

**EARTHWORK SUMMARY: WOODRUFF ALL**


AREA	CUT (CY)	FILL (CY)	NET (CY)
ZONE 1	197,175	186,286	-10,889
ZONE 2	642,235	653,124	10,889
ZONE 3	468,545	468,545	0
TOTAL	1,307,955	1,307,955	0

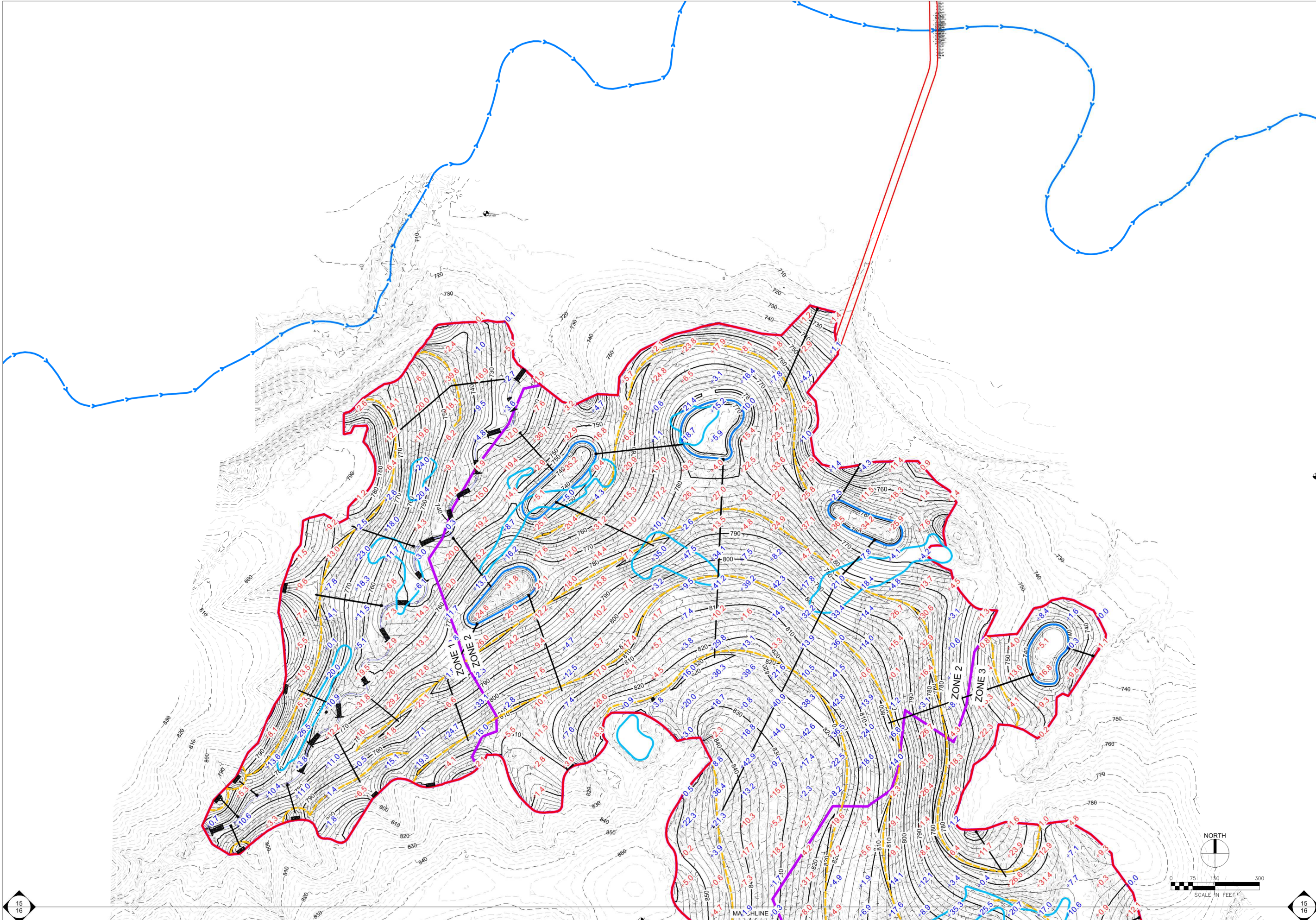
**ELEVATIONS TABLE**

CUT/FILL	MIN ELEVATION (FT)	MAX ELEVATION (FT)	COLOR
CUT	-55	-50	Dark Red
CUT	-50	-45	Red
CUT	-45	-40	Light Red
CUT	-40	-35	Orange
CUT	-35	-30	Light Orange
CUT	-30	-25	Yellow
CUT	-25	-20	Light Green
CUT	-20	-15	Green
CUT	-15	-10	Light Blue
CUT	-10	-5	Blue
CUT	-5	0	Light Blue
FILL	0	5	Light Blue
FILL	5	10	Blue
FILL	10	15	Light Blue
FILL	15	20	Blue
FILL	20	25	Light Blue
FILL	25	30	Blue
FILL	30	35	Light Blue
FILL	35	40	Blue
FILL	40	45	Light Blue
FILL	45	50	Blue
FILL	50	55	Light Blue
FILL	55	60	Blue

**EARTHWORK BALANCE NOTE:**  
 A SHRINKAGE FACTOR OF 12.5% IS ASSUMED FOR FILL.  
 EXISTING AND PROPOSED CONTOURS SHOWN AT 2' INTERVALS.


**NOTES:**  
 NO PONDING OF WATER WILL BE ACCEPTED, EXCEPT AT PROPOSED IMPOUNDMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY ANY AREA OF EXISTING OR PROPOSED GROUND THAT HAVE POTENTIAL TO POND WATER AND MAKE ANY ADJUSTMENTS NECESSARY TO ENSURE THAT WATER WILL POSITIVELY DRAIN. ADJUST GRADES AT PROJECT LIMITS TO ALLOW SMOOTH TRANSITION FROM PROPOSED GRADES TO EXISTING GRADES.

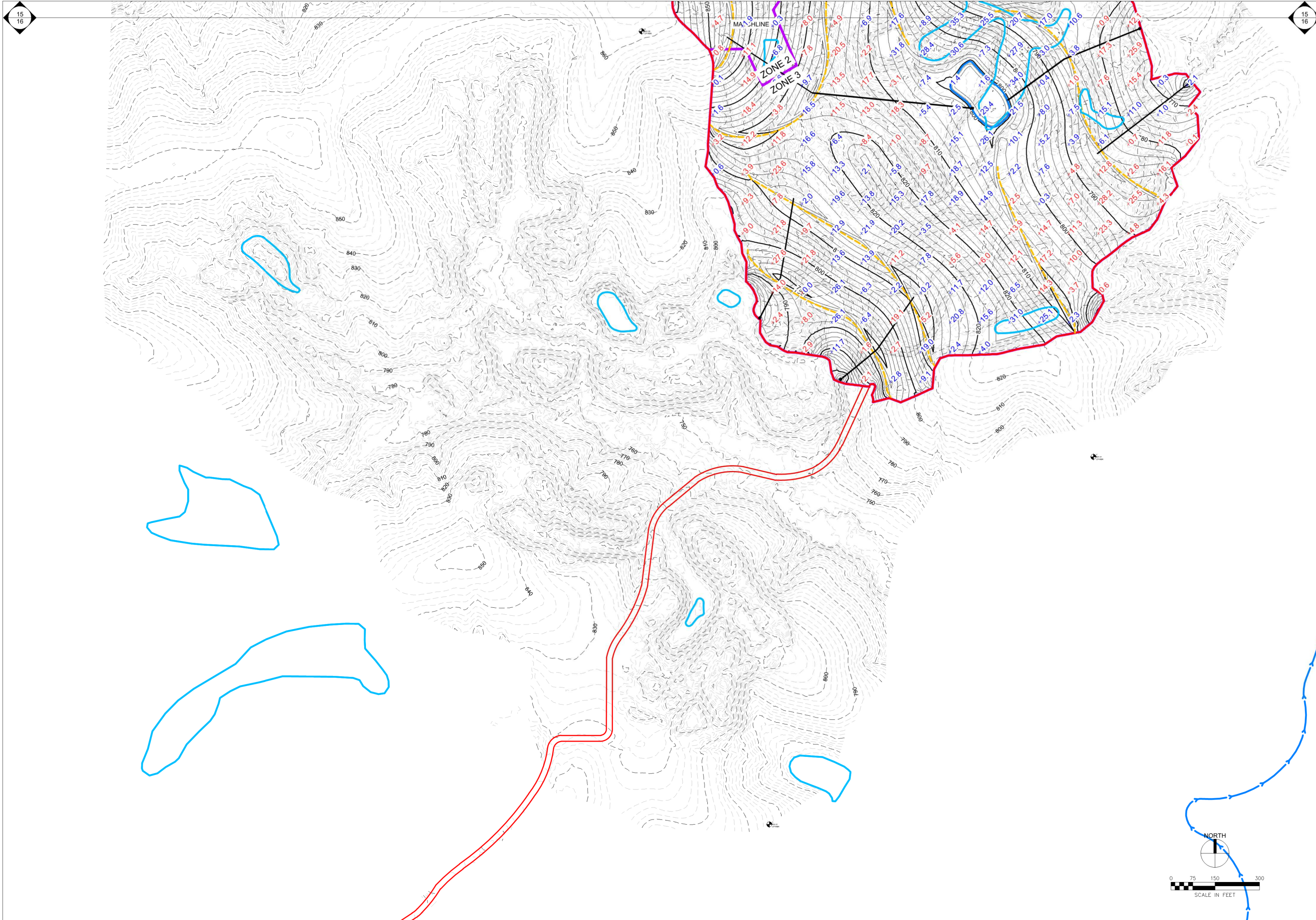
DESIGN BY: AJH DRAWN BY: GHK CHKD. BY: LTM ISSUED: 06/30/2023 REVISED: ---- S-H PROJECT NUMBER: 2142203060	 <p><b>WOODRUFF AML          AML RECLAMATION PROJECT</b></p> <p><b>CUT-FILL PLAN OVERALL</b></p>	<p style="text-align: center;"><b>SHIVEHATTERY</b>          ARCHITECTURE+ENGINEERING</p> <p style="font-size: small;">4105 Westown Parkway, Suite 100   West Des Moines, Iowa 50266          515.223.8104   fax: 515.223.0622   shivehattery.com          Iowa   Illinois   Missouri   Illinois Firm Number: 184-000214</p> <p style="font-size: small;">IOWA DEPARTMENT OF AGRICULTURE          AND LAND STEWARDSHIP          DIVISION OF SOIL CONSERVATION          AND WATER QUALITY          HENRY A. WALLACE BUILDING          502 E. 9th STREET, DES MOINES, IOWA 50319          (515) 281-4246</p>
<b>SHEET</b> <span style="font-size: 2em; font-weight: bold;">14</span> OF 37		




15  
16

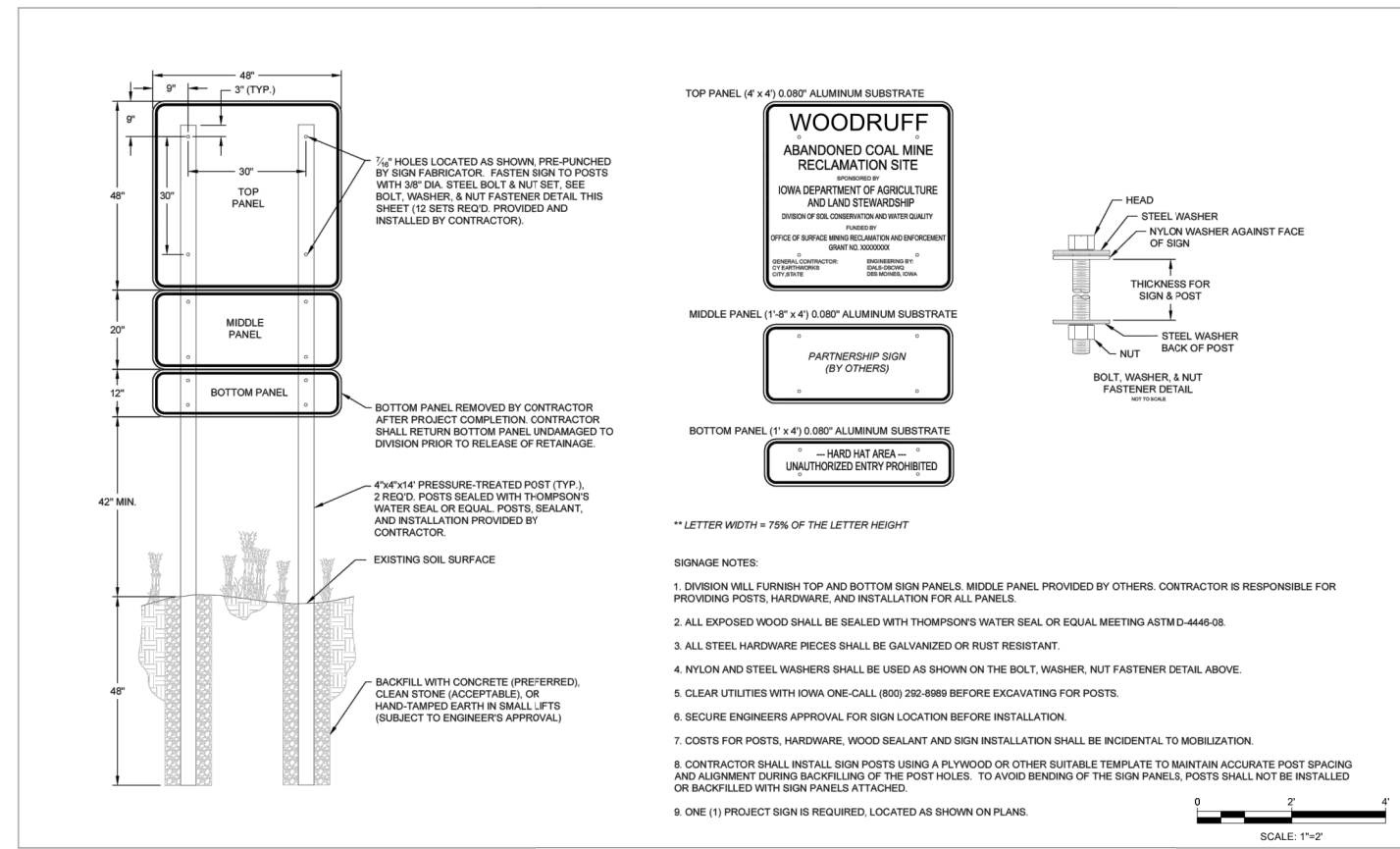
15  
16

DESIGN BY: AJH	DRAWN BY: GHK	CHKD. BY: LTM	ISSUED: 06/30/2023	REVISED: ----	S-H PROJECT NUMBER: 2142203060
WOODRUFF AML AML RECLAMATION PROJECT		IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246			
SHEET 15 OF 37		 <b>SHIVEHATTERY</b> ARCHITECTURE+ENGINEERING 4105 Westown Parkway, Suite 100   West Des Moines, Iowa 50266 515.223.0104   fax: 515.223.0622   shivehattery.com Iowa   Illinois   Missouri   Illinois Firm Number: 184-000214			



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WOODRUFF AML AML RECLAMATION PROJECT		 IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246									
SHEET <b>16 OF 37</b>											

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1 SIGN DETAIL

**WOODRUFF**  
 ABANDONED COAL MINE RECLAMATION SITE  
 DIVISION OF SOIL CONSERVATION AND WATER QUALITY  
 IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP  
 PARTNERSHIP SIGN (BY OTHERS)  
 HARD HAT AREA - UNAUTHORIZED ENTRY PROHIBITED

TOP PANEL (4' x 4') 0.080" ALUMINUM SUBSTRATE  
 MIDDLE PANEL (1'-8" x 4') 0.080" ALUMINUM SUBSTRATE  
 BOTTOM PANEL (1' x 4') 0.080" ALUMINUM SUBSTRATE

7/16" HOLES LOCATED AS SHOWN, PRE-PUNCHED BY SIGN FABRICATOR. FASTEN SIGN TO POSTS WITH 3/8" DIA. STEEL BOLT & NUT SET. SEE BOLT, WASHER, & NUT FASTENER DETAIL THIS SHEET (12 SETS REQ'D. PROVIDED AND INSTALLED BY CONTRACTOR).

BOTTOM PANEL REMOVED BY CONTRACTOR AFTER PROJECT COMPLETION. CONTRACTOR SHALL RETURN BOTTOM PANEL UNDAMAGED TO DIVISION PRIOR TO RELEASE OF RETAINAGE.

4"x4"x14' PRESSURE-TREATED POST (TYP.), 2 REQ'D. POSTS SEALED WITH THOMPSON'S WATER SEAL OR EQUAL. POSTS, SEALANT, AND INSTALLATION PROVIDED BY CONTRACTOR.

EXISTING SOIL SURFACE

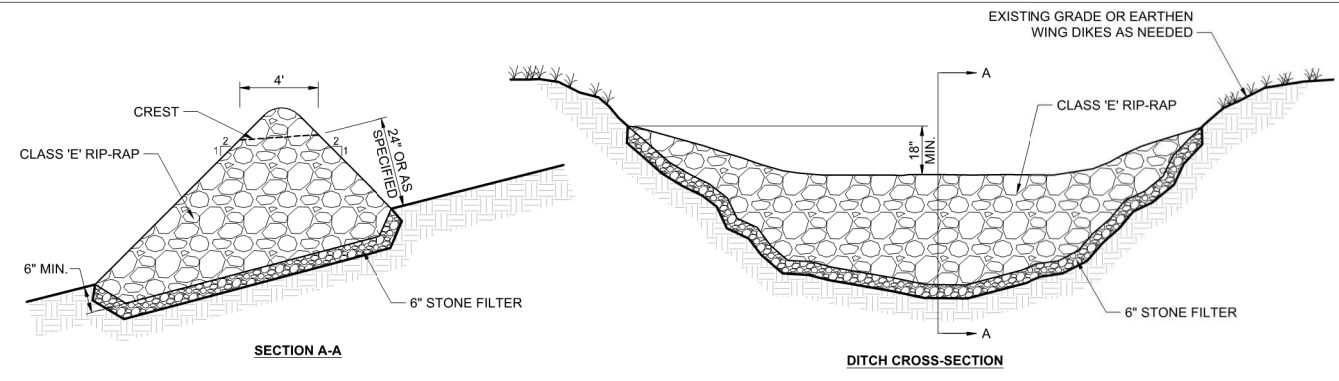
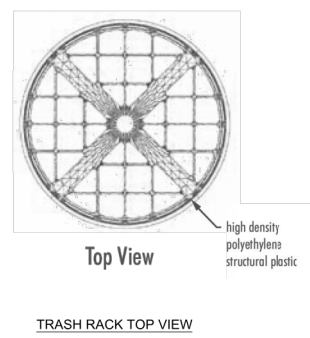
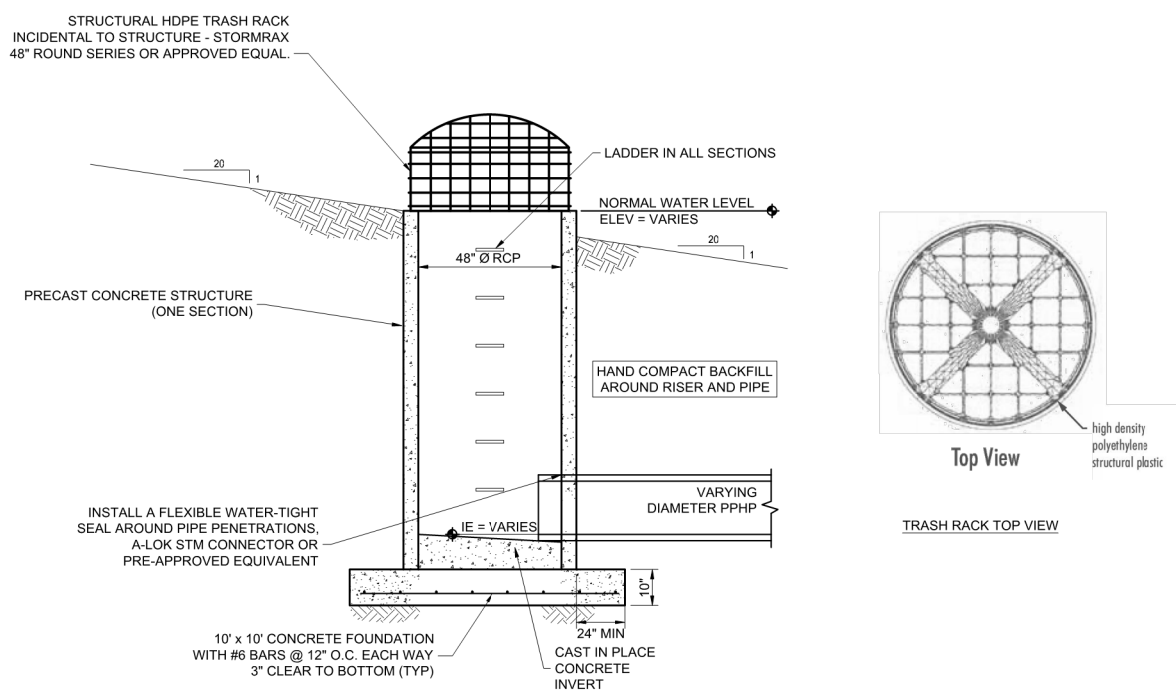
BACKFILL WITH CONCRETE (PREFERRED), CLEAN STONE (ACCEPTABLE), OR HAND-TAMPED EARTH IN SMALL LIFTS (SUBJECT TO ENGINEER'S APPROVAL)

SCALE: 1"=2"

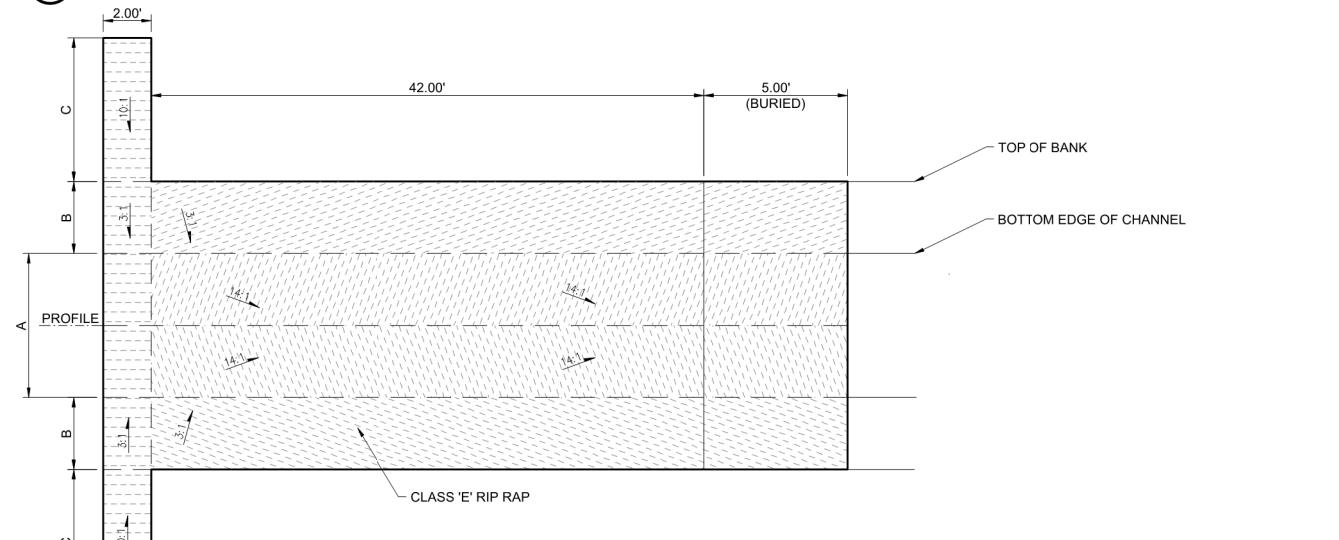
SIGNAGE NOTES:  
 1. DIVISION WILL FURNISH TOP AND BOTTOM SIGN PANELS. MIDDLE PANEL PROVIDED BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSTS, HARDWARE, AND INSTALLATION FOR ALL PANELS.  
 2. ALL EXPOSED WOOD SHALL BE SEALED WITH THOMPSON'S WATER SEAL OR EQUAL MEETING ASTM D-4446-08.  
 3. ALL STEEL HARDWARE PIECES SHALL BE GALVANIZED OR RUST RESISTANT.  
 4. NYLON AND STEEL WASHERS SHALL BE USED AS SHOWN ON THE BOLT, WASHER, NUT FASTENER DETAIL ABOVE.  
 5. CLEAR UTILITIES WITH IOWA ONE-CALL (800) 292-6989 BEFORE EXCAVATING FOR POSTS.  
 6. SECURE ENGINEER'S APPROVAL FOR SIGN LOCATION BEFORE INSTALLATION.  
 7. COSTS FOR POSTS, HARDWARE, WOOD SEALANT AND SIGN INSTALLATION SHALL BE INCIDENTAL TO MOBILIZATION.  
 8. CONTRACTOR SHALL INSTALL SIGN POSTS USING A PLYWOOD OR OTHER SUITABLE TEMPLATE TO MAINTAIN ACCURATE POST SPACING AND ALIGNMENT DURING BACKFILLING OF THE POST HOLES. TO AVOID BENDING OF THE SIGN PANELS, POSTS SHALL NOT BE INSTALLED OR BACKFILLED WITH SIGN PANELS ATTACHED.  
 9. ONE (1) PROJECT SIGN IS REQUIRED, LOCATED AS SHOWN ON PLANS.

