

west virginia department of environmental protection

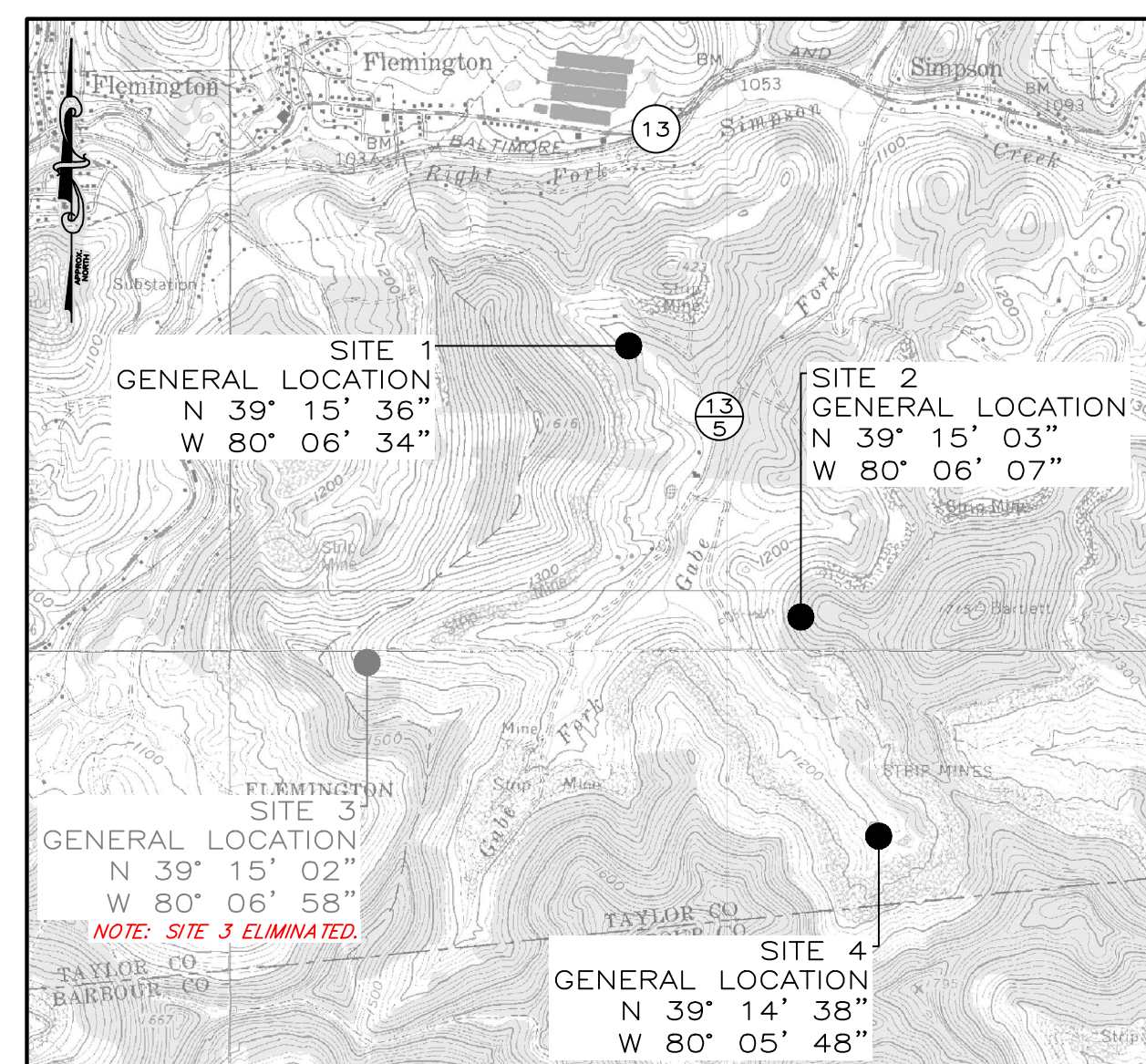
**EARL RAY TOMBLIN, GOVERNOR    RANDY C. HUFFMAN, CABINET SECRETARY**

**OFFICE OF ABANDONED MINE LANDS AND RECLAMATION**

# **GRAFTON #4 REFUSE AND HIGHWALL**

TAYLOR COUNTY, WEST VIRGINIA

VICINITY MAP



USGS 7.5' QUAD (GRAFTON/PHILIPPI)

INDEX TO SHEETS

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S1-16	HW # 2 BASELINE STA. 11+50 - STA. 13+00 SECTIONS

INDEX TO SHEETS

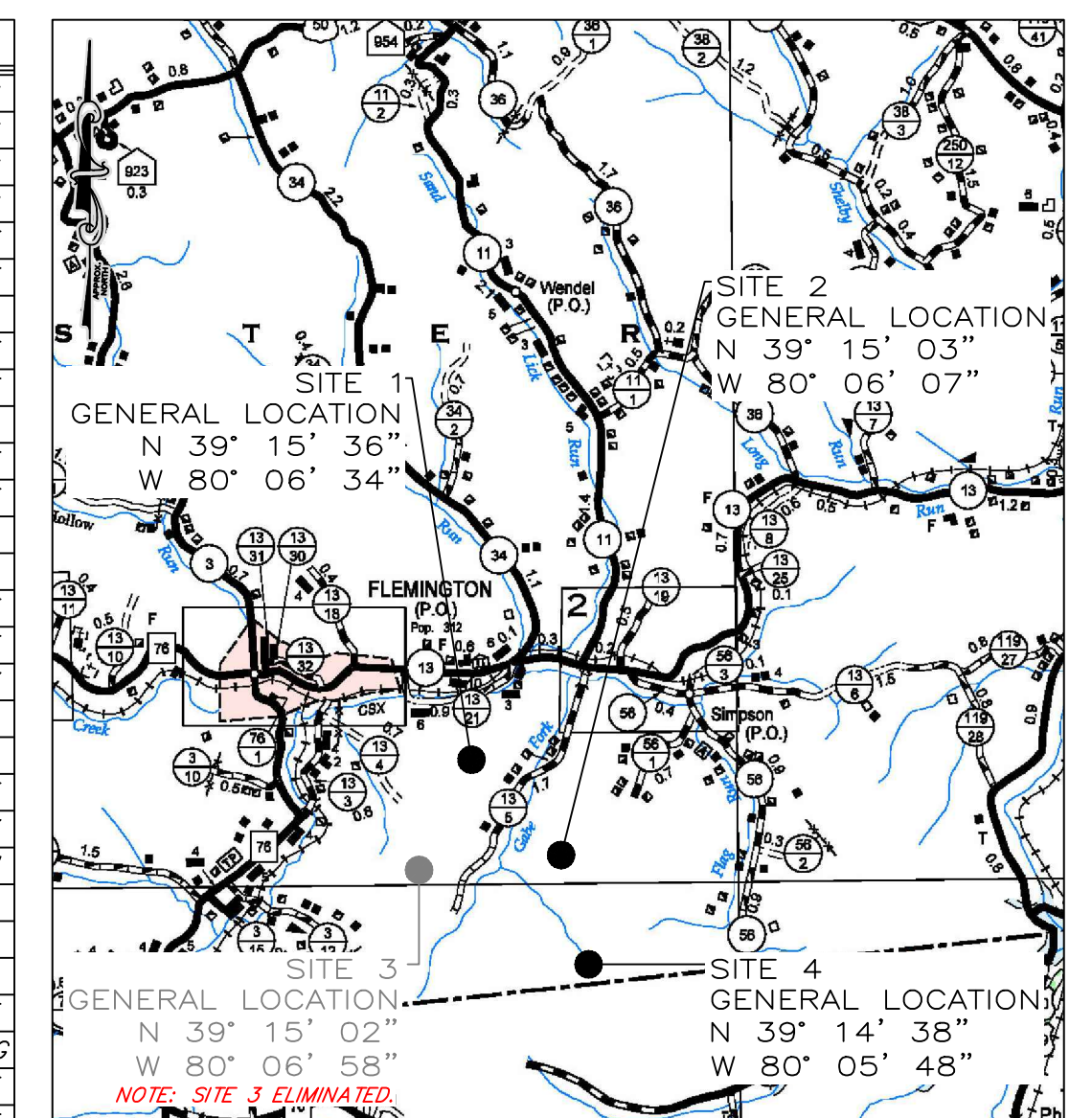
SHEET NO.	DESCRIPTION
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D-6	MISCELLANEOUS DETAILS
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E-2	TEMPORARY E & S CONTROL DETAILS

NOTE: SITE 3 ELIMINATED FROM PROJECT BY DEP ON 12.20.2013.

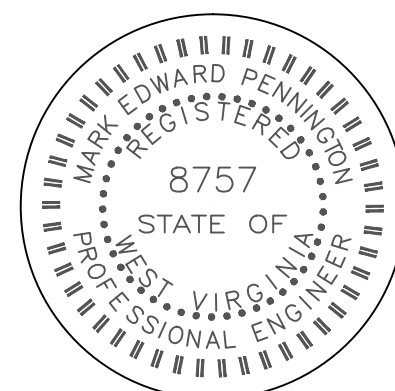
BID SCHEDULE

ITEM NO.	DESCRIPTION	QUANTITY
1.0	Mobilization & Demobilization (Limited to 10% of Total Bid)	1 LS
2.0	Construction Layout Stakes (Limited to 3% of Total Bid)	1 LS
3.0	Quality Control (Limited to 2% of Total Bid)	1 LS
4.1	Site Preparation (Limited to 10% of Total Bid)	1 LS
4.2	Remove and Replace Existing Fence	200 LF
4.3	Install and Remove Temporary Fence	100 LF
5.1	Stabilized Construction Entrance	3 EA
5.2	Silt Fence	3600 LF
5.3	Wattles	6672 LF
5.4	Ditch Check	19 EA
5.5	Temporary Ditch	430 LF
5.6	Temporary 15" Diameter HDPE CPP	180 LF
5.7	Dewatering Bag	1 EA
6.0	Revegetation (per plan view acre)	23 AC
7.1	2H:1V Rip Rap "Vee" Channel - 2 ft. deep	433 LF
7.2	2' Deep 2H:1V Grouted Rip Rap "Vee" Channel - 2 ft. deep	219 LF
7.3	Erosion Control Matting for Toe Ditch	1600 SY
7.4	Splash Pad	3 EA
7.5	Grouted Rip Rap "Vee" Channel Road Crossing	6 EA
7.6	Rip Rap "Armored Erosion Feature or Existing Channel	426 LF
8.1	Unclassified Excavation	30169 CY
8.2	No. 1 Stone Fill	938 TN
8.3	No. 57 Stone Fill	938 AC
9.1	Wet or Modified Wet Mine Seal	5 EA
9.2	Single 36" Diameter Dry Bat Gate Mine Seal	1 EA
9.3	Mine Seal Conveyance Pipe	1434 LF
9.4	Soda Ash Briquettes	100 BAG
10.1	Site 2 Under-drain	300 LF
10.2	Standard Under-drain	100 LF
10.3	12" Diameter SDR 35 Solid PVC Conveyance Pipe	178 LF

LOCATION MAP



COUNTY HIGHWAY MAP, 1" = 1 MI.



*Mark E. Pennington*  
 MARK E. PENNINGTON RPE NO. 8757

01-27-14  
 DATE

**GENERAL NOTES**

- Dewatering the existing mine reservoir(s) and treatment of discharge will be required. Detailed mining information is limited for the portal sites shown on these plans and most of the portals are collapsed and cannot be visually examined. Therefore, the volume of the mine reservoir(s) cannot be accurately determined. However, field observations and the results of the piezometer measurements suggest a significant mine reservoir is likely to be present. The results of testing performed on samples obtained from the piezometers suggest the mine reservoir will require treatment before discharge. However, ground water conditions vary with season and weather. Also, water quality can change when the reservoir is dewatered. Therefore, the Contractor should be aware that substantial dewatering and treatment measures may be needed.
- A Bat Gate will be installed where the portals are found to be open as shown on these plans and as directed by the WVDEP
- Wet or modified mine seals will be installed in all collapsed portals shown on the plans. The intent is to install wet mine seals in all portals. However, if installation of a wet seal is not practical or possible due to the collapsed condition of the entry, the Contractor will appeal to the WVDEP for permission to install a modified mine seal.
- The mine floor and roof information provided on the plans is based on the results of the mine map shown on the plans, the test borings, topographic information, and visual examination of the entry locations. Therefore, the actual mine floor elevation, amount of roof collapse, mine roof height, and the portal width will vary from that shown on the plans.
- The portal information shown on these plans is provided for information only and should be considered as approximate. The Contractor is responsible for examining the site and making his own investigations necessary for preparation of his bid.
- Contractor to field verify the height of the mine openings, width of the portals, and length of the bat gates and seals required prior to purchasing materials for construction of the same as approved by the WVDEP.

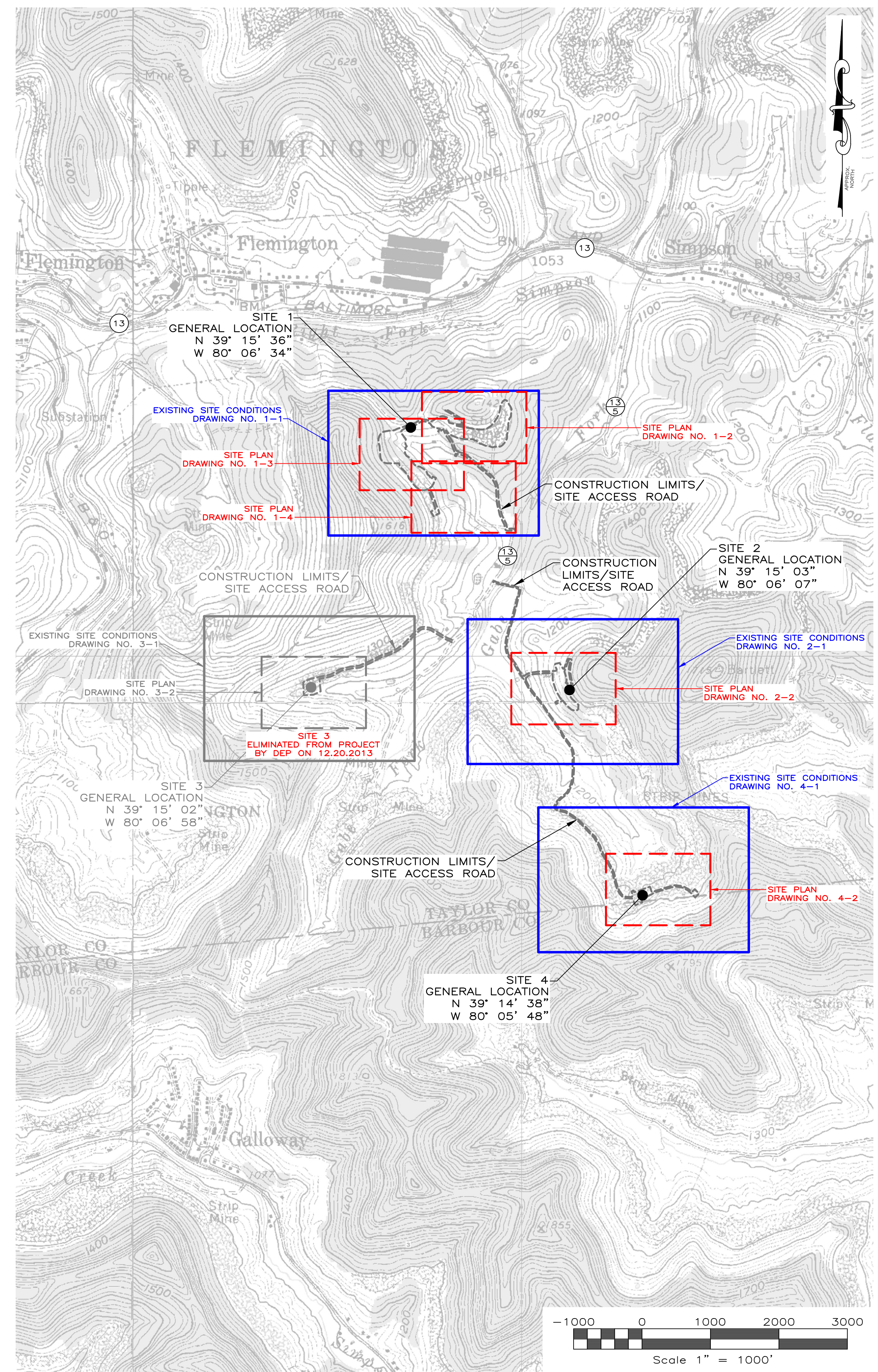
TABLE 1 - PORTAL INVENTORY  
GRAFTON #4 REFUSE AND HIGHWALL- DEP16073  
BY: CIVIL TECH ENGINEERING INC. - 8.12.13

PORTAL NO.	PORTAL LOCATION	PORTAL CONDITION	MINE SEAL OR BAT GATE	COMMENTS
P1-1	SITE 1 - WEST OF PRIORITY HIGHWALL 2	COLLAPSED AND DRAINING HEAVY RED AMD WITH PH = 3 TO 4	WET OR MODIFIED MINE SEAL	SMALL POND LOCATED IN FRONT OF THE ENTRY LOCATION
P1-2	SITE 1 - NORTH OF PRIORITY HIGHWALL 1	COLLAPSED AND DRY	WET OR MODIFIED MINE SEAL	APPROX. 4' DEEP SUBSIDENCE FEATURE LOCATED IN FRONT OF ENTRY
P1-3	SITE 1 - NORTH OF PRIORITY HIGHWALL 1	COLLAPSED AND DRAINING MODERATE RED AMD	WET OR MODIFIED MINE SEAL	STANDING RED WATER IN FRONT OF ENTRY
P1-4	SITE 1 - SOUTH OF PRIORITY HIGHWALL 1	OPEN AND DRY	36" DIAM. DRY BAT GATE	CLASSIFIED AS AN OPEN VERTICAL SHAFT. OPEN AREA APPROX. 1.5X4' (APPROX. 6 SF)
P2-1	SITE 2 - MIDDLE PORTAL	COLLAPSED AND DRAINING MODERATE AMD TO EXISTING DRAINAGE FEATURE	NA-DRAIN TO PROPOSED UNDERDRAIN	NO ENTRY - SURFACE MINE ENCOUNTERED
P2-2	SITE 2 - SOUTHERNMOST PORTAL	COLLAPSED AND DRY	NA	NO ENTRY - SURFACE MINE ENCOUNTERED
P2-3	SITE 2 - NORTHERNMOST PORTAL	COLLAPSED AND DRAINING HEAVY RED AMD TO EXISTING DRAINAGE FEATURE	WET OR MODIFIED MINE SEAL	ENTRY INDICATED BY MINE MAP - PORTAL COVERED WITH MINE SPOIL

**BORING SUMMARY - GRAFTON #4 REFUSE & HIGHWALL, TAYLOR COUNTY WV**  
July 12, 2013

Boring	Ground Elev. (ft.)	Driller's Water Observ. (ft.)	Piez. Depth (ft.)/ Reservoir Head (ft.)	Term. Depth (ft.)	2013 Water Level Depth/Elevation (ft.)				Soil Description	Rock Description	Depth/Elev. of Coal Seam/Void (ft.)
					7/02	7/03	7/08	7/12			
*B-1A (AbovePortal P1-1)	1311	NA	NA- Solid Coal Piezometer Not Installed	66	NA				Natural, moist, brown Sandy Clay with rock fragments to 15 ft.	Gray, very soft Claystone (15-30') Gray, soft to hard Shale (30-56')	7 ft. Thick Coal Seam - No Void (56-63') Coal Floor at Elev. 1248' (underlain by Claystone)
**B-1B (Above Portal P1-1)	1311	Water noted at 44.3 ft. at Completion	66 ft./ Reservoir Head = 7'	66	NA	44.3/ 1266.7	57.5/ 1253.5	NA	Natural, moist, brown Sandy Clay with rock fragments to 15 ft.	Gray, very soft Claystone (15-31') Gray, soft to hard Shale (41-57.5') Sandstone layer (44.5-48.5')	7 ft. Thick Coal Seam - No Void (57.5-64.5') Coal Floor at Elev. 1246.5' (underlain by Claystone)
B-2 (BelowPortal P1-3)	1233	Water noted at 20' during drilling. Dry at Completion	NA	30.4	NA				Natural, moist, brown, soft to medium stiff Sandy Clay with rock fragments to 15 ft.	Gray, soft, weathered, Shale (15-30.4')	NA
B-3 (AbovePortal P1-3)	1303	Moist during drilling - lost core water below 59'	80 ft./ Reservoir Head = 10.5'	80	68.5/ 1234.5	68.5/ 1234.5	68.5/ 1234.5	NA	Natural moist, brown, medium stiff Sandy Clay with rock fragments to 40 ft.	Gray, medium hard, Shale with coal laminations, badly broken and fractured (40-72')	Void and mine roof collapse with fall-in over approx. 1.5 ft. of coal (72-79') Coal Floor at Elev. 1224' (underlain by Shale)
B-4 (AbovePortal P2-1)	1327	Water noted at 31 ft. at Completion	55 ft./ Reservoir Head = 6.3'	55	NA	NA	31/ 1296	43.7/ 1283.3	Natural, moist, brown Sandy Clay to 17 ft.	Brown, soft, Shale and Claystone (17-40'). Became gray and harder at 39.5 ft.	Mine roof collapse debris (40-49.5') Coal Floor at Elev. 1277' (underlain by Claystone)

\* Boring B-1A offset 25 ft. eastward along the road from the original Boring B-1 location. \*\* Boring B-1B offset 50 ft. eastward along the road from the original Boring B-1 location.



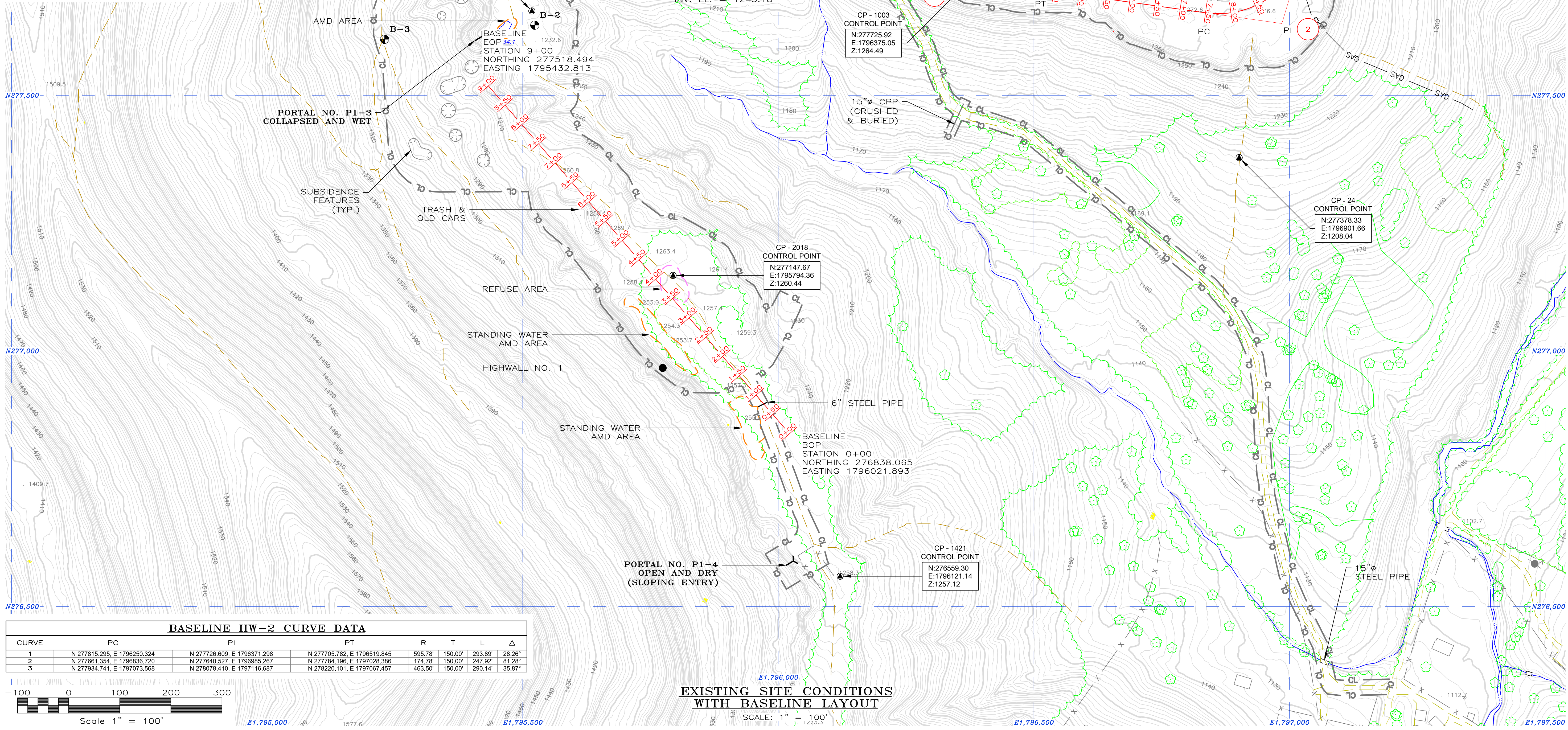
**SITE LOCATION PLAN/INDEX SHEET**

SCALE: 1" = 1000'

REVISIONS	SCALE: AS SHOWN	AML & R WVDEP	PROPOSED SITE LOCATION PLAN/INDEX SHEET GRAFTON #4 REFUSE AND HIGHWALL TAYLOR COUNTY, WEST VIRGINIA
SITE 3 REMOVED BY DEP ON 12.20.2013.	DRAWN BY: CDA CHECKED BY: MFP		
DATE	PROJECT NO.	CIVIL TECH ENGINEERING, INC. HURRICANE, WEST VIRGINIA	
01/27/14	13103		
DRAWING NO.	0		

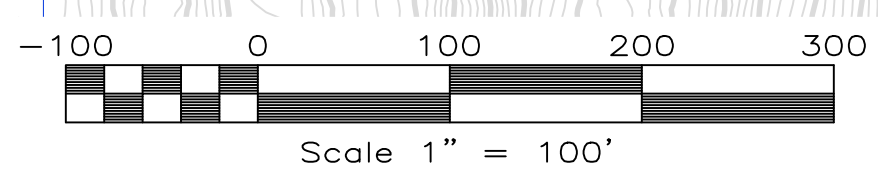
**—LEGEND—**

- N190,000— WV STATE PLANE COORDINATES
- 2200— EXISTING GROUND CONTOUR
- x SPOT ELEVATION
- BASELINE
- CP-1 SURVEY CONTROL POINT
- TREE LINE
- B-1 BORING LOCATION
- UTILITY POLE
- MINE PORTAL
- PAVED ROAD
- UNPAVED ROAD
- TRAIL
- WET AREA
- STREAM & CREEKS
- GAS LINE
- OE— OVERHEAD ELECTRIC
- REFUSE AREA
- AMD SEEP
- AMD AREA
- x FENCE LINE
- SUBSIDENCE FEATURE
- ⊗ GAS VALVE
- STRUCTURE
- CL— PROPOSED CONSTRUCTION LIMITS



**BASELINE HW-2 CURVE DATA**

CURVE	PC	PI	PT	R	T	L	Δ
1	N 277815.295, E 1796250.324	N 277726.609, E 1796371.298	N 277705.782, E 1796519.845	595.78'	150.00'	293.89'	28.26°
2	N 277661.354, E 1796836.720	N 277640.527, E 1796985.267	N 277784.196, E 1797028.386	174.78'	150.00'	247.92'	81.28°
3	N 277834.741, E 1797073.568	N 278078.410, E 1797116.687	N 278220.101, E 1797067.457	463.50'	150.00'	290.14'	35.87°



**EXISTING SITE CONDITIONS WITH BASELINE LAYOUT**

SCALE: 1" = 100'

**REVISIONS**

NO.	DATE	DESCRIPTION

SCALE: AS SHOWN  
 DRAWN BY: CDA  
 CHECKED BY: MFP

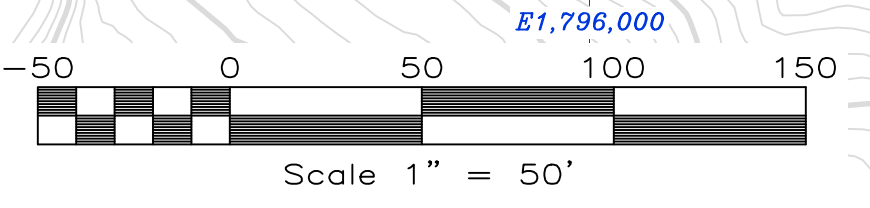
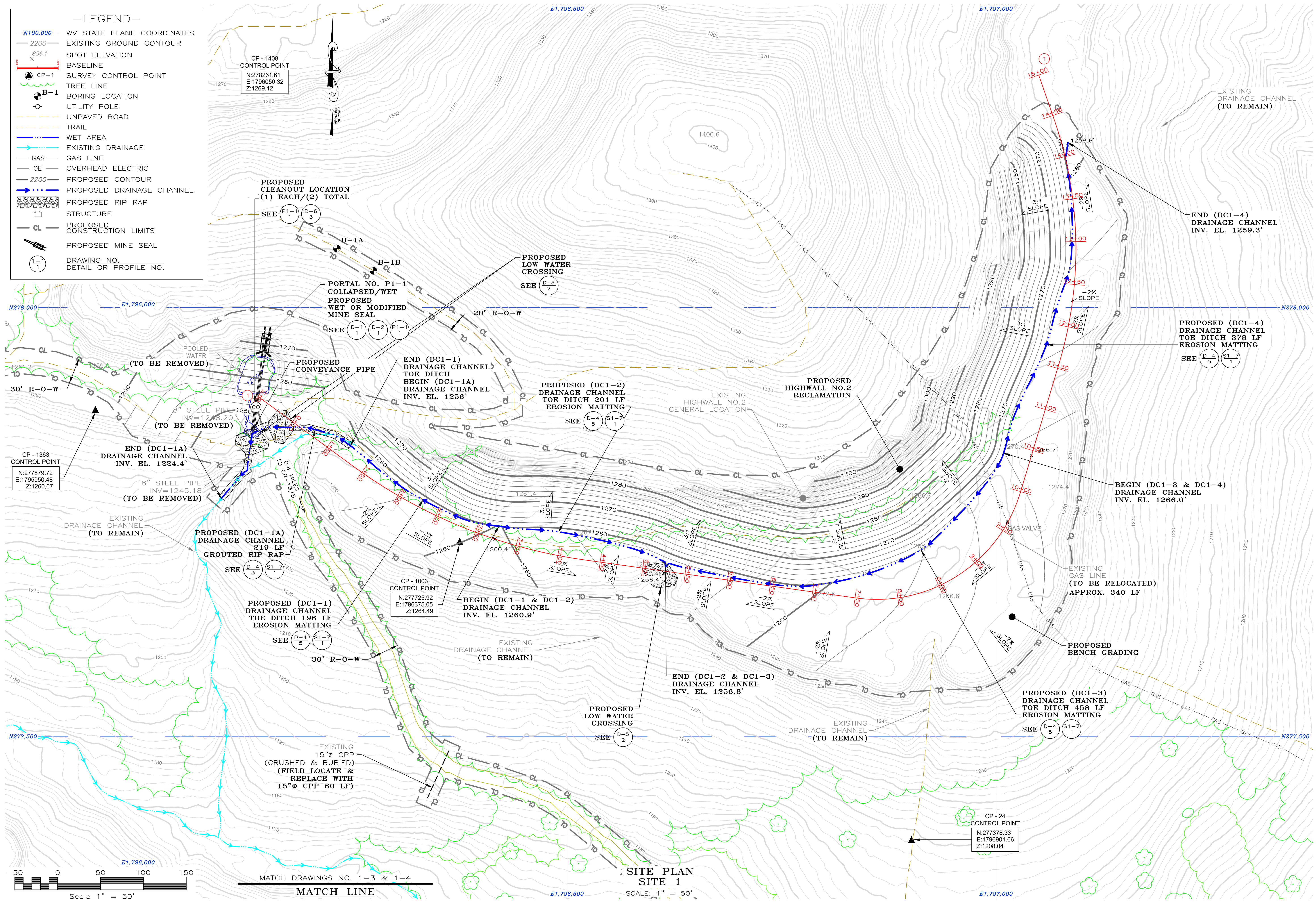
**AML & R**  
 WDEP

**SITE 1**  
 EXISTING SITE CONDITIONS WITH BASELINE LAYOUT  
 GRAFTON #4 REFUSE & HIGHWALL

**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

DATE: 01/27/14  
 PROJECT NO.: 13103  
 DRAWING NO.: 1-1

- LEGEND-**
- N190,000 — WV STATE PLANE COORDINATES
  - 2200 — EXISTING GROUND CONTOUR
  - x 856.1 — SPOT ELEVATION
  - — BASELINE
  - ▲ CP-1 — SURVEY CONTROL POINT
  - — TREE LINE
  - B-1 — BORING LOCATION
  - — UTILITY POLE
  - — UNPAVED ROAD
  - - - — TRAIL
  - — WET AREA
  - — EXISTING DRAINAGE
  - — GAS LINE
  - OE — OVERHEAD ELECTRIC
  - 2200 — PROPOSED CONTOUR
  - — PROPOSED DRAINAGE CHANNEL
  - ▨ — PROPOSED RIP RAP
  - — STRUCTURE
  - CL — PROPOSED CONSTRUCTION LIMITS
  - — PROPOSED MINE SEAL
  - (1-1) — DRAWING NO. / DETAIL OR PROFILE NO.



MATCH DRAWINGS NO. 1-3 & 1-4  
**MATCH LINE**

**SITE PLAN**  
**SITE 1**  
 SCALE: 1" = 50'

REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN	AML & R
DRAWN BY: CDA	WDEP
CHECKED BY: MFP	

<b>SITE PLAN</b>	
<b>SITE 1</b>	
<b>GRAFTON #4 REFUSE &amp; HIGHWALL</b>	
<b>TAYLOR COUNTY, WEST VIRGINIA</b>	

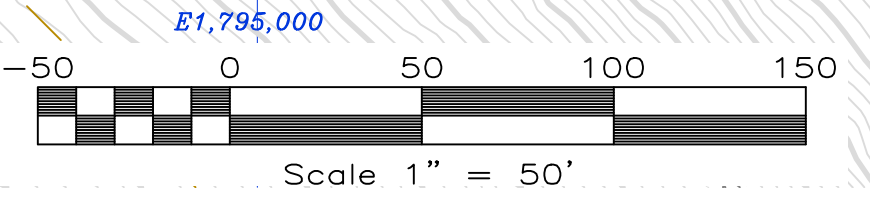
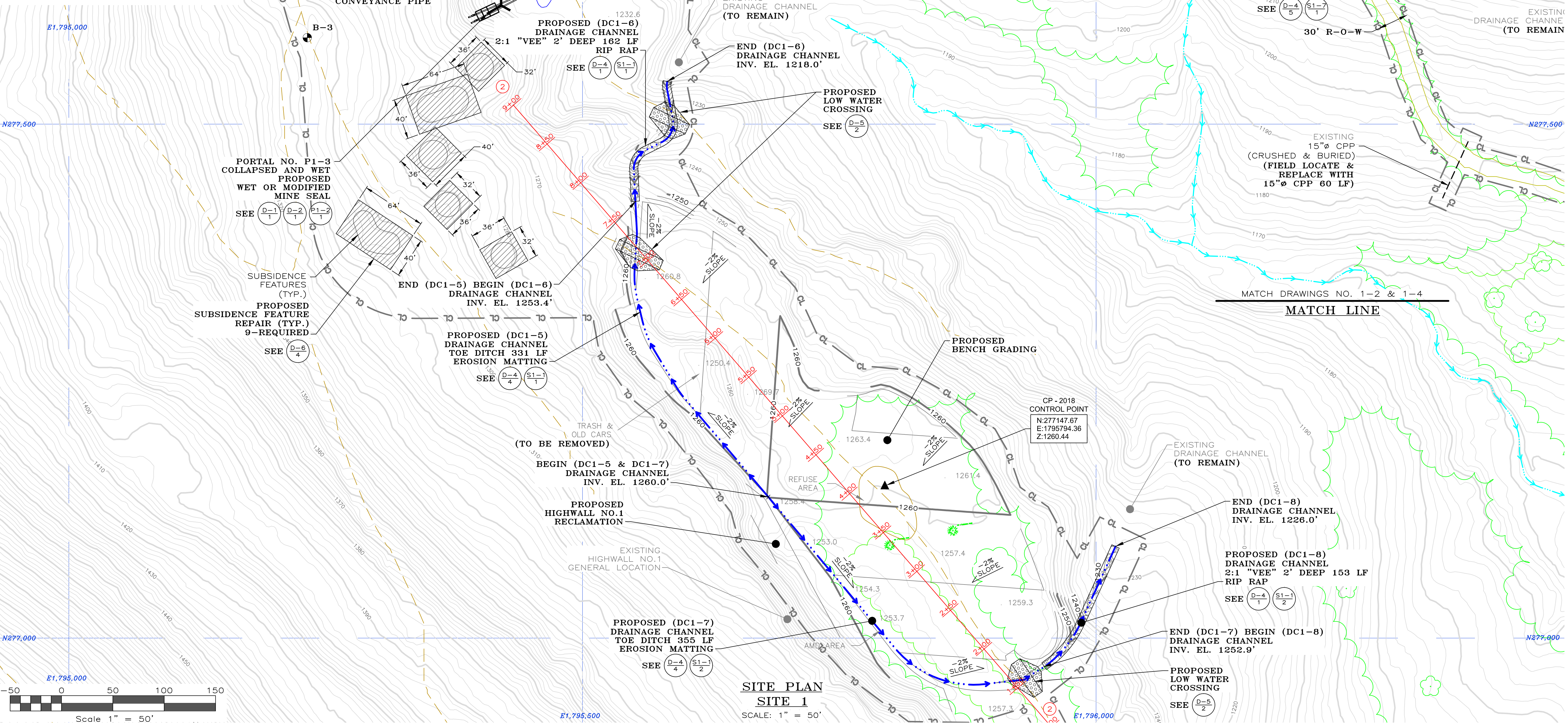
  

<b>CIVIL TECH ENGINEERING, INC.</b>	
<b>HURRICANE, WEST VIRGINIA</b>	

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	1-2

- LEGEND-**
- N190,000- WV STATE PLANE COORDINATES
  - 2200 EXISTING GROUND CONTOUR
  - 856.1 SPOT ELEVATION
  - BASELINE
  - CP-1 SURVEY CONTROL POINT
  - B-1 TREE LINE
  - BORING LOCATION
  - UTILITY POLE
  - UNPAVED ROAD
  - TRAIL
  - WET AREA
  - EXISTING DRAINAGE
  - GAS LINE
  - OE OVERHEAD ELECTRIC
  - 2200 PROPOSED CONTOUR
  - PROPOSED DRAINAGE CHANNEL
  - PROPOSED SUBSIDENCE FEATURE REPAIR
  - PROPOSED RIP RAP STRUCTURE
  - CL PROPOSED CONSTRUCTION LIMITS
  - PROPOSED MINE SEAL
  - (1-1) DRAWING NO. DETAIL OR PROFILE NO.



**SITE PLAN**  
**SITE 1**  
 SCALE: 1" = 50'

REVISIONS	
NO.	DESCRIPTION

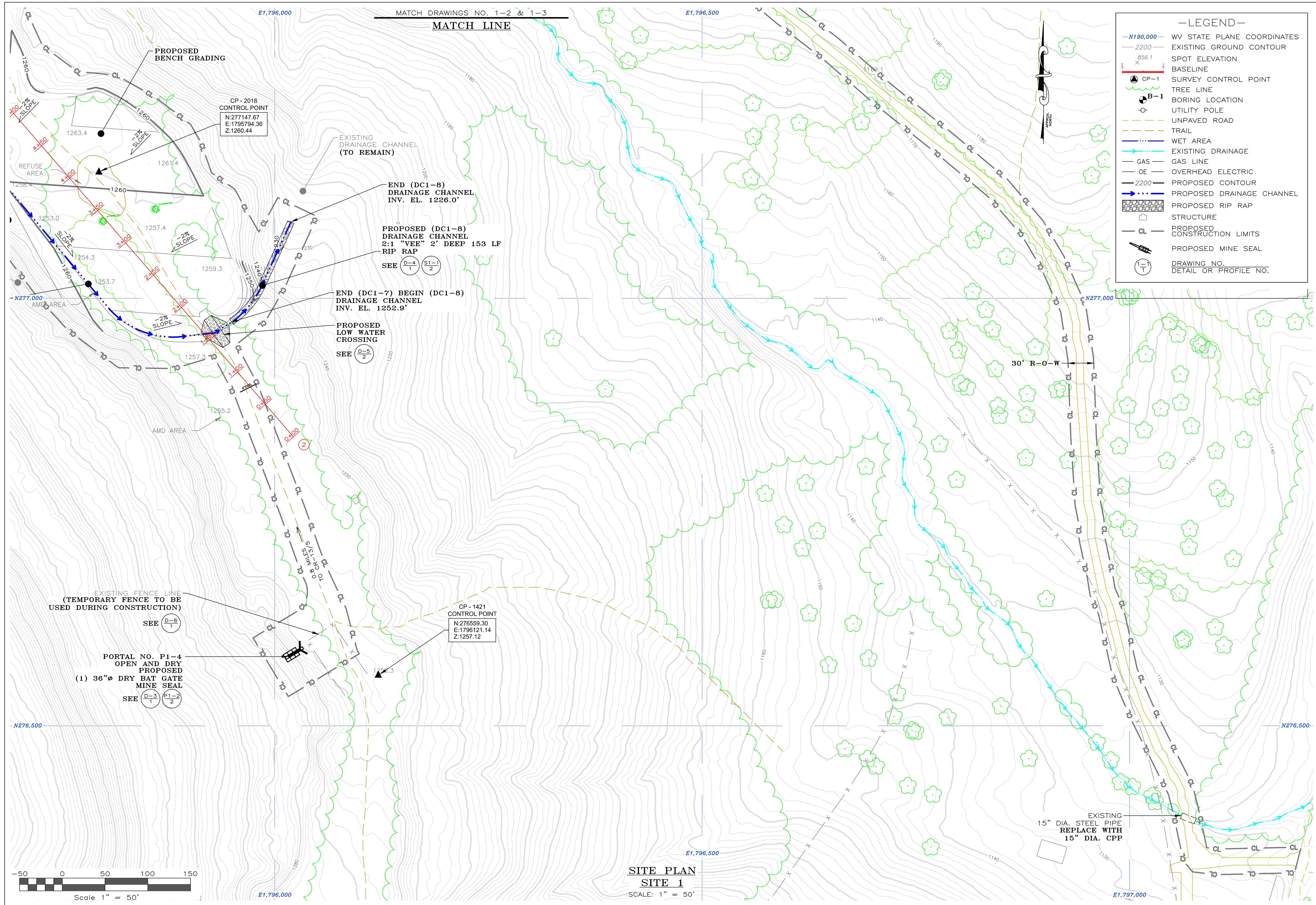
SCALE: AS SHOWN	DATE: 01/27/14
DRAWN BY: CDA	PROJECT NO. 13103
CHECKED BY: MFP	DRAWING NO. 1-3

AML & R	DATE: 01/27/14
WDEP	PROJECT NO. 13103
	DRAWING NO. 1-3

SITE PLAN	CIVIL TECH ENGINEERING, INC.
SITE 1	HURRICANE, WEST VIRGINIA
GRAFTON #4 REFUSE & HIGHWALL	
TAYLOR COUNTY, WEST VIRGINIA	



REVISIONS	
NO.	DESCRIPTION

SCALE: AS SHOWN	DATE	BY
DRAWN BY: CDA	CHECKED BY: MFP	

AML & R
WDEP

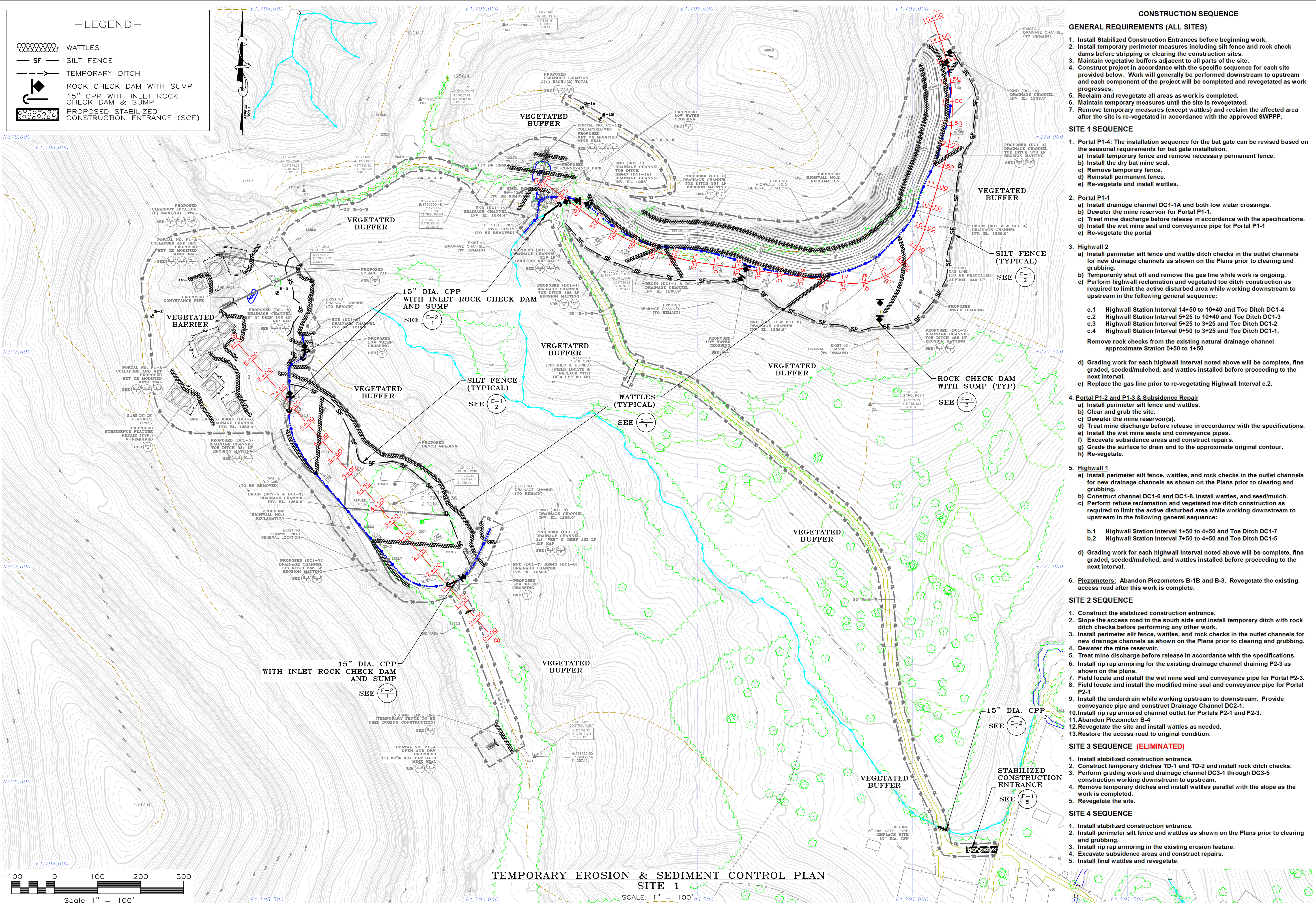
<b>SITE PLAN</b>
<b>SITE 1</b>
<b>GRAFTON #4 REFUSE &amp; HIGHWALL</b>
<b>TAYLOR COUNTY, WEST VIRGINIA</b>

