

west virginia department of environmental protection

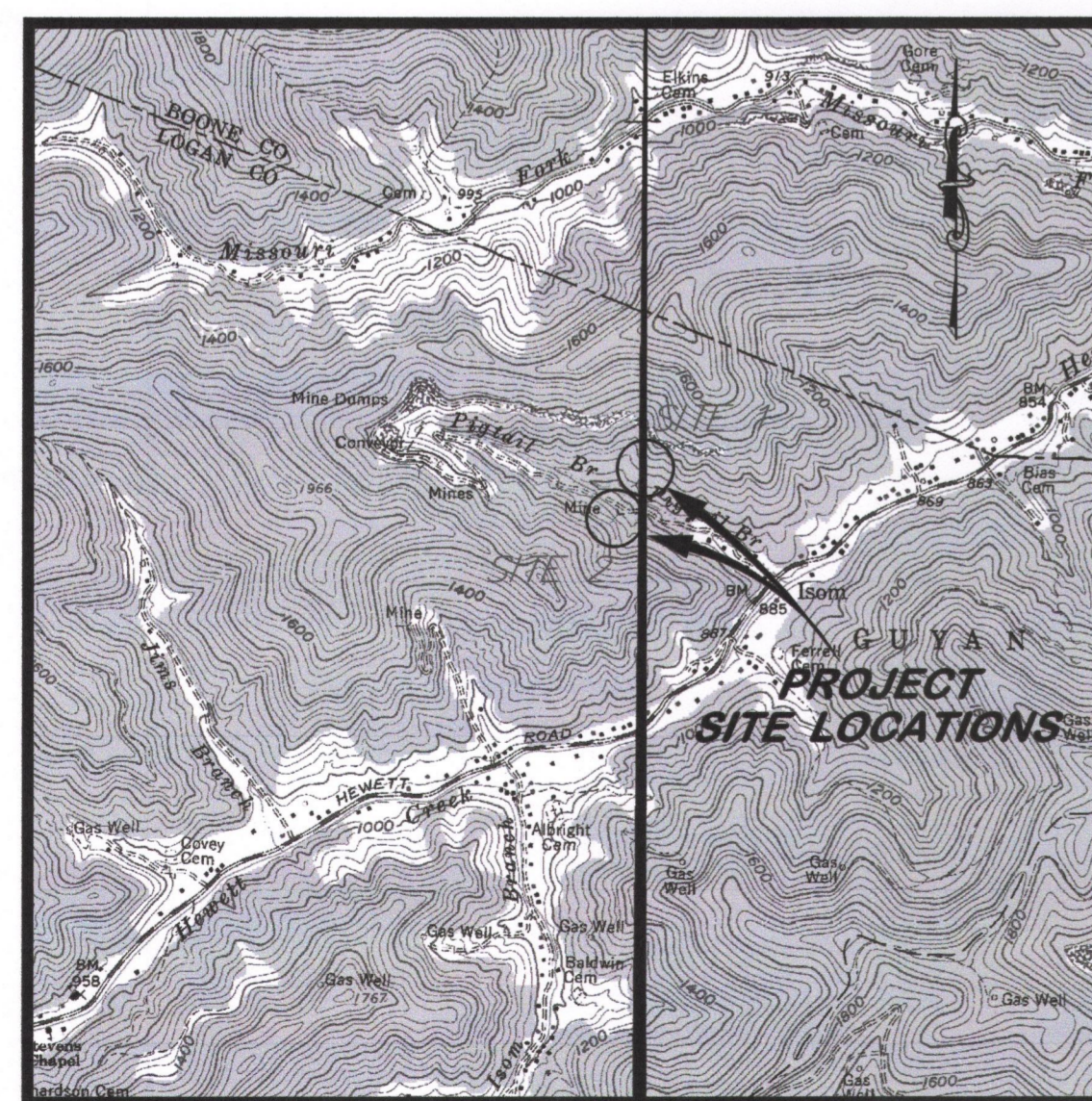
EARL RAY TOMBLIN, GOVERNOR **RANDY C. HUFFMAN, CABINET SECRETARY**

OFFICE OF ABANDONED MINE LANDS AND RECLAMATION

PIGTAIL BRANCH PORTALS

NEAR ISOM
LOGAN COUNTY, WEST VIRGINIA

VICINITY MAP



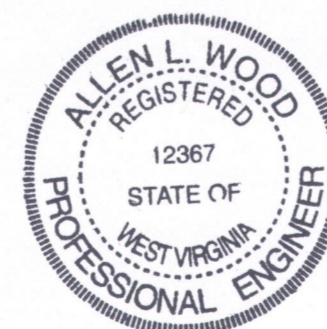
USGS 7.5' QUAD (HENLAWSON and CLOTHIER)

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
2	EXISTING CONDITIONS AND TAX MAP OVERLAY
3	RECLAMATION PLAN AND SEDIMENT CONTROL PLAN
4	PROFILE AND CROSS SECTIONS CHANNEL "A" AND BASELINE 1 REGRADE
5	SEDIMENT CONTROL TYPICAL DETAILS
6	TYPICAL DETAILS
7	TYPICAL DETAILS (2)
8	TYPICAL DETAILS (3)
9	PORTAL CROSS SECTIONS