\*\* LETTER WIDTH = 75% OF THE LETTER HEIGHT

3 WATER CONTROL STRUCTURE WITH TRASH RACK



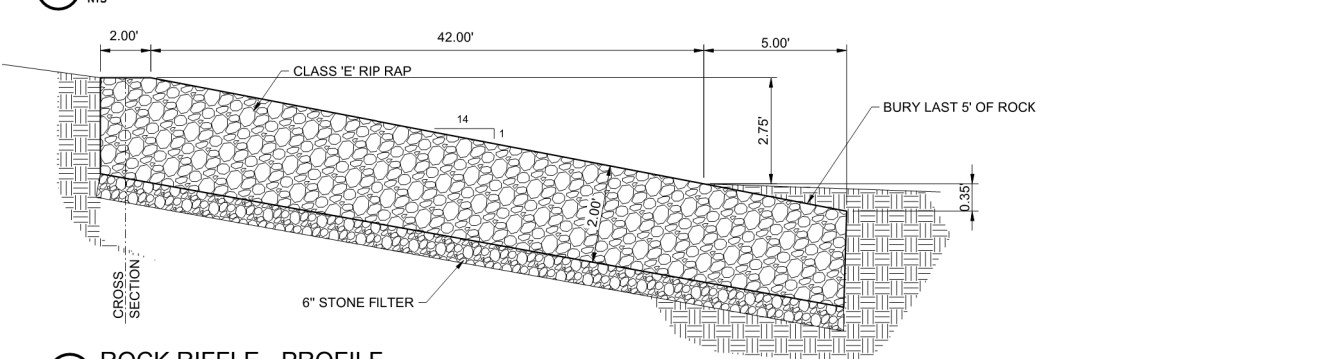
2 DITCH CHECK



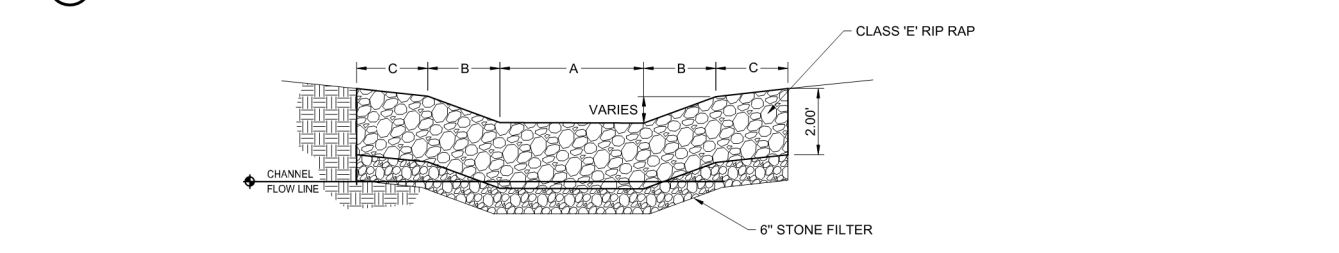
**ROCK LETDOWN DIMENSIONS**

START STATION	END STATION	A (FEET)	B (FEET)	C (FEET)	COMMENTS
1+08	8+00	4	3.6	8	
8+00	23+95	6	4.5	10	

4.1 ROCK RIFFLE - PLAN



4.2 ROCK RIFFLE - PROFILE



4.3 ROCK RIFFLE - CROSS SECTION

S-H PROJECT NUMBER: 2142203060

ISSUED: 06/30/2023  
 REVISED: ---

CHKD. BY: LTM

GHK

DRAWN BY:

AJH

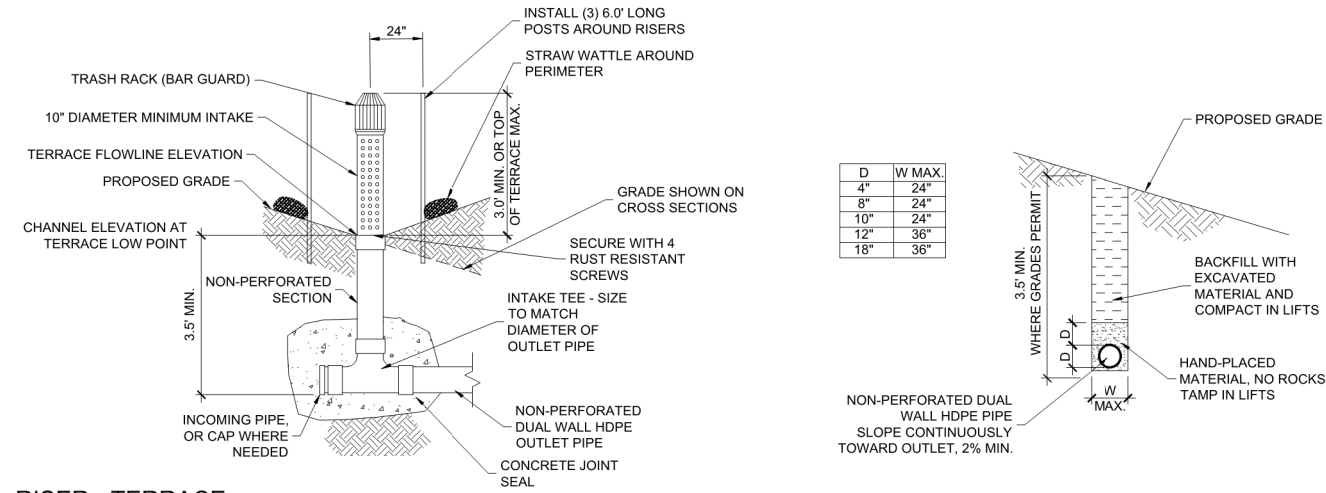
DESIGN BY:

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP  
 DIVISION OF SOIL CONSERVATION AND WATER QUALITY  
 HENRY A. WALLACE BUILDING  
 502 E. 9th STREET, DES MOINES, IOWA 50319  
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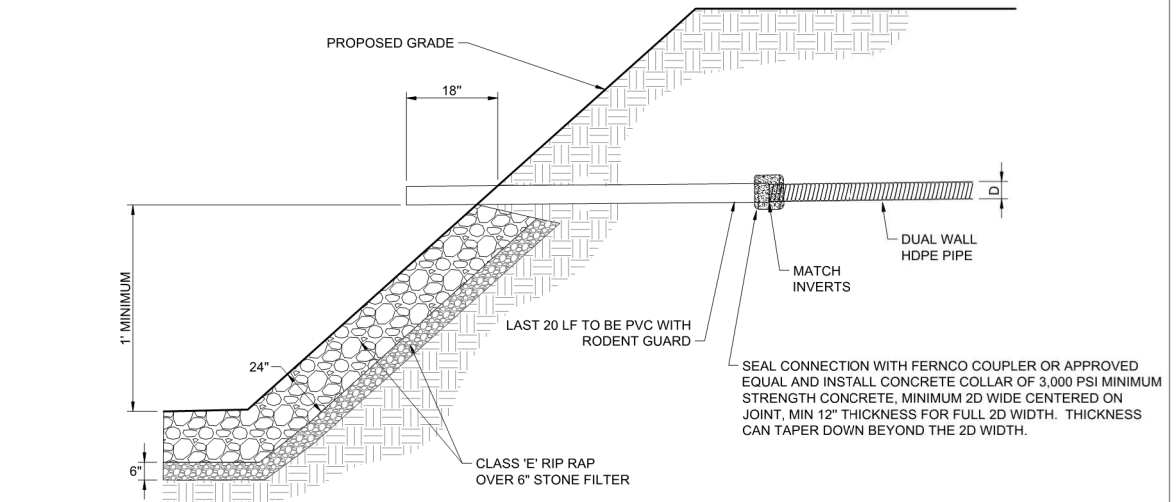


WOODRUFF AML RECLAMATION PROJECT  
 PROJECT DETAILS

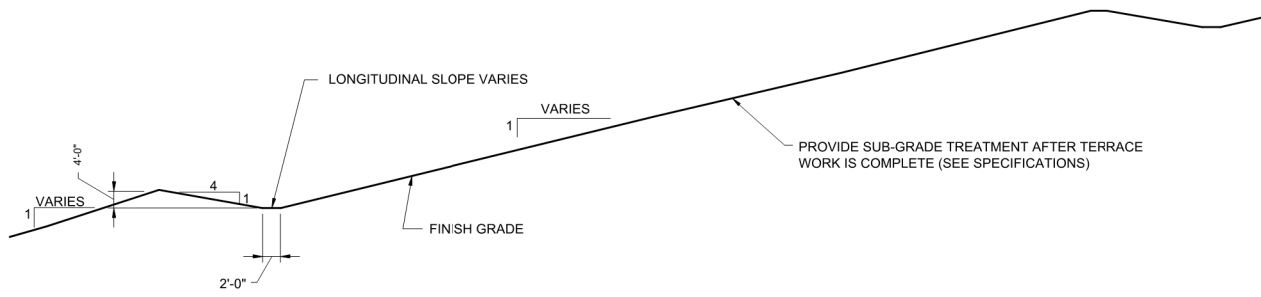
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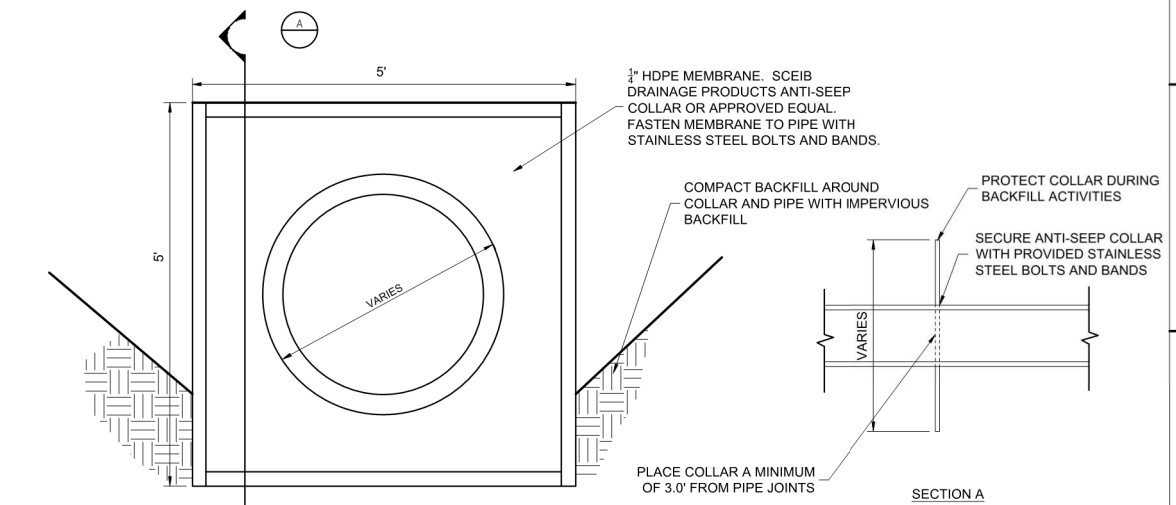
1 RISER - TERRACE  
NTS



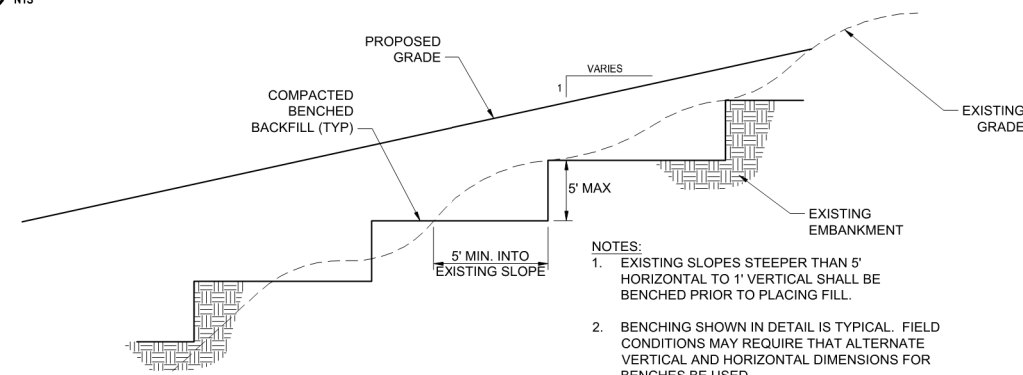
5 PIPE OUTLET PROTECTION  
NTS



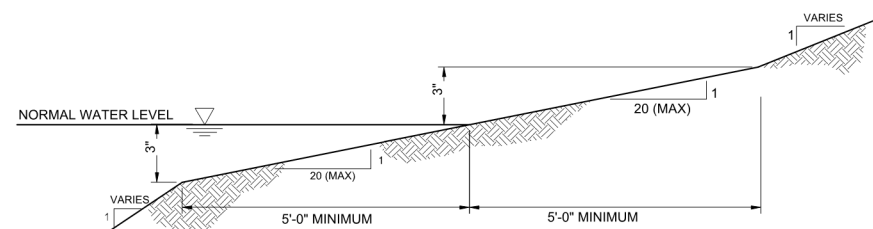
2 TERRACE - 4' HEIGHT  
NTS



6 HDPE ANTI-SEEPAGE COLLAR  
NTS



3 TYPICAL BENCHING DETAIL  
NTS



4 TYPICAL WETLAND EDGE  
NTS

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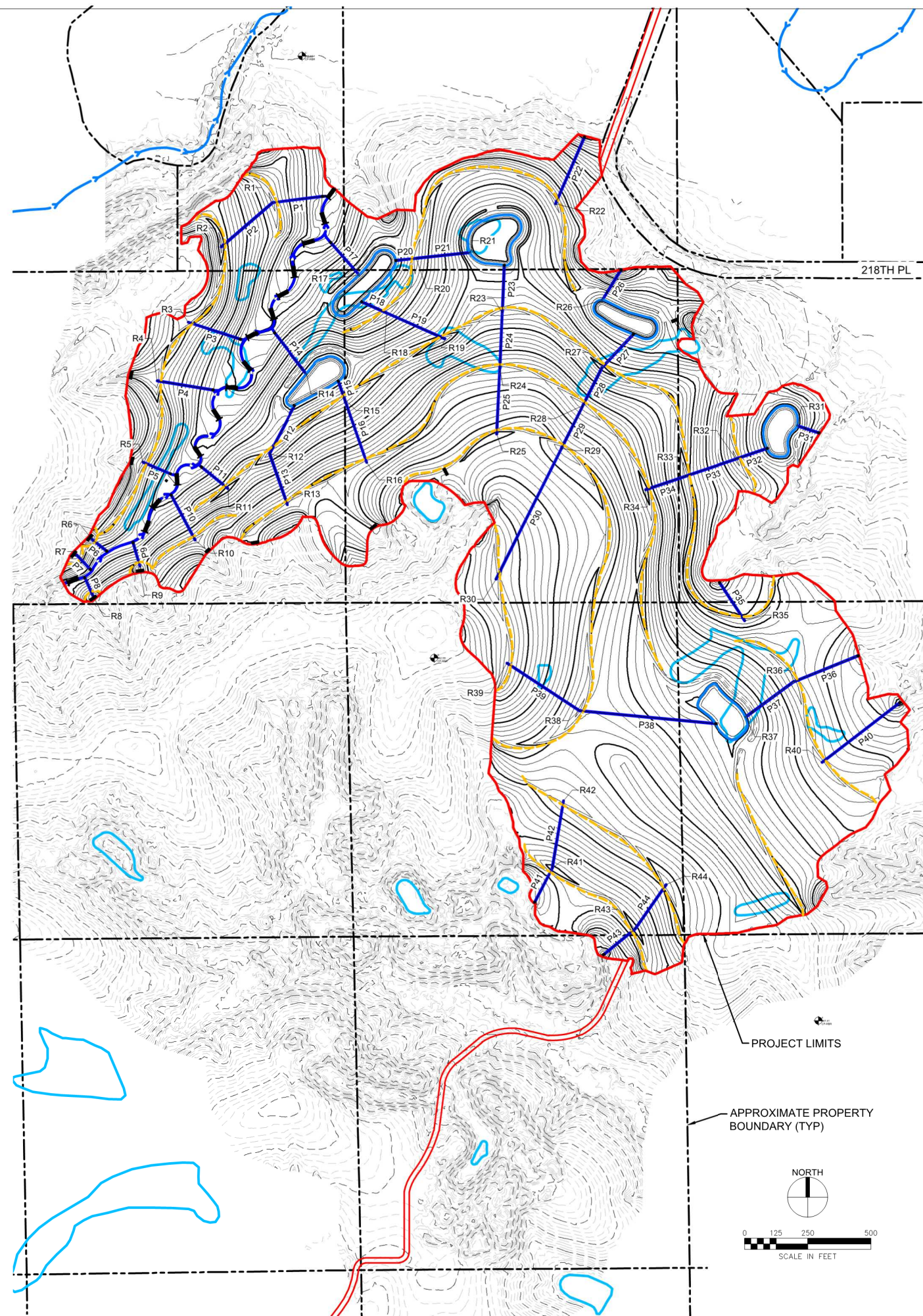
WOODRUFF AML  
AML RECLAMATION PROJECT  
PROJECT DETAILS

PIPES							
NO.	LENGTH	DIAMETER	MATERIAL	UPSTREAM INVERT (FT)	DOWNSTREAM INVERT (FT)	SLOPE	NOTES
P1	201	10"	DWPE	738.17'	721.00'	8.58%	DAYLIGHT
P2	271	8"	DWPE	763.33'	738.33'	9.28%	DAYLIGHT
P3	218	8"	DWPE	772.00'	743.50'	13.21%	DAYLIGHT
P4	224	12"	DWPE	770.00'	752.00'	8.06%	DAYLIGHT
P5	119	8"	DWPE	776.88'	763.50'	11.36%	DAYLIGHT
P6	74	8"	DWPE	777.00'	775.00'	2.72%	DAYLIGHT
P7	79	8"	DWPE	786.00'	777.20'	11.26%	DAYLIGHT
P8	76	8"	DWPE	782.00'	777.37'	6.11%	DAYLIGHT
P9	98	8"	DWPE	779.00'	774.32'	4.81%	DAYLIGHT
P10	204	8"	DWPE	787.00'	766.61'	10.06%	DAYLIGHT
P11	135	8"	DWPE	774.33'	761.50'	9.61%	DAYLIGHT
P12	216	10"	DWPE	770.00'	768.00'	0.93%	DAYLIGHT
P13	217	8"	DWPE	800.00'	770.00'	14.00%	DAYLIGHT
P14	207	12"	PPHP	764.00'	740.25'	11.58%	ASC
P15	77	10"	DWPE	770.17'	768.00'	2.83%	DAYLIGHT
P16	267	8"	DWPE	800.33'	770.33'	11.35%	DAYLIGHT
P17	171	12"	PPHP	741.00'	725.00'	9.45%	ASC
P18	108	10"	DWPE	748.19'	746.00'	2.03%	DAYLIGHT
P19	254	8"	DWPE	772.33'	748.33'	9.49%	DAYLIGHT
P20	81	12"	PPHP	748.00'	746.00'	2.50%	DAYLIGHT
P21	217	12"	PPHP	771.00'	748.00'	10.66%	ASC
P22	291	8"	DWPE	757.00'	718.09'	13.50%	DAYLIGHT
P23	186	12"	DWPE	779.00'	775.00'	2.15%	DAYLIGHT
P24	225	10"	DWPE	798.17'	779.14'	8.52%	DAYLIGHT
P25	261	8"	DWPE	814.00'	798.33'	6.02%	DAYLIGHT
P26	141	12"	PPHP	756.00'	737.12'	13.52%	ASC
P27	181	15"	DWPE	774.00'	762.00'	6.66%	DAYLIGHT
P28	170	12"	DWPE	796.00'	774.00'	13.06%	DAYLIGHT
P29	191	10"	DWPE	810.00'	796.00'	7.36%	DAYLIGHT
P30	580	8"	DWPE	836.33'	810.00'	4.55%	DAYLIGHT
P31	91	12"	PPHP	736.00'	733.50'	2.78%	ASC
P32	131	12"	DWPE	747.00'	739.00'	6.15%	DAYLIGHT
P33	216	10"	DWPE	772.00'	747.00'	11.70%	DAYLIGHT
P34	169	8"	DWPE	794.00'	772.00'	13.18%	DAYLIGHT
P35	182	8"	DWPE	772.33'	764.71'	4.22%	DAYLIGHT
P36	274	15"	PPHP	778.00'	769.75'	3.01%	DAYLIGHT
P37	238	15"	PPHP	796.00'	778.00'	7.60%	ASC
P38	542	10"	DWPE	807.20'	799.08'	1.50%	DAYLIGHT
P39	344	8"	DWPE	838.25'	807.20'	9.08%	DAYLIGHT
P40	390	8"	DWPE	778.00'	756.00'	5.66%	DAYLIGHT
P41	152	10"	DWPE	784.00'	780.00'	2.64%	DAYLIGHT
P42	274	8"	DWPE	806.00'	784.00'	8.07%	DAYLIGHT
P43	160	10"	DWPE	784.17'	763.00'	13.36%	DAYLIGHT
P44	216	8"	DWPE	802.33'	784.33'	8.38%	DAYLIGHT

