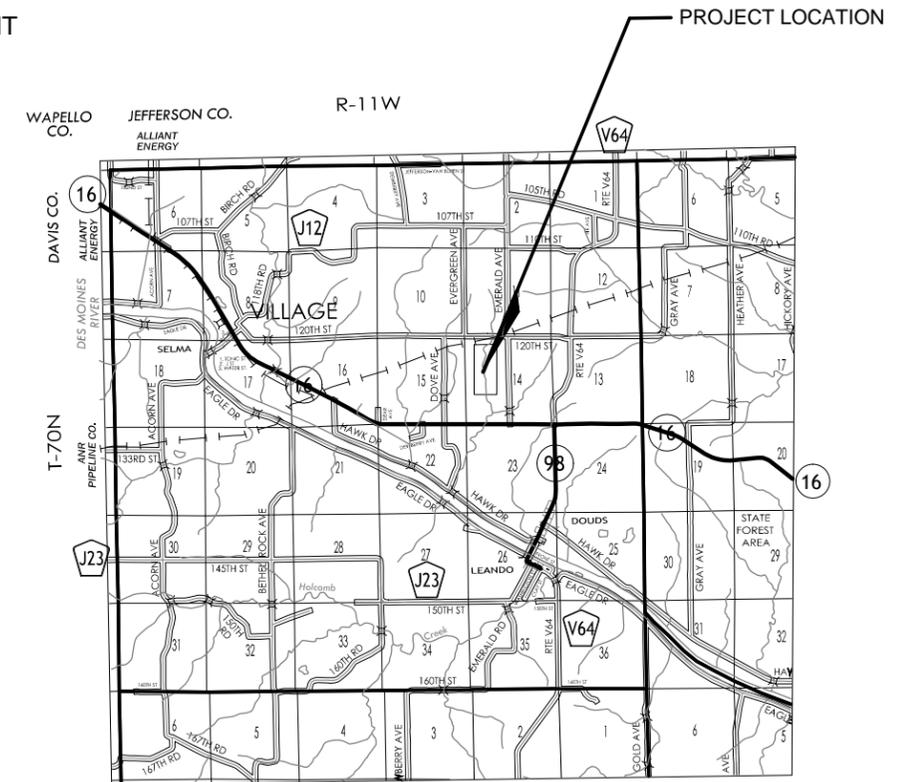
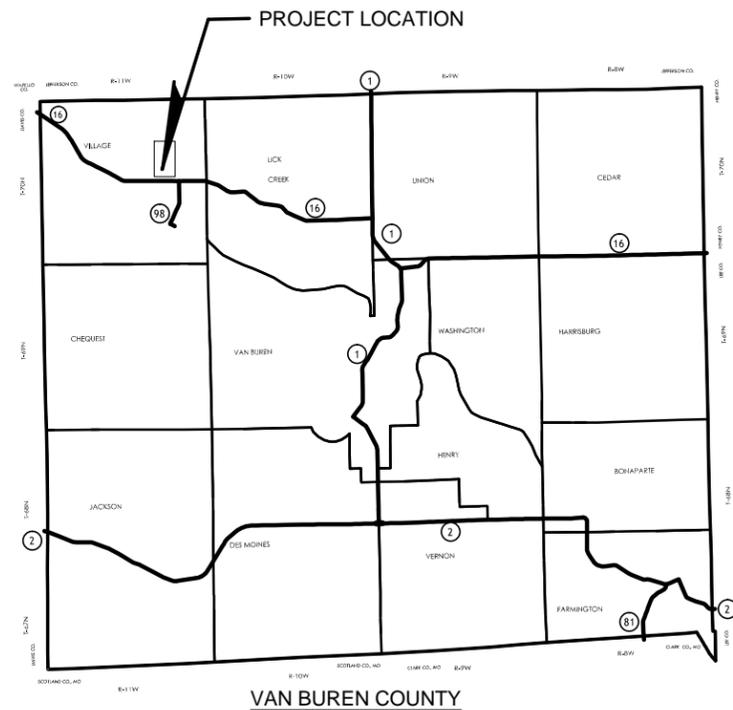
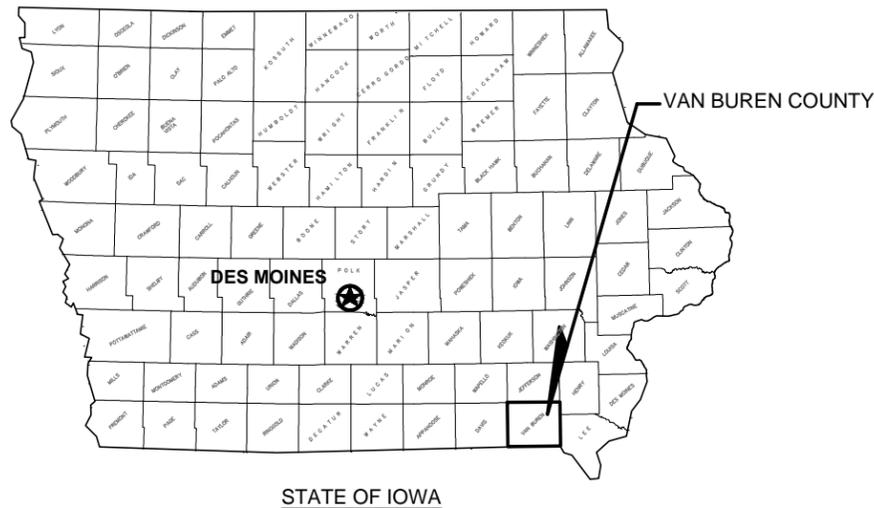


DOOLEY (IA-202) AML RECLAMATION PROJECT

SECTION 14, TOWNSHIP 70 NORTH, RANGE 11 WEST, VAN BUREN COUNTY
DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

FUNDED BY:
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
GRANT NO: S13AF20008



PREPARED FOR:
DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP
HENRY A. WALLACE BUILDING
502 E. 9TH STREET
DES MOINES, IOWA 50319
(515) 281-4246

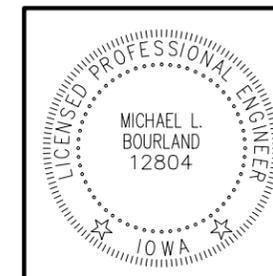
ENGINEER:
MICHAEL L. BOURLAND, P.E.
MINES & MINERALS BUREAU
TEL: (515)-242-6130
E-MAIL: mike.bourland@iowaagriculture.gov

- INDEX OF SHEETS:
- 1 COVER SHEET
 - 2 PROJECT NOTES
 - 3 SITUATION PLAN
 - 4 SITE PREPARATION
 - 5 GRADING PLAN
 - 6 STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
 - 7 CUT-FILL PLAN
 - 8 DETAILS - EMBANKMENT AND OUTLETS
 - 9 DETAILS - TERRACES, OUTLETS AND FENCING
 - 10 DETAILS - CROSSING
 - 11 SIGN DETAILS
 - 12 CROSS SECTIONS



OWNERSHIP OF DOCUMENTS:
This document, and the ideas and designs contained in this document, are an instrument of professional service, and may not be used, in whole or in part, for any other project without the written the Division of Soil Conservation..

DISCLAIMER:
Reference to particular products, tradenames, or manufacturers is intended for clarity only and does not represent endorsement by the State of Iowa. Equivalent products or materials may be suitable, subject to the approval of the Engineer or Division.



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa

Signature: *Michael L. Bourland* Date: 3-14-2014

Name (printed or typed): Michael L. Bourland

License Number: 12804

My license renewal date is: December 31, 2015

Pages or sheets covered by this seal: Sheets 1-12

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DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE
AND LAND STEWARDSHIP
HENRY A. WALLACE BUILDING
502 E. 9TH STREET, DES MOINES, IOWA 50319
(515)281-4246

DESIGN BY: MLB DRAWN BY: MLB

DOOLEY
AML RECLAMATION PROJECT
COVER SHEET

PROJECT NOTES

GENERAL NOTES:

1. ALL IMPROVEMENTS SHOWN ON THESE PLANS SHALL COMPLY WITH THE GENERAL CONDITIONS, STANDARDS, AND SPECIFICATIONS SET FORTH IN PROJECT DOCUMENTS. THESE INCLUDE STANDARD CONSTRUCTION SPECIFICATIONS SET FORTH BY THE DIVISION OF SOIL CONSERVATION AS WELL AS THE SUPPLEMENTAL SPECIFICATIONS ESTABLISHED BY THE ENGINEER. SPECIFICATIONS OR STANDARDS INCORPORATED BY REFERENCE SHALL ALSO BE FOLLOWED.
2. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE DIVISION'S STANDARD SPECIFICATIONS AND THE ENGINEER'S SUPPLEMENTAL SPECIFICATIONS.
3. OWNERSHIP: THIS DOCUMENT, AND THE IDEAS AND DESIGN CONTAINED IN THIS DOCUMENT, ARE AN INSTRUMENT OF PROFESSIONAL SERVICE, AND MAY NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE DIVISION OF SOIL CONSERVATION.
4. REFERENCES TO PARTICULAR PRODUCTS, TRADENAMES, OR MANUFACTURERS IS INTENDED FOR CLARITY ONLY AND DO NOT REPRESENT EXCLUSION OR ENDORSEMENT BY THE STATE OF IOWA. EQUIVALENT PRODUCTS OR MATERIALS MAY BE SUITABLE, SUBJECT TO THE APPROVAL OF THE ENGINEER.
5. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO THE ENGINEER AND/OR DIVISION PRIOR TO COMMENCING CONSTRUCTION.

UTILITY NOTES:

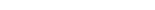
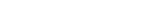
1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES AND PUBLIC ROADWAYS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF ANY CONFLICTS WITH THE DRAWINGS OCCUR. ANY DAMAGE TO EXISTING UTILITIES AND/OR PAVED STREETS CAUSED BY TRENCHING AND GRADING OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE.
2. UNDERGROUND FACILITIES STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS, PUBLIC RECORDS, AND FIELD INVESTIGATION. THEIR LOCATIONS SHALL BE CONSIDERED TO BE APPROXIMATE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT IOWA ONE-CALL AND/OR EACH UTILITY COMPANY FOR THE FIELD LOCATION(S) OF EXISTING UTILITY LINES IN OR NEARBY THE CONSTRUCTION AREA PRIOR TO BEGINNING ANY CONSTRUCTION.
3. THERE MAY BE ADDITIONAL PRIVATE OR OTHER UNDERGROUND UTILITIES NOT SHOWN OR KNOWN AT THE TIME OF THE PUBLICATION OF THIS DRAWING. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXISTENCE AND LOCATION OF ANY ADDITIONAL UNDERGROUND UTILITIES NOT SHOWN ON THIS DRAWING IN ORDER TO AVOID DAMAGE THERETO.
4. THE CONTRACTOR SHALL EXERCISE PROPER CAUTION TO PROTECT EXISTING UTILITY IMPROVEMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE THERETO AT NO ADDITIONAL EXPENSE TO THE OWNER OR DIVISION.