BID SCHEDULE

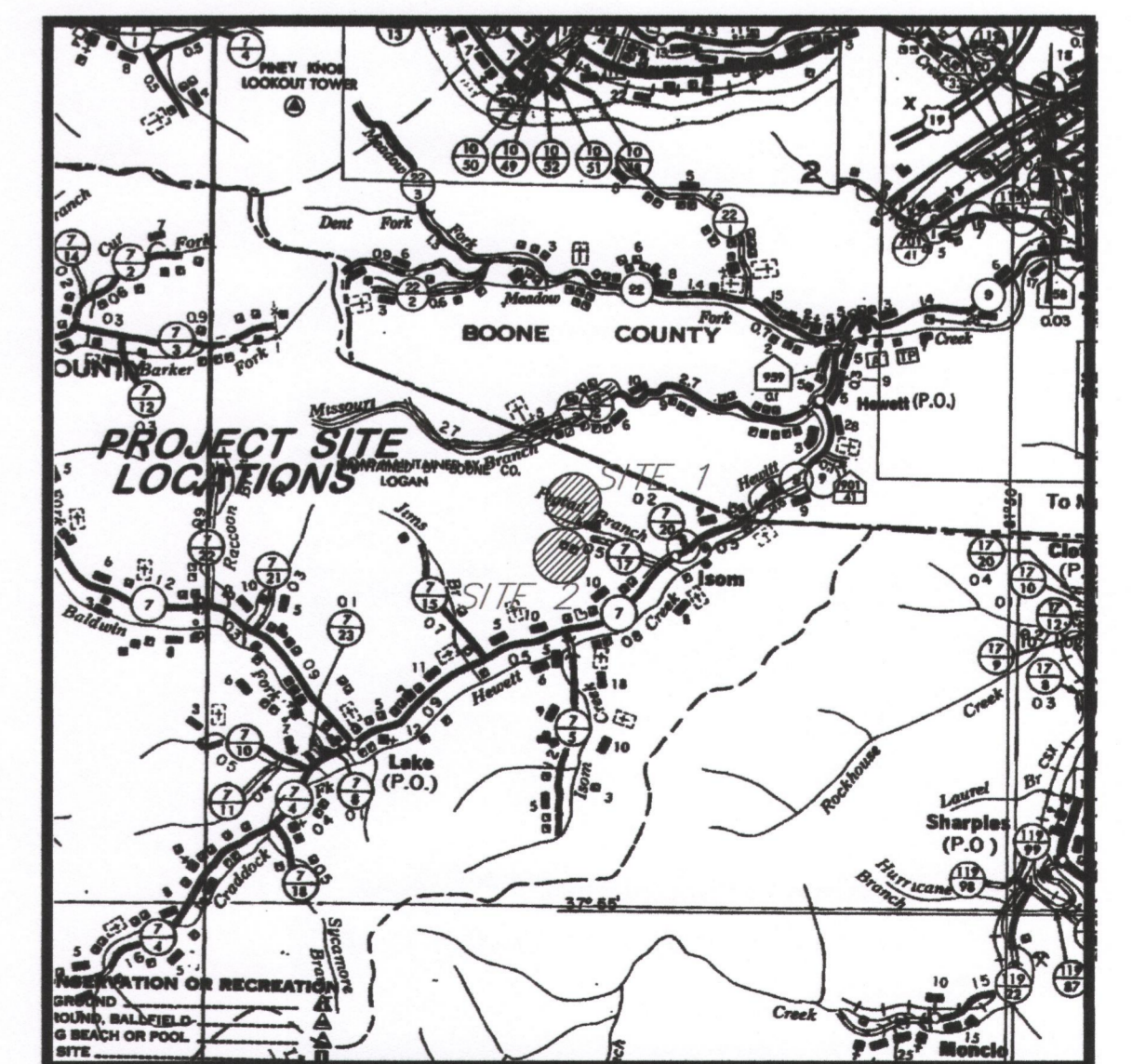
ITEM NO.	Qty	Unit	DESCRIPTION
1.0	1	LS	Mobilization and Demobilization (Limited to 10% of Total Bid)
2.0	1	LS	Construction Layout (Limited to 5% of Total Bid)
3.0	1	LS	Quality Control (Limited to 3% of Total Bid)
4.1	1	LS	Site Preparation (Limited to 10% of Total Bid)
4.2	400	TN	Access Road Stone
5.1	300	LF	Silt Fence Sediment Control
5.2	25	TN	Stabilized Construction Entrance (1 @ 70 LF x 12' Width)
5.3	10	EA	Rock Check Dam
6.0	1	LS	Revegetation
7.1	450	LF	10' Rock Riprap Vee Channel
7.2	90	LF	6' Grouted Riprap Flat Bottom Channel
7.3	1	EA	Riprap "Vee" Channel Road Crossing
7.4	200	LF	4' x 4' Underdrain
7.5	200	LF	Underdrain Conveyance Pipe
9.1	8	EA	Wet/Modified Mine Seal
9.2	275	LF	Mine Seal Conveyance Pipe
9.3	50	EA	Soda Ash Briquettes (50 LB Bag)