NOTE:  
ASC = 5'X5' ANTI-SEEPAGE COLLAR - SEE DETAIL

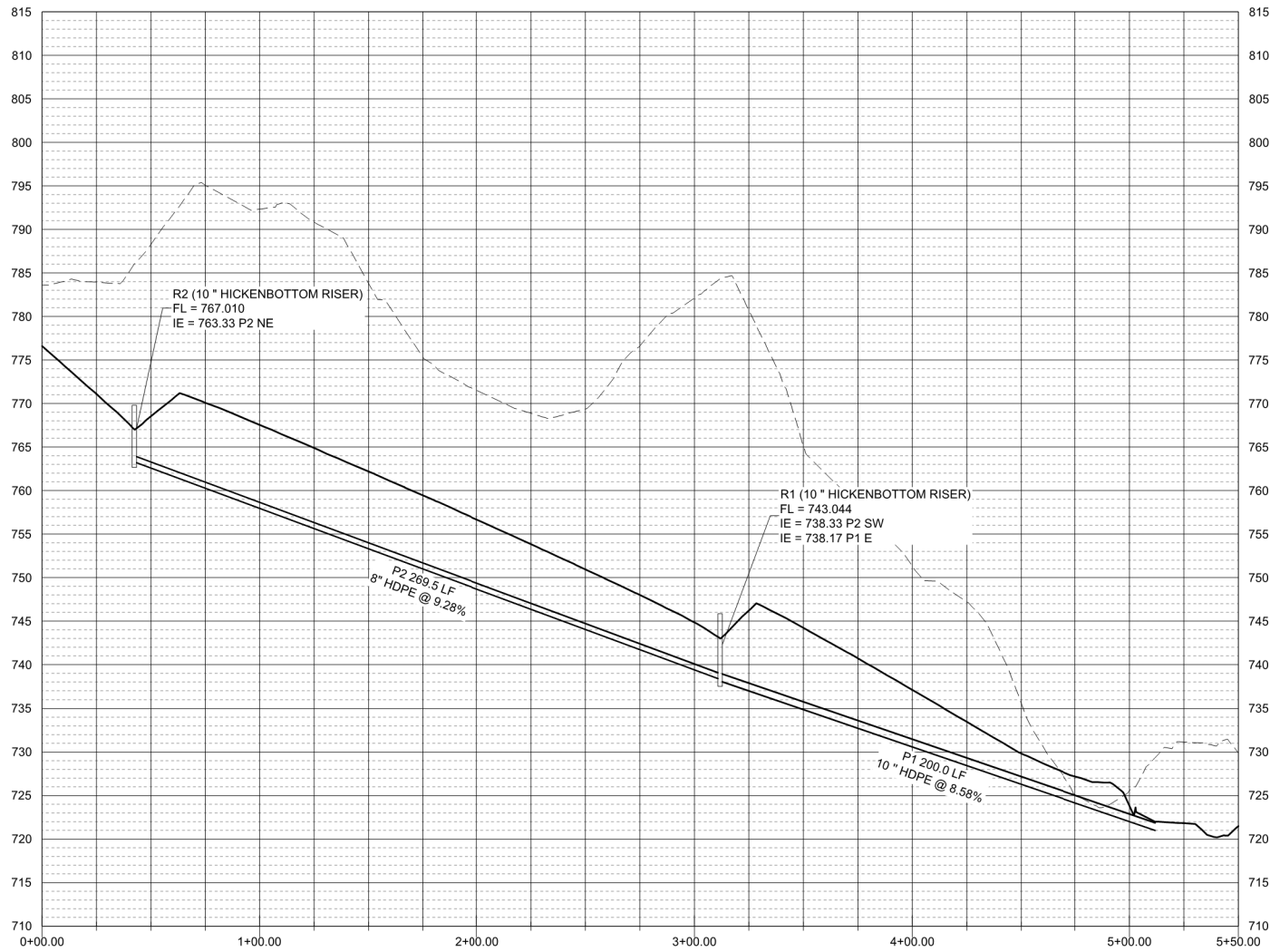
RISER INTAKES				
NO.	SIZE	TYPE	TERRACE FLOWLINE / RIM ELEVATION	INVERT ELEV OUT
R1	10"	PR	746.05'	738.17'
R2	10"	PR	770.01'	763.33'
R3	10"	PR	779.00'	772.00'
R4	10"	PR	777.03'	770.00'
R5	10"	PR	784.01'	776.88'
R6	10"	PR	783.43'	777.00'
R7	10"	PR	792.59'	786.00'
R8	10"	PR	788.40'	782.00'
R9	10"	PR	786.53'	779.00'
R10	10"	PR	794.00'	787.00'
R11	10"	PR	781.02'	774.33'
R12	10"	PR	777.00'	770.00'
R13	10"	PR	807.00'	800.00'
R14	48"	CR	768.06'	764.00'
R15	10"	PR	774.86'	770.17'
R16	10"	PR	807.02'	800.33'
R17	48"	CR	745.99'	741.00'
R18	10"	PR	755.01'	748.19'
R19	10"	PR	779.03'	772.33'
R20	12"	PR	755.01'	748.00'
R21	48"	CR	775.01'	771.00'
R22	10"	PR	764.02'	757.00'
R23	12"	PR	785.07'	779.00'
R24	10"	PR	805.04'	798.17'
R25	10"	PR	821.05'	814.00'
R26	48"	CR	762.01'	756.00'
R27	12"	PR	781.03'	774.00'
R28	12"	PR	803.04'	796.00'
R29	10"	PR	817.02'	810.00'
R30	10"	PR	843.03'	836.33'
R31	48"	CR	739.01'	736.00'
R32	12"	PR	754.01'	747.00'
R33	10"	PR	777.10'	772.00'
R34	10"	PR	801.06'	794.00'
R35	10"	PR	779.01'	772.33'
R36	12"	PR	783.00'	778.00'
R37	48"	CR	799.01'	796.00'
R38	10"	PR	814.24'	807.20'
R39	10"	PR	845.28'	838.25'
R40	10"	PR	785.25'	778.00'
R41	10"	PR	791.06'	784.00'
R42	10"	PR	813.06'	806.00'
R43	10"	PR	791.03'	784.17'
R44	10"	PR	809.04'	802.33'

NOTE:  
PR = PLASTIC RISER (HICKENBOTTOM) - SEE DETAIL  
CR = CONCRETE RISER WITH TRASH RACK - SEE DETAIL



- NOTES:
- SEE DETAILS, PIPE PROFILES, AND GRADING PLANS FOR ADDITIONAL INFORMATION.
  - LENGTHS LISTED ABOVE FOR ALL DWPE PIPES THAT DAYLIGHT INCLUDE A 20' PVC OUTLET SECTION, SEE DETAIL. SEE PROJECT QUANTITIES ON SHEET 2 FOR DESIGN LENGTHS.
  - NO PVC OUTLET SECTION REQUIRED FOR PPHP PIPES.

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DRAINAGE PLAN			SHEET 19 OF 37		



### HDPE PIPE COVER INFORMATION

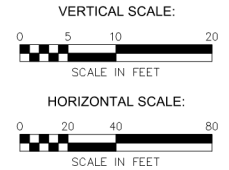
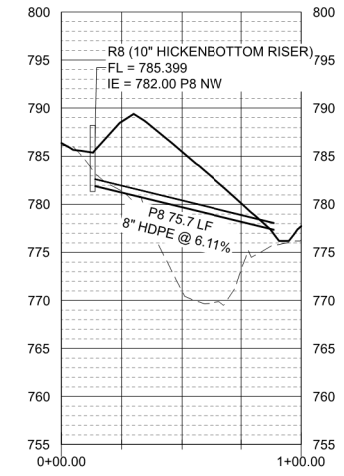
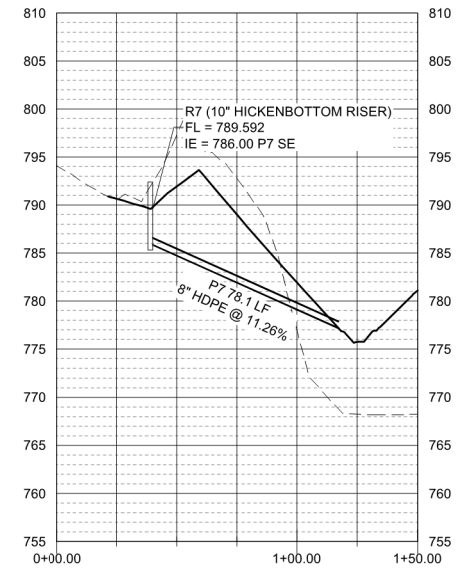
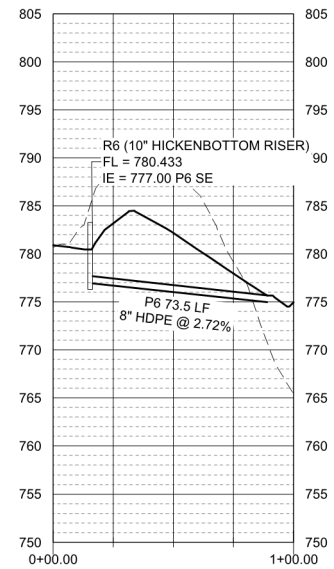
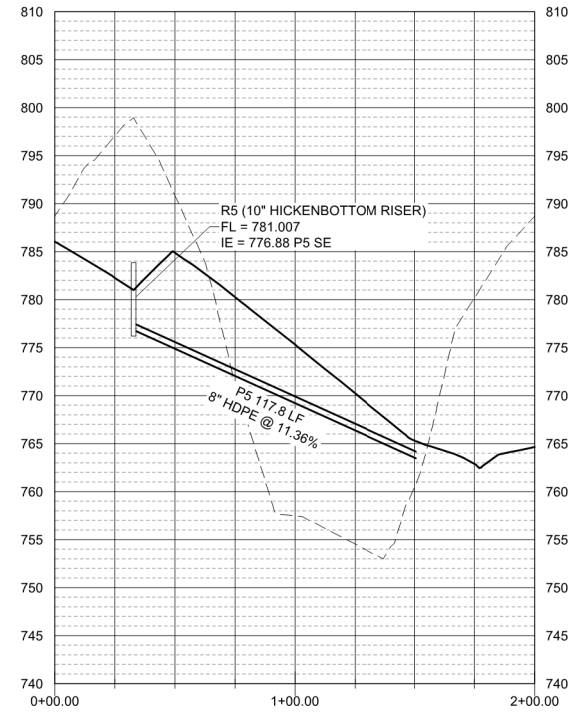
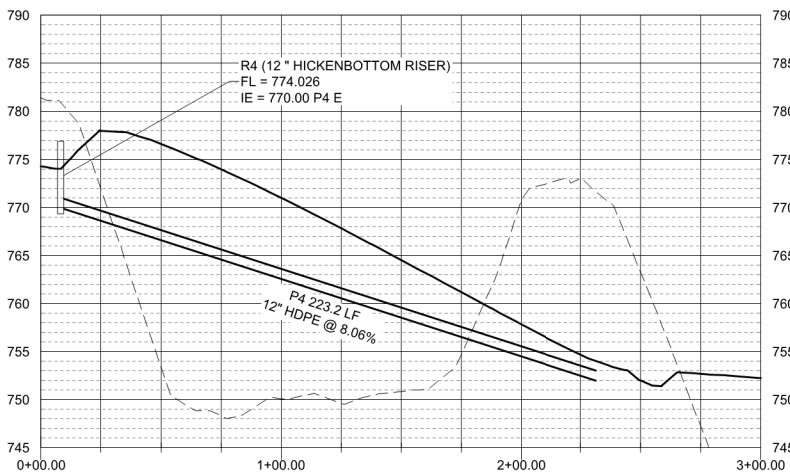
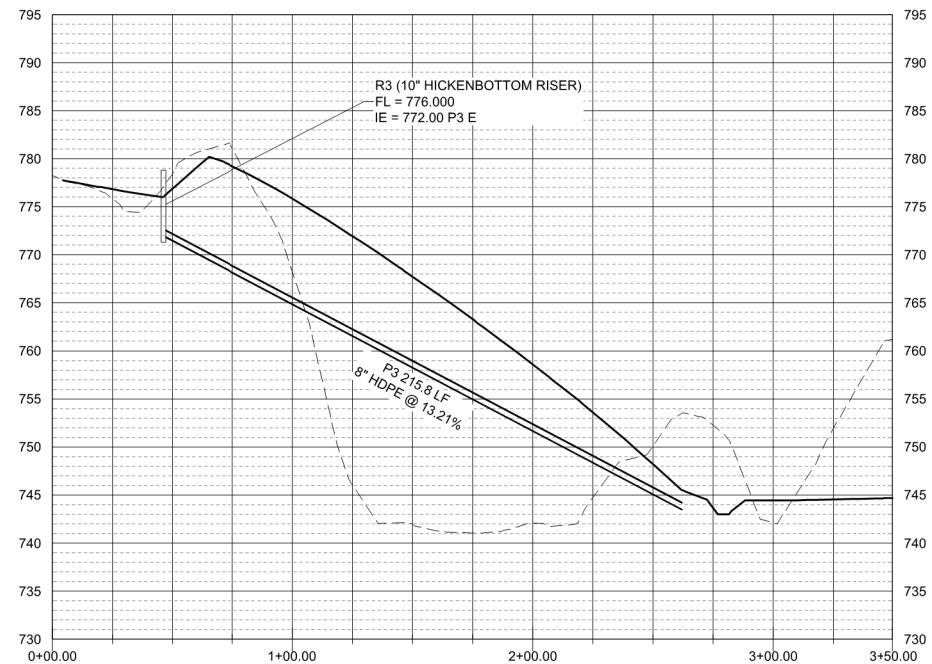
SIZE (IN)	MIN (FT)	MAX (FT)
8"	1	11
10"	1	11
12"	1	11
15"	1	11

### PPHP PIPE COVER INFORMATION

SIZE (IN)	MIN (FT)	MAX (FT)
12"	1	16
15"	1	16

**NOTES:**

- PIPE PROFILES ARE SHOWN FOR CONTEXT. MAINTAIN A MINIMUM PIPE SLOPE OF 1% AND DO NOT EXCEED MAX PIPE COVER LISTED IN TABLES ABOVE. REFER TO PROJECT SPECIFICATIONS FOR TRENCH SIZE, BEDDING, BACKFILL REQUIREMENTS. PIPES INSTALLED THROUGH FILL ZONES REQUIRE WAITING PERIOD AFTER PROPOSED GRADES ARE ACHIEVED AND PRIOR TO PIPE INSTALLATION. REFER TO PROJECT SPECIFICATIONS.
- WHERE PIPES ARE SHOWN TO OUTLET BELOW GRADE, CREATE 4' WIDE SWALE FROM PIPE OUTLET TO FLOWLINE OF NEAREST CHANNEL OR NORMAL WATER LEVEL OF NEAREST WETLAND.



S-H PROJECT NUMBER: 2142203060

ISSUED: 06/30/2023

REVISED: ---

CHKD. BY: LTM

GHK

DRAWN BY:

AJH

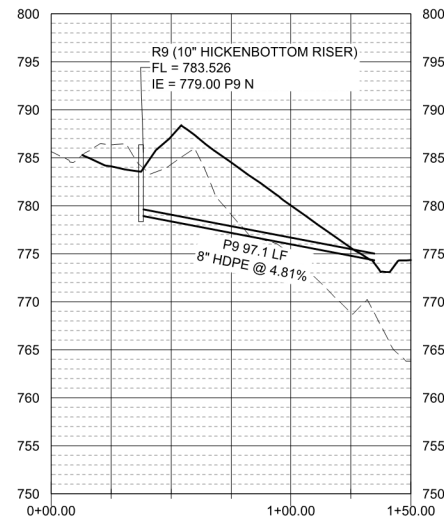
DESIGN BY:

IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION  
AND WATER QUALITY  
HENRY A. WALLACE BUILDING  
502 E. 9th STREET, DES MOINES, IOWA 50319  
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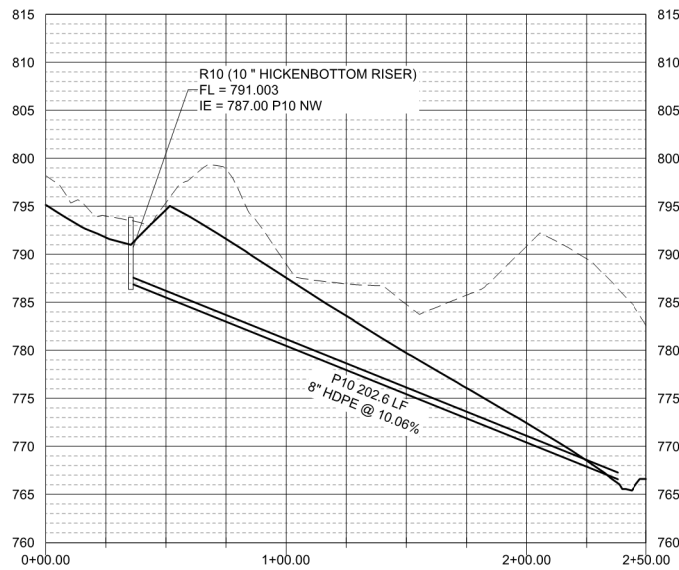


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AML RECLAMATION PROJECT  
PIPE PROFILES

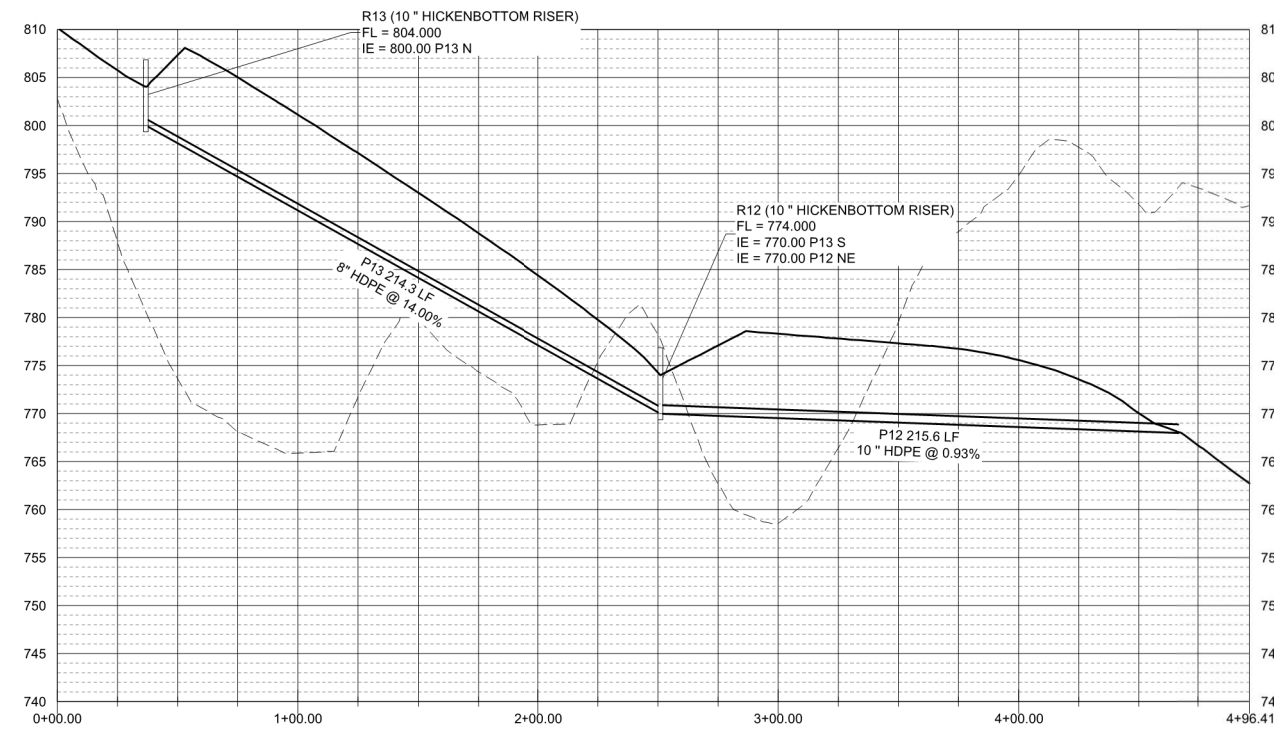
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515.223.0104 | fax: 515.223.0622 | shivehattery.com  
Iowa | Illinois | Missouri | Illinois Firm Number: 184-000214