SITE SPECIFIC NOTES:

1. A CLOSED LANDFILL IS LOCATED ON THE EAST SIDE OF THE SITE THAT IS OWNED BY THE COUNTY. THIS AREA SHALL NOT BE DISTURBED EXCEPT AS PROVIDED ON THE PLANS WITHOUT THE EXPRESS WRITTEN PERMISSION FROM THE COUNTY.
2. A SERIES OF MONITORING WELLS ARE LOCATED ON THE SITE WHERE SOME GRADING WILL OCCUR. EXTREME CARE SHALL BE USED AROUND ALL MONITORING WELLS TO NOT DISTURB THEM. ANY DISTURBANCE THAT MAY OCCUR WILL BE CORRECTED BY THE CONTRACTOR AT HIS OWN COST.
3. TWO MONITORING WELLS WILL REQUIRE AN EXTENSION BE PLACED OTHERS WILL NEED TO BE SHORTENED AFTER GRADING IS COMPLETED. THE CONTRACTOR SHALL COORDINATE WORK IN THESE AREAS AND THE NEEDED MODIFICATION WITH BARKER-LEMAR ASSOCIATES. THE CONTACT PERSON IS BRIAN RATH AT 515-256-8814.
4. LIMITED CLEARING IS ANTICIPATED AT THE SITE. ANY BURNING OF BRUSH SHALL BE COMPLETED A SAFE DISTANCE AWAY FROM THE MONITORING WELLS SINCE THEY ARE CONSTRUCTED OF PVC.
5. A HIGH PRESSURE GAS LINE IS LOCATED NORTH OF THE WORK AREA.
6. THE WEST PORTION OF THE SITE IS SOMETIMES USED AS A PASTURE. IF CATTLE ARE ON SITE, CONTRACTOR SHALL MAKE SURE GATE IS ALWAYS CLOSED AND EXERCISE CARE WHEN ENTERING AND LEAVING THE SITE.

TOPOGRAPHICAL NOTES:

1. THE TOPOGRAPHIC INFORMATION USED FOR THIS DESIGN WAS OBTAINED USING LIGHT DETECTION AND RANGING (LIDAR).
2. GLOBAL POSITIONING EQUIPMENT (GPS) WAS USED TO LOCATE THE MONITORING WELL LOCATIONS, ROAD CROSSING CULVERT LOCATIONS AND ELEVATIONS, ALONG WITH SOME FENCE LOCATIONS.
3. GPS AND LIDAR INFORMATION HAS BEEN USED IN THE DESIGN TO DETERMINE THE CROSSING AND OUTLET ELEVATIONS. THE CONTRACTOR WILL CONTACT THE ENGINEER PRIOR TO ESTABLISHING THE FINAL CONSTRUCTED ELEVATION OF THE AUXILIARY SPILLWAY AND OUTLET PIPE.
4. SITE GRADING FOR THIS PROJECT ASSUMES A SHRINKAGE FACTOR OF 15 PERCENT. THE ACTUAL SHRINKAGE RATE MAY DIFFER AND SLIGHT ADJUSTMENTS TO THE GRADING PLAN MAY BE NEEDED.

-  PROPOSED MAJOR TOPO LINES
-  PROPOSED MINOR TOPO LINES
-  EXISTING MAJOR TOPO LINES
-  EXISTING MINOR TOPO LINES
-  PROJECT BOUNDARY
-  1/4 - MILE NO BURN RADIUS
-  EXISTING STREAM
-  EXISTING FENCE
-  PROPOSED TERRACE
-  PROPOSED TILE FOR TERRACE
-  PROPOSED SILT FENCE

Legend

-  EXISTING COUNTY LANDFILL (Do Not Disturb)
-  EXISTING DELINEATED WETLAND
-  EXISTING MONITORING WELLS
-  TREE CLEARING AREAS
-  TILE RISER
-  STRAW WATTLE
-  RIPRAP
-  GROUTED RIPRAP
-  TIED CONCRETE BLOCK

No.	Item	Section	Qty	Unit
1	Mobilization	2100	1	Lump Sum
2	Site Clearing & Preparation	2100	1.7	Acre
3	Crossing Tile Removal	2100	1	Each
4	Monitoring Well Modifications	2100	1	Lump Sum
5	Surface Roughening	2120	9.5	Acre
6	Silt Fence Installation	2120	1520	LF
7	Silt Fence Removal	2120	1520	LF
8	Granular Surfacing	2120	30	Ton
9	Straw Wattle, 9" dia.	2120	120	LF
10	Excavation	2200	17,200	CY
11	Terraces	2300	1827	LF
12	RipRap, Class E	2300	780.0	Ton
13	Grout	2300	135	CY
14	Crossing - Tied Concrete Block	2300	1560	SF
15	Geotextile Fabric	2300	1020	SY
16	Pipe, HDPE, 6"	2300	78	LF
17	Pipe, HDPE, 8"	2300	226	LF
18	Riser, Terrace, 6"	2300	3	Each
19	Pipe Outlet, Sch. 40 PVC, 6"	2300	1	Each
20	Pipe Outlet, Sch. 40 PVC, 8"	2300	1	Each
21	RCP - 24" Diam.	2300	170	LF
22	Ag Lime, Subgrade, 50 T ECCE/Ac	2400	475.0	Ton
23	Subgrade Mulch, 5 T/Ac	2400	9.5	Acre
24	Field Fence	2500	1068	LF
25	Double Gate (2 -12 ft panesl)	2500	2	Each
26	Fence - Creek Crossing	2500	1	Each
27	Ag Lime, Seeding @ 5 T ECCE/Ac	2700	47.5	Ton
28	N, @ 80 Lb/Ac	2700	760	Pound
29	P, @ 80 Lb/Ac	2700	760	Pound
30	K, @ 110 Lb/Ac	2700	1045	Pound
31	Interim Seeding	2700	9.5	Acre
32	Mulch, Seeding @ 2 T/ac	2700	9.5	Acre

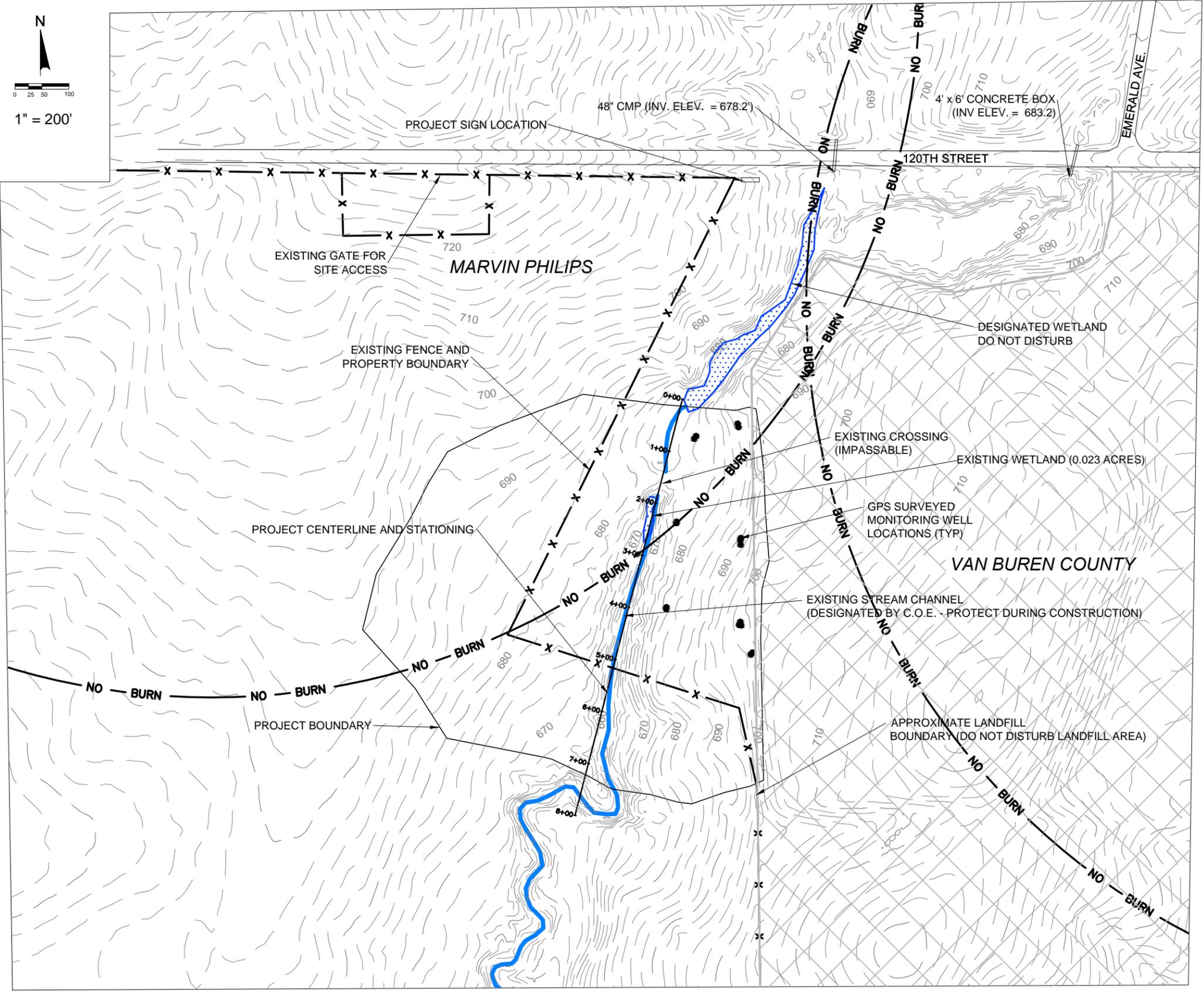
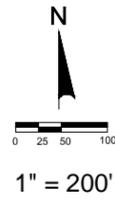
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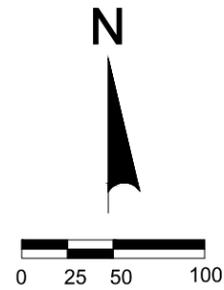
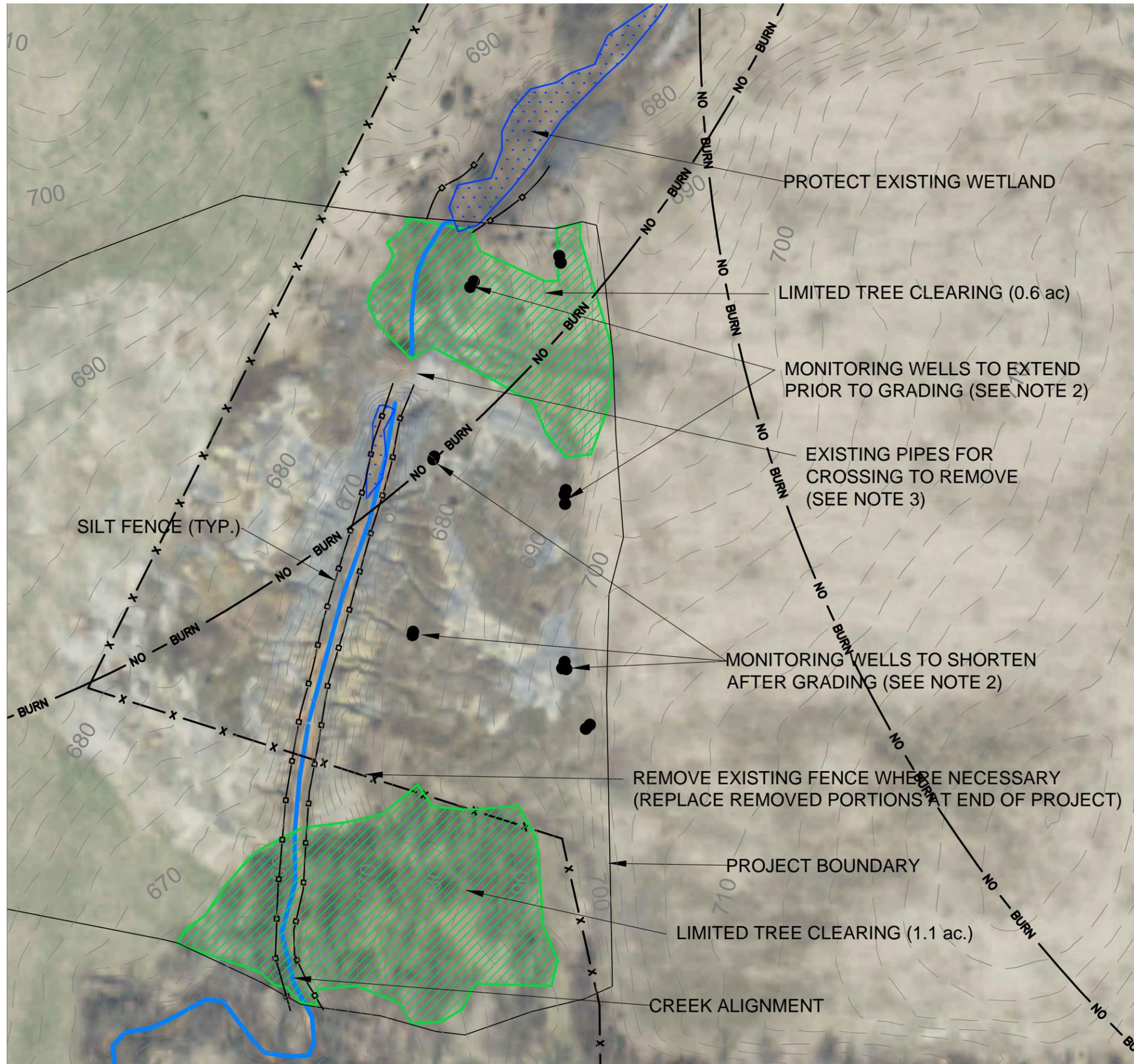