Allen L. Wood
APPROVED

8/5/15
DATE

LOCATION MAP

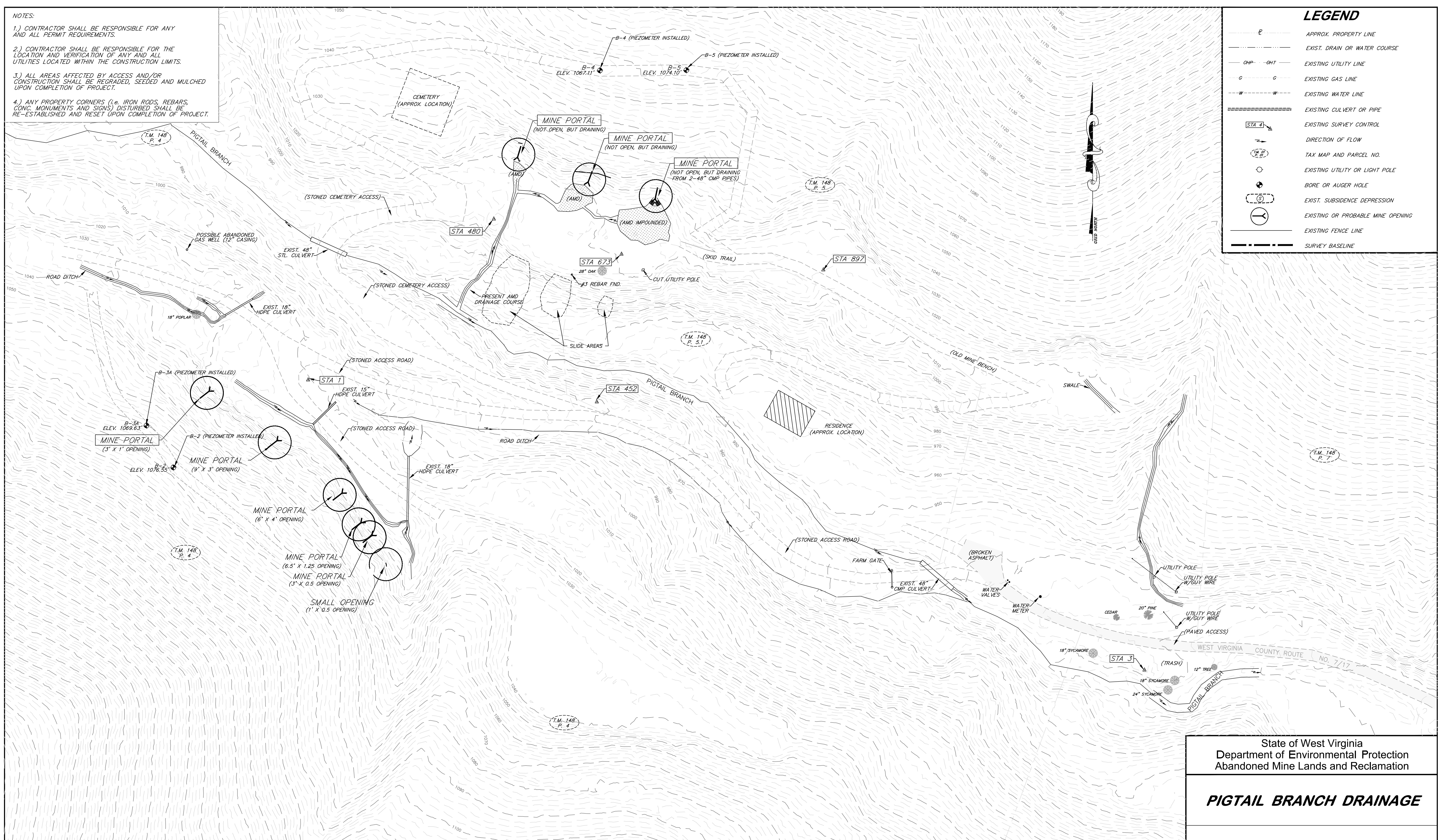


COUNTY HIGHWAY MAP, 1" = 1 MI.

NOTES:
 1.) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PERMIT REQUIREMENTS.
 2.) CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND VERIFICATION OF ANY AND ALL UTILITIES LOCATED WITHIN THE CONSTRUCTION LIMITS.
 3.) ALL AREAS AFFECTED BY ACCESS AND/OR CONSTRUCTION SHALL BE REGRADED, SEEDED AND MULCHED UPON COMPLETION OF PROJECT.
 4.) ANY PROPERTY CORNERS (i.e. IRON RODS, REBARS, CONC. MONUMENTS AND SIGNS) DISTURBED SHALL BE RE-ESTABLISHED AND RESET UPON COMPLETION OF PROJECT.

LEGEND

- APPROX. PROPERTY LINE
- EXIST. DRAIN OR WATER COURSE
- EXISTING UTILITY LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING CULVERT OR PIPE
- EXISTING SURVEY CONTROL
- DIRECTION OF FLOW
- TAX MAP AND PARCEL NO.
- EXISTING UTILITY OR LIGHT POLE
- BORE OR AUGER HOLE
- EXIST. SUBSIDENCE DEPRESSION
- EXISTING OR PROBABLE MINE OPENING
- EXISTING FENCE LINE
- SURVEY BASELINE



SURVEY CONTROL

NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	345913.4063	1716051.7130	1010.9500	MAG NAIL
452	345892.5291	1716325.8250	981.9100	MAG NAIL
480	346066.2322	1716228.0777	1009.3300	MAG NAIL
549	345637.8222	1716845.8810	933.0200	MAG NAIL
673	346032.8205	1716349.2921	1010.3300	MAG NAIL
897	346016.7293	1716541.9101	1013.8900	MAG NAIL

WSPCS NAD 83 BY GPS OBSERVATION OCTOBER 2014

State of West Virginia
 Department of Environmental Protection
 Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

