THE WGS84 ELLIPSOID WITH INFORMATION FROM A TRIMBLE R10 SURVEY GRADE GPS RECEIVER ON AUGUST 11, 2025 AT DUCKS UNLIMITED CONTROL POINT DU-500-2025 AND CALIBRATED TO AN OPUS POSITION OCCUPIED FOR 3 HOURS & 27 MINUTES AND SENT TO NGS FOR SOLUTION. THE VERTICAL CONTROL CAME FROM THE SAME SOLUTION USING GEOID 18 CONUS IN THE NAVD88. THE FULL OPUS SOLUTION REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN FORT COLLINS, COLORADO.



EXAMPLE OF DUCKS UNLIMITED CONTROL POINT SURVEY CAP

**"BEFORE YOU DIG"**  
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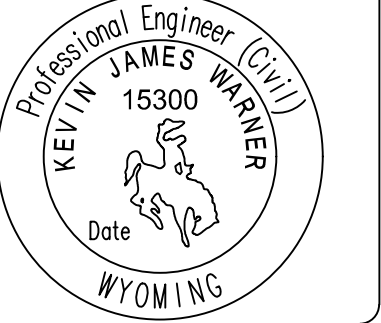
DU CONSTRUCTION ENGINEER:  
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GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:



DESIGNED BY: MAK  
 DRAWN BY: JWJ  
 SURVEYED BY: MAK  
 CHECKED BY:  
 APPROVED BY:  
 APPROVED BY:

REVISION:	DATE:	BY:
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PROJECT: WTCA SAND CREEK DIVERSION  
 SHEET TITLE: CONTROL POINTS


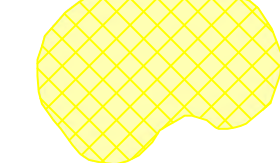
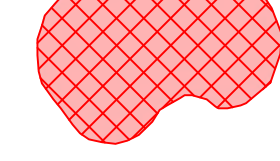
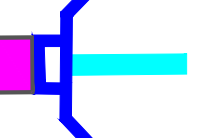
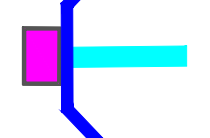
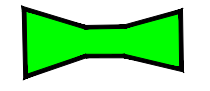
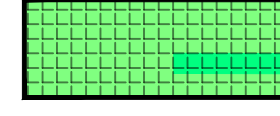