DIVISION OF SOIL CONSERVATION
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 AND LAND STEWARDSHIP
 HENRY A. WALLACE BUILDING
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 (515)281-4246

DOOLEY
AML RECLAMATION PROJECT
PROJECT NOTES



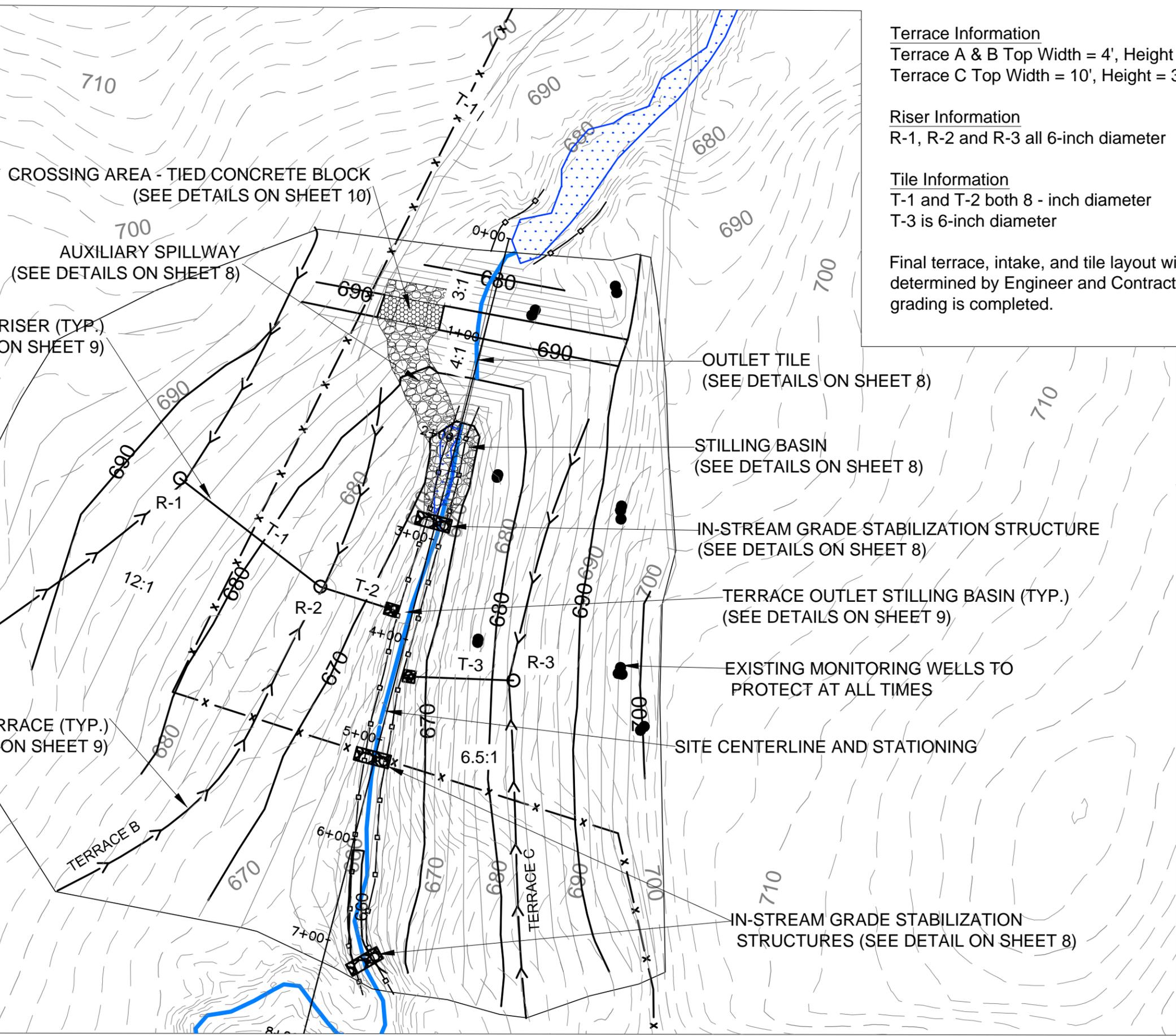
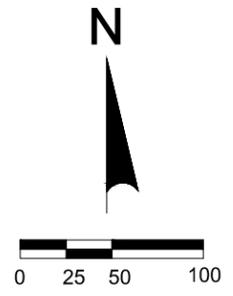
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DOOLEY AML RECLAMATION PROJECT SITUATION PLAN		DIVISION OF SOIL CONSERVATION IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515)281-4246			
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NOTES:

1. Tree clearing limits will be established by Division and Contractor prior to clearing and shall be limited to areas only required for grading.
2. Monitoring Wells are to be protected at all times during construction. Several wells as indicated will need an extension added prior to grading in this area while other wells will need to be shortened after grading is completed. All modifications of monitoring wells to be completed by Barker-LeMar Associates.
3. The removed plastic tile from the crossing are to be salvaged and given to the landowner.
4. The wetland area to north is to be protected at all times during construction.
5. Silt fence as shown on the SWPPP plan shall be installed after clearing and fence removal and before any major grading work is performed.
6. Existing Fence shall be removed as needed to allow access for grading. The location of the fence shall be surveyed prior to removal. All removed portions will be replaced. Gate locations will be determined in consultation with landowners and Division prior to fence replacement. The fence will include a cable with hanging panels at the creek crossing.
7. The area immediately east of the site is a closed landfill owned by the County. No disturbance is allowed in this area.
8. The creek is under the jurisdiction of the Corps of Engineers. The only disturbance allowed is what is considered necessary to place fill for the crossing and riprap for the stilling basin and in-stream grade stabilization structures. Access to either side of the site shall be at the crossing and not across the creek.

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		SILT FENCE (TYP.)			
		SITE PREPARATION PLAN			
REVISION:	DATE:	DESCRIPTION:			
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Terrace Information
 Terrace A & B Top Width = 4', Height = 4'
 Terrace C Top Width = 10', Height = 3.5'

Riser Information
 R-1, R-2 and R-3 all 6-inch diameter

Tile Information
 T-1 and T-2 both 8 - inch diameter
 T-3 is 6-inch diameter

Final terrace, intake, and tile layout will be determined by Engineer and Contractor after final grading is completed.

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GRADING PLAN			<table border="1"> <thead> <tr> <th>REVISION</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> </tbody> </table>			REVISION	DATE	DESCRIPTION	1			2			3			4		
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STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SITE INFORMATION

1. The site is located in the NW 1/4 of Section 14 of Village Township (T70 N, R11W) in Van Buren County, Iowa.
2. This SWPPP covers the reclamation of about 9.8 acres of strip coal mined areas.
3. The predominant soil types within the site are mine spoil materials that are highly erodible. The west portion of the site has been graded and used as a pasture. The area immediately east of the site is a closed landfill and the cover material shall not be disturbed during construction.
4. Runoff from the construction area will flow into the unnamed tributary that extends north-south across the site that flows to the Des Moines River.
5. The average runoff curve number for this land after permanent vegetation is established is estimated to be 74.

GENERAL NOTES

1. This project will be covered by the NPDES General Permit No. 2 which regulates runoff from construction sites. The permit application will be completed by the Division and the Contractor will be a co-permittee.
2. The general contractor is responsible for the implementation and compliance with the SWPPP. The prime contractor and all subcontractors must sign the Certification Statement required by SWPPP before starting work on the site.
3. The general contractor and all of his subcontractors shall conduct their operations in a manner which minimizes erosion and prevents sedimentation from leaving the construction site.
4. It is the general contractor's responsibility to insure all sediment and erosion control measures, along with any needed modifications or repairs, are installed as soon as practical.
5. The general contractor is responsible to maintain a copy of the SWPPP, including updates to the plans and inspection reports, at the site or other designated location.
6. The general contractor is responsible to coordinate the required inspections and reports by qualified people.
7. Work shall be completed in accordance with this plan, contract drawings, and Specification 02120 and any other local, state, or federal requirements. In the event of a conflict, the most restrictive requirements will apply.

EROSION CONTROLS - GENERAL

1. Granular surfacing shall be installed and maintained at the entrance into the site to control mud from being tracked off site onto the county road. Excessive mud tracked onto the county road shall be removed.
2. Water shall be applied to haul roads or other surfaces as needed to control dust during construction.

3. Water removed from the site through pumping or other controls shall be handled in a manner to control erosion, such as riprap or other energy dissipating materials.
4. Silt fence shall be installed at the locations shown on the plans as soon as practical. The locations and lengths shown are approximate and should be adjusted as needed but must be approved by Engineer or Division in order to receive payment.
5. Silt fence lengths that extend more than 200 feet in length shall be installed in separate runs offset by at least 30 feet to allow through access.
6. Additional control measures may be required. Contractor shall implement and maintain these measures as deemed necessary by Division or Engineer.
7. If construction activity is not planned to occur in a disturbed area for at least 21 days, the area shall be stabilized as soon as possible and within 14 days following the last disturbance unless the ground is frozen or snow covered. Temporary stabilization could include surface roughening, mulching, temporary seeding, or other approved method if interim seeding is not possible.