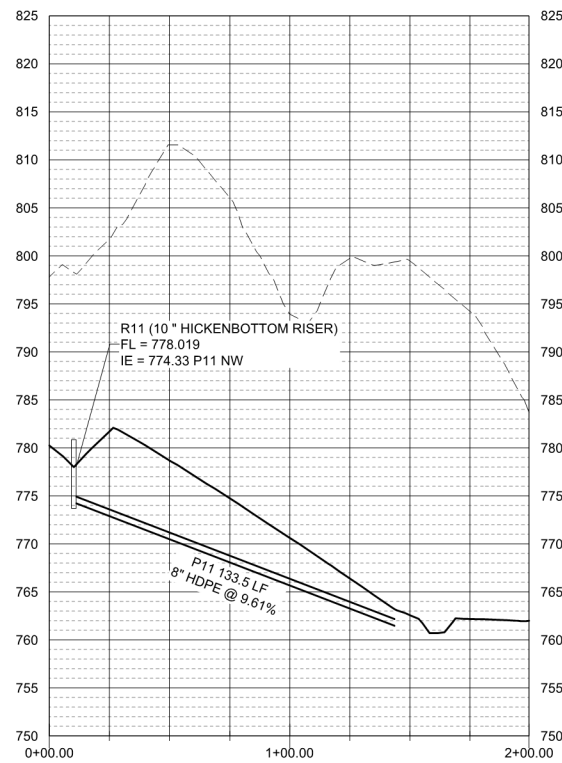
P9 PROFILE



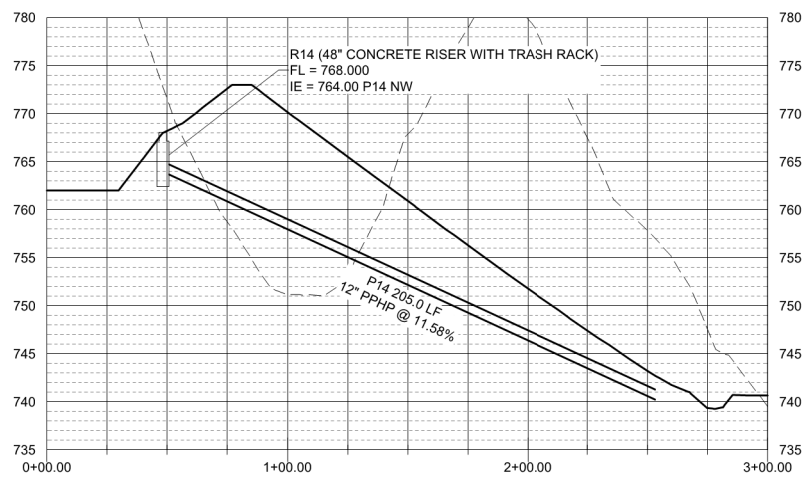
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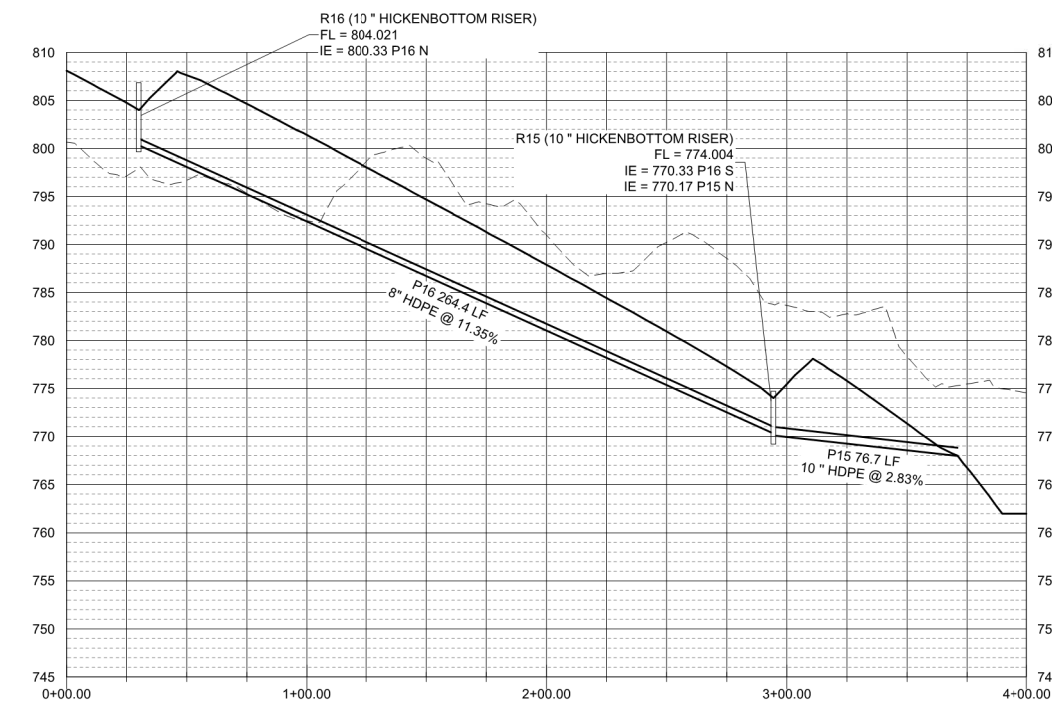
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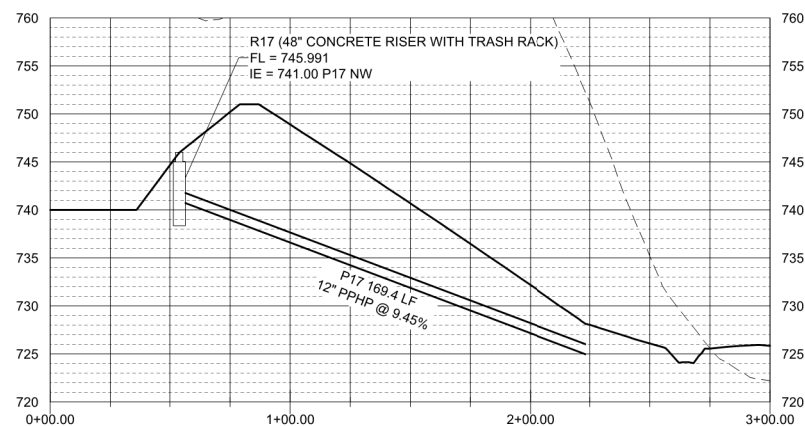
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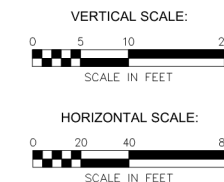
P14 PROFILE



P15-16 PROFILE



P17 PROFILE



S-H PROJECT NUMBER: 2142203060

REVISED: ---

ISSUED: 06/30/2023

CHKD. BY: LTM

GHK

DRAWN BY: A/JH

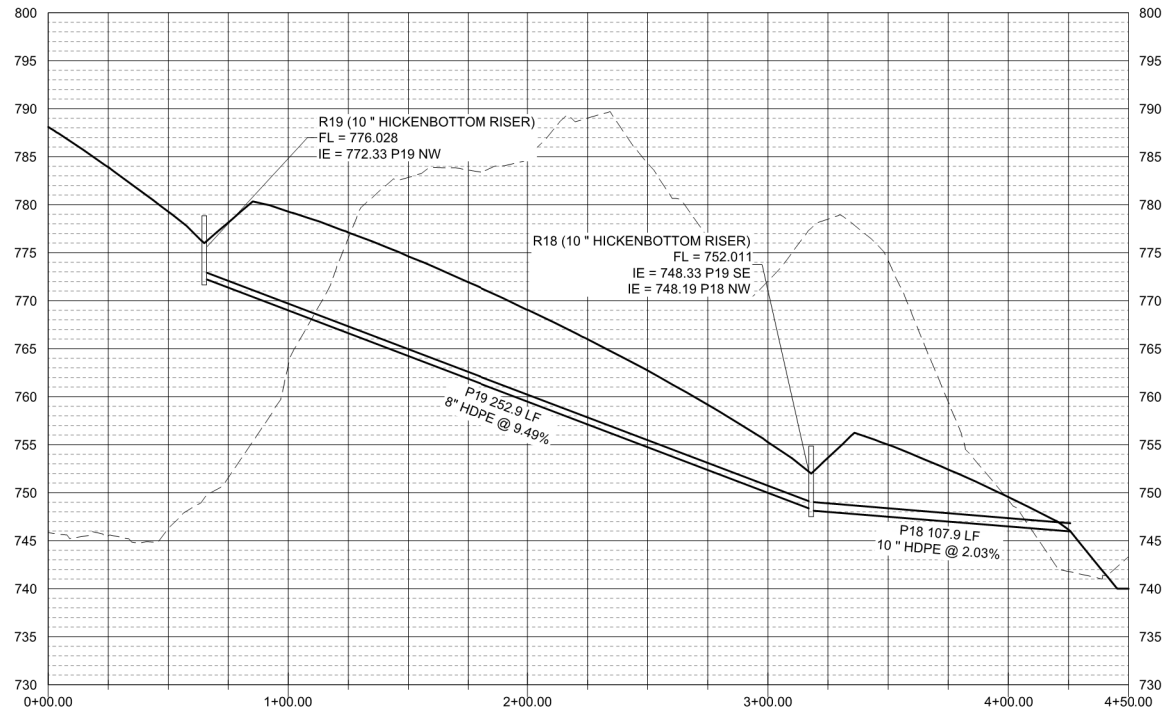
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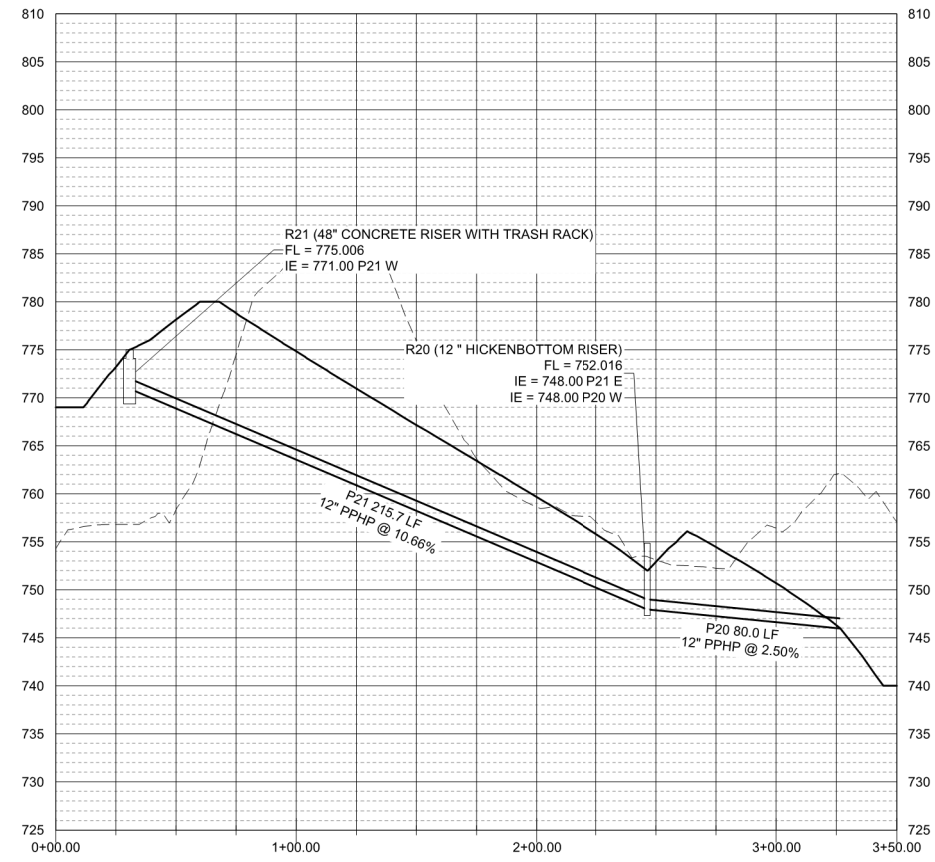


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AML RECLAMATION PROJECT

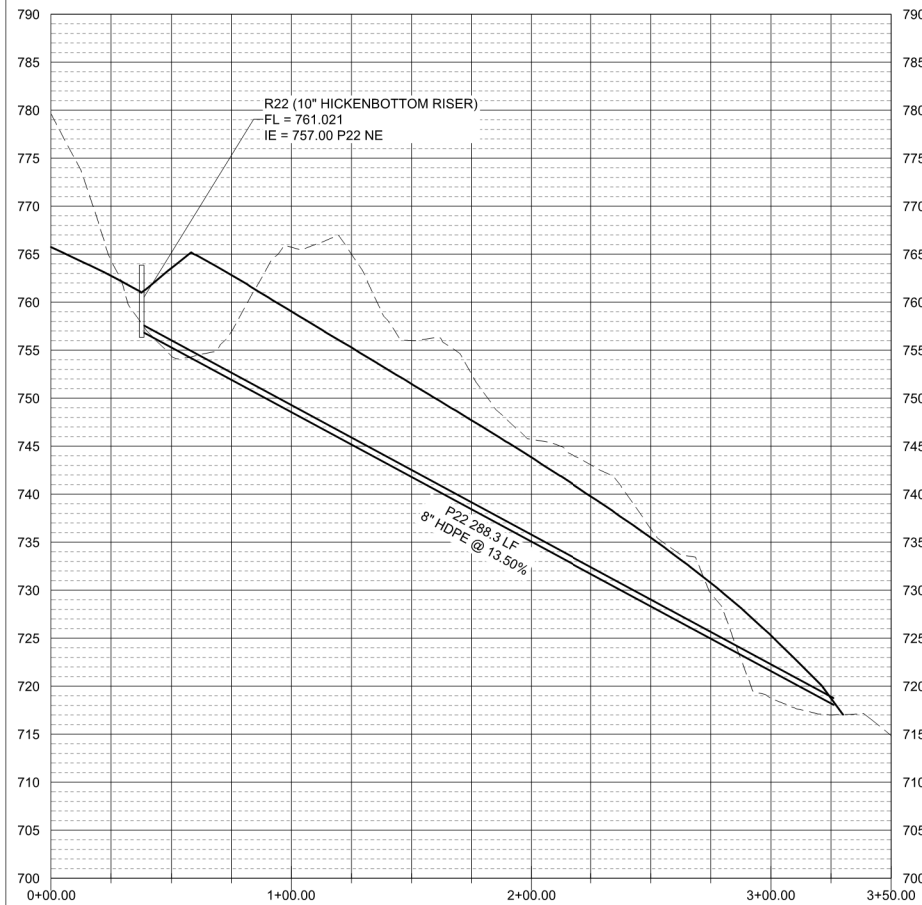
PIPE PROFILES



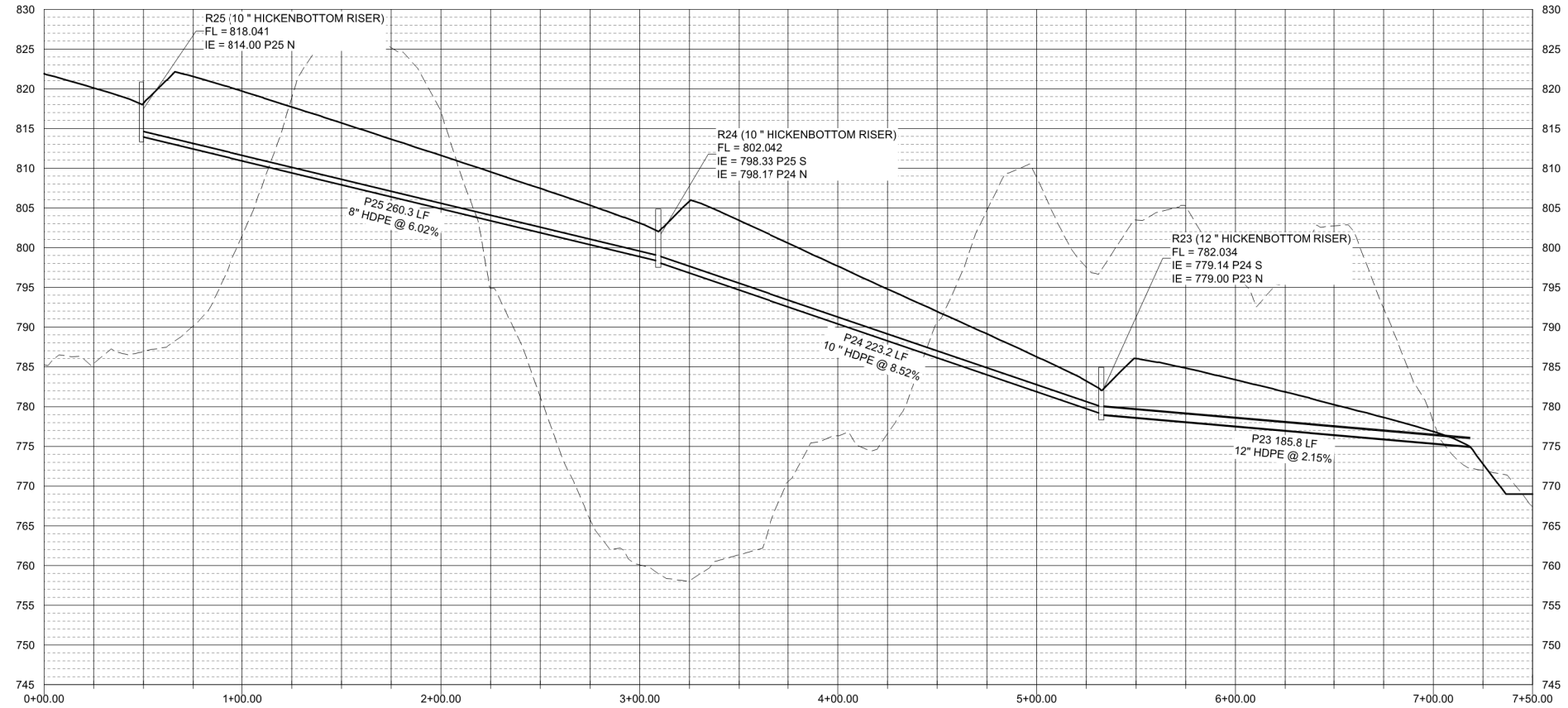
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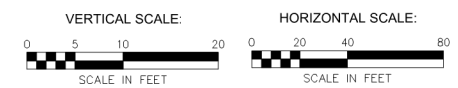
**P20-21 PROFILE**



**P22 PROFILE**



**P23-25 PROFILE**



S-H PROJECT NUMBER: 2142203060

REVISED: ---

ISSUED: 06/30/2023

CHKD. BY: LTM

GHK

DRAWN BY: AJH

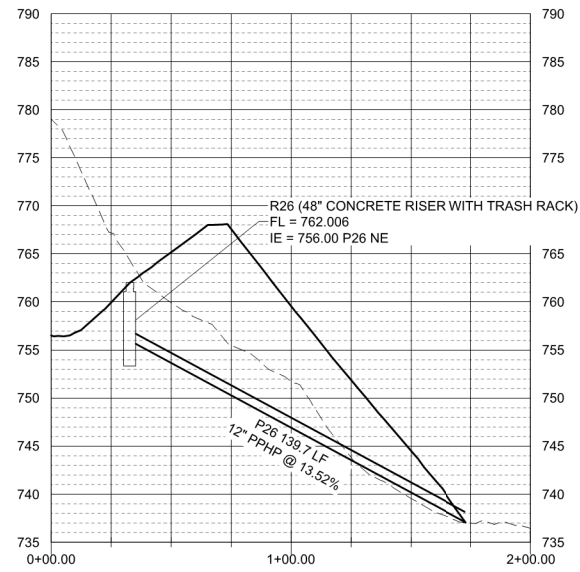
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AML RECLAMATION PROJECT

DESIGN BY: AJH

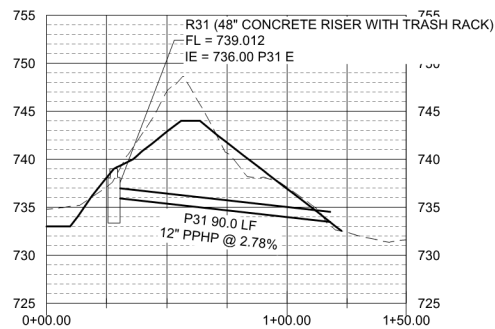
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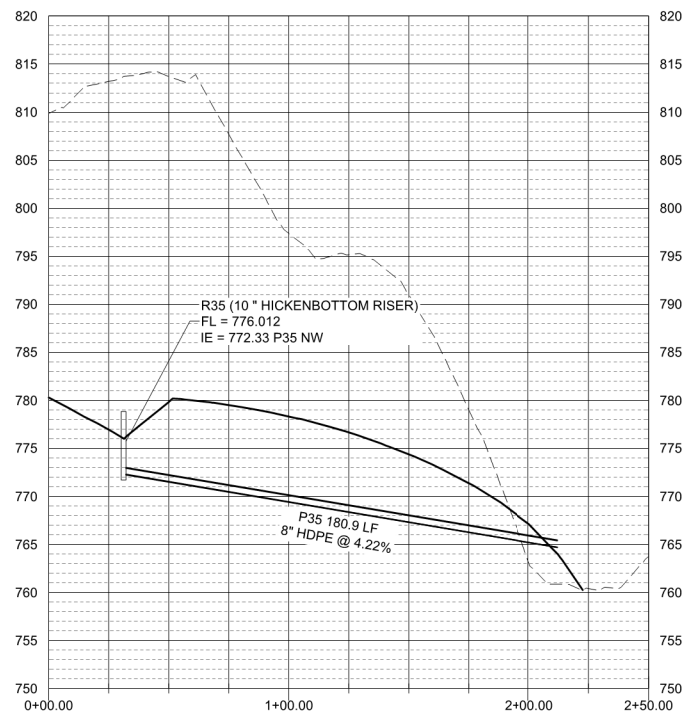
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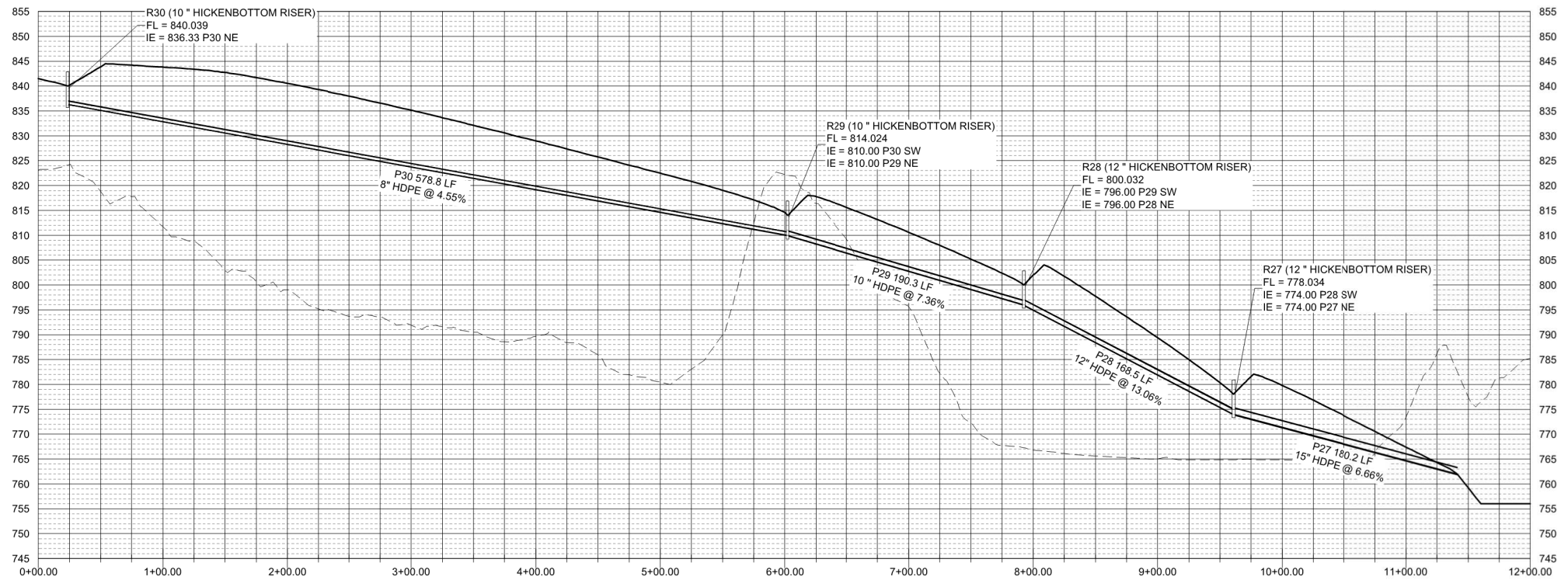
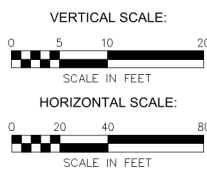
P26 PROFILE