<b>CIVIL TECH ENGINEERING, INC.</b>
<b>HURRICANE, WEST VIRGINIA</b>

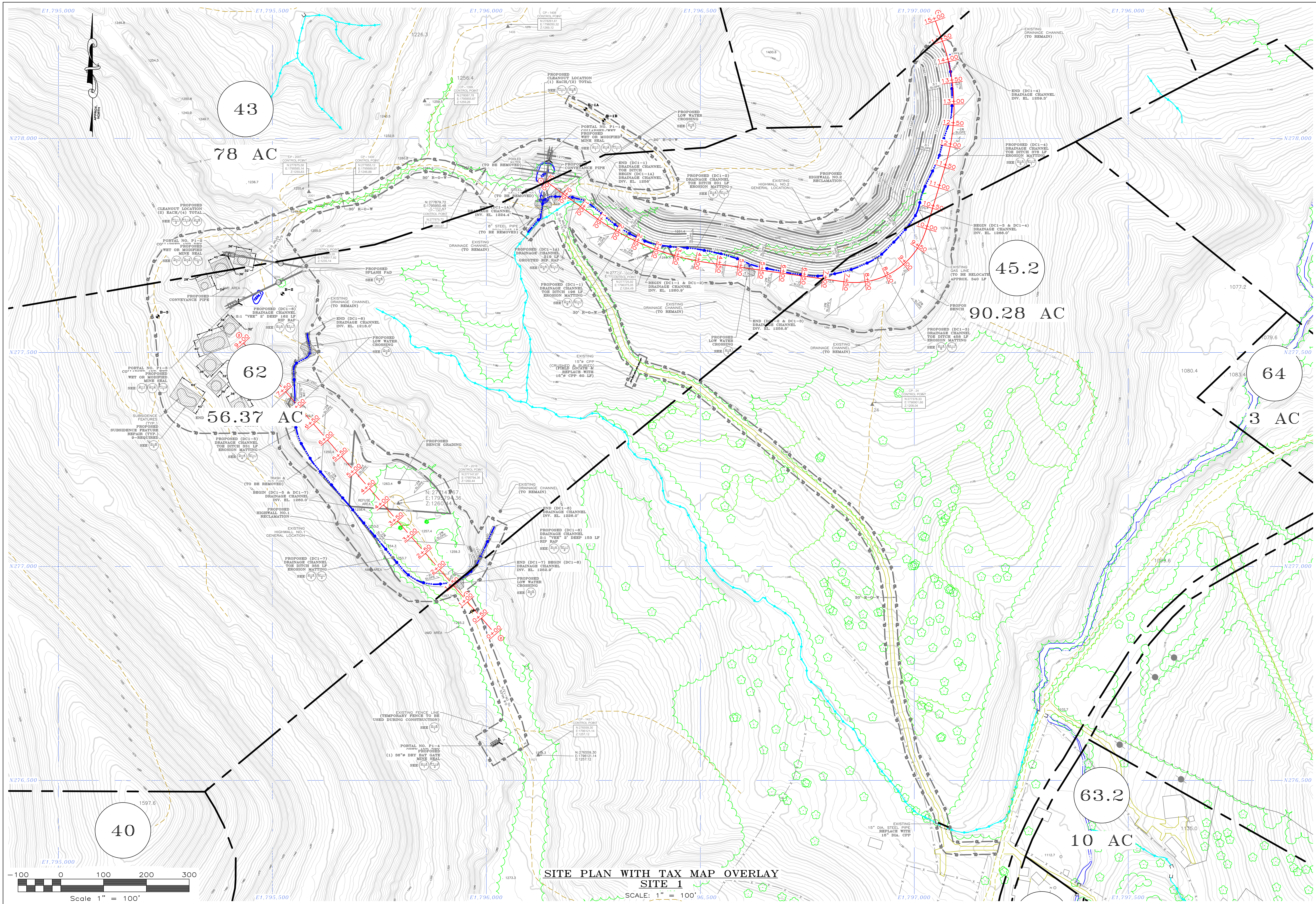
  

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	1-4



- ### CONSTRUCTION SEQUENCE
- #### GENERAL REQUIREMENTS (ALL SITES)
1. Install Stabilized Construction Entrances before beginning work.
  2. Install temporary perimeter measures including silt fence and rock check dams before stripping or clearing the construction sites.
  3. Maintain vegetative buffers adjacent to all parts of the site.
  4. Construct project in accordance with the specific sequence for each site provided below. Work will generally be performed downstream to upstream and each component of the project will be completed and revegetated as work progresses.
  5. Reclaim and revegetate all areas as work is completed.
  6. Maintain temporary measures until the site is revegetated.
  7. Remove temporary measures (except wattles) and reclaim the affected area after the site is re-vegetated in accordance with the approved SWPPP.
- #### SITE 1 SEQUENCE
1. **Portal P1-4:** The installation sequence for the bat gate can be revised based on the seasonal requirements for bat gate installation.
    - a) Install temporary fence and remove necessary permanent fence.
    - b) Install the dry bat mine seal.
    - c) Remove temporary fence.
    - d) Reinstall permanent fence.
    - e) Re-vegetate and install wattles.
  2. **Portal P1-1**
    - a) Install drainage channel DC1-1A and both low water crossings.
    - b) Dewater the mine reservoir for Portal P1-1.
    - c) Treat mine discharge before release in accordance with the specifications.
    - d) Install the wet mine seal and conveyance pipe for Portal P1-1
    - e) Re-vegetate the portal
  3. **Highwall 2**
    - a) Install perimeter silt fence and wattle ditch checks in the outlet channels for new drainage channels as shown on the Plans prior to clearing and grubbing.
    - b) Temporarily shut off and remove the gas line while work is ongoing.
    - c) Perform highwall reclamation and vegetated toe ditch construction as required to limit the active disturbed area while working downstream to upstream in the following general sequence:
      - c.1 Highwall Station Interval 14+50 to 10+40 and Toe Ditch DC1-4
      - c.2 Highwall Station Interval 5+25 to 10+40 and Toe Ditch DC1-3
      - c.3 Highwall Station Interval 5+25 to 3+25 and Toe Ditch DC1-2
      - c.4 Highwall Station Interval 0+50 to 3+25 and Toe Ditch DC1-1,
 Remove rock checks from the existing natural drainage channel approximate Station 0+50 to 1+50
    - d) Grading work for each highwall interval noted above will be complete, fine graded, seeded/mulched, and wattles installed before proceeding to the next interval.
    - e) Replace the gas line prior to re-vegetating Highwall Interval c.2.
  4. **Portal P1-2 and P1-3 & Subsidence Repair**
    - a) Install perimeter silt fence and wattles.
    - b) Clear and grub the site.
    - c) Dewater the mine reservoir(s).
    - d) Treat mine discharge before release in accordance with the specifications.
    - e) Install the wet mine seals and conveyance pipes.
    - f) Excavate subsidence areas and construct repairs.
    - g) Grade the surface to drain and to the approximate original contour.
    - h) Re-vegetate.
  5. **Highwall 1**
    - a) Install perimeter silt fence, wattles, and rock checks in the outlet channels for new drainage channels as shown on the Plans prior to clearing and grubbing.
    - b) Construct channel DC1-6 and DC1-8, install wattles, and seed/mulch.
    - c) Perform refuse reclamation and vegetated toe ditch construction as required to limit the active disturbed area while working downstream to upstream in the following general sequence:
      - b.1 Highwall Station Interval 1+50 to 4+50 and Toe Ditch DC1-7
      - b.2 Highwall Station Interval 7+50 to 4+50 and Toe Ditch DC1-5
    - d) Grading work for each highwall interval noted above will be complete, fine graded, seeded/mulched, and wattles installed before proceeding to the next interval.
  6. **Piezometers:** Abandon Piezometers B-1B and B-3. Revegetate the existing access road after this work is complete.
- #### SITE 2 SEQUENCE
1. Construct the stabilized construction entrance.
  2. Slope the access road to the south side and install temporary ditch with rock ditch checks before performing any other work.
  3. Install perimeter silt fence, wattles, and rock checks in the outlet channels for new drainage channels as shown on the Plans prior to clearing and grubbing.
  4. Dewater the mine reservoir.
  5. Treat mine discharge before release in accordance with the specifications.
  6. Install rip rap armoring for the existing drainage channel draining P2-3 as shown on the plans.
  7. Field locate and install the wet mine seal and conveyance pipe for Portal P2-3.
  8. Field locate and install the modified mine seal and conveyance pipe for Portal P2-1
  9. Install the underdrain while working upstream to downstream. Provide conveyance pipe and construct Drainage Channel DC2-1.
  10. Install rip rap armored channel outlet for Portals P2-1 and P2-3.
  11. Abandon Piezometer B-4.
  12. Revegetate the site and install wattles as needed.
  13. Restore the access road to original condition.
- #### SITE 3 SEQUENCE (ELIMINATED)
1. Install stabilized construction entrance.
  2. Construct temporary ditches TD-1 and TD-2 and install rock ditch checks.
  3. Perform grading work and drainage channel DC3-1 through DC3-5 construction working downstream to upstream.
  4. Remove temporary ditches and install wattles parallel with the slope as the work is completed.
  5. Revegetate the site.
- #### SITE 4 SEQUENCE
1. Install stabilized construction entrance.
  2. Install perimeter silt fence and wattles as shown on the Plans prior to clearing and grubbing.
  3. Install rip rap armoring in the existing erosion feature.
  4. Excavate subsidence areas and construct repairs.
  5. Install final wattles and revegetate.

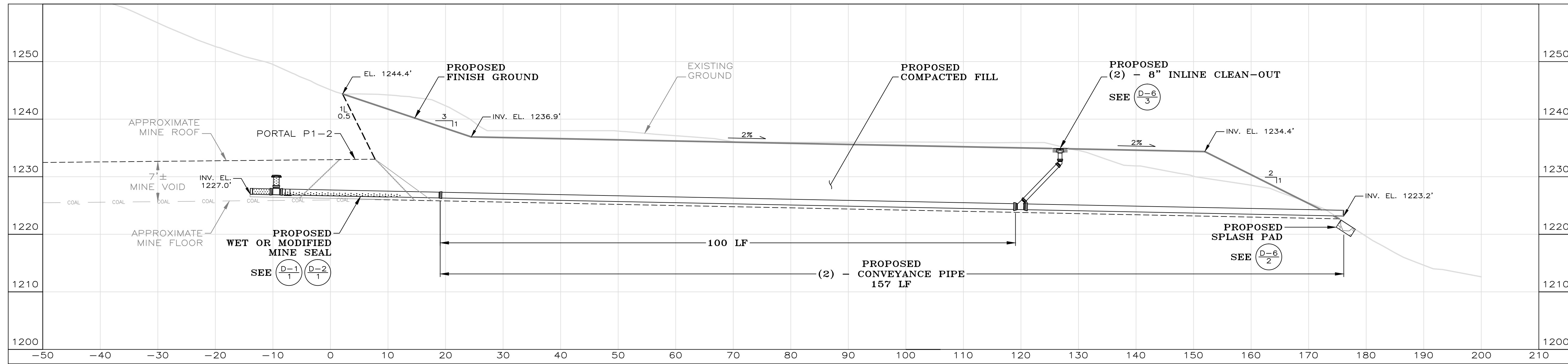
REVISONS	DESCRIPTION	DATE	BY
	REVISED SEQUENCE	DEC 2013	HNC
SCALE: AS SHOWN	DRAWN BY: CCA	CHECKED BY: MFP	
	TEMPORARY EROSION & SEDIMENT CONTROL PLAN - SITE 1	GRAFTON #4 REFUSE & HIGHWALL TAYLOR COUNTY, WEST VIRGINIA	
AML & R	WVDEP	CIVIL TECH ENGINEERING, INC.	
	HURRICANE, WEST VIRGINIA	DATE: 01/27/14	
PROJECT NO. 13103		DRAWING NO. 1-5	



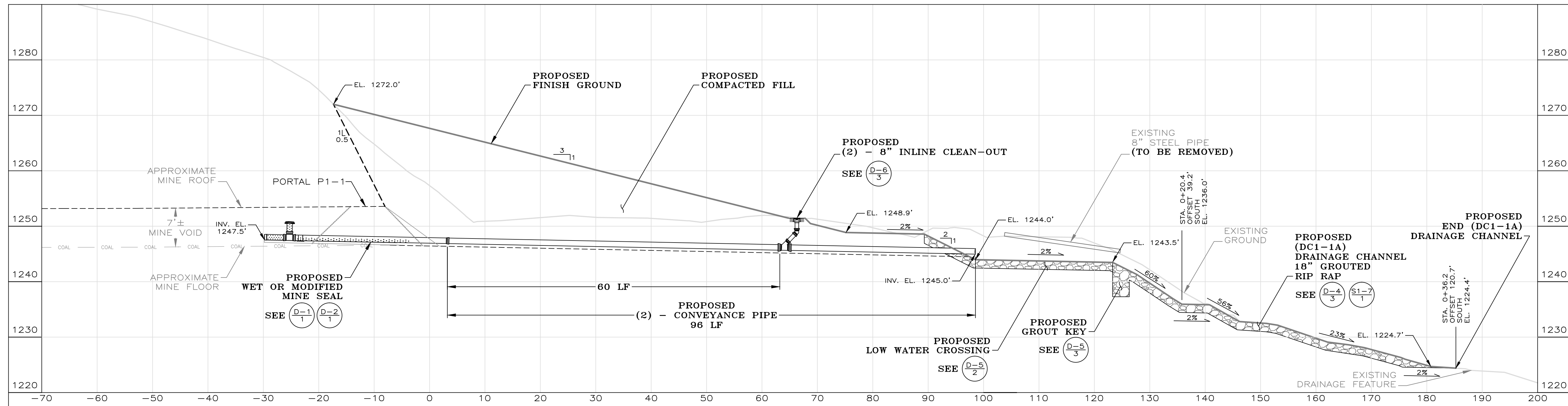
SITE PLAN WITH TAX MAP OVERLAY  
 SITE 1  
 SCALE: 1" = 100'

<b>REVISIONS</b> DATE BY DESCRIPTION	
SCALE: AS SHOWN DRAWN BY: CDA CHECKED BY: MEF	
<b>AML &amp; R</b> WDFP	
PROPOSED SITE PLAN WITH TAX MAP OVERLAY GRAFTON #4 REFUSE & HIGHWALL TAYLOR COUNTY, WEST VIRGINIA	
<b>CIVIL TECH ENGINEERING, INC.</b> HURRICANE, WEST VIRGINIA	
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	1-6





DETAIL (2)  
PORTAL P1-2 PROFILE  
SCALE: 1" = 10'



DETAIL (1)  
PORTAL P1-1 PROFILE  
SCALE: 1" = 10'

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	DEC 2013	HNC	REVISED PORTAL P1-1 PROFILE

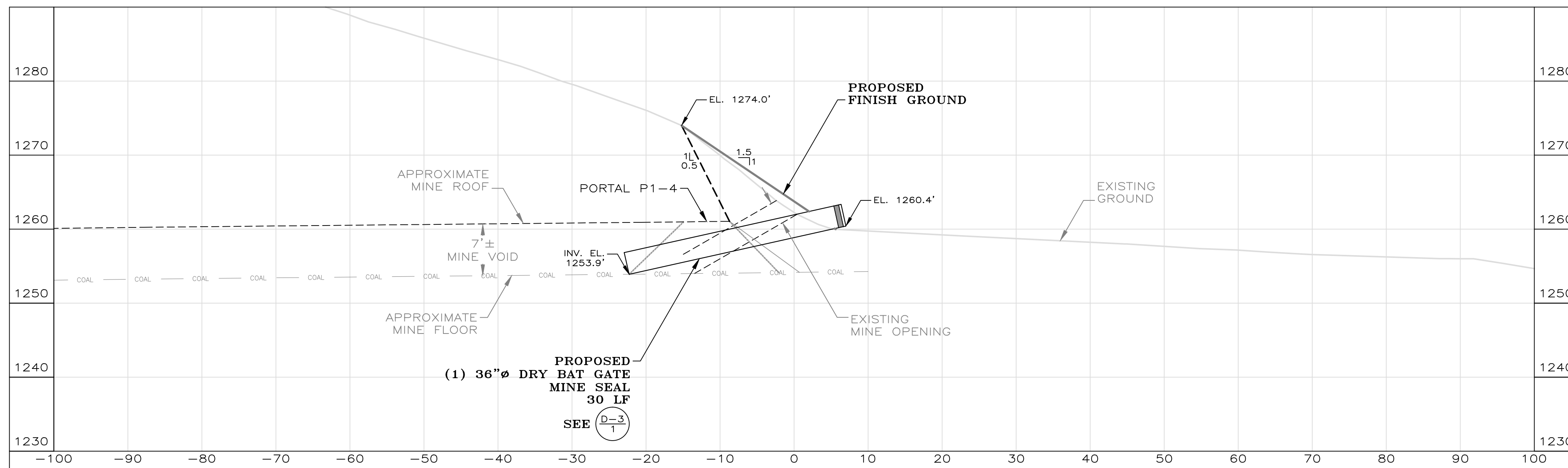
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AML & R  
WDEP

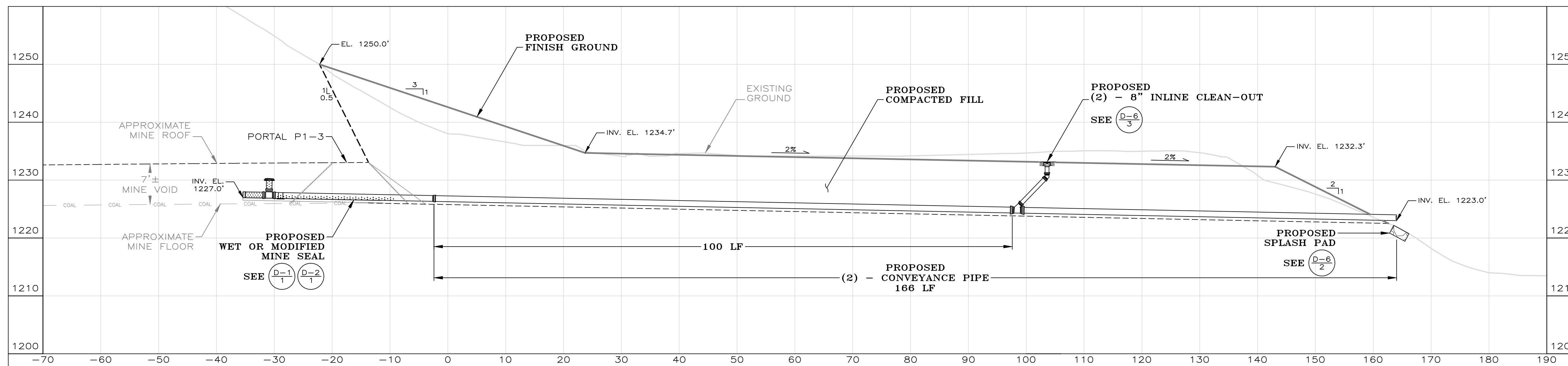
SITE 1 PORTAL PROFILES  
P1-1 & P1-2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

CIVIL TECH ENGINEERING, INC.  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	P1-1

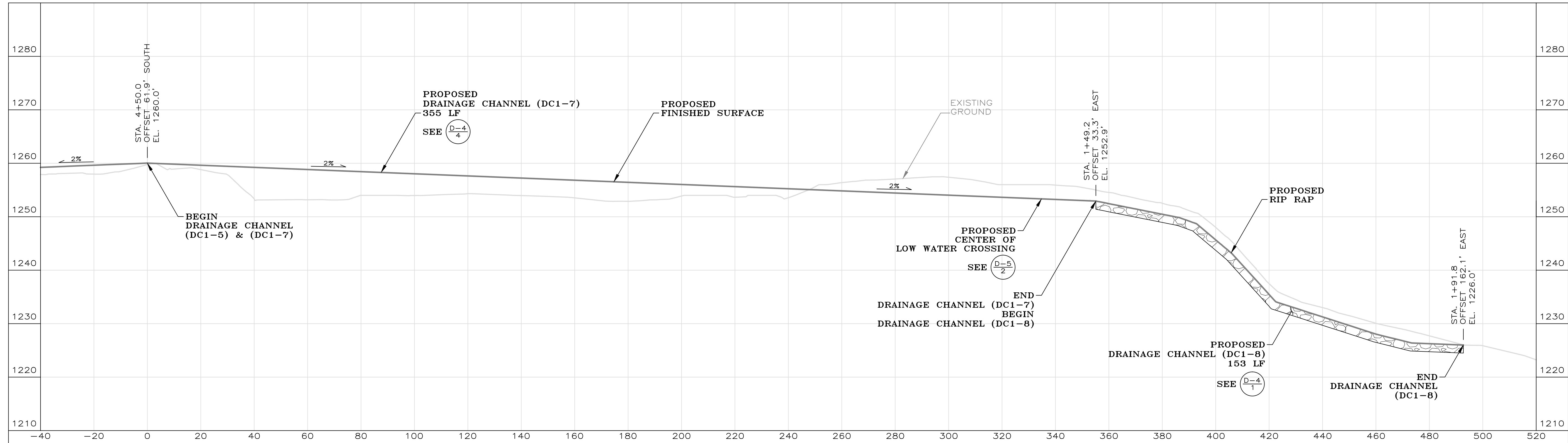


**DETAIL (2)**  
**PORTAL P1-4 PROFILE**  
SCALE: 1" = 10'

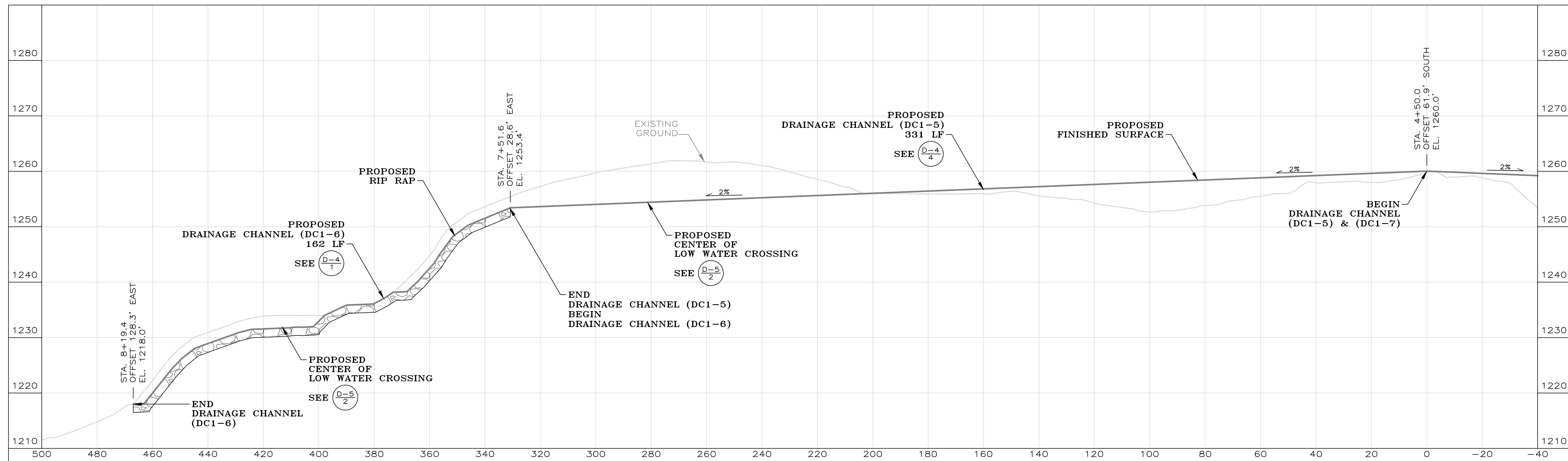


**DETAIL (1)**  
**PORTAL P1-3 PROFILE**  
SCALE: 1" = 10'

<b>REVISIONS</b> DATE BY DESCRIPTION		SCALE: AS SHOWN DRAWN BY: CDA CHECKED BY: MEF	<b>AML &amp; R</b> WDEP	<b>SITE 1 PORTAL PROFILES</b> P1-3 & P1-4 GRAFTON #4 REFUSE & HIGHWALL TAYLOR COUNTY, WEST VIRGINIA	<b>CIVIL TECH ENGINEERING, INC.</b> HURRICANE, WEST VIRGINIA



**DETAIL (2)**  
**HIGHWALL #1 - DRAINAGE CHANNEL (DC1-7 & DC1-8) PROFILE**  
 SCALE: V: 1" = 10', H: 1" = 20'



**DETAIL (1)**  
**HIGHWALL #1 - DRAINAGE CHANNEL (DC1-5 & DC1-6) PROFILE**  
 SCALE: V: 1" = 10', H: 1" = 20'

REVISIONS	
DATE	DESCRIPTION

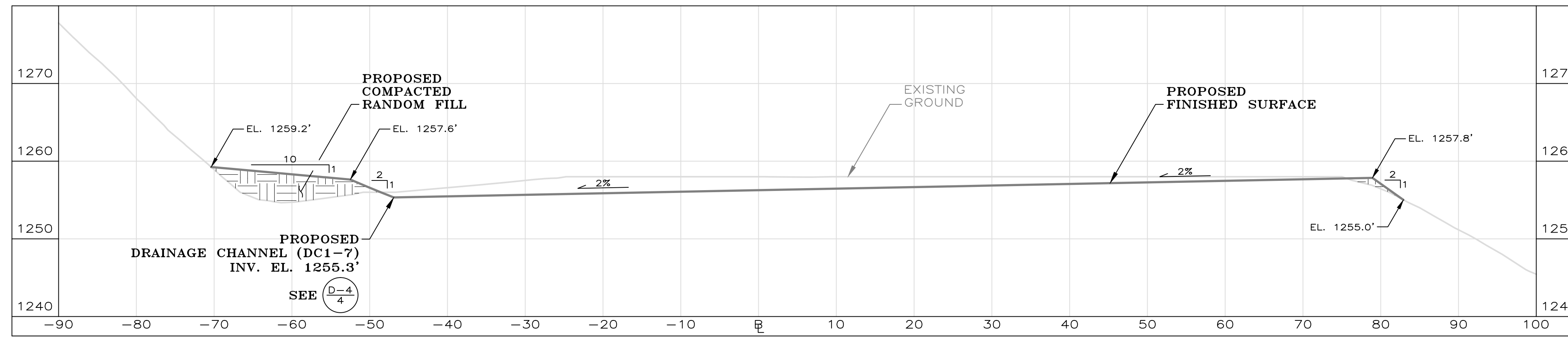
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 CHECKED BY: MEF

AML & R  
 WDEP

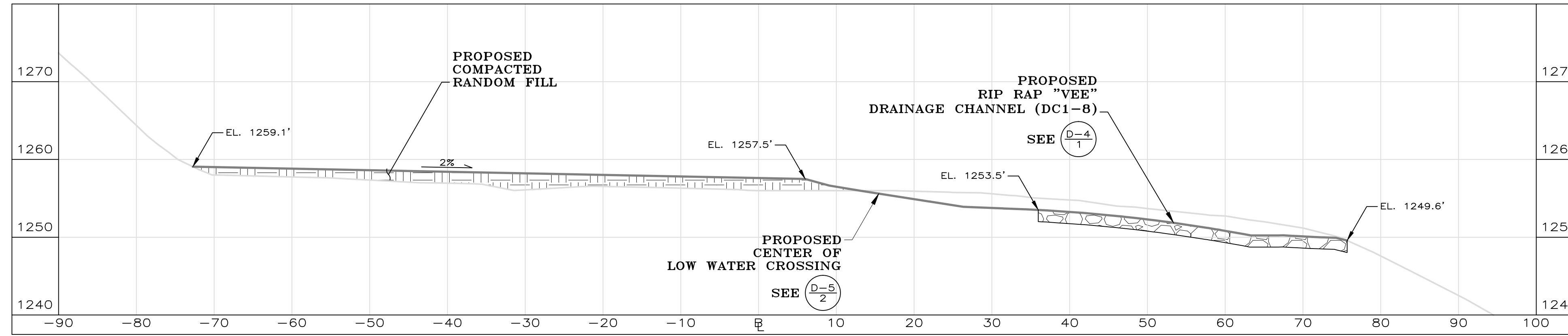
DC1-5 - DC1-8  
 SITE 1 - HIGHWALL #1  
 GRAFTON #4 REFUSE & HIGHWALL  
 TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

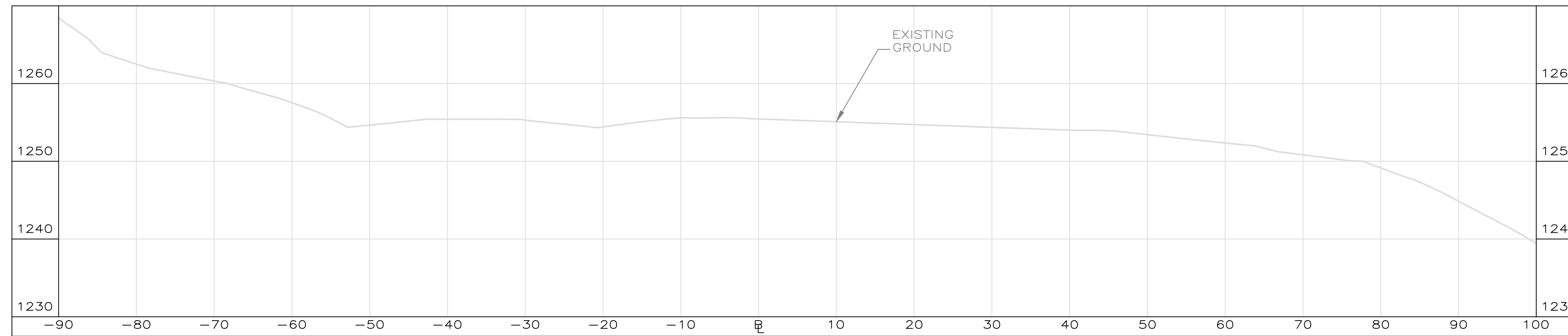
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-1



**BASELINE STATION 2+00**  
SCALE: 1" = 10'



**BASELINE STATION 1+50**  
SCALE: 1" = 10'



**BASELINE STATION 1+00**  
SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

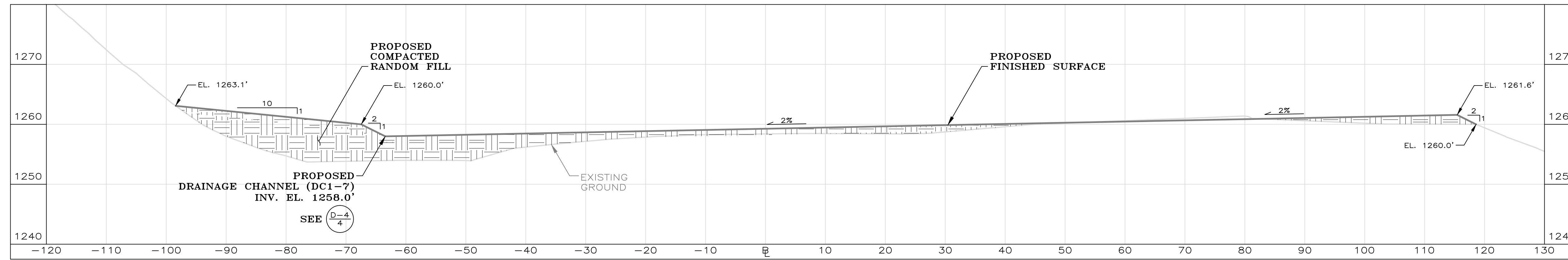
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CHECKED BY: MEP

AML & R  
WDEP

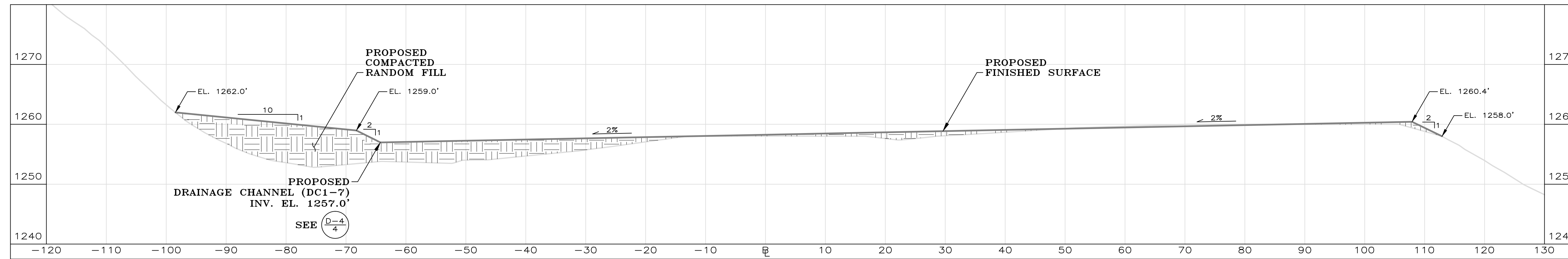
STA. 1+00 - STA. 2+00  
SITE 1 - HIGHWALL #1  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

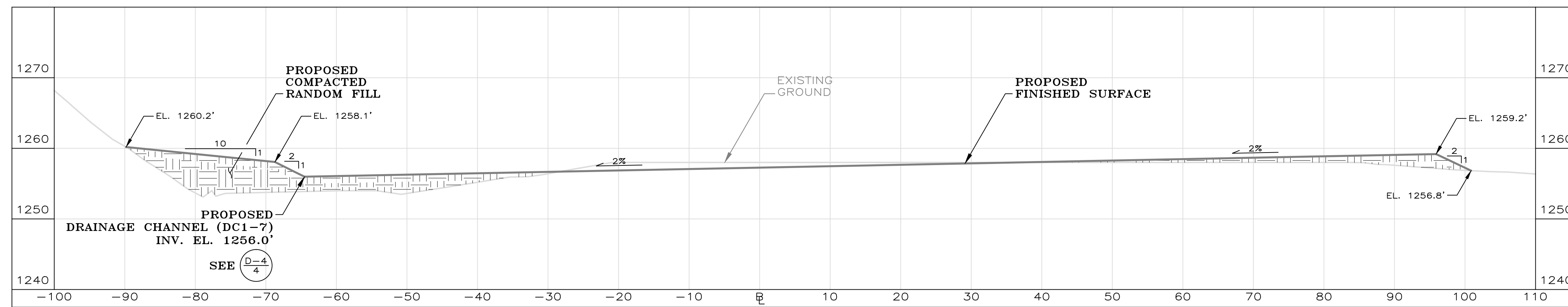
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-2



**BASELINE STATION 3+50**  
SCALE: 1" = 10'

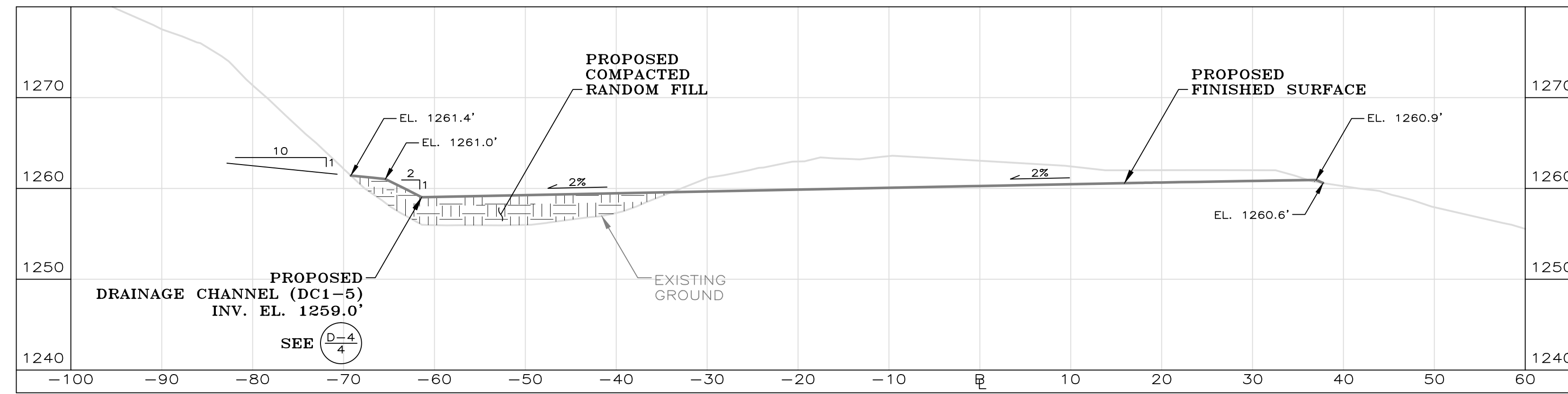


**BASELINE STATION 3+00**  
SCALE: 1" = 10'

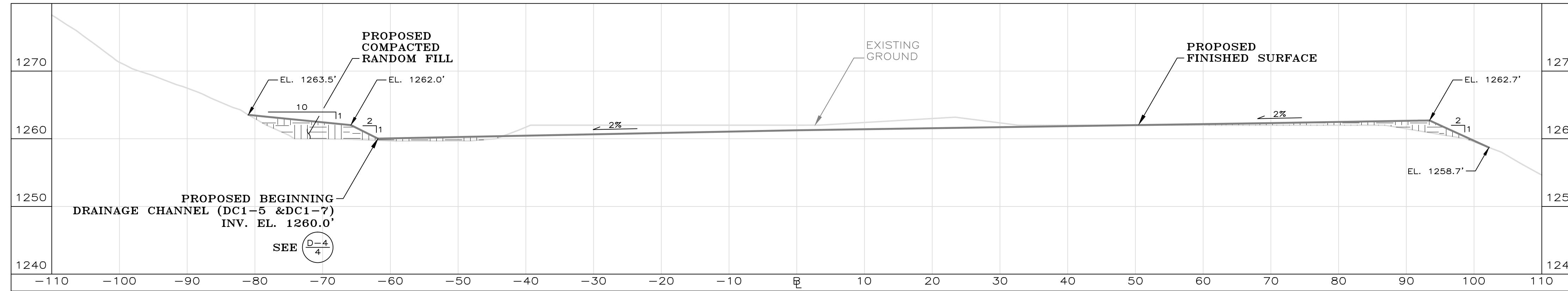


**BASELINE STATION 2+50**  
SCALE: 1" = 10'

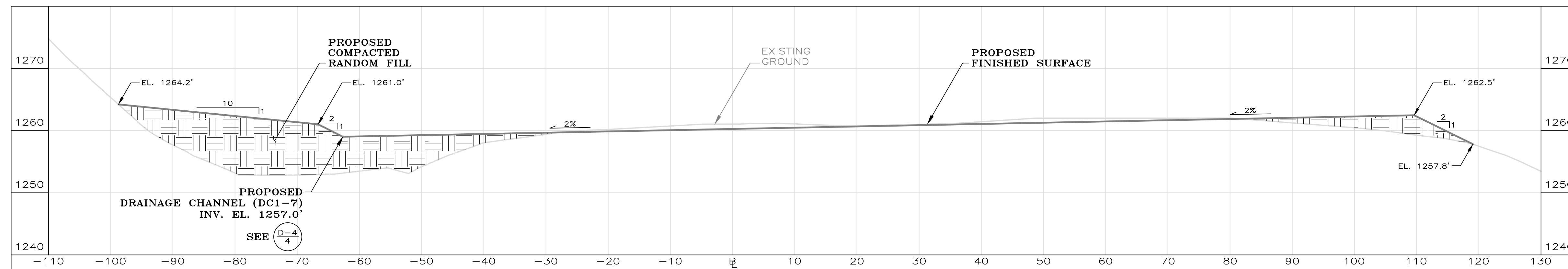
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SCALE: AS SHOWN DRAWN BY: CDA CHECKED BY: MEP	<b>AML &amp; R</b> WDEP		
STA. 2+50 - STA. 3+50 SITE 1 - HIGHWALL #1 GRAFTON #4 REFUSE & HIGHWALL TAYLOR COUNTY, WEST VIRGINIA			
<b>CIVIL TECH ENGINEERING, INC.</b> HURRICANE, WEST VIRGINIA			
DATE	01/27/14		
PROJECT NO.	13103		
DRAWING NO.	S1-3		



**BASELINE STATION 5+00**  
SCALE: 1" = 10'



**BASELINE STATION 4+50**  
SCALE: 1" = 10'



**BASELINE STATION 4+00**  
SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

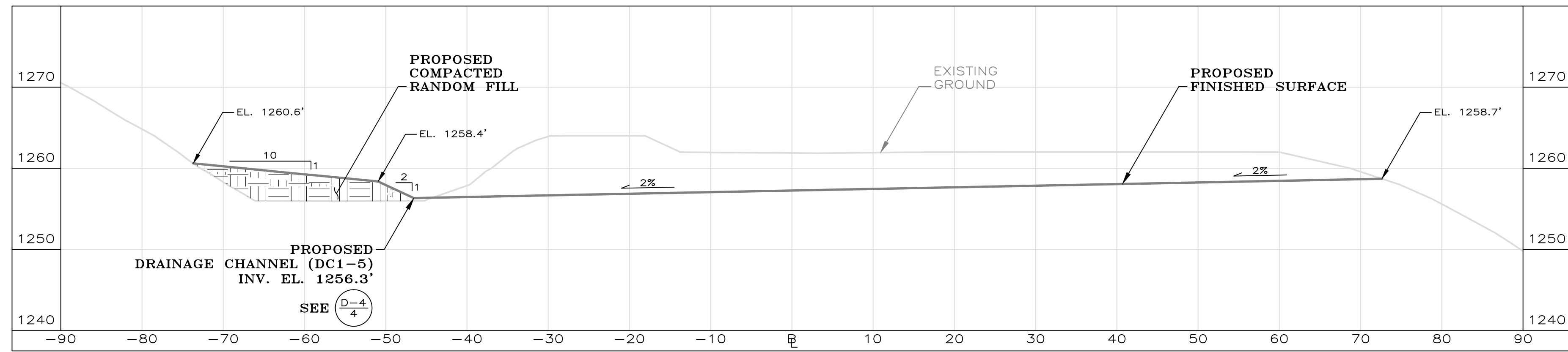
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DRAWN BY: CDA  
CHECKED BY: MFP

AML & R  
WDEP

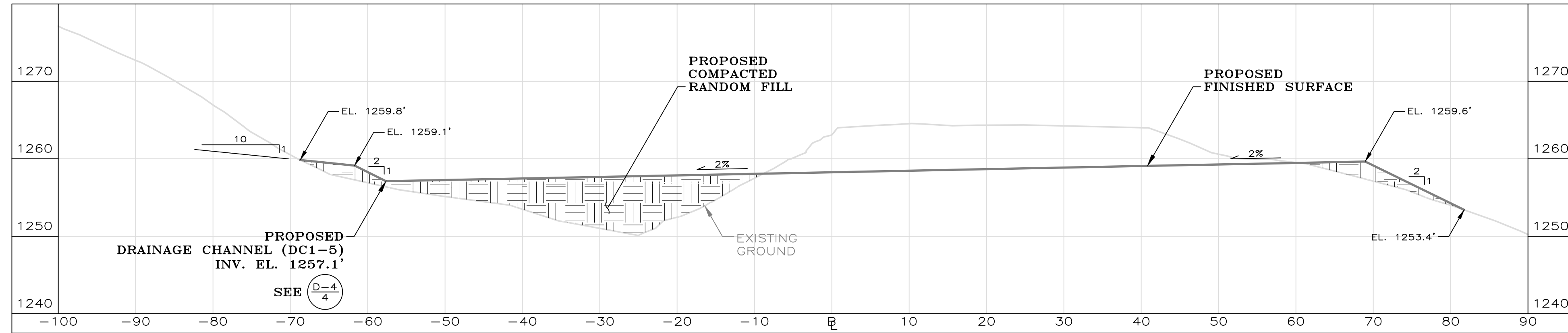
STA. 4+00 - STA. 5+00  
SITE 1 - HIGHWALL #1  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

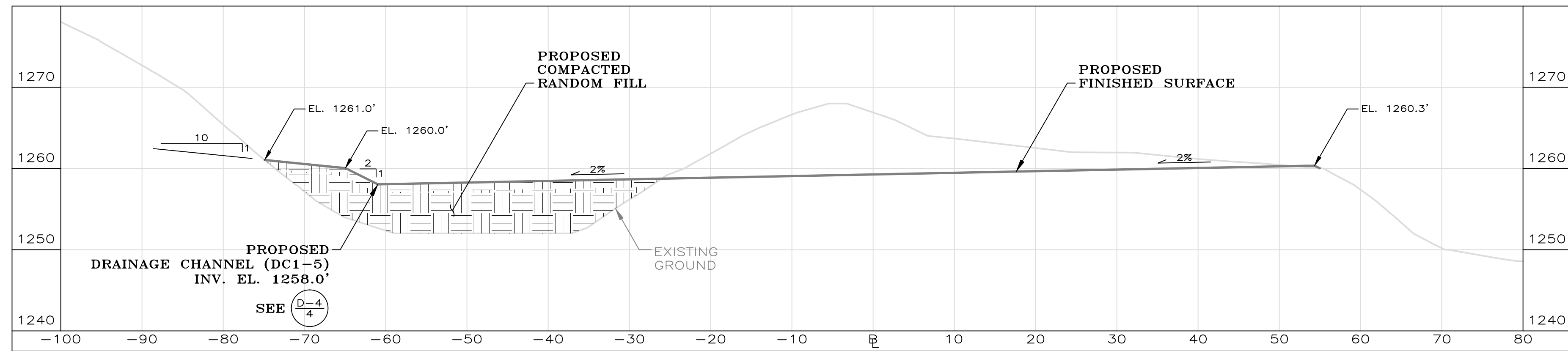
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-4



**BASELINE STATION 6+50**  
SCALE: 1" = 10'



**BASELINE STATION 6+00**  
SCALE: 1" = 10'



**BASELINE STATION 5+50**  
SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

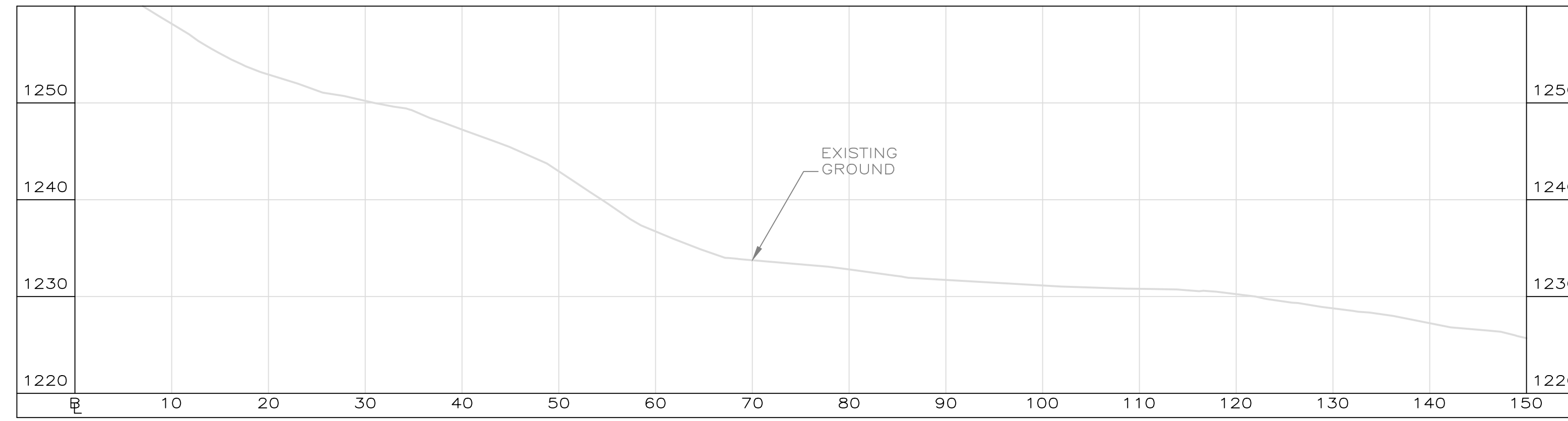
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CHECKED BY: MFP

AML & R  
WDEP

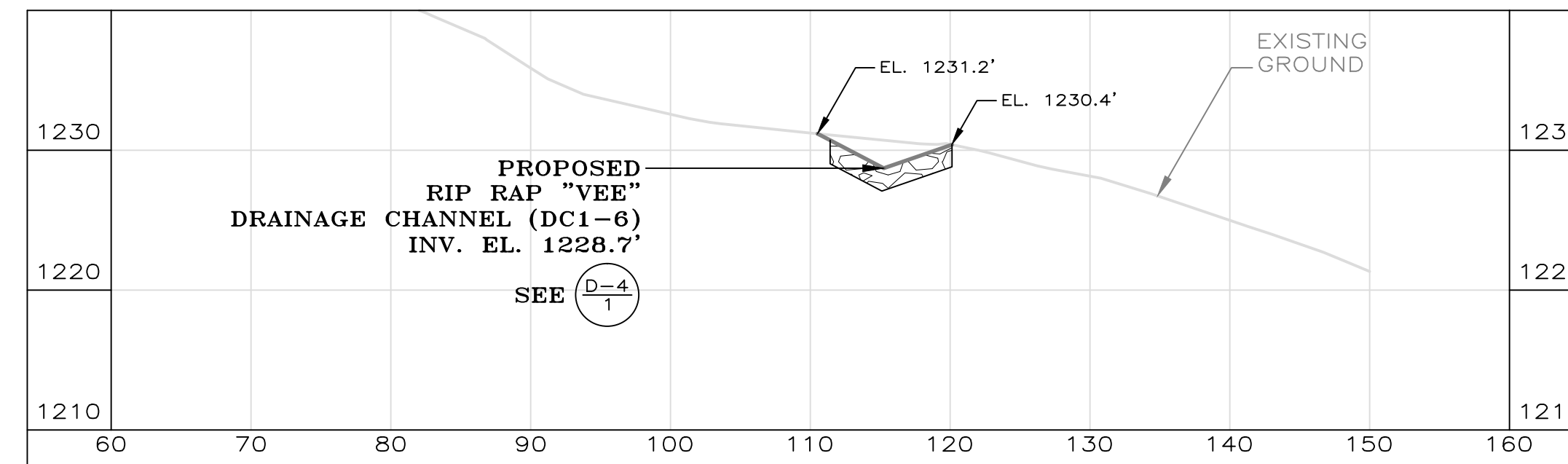
STA. 5+50 - STA. 6+50  
SITE 1 - HIGHWALL #1  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