OTHER POLLUTION CONTROLS

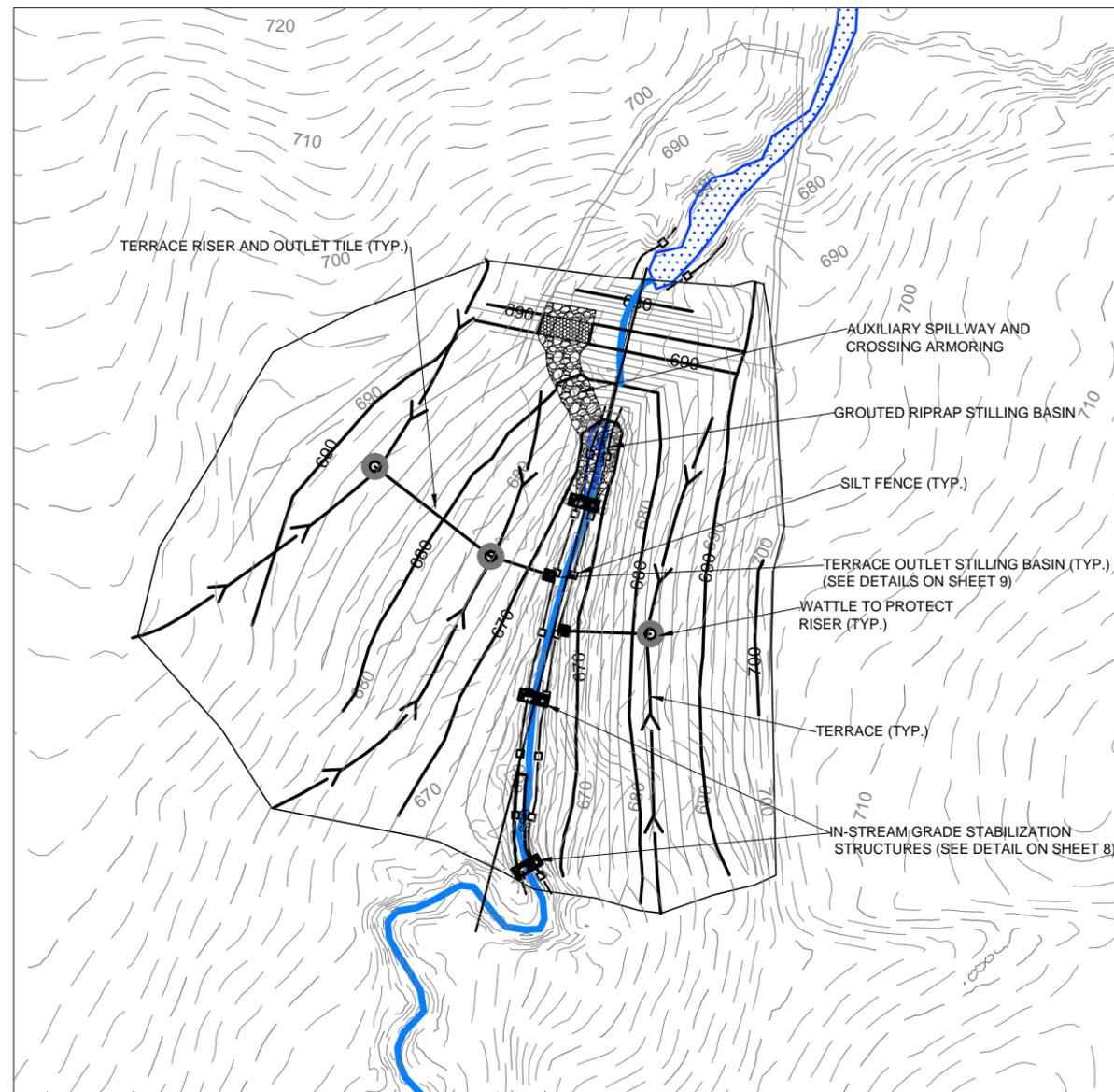
1. Sanitary facilities shall be placed and maintained on the site.
2. Contractor shall keep the site free of all wastes, including litter, used parts, used oil, tires, and any other waste generated from construction activities.
3. Concrete washout residue should be contained and hauled off site when hardened. Areas used for concrete washout shall be filled and stabilized.

MAINTENANCE

1. The contractor shall maintain all erosion control measures in proper working order during the duration of the contract. If a measure is no longer needed, it shall be removed with any sediment properly handled.
2. Contractor shall remove sediment from sediment traps, ditches, and silt fences when their installed capacity is reduced by 50%.

INSPECTIONS

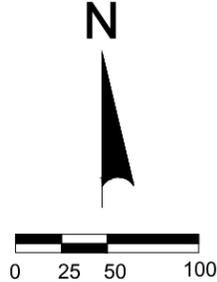
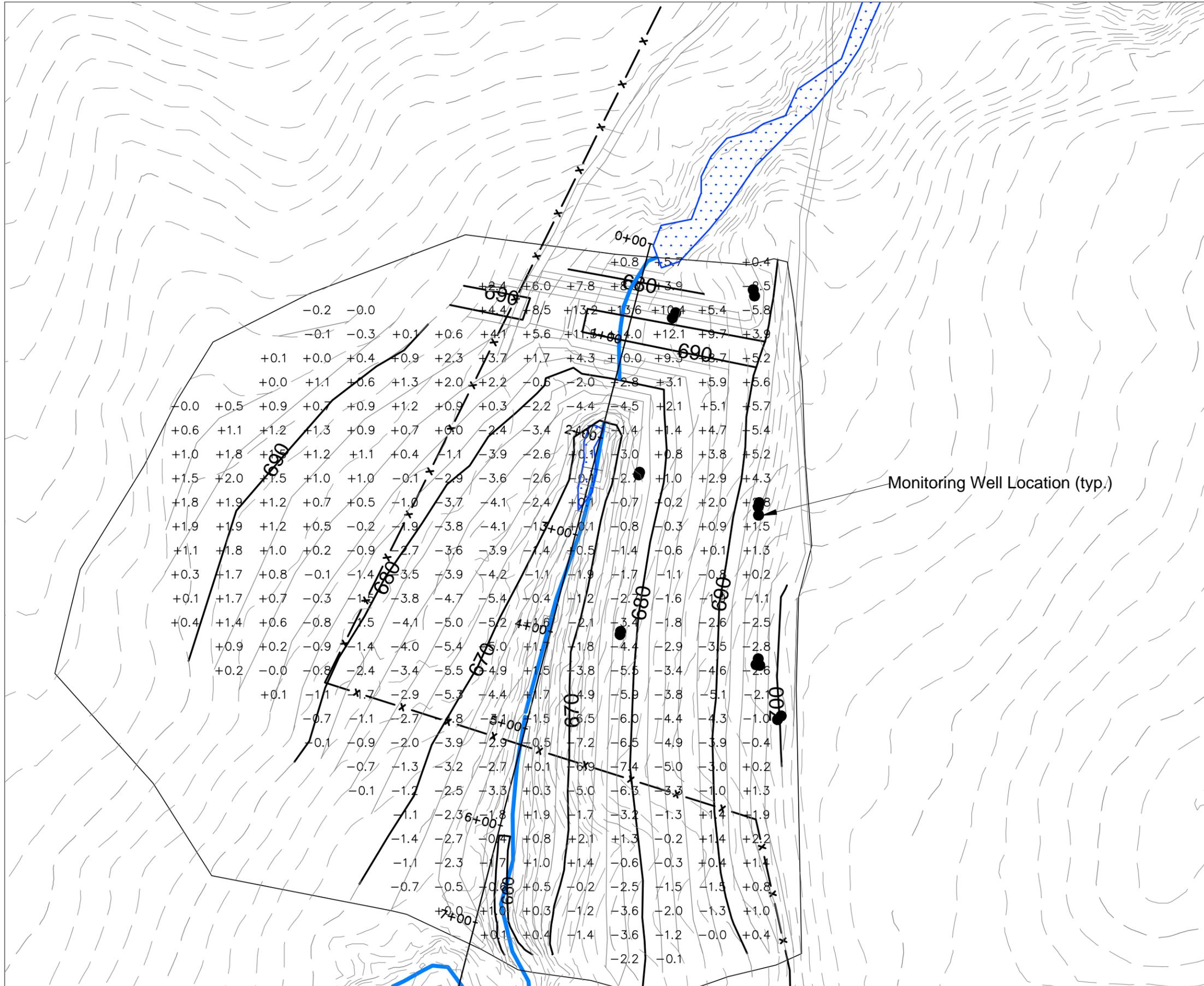
1. Site inspections shall be completed once every 7 days by a qualified person as coordinated by the contractor.
2. Site inspection report forms shall be provided by the Engineer.
3. Copies of the inspection reports shall be maintained by the contractor.
4. SWPPP records shall be maintained by the Division for a period of 3 years after the permit has been terminated.



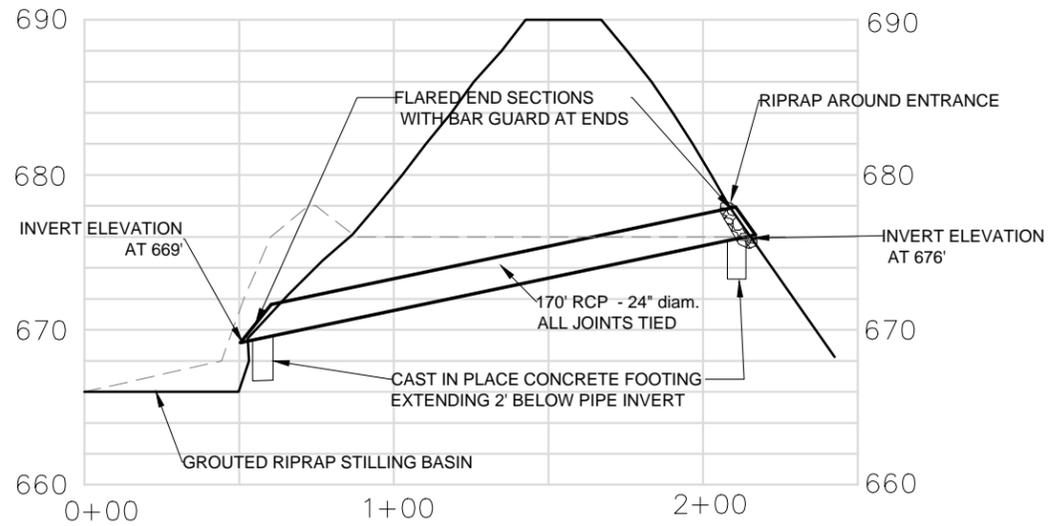
SITE SPECIFIC CONTROLS

1. Silt fence shall be installed as soon as practical to protect the stream and wetland.
2. Terraces and outlet tile shall be constructed as soon as possible after grading is complete.
3. Riprap over filter fabric shall be placed for the auxiliary spillway, stilling basin for outlet pipe, and below grade check dams.
4. Surface roughening in conjunction with lime and mulch application shall be used until interim seeding can be completed.
5. Straw wattles shall be placed around each inlet after interim seeding is completed.