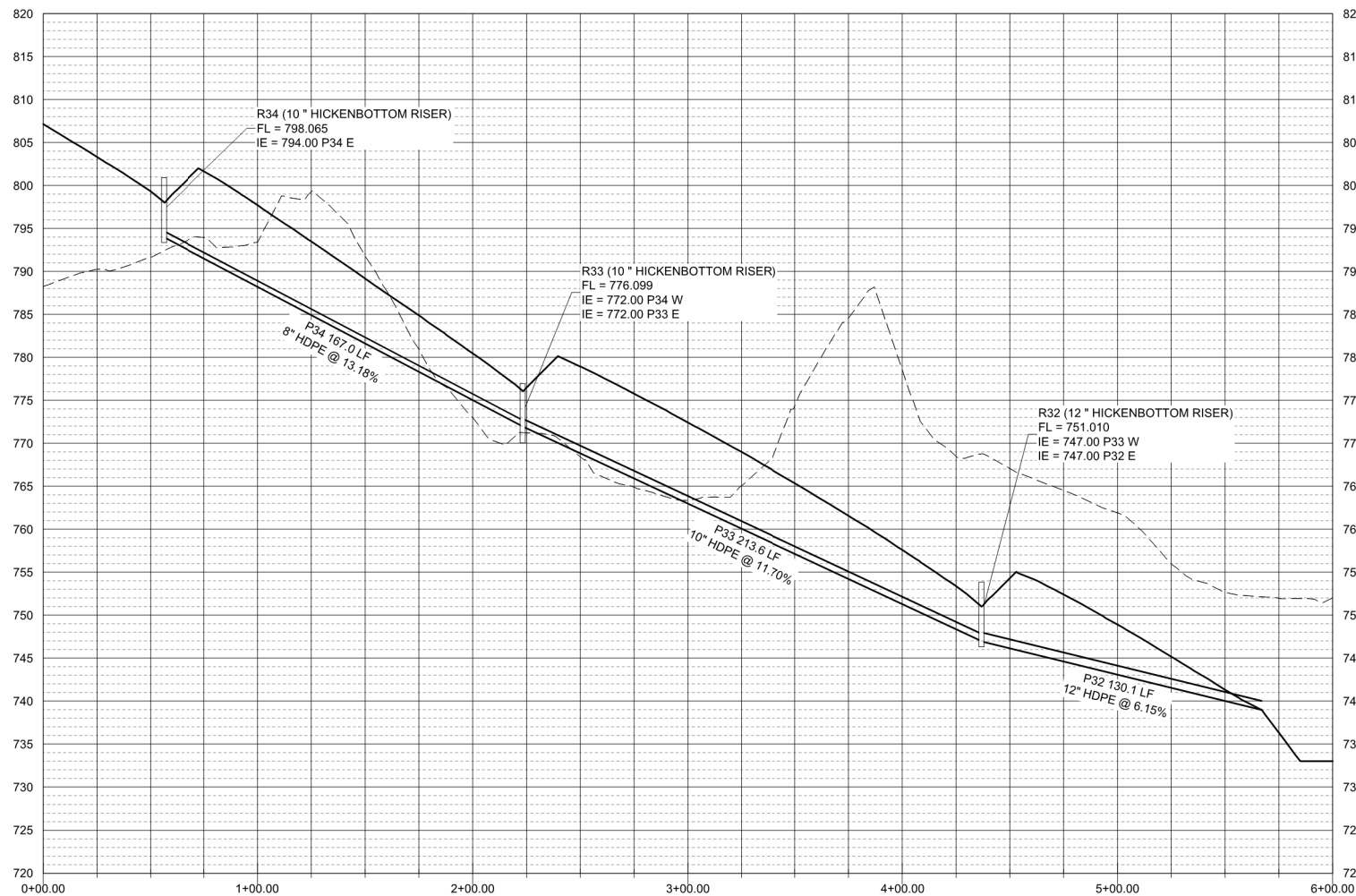
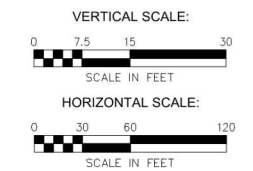
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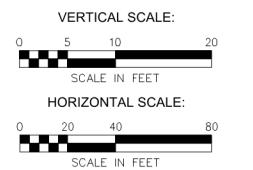
P35 PROFILE



P27-30 PROFILE



P32-34 PROFILE



S-H PROJECT NUMBER: 2142203060

ISSUED: 06/30/2023

CHKD. BY: LTM

DRAWN BY: GHK

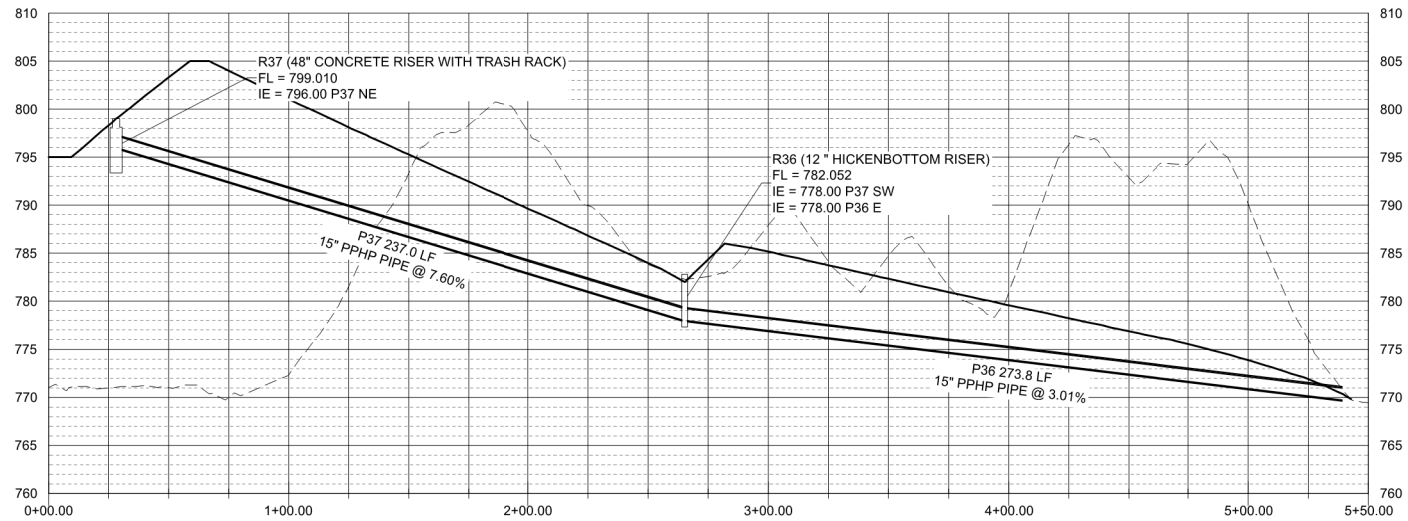
DESIGN BY: AJH

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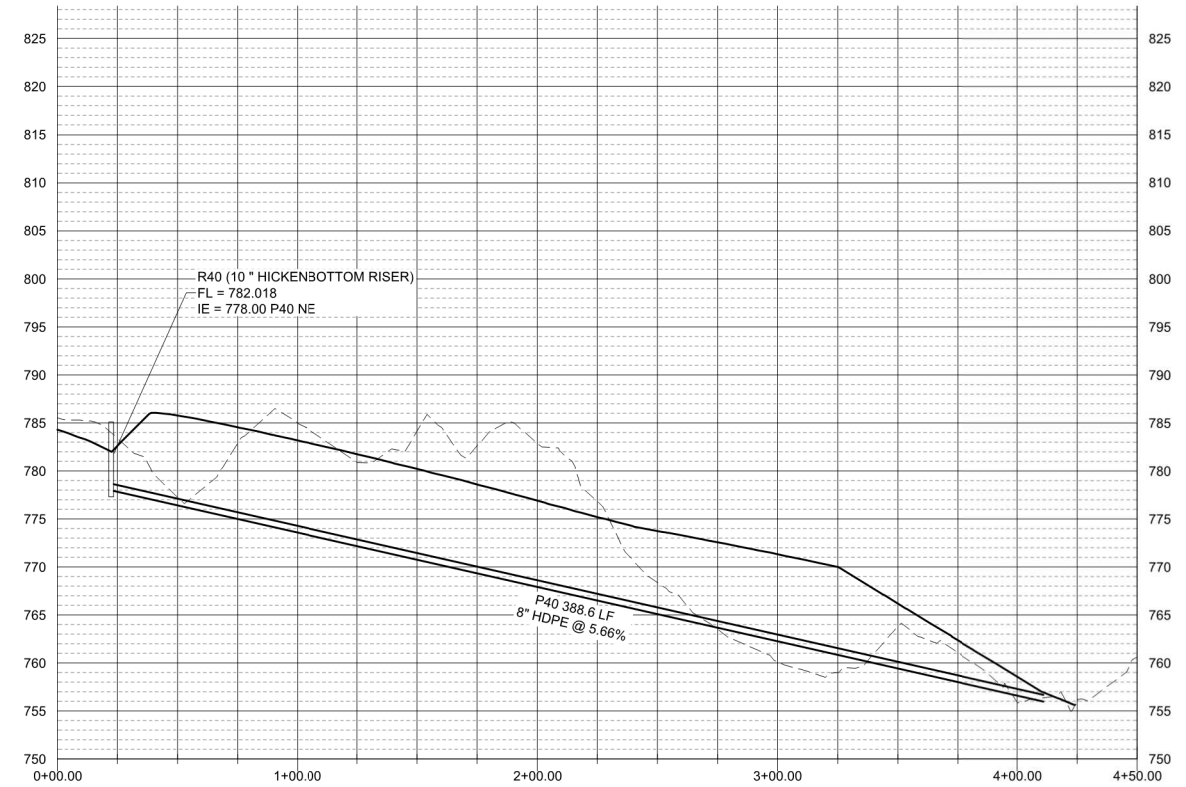


WOODRUFF AML  
AML RECLAMATION PROJECT  
PIPE PROFILES

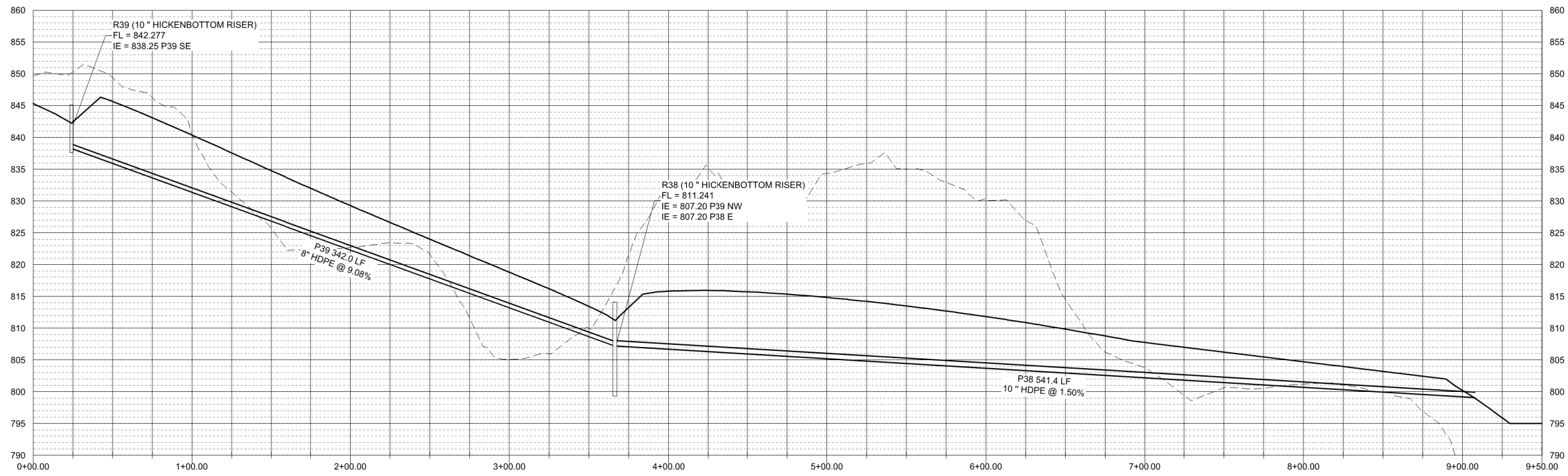
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515.223.0104 | fax: 515.223.0222 | shive-hattery.com  
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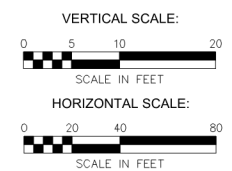
P36-37 PROFILE



P40 PROFILE



P38-39 PROFILE



S-H PROJECT NUMBER: 2142203060

REVISED: ---

ISSUED: 06/30/2023

CHKD. BY: LTM

GHK

DRAWN BY:

AJH

DESIGN BY:

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 HENRY A. WALLACE BUILDING  
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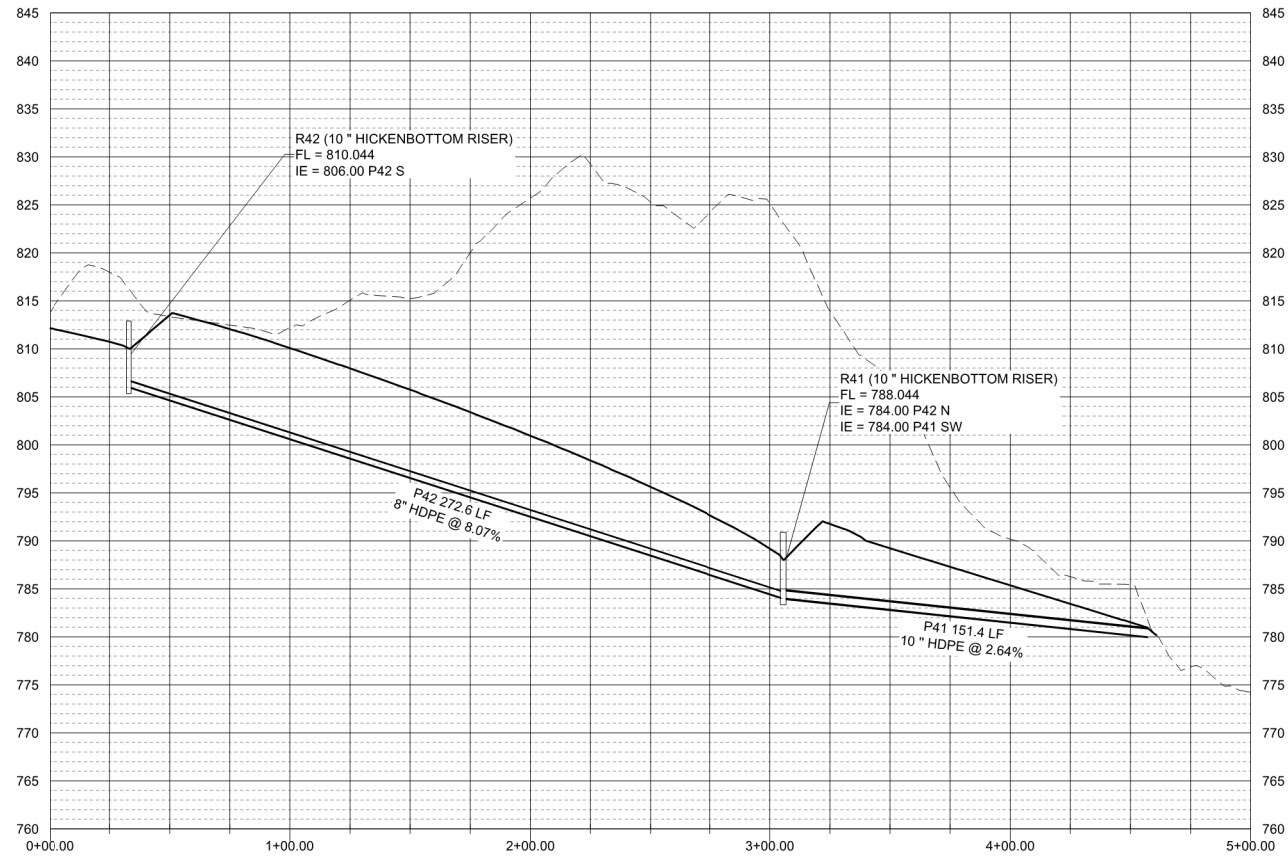


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 AML RECLAMATION PROJECT

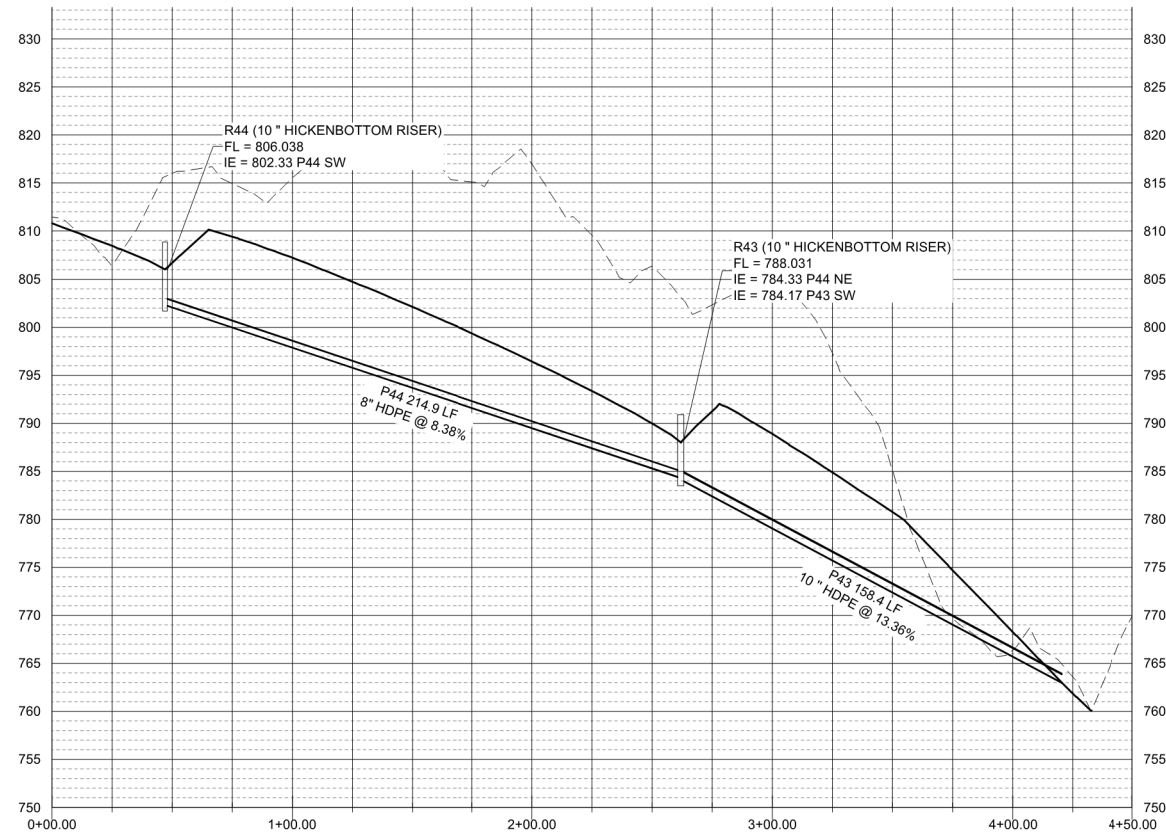
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 24 OF 37

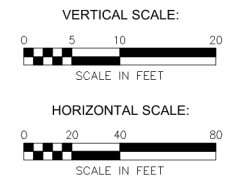
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P41-42 PROFILE