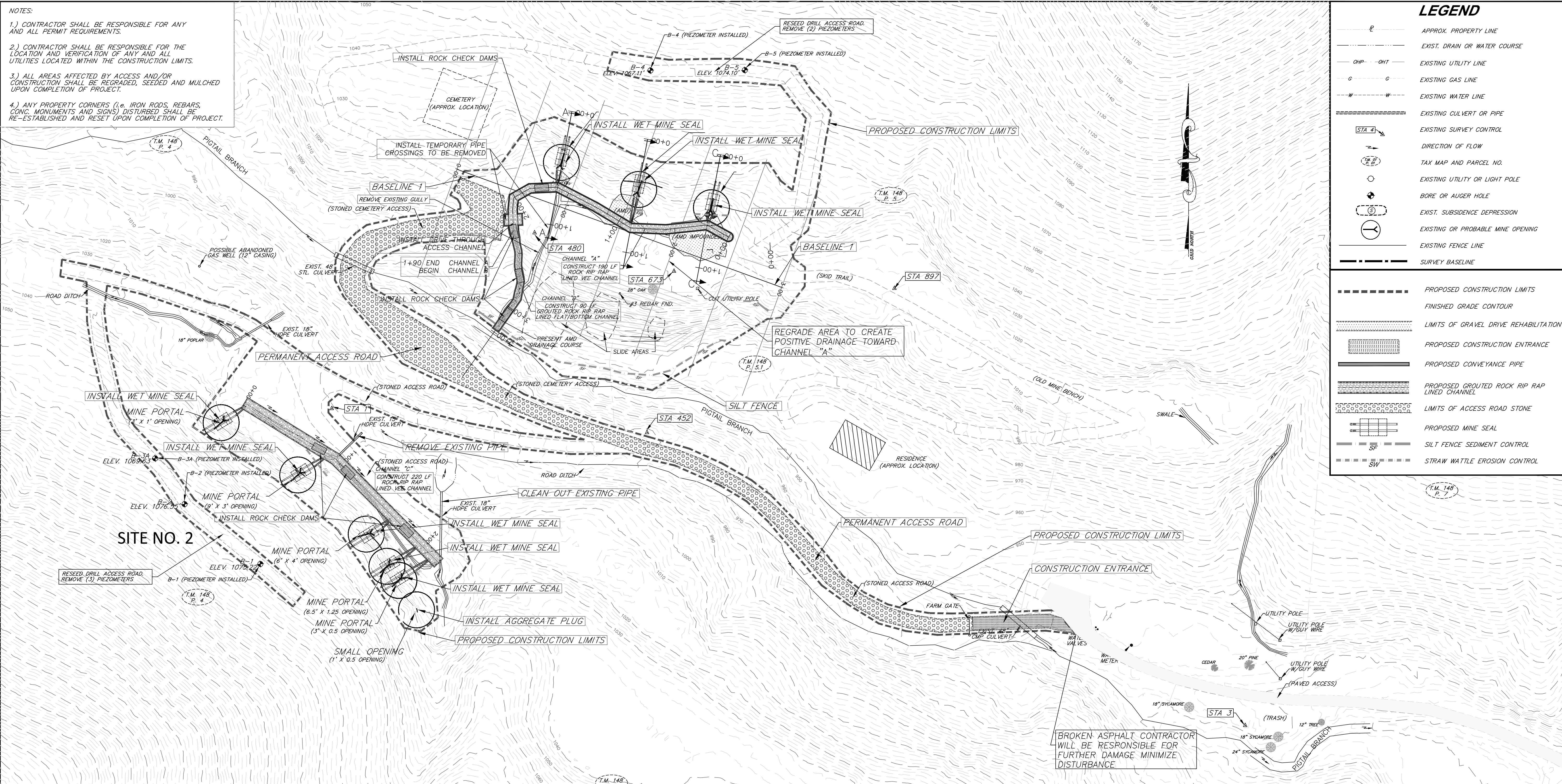
EXISTING CONDITIONS AND TAX MAP OVERLAY

DRAWN BY: RCD
 APPROVED BY: [Signature]
 DATE: 11/17/2014

SCALE: 1" = 40'
 SHEET NO. 2
 OF 9

NOTES:

- 1.) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PERMIT REQUIREMENTS.
- 2.) CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND VERIFICATION OF ANY AND ALL UTILITIES LOCATED WITHIN THE CONSTRUCTION LIMITS.
- 3.) ALL AREAS AFFECTED BY ACCESS AND/OR CONSTRUCTION SHALL BE REGRADED, SEEDED AND MULCHED UPON COMPLETION OF PROJECT.
- 4.) ANY PROPERTY CORNERS (i.e. IRON RODS, REBARS, CONC. MONUMENTS AND SIGNS) DISTURBED SHALL BE RE-ESTABLISHED AND RESET UPON COMPLETION OF PROJECT.



LEGEND

- APPROX. PROPERTY LINE
- EXIST. DRAIN OR WATER COURSE
- EXISTING UTILITY LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING CULVERT OR PIPE
- EXISTING SURVEY CONTROL
- DIRECTION OF FLOW
- TAX MAP AND PARCEL NO.
- EXISTING UTILITY OR LIGHT POLE
- BORE OR AUGER HOLE
- EXIST. SUBSIDENCE DEPRESSION
- EXISTING OR PROBABLE MINE OPENING
- EXISTING FENCE LINE
- SURVEY BASELINE
- PROPOSED CONSTRUCTION LIMITS
- FINISHED GRADE CONTOUR
- LIMITS OF GRAVEL DRIVE REHABILITATION
- PROPOSED CONSTRUCTION ENTRANCE
- PROPOSED CONVEYANCE PIPE
- PROPOSED GROUDED ROCK RIP RAP LINED CHANNEL
- LIMITS OF ACCESS ROAD STONE
- PROPOSED MINE SEAL
- SILT FENCE SEDIMENT CONTROL
- STRAW WATTLE EROSION CONTROL

SURVEY CONTROL				
NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	345913.4063	1716051.7130	1010.9500	MAG NAIL
452	345892.5291	1716325.8250	981.9100	MAG NAIL
480	346066.2322	1716228.0777	1009.3300	MAG NAIL
549	345637.8222	1716845.8810	933.0200	MAG NAIL
673	346032.8205	1716349.2921	1010.3300	MAG NAIL
897	346016.7293	1716541.9101	1013.8900	MAG NAIL

WVSPCS NAD 83 BY GPS OBSERVATION OCTOBER 2014

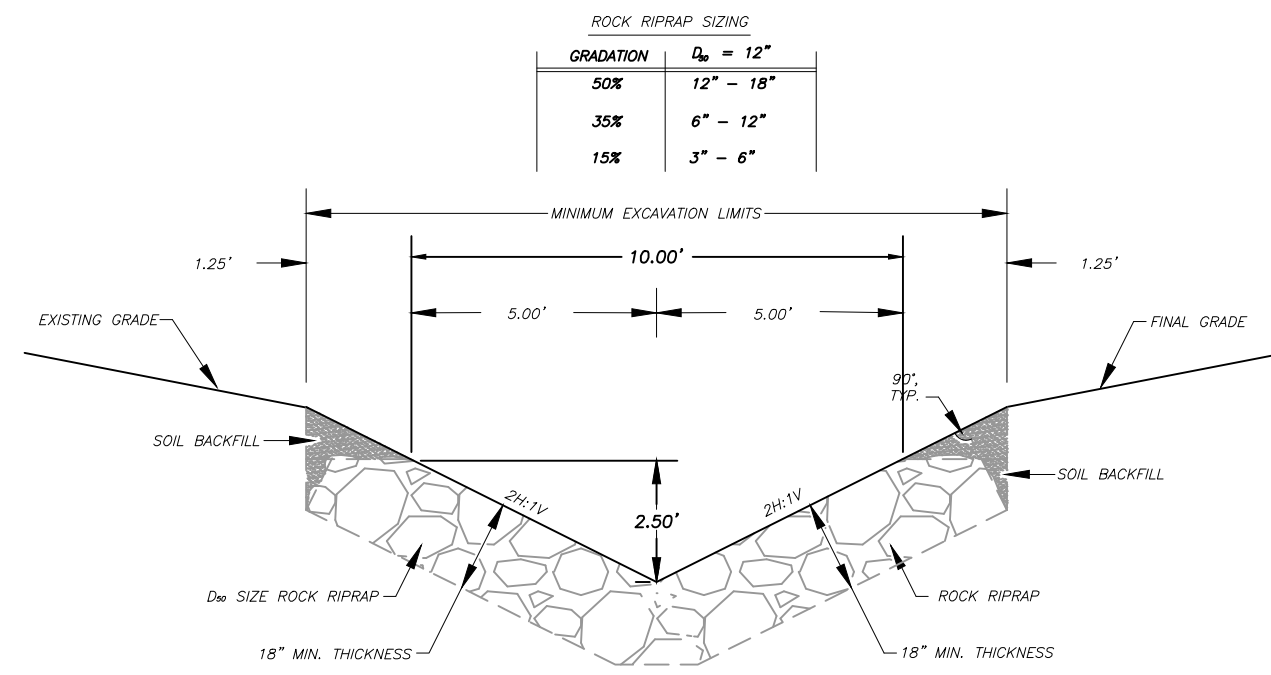
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