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DOOLEY AML RECLAMATION PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP)						SHEET 6 OF 12		

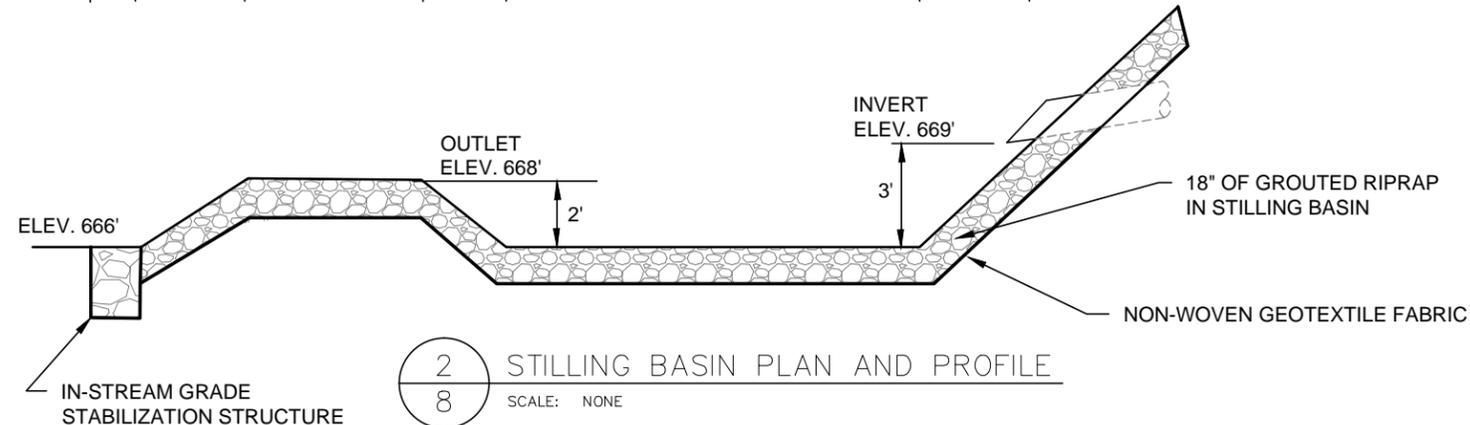
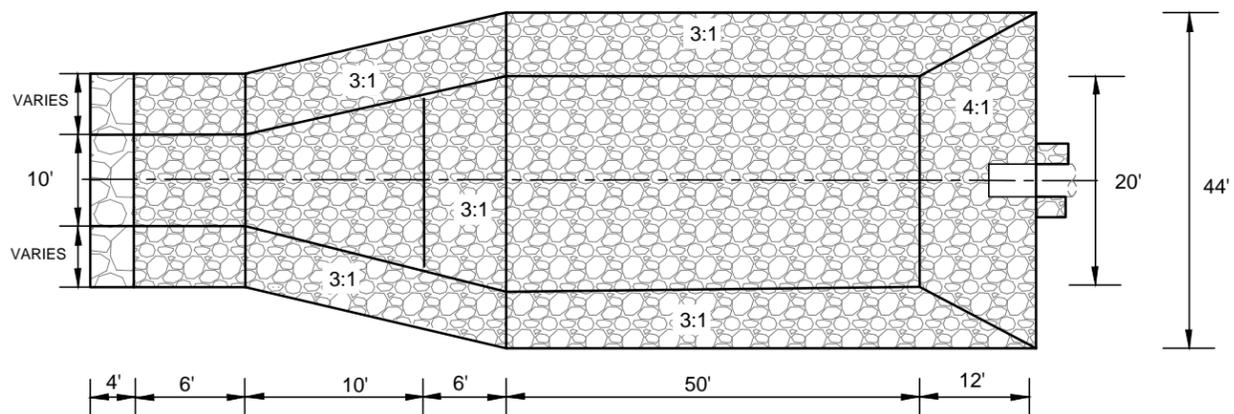


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DOOLEY AML RECLAMATION PROJECT						SHEET			
CUT-FILL PLAN						7 OF 12			



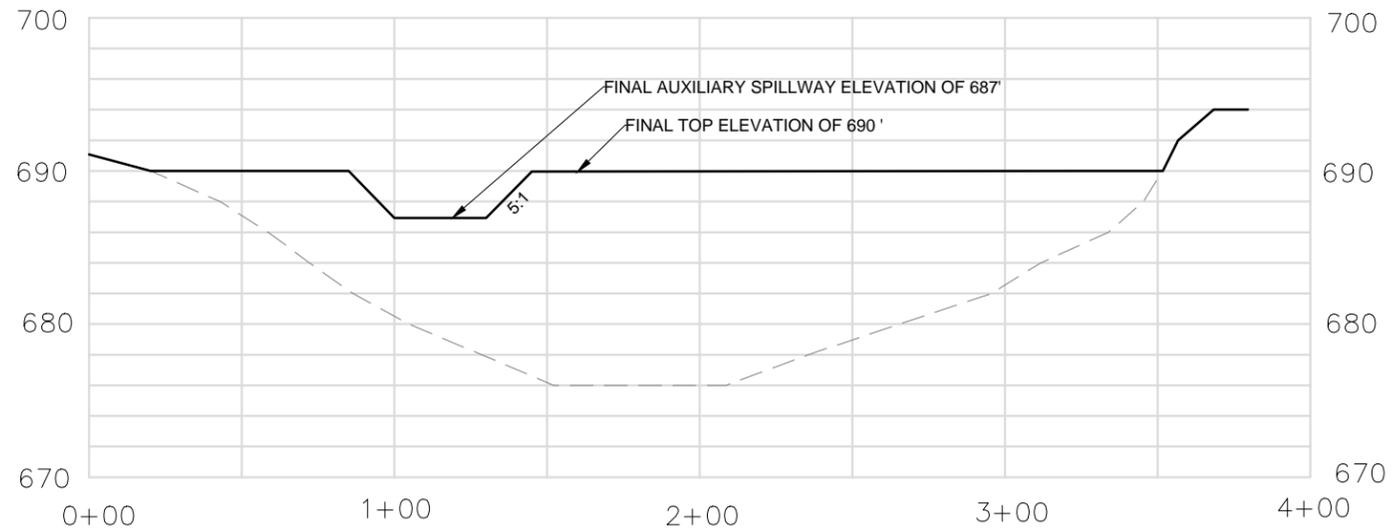
1
8 CROSS SECTION ALONG TILE
SCALE: 5H:1V

NOTE: INVERT ELEVATION ON UPSTREAM END OF CONCRETE PIPE SHALL BE SET AT NORMAL POOL OF THE UPSTREAM WETLAND AREA ASSUMED TO BE 676 FT. AND SHALL ALSO BE AT LEAST 1FT LOWER THAN COUNTY CULVERT ELEVATION - MEASURED 678.3 FT. BY GPS.



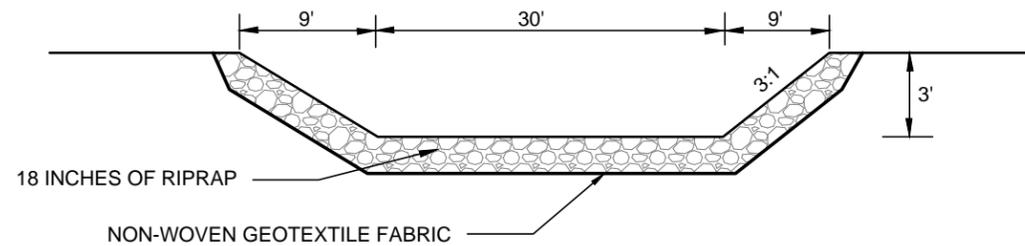
2
8 STILLING BASIN PLAN AND PROFILE
SCALE: NONE

NOTE: RIPRAP USED FOR GROUTED PORTION SHALL BE SCREEN OVER 8-INCH GRIZZLY. RIPRAP SHALL EXTEND TO UP TO ELEVATION 670 FEET ON SIDES AND HIGHER AROUND OUTLET PIPE.



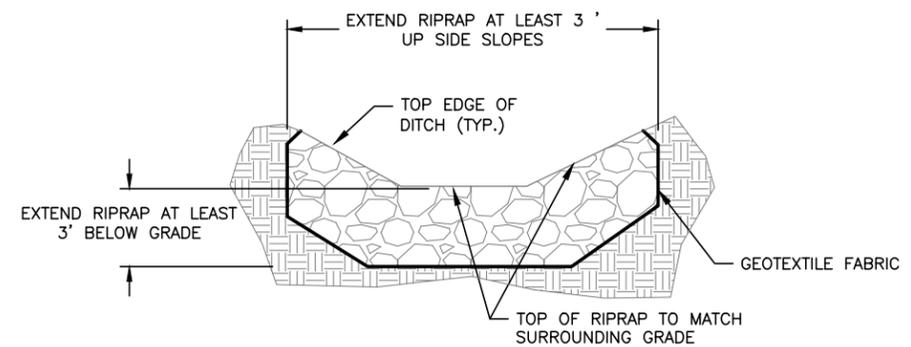
3
8 PROFILE ALONG CENTERLINE OF DIKE
SCALE: 5H:1V

NOTE; TOP OF EMBANKMENT WIDTH = 20'



4
8 AUXILIARY SPILLWAY CROSS SECTION
SCALE: NONE

NOTE: SLOPES OF SPILLWAY TO BE 3H:1V EXCEPT AT CROSSING WHERE SIDE SLOPES SHALL BE 5H:1V WITH A TRANSITION SECTION LENGTH OF 10 FT.



5
8 IN-STREAM GRADE STABILIZATION STRUCTURE CROSS SECTION
SCALE: NONE

NOTE: WIDTH OF STRUCTURE ALONG STREAM CHANNEL SHALL BE AT LEAST 4 FEET

REVISION	DATE	DESCRIPTION
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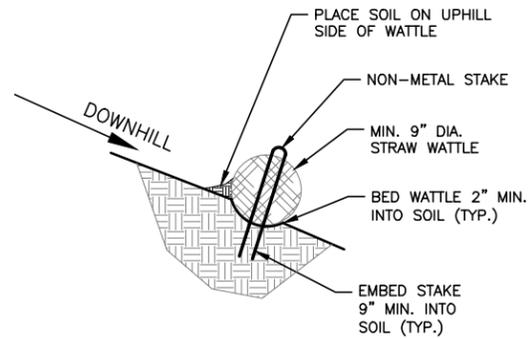
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CHKD. BY: WJG

DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE
AND LAND STEWARDSHIP
HENRY A. WALLACE BUILDING
502 E. 9th STREET, DES MOINES, IOWA 50319
(515)281-4246