P43-44 PROFILE



S-H PROJECT NUMBER: 2142203060

REVISED: ---

ISSUED: 06/30/2023

CHKD. BY: LTM

DRAWN BY: GHK

DESIGN BY: AJH

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AML RECLAMATION PROJECT

PIPE PROFILES

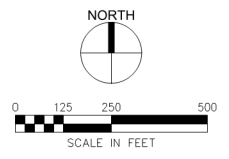
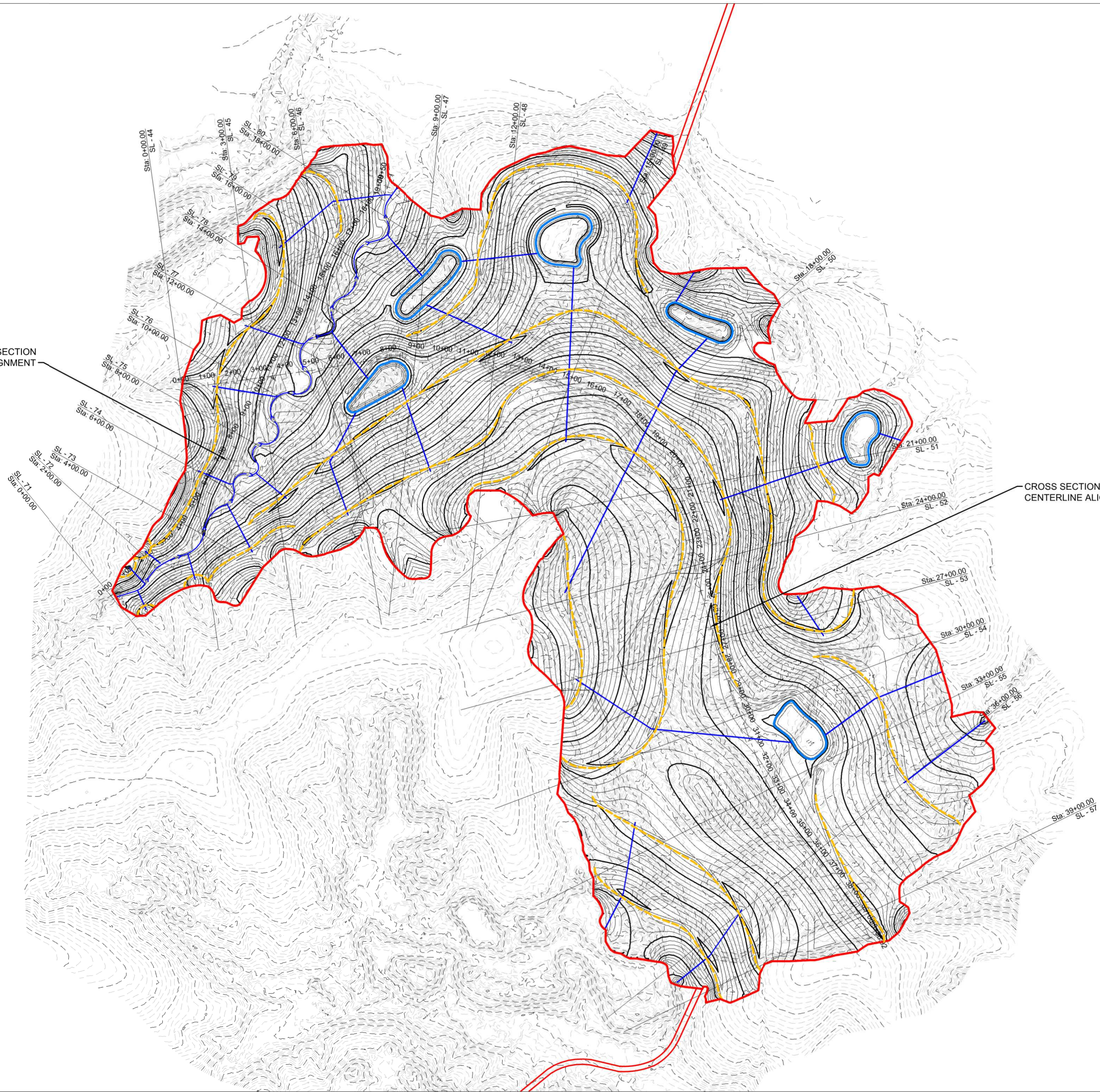
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25 OF 37



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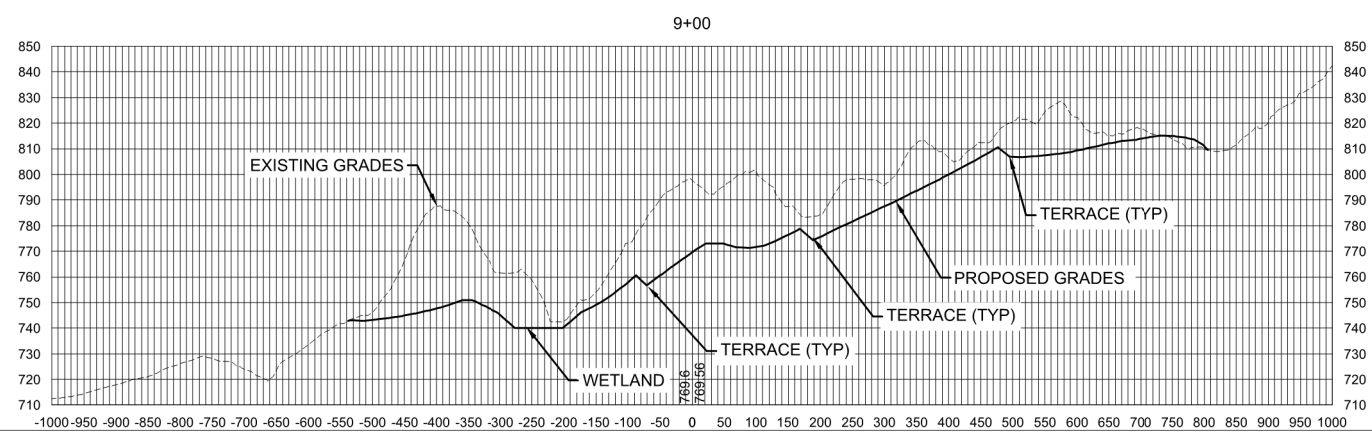
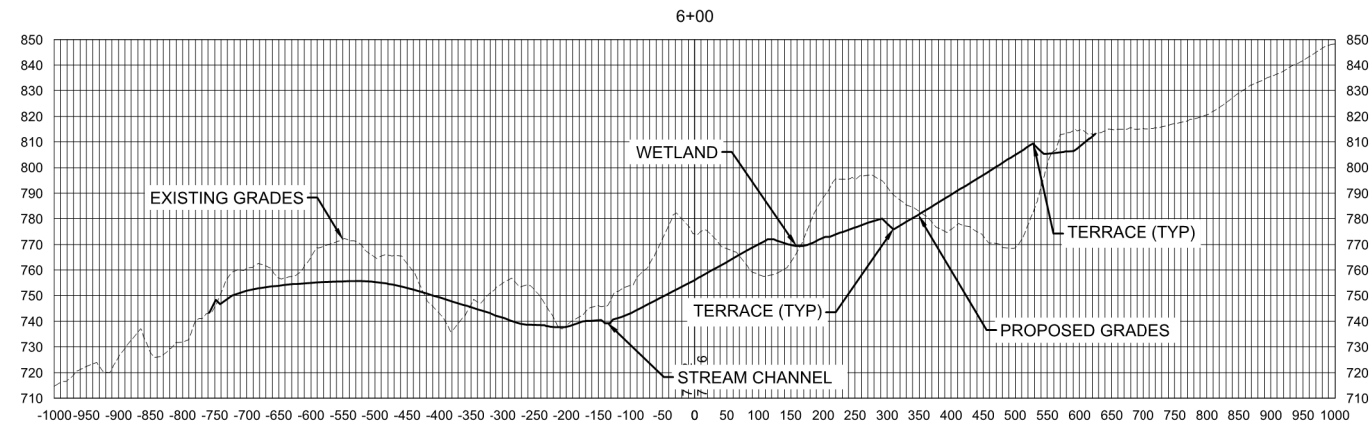
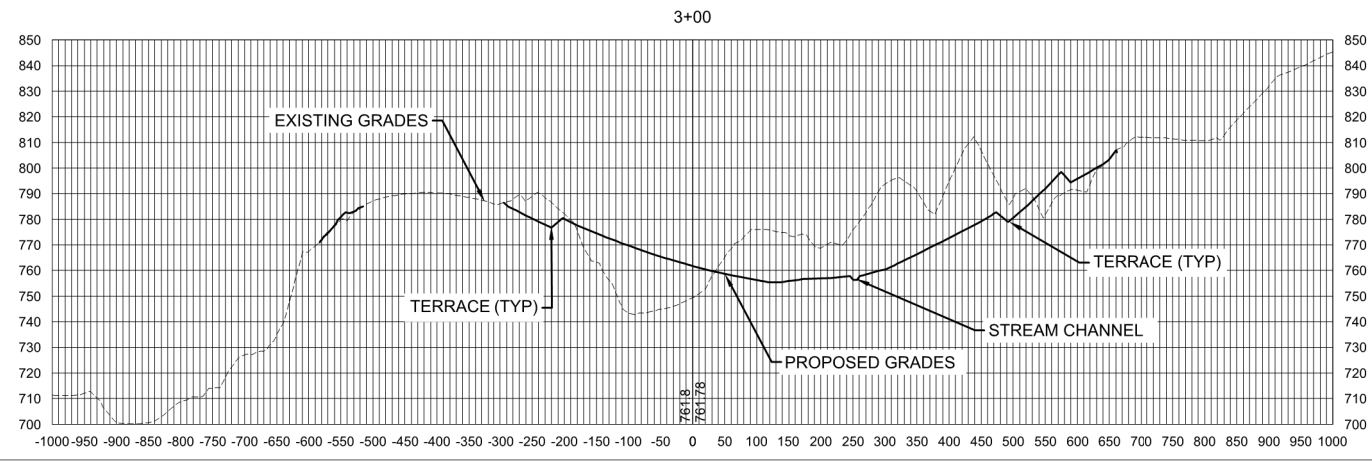
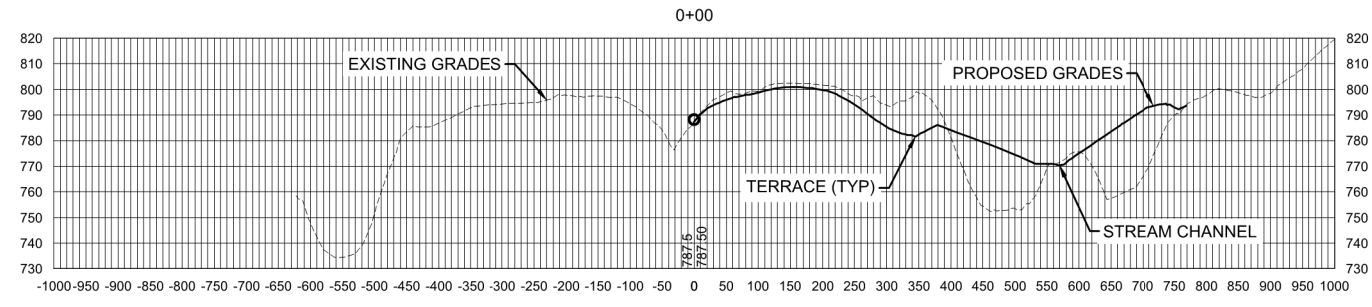
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CHANNEL CROSS SECTION  
CENTERLINE ALIGNMENT

CROSS SECTIONS  
CENTERLINE ALIGNMENT



DESIGN BY: AJH	DRAWN BY: GHK	CHKD. BY: LTM	ISSUED: 06/30/2023	REVISED: ----	S-H PROJECT NUMBER: 2142203060
WOODRUFF AML AML RECLAMATION PROJECT		IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246			
CROSS SECTIONS PLAN					
SHEET 26 OF 37		 <small>4125 Westown Parkway, Suite 100   West Des Moines, Iowa 50266 515.223.8104   fax: 515.223.0622   shivehattery.com Iowa   Illinois   Missouri   Illinois Firm Number: 184-000214</small>			



S-H PROJECT NUMBER: 2142203060

REVISED: ----

ISSUED: 06/30/2023

CHKD. BY: LTM

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DRAWN BY:

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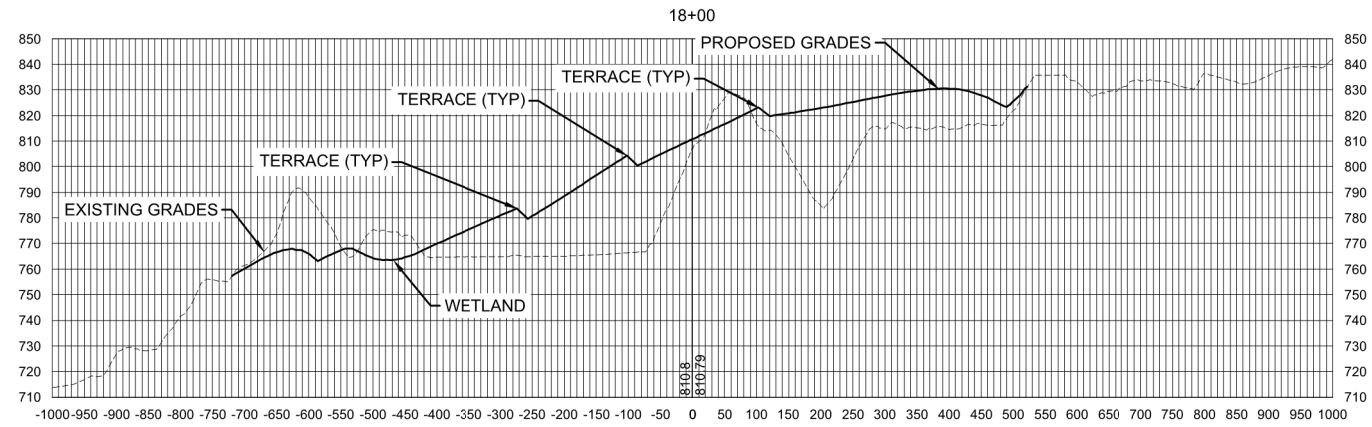
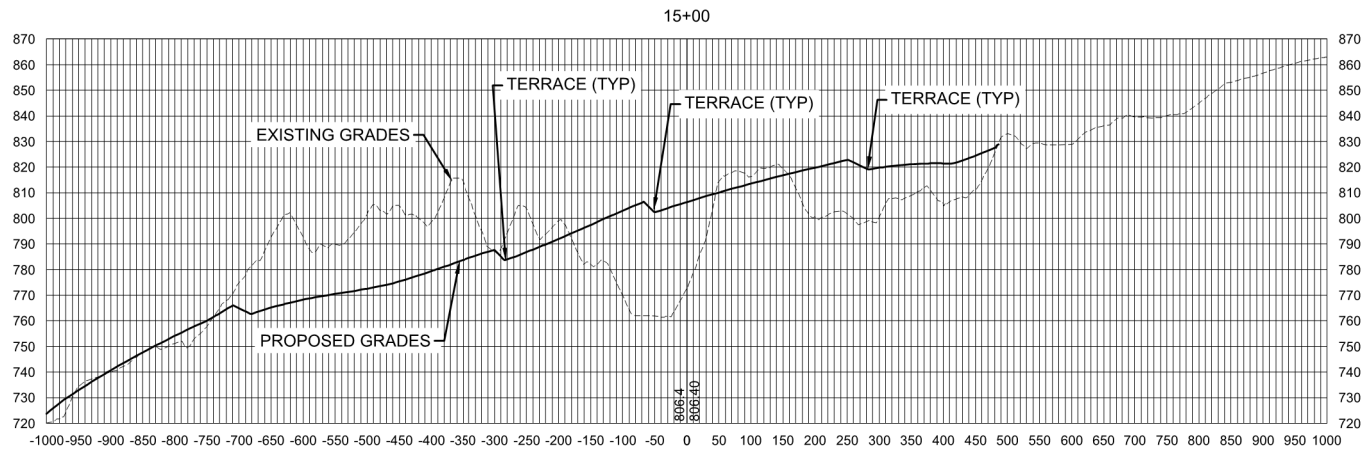
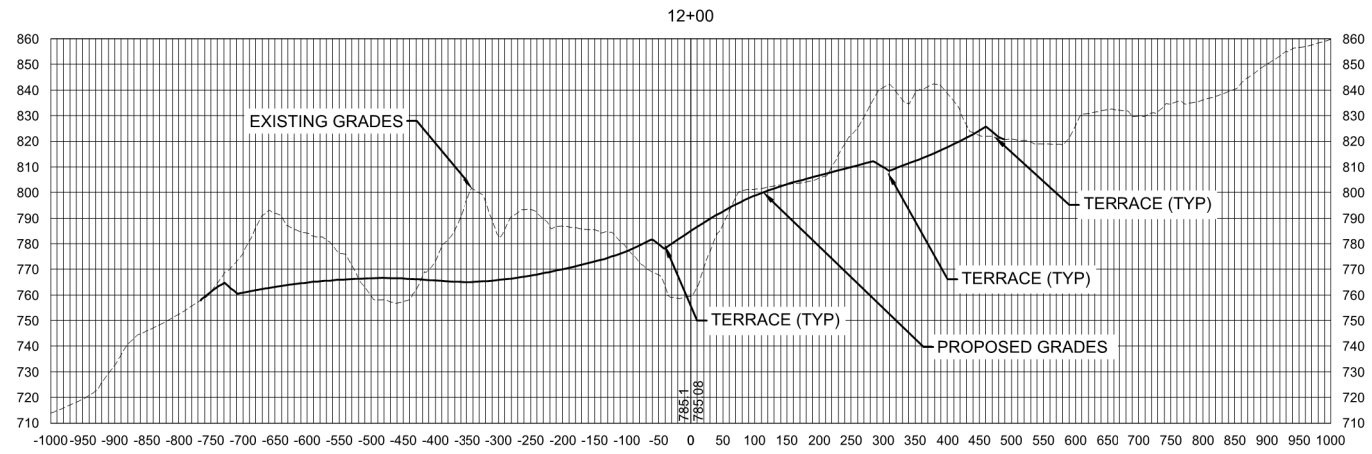
DESIGN BY:

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CROSS SECTIONS



S-H PROJECT NUMBER: 2142203060

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ISSUED: 06/30/2023  
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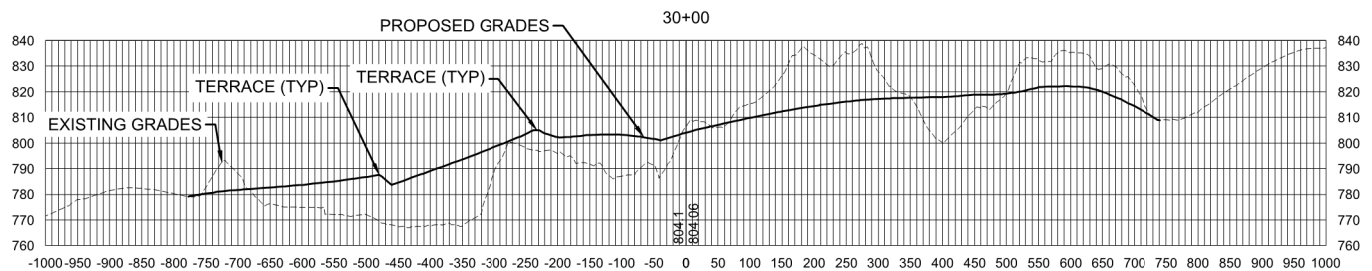
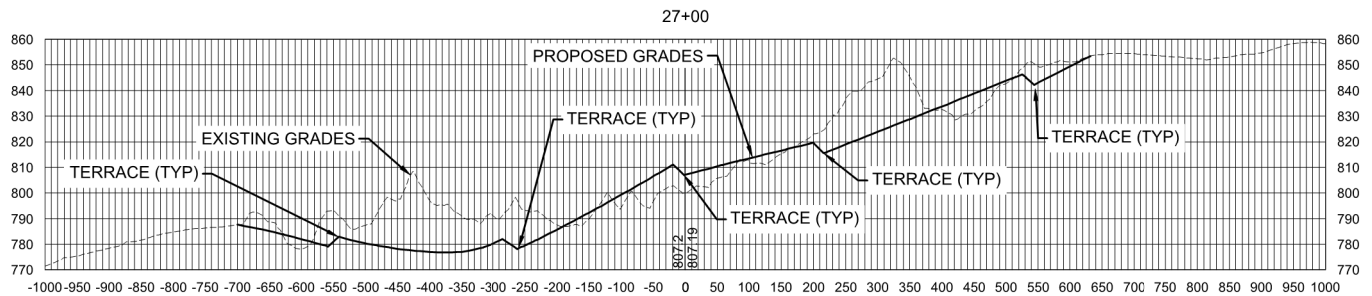
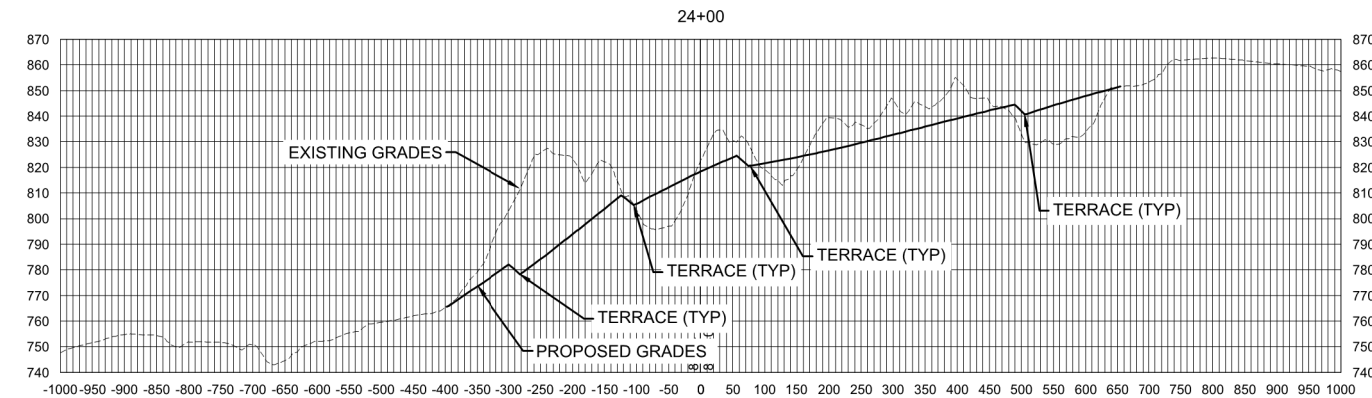
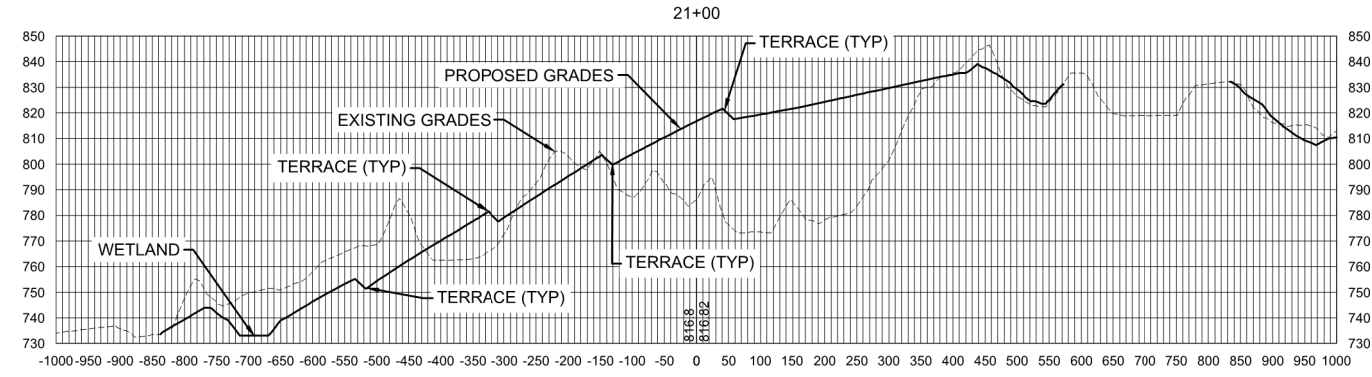
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CROSS SECTIONS