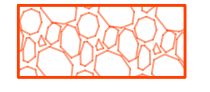

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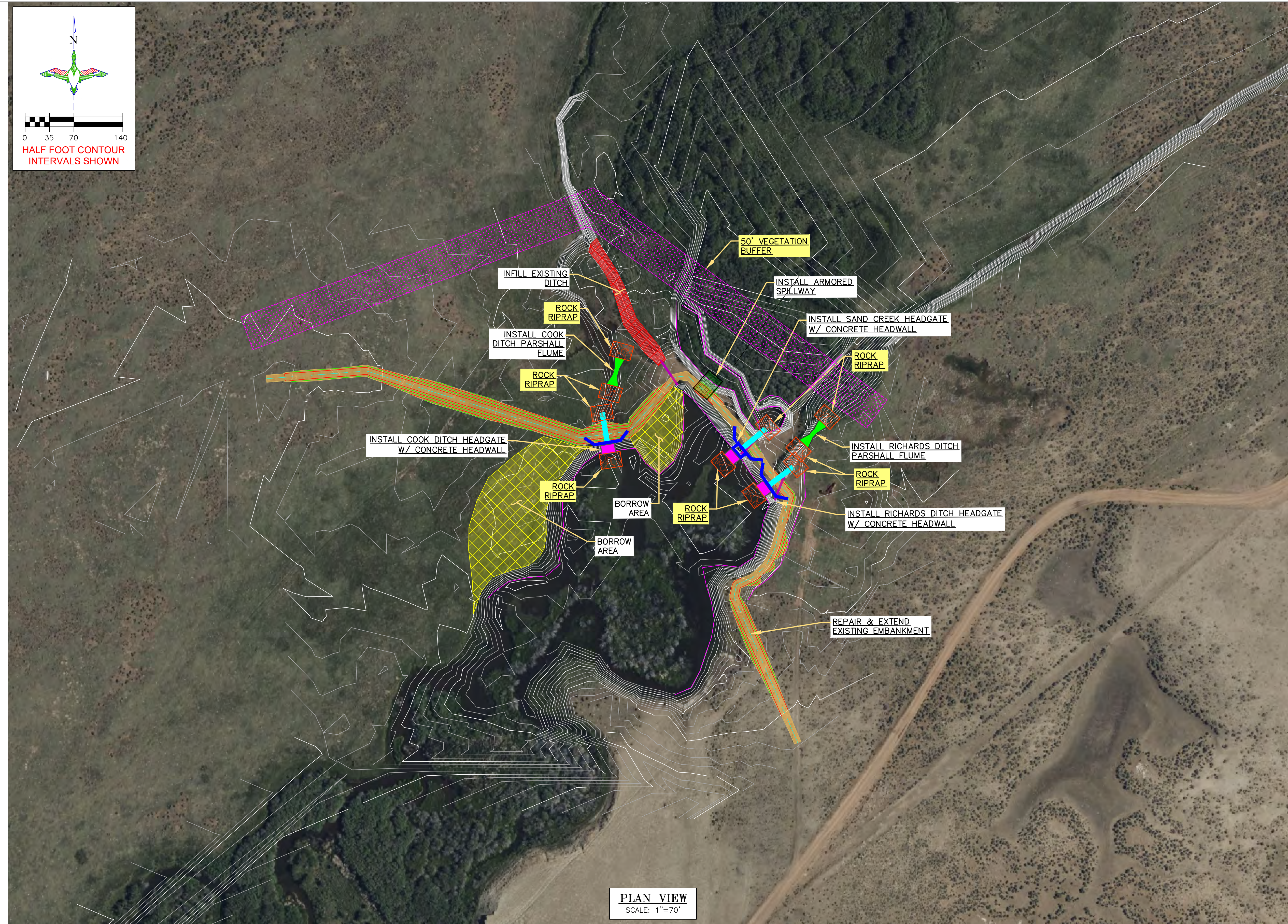
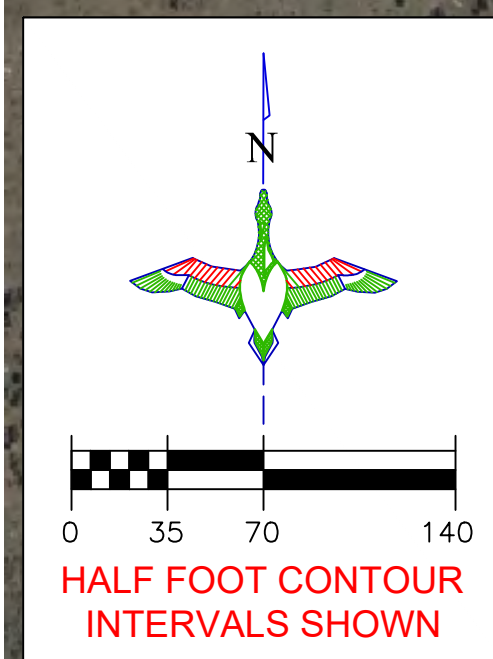
SHEET TITLE: CONTROL POINTS

SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 21  
 SHEET 21 OF 24

- LEGEND**
- EMBANKMENT CONSTRUCTION 
  - BORROW / SPOILS LOCATION 
  - DITCH INFILL 
  - HEADGATE W/ CONCRETE STRUCTURE 
  - HEADGATE W/ CONCRETE HEADWALL 
  - PARSHALL FLUME 
  - FLEX-A-MAT 
  - REMOVE EXISTING PIPE 
  - ROCK RIPRAP 
  - 50' VEGETATION BUFFER 