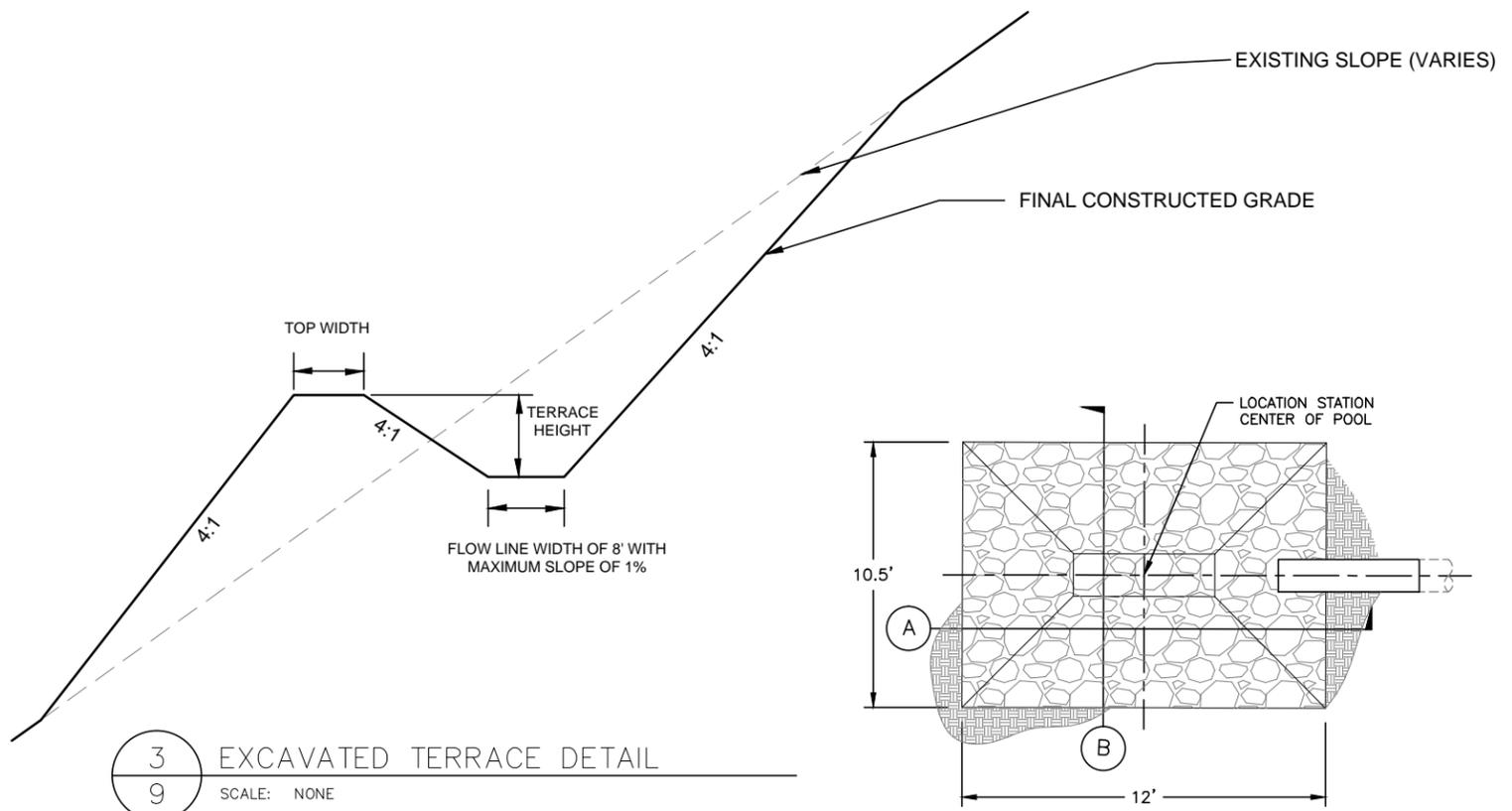


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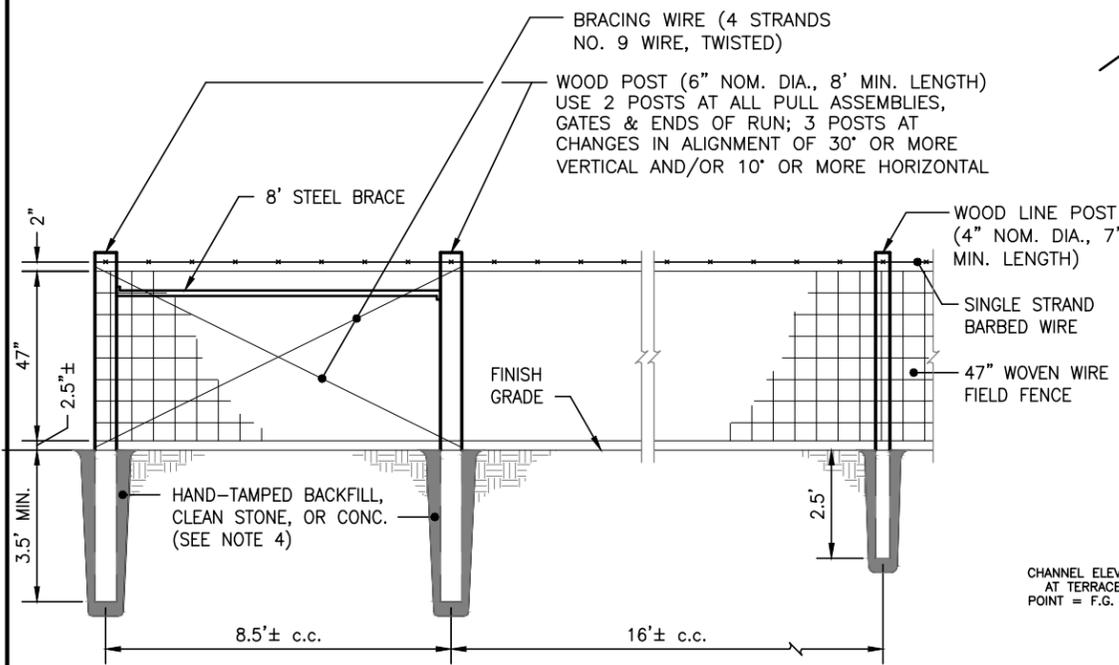
DOOLEY
AML RECLAMATION PROJECT
DETAILS - EMBANKMENT AND OUTLETS



1 STRAW WATTLE INSTALLATION DETAIL
SCALE: NONE



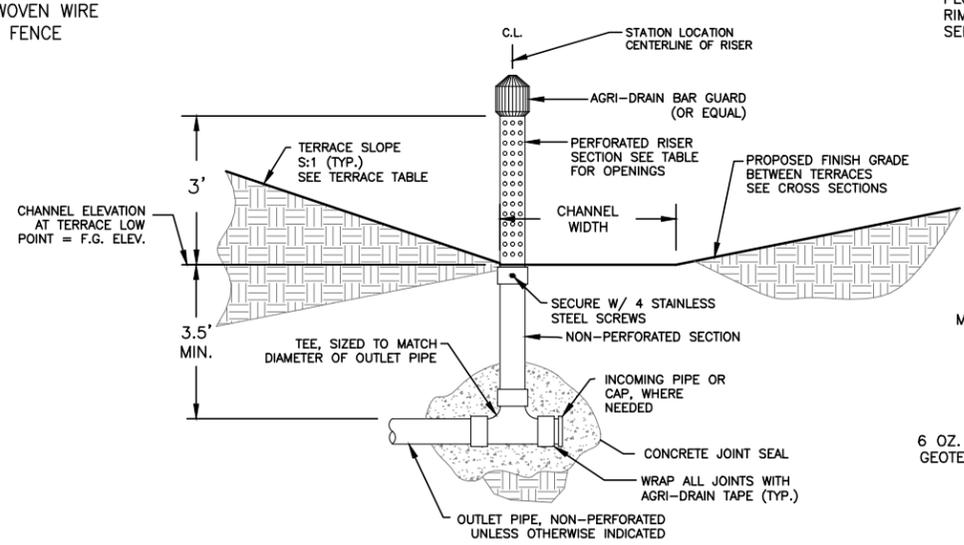
3 EXCAVATED TERRACE DETAIL
SCALE: NONE



5 WOVEN FENCE DETAIL
SCALE: NONE

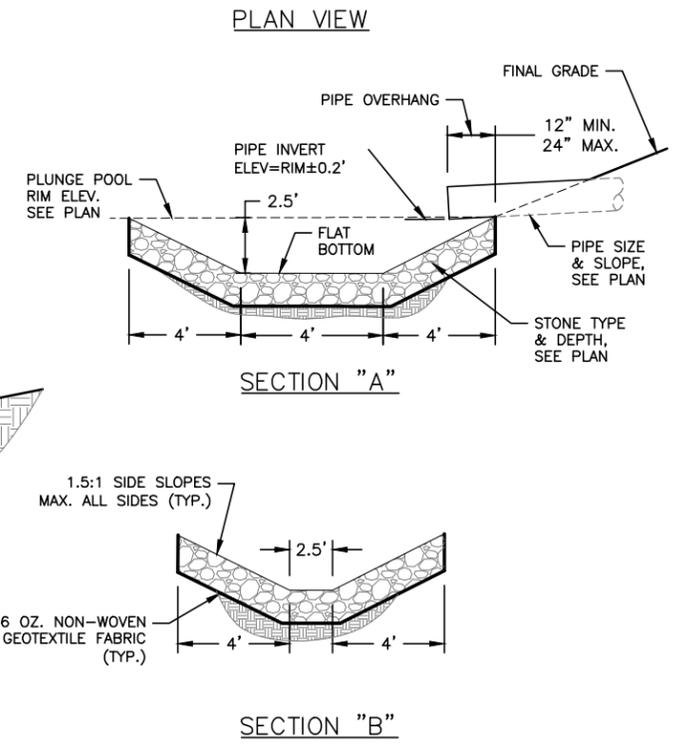
FENCE DETAIL NOTES:

- ALL FENCING TO BE WOVEN WIRE UNLESS OTHERWISE NOTED.
- FENCING DETAIL IS SIMILAR TO IOWA DOT STANDARD ROAD PLAN MI-103 EXCEPT ALL POSTS MUST BE WOOD AND NO BARBED WIRE REQUIRED AS THE BOTTOM STRAND BELOW THE WOVEN FENCING.
- BRACE END POST TO FIRST INTERIOR POST WITH STEEL BRACE AND BRACING WIRE. SIMILAR DETAIL AT ALL REQUIRED CORNER POST, ANGLE POST AND PULL POST ASSEMBLIES.
- IN LIEU OF EXCAVATING, POSTS MAY BE SET BY DRIVING. IN EITHER EVENT, CLEAR UTILITIES PRIOR TO INSTALLING FENCE POSTS.
- PAY LENGTH EXCLUDES GATES. FOR PURPOSE OF BIDDING PAY LENGTH IS PLAN LENGTH MEASURED FROM POINT TO POINT. ACTUAL PAY LENGTH WILL BE MEASURED IN THE FIELD ALONG THE SLOPE AND ALONG THE CONTOUR. THERE SHALL BE NO SEPARATE PAY FOR BRACE PANELS.



2 TERRACE RISER DETAIL
SCALE: NONE

NOTE: TWO (2) STEEL FENCE POSTS REQUIRED TO SUPPORT RISER UP TO 8" DIAMETER, THREE (3) POSTS REQ'D FOR 10" & LARGER RISERS, FENCE POSTS NOT SHOWN



4 TERRACE PLUNGE POOL
SCALE: NONE

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DOOLEY AML RECLAMATION PROJECT DETAIL - TERRACES AND OUTLETS				
SHEET				
9 OF 12				