S-H PROJECT NUMBER: 2142203060

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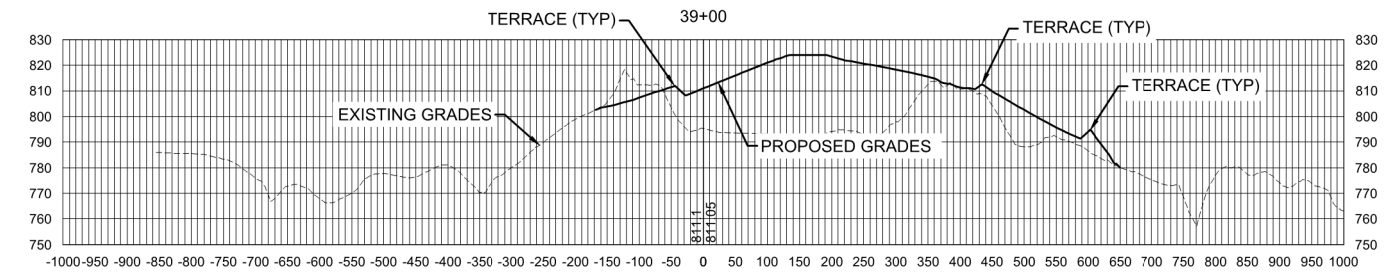
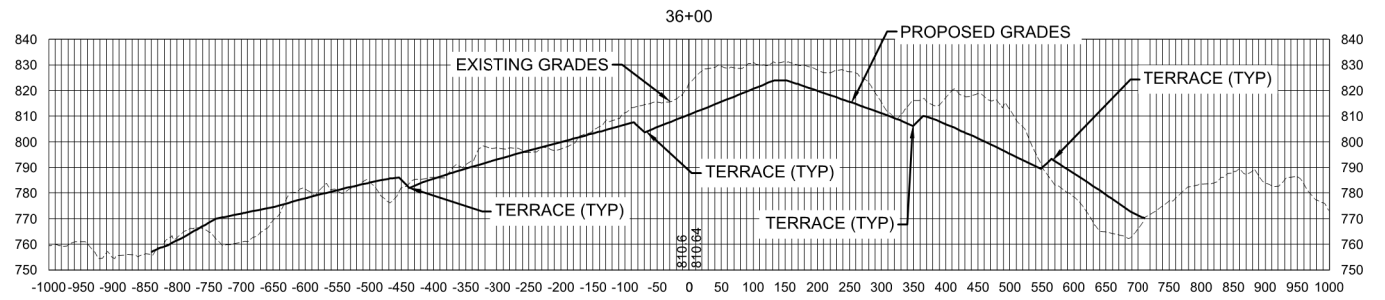
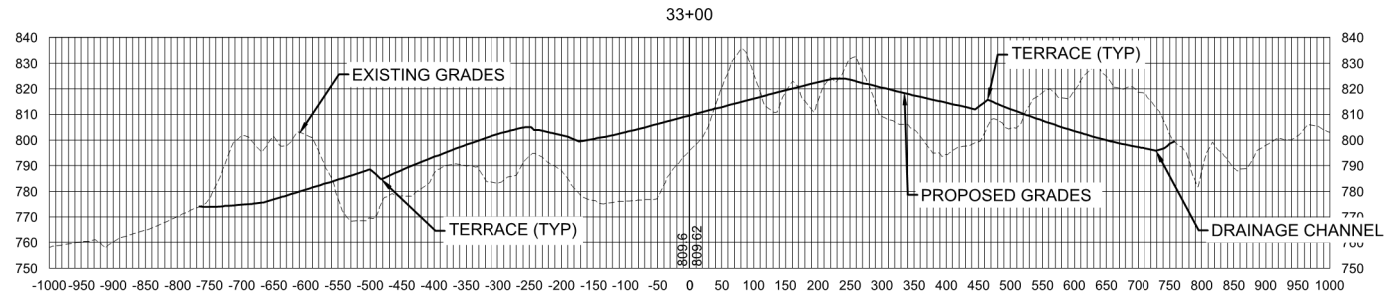
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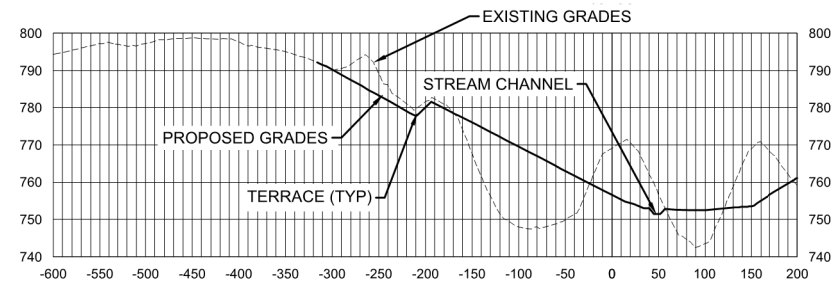
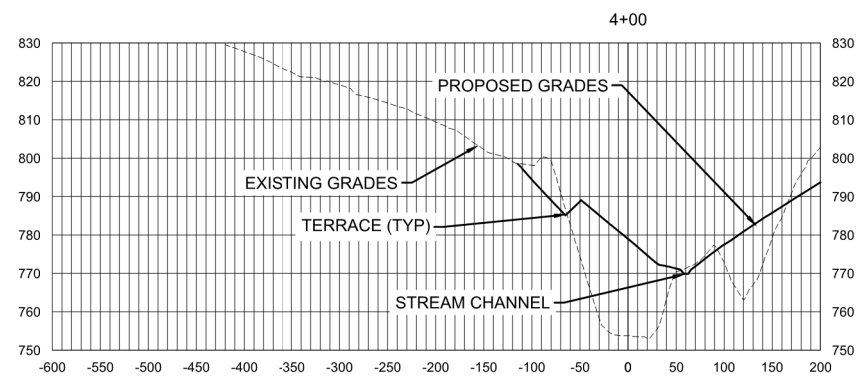
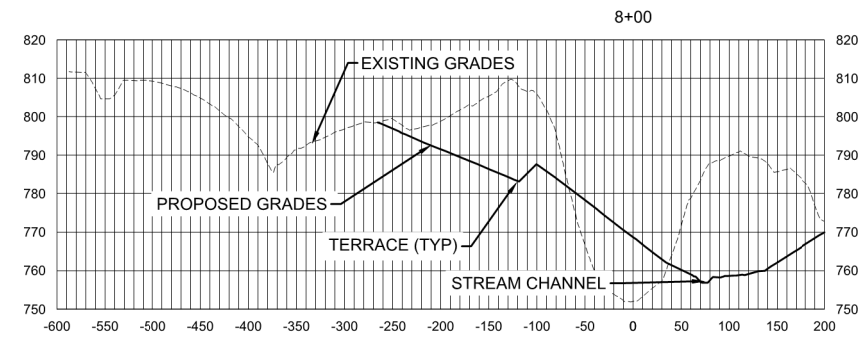
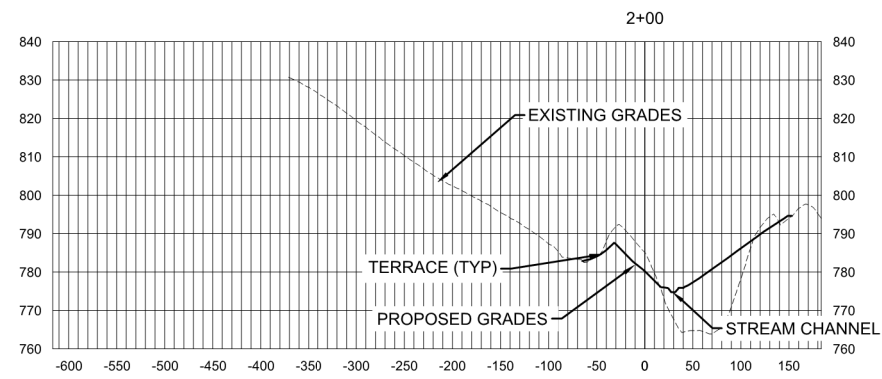
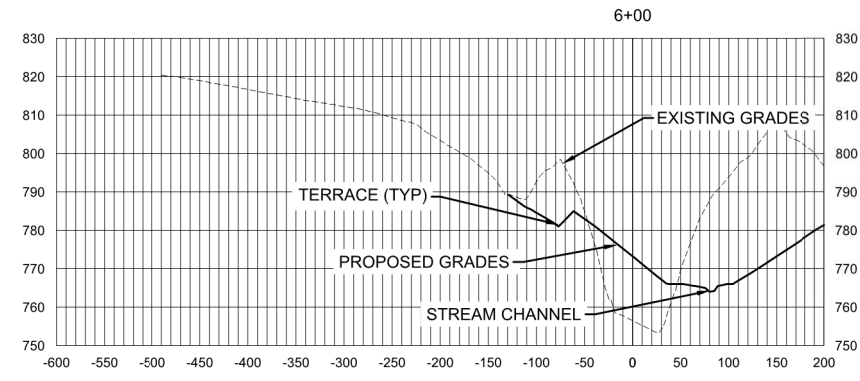
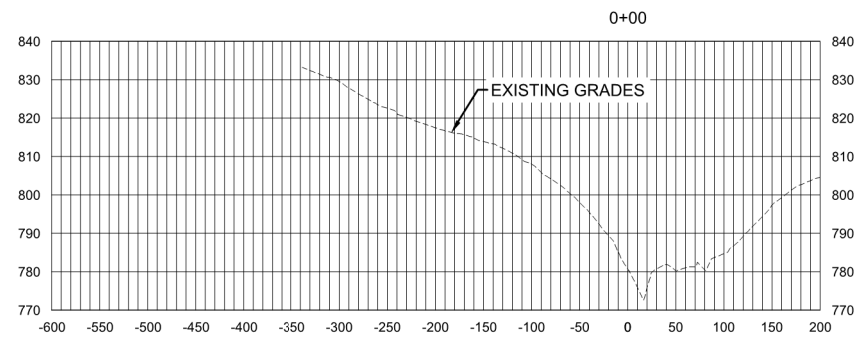
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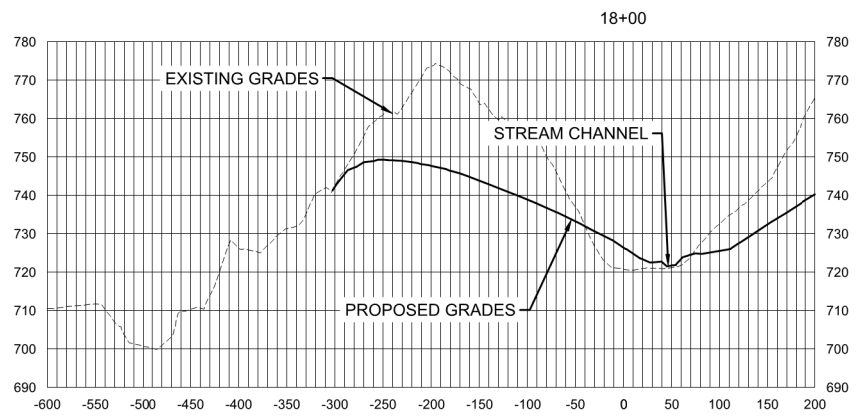
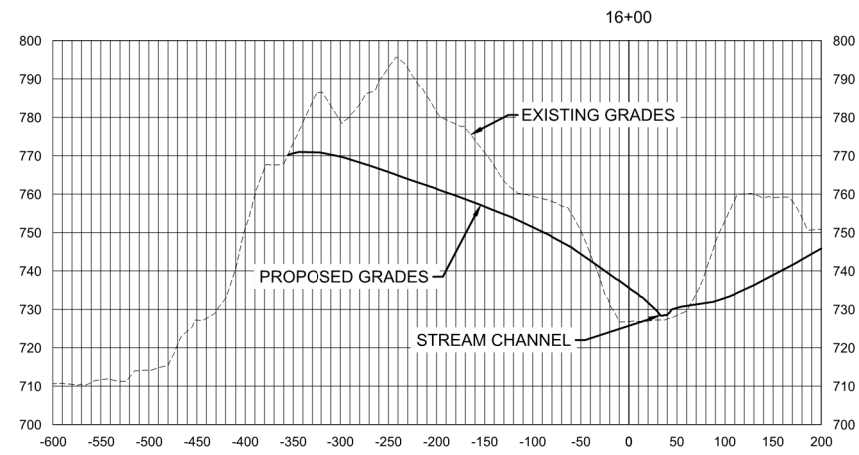
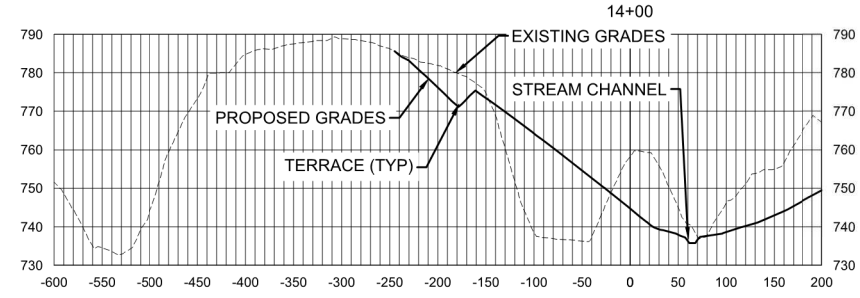
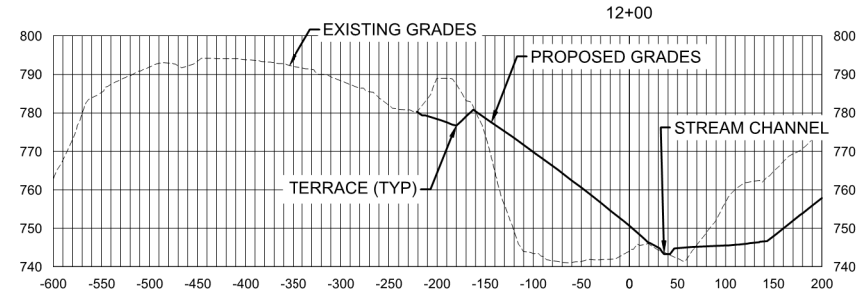
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 IOWA DEPARTMENT OF AGRICULTURE  
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 AND WATER QUALITY  
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DESIGN BY: AJH  
 DRAWN BY: GHK  
 CHKD. BY: LTM

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REVISED:

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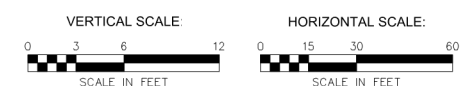
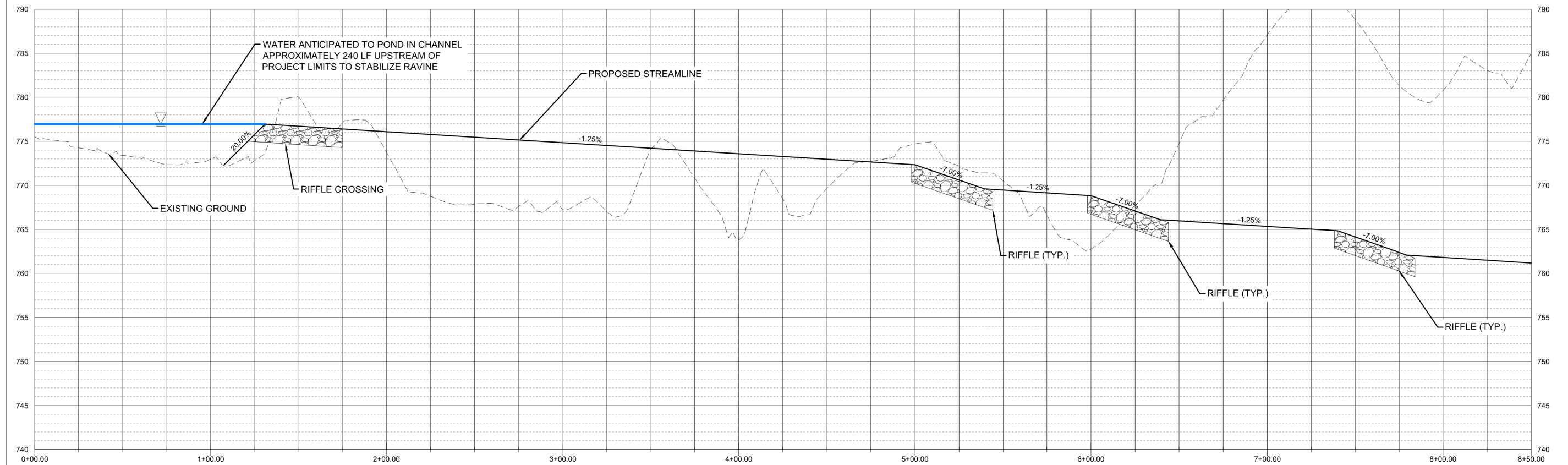
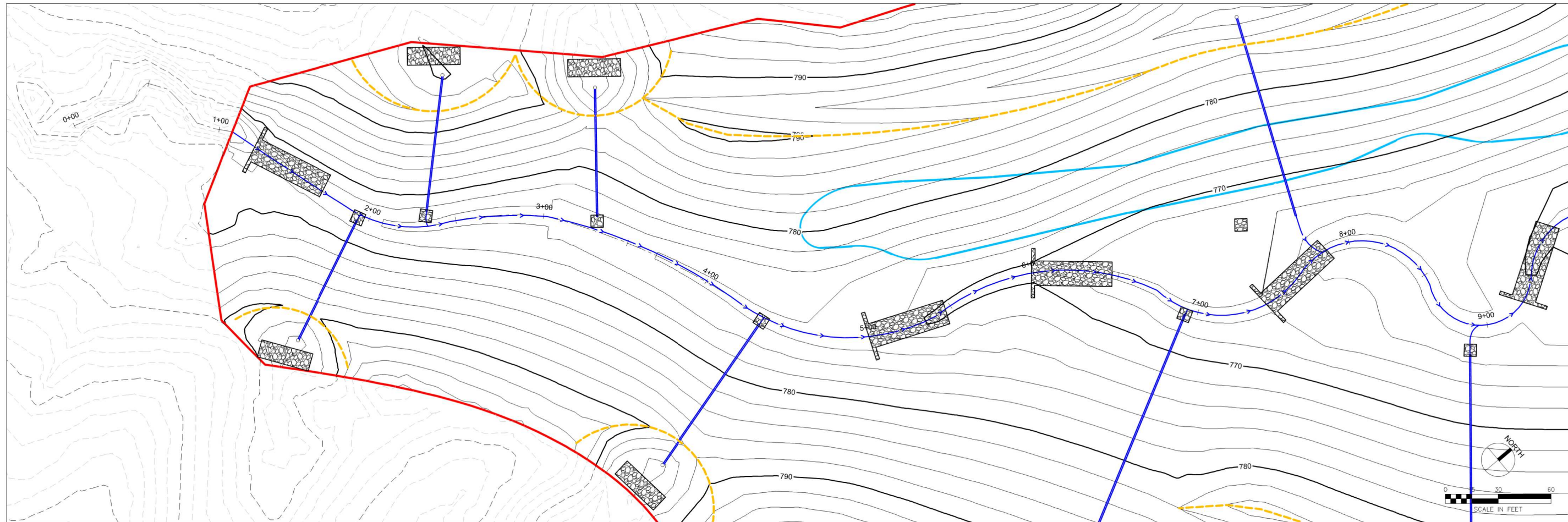
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 AML RECLAMATION PROJECT

CHANNEL CROSS SECTIONS



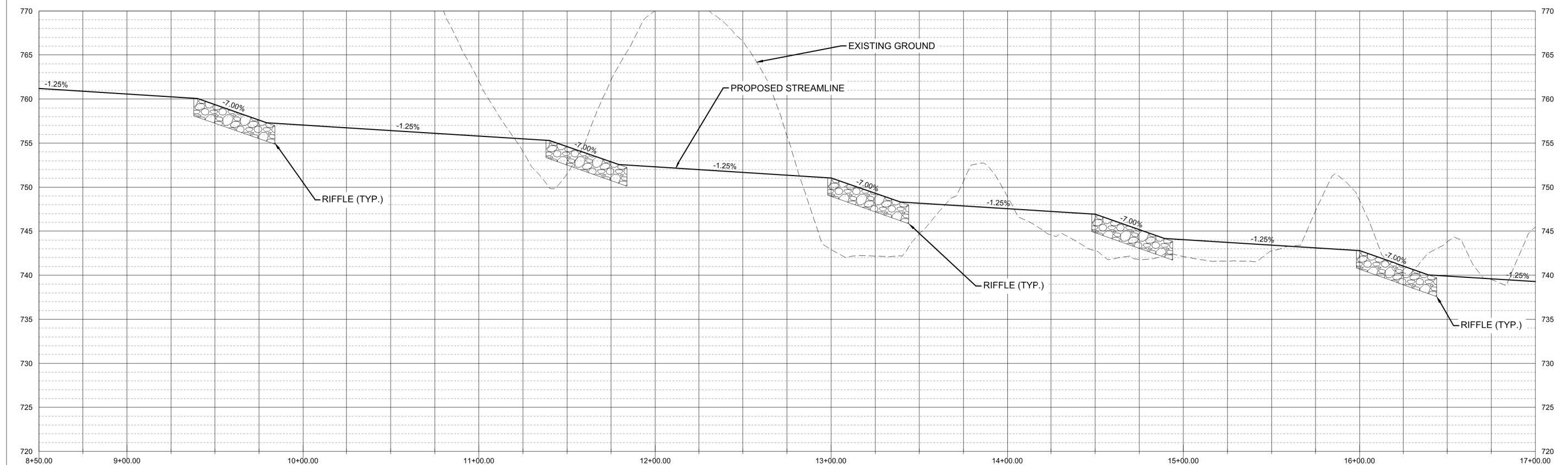
DESIGN BY: AJH    DRAWN BY: GHK    CHKD. BY: LTM    ISSUED: 06/30/2023    REVISED: ---    S-H PROJECT NUMBER: 2142203060