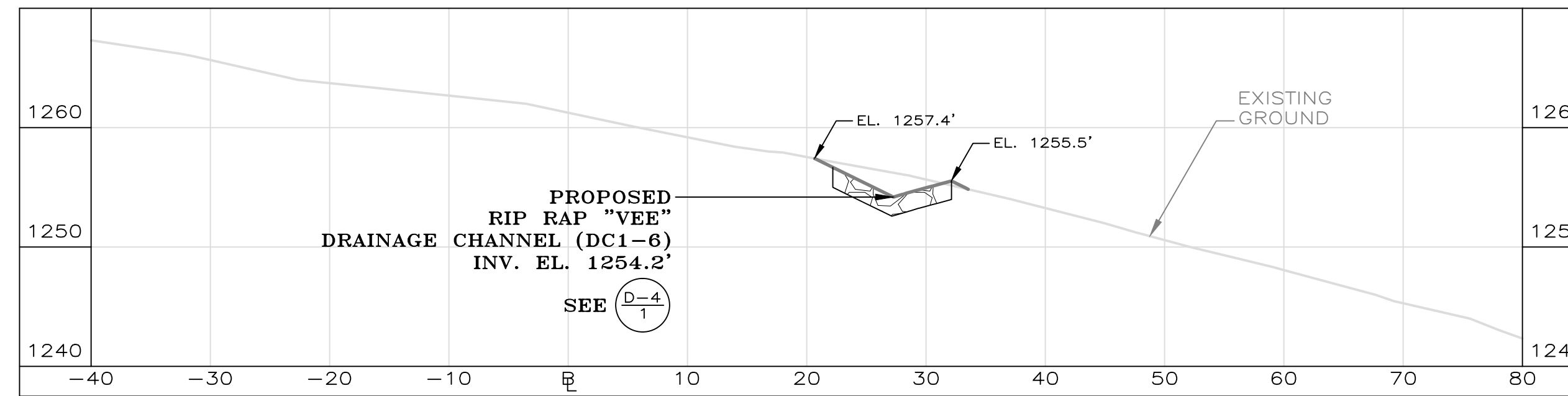
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-5



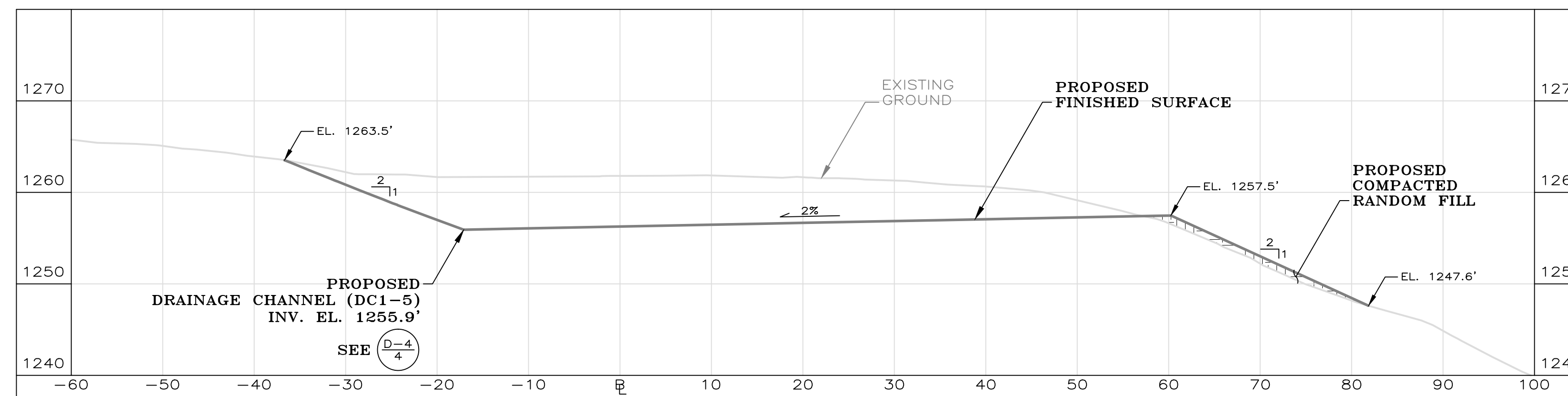
**BASELINE STATION 8+50**  
SCALE: 1" = 10'



**BASELINE STATION 8+00**  
SCALE: 1" = 10'



**BASELINE STATION 7+50**  
SCALE: 1" = 10'



**BASELINE STATION 7+00**  
SCALE: 1" = 10'

**REVISIONS**

DATE	BY	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CDA  
CHECKED BY: MEP

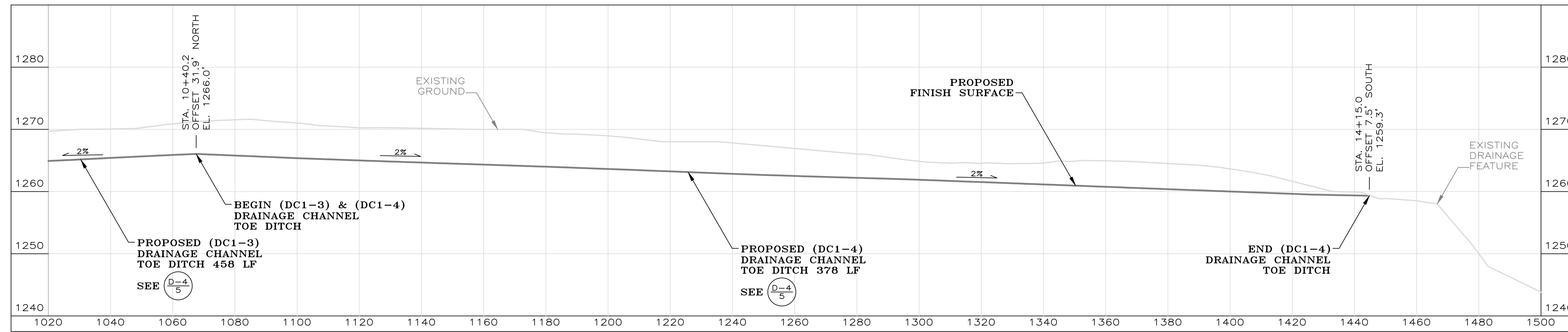
**AML & R**  
WDEP

STA. 7+00 - STA. 8+50  
SITE 1 - HIGHWALL #1  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

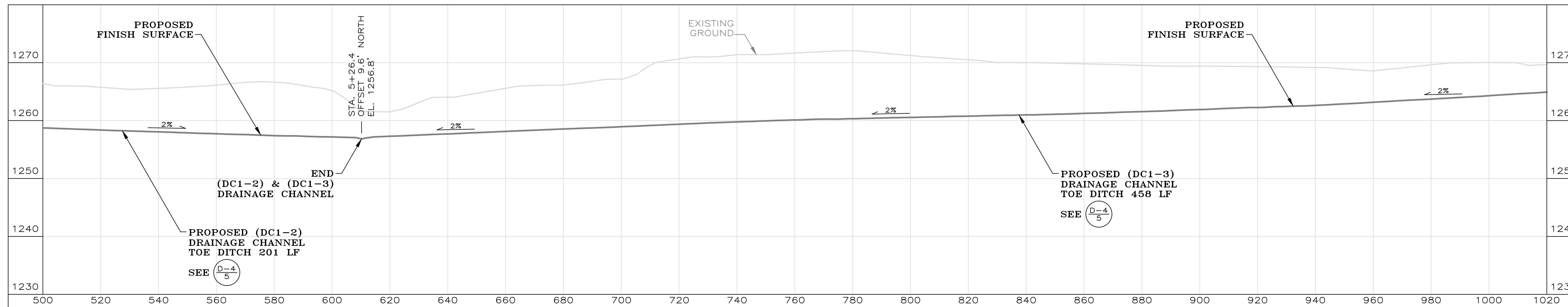
**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-6

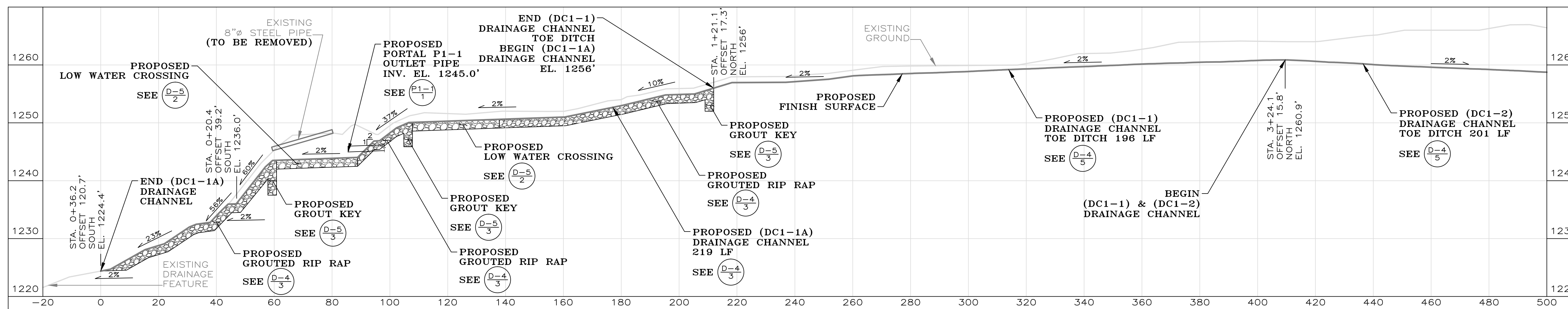




**DETAIL (1) - CONTINUED**  
**HIGHWALL #2 - DRAINAGE CHANNEL PROFILE**  
 SCALE: V: 1" = 10', H: 1" = 20'



**DETAIL (1) - CONTINUED**  
**HIGHWALL #2 - DRAINAGE CHANNEL PROFILE**  
 SCALE: V: 1" = 10', H: 1" = 20'



**DETAIL (1)**  
**HIGHWALL #2 - DRAINAGE CHANNEL PROFILE**  
 SCALE: V: 1" = 10', H: 1" = 20'

REVISIONS	
DATE	DESCRIPTION

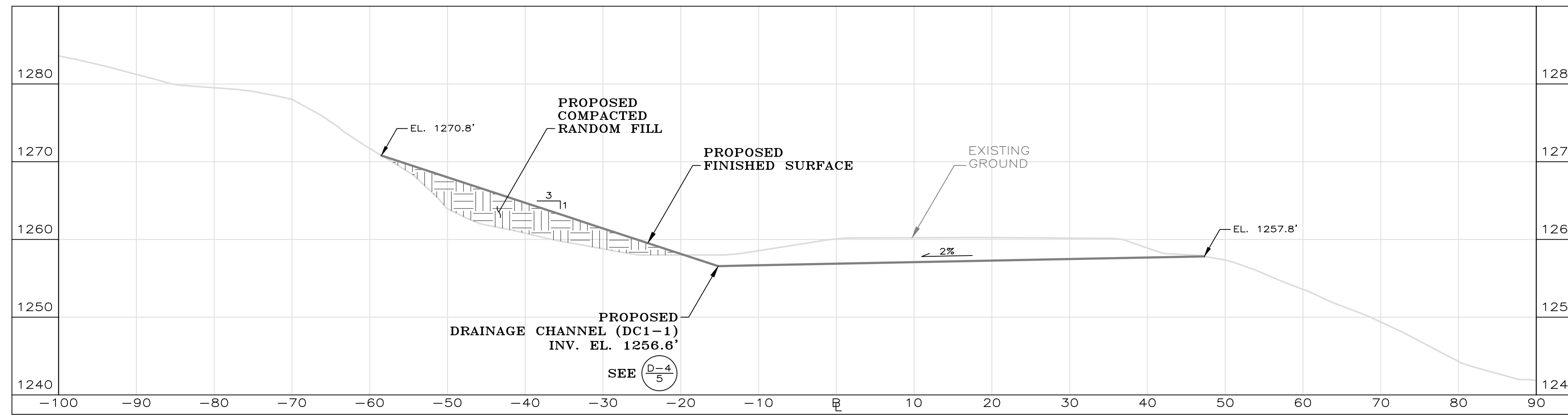
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AML & R  
 WDEP

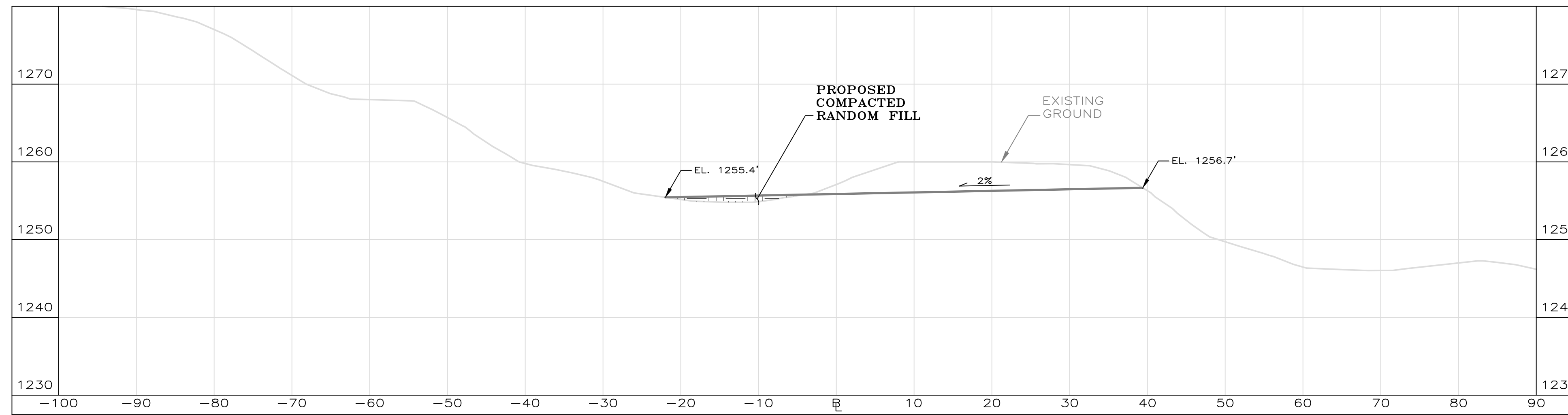
DC1-1 - DC1-4  
 SITE 1 - HIGHWALL #2  
 GRAFTON #4 REFUSE & HIGHWALL  
 TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

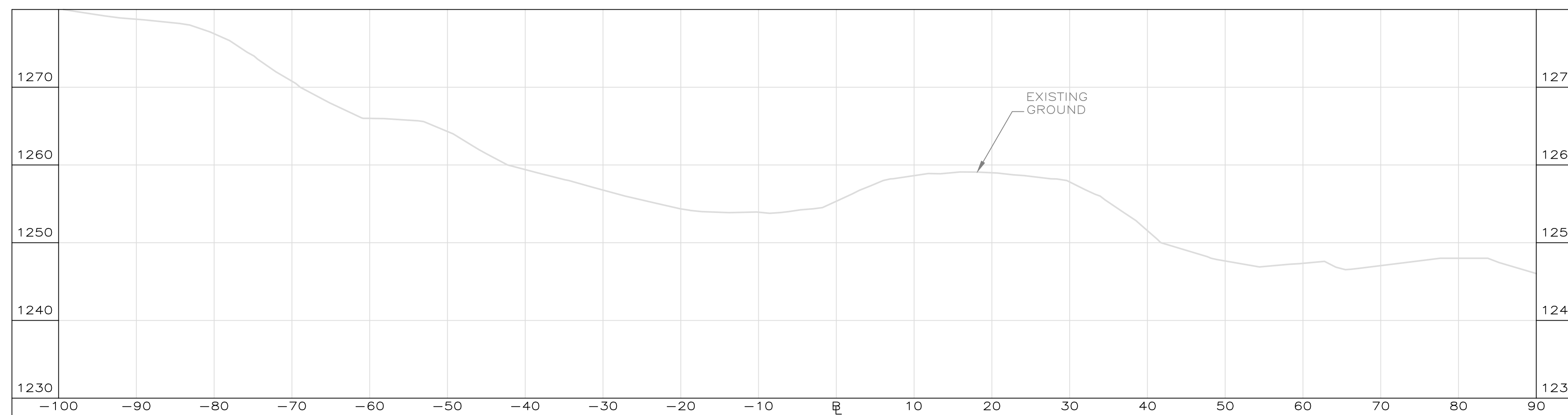
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-7



**BASELINE STATION 1+50**  
SCALE: 1" = 10'



**BASELINE STATION 1+00**  
SCALE: 1" = 10'



**BASELINE STATION 0+92**  
SCALE: 1" = 10'

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CDA  
CHECKED BY: MEP

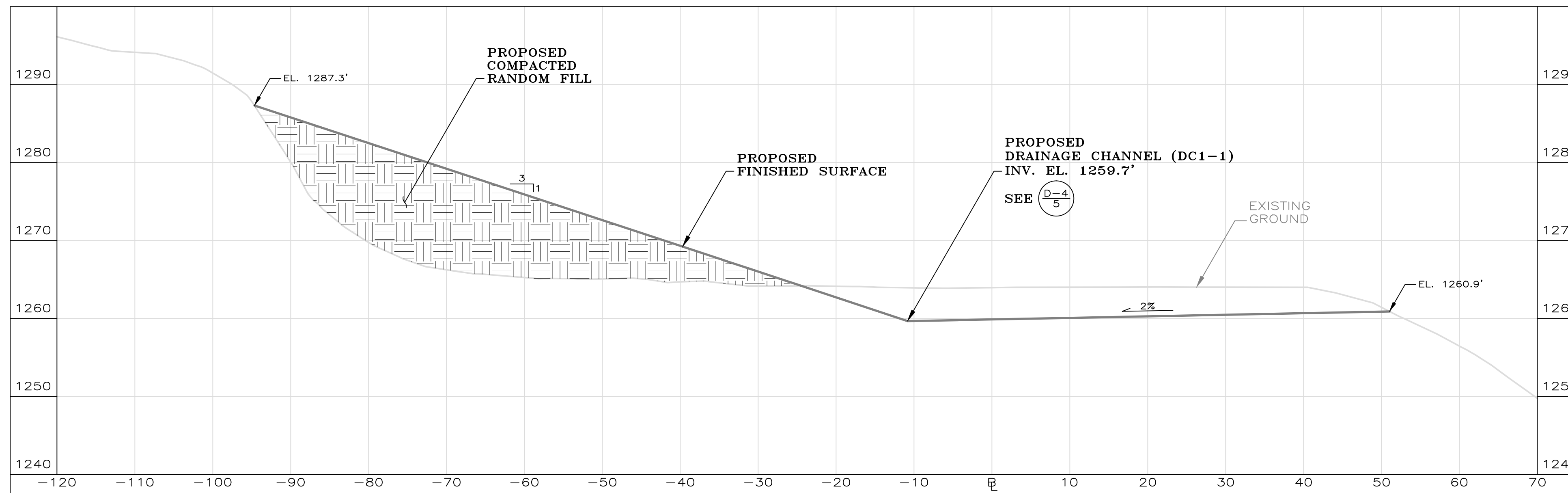
**AML & R**

WDEP

STA. 0+92 - STA. 1+50  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

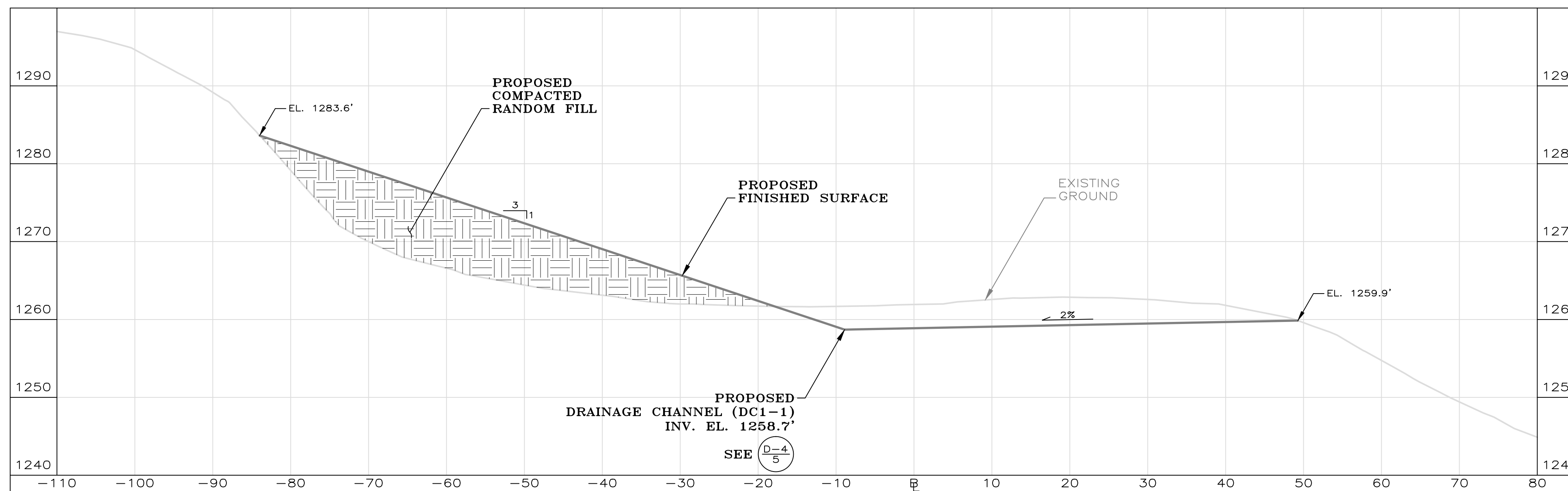
**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-8



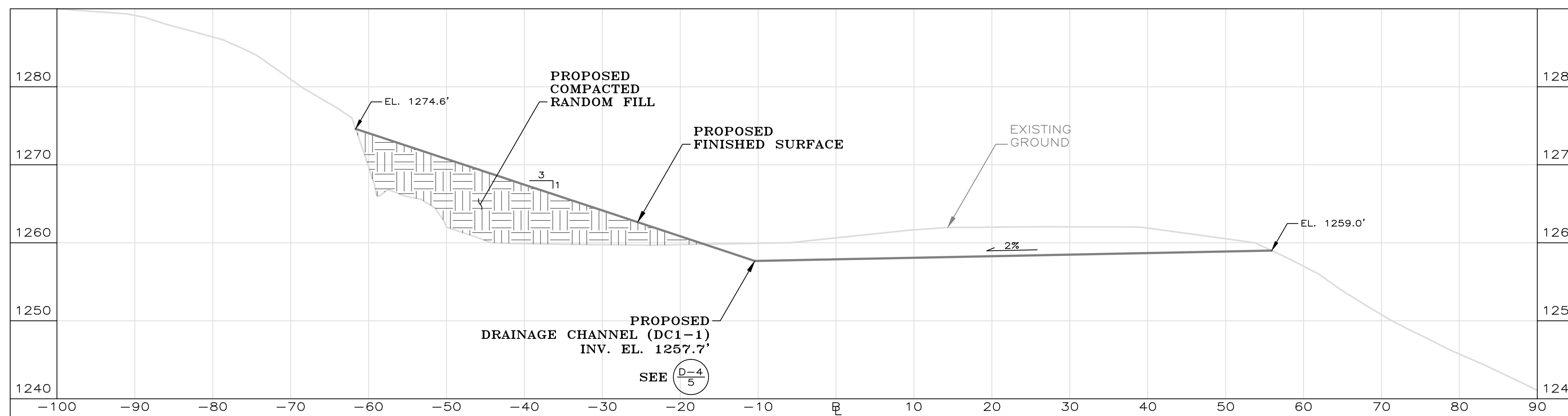
**BASELINE STATION 3+00**

SCALE: 1" = 10'



**BASELINE STATION 2+50**

SCALE: 1" = 10'



**BASELINE STATION 2+00**

SCALE: 1" = 10'

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CDA  
CHECKED BY: MEP

**AML & R**  
WDEP

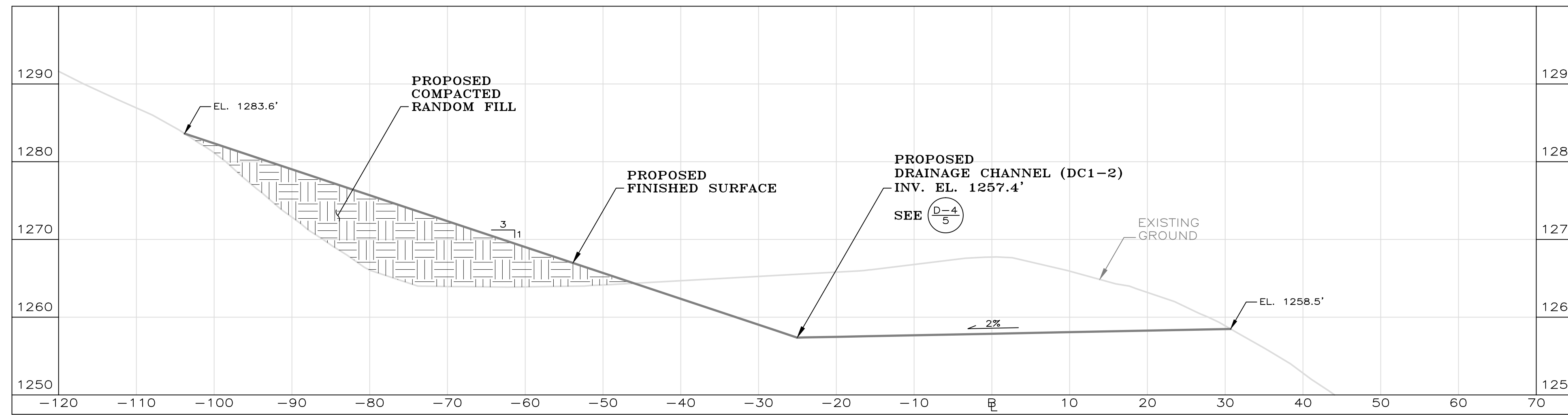
STA. 2+00 - STA. 3+00  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

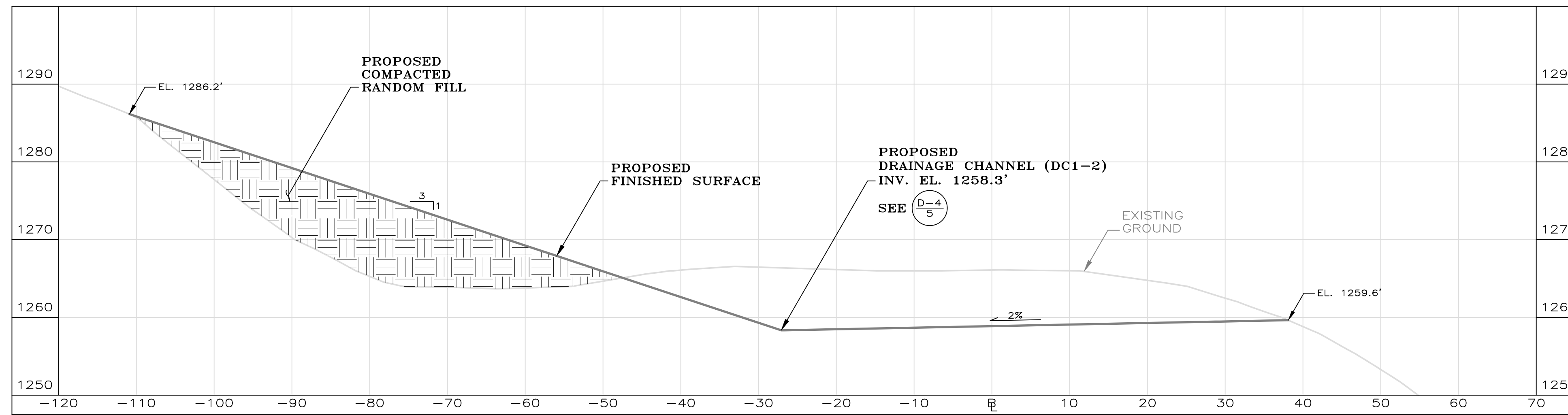
DATE  
01/27/14

PROJECT NO.  
13103

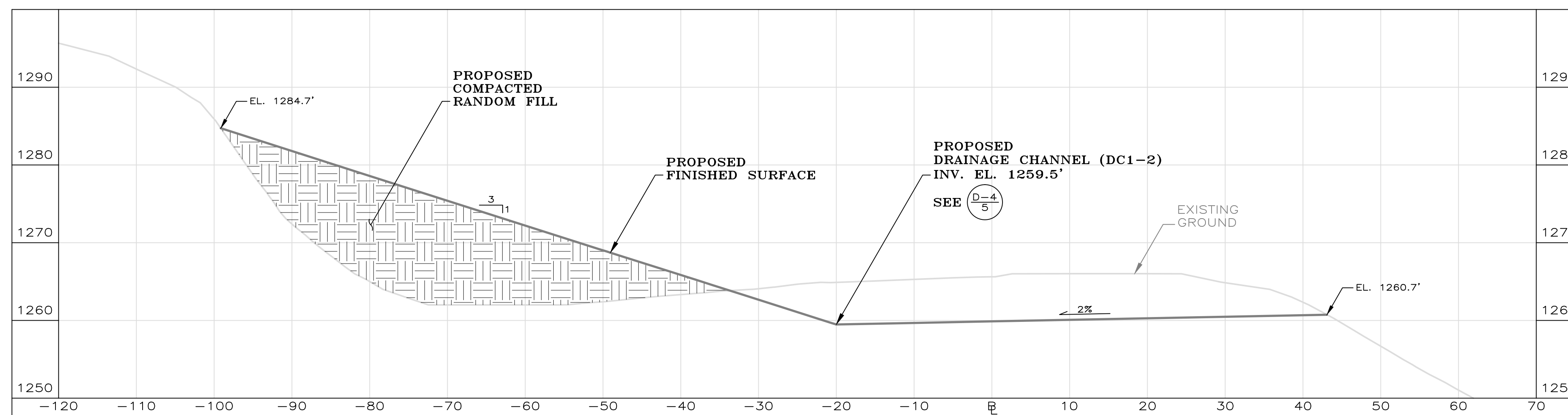
DRAWING NO.  
S1-9



**BASELINE STATION 4+50**  
SCALE: 1" = 10'



**BASELINE STATION 4+00**  
SCALE: 1" = 10'



**BASELINE STATION 3+50**  
SCALE: 1" = 10'

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CDA  
CHECKED BY: MEP

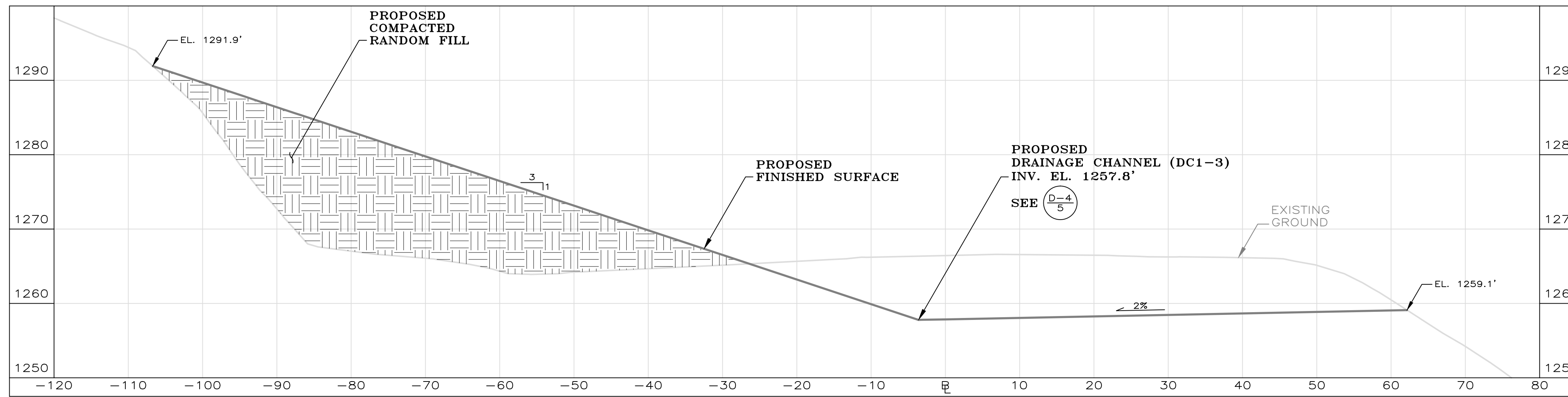
**AML & R**

WDEP

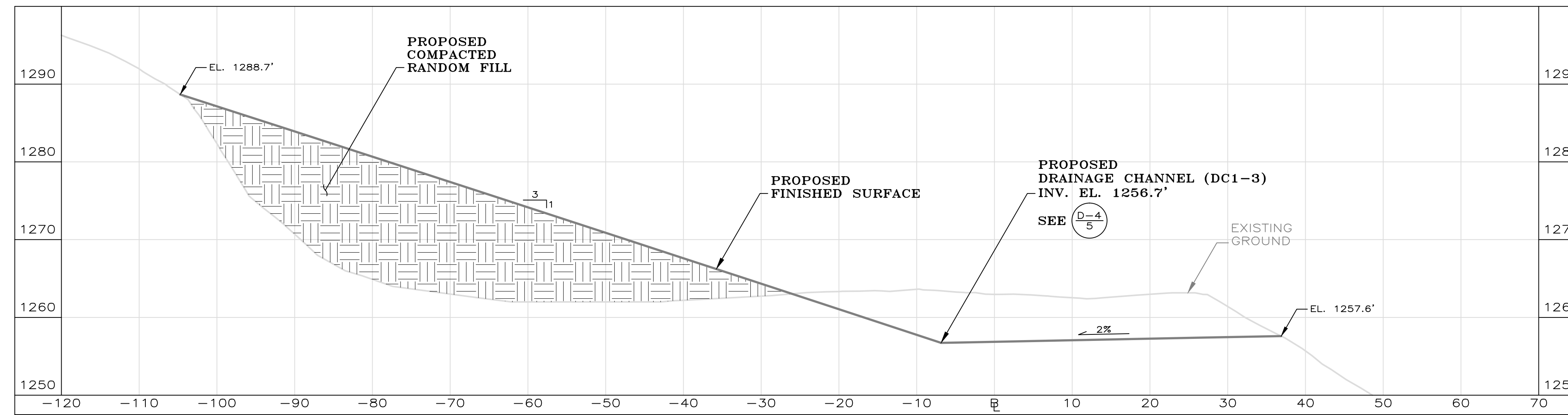
STA. 3+50 - STA. 4+50  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

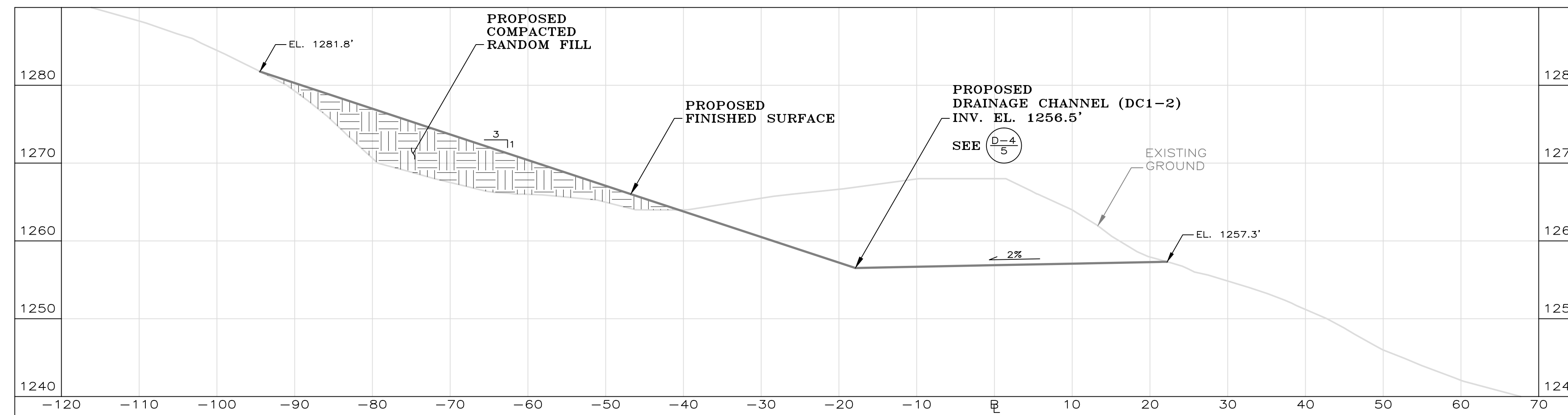
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-10



**BASELINE STATION 6+00**  
SCALE: 1" = 10'



**BASELINE STATION 5+50**  
SCALE: 1" = 10'



**BASELINE STATION 5+00**  
SCALE: 1" = 10'

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

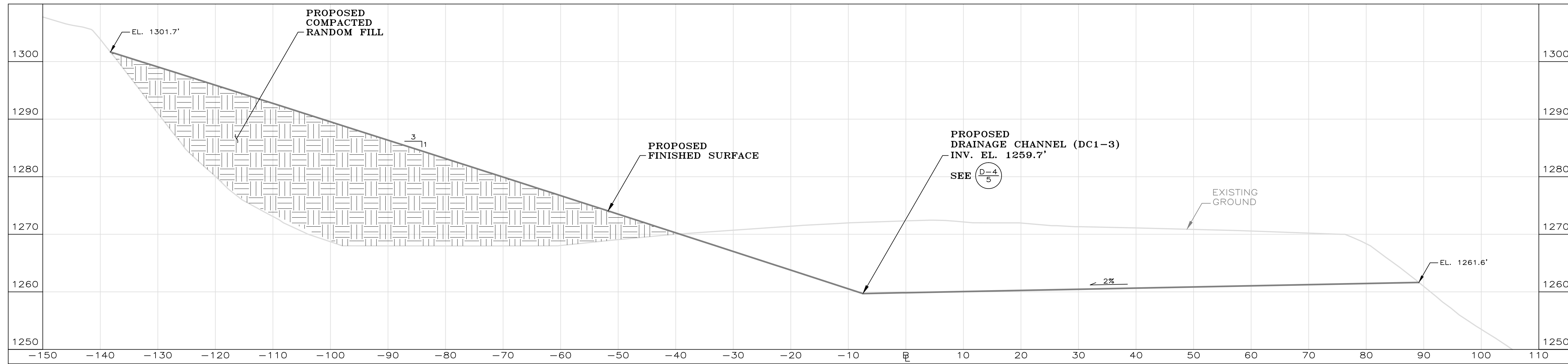
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**AML & R**  
WDEP

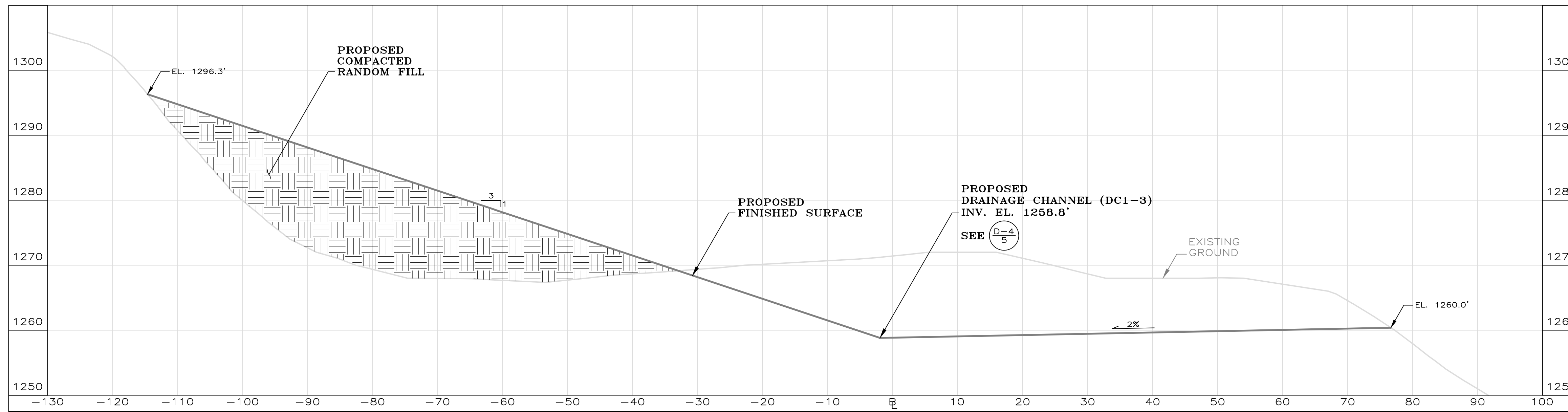
STA. 5+00 - STA. 6+00  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-11



**BASELINE STATION 7+00**  
SCALE: 1" = 10'



**BASELINE STATION 6+50**  
SCALE: 1" = 10'

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

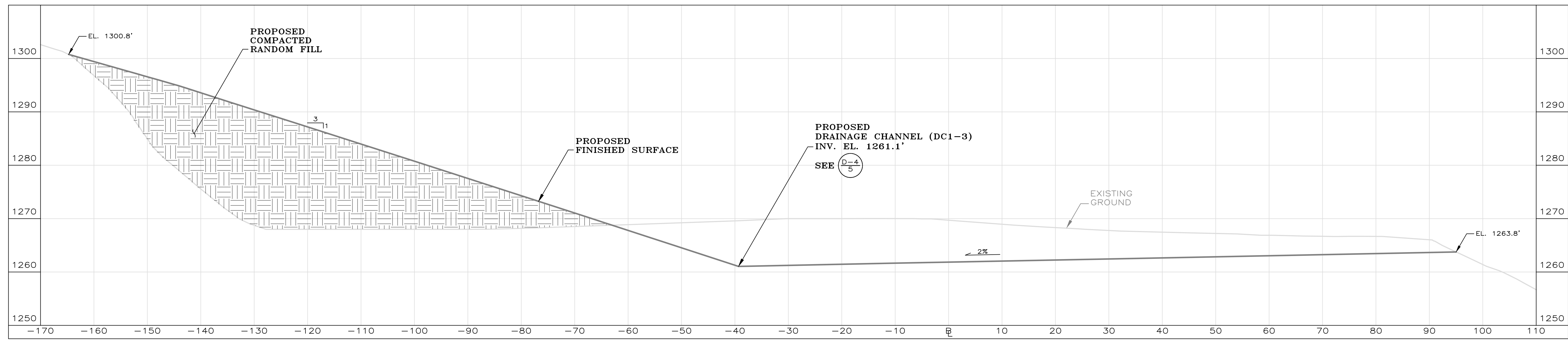
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**AML & R**  
WDEP

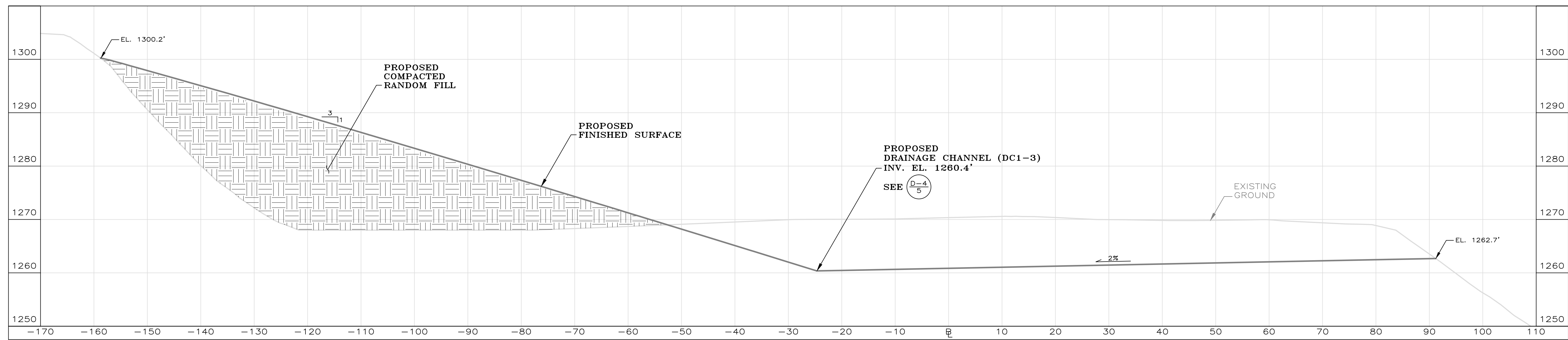
STA. 6+50 - STA. 7+00  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-12



**BASELINE STATION 8+00**  
 SCALE: 1" = 10'



**BASELINE STATION 7+50**  
 SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

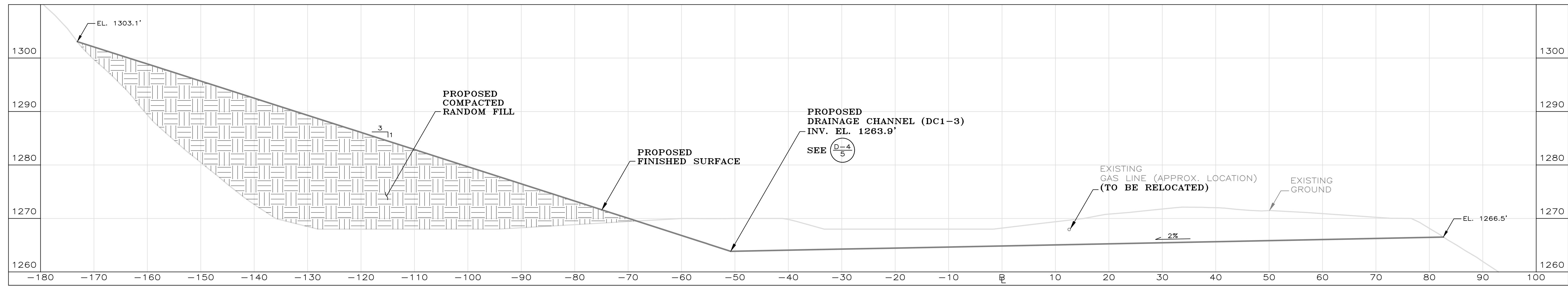
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AML & R  
 WDEP

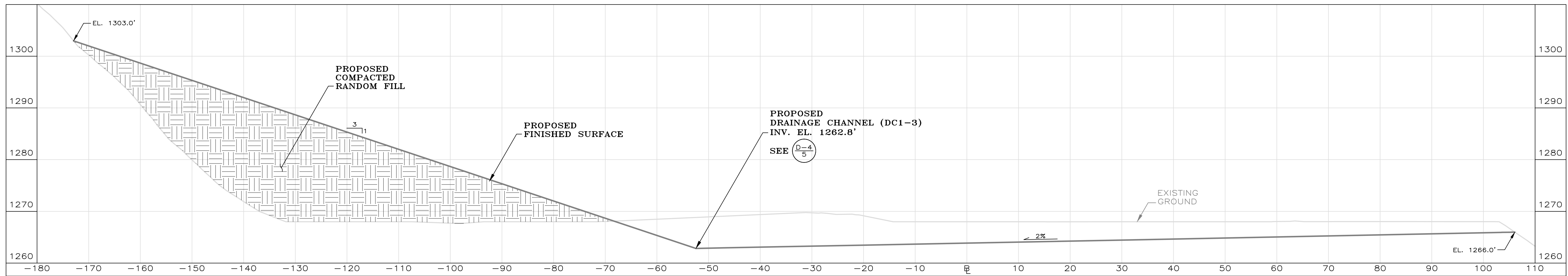
STA. 7+50 - STA. 8+00  
 SITE 1 - HIGHWALL #2  
 GRAFTON #4 REFUSE & HIGHWALL  
 TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

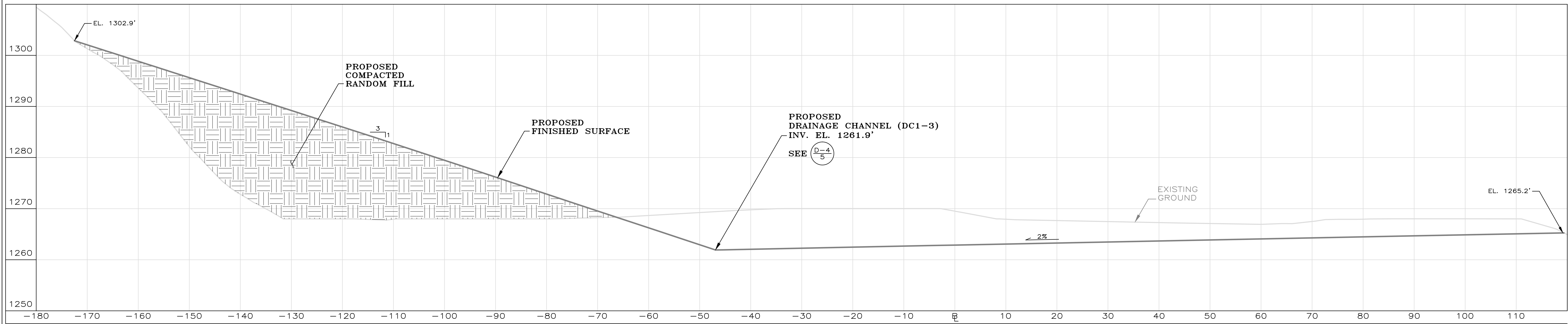
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-13