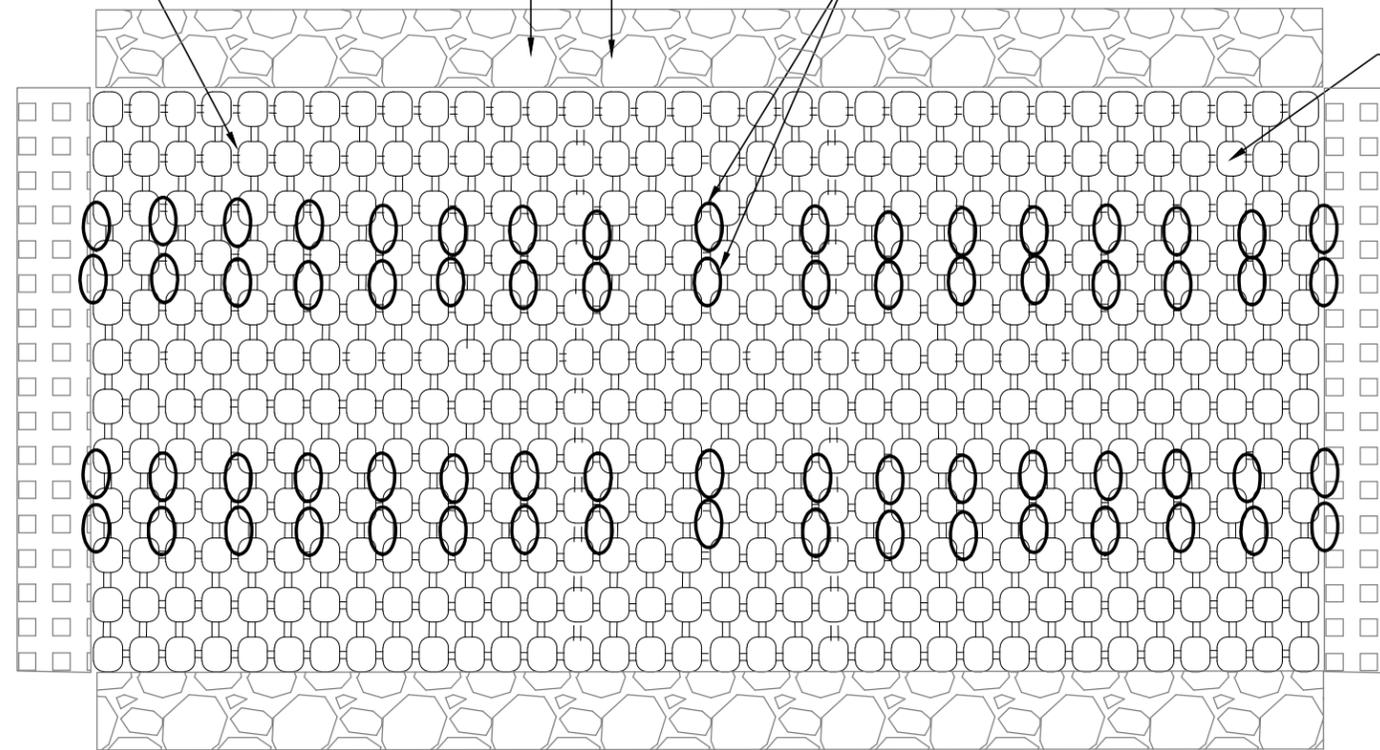
STAGGERED TO SHOW GEOGRID UNDER FLEXAMAT

WATER FLOW

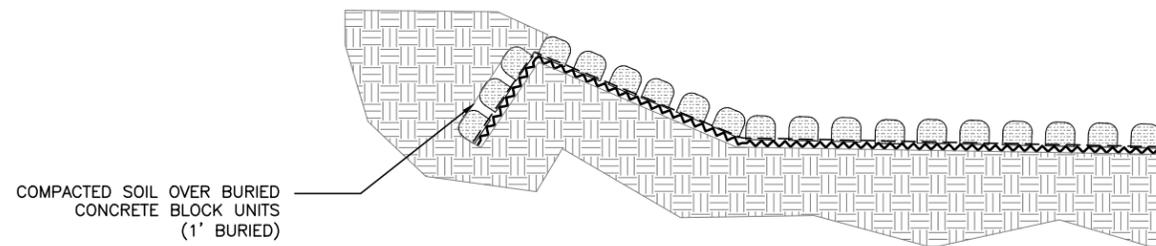
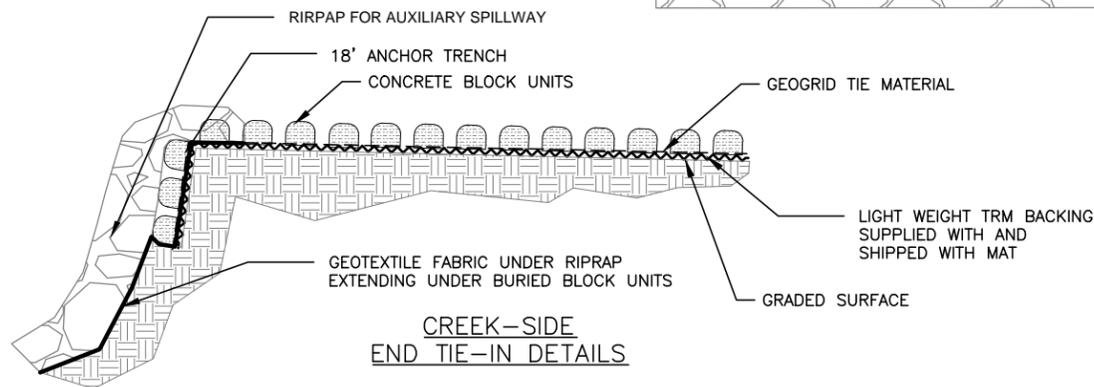
HEAVY DUTY TIES

TIED CONCRETE BLOCK MAT

20 FT. WIDE



PLAN VIEW



ACCESS CROSSING SIDE
END TIE-IN DETAILS

TIED CONCRETE BLOCK MAT INSTALLATION NOTES:

1. GRADE CROSSING AS SHOWN IN THE PROJECT GRADING PLAN. OVEREXCAVATE AS NEEDED TO ACCOUNT FOR MAT THICKNESS TO PROVIDE SMOOTH TRANSITIONS WITH AUXILIARY SPILLWAY RIPRAP AND ACCESS ROAD.
2. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND.
3. THE PREPARED SURFACE SHALL PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS WITH NO SHARP OR ABRUPT BREAKS IN THE GRADE
4. APPLY LIME, FERTILIZER, AND SEED DIRECTLY TO THE PREPARED SOIL PRIOR TO MAT INSTALLATION. USE SEED PER PROJECT SPECIFICATIONS.
5. INSTALL TIED CONCRETE BLOCK MAT IN ROLLS. STANDARD ROLLS ARE AVAILABLE IN 5.5', 8', 10', & 16' WIDTHS, 30', 40' & ' 50' LENGTHS.
6. SPLICING MATS: WHERE SECTIONS OF MAT ABUT EACH OTHER, USE A 4' SECTION OF HIGH STRENGTH GEOGRID THE LENGTH OF THE SECTIONS TO BE TIED. 2' OF THE SEAM SHALL BE PLACED UNDER EACH SECTION OF MAT. HEAVY DUTY ZIP TIES SHALL BE PLACED AT 12-INCH INTERVALS FOR EACH MAT AND SHALL BE LOCATED WITHIN 12 INCHES OF THE SEAM. SEAMS SHALL BE LOCATED PERPENDICULAR TO FLOW. THE GEOGRID AND TIES ARE INCIDENTAL TO THE COST OF THE FLEXAMAT.
7. THE UPSTREAM AND DOWNSTREAM EDGES OF FLEXAMAT SHALL BE EMBEDDED 18" VERTICALLY AND COVERED WITH RIPRAP.
8. THE EDGES OF FLEXAMAT IN LINE WITH THE CROSSING SHALL BE TRENCHED 12" WITH COMPACTED SOIL PLACED FLUSH WITH THE TOP OF MAT ALONG THE EDGE.
9. THE BID QUANTITY OF FLEXAMAT PROVIDED INCLUDES THE EXPOSED SURFACE AREA ALONG WITH ADDITIONAL AMOUNTS NEEDED FOR THE ANCHORING/BURIAL TRENCHES. PROPOSED LAYOUT OF MAT LENGTHS AND JOINTS MUST BE SUBMITTED TO ENGINEER AND APPROVED PRIOR TO ORDERING FROM THE SUPPLIER.
10. REFER TO THE SUPPLEMENTAL SPECIFICATIONS FOR DETAILS AND REQUIREMENTS FOR FLEXAMAT, SPLICING GEOGRID AND HEAVY DUTY TIES.

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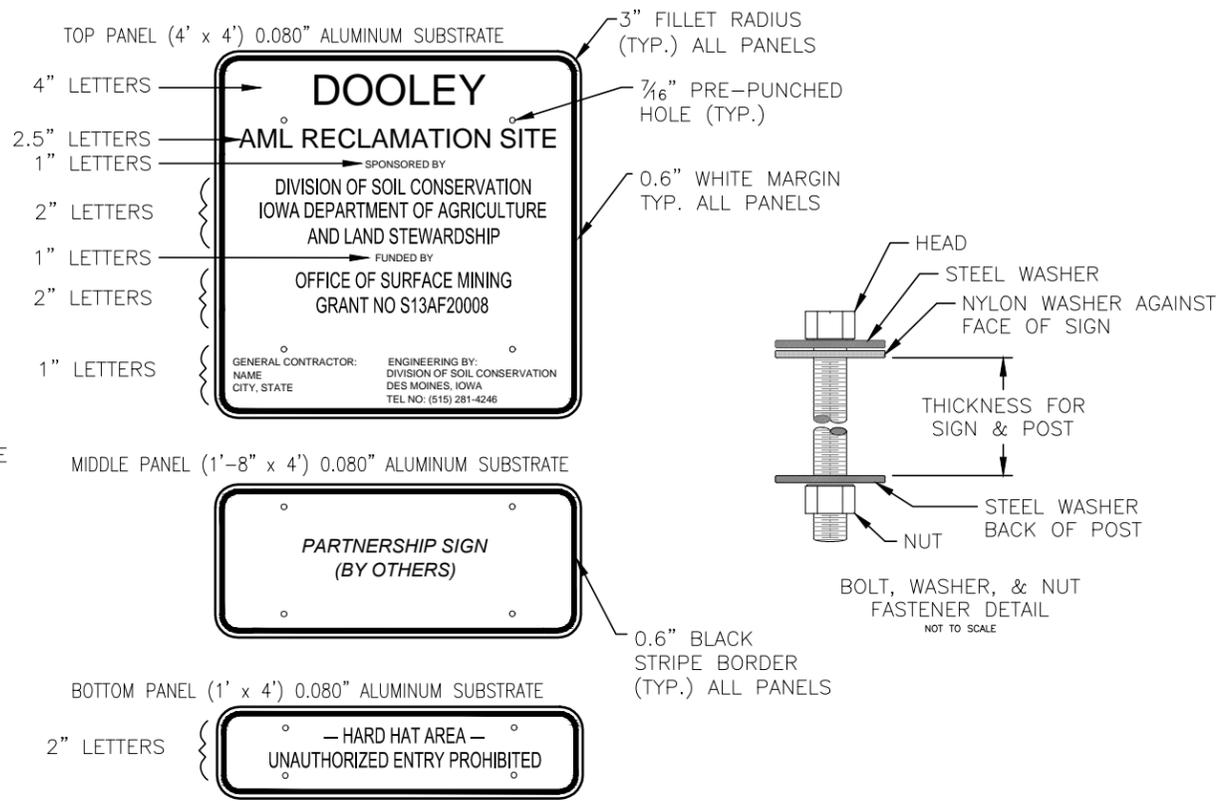
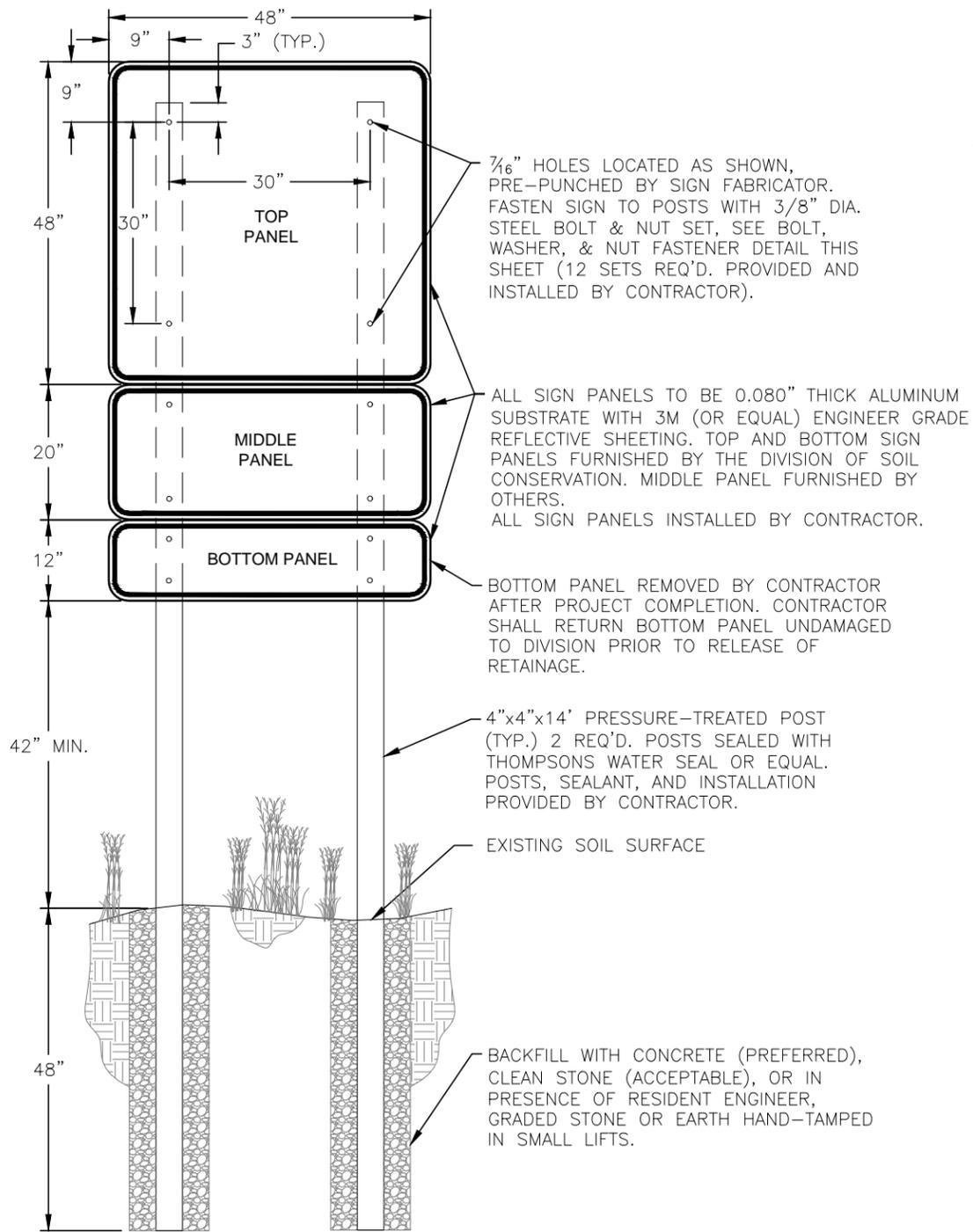
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DOOLEY
AML RECLAMATION PROJECT