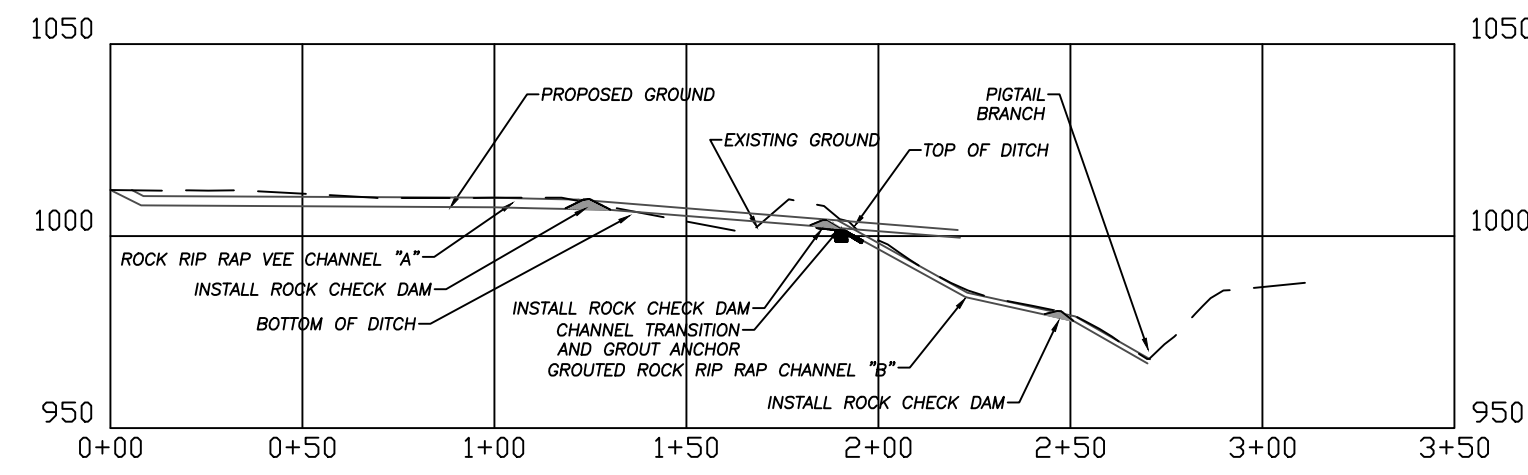
RECLAMATION PLAN AND SEDIMENT CONTROL

DRAWN BY: RCD
APPROVED BY: [Signature]
DATE: 12/10/2014

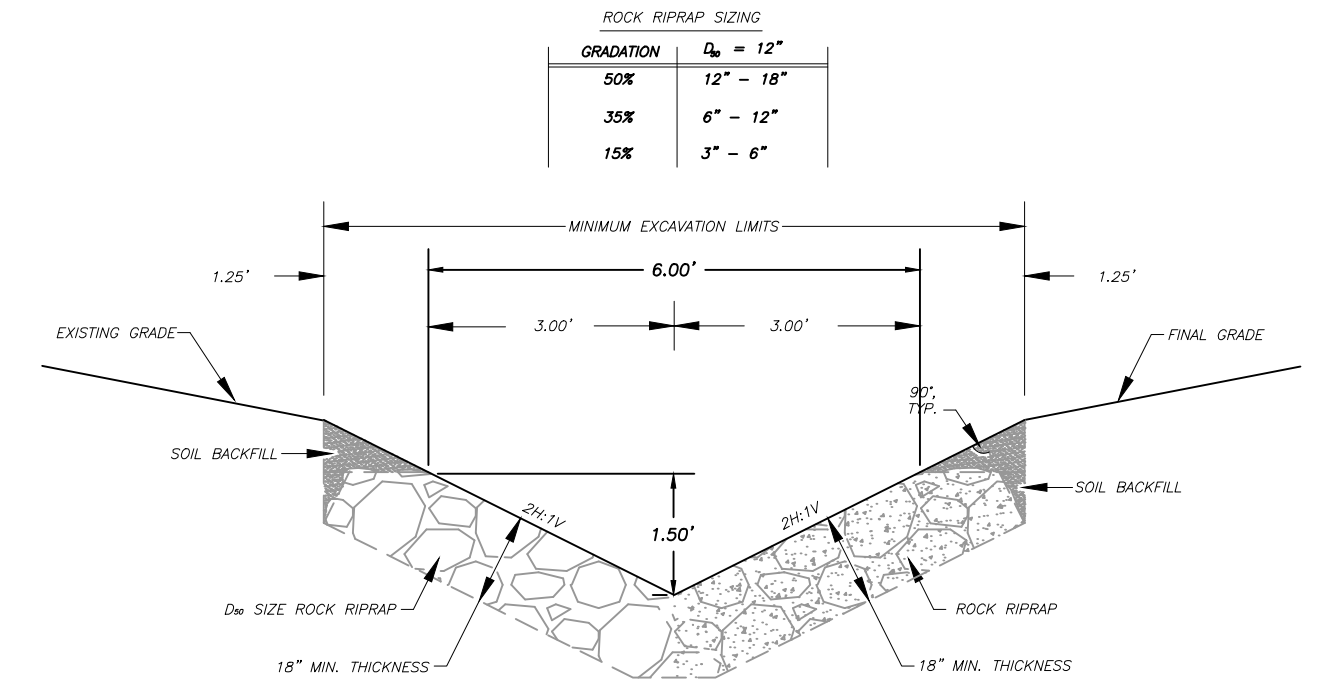
SCALE: 1" = 40'
SHEET NO. 3
OF 9



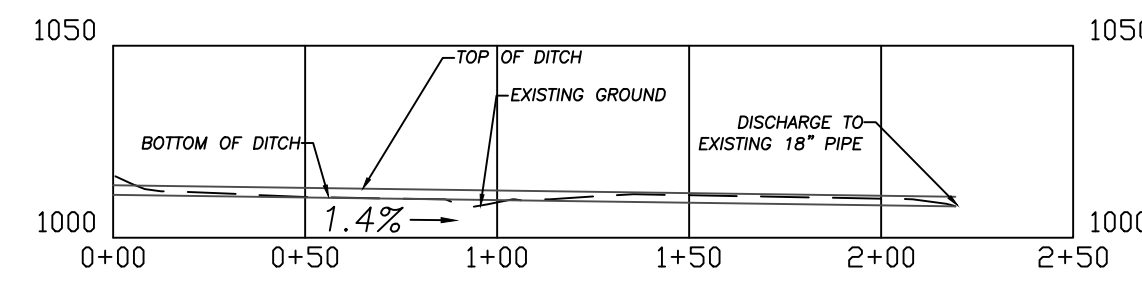
ROCK RIP RAP VEE CHANNEL
(CHANNEL "A" AND CHANNEL "C")