**BASELINE STATION 9+50**  
SCALE: 1" = 10'



**BASELINE STATION 9+00**  
SCALE: 1" = 10'



**BASELINE STATION 8+50**  
SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CJA  
CHECKED BY: MEP

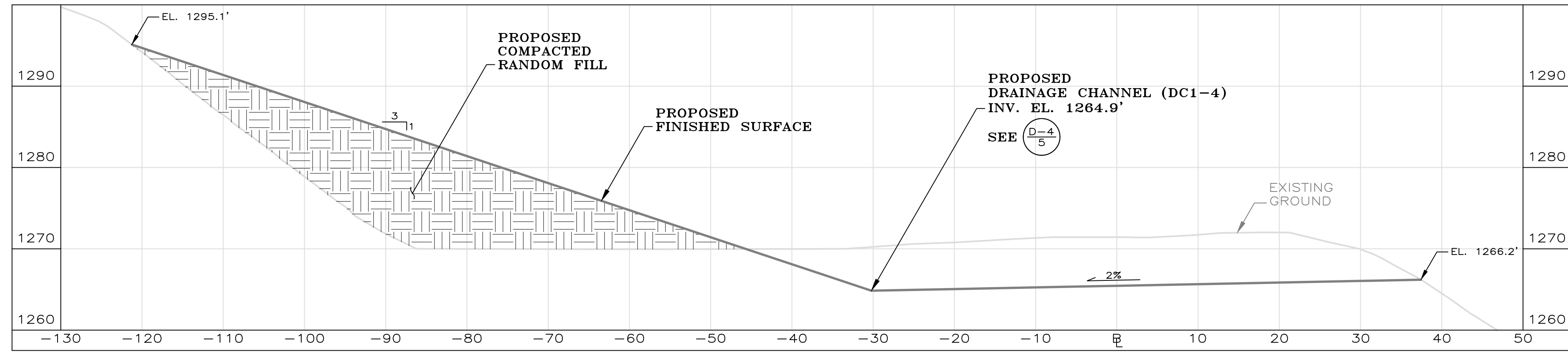
AML & R  
WDEP

STA. 8+50 - STA. 9+50  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

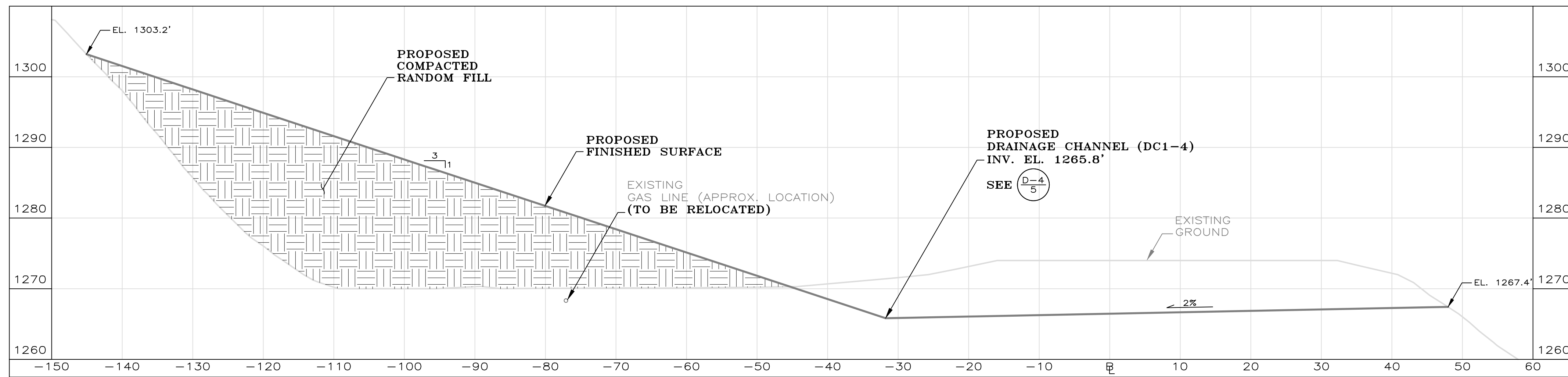
**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-14

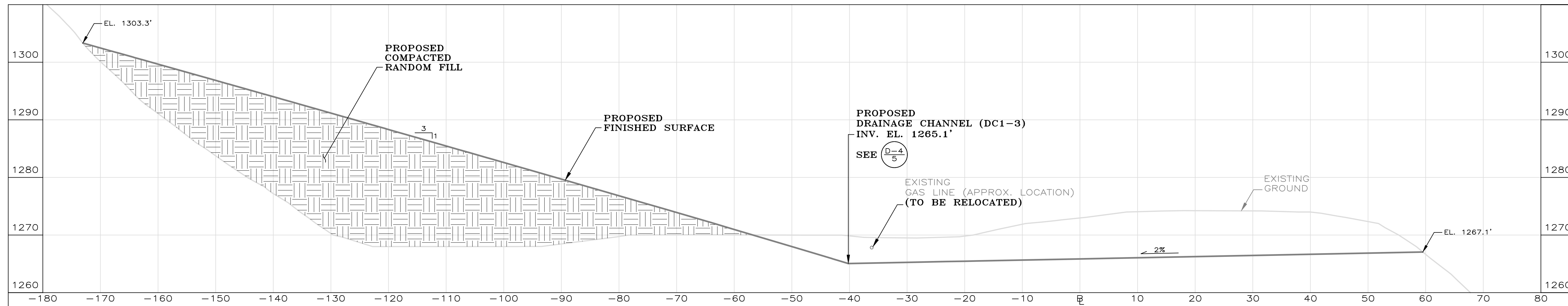




**BASELINE STATION 11+00**  
SCALE: 1" = 10'



**BASELINE STATION 10+50**  
SCALE: 1" = 10'



**BASELINE STATION 10+00**  
SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

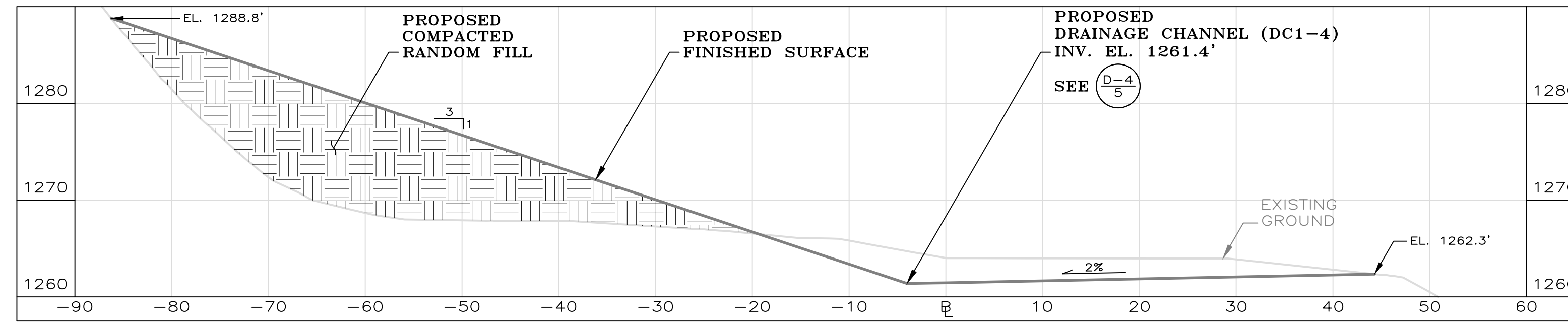
SCALE: AS SHOWN  
DRAWN BY: CDA  
CHECKED BY: MEP

AML & R  
WDEP

STA. 10+00 - STA. 11+00  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

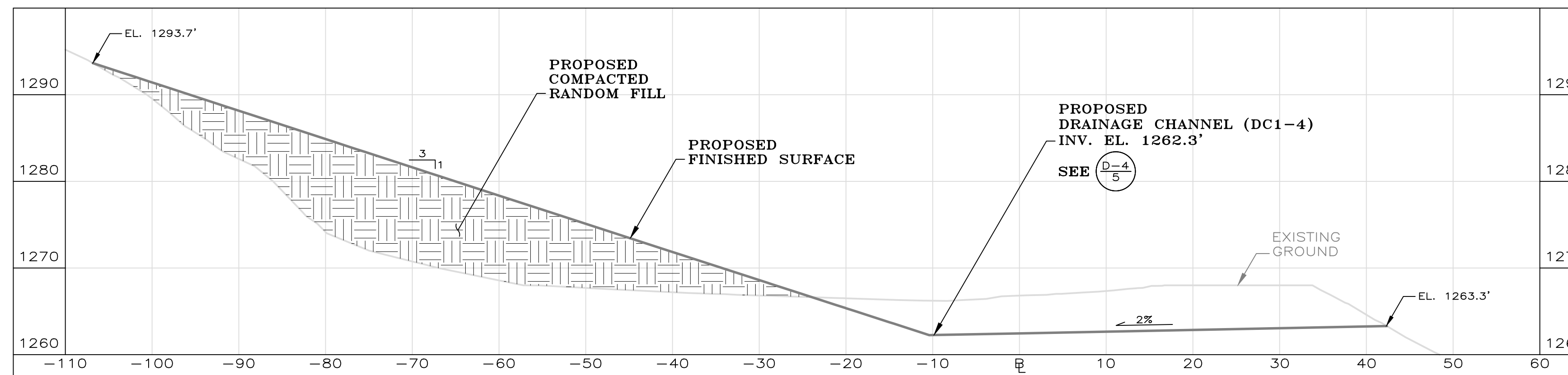
**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE  
01/27/14  
PROJECT NO.  
13103  
DRAWING NO.  
S1-15



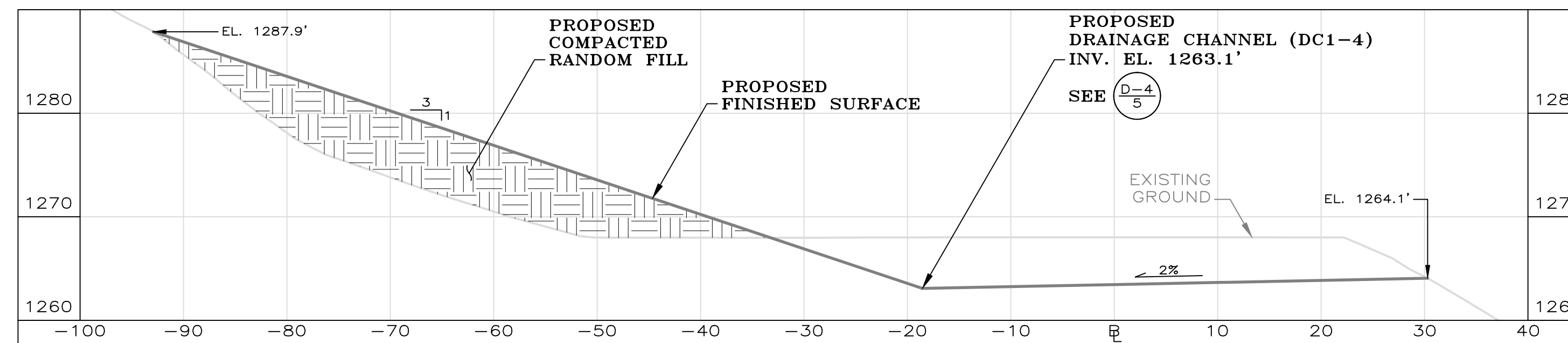
**BASELINE STATION 13+00**

SCALE: 1" = 10'



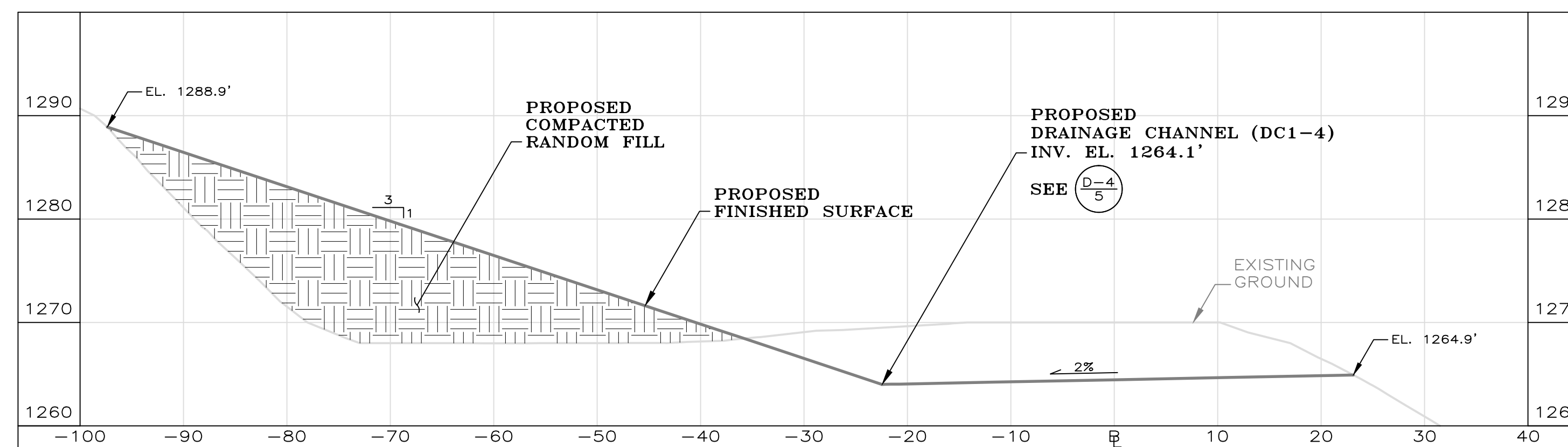
**BASELINE STATION 12+50**

SCALE: 1" = 10'



**BASELINE STATION 12+00**

SCALE: 1" = 10'



**BASELINE STATION 11+50**

SCALE: 1" = 10'

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

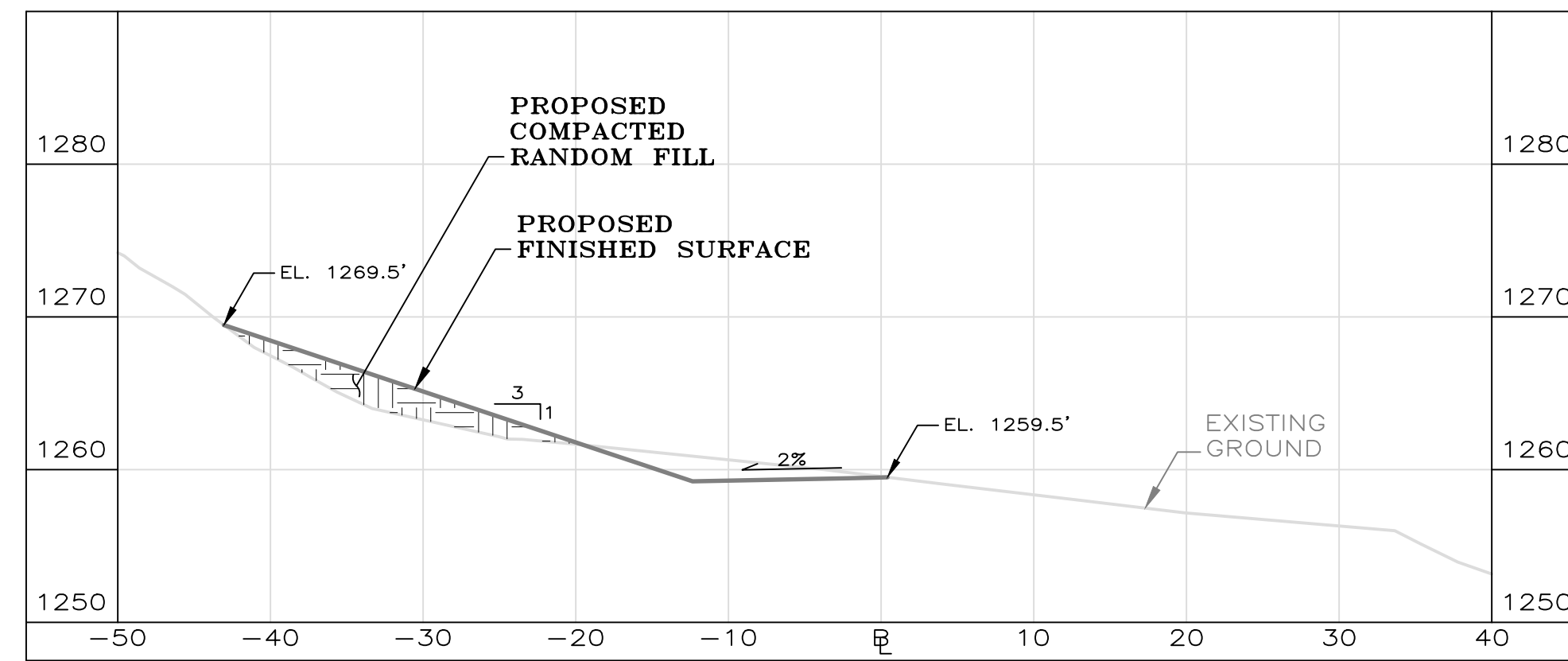
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**AML & R**  
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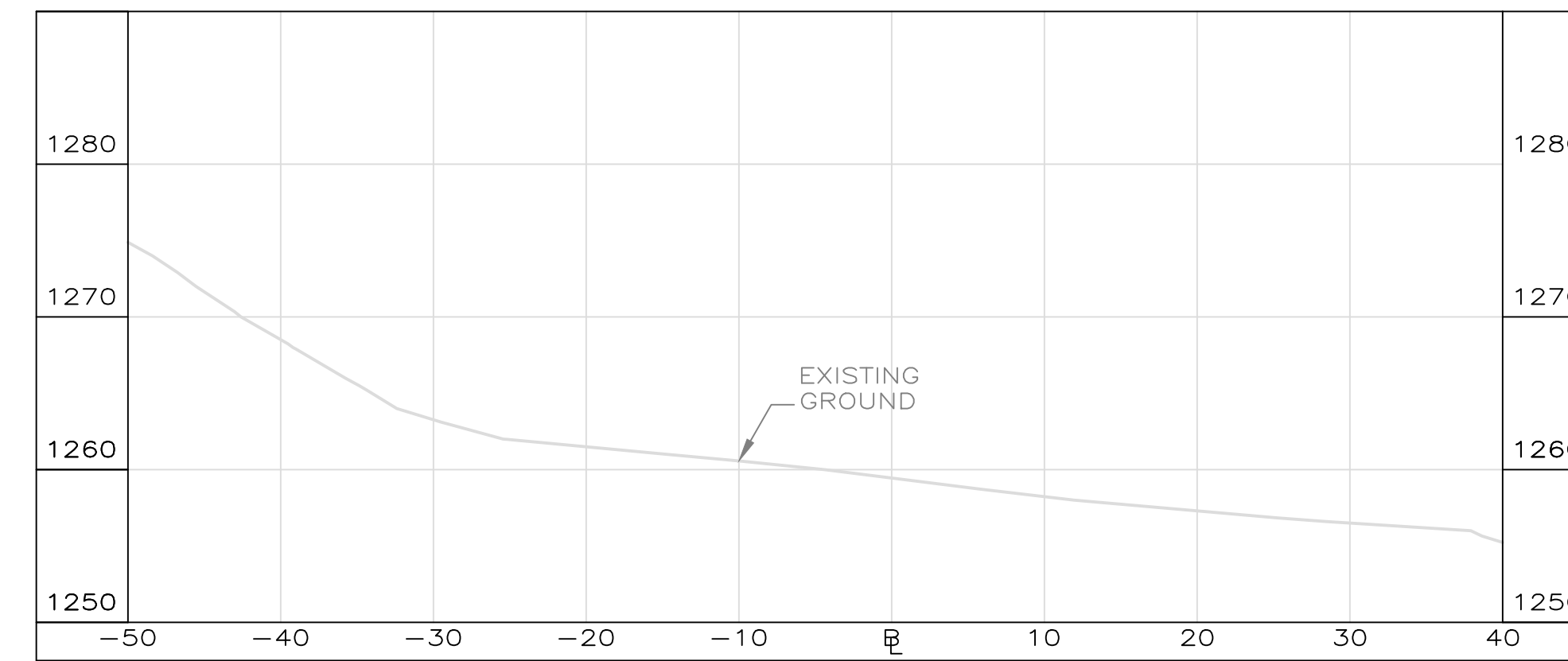
STA. 11+50 - STA. 13+00  
 SITE 1 - HIGHWALL #2  
 GRAFTON #4 REFUSE & HIGHWALL  
 TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

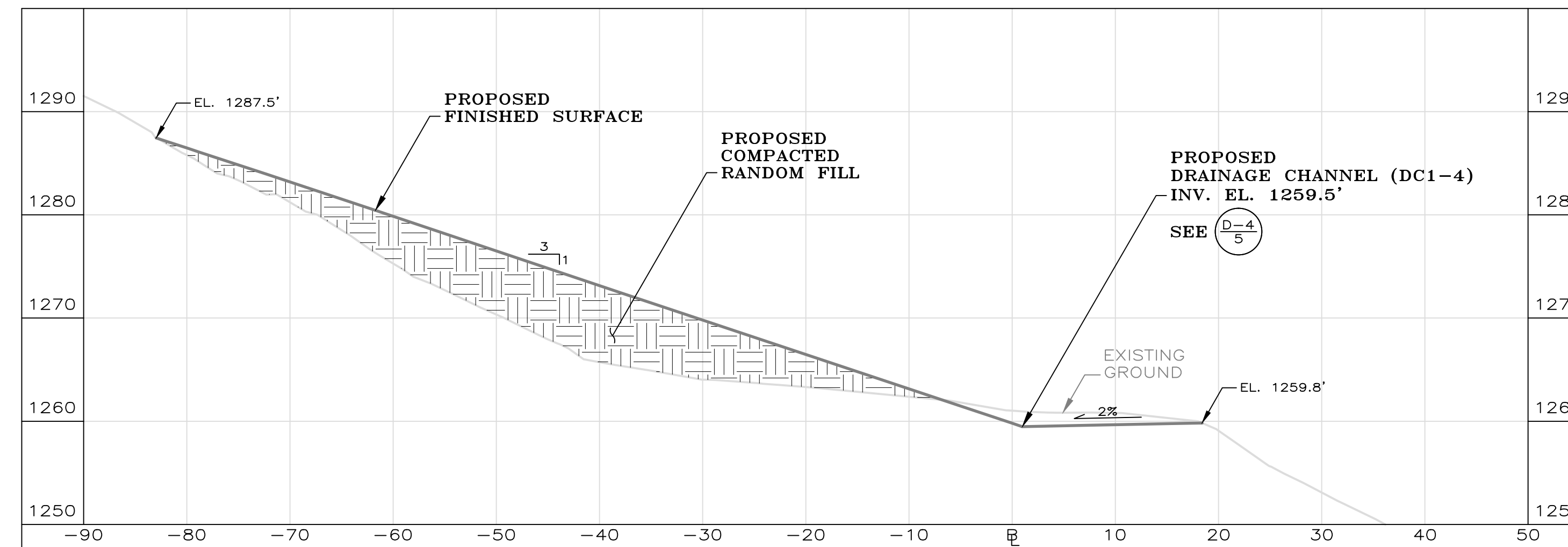
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PROJECT NO.	13103
DRAWING NO.	S1-16



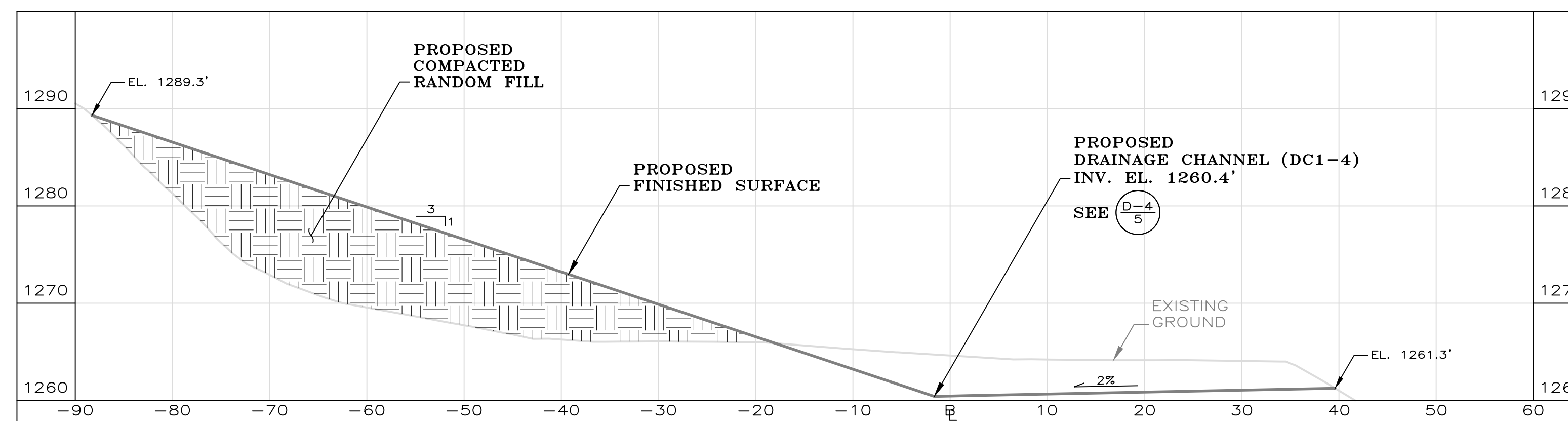
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SCALE: 1" = 10'



**BASELINE STATION 14+57**  
SCALE: 1" = 10'



**BASELINE STATION 14+00**  
SCALE: 1" = 10'



**BASELINE STATION 13+50**  
SCALE: 1" = 10'

REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CDA  
CHECKED BY: MEP

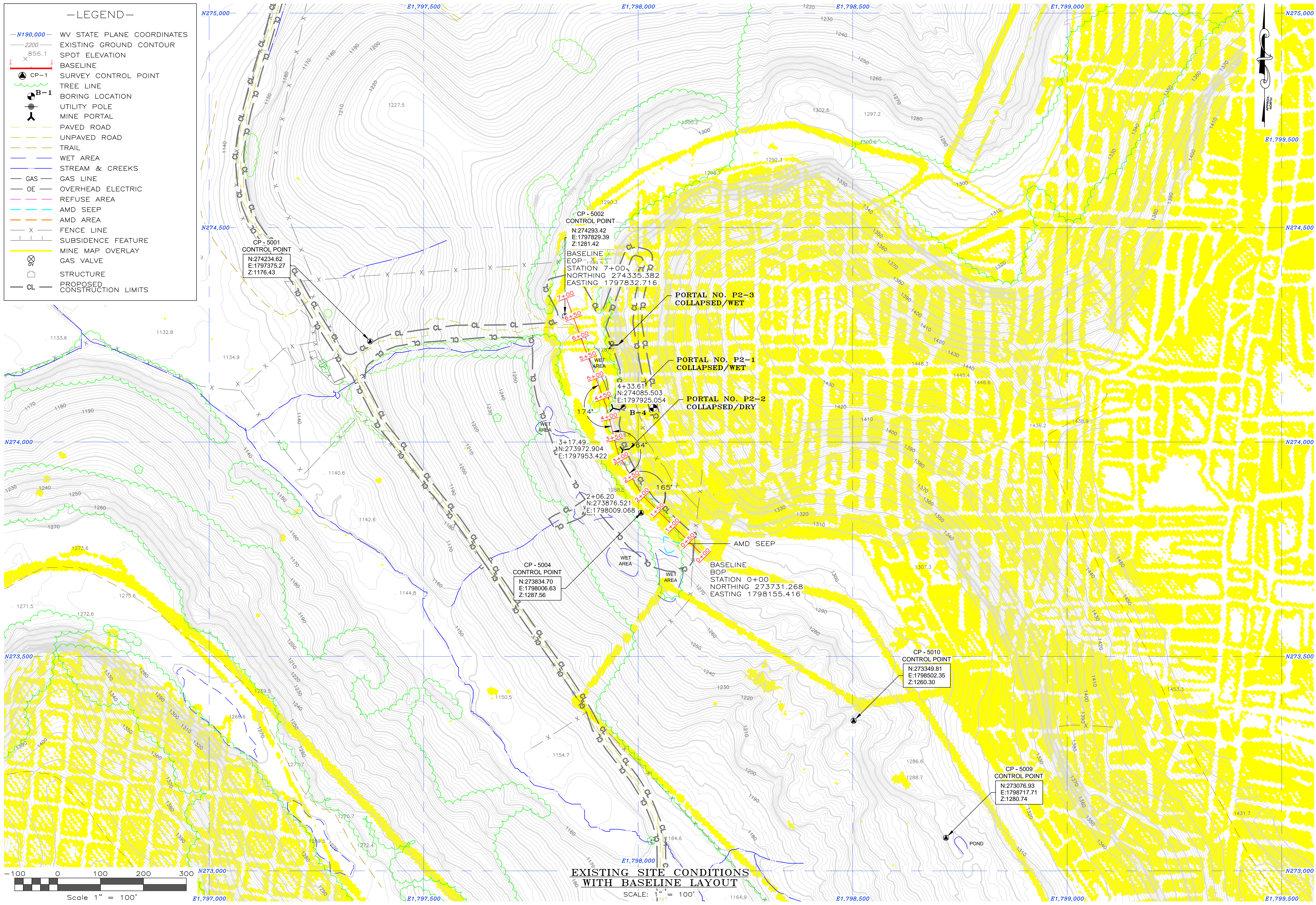
AML & R  
WDEP

STA. 13+50 - STA. 14+57  
SITE 1 - HIGHWALL #2  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	S1-17

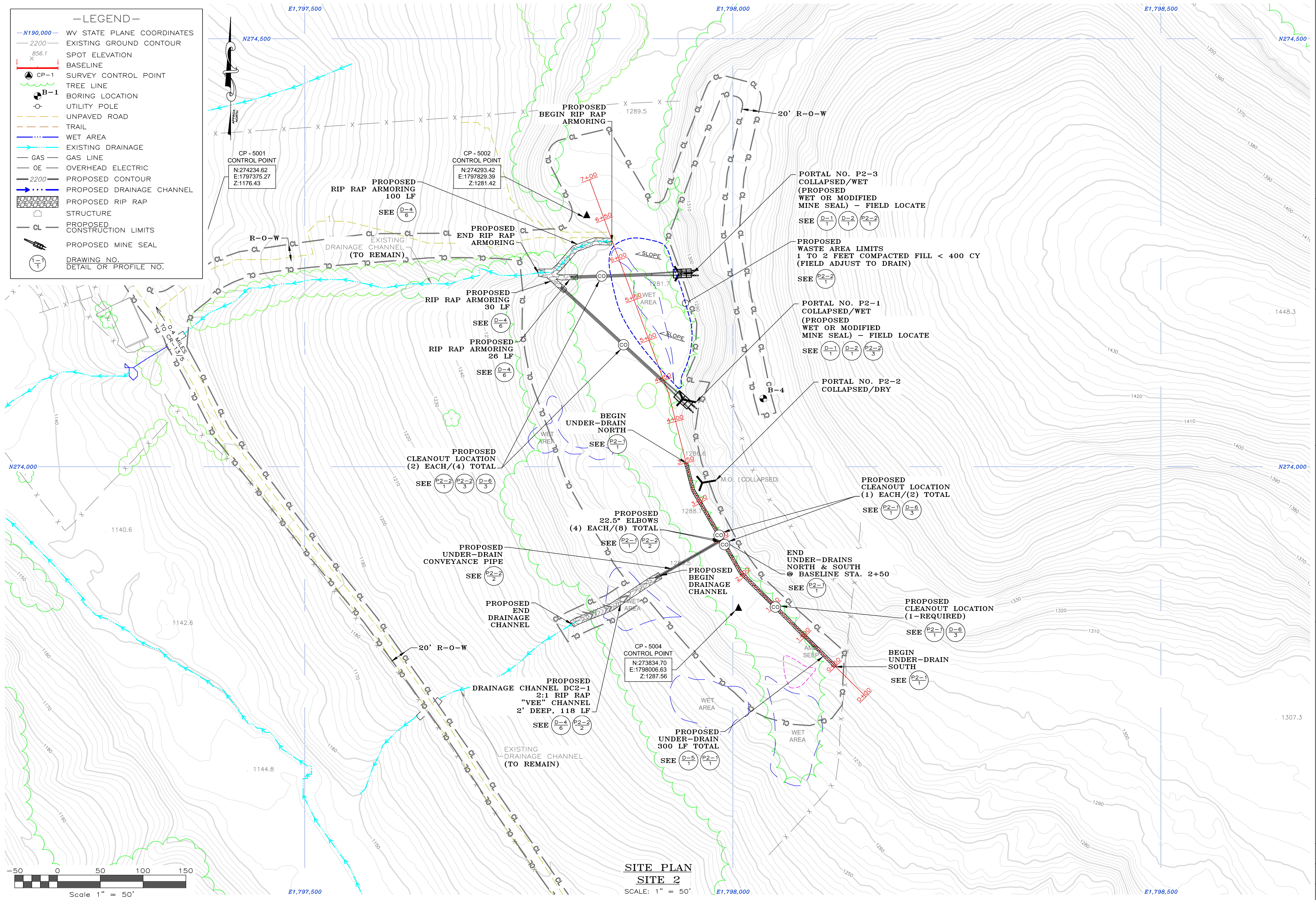
- LEGEND—**
- N190,000— WV STATE PLANE COORDINATES
  - 2200— EXISTING GROUND CONTOUR
  - x SPOT ELEVATION
  - x BASELINE
  - CP-1 SURVEY CONTROL POINT
  - TREE LINE
  - B-1 BORING LOCATION
  - UTILITY POLE
  - MINE PORTAL
  - PAVED ROAD
  - UNPAVED ROAD
  - TRAIL
  - WET AREA
  - STREAM & CREEKS
  - GAS LINE
  - OE— OVERHEAD ELECTRIC
  - REFUSE AREA
  - AMD SEEP
  - AMD AREA
  - x FENCE LINE
  - SUBSIDENCE FEATURE
  - MINE MAP OVERLAY
  - ⊗ GAS VALVE
  - STRUCTURE
  - CL— PROPOSED CONSTRUCTION LIMITS



**EXISTING SITE CONDITIONS WITH BASELINE LAYOUT**  
SCALE: 1" = 100'

<b>REVISIONS</b>	
DATE	DESCRIPTION
<b>AML &amp; R</b>	
WVDEP	
<b>SITE 2</b>	
<b>EXISTING SITE CONDITIONS WITH BASELINE LAYOUT</b>	
<b>GRAFTON #4 REFUSE &amp; HIGHWALL</b>	
<b>CIVIL TECH ENGINEERING, INC.</b>	
<b>HURRICANE, WEST VIRGINIA</b>	
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	2-1

- LEGEND-**
- N190,000- WV STATE PLANE COORDINATES
  - 2200- EXISTING GROUND CONTOUR
  - 856.1 SPOT ELEVATION
  - BASELINE
  - CP-1 SURVEY CONTROL POINT
  - B-1 TREE LINE
  - BORING LOCATION
  - UTILITY POLE
  - UNPAVED ROAD
  - TRAIL
  - WET AREA
  - EXISTING DRAINAGE
  - GAS LINE
  - OE OVERHEAD ELECTRIC
  - 2200 PROPOSED CONTOUR
  - PROPOSED DRAINAGE CHANNEL
  - PROPOSED RIP RAP STRUCTURE
  - CL PROPOSED CONSTRUCTION LIMITS
  - PROPOSED MINE SEAL
  - DRAWING NO. (1-T)
  - DETAIL OR PROFILE NO.



**SITE PLAN  
SITE 2**  
SCALE: 1" = 50'

REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN	DRAWN BY: CDA
	CHECKED BY: MFP

<b>AML &amp; R</b>	<b>WDEP</b>
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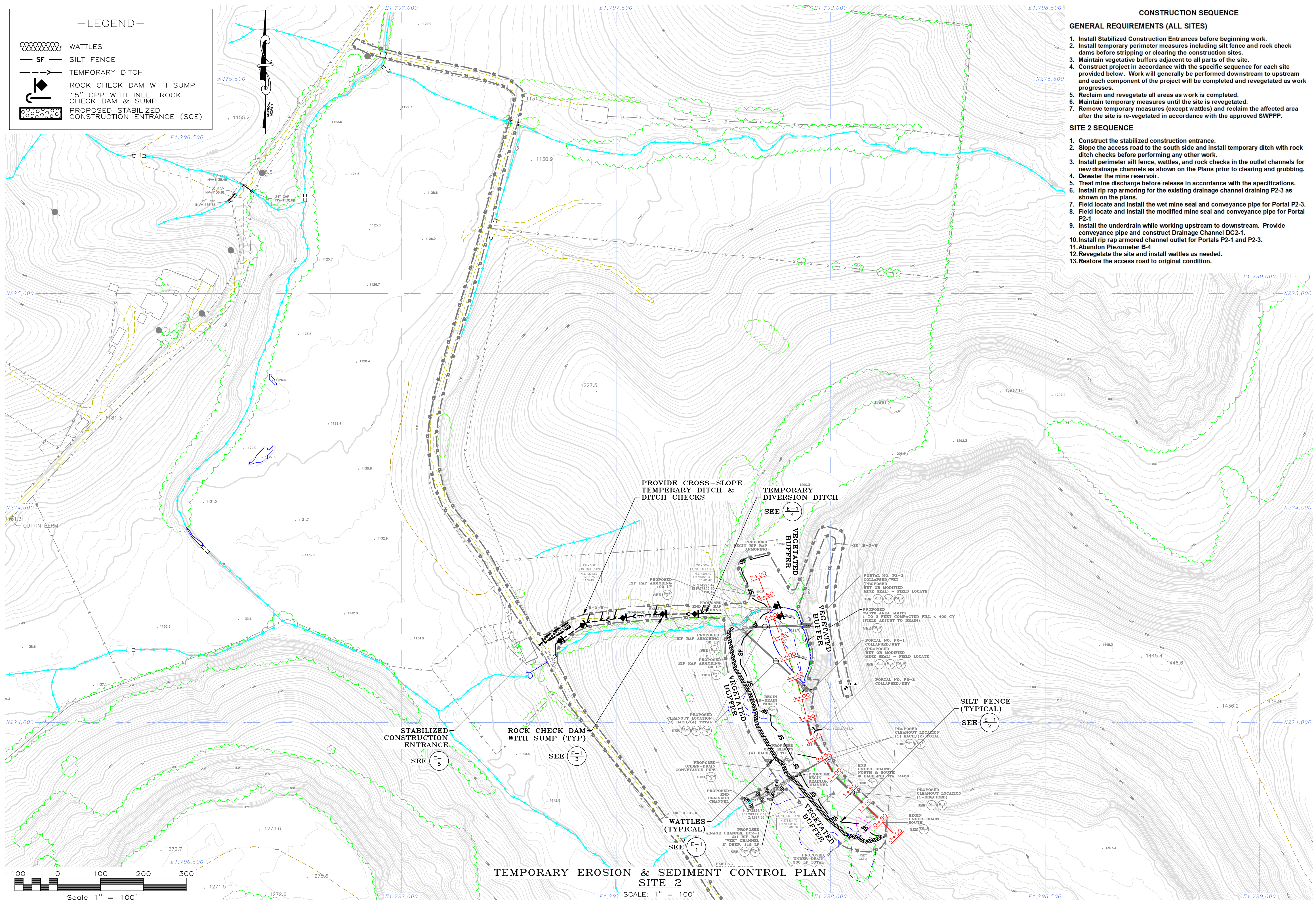
<b>SITE PLAN</b>	<b>GRAFTON #4 REFUSE &amp; HIGHWALL</b>
<b>SITE 2</b>	<b>TAYLOR COUNTY, WEST VIRGINIA</b>

<b>CIVIL TECH ENGINEERING, INC.</b>	<b>HURRICANE, WEST VIRGINIA</b>
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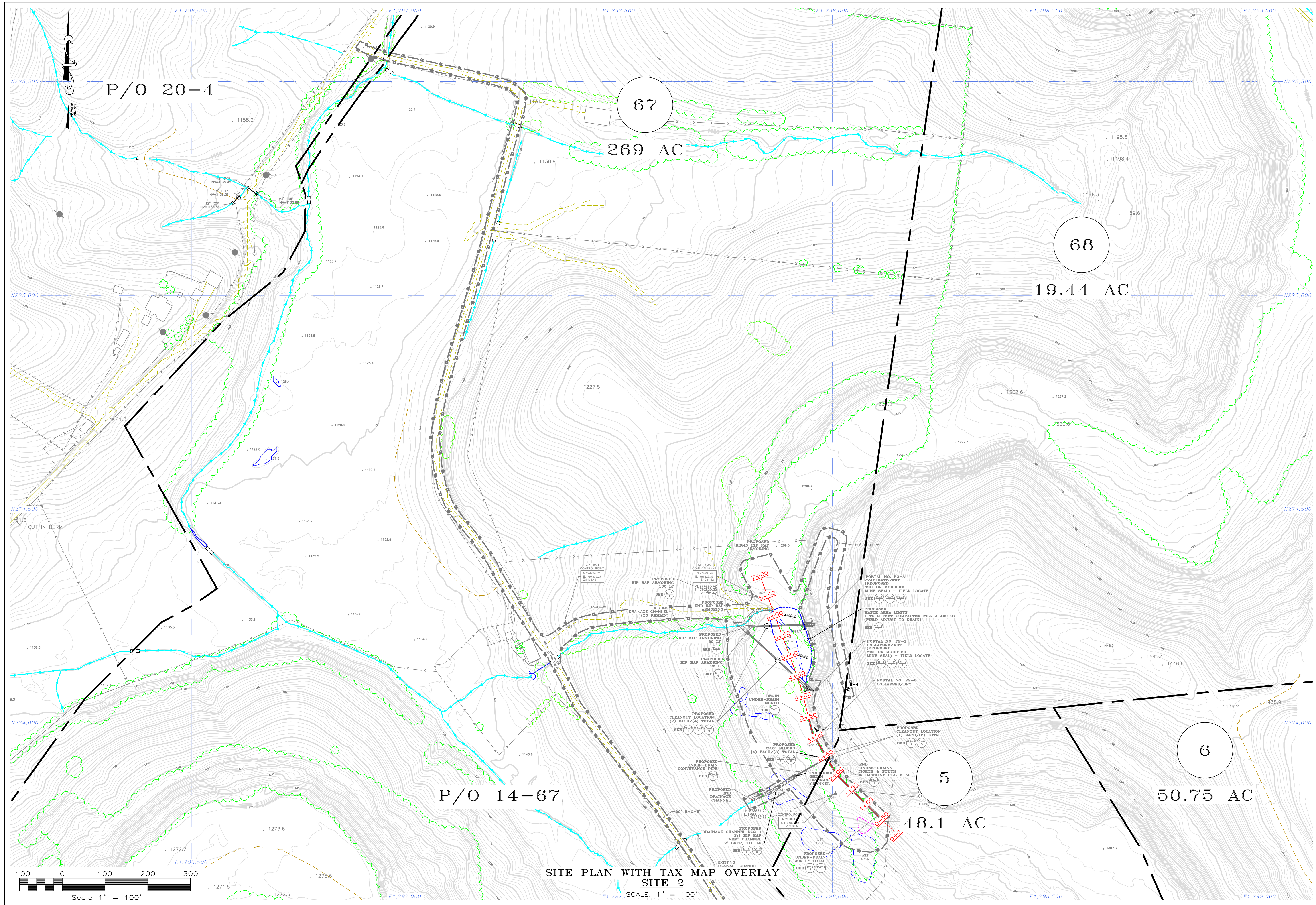
  

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	2-2



- CONSTRUCTION SEQUENCE**
- GENERAL REQUIREMENTS (ALL SITES)**
1. Install Stabilized Construction Entrances before beginning work.
  2. Install temporary perimeter measures including silt fence and rock check dams before stripping or clearing the construction sites.
  3. Maintain vegetative buffers adjacent to all parts of the site.
  4. Construct project in accordance with the specific sequence for each site provided below. Work will generally be performed downstream to upstream and each component of the project will be completed and revegetated as work progresses.
  5. Reclaim and revegetate all areas as work is completed.
  6. Maintain temporary measures until the site is revegetated.
  7. Remove temporary measures (except wattles) and reclaim the affected area after the site is re-vegetated in accordance with the approved SWPPP.
- SITE 2 SEQUENCE**
1. Construct the stabilized construction entrance.
  2. Slope the access road to the south side and install temporary ditch with rock ditch checks before performing any other work.
  3. Install perimeter silt fence, wattles, and rock checks in the outlet channels for new drainage channels as shown on the Plans prior to clearing and grubbing.
  4. Dewater the mine reservoir.
  5. Treat mine discharge before release in accordance with the specifications.
  6. Install rip rap armoring for the existing drainage channel draining P2-3 as shown on the plans.
  7. Field locate and install the wet mine seal and conveyance pipe for Portal P2-3.
  8. Field locate and install the modified mine seal and conveyance pipe for Portal P2-1.
  9. Install the underdrain while working upstream to downstream. Provide conveyance pipe and construct Drainage Channel DC2-1.
  10. Install rip rap armored channel outlet for Portals P2-1 and P2-3.
  11. Abandon Piezometer B-4.
  12. Revegetate the site and install wattles as needed.
  13. Restore the access road to original condition.