**PLAN VIEW**  
SCALE: 1"=70'

**ABBREVIATIONS LIST**

- |                                |                                  |                               |
|--------------------------------|----------------------------------|-------------------------------|
| BTM. = BOTTOM                  | INV = INVERT                     | R.O.W. = RIGHT OF WAY         |
| C.L. = CENTER LINE             | LAT = LATITUDE (WGS84)           | S = SOUTH                     |
| CMP = CORRUGATED METAL PIPE    | LONG = LONGITUDE (WGS84)         | TBM = TEMPORARY BENCHMARK     |
| CONC. = CONCRETE               | L.F. = LINEAR FEET               | UG = UNDERGROUND              |
| DIA. = DIAMETER                | MISC = MISCELLANEOUS             | VEG = VEGETATION              |
| E = EASTING COORDINATE OR EAST | N = NORTHING COORDINATE OR NORTH | W = WEST OR WITH              |
| ELEV. = ELEVATION              | O.C. = ON CENTER                 | WCS = WATER CONTROL STRUCTURE |
| EMB. = EMBANKMENT              | P.I. = POINT OF INTERSECTION     | WL = WATER LEVEL              |
| EX. = EXISTING                 | RCP = REINFORCED CONCRETE PIPE   | WS = WATER SHOT               |
| FES = FLARED END SECTION       | RD = ROAD                        |                               |
| FSL = FULL SERVICE LEVEL       | REQ'D = REQUIRED                 |                               |
| GA = GAUGE                     |                                  |                               |
- \*NOTE: NOT ALL ABBREVIATIONS IN THIS LIST APPEAR ON THIS SHEET

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**DU DESIGN ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

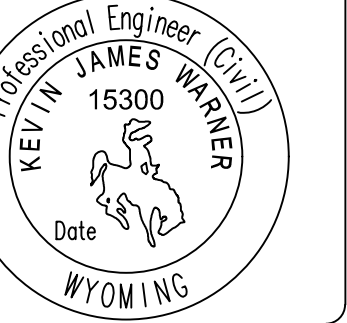
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GREAT PLAINS REGIONAL OFFICE

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DRAWN BY: JWV  
SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:  
APPROVED BY:

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PROJECT: WTCA SAND CREEK DIVERSION  
SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN #1

DATE: 04/10/2026


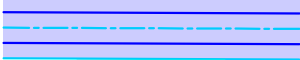
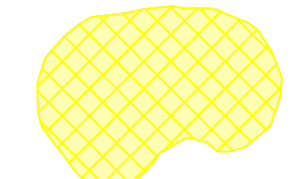