NOT TO SCALE



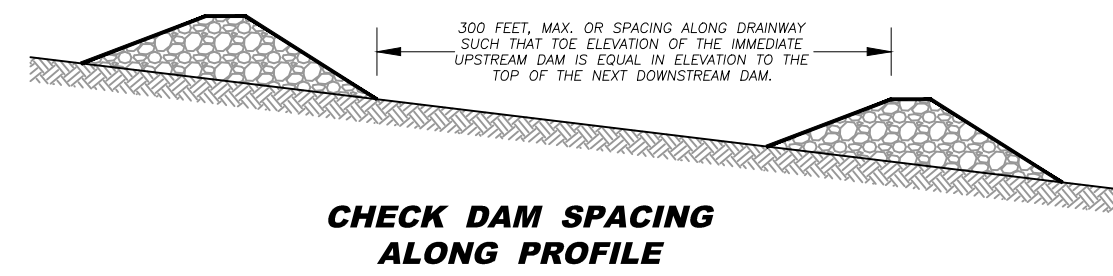
CHANNEL "A" AND "B" PROFILE
SCALE: 1" = 50'



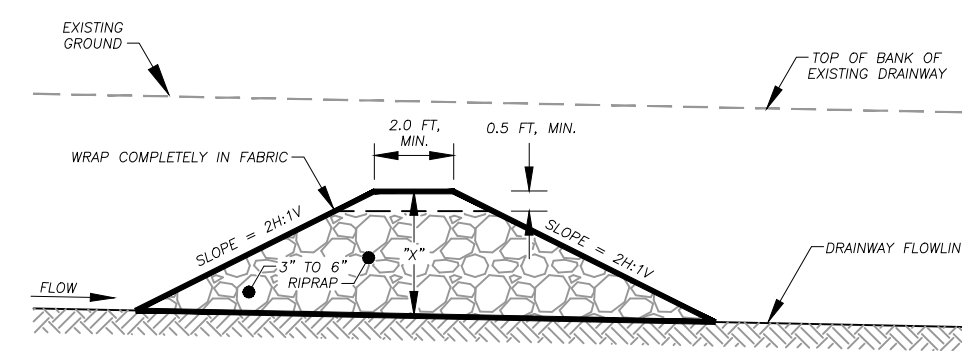
GROUTED ROCK RIP RAP VEE CHANNEL
(CHANNEL "B")
NOT TO SCALE



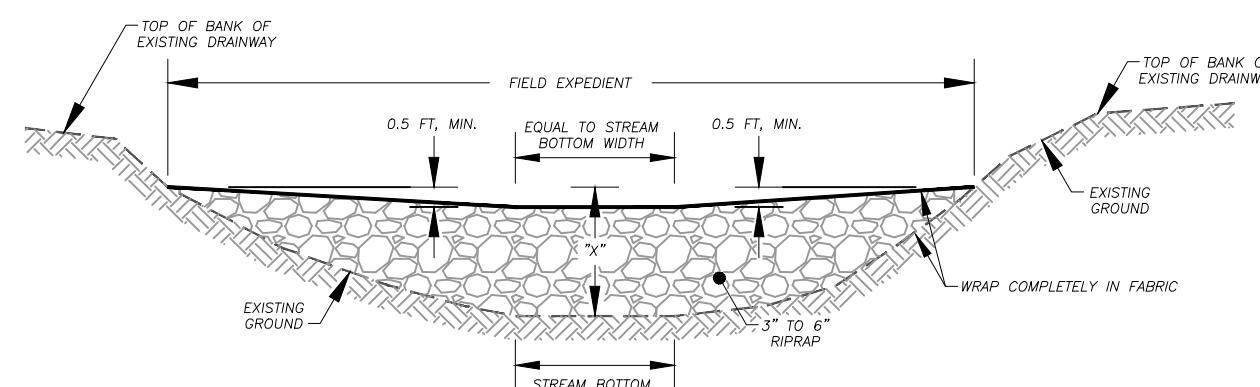
CHANNEL "C" PROFILE
SCALE: 1" = 50'