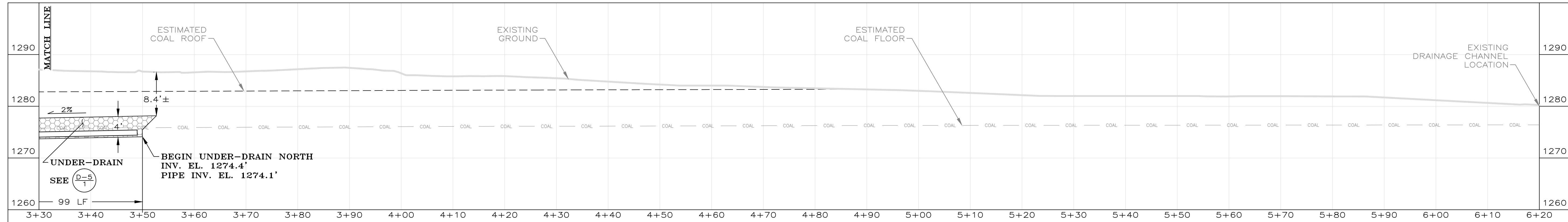
REVISIONS		SCALE: AS SHOWN	AML & R WDEP	TEMPORARY EROSION & SEDIMENT CONTROL PLAN - SITE 2 GRAFTON #4 REFUSE & HIGHWALL TAYLOR COUNTY, WEST VIRGINIA
DATE	DESCRIPTION	DRAWN BY: CDA CHECKED BY: MFP		
<p>CIVIL TECH ENGINEERING, INC. HURRICANE, WEST VIRGINIA</p>				
DATE	PROJECT NO.	DRAWING NO.		
01/27/14	13103	2-3		



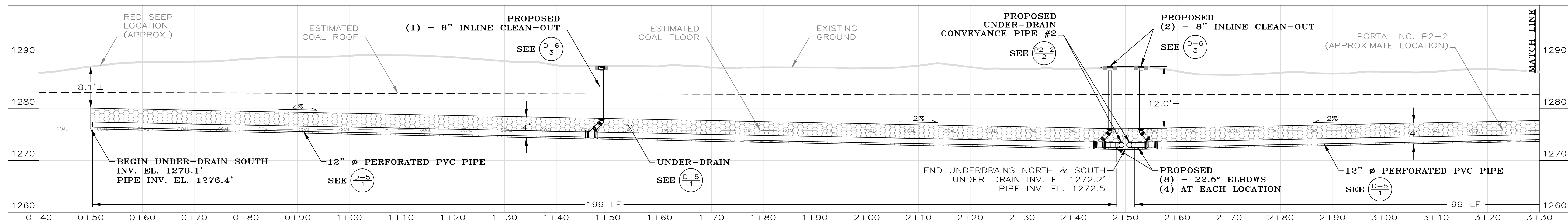
**SITE PLAN WITH TAX MAP OVERLAY  
SITE 2**

SCALE: 1" = 100'

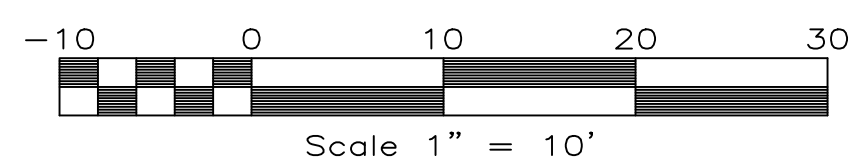
<b>REVISIONS</b> DATE BY DESCRIPTION	
SCALE: AS SHOWN DRAWN BY: CDA CHECKED BY: MFP	<b>AML &amp; R</b> WDEP
<b>PROPOSED SITE PLAN WITH TAX MAP OVERLAY</b> <b>GRAFTON #4 REFUSE &amp; HIGHWALL</b> TAYLOR COUNTY, WEST VIRGINIA	
<b>CIVIL TECH ENGINEERING, INC.</b> HURRICANE, WEST VIRGINIA	
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	2-4



**DETAIL (1) - CONTINUED**  
**PROPOSED SITE 2 UNDER-DRAIN PROFILE**  
 SCALE: 1" = 10'



**DETAIL (1)**  
**PROPOSED SITE 2 UNDER-DRAIN NORTH & SOUTH PROFILE**  
 SCALE: 1" = 10'



REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN  
 DRAWN BY: CDA  
 CHECKED BY: MFP

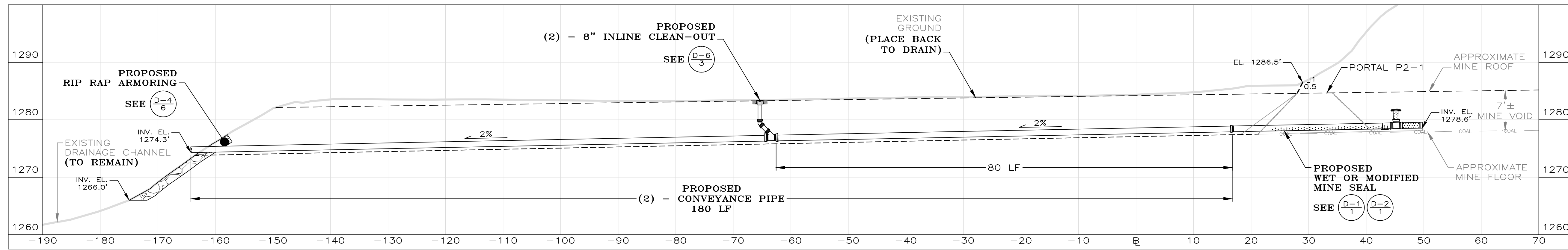
AML & R  
 WDEP

PROPOSED  
 SITE 2 PROFILES  
 GRAFTON #4 REFUSE AND HIGHWALL  
 TAYLOR COUNTY, WEST VIRGINIA

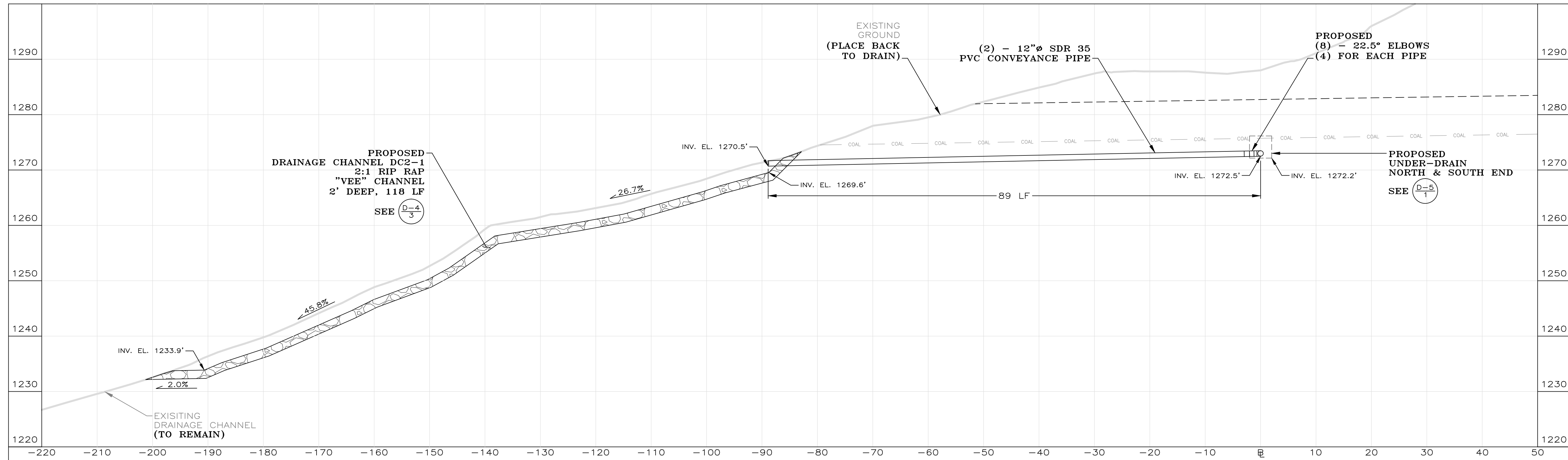
**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

DATE  
 01/27/14  
 PROJECT NO.  
 13103  
 DRAWING NO.  
 P2-1

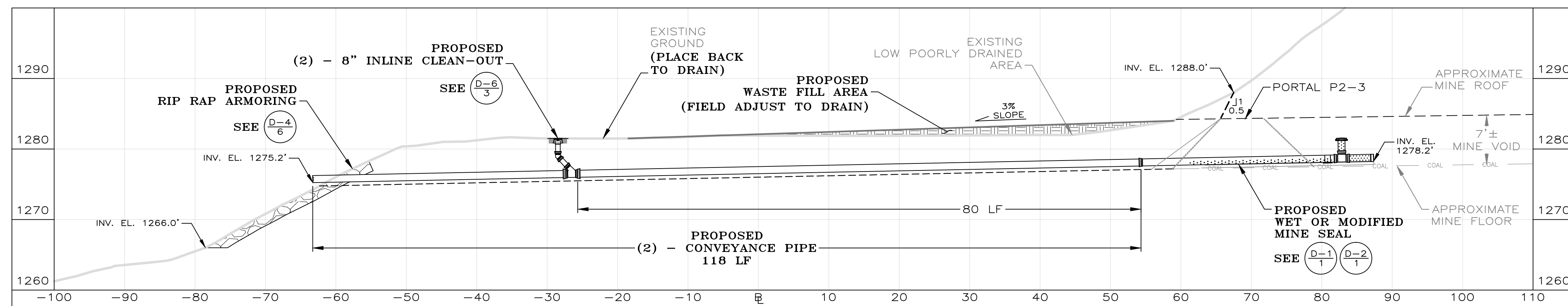




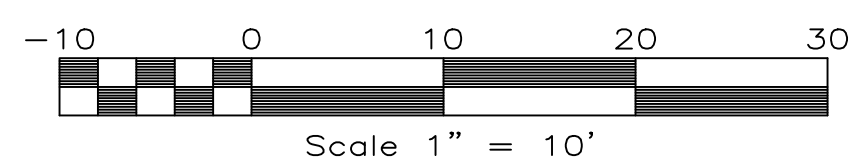
**DETAIL (3)**  
**PROPOSED PORTAL P2-1 PROFILE**  
 SCALE: 1" = 10'



**DETAIL (2)**  
**PROPOSED UNDER-DRAIN NORTH & SOUTH CONVEYANCE PIPE & DRAINAGE CHANNEL DC2-1 PROFILE**  
 SCALE: 1" = 10'



**DETAIL (1)**  
**PROPOSED PORTAL P2-3 PROFILE**  
 SCALE: 1" = 10'



REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN  
 DRAWN BY: CDA  
 CHECKED BY: MEF

AML & R  
 WDEP

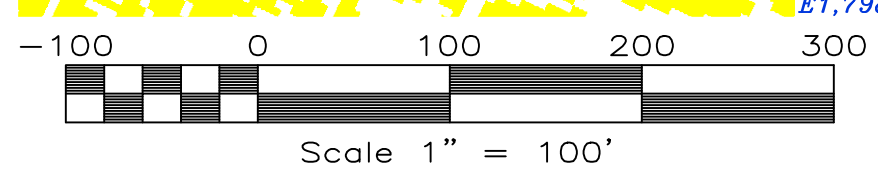
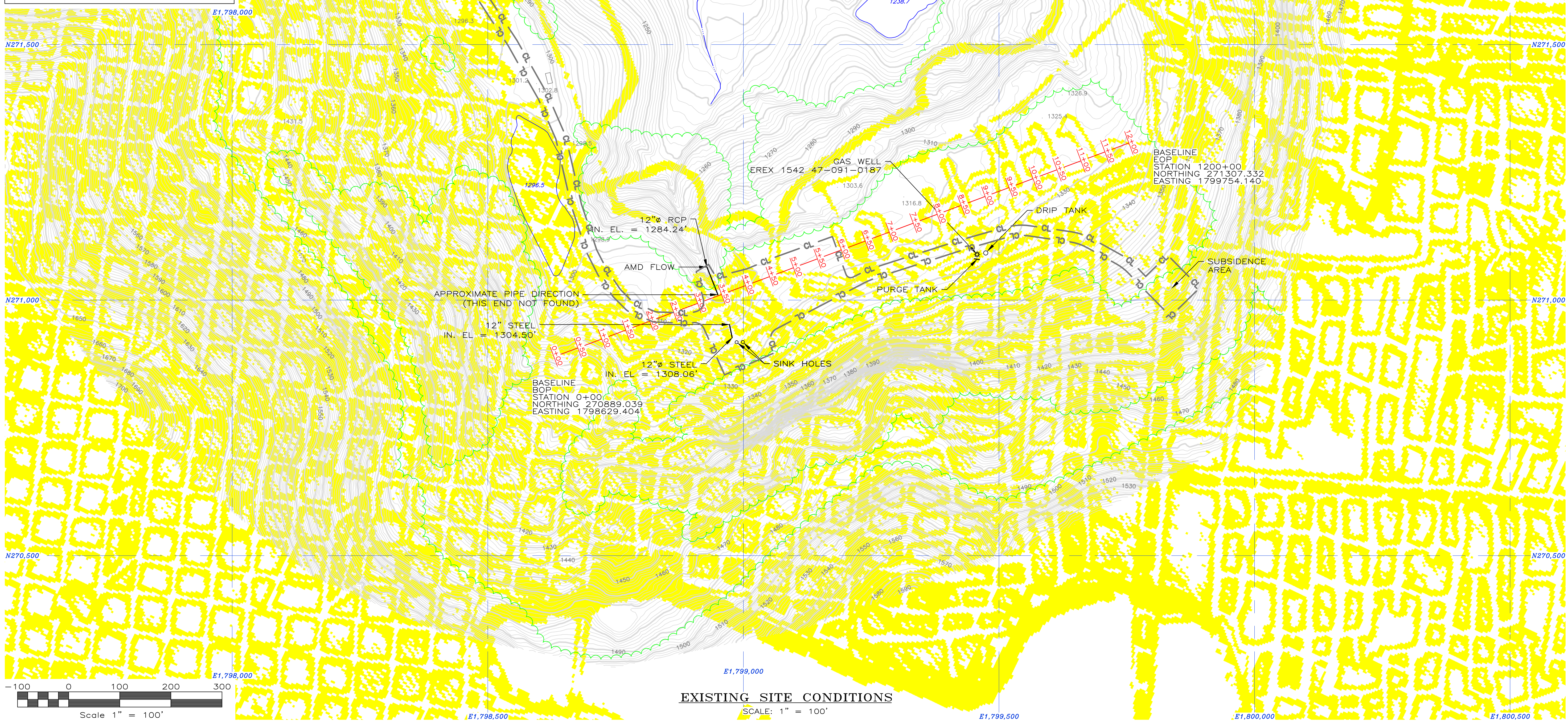
PROPOSED  
 SITE 2 PROFILES  
 GRAFTON #4 REFUSE AND HIGHWALL  
 TAYLOR COUNTY, WEST VIRGINIA

CIVIL TECH ENGINEERING, INC.  
 HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	P2-2

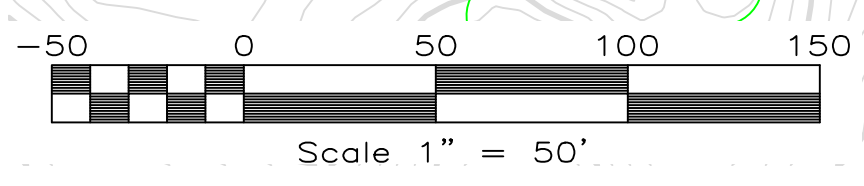
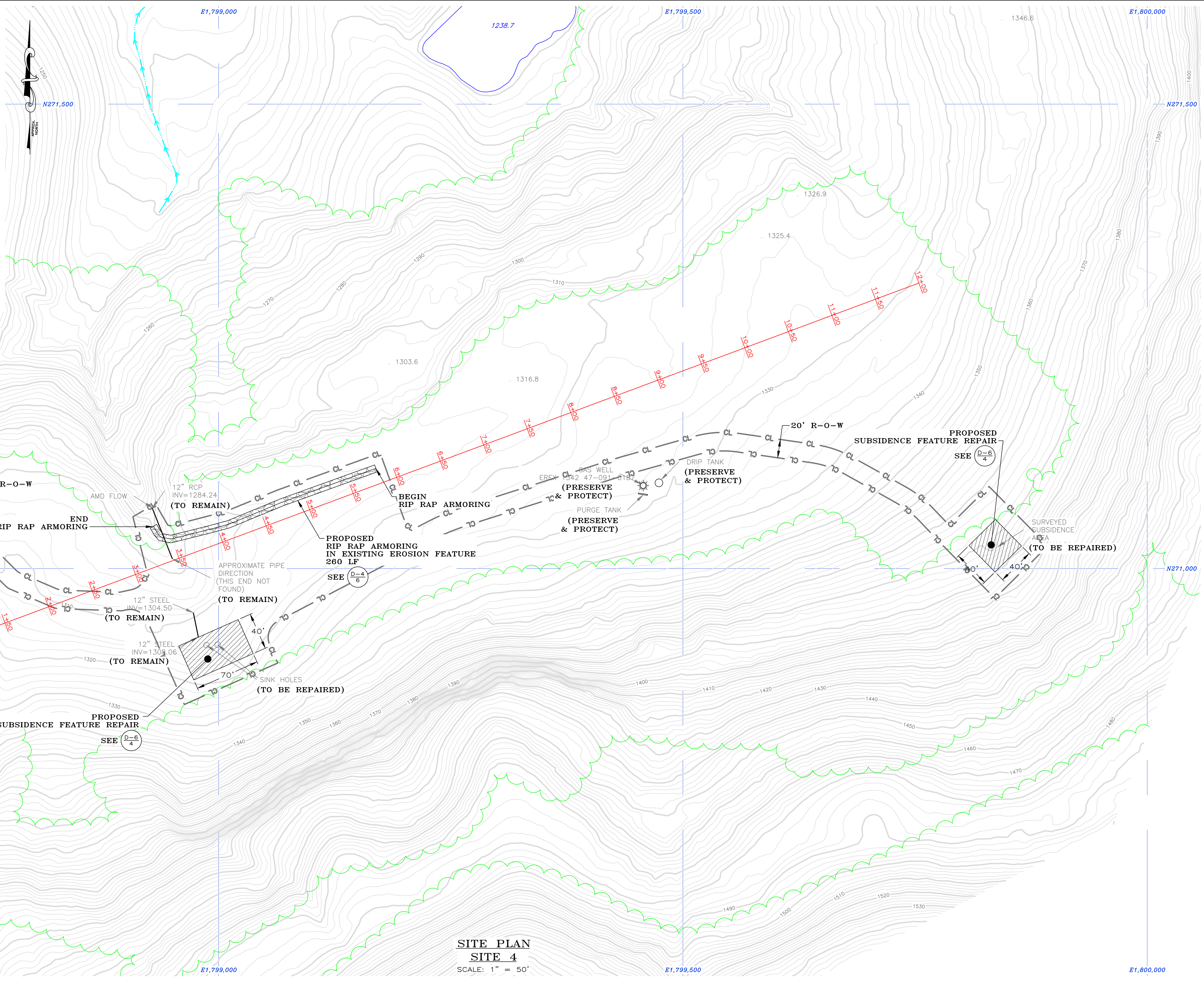
**-LEGEND-**

	WV STATE PLANE COORDINATES
	EXISTING GROUND CONTOUR
	SPOT ELEVATION
	BASELINE
	SURVEY CONTROL POINT
	TREE LINE
	BORING LOCATION
	UTILITY POLE
	MINE PORTAL
	PAVED ROAD
	UNPAVED ROAD
	TRAIL
	WET AREA
	STREAM & CREEKS
	GAS LINE
	OVERHEAD ELECTRIC
	REFUSE AREA
	AMD SEEP
	AMD AREA
	FENCE LINE
	SUBSIDENCE FEATURE
	MINE MAP OVERLAY
	GAS VALVE
	STRUCTURE
	PROPOSED CONSTRUCTION LIMITS



REVISIONS	
DATE	DESCRIPTION
SCALE: AS SHOWN	
DRAWN BY: CDA	
CHECKED BY: MFP	
AML & R	
WVDEP	
SITE 4	
EXISTING SITE CONDITIONS	
GRAFTON #4 REFUSE & HIGHWALL	
CIVIL TECH ENGINEERING, INC.	
HURRICANE, WEST VIRGINIA	
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	4-1

- LEGEND-**
- N190,000— WV STATE PLANE COORDINATES
  - 2200— EXISTING GROUND CONTOUR
  - x SPOT ELEVATION
  - BASELINE
  - ▲ CP-1 SURVEY CONTROL POINT
  - TREE LINE
  - B-1 BORING LOCATION
  - UTILITY POLE
  - UNPAVED ROAD
  - - - TRAIL
  - WET AREA
  - EXISTING DRAINAGE
  - GAS LINE
  - OE— OVERHEAD ELECTRIC
  - PROPOSED CONTOUR
  - PROPOSED DRAINAGE CHANNEL
  - PROPOSED RIP RAP STRUCTURE
  - CL— PROPOSED CONSTRUCTION LIMITS
  - PROPOSED MINE SEAL
  - 1  
T DRAWING NO.  
DETAIL OR PROFILE NO.



**SITE PLAN**  
**SITE 4**  
SCALE: 1" = 50'

REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN	DRAWN BY: CDA
	CHECKED BY: MFP

<b>AML &amp; R</b>	<b>WDEP</b>
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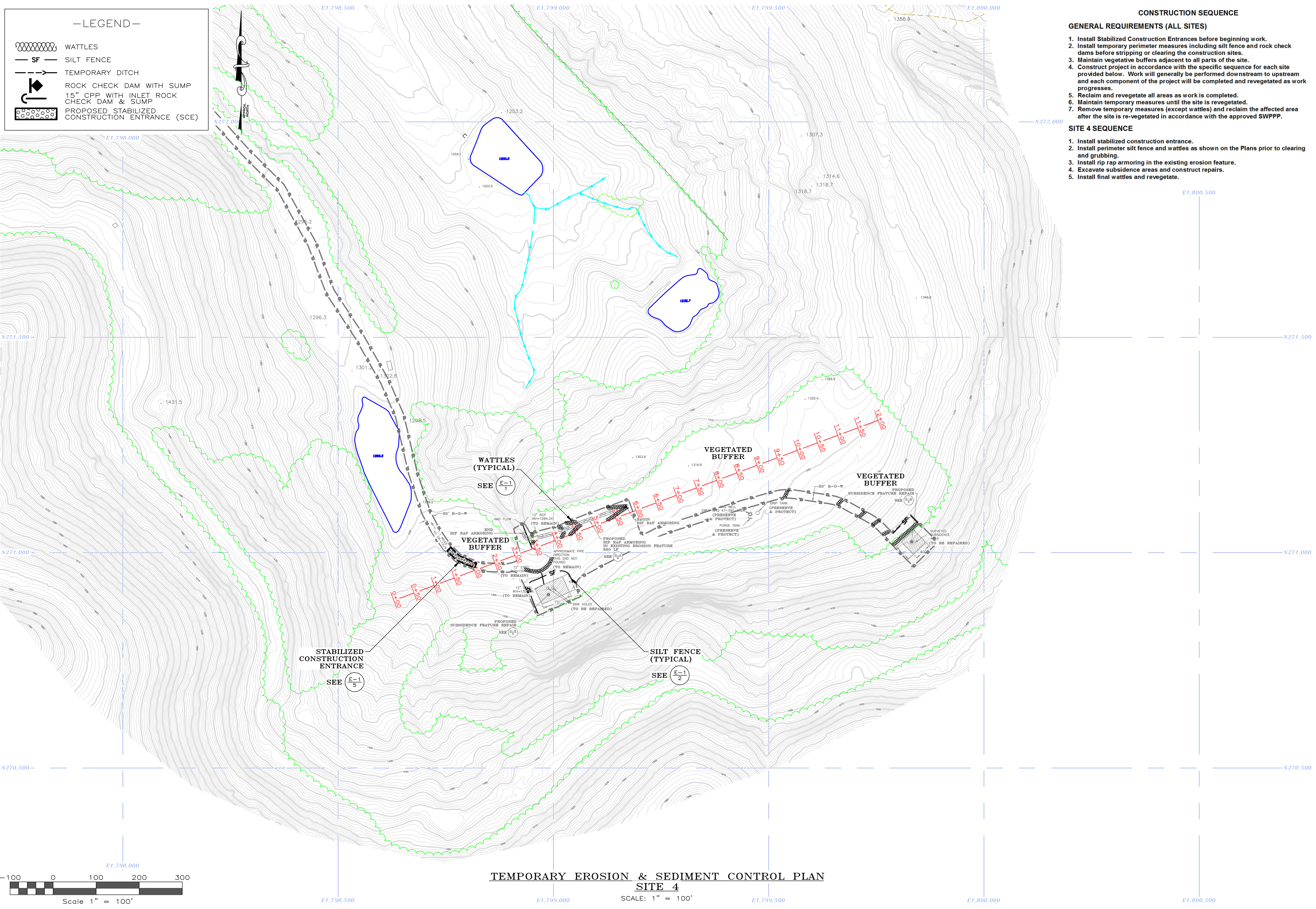
<b>SITE PLAN</b>	<b>GRAFTON #4 REFUSE &amp; HIGHWALL</b>
<b>SITE 4</b>	<b>TAYLOR COUNTY, WEST VIRGINIA</b>

<b>CIVIL TECH ENGINEERING, INC.</b>	<b>HURRICANE, WEST VIRGINIA</b>
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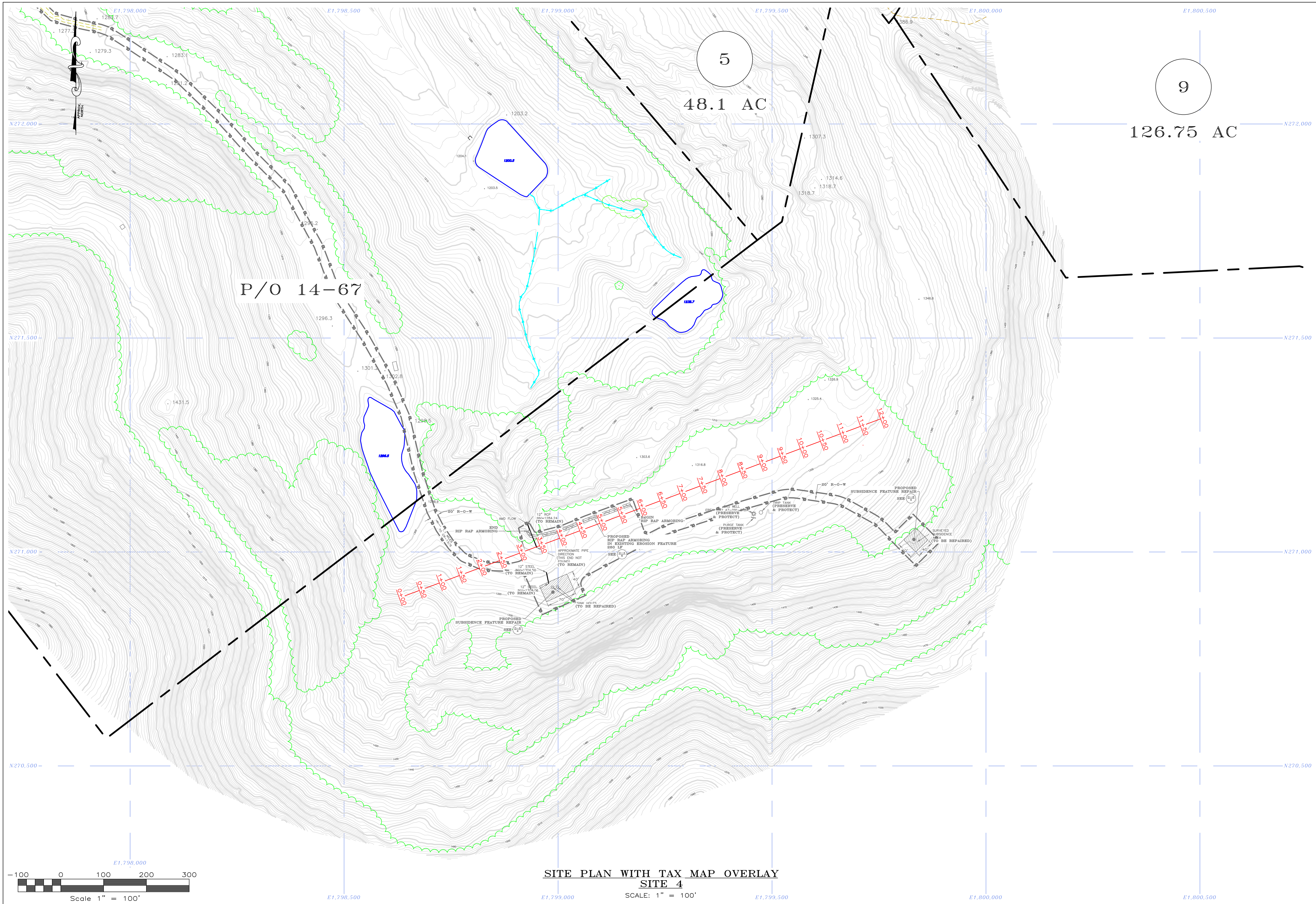
  

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	4-2



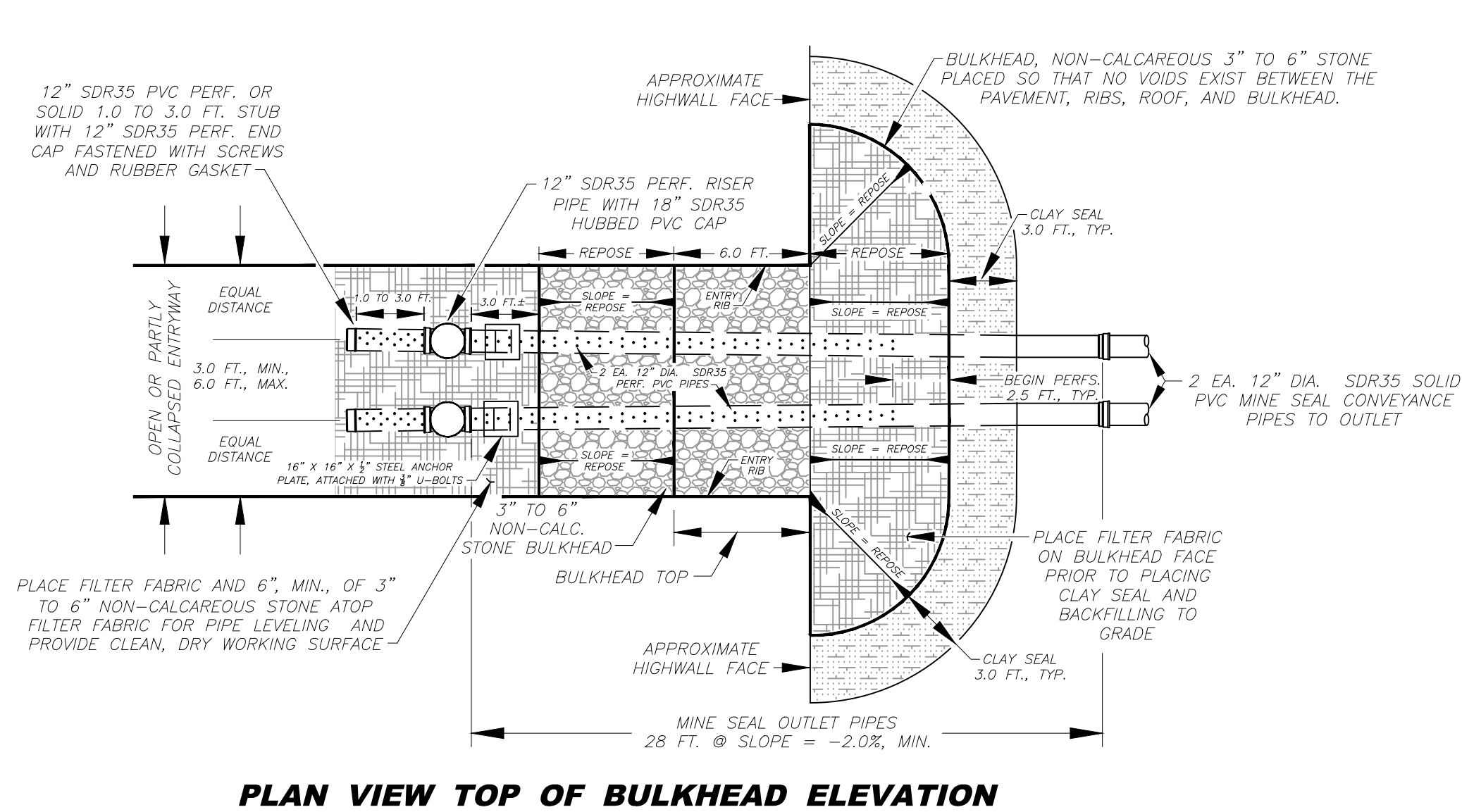
- CONSTRUCTION SEQUENCE**
- GENERAL REQUIREMENTS (ALL SITES)**
1. Install Stabilized Construction Entrances before beginning work.
  2. Install temporary perimeter measures including silt fence and rock check dams before stripping or clearing the construction sites.
  3. Maintain vegetative buffers adjacent to all parts of the site.
  4. Construct project in accordance with the specific sequence for each site provided below. Work will generally be performed downstream to upstream and each component of the project will be completed and revegetated as work progresses.
  5. Reclaim and revegetate all areas as work is completed.
  6. Maintain temporary measures until the site is revegetated.
  7. Remove temporary measures (except wattles) and reclaim the affected area after the site is re-vegetated in accordance with the approved SWPPP.
- SITE 4 SEQUENCE**
1. Install stabilized construction entrance.
  2. Install perimeter silt fence and wattles as shown on the Plans prior to clearing and grubbing.
  3. Install rip rap armoring in the existing erosion feature.
  4. Excavate subsidence areas and construct repairs.
  5. Install final wattles and revegetate.

REVISIONS	DESCRIPTION	DATE	BY
SCALE: AS SHOWN	DRAWN BY: CDA	CHECKED BY: MFP	
<b>AML &amp; R</b>			
WDEP			
TEMPORARY EROSION & SEDIMENT CONTROL PLAN - SITE 4 GRAFTON #4 REFUSE & HIGHWALL TAYLOR COUNTY, WEST VIRGINIA			
<b>CIVIL TECH ENGINEERING, INC.</b> HURRICANE, WEST VIRGINIA			
DATE	01/27/14		
PROJECT NO.	13103		
DRAWING NO.	4-3		



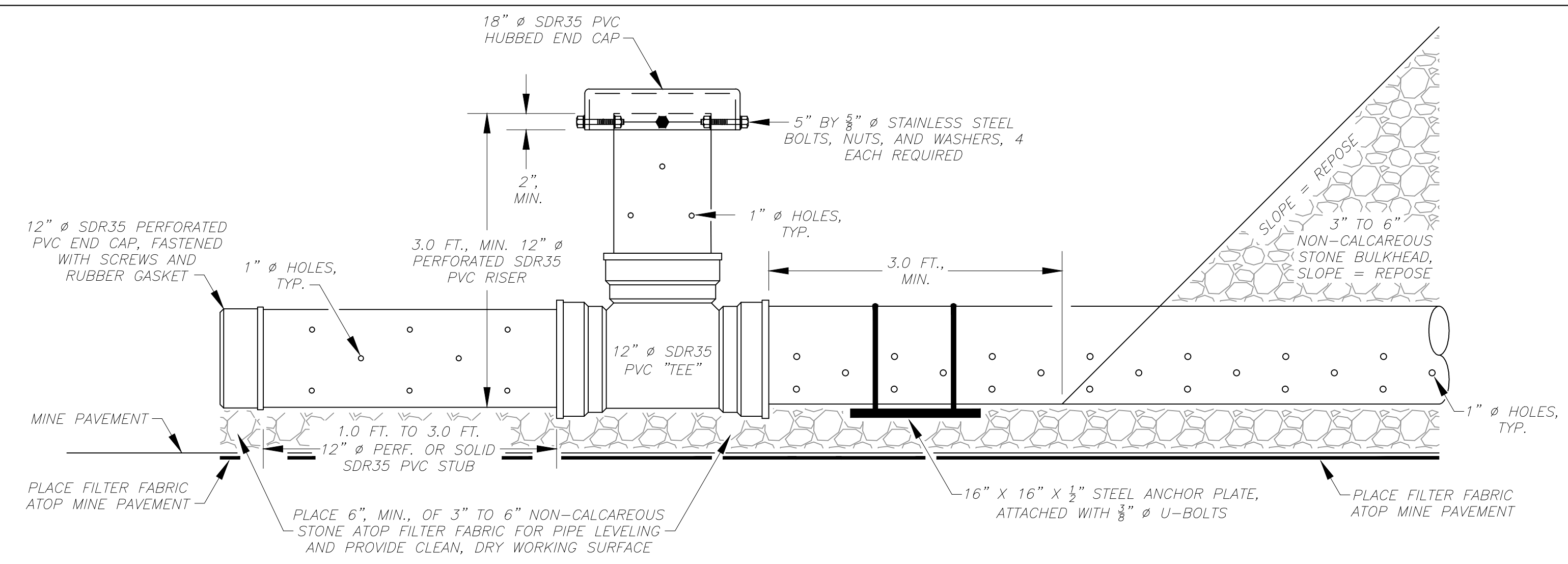
**SITE PLAN WITH TAX MAP OVERLAY**  
**SITE 4**  
 SCALE: 1" = 100'

<b>REVISIONS</b> DESCRIPTION DATE BY	
SCALE: AS SHOWN DRAWN BY: CDA CHECKED BY: MFP	<b>AML &amp; R</b> WDEP
<b>PROPOSED SITE PLAN WITH TAX MAP OVERLAY</b> <b>GRAFTON #4 REFUSE &amp; HIGHWALL</b> TAYLOR COUNTY, WEST VIRGINIA	
<b>CIVIL TECH ENGINEERING, INC.</b> HURRICANE, WEST VIRGINIA	
DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	4-4



**PLAN VIEW TOP OF BULKHEAD ELEVATION**

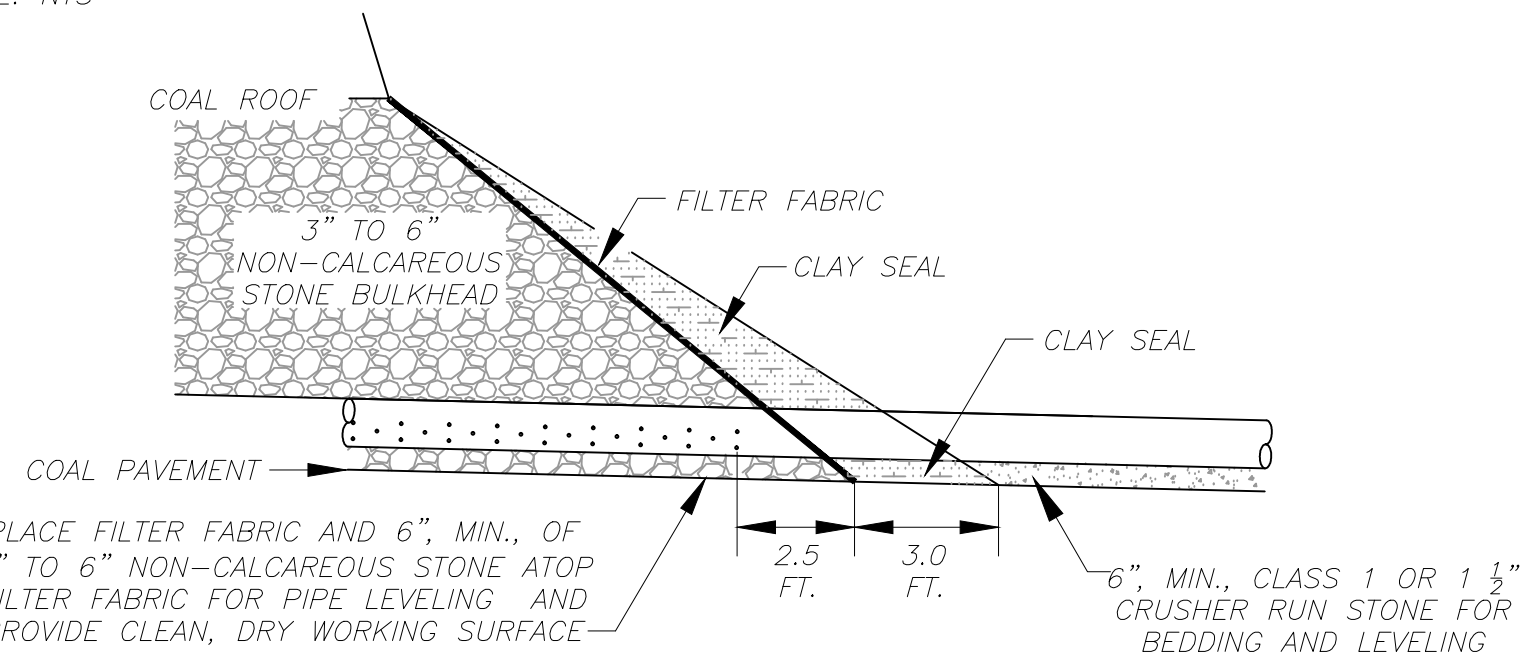
SCALE: NTS



**"TEE" RISER DETAIL**

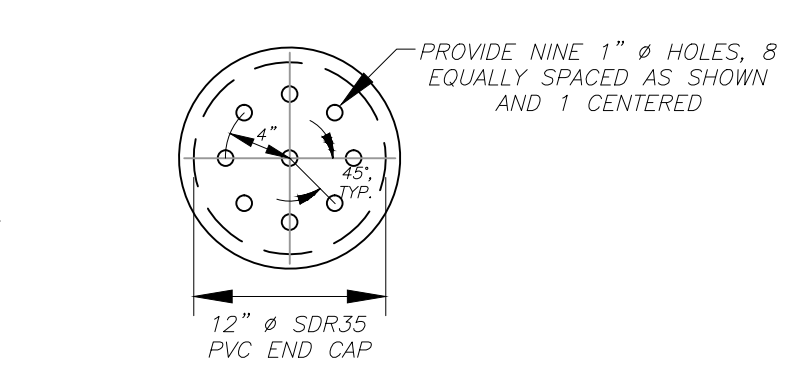
SCALE: 1" = 1 FT.

- NOTES:
1. THE TWO (2) JOINTS (28.0 FEET) OF MINE SEAL OUTLET PIPES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "WET MINE SEALS" REGARDLESS OF WHERE THESE PIPES END IN THE INSTALLATION.
  2. THE MINE SEAL CONVEYANCE PIPE LENGTHS VARY AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "MINE SEAL CONVEYANCE PIPES". MINE SEAL CONVEYANCE PIPES BEGIN AT THE END OF THE MINE SEAL OUTLET PIPES AND EXTEND TO THE PLANNED OUTFALL.
  3. THE PERFORATED END CAP LOCATED INSIDE THE MINE AT THE END OF THE ONE TO THREE FOOT (1.0' TO 3.0') STUB SHALL HAVE A RUBBER GASKET, PLACED ON THE UPSTREAM END OF THE STUB AND SCREWED IN PLACE.
  4. THE STONE BULKHEAD SHALL BE IN CONTACT WITH COAL ROOF FOR A DISTANCE EQUAL TO THE OPENING HEIGHT OR A MINIMUM OF 6.0 FEET. THE INSIDE AND OUTSIDE STONE BULKHEAD FACES SHALL BE CONSTRUCTED AT THE ANGLE OF REPOSE OF THE 3" TO 6" NON-CALCAREOUS STONE PLACED.
  5. 1 1/2" CRUSHER RUN STONE SHALL MEET THE GRADATION REQUIREMENTS FOR CLASS 1 AGGREGATE IN TABLE 704.6.2A OF THE WOOD SPECIFICATIONS FOR ROADS AND BRIDGES.



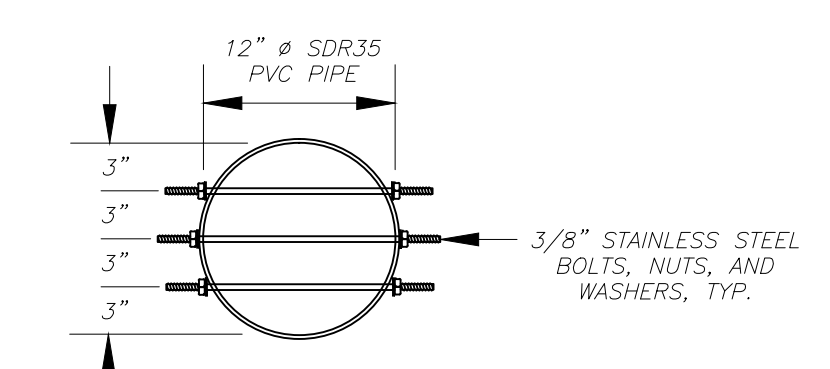
**CLAY SEAL DETAILS, TYP.**

SCALE: 1" = 4 FT.



**PERFORATED END CAP**

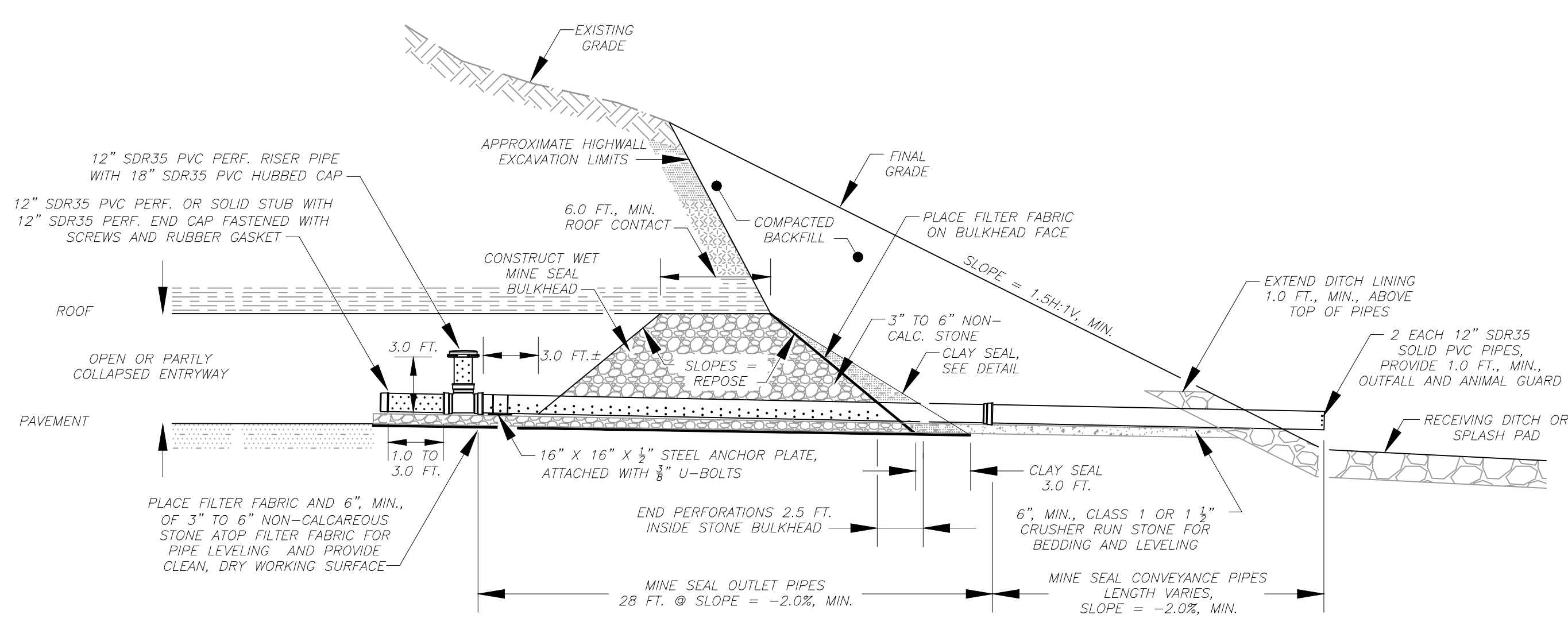
SCALE: 1" = 1 FT.



**12" Ø PVC PIPE ANIMAL GUARD CROSS SECTION, TYP.**

SCALE: 1" = 1 FT.

NOTE:  
1. ANIMAL GUARDS SHALL BE INSTALLED THE SAME DAY AS THE PIPE IS INSTALLED.

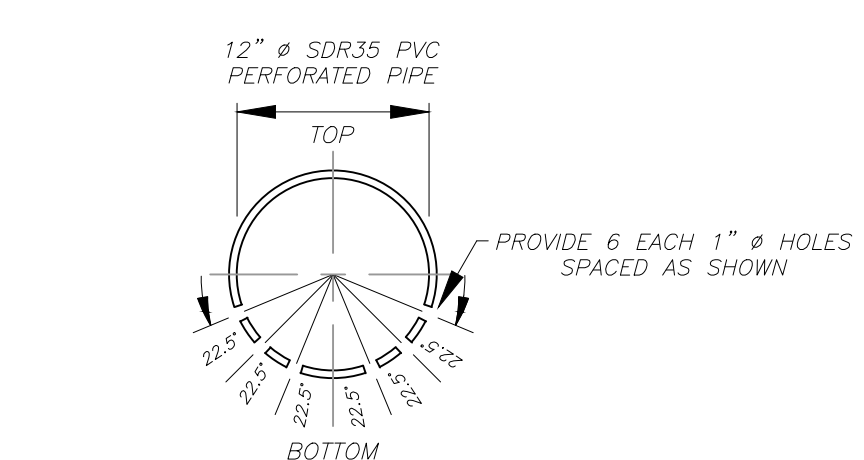


**PROFILE VIEW, TYP.**

SCALE: 1" = 6 FT.

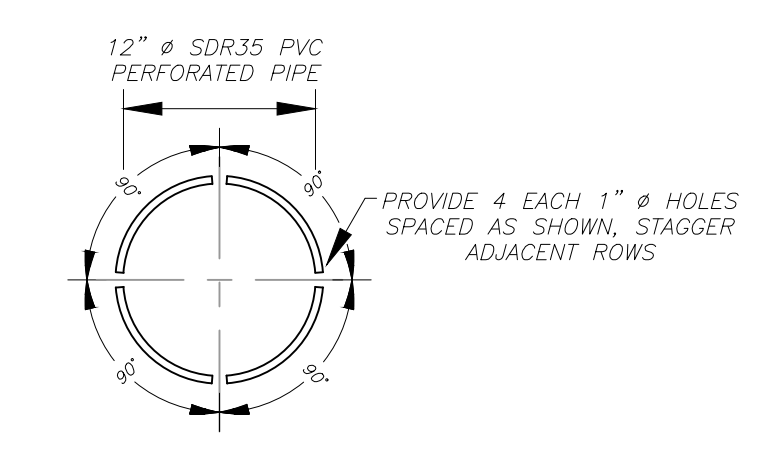
**WET MINE SEAL**

SCALE AS NOTED



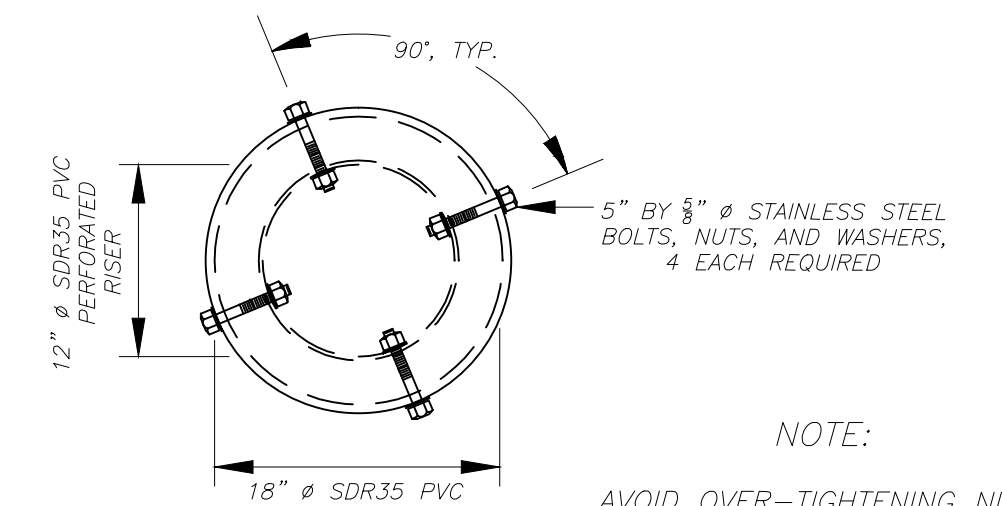
**WET MINE SEAL OUTLET PIPES CROSS SECTION, TYP.**

SCALE: 1" = 1 FT.