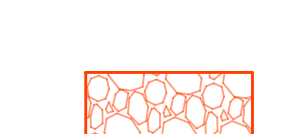

SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN #1

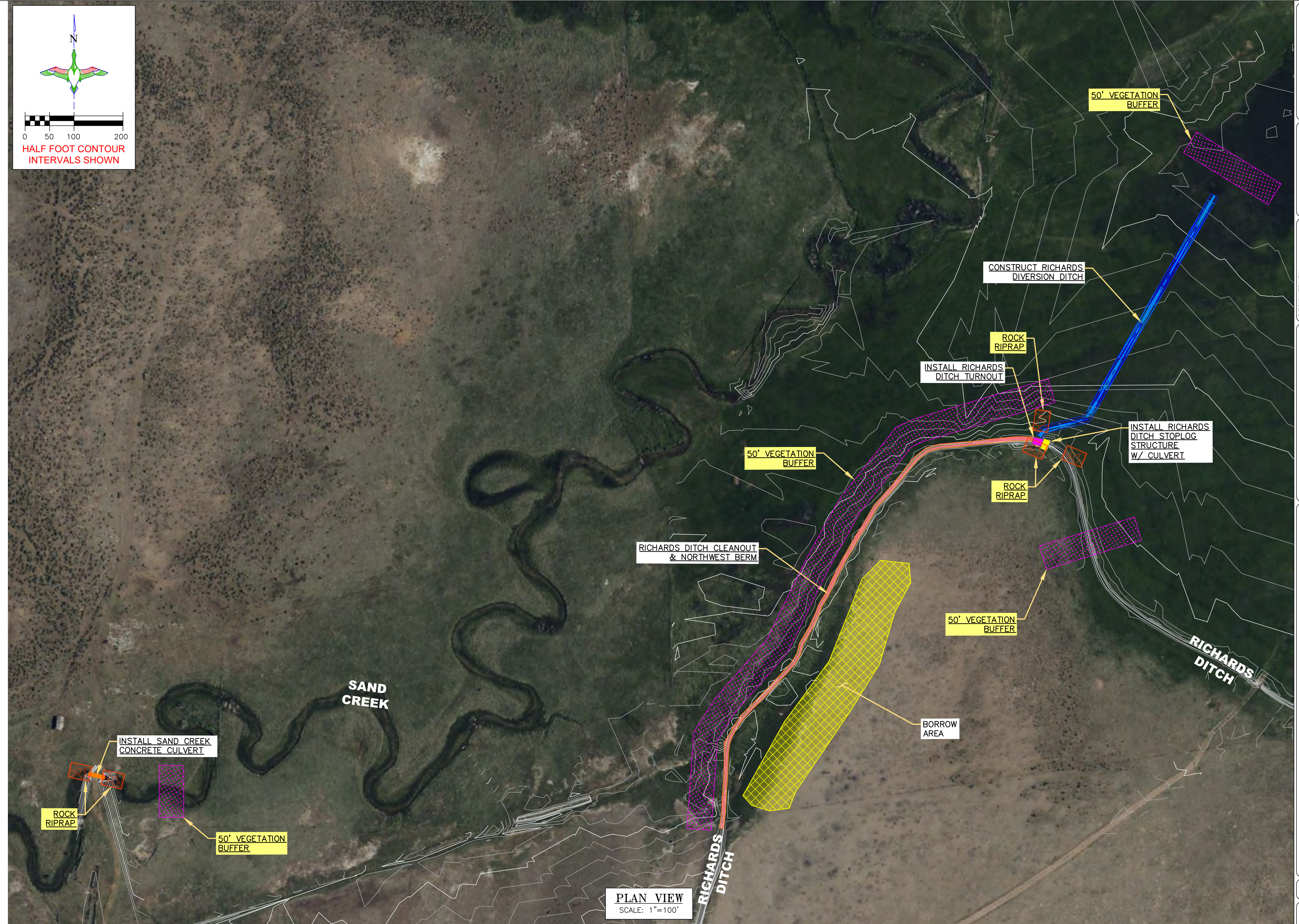
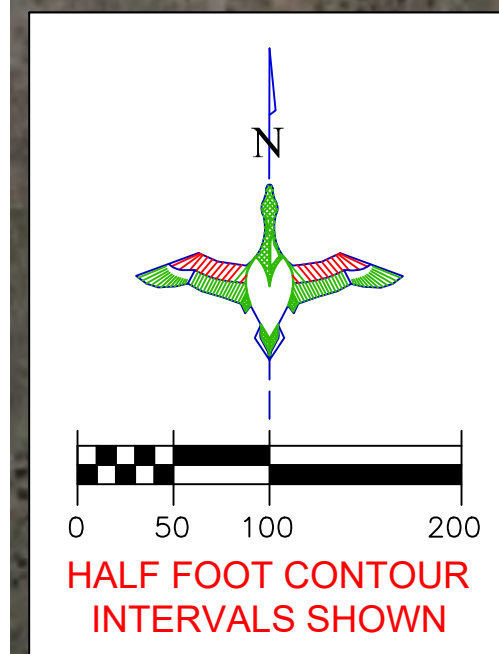
SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 22  
SHEET 22 OF 24

**LEGEND**

- EMB. CONSTRUCTION/  
EARTHWORK 
- DITCH 
- BORROW / SPOILS  
LOCATION 
- SLIDEGATE TURNOUT 
- STOPLOG CULVERT 
- CONCRETE  
CULVERT 
- ROCK RIPRAP 
- 50' VEGETATION BUFFER 