CHECK DAM SPACING ALONG PROFILE



PROFILE VIEW

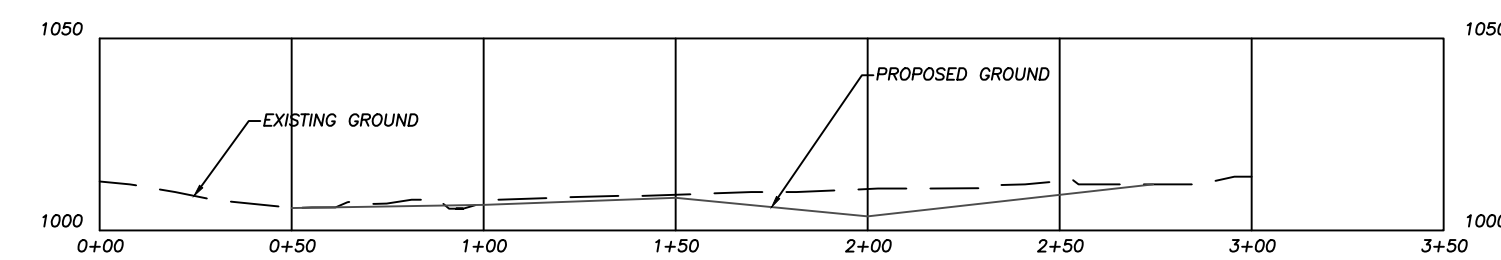
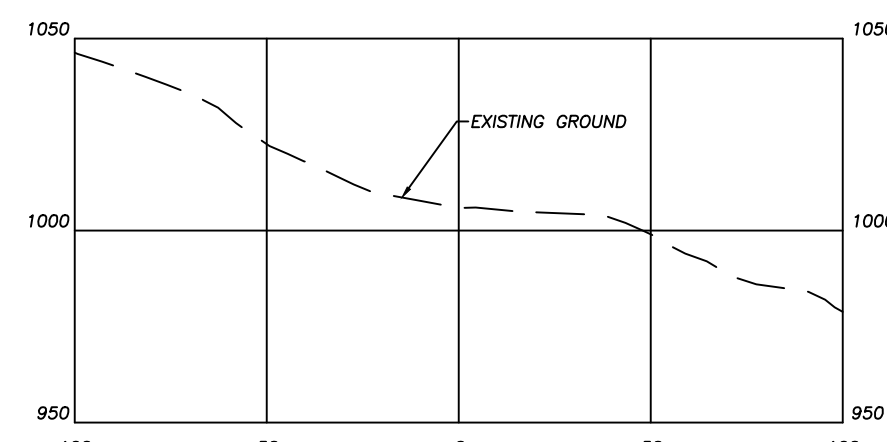


CROSS SECTION VIEW

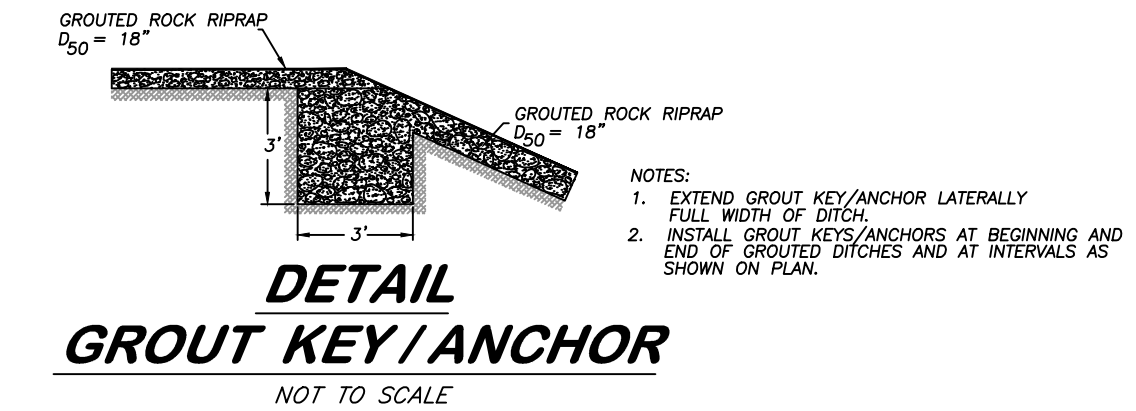
- NOTES:
1. "N" DIMENSION AS DETAILED BY THE SPECIFICATIONS FOR SEDIMENT CONTROL THE MAXIMUM HEIGHT OF THE ROCK CHECK DAM IS 2 FEET. HOWEVER, ROCK CHECK DAMS CAN BE CONSTRUCTED IN SMALLER DITCHES, THE CENTER OF THE ROCK CHECK DAM SHALL BE 0'-8" LOWER THAN THE OUTER EDGES AS SHOWN.
 2. ROCK CHECK DAMS 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'-8" 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'-8" 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.