WOODRUFF AML  
AML RECLAMATION PROJECT  
NORTH STREAM PROFILE

IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION  
AND WATER QUALITY  
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**SHEET**  
**33 OF 37**



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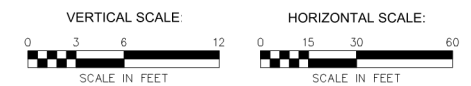
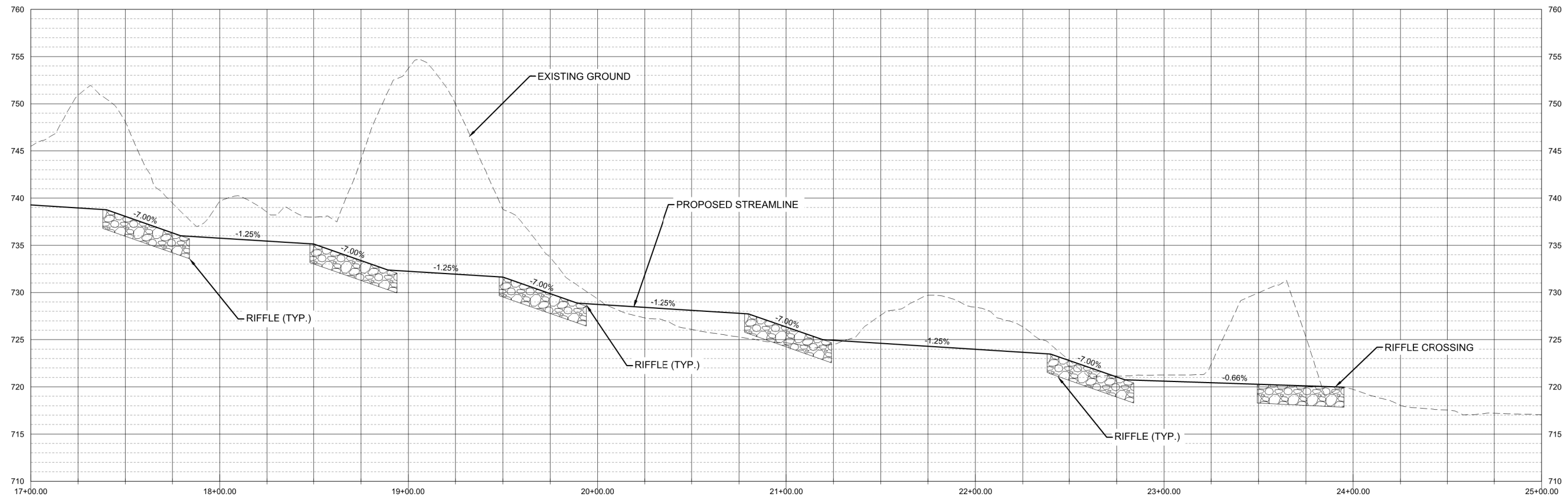
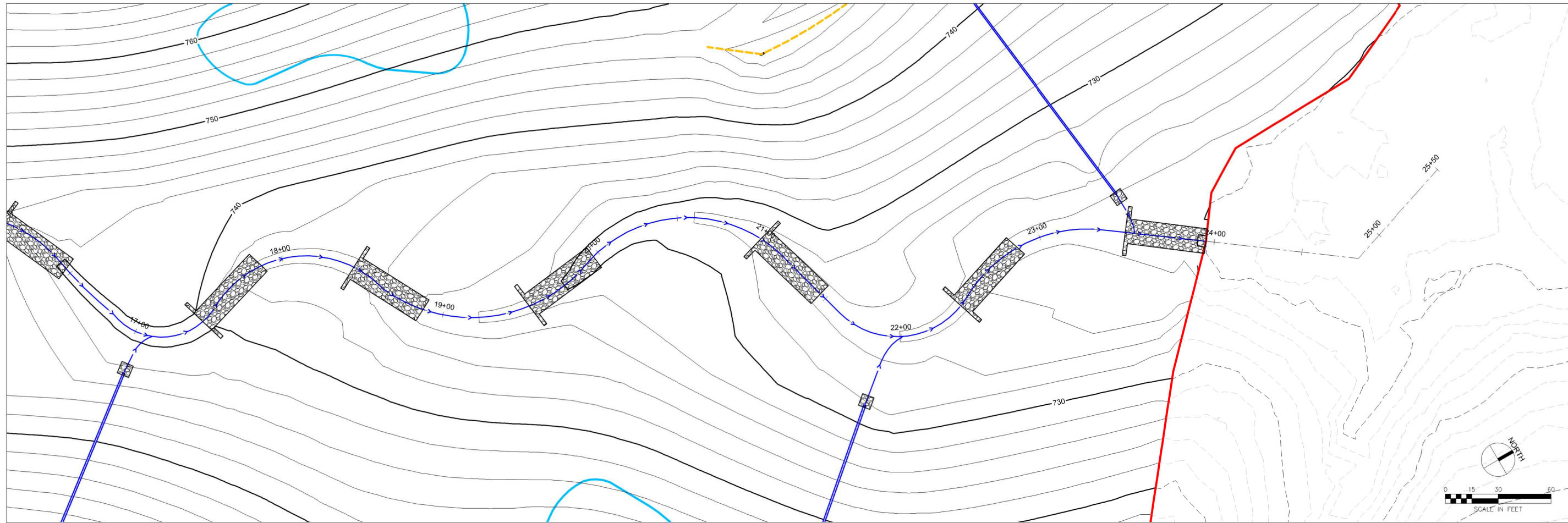
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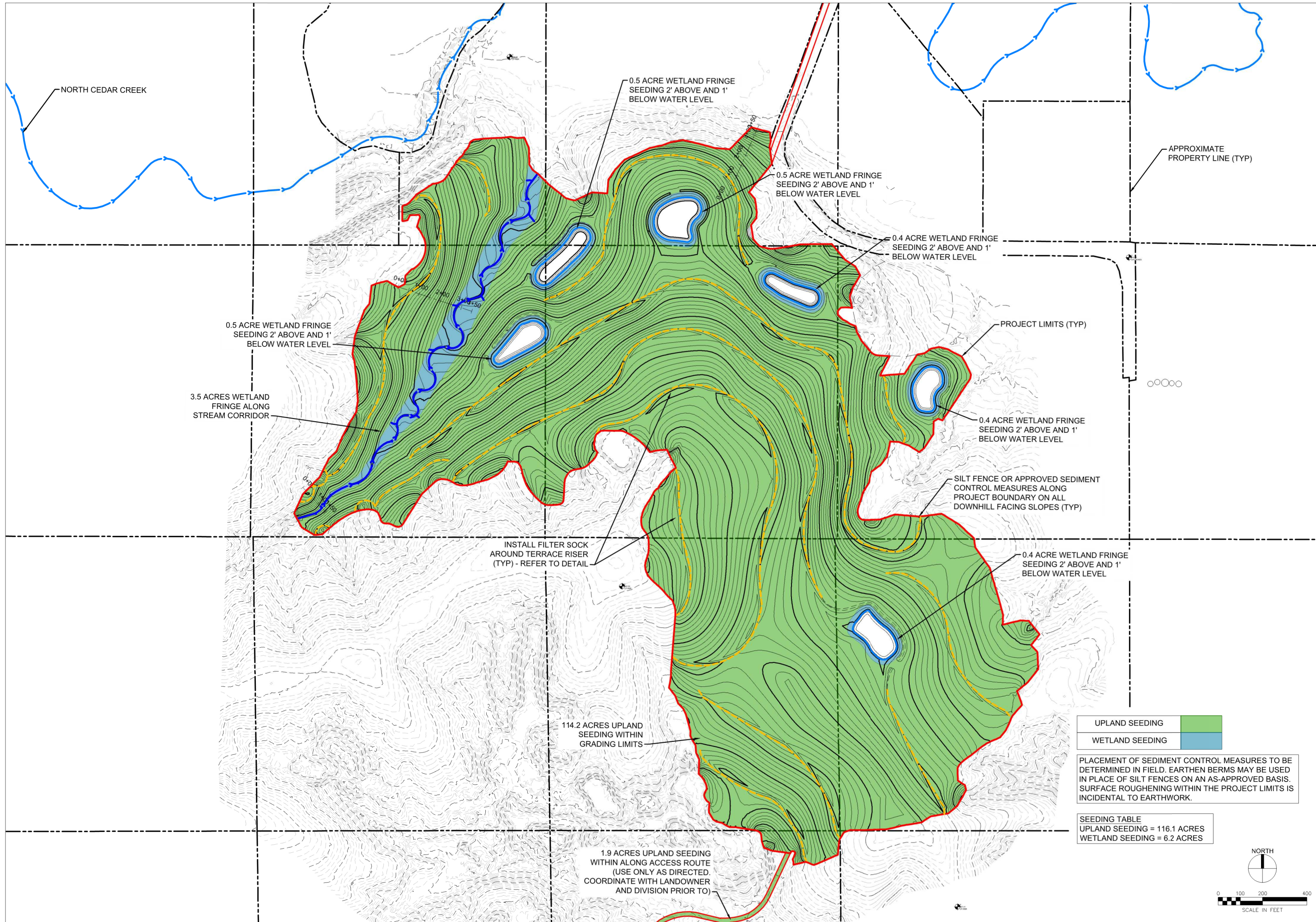
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WOODRUFF AML AML RECLAMATION PROJECT			IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246		
SWPPP & SEEDING PLAN					
SHEET 36 OF 37			 <small>4105 Westown Parkway, Suite 100   West Des Moines, Iowa 50266        515.223.0104   fax: 515.223.0622   shivehattery.com        Iowa   Illinois   Missouri   Illinois Firm Number: 184-000214</small>		

# STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SUMMARY

**SITE INFORMATION:**

1. SITE IS LOCATED IN SECTIONS 16, 21, TOWNSHIP 74 NORTH, RANGE 18 WEST, MARION COUNTY, IOWA.
2. THIS SWPPP COVERS THE RECLAMATION OF APPROXIMATELY 130 ACRES OF STRIP MINED LAND.
3. THE PREDOMINATE SOIL TYPES ARE: MINE SPOIL (5025)
4. RUNOFF FROM THE CONSTRUCTION AREA WILL FLOW INTO AN UNNAMED TRIBUTARY TO CEDAR CREEK.
5. THE AVERAGE NRCS RUNOFF CURVE NUMBER FOR THIS LAND AFTER PERMANENT VEGETATION IS ESTABLISHED IS ESTIMATED TO BE 84, BASED ON GRASSLAND WITH 50%-75% COVER. SOILS ON THIS SITE ARE SHOWN IN THE NRCS SOIL SURVEY AS BEING IN THE "D" HYDROLOGIC SOIL GROUP.

**GENERAL:**

1. THIS PROJECT WILL BE COVERED BY NPDES GENERAL PERMIT NO. 2 WHICH REGULATES STORMWATER DISCHARGE ASSOCIATED WITH INDUSTRIAL ACTIVITY FOR CONSTRUCTION ACTIVITIES.
2. THIS SHEET IS INCLUDED IN THE PLANS TO SUMMARIZE THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP). PARTICULAR INFORMATION CAN BE FOUND IN THE SWPPP DOCUMENTATION, WHICH SHALL INCLUDE:
  - A) THE SWPPP NARRATIVE DEVELOPED BY THE ENGINEER EXPLAINING HOW GENERAL PERMIT No. 2 REQUIREMENTS WILL BE MET
  - B) A COPY OF THE PERMIT AUTHORIZATION
  - C) CONTRACTOR AND SUB-CONTRACTOR CERTIFICATION STATEMENTS
  - D) ANTICIPATED SEQUENCE OF CONSTRUCTION EVENTS
  - E) DRAWINGS SHOWING LOCATIONS OF EROSION AND SEDIMENT CONTROL PRACTICES
  - F) COMPLETED INSPECTION REPORTS
  - G) MODIFICATIONS AND REPAIR DOCUMENTATION
3. THE SWPPP DOCUMENTATION SHALL BE KEPT AND MAINTAINED BY THE DIVISION IN AN ELECTRONIC FORM ACCESSIBLE TO DIVISION PERSONNEL, ENGINEER, AND CONTRACTOR AT ALL TIMES. THE ELECTRONIC SWPPP DOCUMENTATION MUST BE MADE AVAILABLE WITHIN THREE (3) HOURS OF A REQUEST FROM REGULATORY PERSONNEL.
4. THE PRIME CONTRACTOR AND ALL ITS SUBCONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER WHICH MINIMIZES EROSION AND PREVENTS SEDIMENTS FROM LEAVING THE CONSTRUCTION SITE. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION AND COMPLIANCE OF THE SWPPP FOR THE ENTIRE CONTRACT. THIS RESPONSIBILITY SHALL BE FURTHER SHARED WITH ALL OF ITS SUB-CONTRACTORS.
5. THE WORK SHALL BE DONE IN ACCORDANCE WITH THE SWPPP, THE CONTRACT DRAWINGS, AND SECTION 02120 OF THE PROJECT SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THESE REQUIREMENTS AND WATER POLLUTION CONTROL LAWS, RULES OR REGULATIONS OF OTHER FEDERAL, STATE OR LOCAL AGENCIES, THE MORE RESTRICTIVE LAWS, RULES OR REGULATIONS SHALL APPLY.
6. CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR THE INSTALLATION OF ALL BMPs IDENTIFIED IN THE SWPPP.

**RECORD OF CHANGES:**

- |                |              |
|----------------|--------------|
| 1. DATE: _____ | DESCRIPTION: |
| 2. DATE: _____ | DESCRIPTION: |
| 3. DATE: _____ | DESCRIPTION: |

**EROSION AND SEDIMENT CONTROLS (GENERAL):**

1. GRANULAR SURFACING SHALL BE INSTALLED AND MAINTAINED AT THE ENTRANCE INTO THE SITE AND ANY IDENTIFIED PARKING AREAS TO CONTROL MUD FROM BEING TRACKED FROM THE SITE. TRACKING OF SEDIMENTS OFF-SITE WILL BE REDUCED BY AVOIDING VEHICLE TRAFFIC ACROSS WET SURFACE SOILS. IF GRANULAR SURFACING AT THE SITE ENTRANCE DOES NOT EFFECTIVELY PREVENT TRACKING OF MUD FROM THE SITE, THEN VEHICLE TIRES SHALL BE MANUALLY CLEANED TO THE EXTENT PRACTICABLE. CONTRACTOR SHALL REMOVE TRACKED MUD AND SOIL FROM ADJOINING ROADWAYS.
2. WATER SHALL BE APPLIED TO HAUL ROADS AND OTHER DISTURBED EARTHEN SURFACES AS NECESSARY TO CONTROL DUST THROUGHOUT THE CONTRACT PERIOD.
3. WATER PUMPED DURING CONSTRUCTION OPERATIONS SHALL BE HANDLED IN A PROPER MANNER. EROSION AND SCOUR SHALL BE PREVENTED AT POINTS WHERE THE PUMP(S) DISCHARGE. LEVEL SPREADERS, RIP-RAP, AND/OR OTHER ENERGY ABSORBING DEVICES OR APPROPRIATE BMPs SHALL BE USED.
4. EXISTING VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION SHALL BE PRESERVED.
5. WHERE INDICATED ON DRAWINGS, SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED AT OR ALONG THE PERIMETER OF THE CONSTRUCTION AREA PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITY.
6. RISERS, INLETS, INTAKES, AND OTHER SUCH WATER-CONVEYING STRUCTURES SHALL BE PROTECTED WITH FILTER SOCK AT THE TIME OF THEIR INITIAL INSTALLATION.
7. IN AREAS WHERE THE PRESENCE OF FILTER SOCK OR STRAW WATTLE WILL INTERFERE WITH CONSTRUCTION ACTIVITIES, DIVERSION DITCHES AND TEMPORARY SEDIMENT TRAPS SHALL BE UTILIZED UNTIL THE SILT FENCE OR OTHER PRACTICES CAN BE INSTALLED.
8. LOCATIONS AND QUANTITIES OF BMPs SHOWN ON THE DRAWINGS ARE APPROXIMATE. ACTUAL LOCATIONS OR QUANTITIES ARE TO BE DETERMINED IN THE FIELD WITH THE APPROVAL OF THE DIVISION OR THE PROJECT ENGINEER.
9. AS THE WORK PROGRESSES, ADDITIONAL EROSION CONTROL MEASURES DEEMED NECESSARY, AS DETERMINED BY THE DIVISION OR ENGINEER AFTER INVESTIGATION, SHALL BE FURNISHED, INSTALLED AND MAINTAINED BY THE CONTRACTOR.
10. IF CONSTRUCTION ACTIVITY IS NOT PLANNED TO OCCUR IN A DISTURBED AREA FOR AT LEAST FOURTEEN (14) DAYS, THE AREA SHALL BE STABILIZED AS SOON AS PRACTICABLE AND WITHIN FOURTEEN (14) DAYS FOLLOWING THE LAST DISTURBANCE (UNLESS THE GROUND IS FROZEN OR SNOW COVERED) BY SURFACE ROUGHENING, TEMPORARY SEEDING, OR OTHER APPROVED METHOD.
11. EROSION CONTROL MEASURES BY THE CONTRACTOR SHALL CONTINUE UNTIL VEGETATIVE GROUND COVER IS ESTABLISHED AND ACCEPTED BY THE DIVISION.
12. ALL AREAS DISTURBED BEYOND CONSTRUCTION LIMITS SHOWN ON THIS PLAN MUST BE SEEDDED AND STABILIZED. THE SEED MIXTURE USED SHOULD INCLUDE SPECIES SIMILAR TO AND COMPATIBLE WITH THE SURROUNDING VEGETATION.
13. BMP'S SHALL BE INSTALLED PRIOR TO ANY TREE GRUBBING ACTIVITIES.

**OTHER POLLUTION CONTROLS:**

1. THE CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION SITE FREE OF ALL WASTES INCLUDING LITTER, USED PARTS, USED OIL AND CONTAINERS, TIRES, AND ANY OTHER WASTES GENERATED BY CONSTRUCTION ACTIVITIES. SANITARY WASTE GENERATED ON SITE SHALL BE TREATED AND DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS. CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND WASTES SHALL ALSO COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
2. CONCRETE WASHOUT RESIDUE SHOULD BE CONTAINED AND HAULED OFF SITE ONCE IT HARDENS. AREAS WHERE CONCRETE WASHOUT OCCURS SHALL BE FILLED AND STABILIZED.

**TOPSOIL PRESERVATION:**

THE SITE IS AN ABANDONED COAL MINE RECLAMATION PROJECT; NO TOPSOIL EXISTS PRIOR TO RECLAMATION-RELATED CONSTRUCTION ACTIVITIES. THEREFORE, THE TOPSOIL PRESERVATION REQUIREMENT WILL NOT BE MET. THE SITE CONSISTS OF MINE SPOIL MATERIAL CLASSIFIED AS MINE PITS AND DUMPS - SOIL TYPE 502 ON USDA SOIL SURVEY MAPS. AFTER FINAL GRADE IS ACHIEVED, AGRICULTURAL LIME WILL BE APPLIED AT A RATE TO BE DETERMINED BY SOIL TESTS. THE AGRICULTURAL LIME, ALONG WITH 5 TONS OF MULCH WILL BE INCORPORATED INTO THE UPPER ONE (1) FOOT OF THE MINE SPOIL TO PRODUCE A GROWING MEDIUM AS OUTLINED IN PROJECT SPECIFICATION 02400. AFTER A PERIOD OF TIME TO ALLOW FOR NEUTRALIZATION AND MULCH DECOMPOSITION, THE SITE WILL BE PREPARED FOR SEEDING. AGRICULTURAL LIME, FERTILIZER, SEED AND CRIMPED MULCH WILL BE APPLIED AS OUTLINED IN PROJECT SPECIFICATION 02700.

**INSPECTIONS:**

1. SITE INSPECTION IS THE RESPONSIBILITY OF THE DIVISION WITH ASSISTANCE FROM CONTRACTOR WHEN REQUESTED; SITE INSPECTIONS SHALL BE PERFORMED BY QUALIFIED PERSONNEL. INSPECTIONS SHALL BE PERFORMED ONCE EVERY SEVEN (7) DAYS.
2. ALL INSTALLED BMPs SHALL BE INSPECTED FOR CONDITION AND EFFECTIVENESS.
3. SITE INSPECTION REPORTS SHALL BE PROPERLY SIGNED BY THE PERSON CONDUCTING THE INSPECTION. THE REPORT SHALL INCLUDE:
  - A) DATE, NAME AND TITLE/POSITION OF THE INSPECTOR;
  - B) WEATHER INFORMATION;
  - C) LOCATION OF SEDIMENT/POLLUTANT DISCHARGE(S);
  - D) BMPs THAT ARE NEEDED, REQUIRE MAINTENANCE, OR HAVE FAILED;
  - E) CORRECTIVE ACTIONS REQUIRED;
  - F) CHANGES/UPDATES TO THE SWPPP.
4. THE FINDINGS OF EACH INSPECTION SHALL BE RECORDED AND KEPT IN AN ELECTRONIC FORMAT WITH THE ELECTRONIC SWPPP.
5. IF INSPECTIONS FIND DEFICIENCIES, THE CONTRACTOR SHALL BEGIN CORRECTIVE ACTION ON ALL DEFICIENCIES AS SOON AS PRACTICABLE.
6. THE SWPPP MAY BE REVISED BASED ON FINDINGS OF THE INSPECTIONS. SUCH REVISIONS SHALL BE MADE WITHIN SEVEN (7) DAYS OF THE INSPECTION. THE CONTRACTOR SHALL IMPLEMENT ALL REVISIONS.
7. COPIES OF INSPECTION REPORTS WILL BE RETAINED WITH THE SWPPP FOR THREE (3) YEARS FROM THE DATE THE PERMIT COVERAGE TERMINATES.

**MAINTENANCE:**

1. THE CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL PRACTICES IN PROPER WORKING ORDER FOR THE DURATION OF THE CONTRACT. IF A PRACTICE IS NO LONGER NEEDED AS DETERMINED BY THE DIVISION OR ENGINEER, IT SHALL BE REMOVED.
2. MAINTENANCE INCLUDES CLEANING, REPAIRING, OR REPLACING AS REQUIRED. IN GENERAL, MAINTENANCE SHALL BE PERFORMED PRIOR TO THE NEXT ANTICIPATED STORM EVENT.
3. REMOVE SEDIMENT FROM SEDIMENT TRAPS, DITCHES, AND SILT FENCES WHEN THEIR INSTALLED CAPACITY IS REDUCED BY FIFTY (50) PERCENT OR MORE.

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SWPPP NOTES