**PLAN VIEW**  
SCALE: 1"=100'

**ABBREVIATIONS LIST**

- |                                |                                  |                               |
|--------------------------------|----------------------------------|-------------------------------|
| BTM. = BOTTOM                  | INV = INVERT                     | R.O.W. = RIGHT OF WAY         |
| C.L. = CENTER LINE             | LAT = LATITUDE (WGS84)           | S = SOUTH                     |
| CMP = CORRUGATED METAL PIPE    | LONG = LONGITUDE (WGS84)         | TBM = TEMPORARY BENCHMARK     |
| CONC. = CONCRETE               | L.F. = LINEAR FEET               | UG = UNDERGROUND              |
| DIA. = DIAMETER                | MISC = MISCELLANEOUS             | VEG = VEGETATION              |
| E = EASTING COORDINATE OR EAST | N = NORTHING COORDINATE OR NORTH | W = WEST OR WITH              |
| ELEV. = ELEVATION              | O.C. = ON CENTER                 | WCS = WATER CONTROL STRUCTURE |
| EMB. = EMBANKMENT              | P.I. = POINT OF INTERSECTION     | WL = WATER LEVEL              |
| EX. = EXISTING                 | RCP = REINFORCED CONCRETE PIPE   | WS = WATER SHOT               |
| FES = FLARED END SECTION       | RD = ROAD                        |                               |
| FSL = FULL SERVICE LEVEL       | REQ'D = REQUIRED                 |                               |
| GA = GAUGE                     |                                  |                               |

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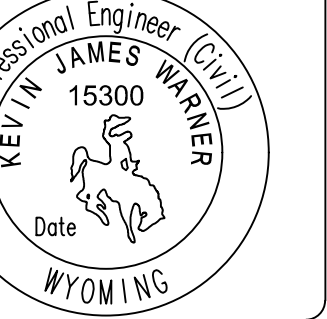
**DU DESIGN ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009

**DU CONSTRUCTION ENGINEER:**  
MICHAEL KUEHNEL, P.E.  
(970) 218-7009



GREAT PLAINS REGIONAL OFFICE

P.E. SEAL:



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SURVEYED BY: MAK  
CHECKED BY:  
APPROVED BY:  
APPROVED BY:

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PROJECT: WTCA  
SAND CREEK DIVERSION  
SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN #2

DATE: 04/10/2026

SHEET TITLE: STORMWATER POLLUTION PREVENTION PLAN #2

SCALES ARE ACCURATE ON 24"x36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 23  
SHEET 23 OF 24

**STORM WATER POLLUTION PREVENTION PLAN**

WYPDES Permit # \_\_\_\_\_ )  
issued on \_\_\_\_/\_\_\_\_/\_\_\_\_ shall apply  
for this project.

**ABBREVIATIONS**

WDEQ: Wyoming Department of Environmental Quality  
WYPDES: Wyoming Pollution Discharge Elimination System  
USFWS: United States Fish and Wildlife Service  
SWMP: Storm Water Management Plan

**LOCATION/NARRATIVE**

Location: See Sheet 1 for the location of this project.  
Project Limits: See Sheet 2 of this plan for the project limits. This sheet covers the earthwork, water control structures and rock riprap.

**PROJECT CONTACTS**

SWPPP Administrator:  
Michael Kuehnel, P.E.  
Ducks Unlimited  
Cell: 970-218-7009  
Email: mkuehnel@ducks.org

The Contractor is responsible for implementation of the SWPPP and installation, inspection and maintenance of the erosion prevention and sediment control BMP's before and during construction.

Contractor Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_  
Email: \_\_\_\_\_

**SPILL NOTIFICATION**

In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- 1. A reportable spill is a quantity of 25 gallons of petroleum which must be reported immediately to the DEQ Water Quality Division.
- 2. Any spill of oil or hazardous substance to waters of the state must be reported immediately.
- 3. Wyoming Department of Environmental Quality's Spill and Complaint:  
DEQSpills.wyo.gov --or-- 24 Hour (307) 777-7781
- 4. Within 7 days following a release, submit a written report to the DEQ Water Quality Division describing the reportable release, the response, and the steps taken to prevent recurrence.