**WET MINE SEAL RISER PIPES AND STUBS CROSS SECTION, TYP.**

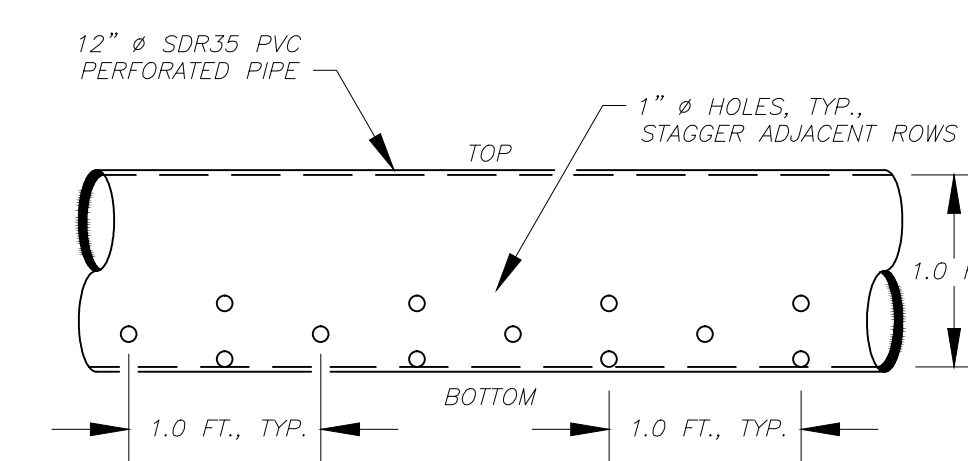
SCALE: 1" = 1 FT.



**RISER CAP DETAIL**

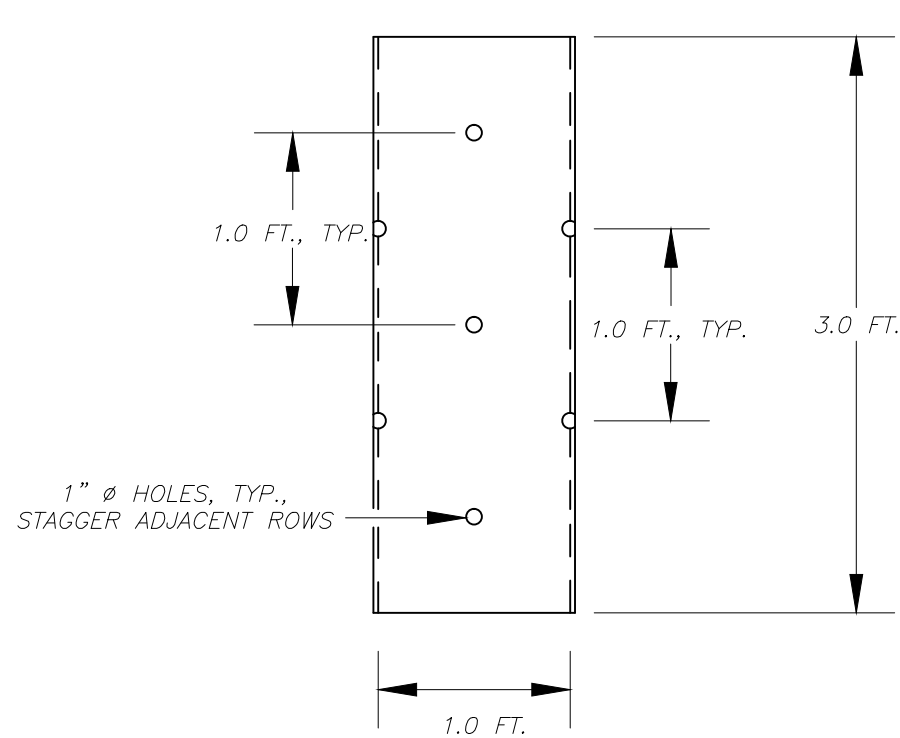
SCALE: 1" = 1 FT.

NOTE:  
AVOID OVER-TIGHTENING NUTS AND BOLTS AS DAMAGE TO THE 18" Ø SDR35 PVC HUBBED END CAP MAY OCCUR



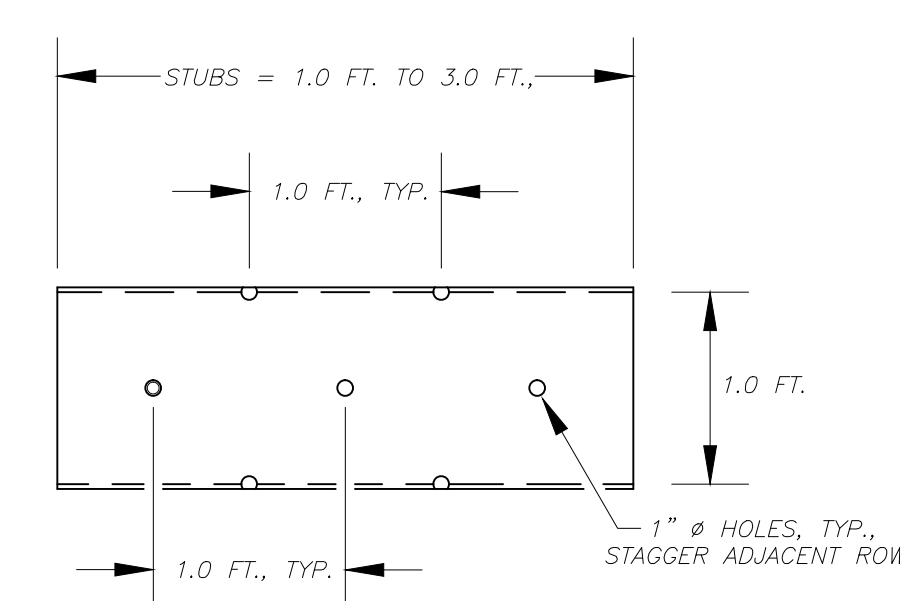
**WET MINE SEAL OUTLET PIPES LONGITUDINAL VIEW, TYP.**

SCALE: 1" = 1 FT.



**WET MINE SEAL RISER PIPES ELEVATION VIEW, TYP.**

SCALE: 1" = 1 FT.



**WET MINE SEAL STUBS LONGITUDINAL VIEW, TYP.**

SCALE: 1" = 1 FT.

**DETAIL (1) - ENTIRE SHEET**

**WET MINE SEAL PIPE DETAILS, TYP.**

SCALE: AS NOTED

REVISIONS	
NO.	DESCRIPTION

SCALE: AS SHOWN	DATE	BY
DRAWN BY: CCA		
CHECKED BY: WEP		

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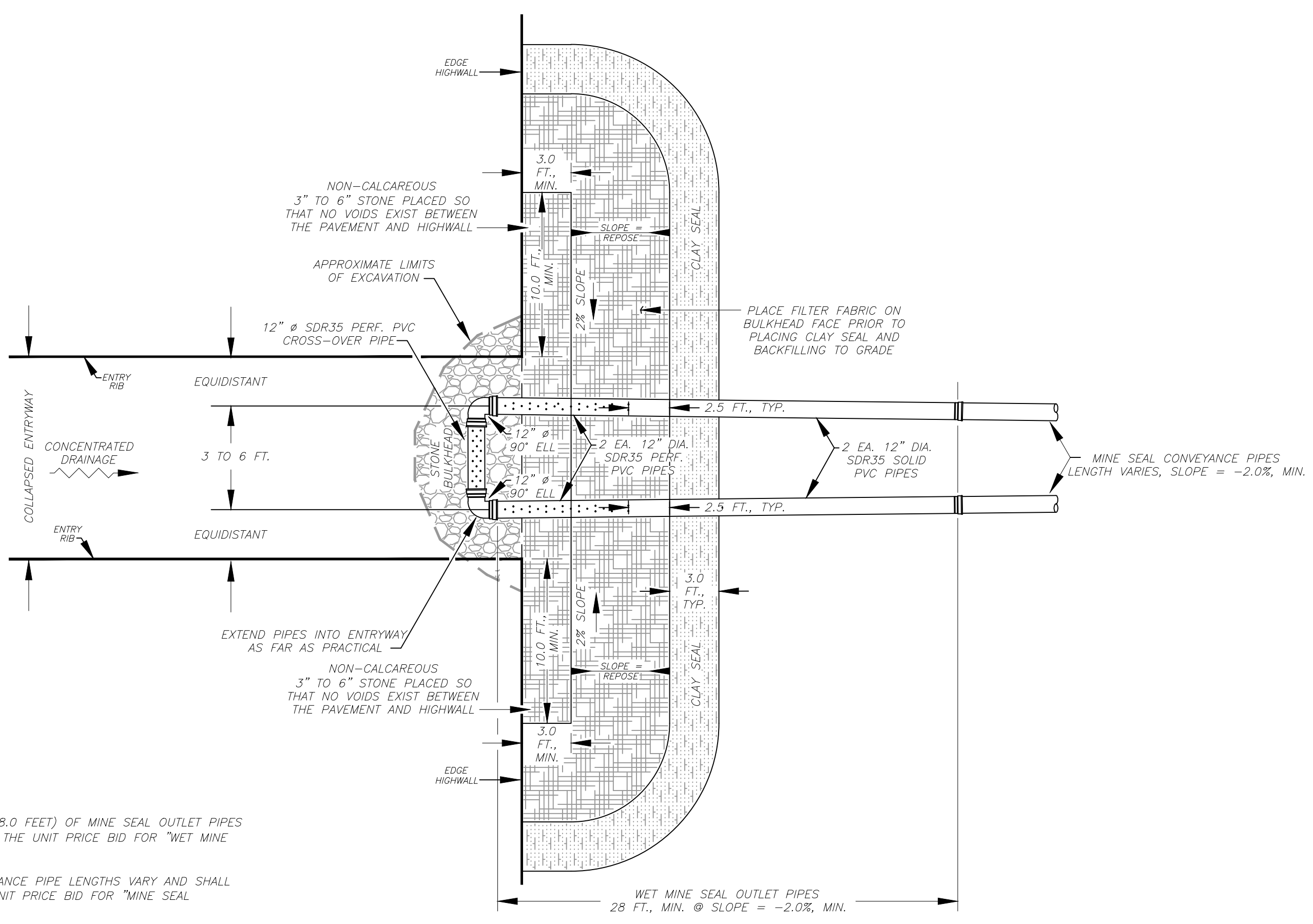
WET MINE SEAL DETAILS	GRAFTON #4 REFUSE & HIGHWALL
TAYLOR COUNTY, WEST VIRGINIA	

CIVIL TECH ENGINEERING, INC.
HURRICANE, WEST VIRGINIA

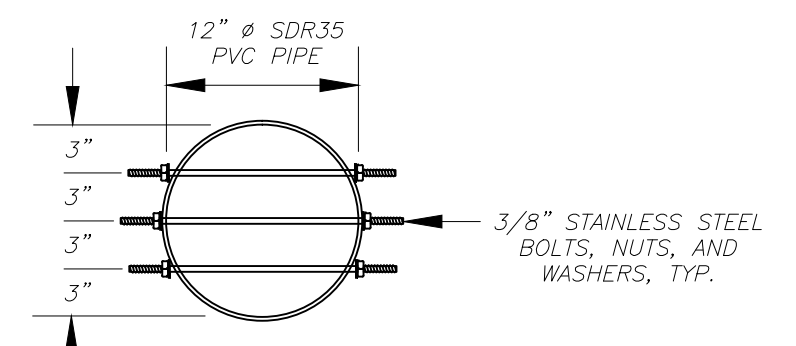
DATE	01/27/14
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**PLAN VIEW, TOP OF BULKHEAD ELEVATION**

SCALE: 1" = 6 FT.

- NOTES:
1. THE TWO (2) JOINTS (28.0 FEET) OF MINE SEAL OUTLET PIPES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "WET MINE SEALS".
  2. THE MINE SEAL CONVEYANCE PIPE LENGTHS VARY AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "MINE SEAL CONVEYANCE PIPES".
  3. 1 1/2" CRUSHER RUN STONE SHALL MEET THE GRADATION REQUIREMENTS FOR CLASS 1 AGGREGATE IN TABLE 704.6.2A OF THE WDOOH SPECIFICATIONS FOR ROADS AND BRIDGES.



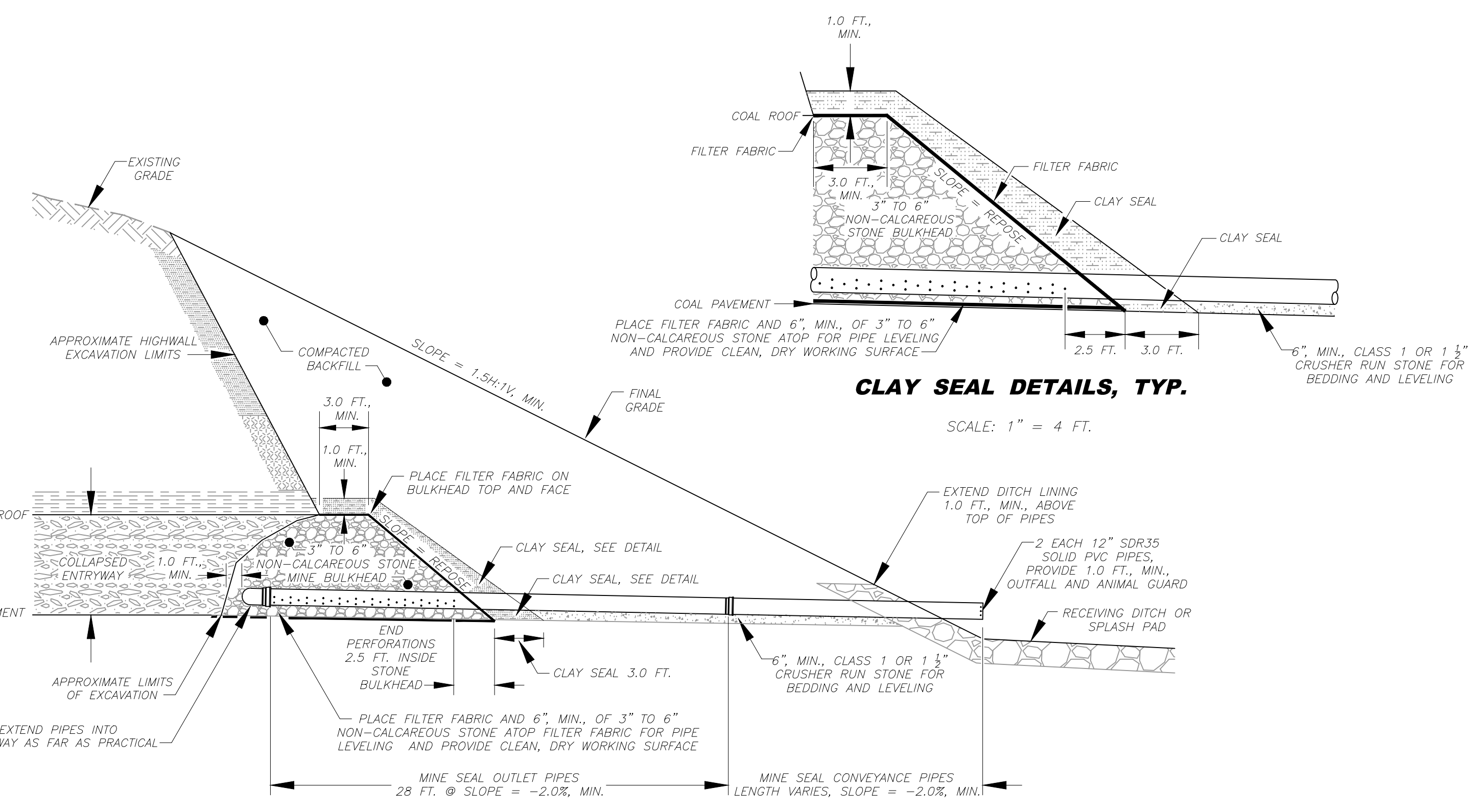
**12" Ø PVC PIPE ANIMAL GUARD CROSS SECTION, TYP.**

SCALE: 1" = 1 FT.

**ANIMAL GUARD DETAIL**

SCALE AS NOTED

NOTE:  
1. ANIMAL GUARDS SHALL BE INSTALLED THE SAME DAY AS THE PIPE IS INSTALLED.

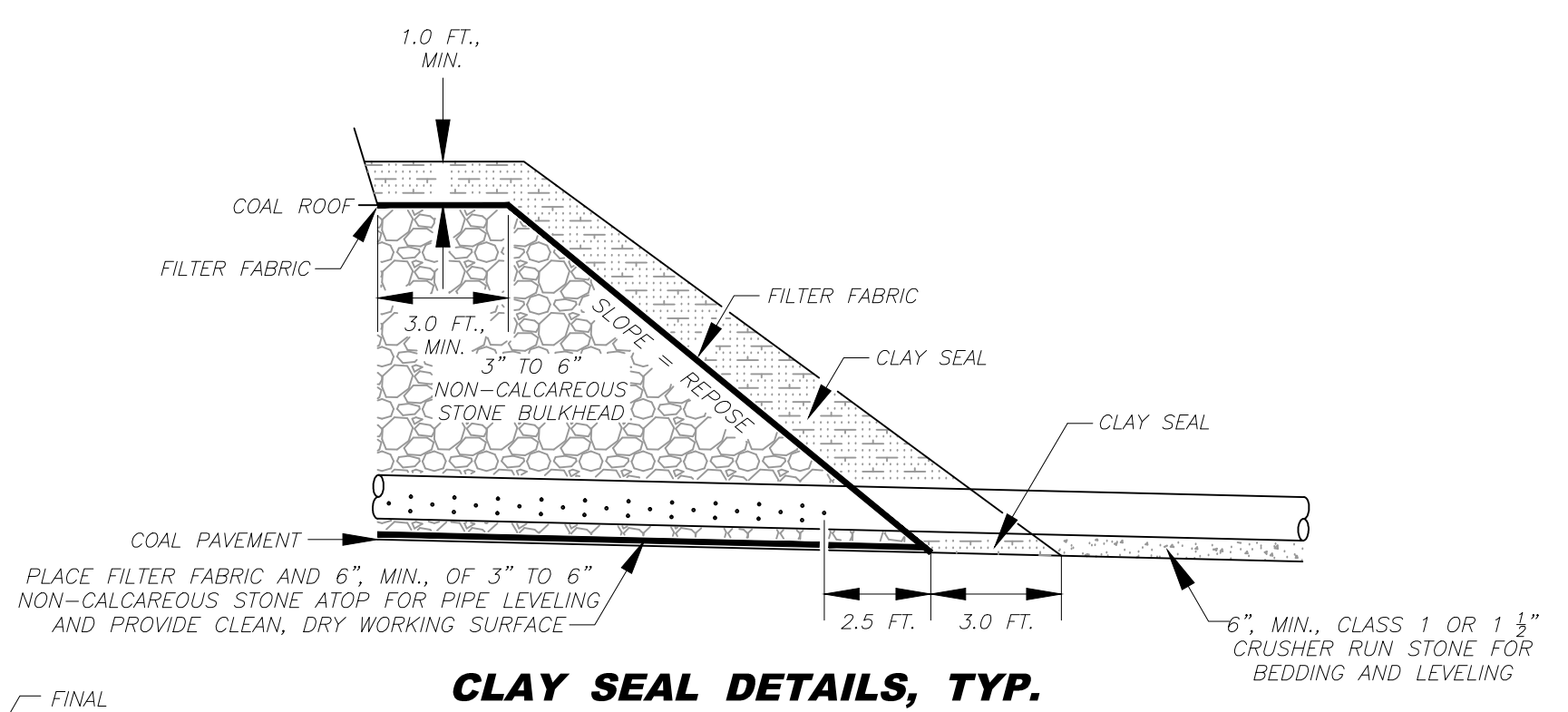


**PROFILE VIEW, TYP.**

SCALE: 1" = 6 FT.

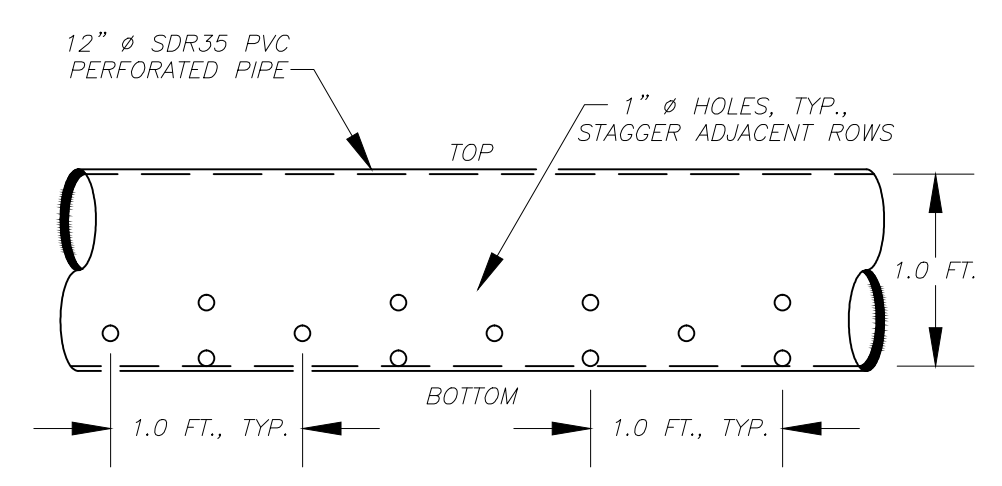
**MODIFIED MINE SEAL**

SCALE AS NOTED



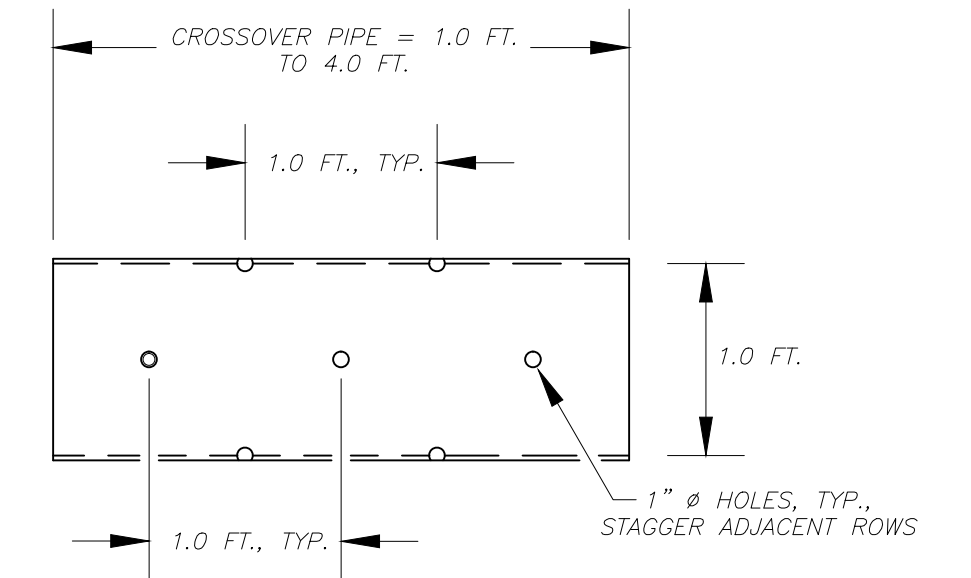
**CLAY SEAL DETAILS, TYP.**

SCALE: 1" = 4 FT.



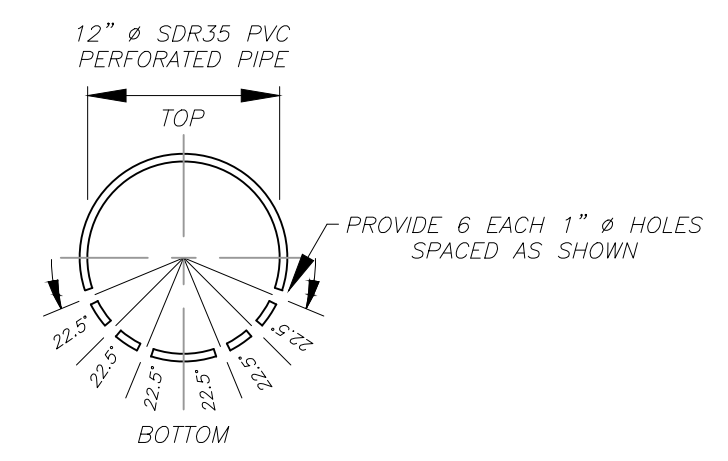
**MODIFIED MINE SEAL OUTLET PIPES LONGITUDINAL VIEW, TYP.**

SCALE: 1" = 1 FT.



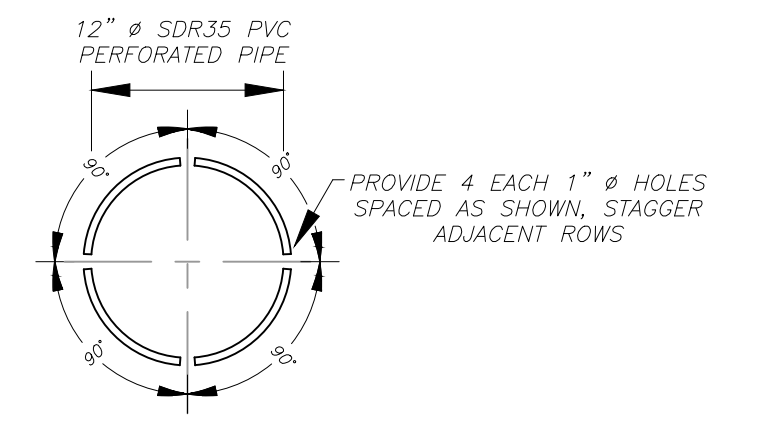
**MODIFIED MINE SEAL CROSS-OVER PIPE LONGITUDINAL VIEW, TYP.**

SCALE: 1" = 1 FT.



**MODIFIED MINE SEAL OUTLET PIPES CROSS SECTION, TYP.**

SCALE: 1" = 1 FT.



**MODIFIED MINE SEAL CROSS-OVER PIPE CROSS SECTION, TYP.**

SCALE: 1" = 1 FT.

**MODIFIED MINE SEAL PIPE DETAILS, TYP.**

SCALE: AS NOTED

**DETAIL (1) - ENTIRE SHEET**

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

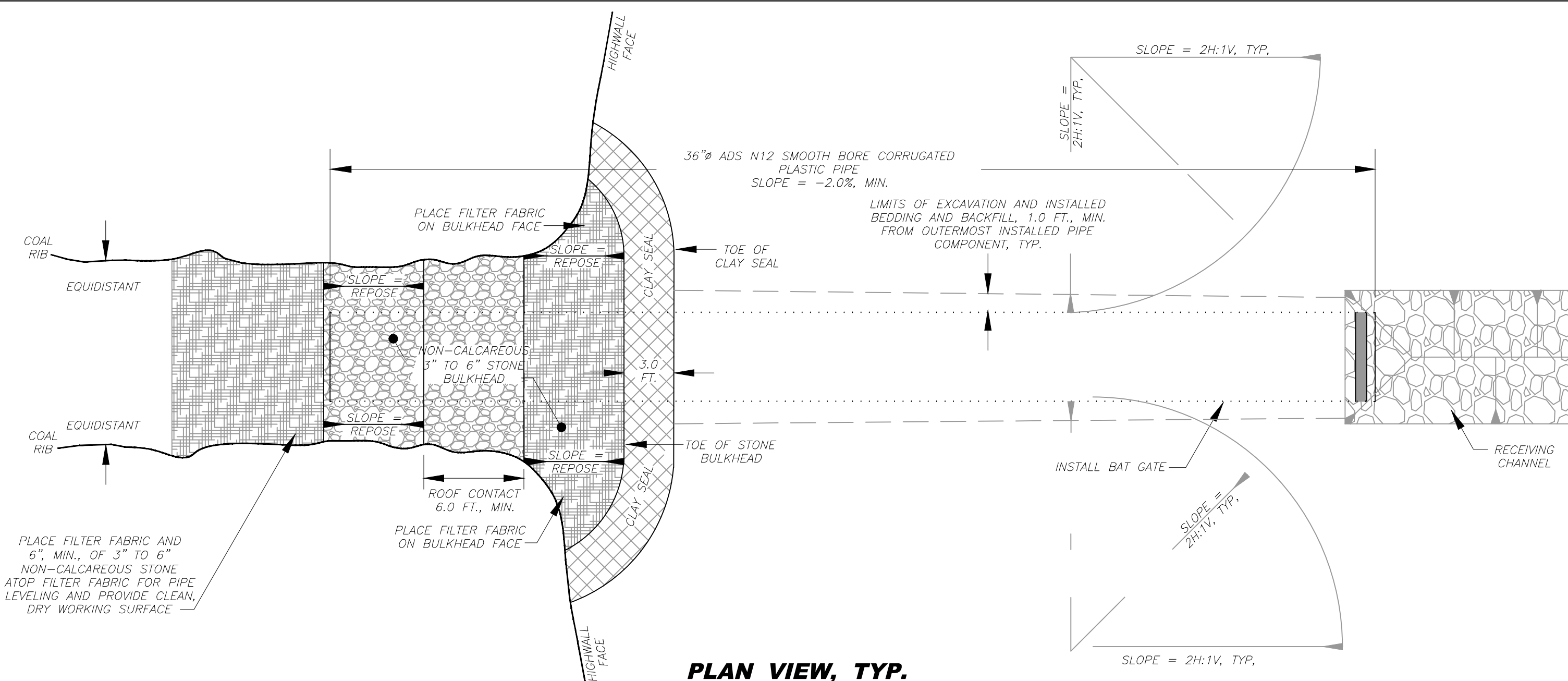
SCALE: AS SHOWN  
DRAWN BY: CCA  
CHECKED BY: WEP

**AML & R**  
WDEP

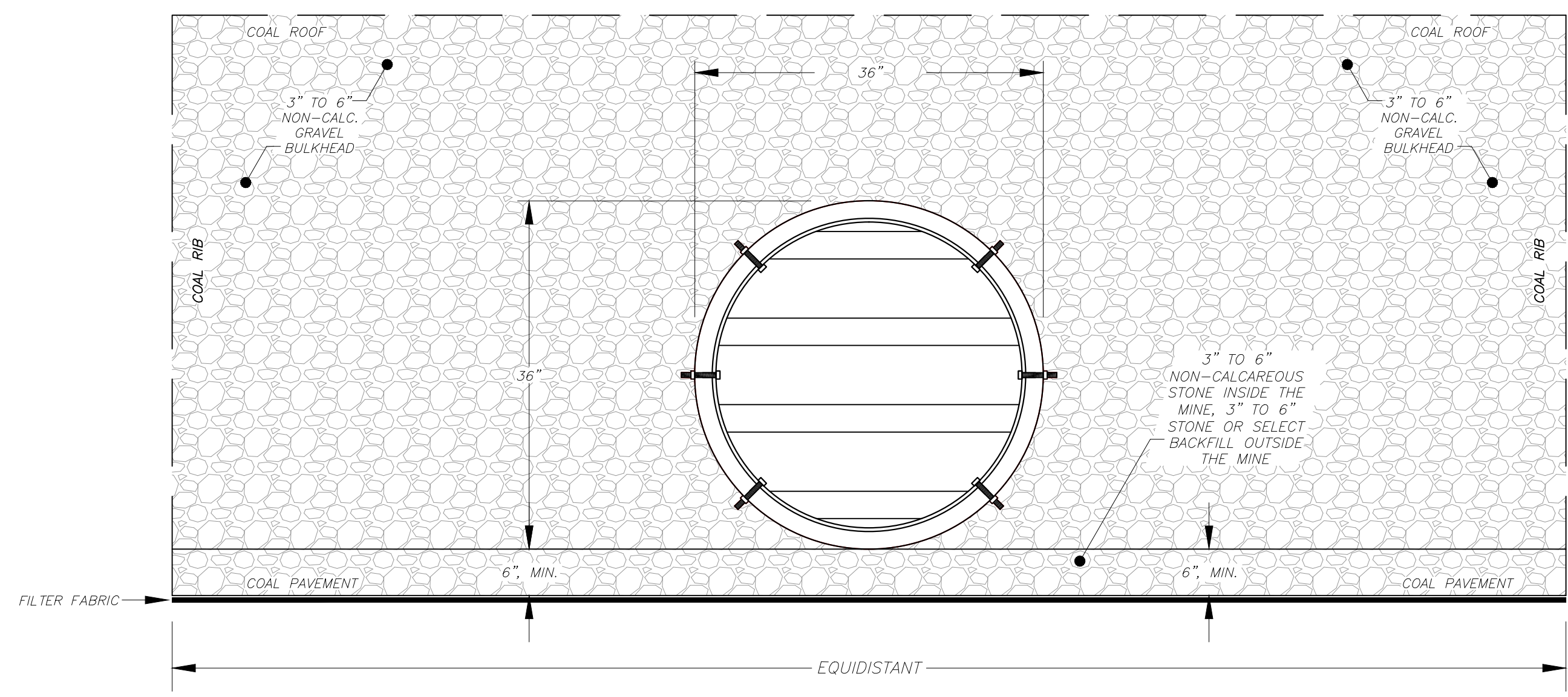
**MODIFIED MINE SEAL DETAILS**  
**GRAFTON #4 REFUSE & HIGHWALL**  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
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DRAWING NO.	D-2



- NOTES:
- ALL PIPE ACCESSORIES INSIDE THE MINE, THE STONE BULKHEAD, CLAY SEAL, FILTER FABRIC, AND ROUND HDPE PIPE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "BAT GATE MINE SEALS".
  - THE STONE BULKHEAD SHALL BE IN CONTACT WITH COAL ROOF FOR A DISTANCE EQUAL TO THE OPENING HEIGHT OR A MINIMUM OF 6.0 FEET, THE INSIDE AND OUTSIDE STONE BULKHEAD FACES SHALL BE CONSTRUCTED AT THE ANGLE OF REPOSE OF THE NO. 57 NON-CALCAREOUS STONE SHALL.
  - SIZE NO. 1 (AASHTO NO. 1) STONE SHALL MEET THE GRADATION REQUIREMENTS IN TABLE 703.4 OF THE WDOOH SPECIFICATIONS FOR ROADS AND BRIDGES.

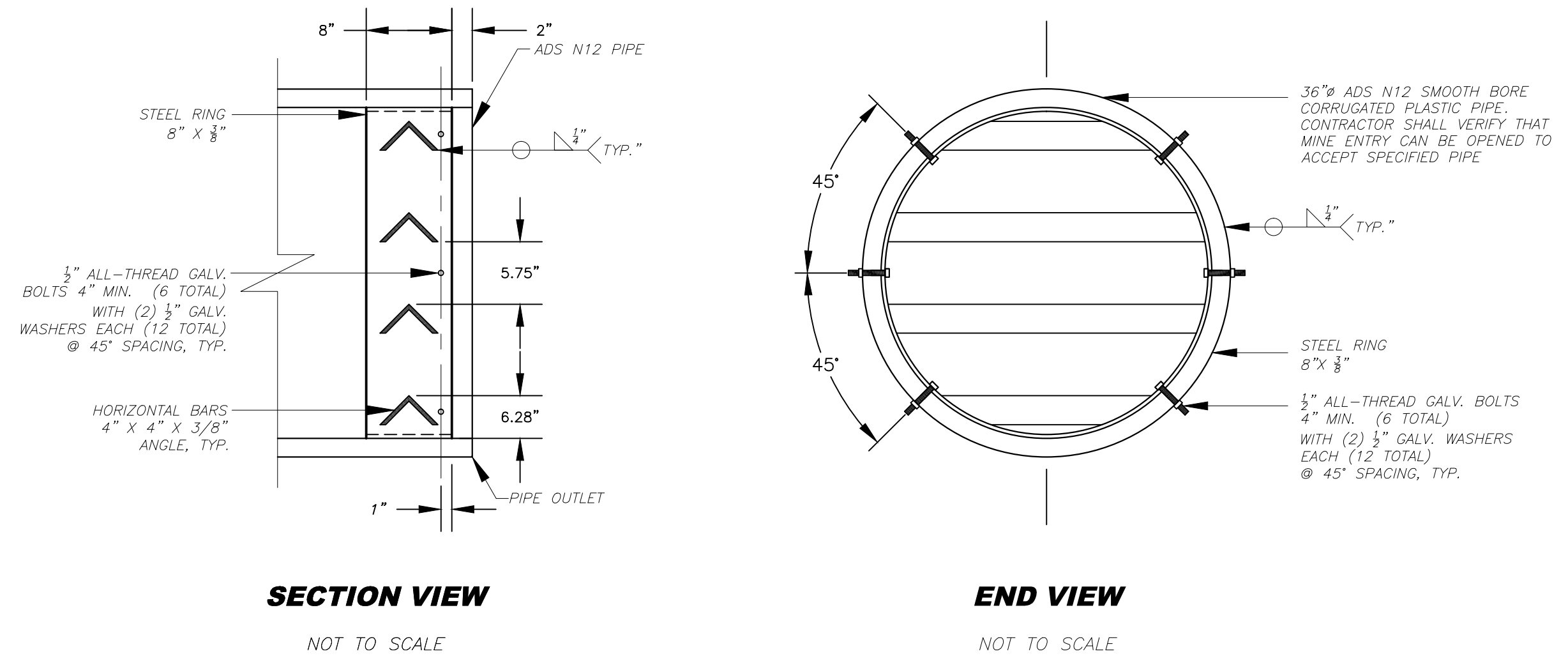
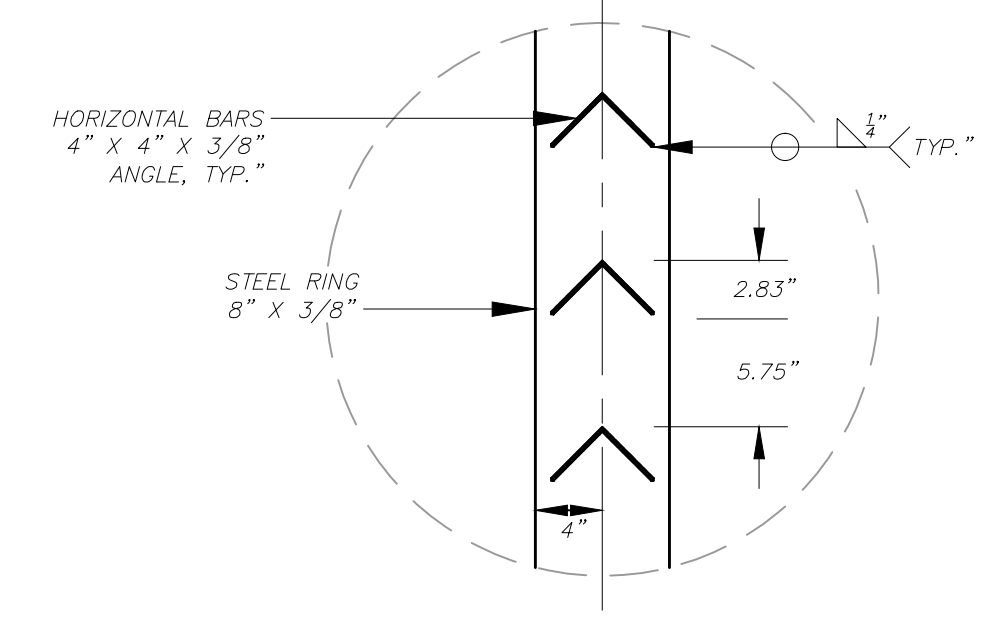
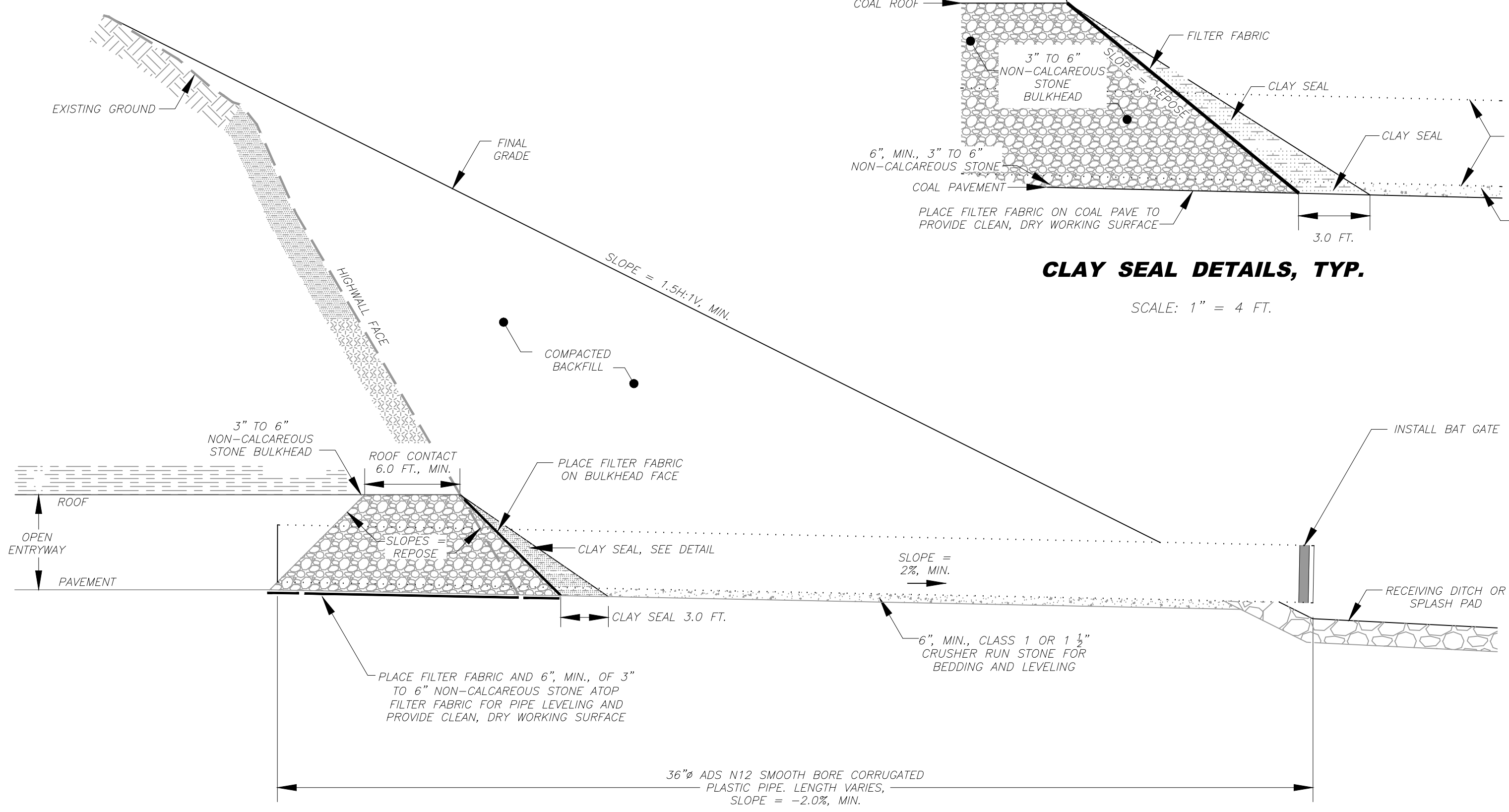


- NOTES:
- HORIZONTAL BAR SPACING ARE NOT TO BE ALTERED. AN ADDITIONAL HORIZONTAL "FLAT" BAR MAY BE REQUIRED TO MAINTAIN SPACING THROUGHOUT ENTIRE HEIGHT OF CURVE. THESE MODIFICATIONS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO BEING PERFORMED.

**36"Ø ADS N12 SMOOTH BORE CORRUGATED PLASTIC PIPE TABLE**

TYPE	OD (INCHES)	ID (INCHES)	WALL THICKNESS (INCHES)	HORIZONTAL BARS	
				(EACH)	SIZE
36"Ø	42	36	3	4	2 1/2 x 2 1/2 x 3/8

- NOTES:
- SINGLE 36"Ø DRY BAT GATE MINE SEAL; INCLUDES ONE (1) 36"Ø BAT GATE WITHOUT CONVEYANCE PIPES.