DETAILS - CROSSING

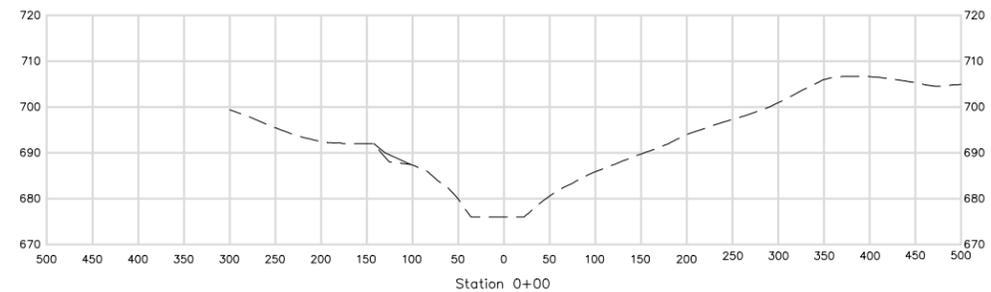
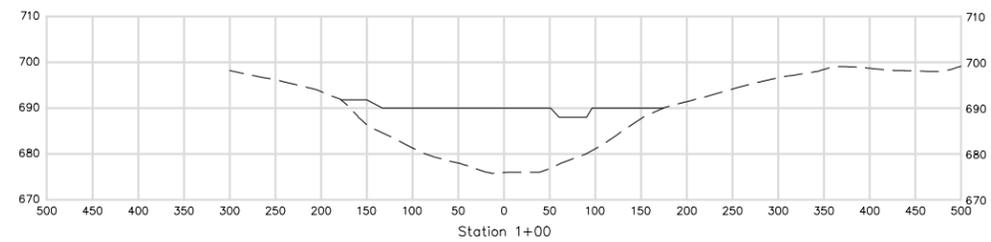
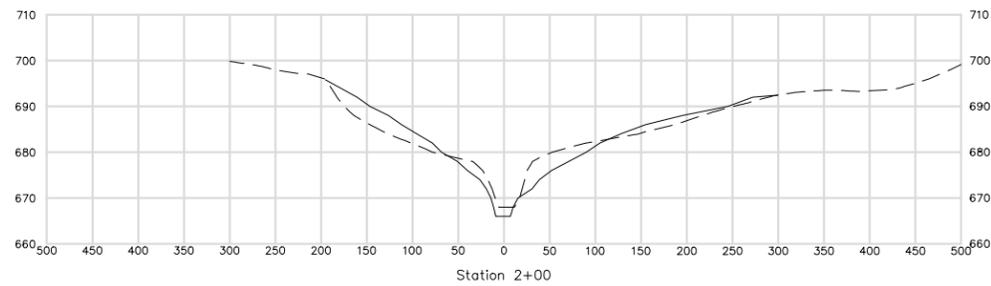
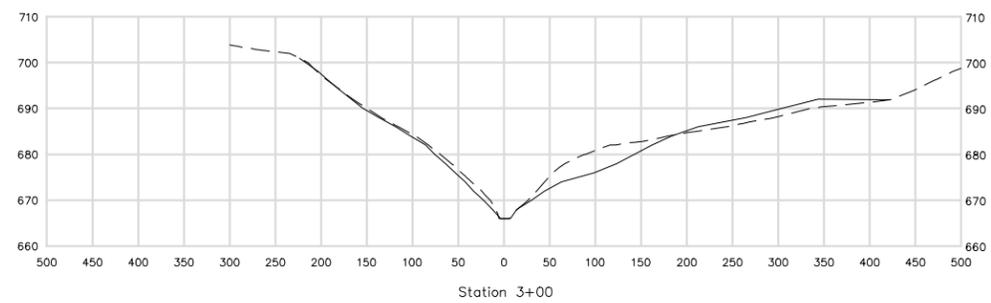
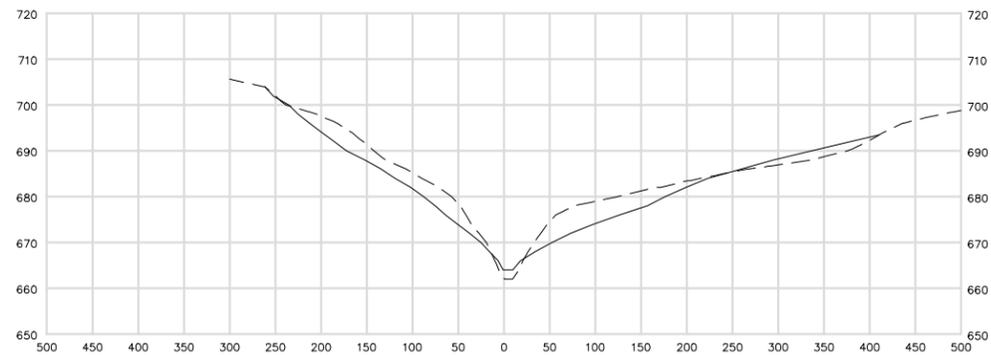


SIGNAGE NOTES:

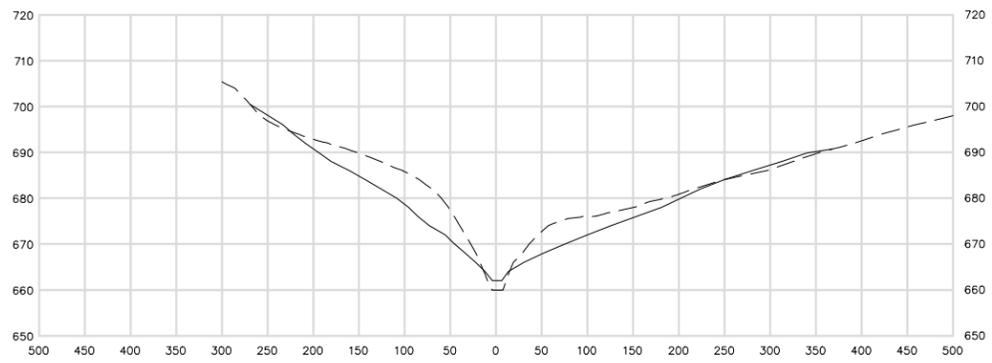
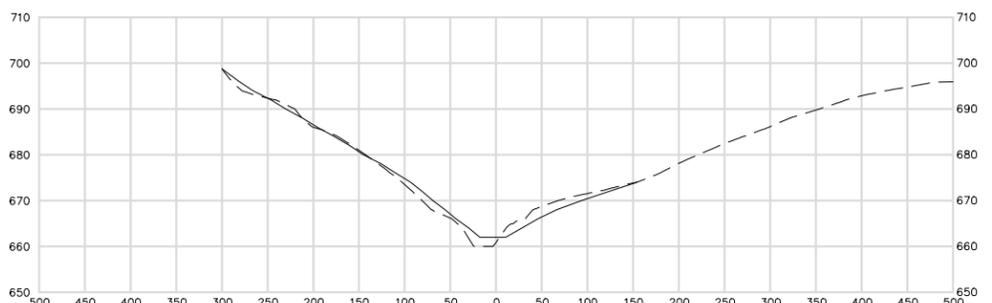
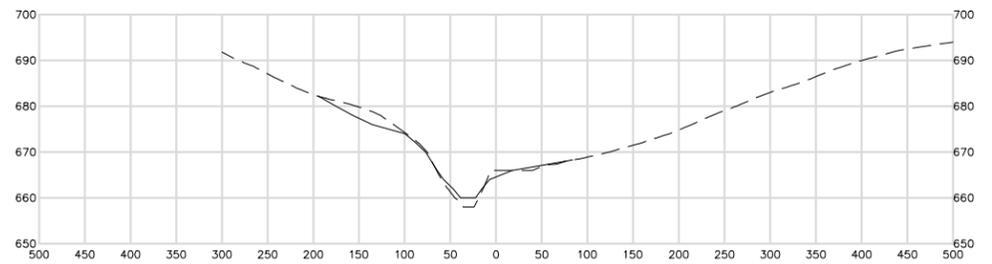
1. DIVISION WILL FURNISH TOP AND BOTTOM SIGN PANELS. MIDDLE PANEL PROVIDED BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING POSTS, HARDWARE, AND INSTALLATION FOR ALL PANELS.
2. ALL EXPOSED WOOD SHALL BE SEALED WITH THOMPSONS WATER SEAL OR EQUAL MEETING ASTM D-4446-08.
3. ALL STEEL HARDWARE PIECES SHALL 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) 292-8989 BEFORE EXCAVATING FOR POSTS.
6. SECURE ENGINEERS 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.

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Horizontal Scale 50
Vertical Scale 10



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**DOOLEY
AML RECLAMATION PROJECT
CROSS SECTIONS**