**POTENTIAL POLLUTION SOURCES**

Heavy machinery will be operated on the project site requiring the use of fuel trucks. Contamination due to fuel spills and oil leaks is possible due to the large volume of work being performed. Day to day cleaning and maintenance of equipment has the potential to impact stormwater quality. Delivery of site materials also has potential for impacting runoff quality. Another potential pollution source is sediment transport from earthwork.

**POLLUTION PREVENTION MANAGEMENT MEASURES**

- Solid Wastes (None anticipated):  
Collected sediment, asphalt, and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with the DEQ Water Quality Division disposal requirements.
- Hazardous Materials (None anticipated):  
Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with DEQ Water Quality Division regulations.
- Vehicle Washing:  
External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.
- Concrete Washout Onsite:  
All liquid and solid wastes generated by concrete washout operation must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operation or areas. Liquid and solid wastes must be disposed of properly and in compliance with DEQ Water Quality Division regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

**EROSION AND SEDIMENT CONTROLS**

- (Check all that apply)
- Stabilization Practices
  - Temporary or Permanent Seeding
  - Sod Placement
  - Planting
  - Mulching (Straw or Cellulose Fiber)
  - Erosion Control Blankets or Mats
  - Vegetation Buffer Strips
  - Roughened Surface (e.g. tracking)
  - Gabions-Gabion Mattress
  - Other: Rip Rap

**Structural Temporary Erosion and Sediment Controls**

- Silt Fence
- Temporary Berm
- Temporary Slope Drain
- Straw Wattles or Rolls
- Diversion Channels/Swales
- Channel Liners (TRM)
- Stone Rip Rap Sheet
- Rock Check Dams
- Sediment Traps/Basins
- Inlet Protection
- Outlet Protection
- Surface Inlet Protection
- Curb Inlet Protection
- Stabilized Construction Entrances
- Other

**DESCRIPTION OF CONSTRUCTION ACTIVITIES**

The proposed construction activities will provide water level management to the site. Through this management more desirable wetlands will be created.

**Major Soil Disturbing Activities (check all that apply):**

- Clearing & Grubbing
- Grading & Shaping
- Cutting & Filling
- Other (describe):

**ORDER OF CONSTRUCTION ACTIVITIES**

(Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.)

- Install initial erosion and sediment control measures.
- Proceed with site grading and construction activities.
- Stabilize areas disturbed by construction activities with temporary erosion and sediment control measures.
- Install water control structure.
- Complete final grading.
- Complete permanent erosion and sediment control measures.

**ESTIMATED PROJECT AREA QUANTITIES**

Total Project Area: 4,103 Acres  
Total Area to Be Disturbed: 0.7 Acres  
Existing Impervious Area: 0.0 Acres  
Proposed Impervious Area: 0.0 Acres

**EXISTING GROUND COVER**

Currently the site is mostly native grass and trees. Water is managed using water control structures.

**NON-STORMWATER DISCHARGE**

None.

**RECEIVING WATER**

Runoff from the site is retained by the existing reservoir outlet works. During a flooding event, water from the project area would discharge into Sand Creek, Cook Ditch or Richards Ditch.

**STREAM CROSSINGS LOCATED WITHIN THE CONSTRUCTION SITE BOUNDARY**

None.

**LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN**

See the Erosion and Sediment Control notes and details on the Stormwater Pollution Prevention Plan sheets.

**FINAL STABILIZATION AND LONGTERM STORMWATER MANAGEMENT**

Following site construction, the goal is to achieve a stabilized cover condition to provide long-term stormwater protection. Stabilization is quantified by achieving uniform cover equal to 70% of the pre-disturbance condition. The post-construction condition of the site shall be that the majority of the disturbed area will be compacted soil and seeded. Once the seeding takes, this shall virtually eliminate erosion from the site. Permanent seeding with mulching is installed as needed. Drainage ditches, pans, and culverts shall be cleaned of debris and sediment. Repair eroded sloped or drainage paths by backfilling. Remove all silt fences following establishment of permanent stable vegetation.

**CONSTRUCTION CHANGES**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SWPPP will be retained in a designated place for review over the course of the project.