**SINGLE BAT GATE MINE SEAL**

**DETAIL (1) - ENTIRE SHEET**

REVISIONS	
DATE	DESCRIPTION

SCALE: AS SHOWN  
DRAWN BY: CCA  
CHECKED BY: MEP

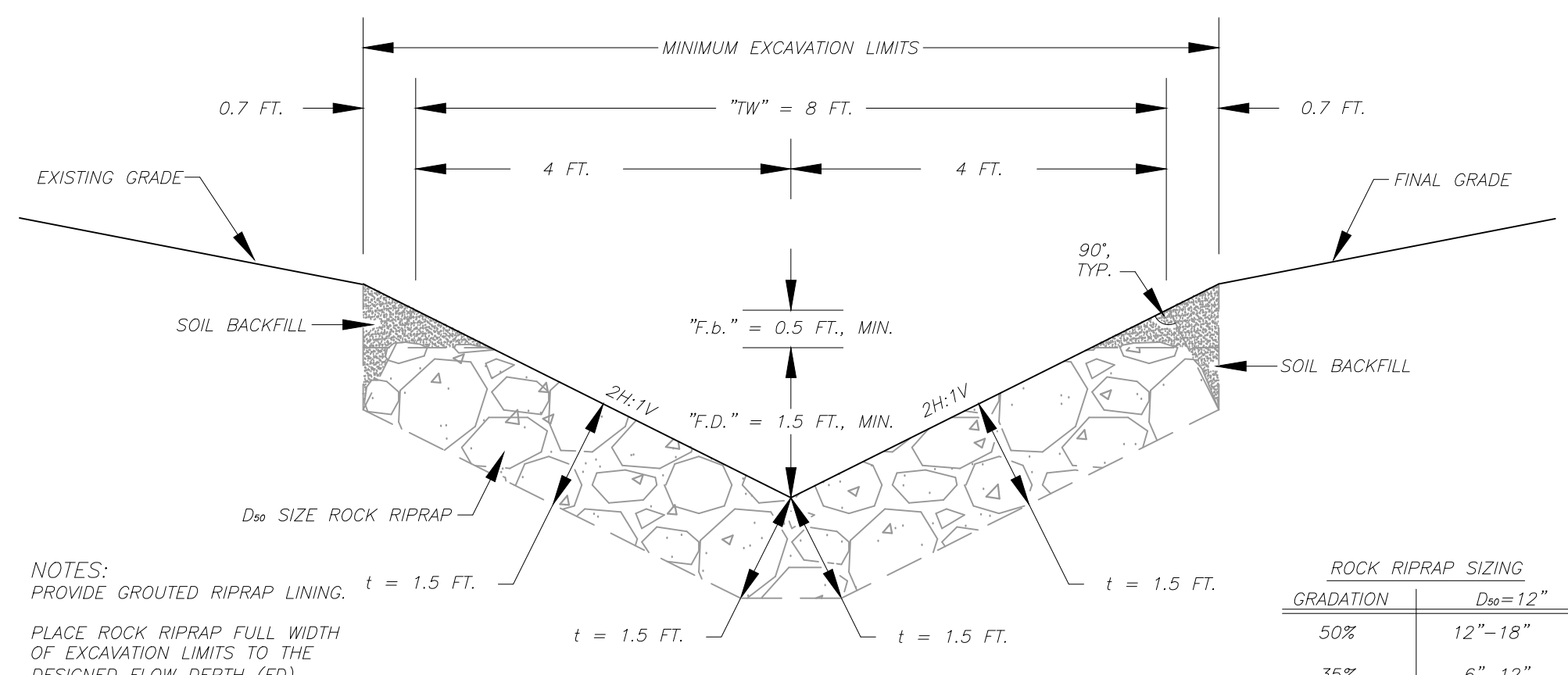
**AML & R**  
WDEP

**SINGLE (DRY) BAT GATE MINE SEAL #4 REFUSE & HIGHWALL**  
GRAFTON COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE: 01/27/14  
PROJECT NO.: 13103  
DRAWING NO.: D-3



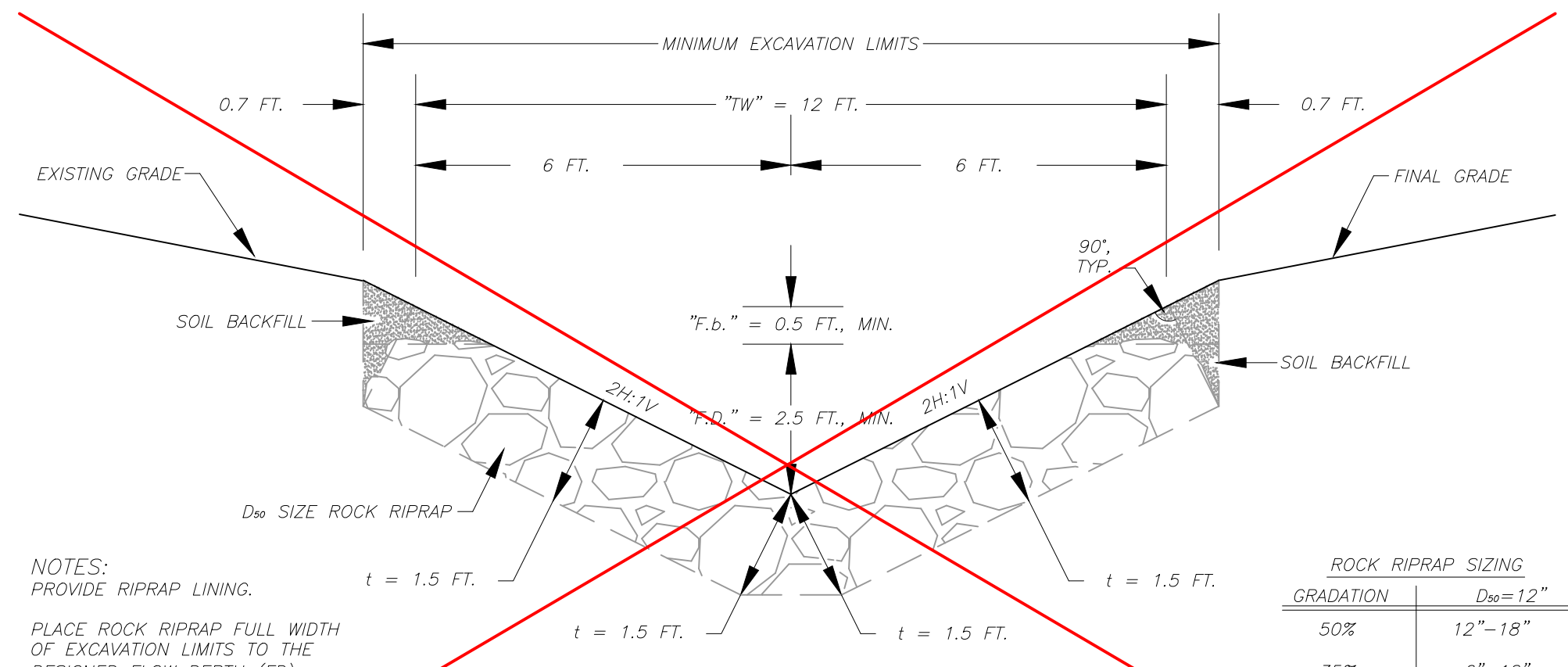


NOTES:  
 PROVIDE GROUTED RIPRAP LINING.  $t = 1.5$  FT.  
 PLACE ROCK RIPRAP FULL WIDTH OF EXCAVATION LIMITS TO THE DESIGNED FLOW DEPTH (FD).  
 $TW$  = TOP WIDTH  
 $Fb$  = FREEBOARD DEPTH  
 $F.D.$  = FLOW DEPTH  
 $t$  = THICKNESS

ROCK RIPRAP SIZING	
GRADATION	$D_{90} = 12"$
50%	12"-18"
35%	6"-12"
15%	3"-6"

**DETAIL (3)**  
**2' DEEP GROUTED RIPRAP 2H:1V "VEE" DRAINAGE CHANNEL**  
 SCALE: NTS

DITCH NO	LF
<del>DC3-2</del>	<del>12</del>
<del>DC3-4</del>	<del>70</del>
<del>DC3-5</del>	<del>60</del>
DC1-1A	219



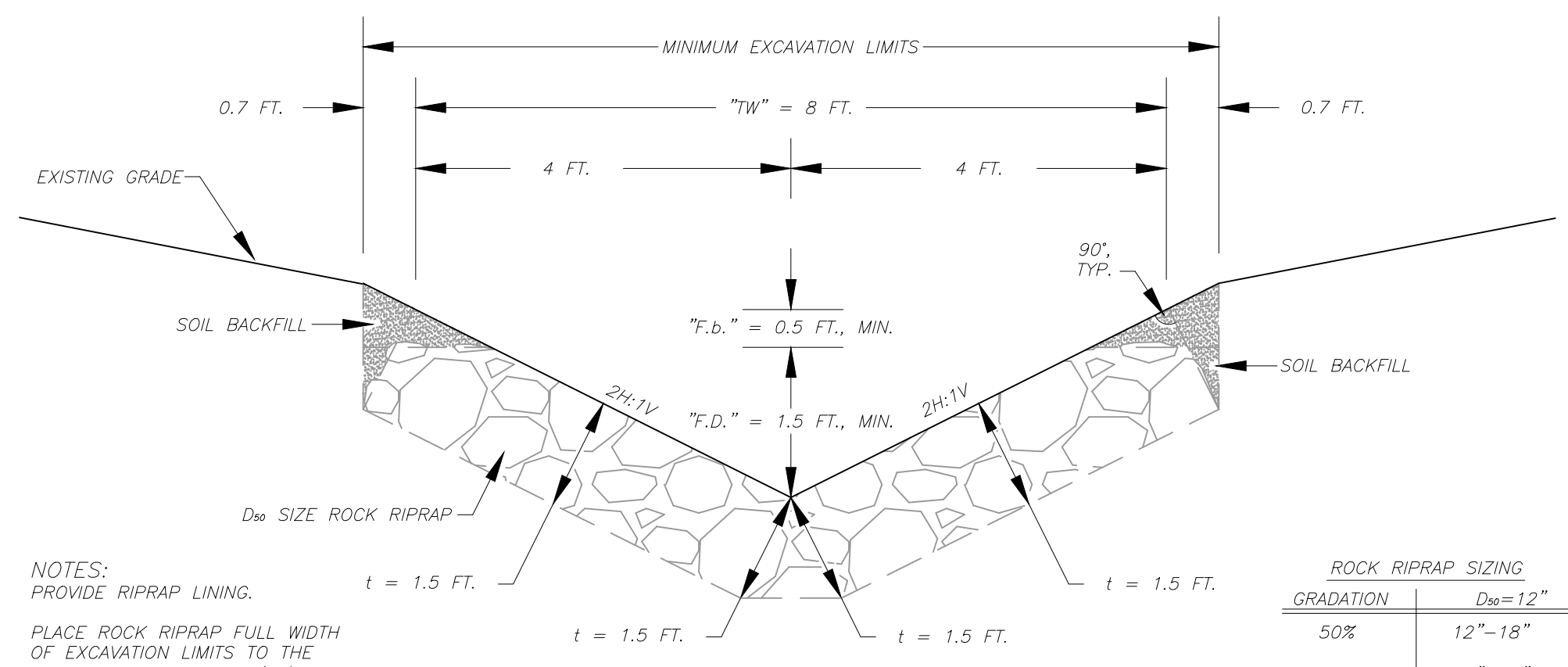
NOTES:  
 PROVIDE RIPRAP LINING.  
 PLACE ROCK RIPRAP FULL WIDTH OF EXCAVATION LIMITS TO THE DESIGNED FLOW DEPTH (FD).  
 $TW$  = TOP WIDTH  
 $Fb$  = FREEBOARD DEPTH  
 $F.D.$  = FLOW DEPTH  
 $t$  = THICKNESS

ROCK RIPRAP SIZING	
GRADATION	$D_{90} = 12"$
50%	12"-18"
35%	6"-12"
15%	3"-6"

**DETAIL (2)**  
**3' DEEP GROUTED RIPRAP 2H:1V "VEE" DRAINAGE CHANNEL**  
 SCALE: NTS

DITCH NO	LF
<del>DC3-3</del>	<del>18</del>

NOTE: DETAIL (2) ELIMINATED DUE TO SITE 3 BEING REMOVED

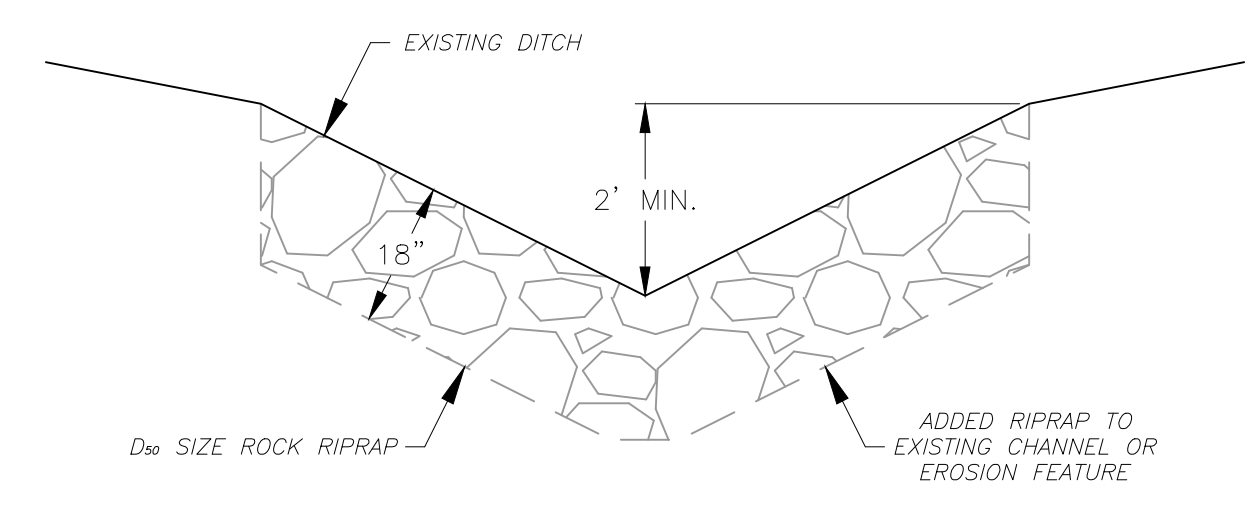


NOTES:  
 PROVIDE RIPRAP LINING.  
 PLACE ROCK RIPRAP FULL WIDTH OF EXCAVATION LIMITS TO THE DESIGNED FLOW DEPTH (FD).  
 $TW$  = TOP WIDTH  
 $Fb$  = FREEBOARD DEPTH  
 $F.D.$  = FLOW DEPTH  
 $t$  = THICKNESS

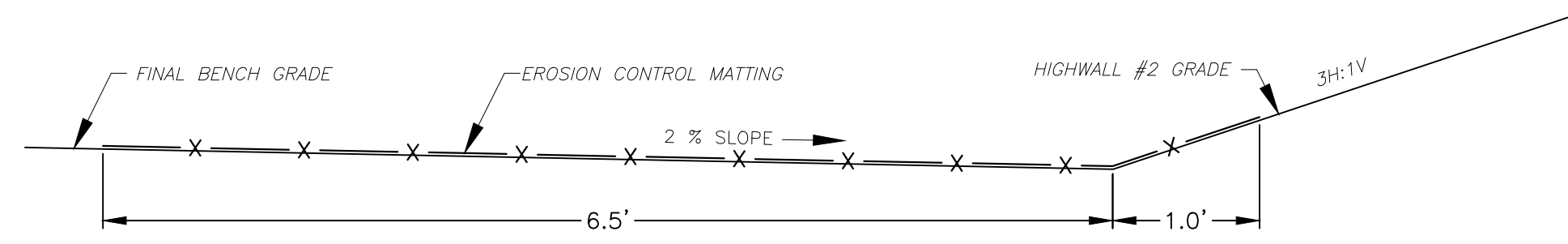
ROCK RIPRAP SIZING	
GRADATION	$D_{90} = 12"$
50%	12"-18"
35%	6"-12"
15%	3"-6"

**DETAIL (1)**  
**2' DEEP RIPRAP 2H:1V "VEE" DRAINAGE CHANNEL**  
 SCALE: NTS

DITCH NO	LF
DC1-6	162
DC1-8	153
DC2-1	118
<del>DC3-1</del>	<del>120</del>

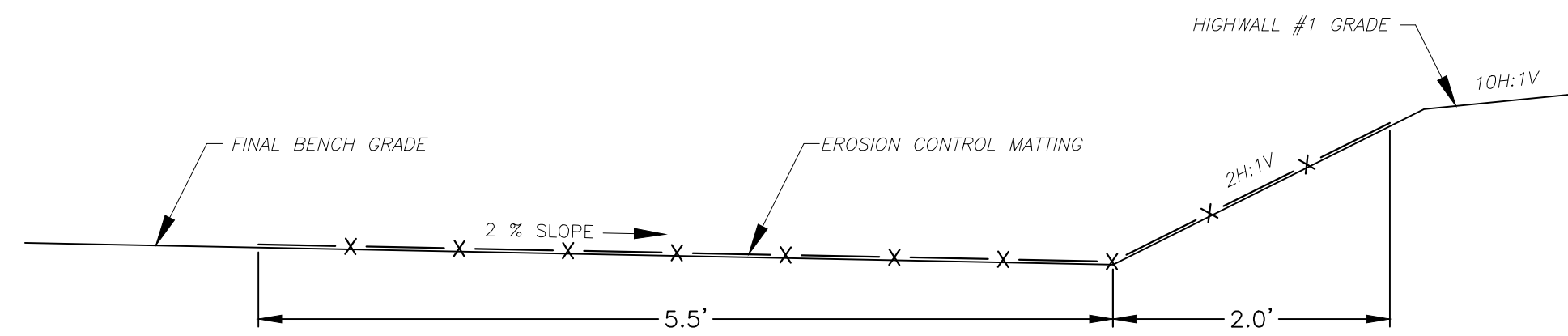


**DETAIL (6)**  
**EXISTING CHANNEL OR EROSION FEATURE ARMORING**  
 SCALE: NTS



**DETAIL (5)**  
**VEGETATED "VEE" DRAINAGE CHANNEL TOE DITCH**  
 SCALE: NTS

DITCH NO	LF
DC1-1	196
DC1-2	201
DC1-3	458
DC1-4	378



**DETAIL (4)**  
**VEGETATED "VEE" DRAINAGE CHANNEL TOE DITCH**  
 SCALE: NTS

DITCH NO	LF
DC1-5	331
DC1-7	355

**REVISIONS**

DATE	BY	DESCRIPTION
DEC 2013	HNC	DETAILS REVISED - SITE 3 ELIMINATED

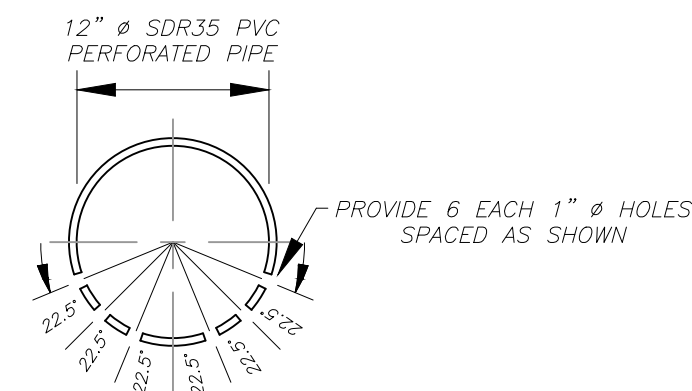
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 DRAWN BY: CCA  
 CHECKED BY: WEP

**AML & R**  
 WDEP

**MISCELLANEOUS DETAILS**  
**GRAFTON #4 REFUSE & HIGHWALL**  
 TAYLOR COUNTY, WEST VIRGINIA

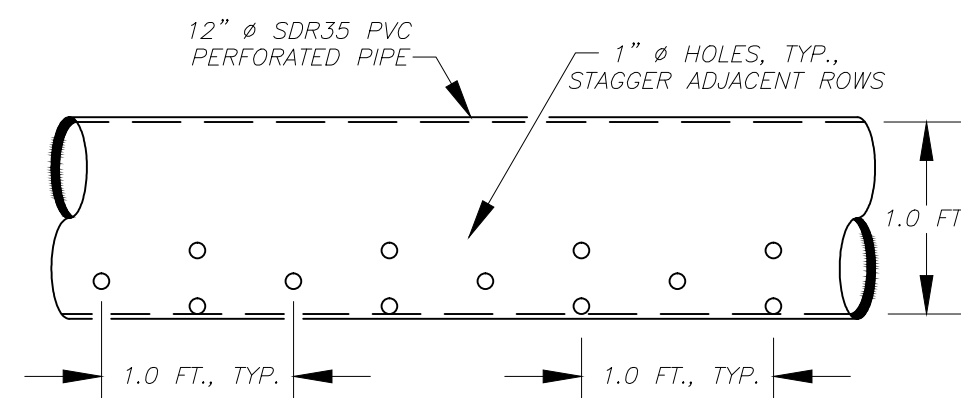
**CIVIL TECH ENGINEERING, INC.**  
 HURRICANE, WEST VIRGINIA

DATE  
 01/27/14  
 PROJECT NO.  
 13103  
 DRAWING NO.  
 D-4



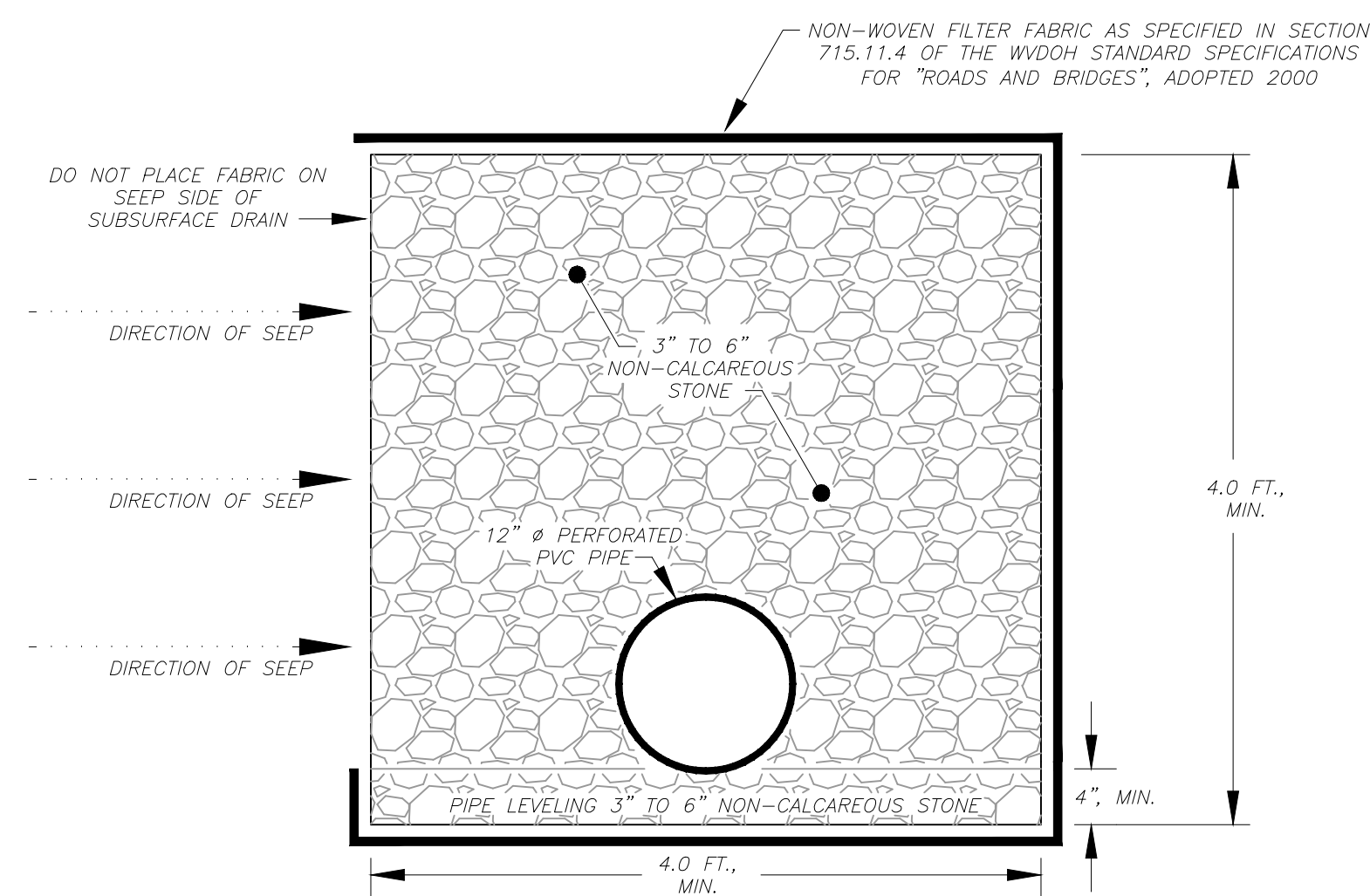
**UNDER-DRAIN PIPE CROSS SECTION, TYP.**

SCALE: NOT TO SCALE



**UNDER-DRAIN PIPE LONGITUDINAL VIEW, TYP.**

SCALE: NOT TO SCALE

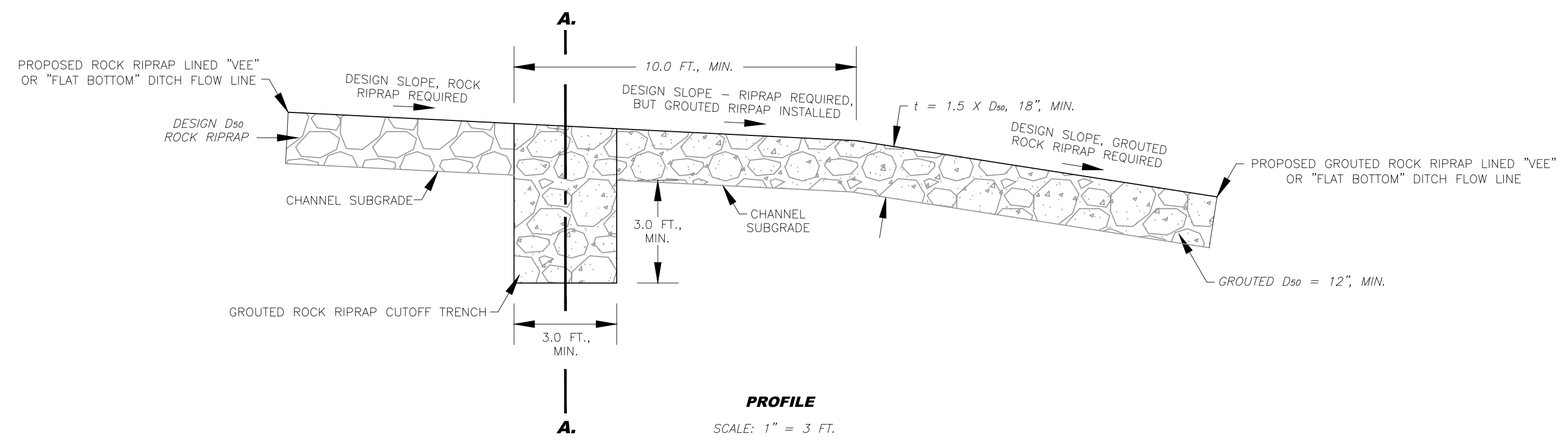


**DETAIL (1)  
UNDER-DRAIN DETAIL**

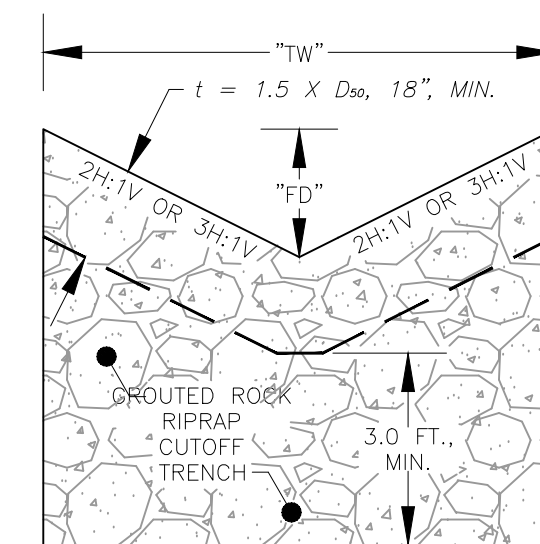
SCALE: NOT TO SCALE

**NOTES:**

1. THE FILTER FABRIC SHALL BE OVERLAPPED 1.0 FOOT, MINIMUM, AT ALL JOINTS.



**PROFILE**  
SCALE: 1" = 3 FT.



**"VEE" DITCH CROSS SECTION A - A**

SCALE: 1" = 3 FT.

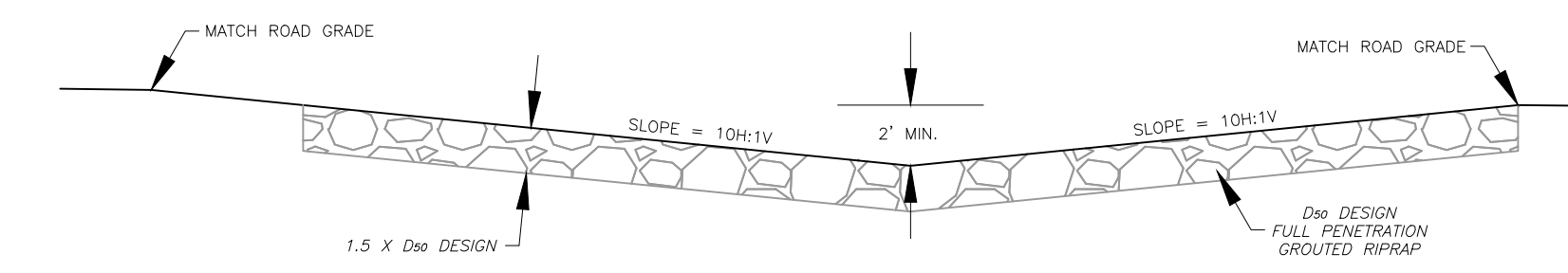
**DETAIL (3)  
GROUT KEY**

SCALE: AS NOTED

GRADATION	D <sub>50</sub> =6"	D <sub>50</sub> =12"	D <sub>50</sub> =18"	D <sub>50</sub> =24"
50%	6" - 9"	12" - 18"	18" - 27"	24" - 36"
35%	3" - 6"	6" - 12"	9" - 18"	12" - 24"
15%	<= 3"	3" - 6"	4.5" - 9"	6" - 12"

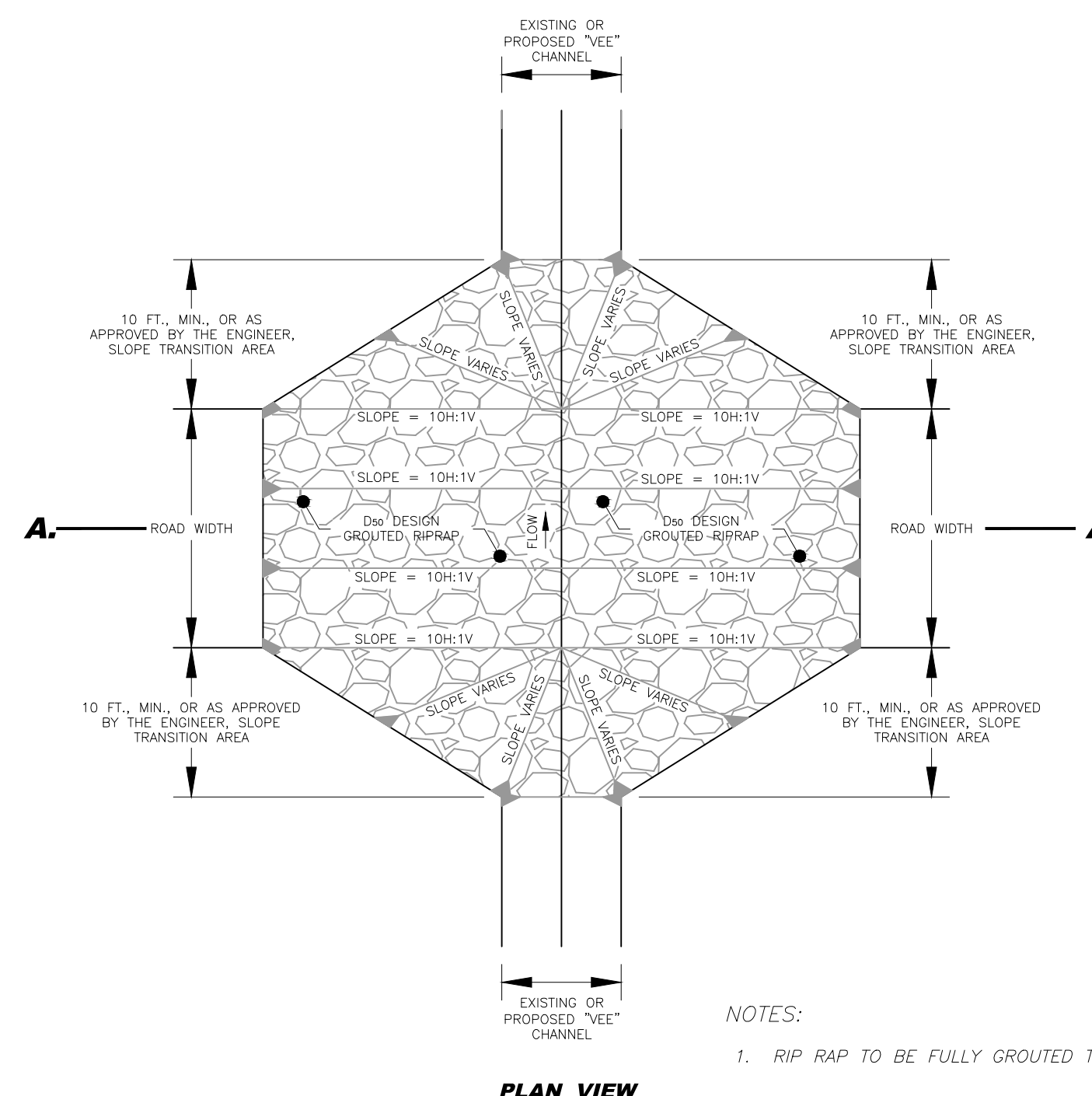
**NOTES:**

1. EXTEND GROUT KEY LATERALLY THE FULL WIDTH OF THE CHANNEL AS SHOWN IN THE CROSS SECTION VIEWS.
2. INSTALL GROUT KEY AT THE JUNCTION OF ROCK RIPRAP CHANNEL WITH GROUTED ROCK RIPRAP CHANNEL AS SHOWN IN THE PROFILE VIEW.
3. AFTER EXCAVATING THE GROUT KEY TO THE DIMENSIONS SHOWN, PLACE GROUT IN THE EXCAVATION TO THE CHANNEL SUB GRADE PRIOR TO PLACING THE RIPRAP.
4. "TW" = TOP WIDTH  
"F.D." = FREEBOARD DEPTH  
"F.D." = FLOW DEPTH  
"t" = THICKNESS



**CROSS SECTION A - A**

SCALE: 1" = 6 FT.



**PLAN VIEW**  
SCALE: 1" = 10 FT.

**NOTES:**

1. RIP RAP TO BE FULLY GROUTED TO SPECIFICATIONS.

**DETAIL (2)  
GROUTED RIPRAP "VEE" CHANNEL ROAD CROSSING**

SCALE: AS NOTED

GRADATION	D <sub>50</sub> =6"	D <sub>50</sub> =12"	D <sub>50</sub> =18"	D <sub>50</sub> =24"
50%	6" - 9"	12" - 18"	18" - 27"	24" - 36"
35%	3" - 6"	6" - 12"	9" - 18"	12" - 24"
15%	<= 3"	3" - 6"	4.5" - 9"	6" - 12"

**REVISIONS**

DATE	BY	DESCRIPTION

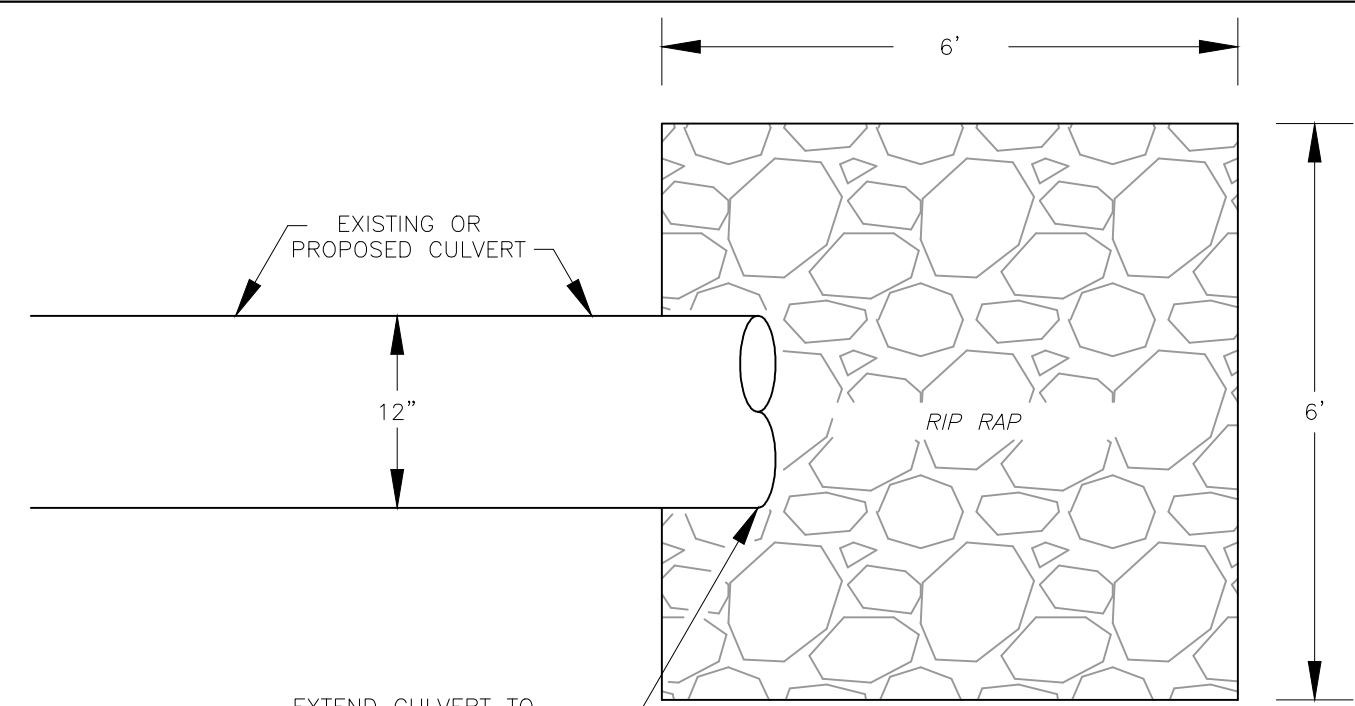
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CHECKED BY: MEF

AML & R  
WDEP

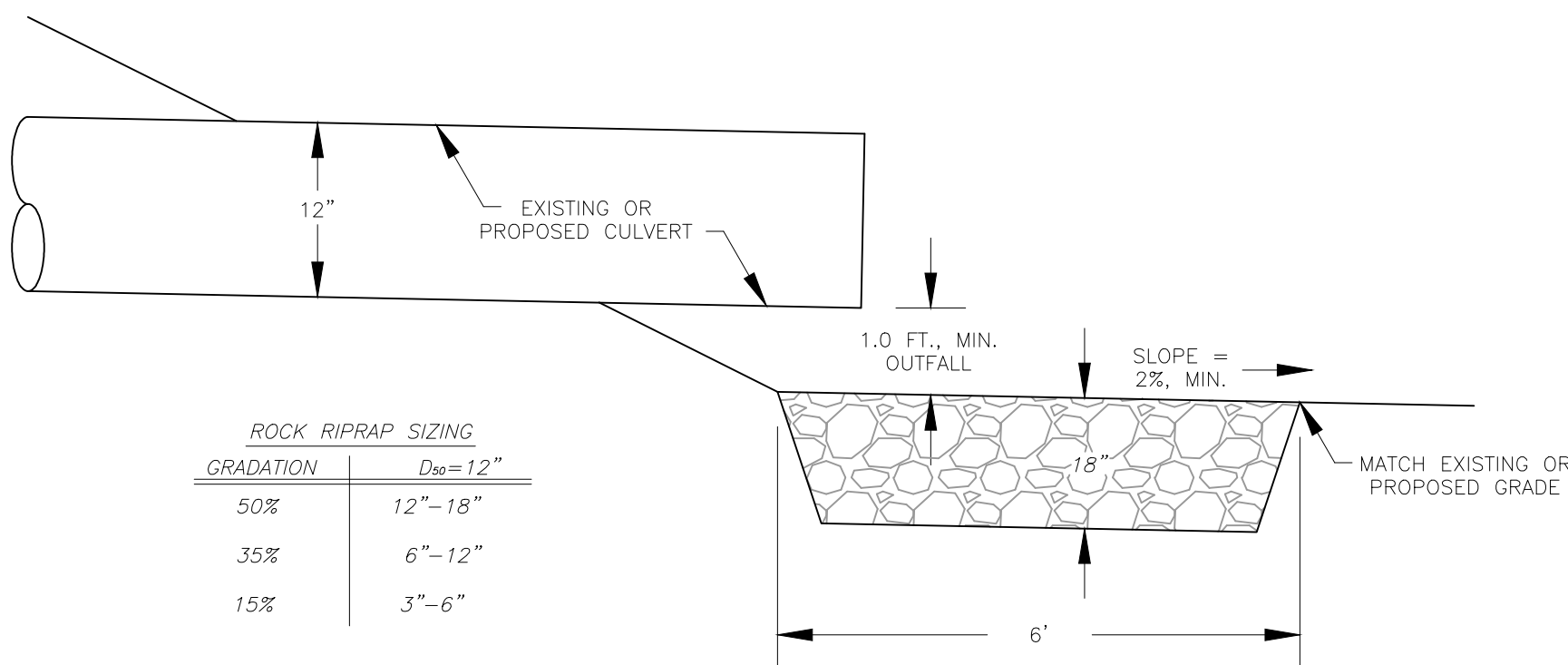
MISCELLANEOUS DETAILS  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

CIVIL TECH ENGINEERING, INC.  
HURRICANE, WEST VIRGINIA

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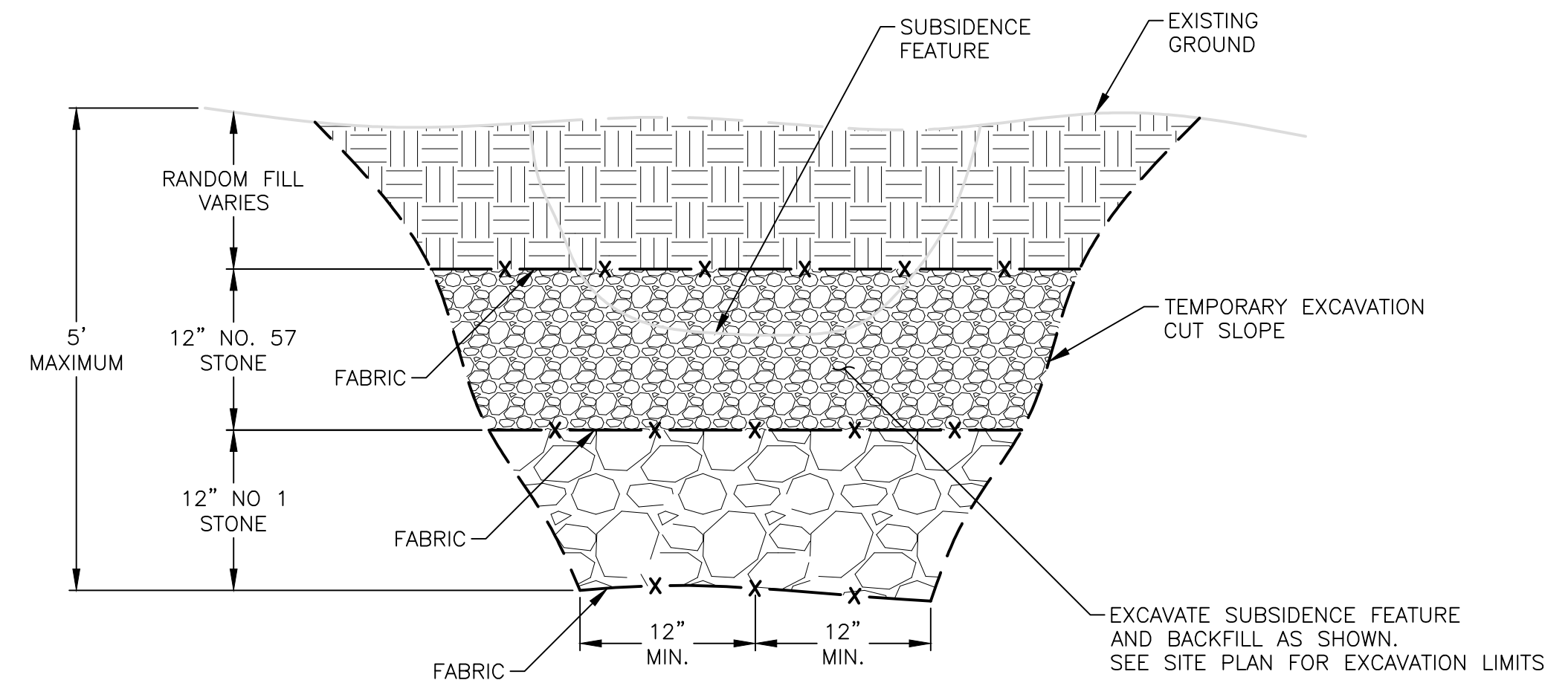


PLAN VIEW



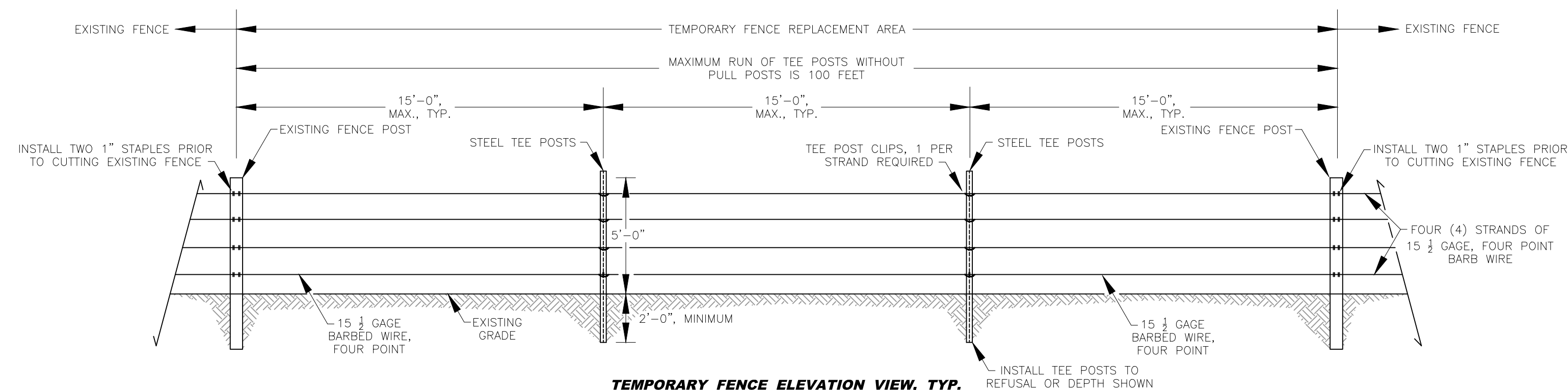
PROFILE

DETAIL (2)  
SPLASH PAD DETAILS



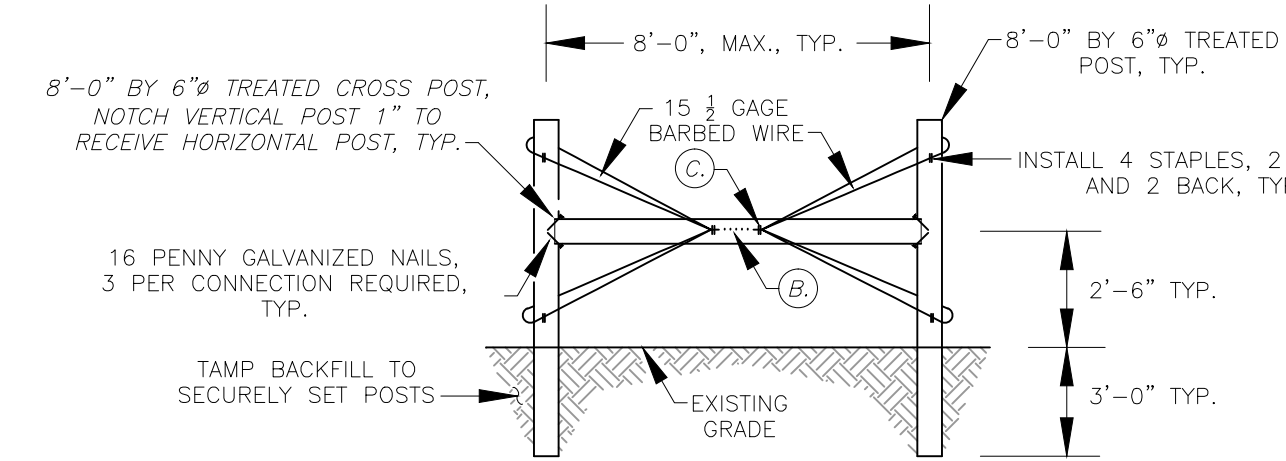
DETAIL (4)  
SUBSIDENCE FEATURE REPAIR DETAIL

SCALE: NTS



TEMPORARY FENCE ELEVATION VIEW, TYP.

SCALE: 1" = 4 FEET



CORNER AND PULL POST ELEVATION VIEW, TYP.

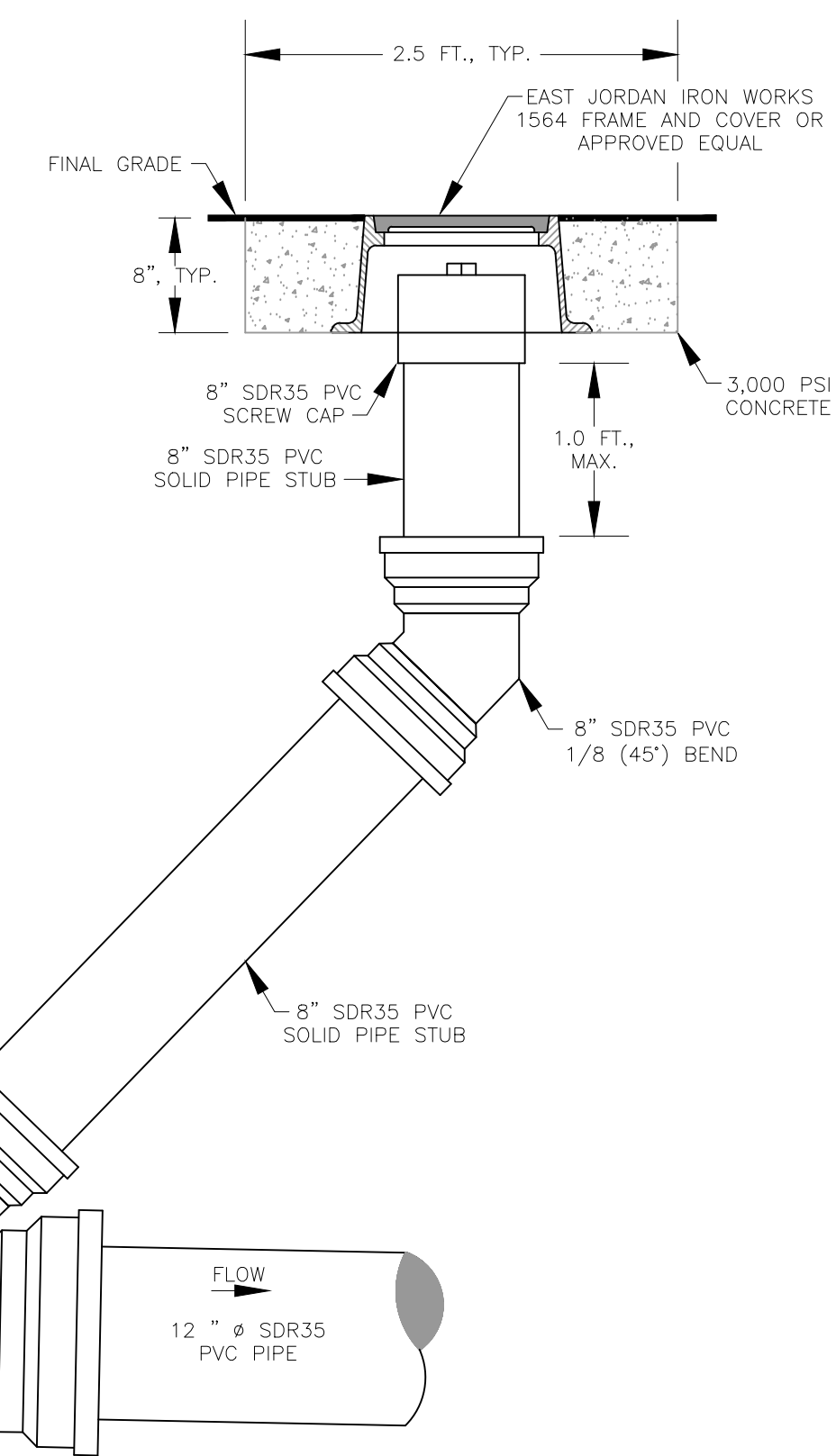
SCALE: 1" = 4 FEET

NOTES:

1. THE MAXIMUM RUN OF STEEL "TEE" POSTS SHALL BE 100 FEET. PULL POSTS AS DETAILED SHALL BE INSTALLED IN THE TEMPORARY FENCE AT 100 FOOT INTERVALS AND HIGH OR LOW POINTS AS DESIGNATED BY THE ENGINEER. CORNER POSTS SHALL BE INSTALLED AT ANGLE POINTS AS DESIGNATED BY THE ENGINEER.
2. TEMPORARY ELECTRIC FENCE INSTALLATIONS REQUIRE FIBERGLASS (ELECTRIC) POSTS SPACED TWENTY FEET (20') ON CENTERS, SET FIVE FEET (5') ABOVE THE GROUND AND TWO FEET (2') INTO THE GROUND, WITH SIX (6) STRANDS OF POLY-WIRE (CONDUCTOR WIRE WOVEN WITH FIBERGLASS WIRE).