**DAILY STORMWATER POLLUTION PREVENTION PLAN LOG BOOK**

SWPPP ADMINISTRATOR: \_\_\_\_\_  
INSPECTOR: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_

**INSPECTION ITEMS:**

- Inlet Filters
- Straw Bale Dikes
- Silt Fence
- Pond Outlet
- Vehicle Tracking Pad
- Pond Sediment
- Surface Erosion
- Riprap Structures
- Drainage Pans

REPAIRS OR MAINTENANCE NEEDED: \_\_\_\_\_

REPAIRS OR MAINTENANCE MADE: \_\_\_\_\_

MAINTENANCE ITEMS: \_\_\_\_\_

CONTACTS MADE: \_\_\_\_\_ AGENCY: \_\_\_\_\_

**MATERIALS HANDLING:**

ITEMS DELIVERED: \_\_\_\_\_

ACTIONS TAKEN: \_\_\_\_\_

**SPILL REPORTING:**

MATERIAL SPILLED: \_\_\_\_\_

WHY MATERIAL SPILLED: \_\_\_\_\_

QUANTITY: \_\_\_\_\_

LOCATION: \_\_\_\_\_

WEATHER CONDITIONS: \_\_\_\_\_

SPILL START TIME: \_\_\_\_\_ SPILL STOP TIME: \_\_\_\_\_ AM/PM

CLEANUP METHOD: \_\_\_\_\_

DISPOSAL METHOD: \_\_\_\_\_

ENTER N/A IF ITEM IS NOT APPLICABLE TO THE SITE SWPPP.

**MAINTENANCE AND INSPECTION**

Maintenance and Inspection Practices

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report or as soon as field conditions allow access.
- Where work has been suspended due to frozen ground conditions, the required inspections and maintenance must take place as soon as runoff occurs at the site or prior to resuming construction, whichever comes first.
- Where parts of the construction site have undergone final stabilization, but work remains on other parts of the site, inspections of the stabilized areas may be reduced to once per month.
- Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/2 of the height of the fence.
- Sediment basins and traps will be checked. Sediment will be removed when the depth reaches approximately 50 percent of the structure's capacity.
- Check dams will be inspected for stability. Sediment will be removed when the depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion.
- Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off-site paved surfaces within 24 hours of discovery.
- Disturbed areas will be checked for stabilization. Stabilization measures shall be initiated as soon as construction activity in that portion of the site has temporarily or permanently ceased.
- The normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connection to a surface water.
- Stabilization of the remaining portions of any temporary or permanent ditches or swales must be completed within 14 days after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased.
- Temporary or permanent ditches or swales that are being used as a sediment containment system (with properly designed rock ditch checks, bio rolls, silt dikes, etc.) do not need to be stabilized. These areas must be stabilized within 24 hours after no longer being used as a sediment containment system.
- Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours after connection to a surface water.
- Discharge procedures for water control and dewatering operations will be inspected. If the water cannot be discharged to a sedimentation basin prior to entering the surface water, it must be treated with the appropriate BMPs, such that the discharge does not adversely affect the receiving water or downstream landowners.
- Inspection and maintenance reports will be completed for each site inspection, this form will also be used to document changes to the SWMP. The report shall include the date and amount of precipitation or snowmelt events that cause surface erosion. A copy of the completed inspection form will be filed with the SWMP documents.
- The Contractor's site superintendent is responsible for inspection. Maintenance and repair activities are the responsibility of the Contractor.

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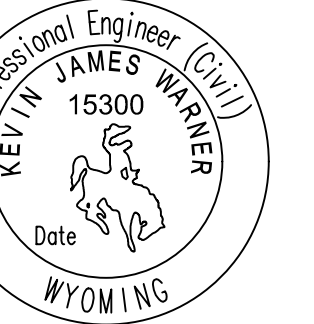
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PROJECT: WTCA SAND CREEK DIVERSION  
SHEET TITLE: SWPPP NOTES

DATE: 04/10/2026

SHEET TITLE: SWPPP NOTES

SCALES ARE ACCURATE ON 24"X36" SHEET SIZE

DU PROJECT NUMBER: WY-192-100

SHEET NUMBER: 24

SHEET 24 OF 24