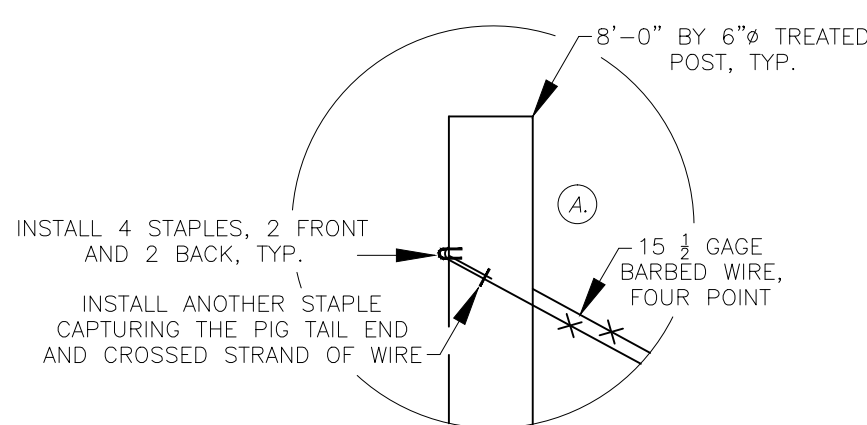
DETAIL (1)  
TEMPORARY FENCE

SCALE: AS NOTED



DETAIL (3)  
INLINE CLEAN-OUT 8"

SCALE: 1" = 1 FT.



DETAIL "A"

NO SCALE

- A. WRAP FENCE AROUND EACH PULL POST EXTENDING FROM 6" TO 8" FROM THE TOP AND 6" TO 8" FROM THE GROUND FORMING A LOOP OF WIRE AROUND BOTH POSTS. OVERLAP ENDS OF LOOPED WIRE 4" MINIMUM IN EACH DIRECTION. OVERLAP SHOULD BE PLACED ON OUTSIDE OF INSTALLED PULL POST INSTALLATION AND ATTACHED TO THE PULL POST BY TWO 1 1/2" NUMBER 9 STAPLES. PLACE THE STAPLES AT THE INTERSECTION OF THE OVERLAP FENCE STRANDS CAPTURING BOTH STRANDS. BEND THE PIG TAIL OF FENCE BACK ALONG THE ALIGNMENT OF THE FENCE AND INSTALL ANOTHER STAPLE CAPTURING BOTH STRANDS. REPEAT FOR OTHER OVERLAPPED STRAND. CONTINUE THE PROCESS ON THE OPPOSITE POST FORMING AN "X" CONFIGURATION AS SHOWN.
- B. PLACE A STEEL BAR AT THE "X" INTERSECTION ADJACENT TO THE HORIZONTAL SUPPORT POST. TWIST THE FENCE STRANDS TOGETHER TO BRING THE PULL POSTS INTO TENSION.
- C. INSTALL TWO 1" STAPLES INTO THE HORIZONTAL SUPPORT POST AT THE END OF THE TWISTED STRANDS AS SHOWN, FOUR STAPLES ARE REQUIRED PER INSTALLATION.
- D. REMOVAL AND REPLACEMENT OF THE EXISTING FENCE TO BE DONE IN AS GOOD OR BETTER CONDITION AS THE EXISTING FENCE.

REVISIONS

DATE BY DESCRIPTION

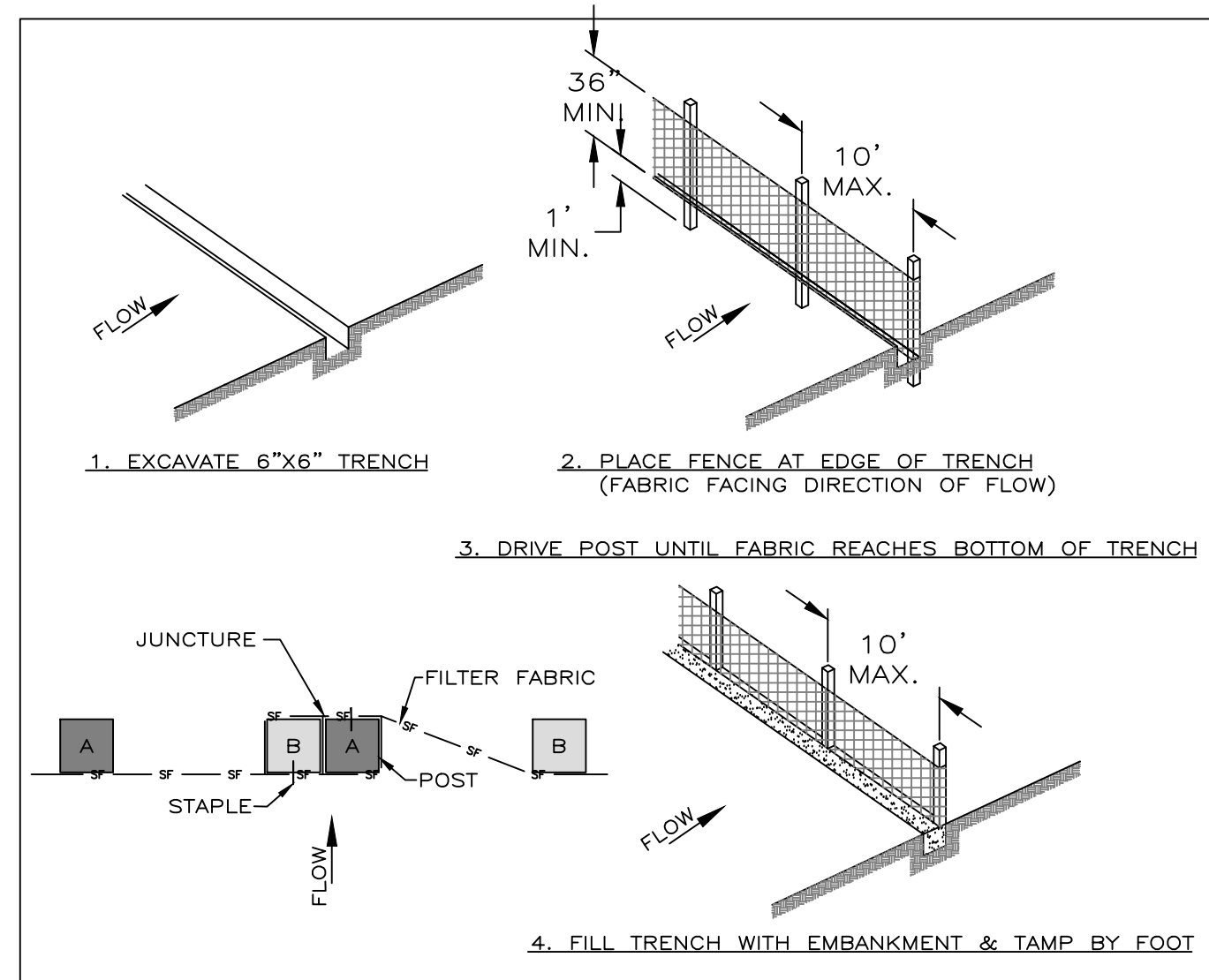
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DRAWN BY: CCA  
CHECKED BY: MEP

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WDEP

MISCELLANEOUS DETAILS  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

CIVIL TECH ENGINEERING, INC.  
HURRICANE, WEST VIRGINIA

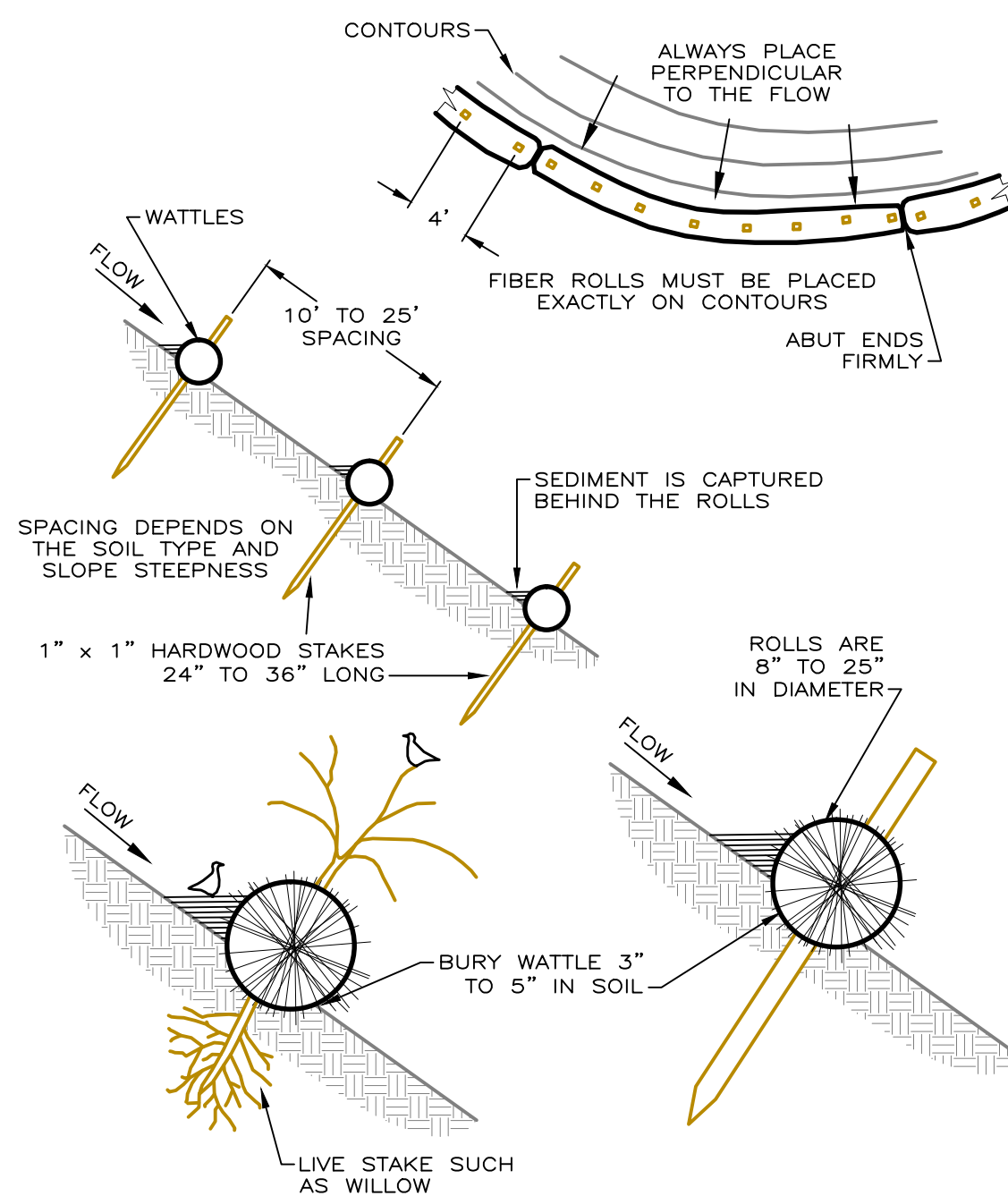
DATE  
01/27/14  
PROJECT NO.  
13103  
DRAWING NO.  
D-6



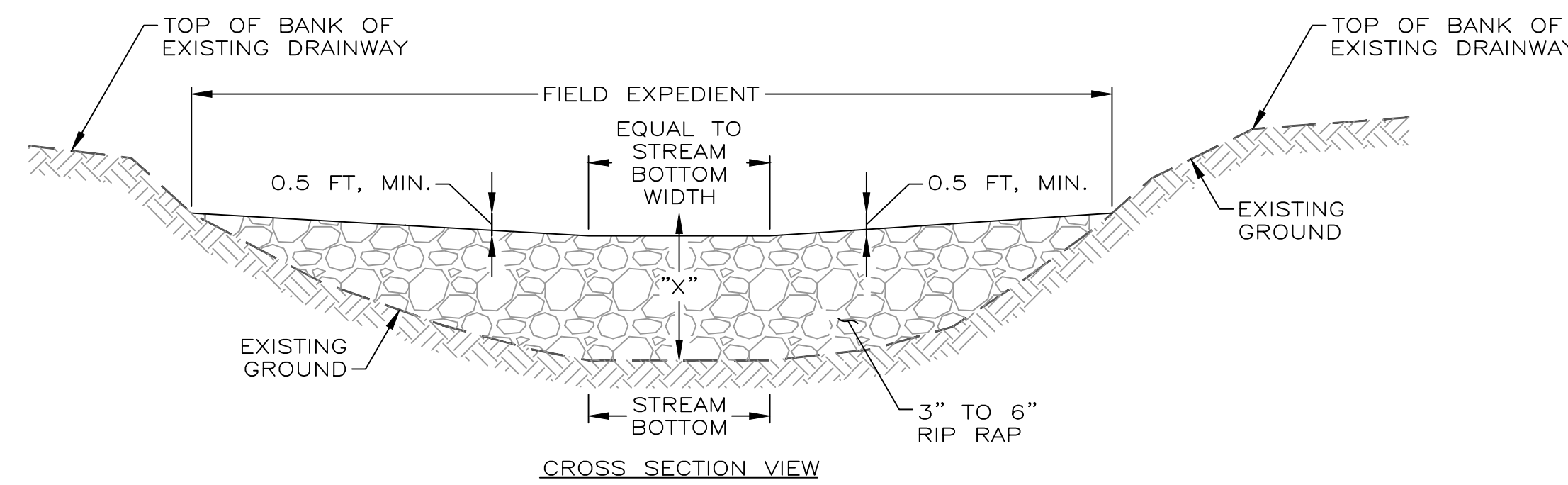
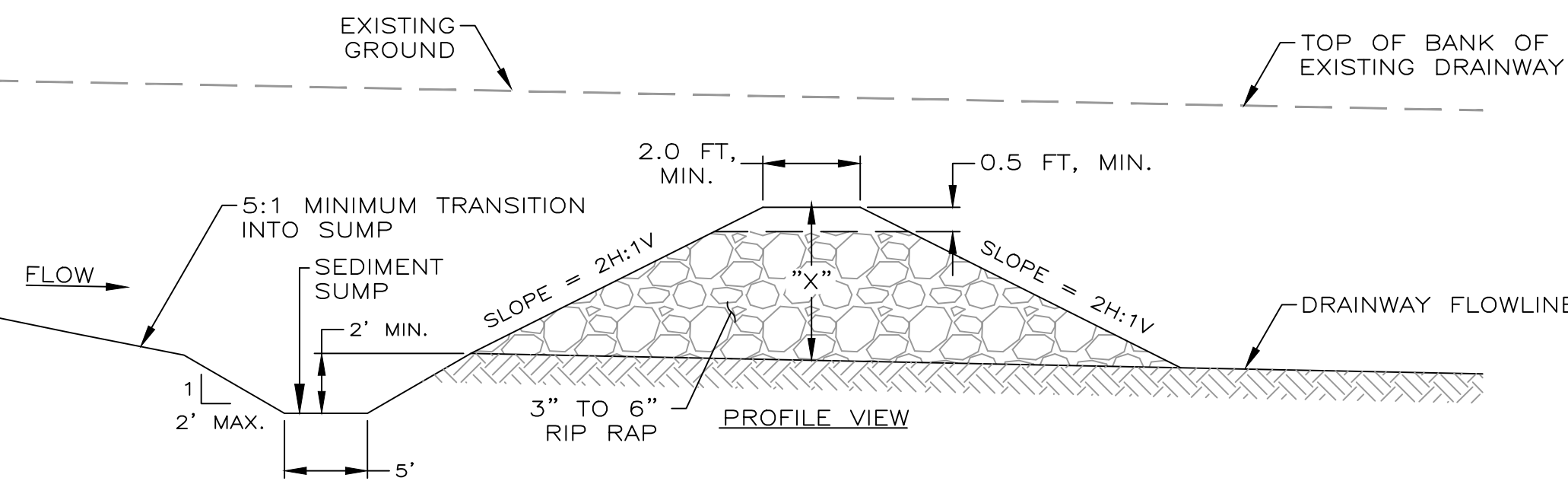
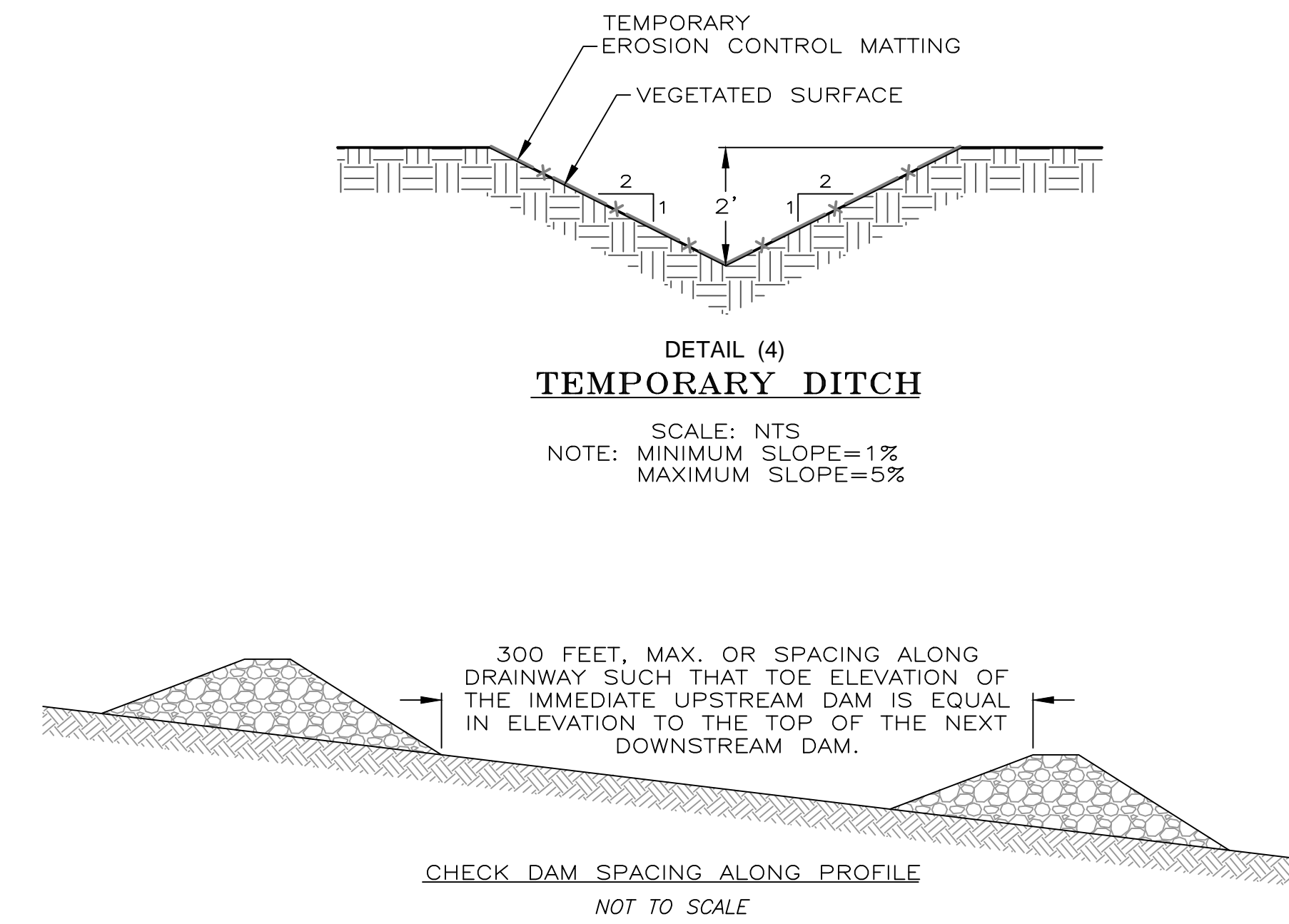
**DETAIL (2)**  
**SILT FENCE INSTALLATION & DETAILS**

SCALE: NTS

- NOTES:
- 1) WHEN MORE THAN ONE ROLL OF SILT FENCE IS USED, THE JUNCTURE MUST BE PLACED SO THAT THE LAST POST OF THE FIRST RUN & THE FIRST POST OF THE SECOND RUN OVERLAP & ARE TIED TOGETHER.
  - 2) INSTALL SILT FENCE PARALLEL WITH GROUND CONTOUR.
  - 3) LIMIT DRAINAGE TO 0.25 AC/100 FT. OF SILT FENCE.
  - 4) DO NOT INSTALL SILT FENCE WHERE CONCENTRATED FLOW IS ANTICIPATED.



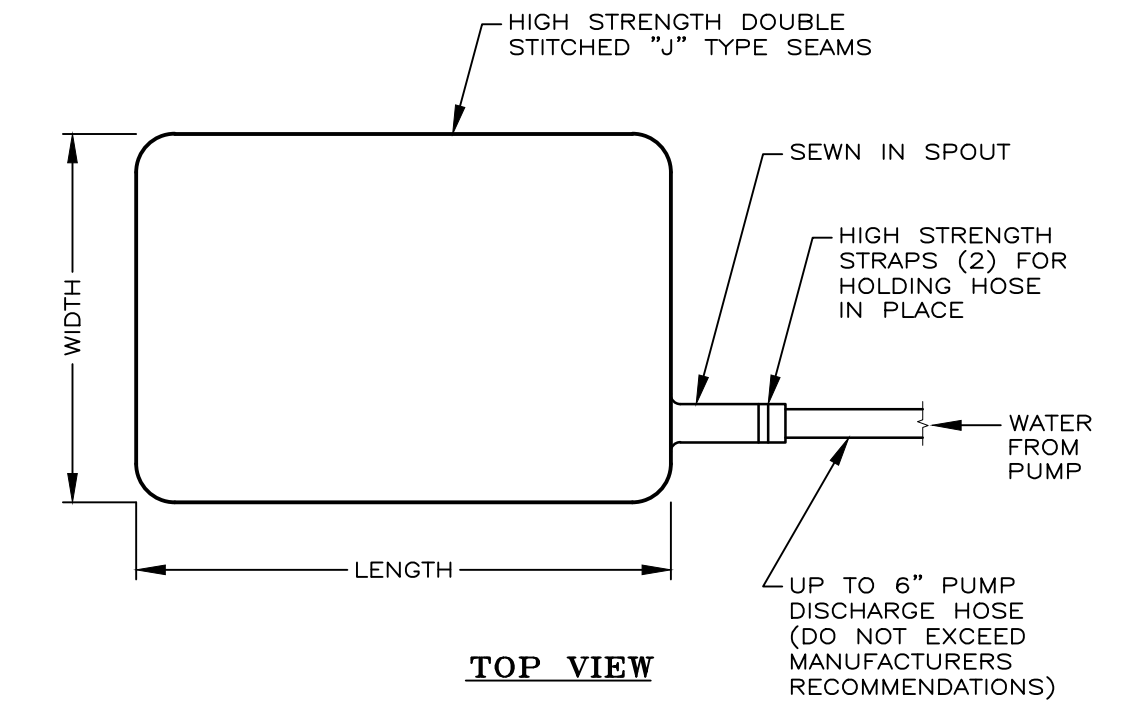
**DETAIL (1)**  
**WATTLES**  
SCALE: NOT TO SCALE



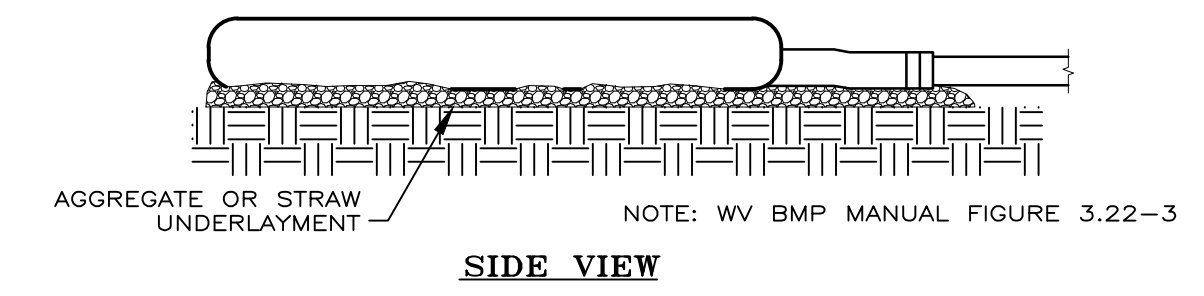
**DETAIL (3)**  
**ROCK CHECK DAM WITH SUMP**  
SCALE: 1" = 3 FEET

- NOTES:
1. "X" DIMENSION AS DETAILED BY THE SPECIFICATIONS, FOR SEDIMENT CONTROL THE MAXIMUM HEIGHT OF THE ROCK CHECK DAM IS 3 FEET. HOWEVER, ROCK CHECK DAMS CAN BE CONSTRUCTED IN SMALLER DITCHES. THE CENTER OF THE ROCK CHECK DAM SHALL BE 0'-6" LOWER THAN THE OUTER EDGES AS SHOWN.
  2. ROCK CHECK DAMS ARE NORMALLY INSTALLED IN EXISTING DRAINS AND THE TOP CROSS SECTION OF THE DAM SHOULD HAVE A LEVEL CENTER SECTION THE SAME WIDTH AS THE EXISTING CHANNEL BOTTOM AND 0'-6" LOWER THAN THE OUTER EDGES OF THE DAM. ROCK CHECK DAMS PLACED IN PROJECT CONSTRUCTED FLAT-BOTTOM DITCHES SHALL HAVE SIMILAR DIMENSIONS.
  3. THE CENTER OF ROCK CHECK DAMS CONSTRUCTED IN PROJECT CONSTRUCTED "VEE" SHAPED OR EXISTING "VEE" SHAPED DITCHES SHALL BE 0'-6" LOWER THAN AND SLOPED TO THE OUTER TOP EDGES OF THE DITCH SO HIGH FLOWS GO OVER THE TOP OF THE DAM AND NOT AROUND THE EDGES.
  4. ROCK CHECK DAMS SHALL BE REMOVED AFTER THE FIRST GROWING SEASON.

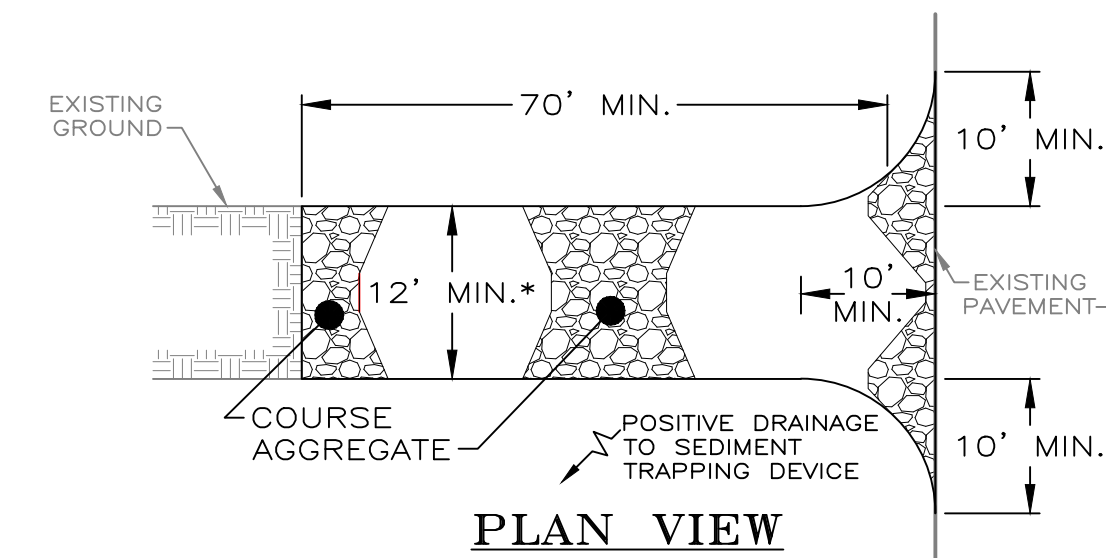
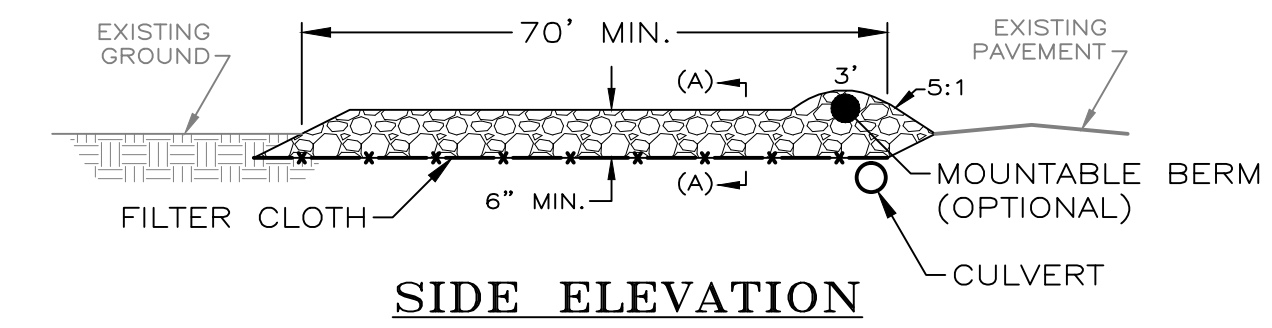
**TEMPORARY EROSION & SEDIMENT CONTROL DETAILS**  
SCALE: NTS



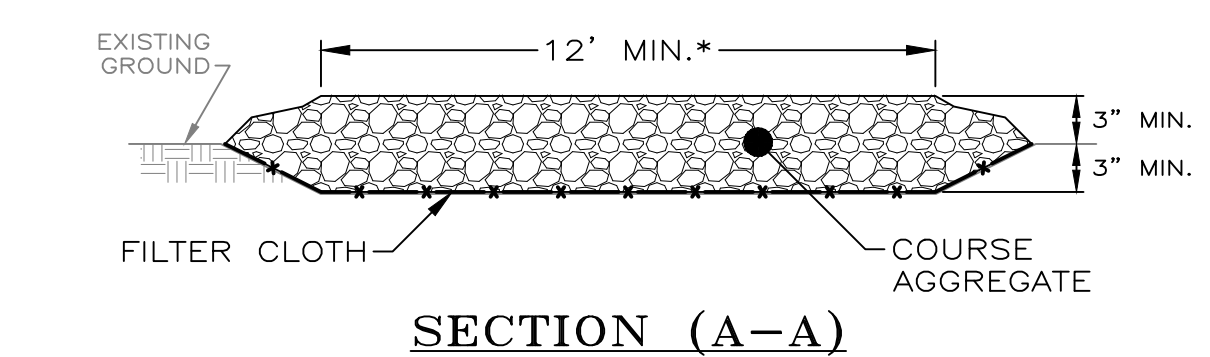
BAG SIZE: Pump discharge (g.p.m.) x 16 = cubic feet of storage required.



**DETAIL (6)**  
**DEWATERING BAG**  
SCALE: NTS



\* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION



**DETAIL (5)**  
**STABILIZED CONSTRUCTION ENTRANCE (SCE)**  
SCALE: NOT TO SCALE

REVISIONS	
DATE	DESCRIPTION

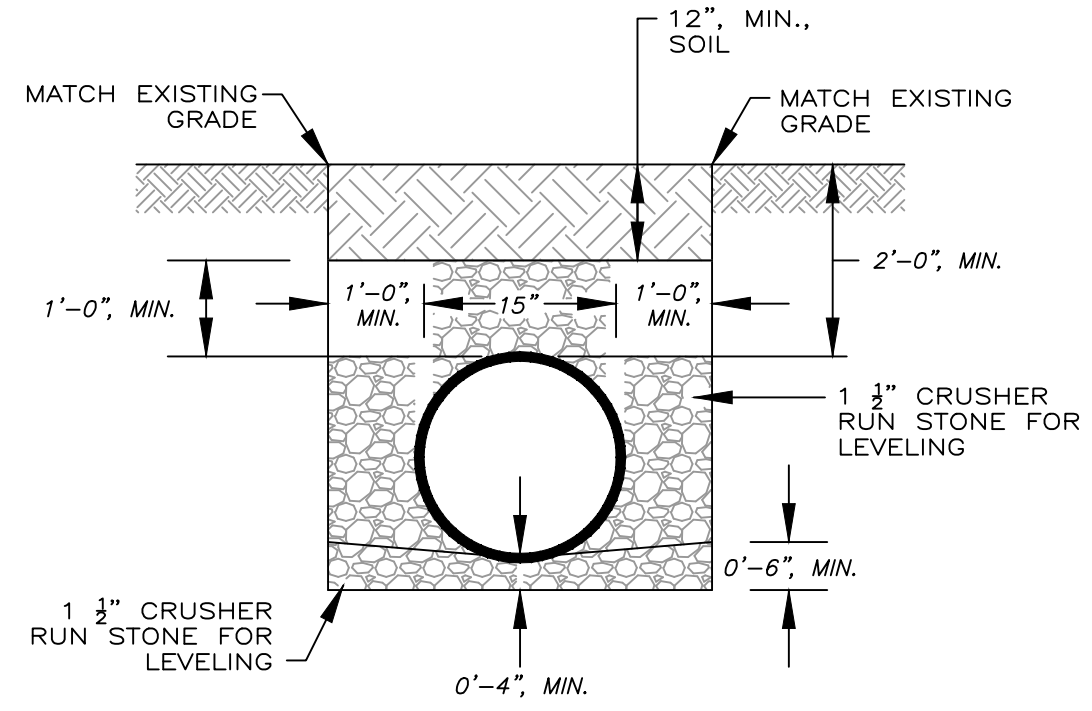
SCALE: AS SHOWN  
DRAWN BY: CCA  
CHECKED BY: MEP

AML & R  
WDEP

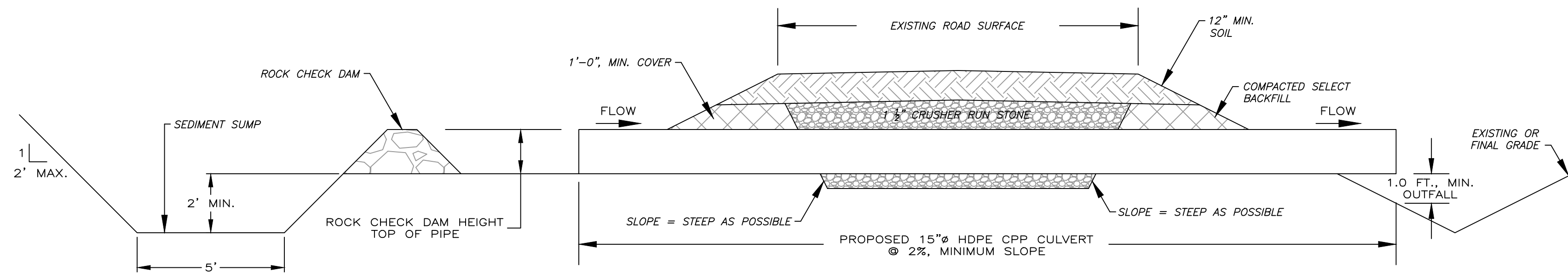
TEMPORARY EROSION & SEDIMENT CONTROL DETAILS  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE  
01/27/14  
PROJECT NO.  
13103  
DRAWING NO.  
E-1

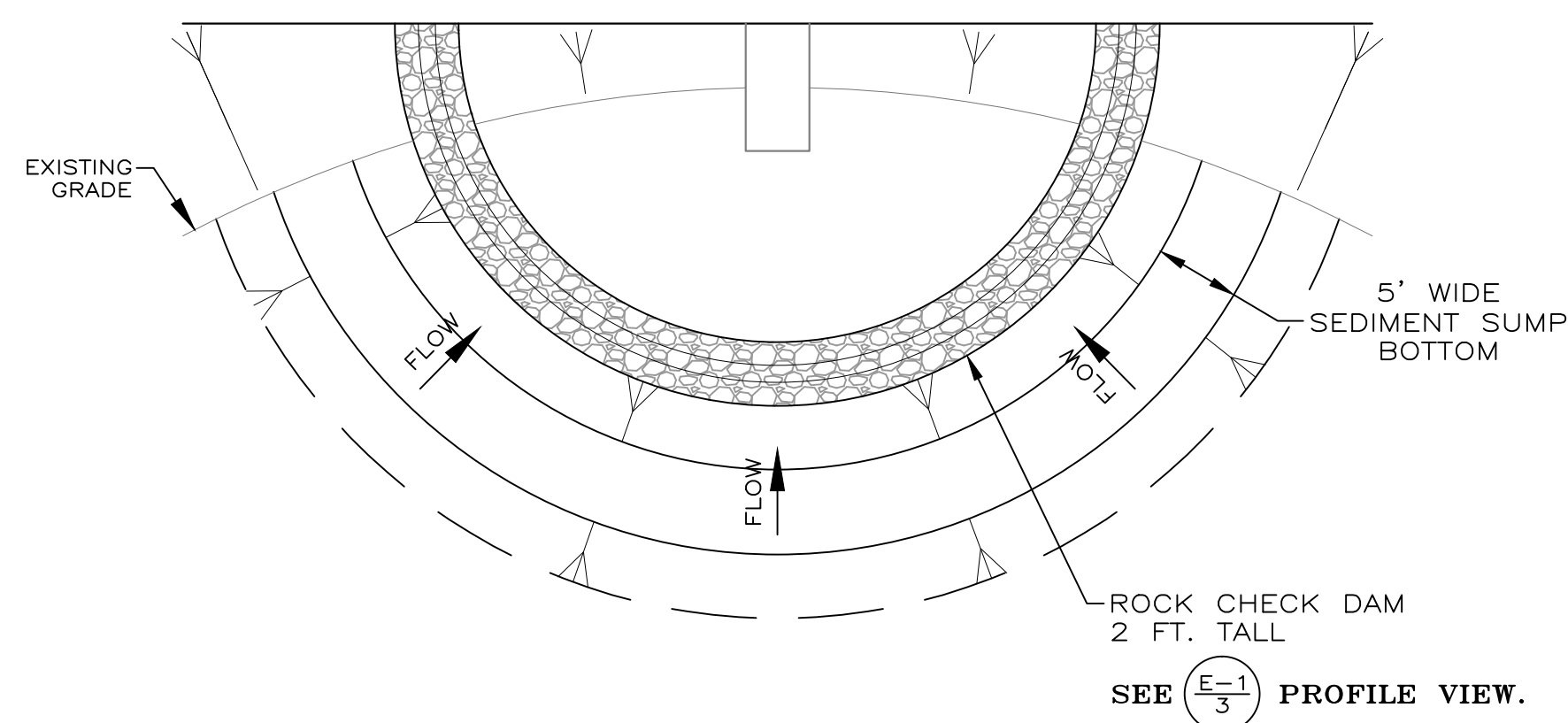
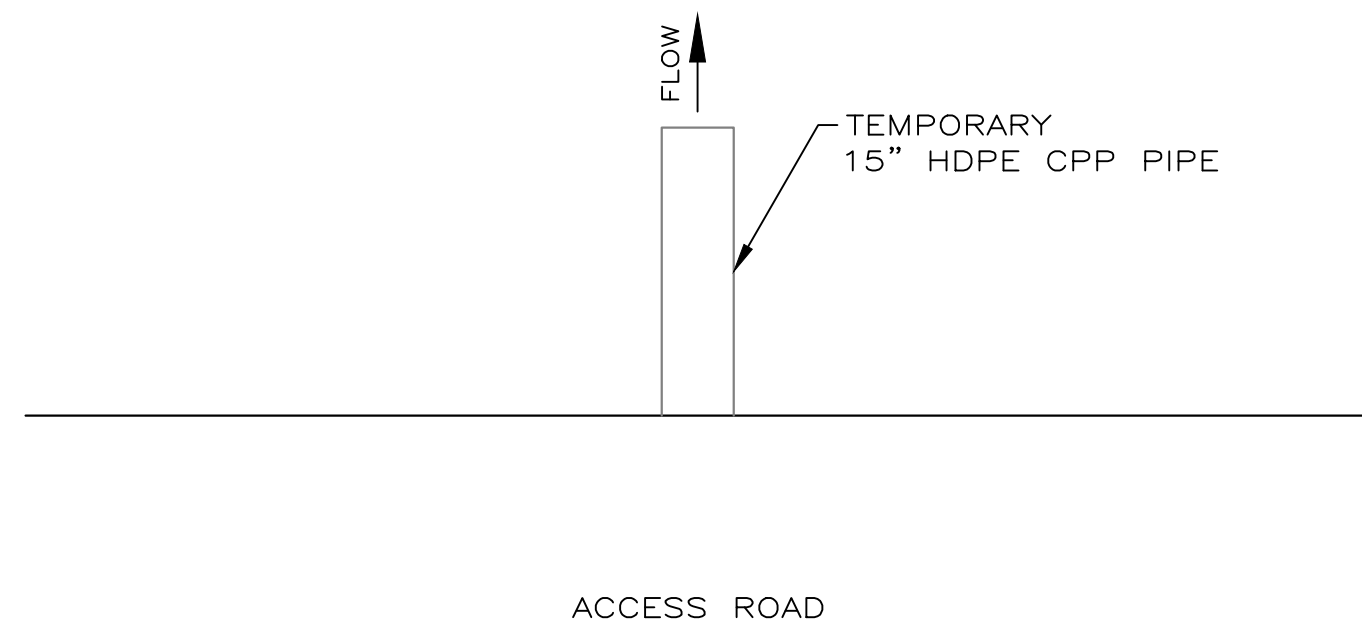


DETAIL (1) - CONTINUED  
TEMPORARY CULVERT TRENCH



DETAIL (1) - CONTINUED  
TEMPORARY CULVERT PROFILE  
SCALE: NTS

NOTES:  
1. 1 1/2" CRUSHER RUN STONE SHALL MEET THE GRADATION REQUIREMENTS FOR CLASS 1 AGGREGATE IN TABLE 704.6.2A OF THE WVDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.



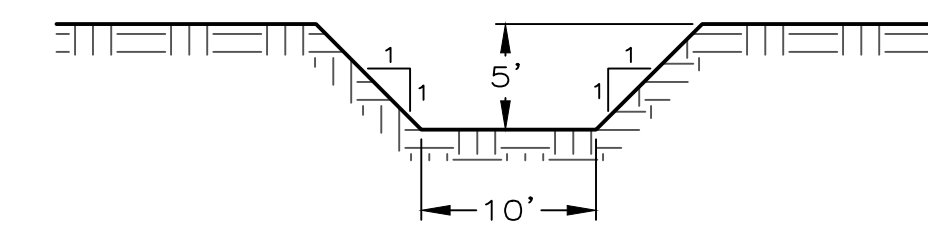
DETAIL (1)  
TEMPORARY PIPE INLET CHECK DAM WITH SEDIMENT SUMP  
SCALE: NOT TO SCALE

NOTES:  
1. PROVIDE ROCK INLET CHECK DAM & SEDIMENT SUMP WHERE SHOWN ON PLANS.

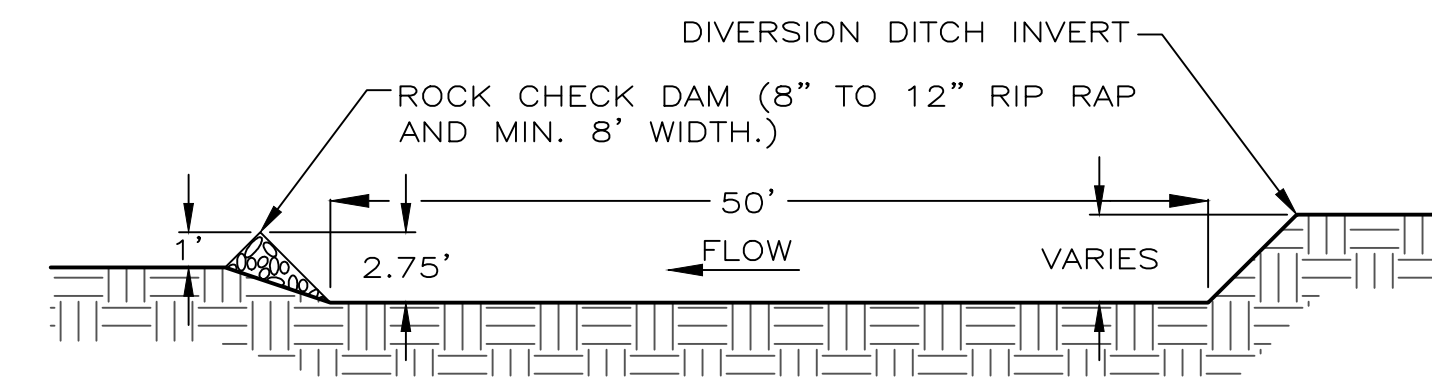
**TEMPORARY EROSION & SEDIMENT CONTROL DETAILS**  
SCALE: NTS

**MAINTENANCE AND SEEDING NOTES**

- At a minimum, inspections of all erosion and sediment controls will be conducted every 7 days and within 24 hours of a rain event of 0.5 inches or greater rainfall in 24 hours.
- Except as noted below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have been temporarily or permanently ceased, but in no case more than seven days after the construction activity in that portion of the site has permanently ceased.
- Where the initiation of stabilization measures by the seventh day after construction activity temporarily or permanently ceases is precluded by snow cover, stabilization measures shall be initiated as soon as conditions allow.
- Where construction activity will resume on a portion of the site within 14 days from when activities ceased, (e.g., the total time period that construction activity is temporarily halted is less than 14 days) then stabilization measures do not have to be initiated on that portion of the site by the seventh day after construction activities have temporarily ceased.
- Areas where the seed has failed to germinate adequately (uniform perennial vegetative cover with a density of 70%) within 30 days after seeding and mulching must be reseeded immediately, or as soon as weather conditions allow.



TYPICAL SEDIMENT TRAP - SECTION  
SCALE: NTS



TYPICAL SEDIMENT TRAP - PROFILE  
SCALE: NTS

NOTE: THE SEDIMENT TRAP WILL BE CONSTRUCTED AS SHOWN AND MAINTAINED TO PROVIDE 1/3 OF THE VOLUME IN DRY STORAGE & 2/3 OF THE VOLUME IN WET STORAGE.

DETAIL (2)  
SCALE: NOT TO SCALE

REVISIONS	
DESCRIPTION	DATE

SCALE: AS SHOWN  
DRAWN BY: CCA  
CHECKED BY: MEP

AML & R  
WDEP

TEMPORARY EROSION &  
SEDIMENT CONTROL DETAILS  
GRAFTON #4 REFUSE & HIGHWALL  
TAYLOR COUNTY, WEST VIRGINIA

**CIVIL TECH ENGINEERING, INC.**  
HURRICANE, WEST VIRGINIA

DATE	01/27/14
PROJECT NO.	13103
DRAWING NO.	E-2