ROCK CHECK DAM

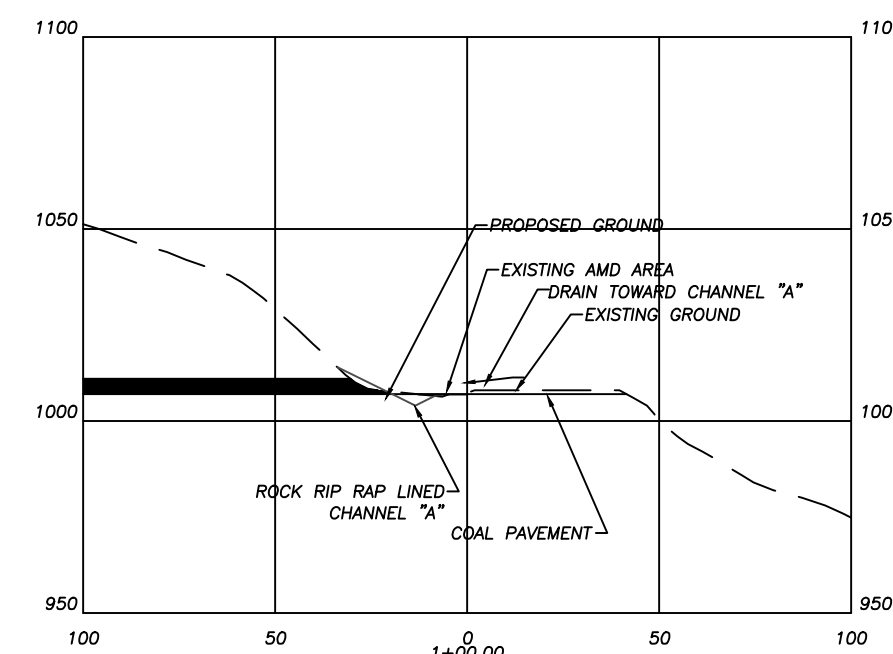
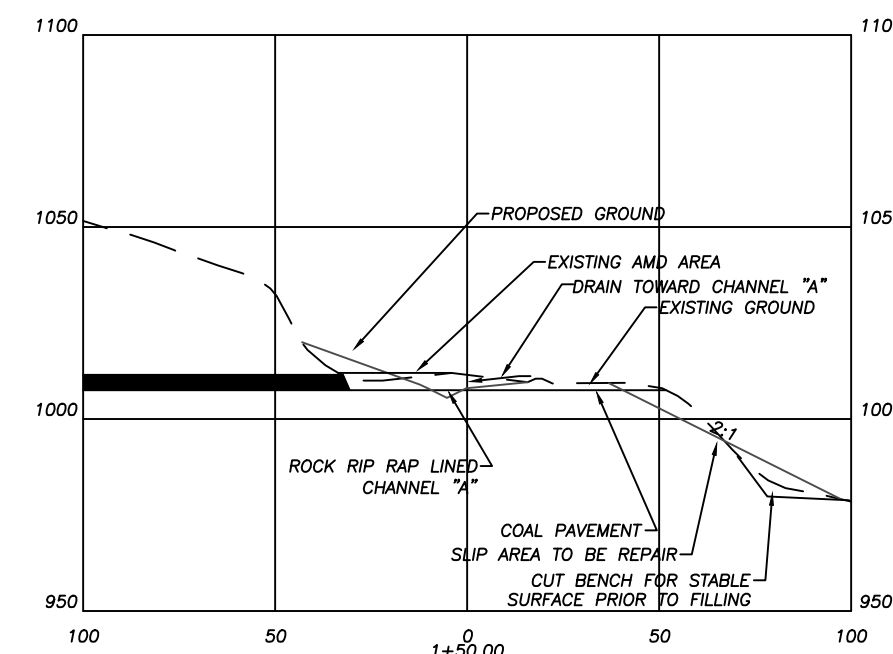
NOT TO SCALE



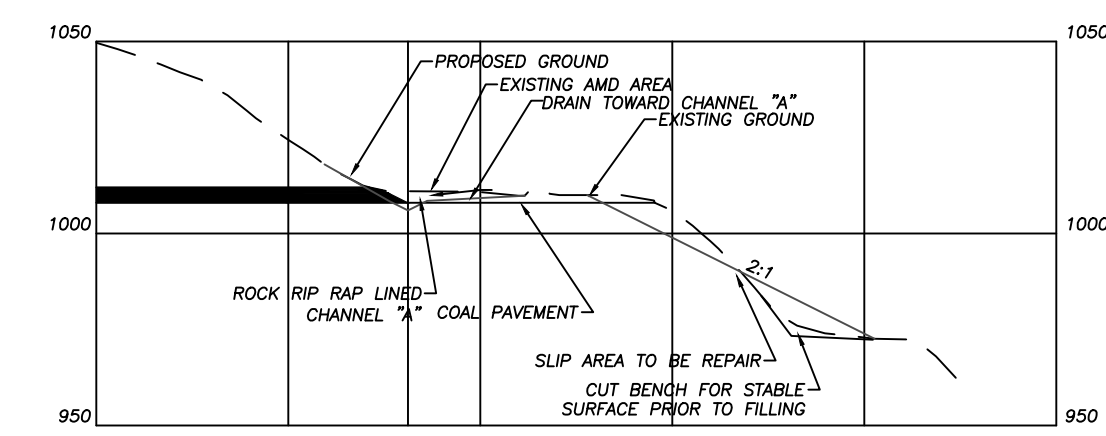
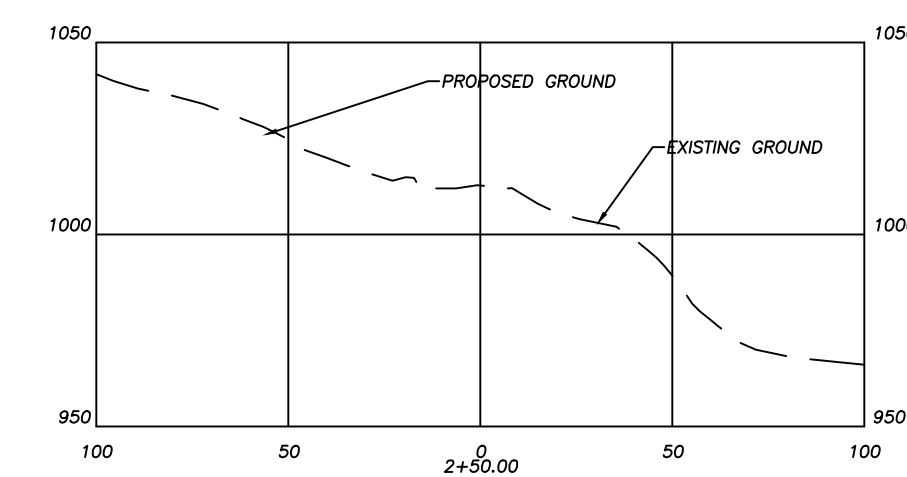
BASELINE 1 PROFILE
SCALE: 1" = 50'



DETAIL GROUT KEY/ANCHOR
NOT TO SCALE



BASELINE 1 CROSS SECTIONS
SCALE: 1" = 50'



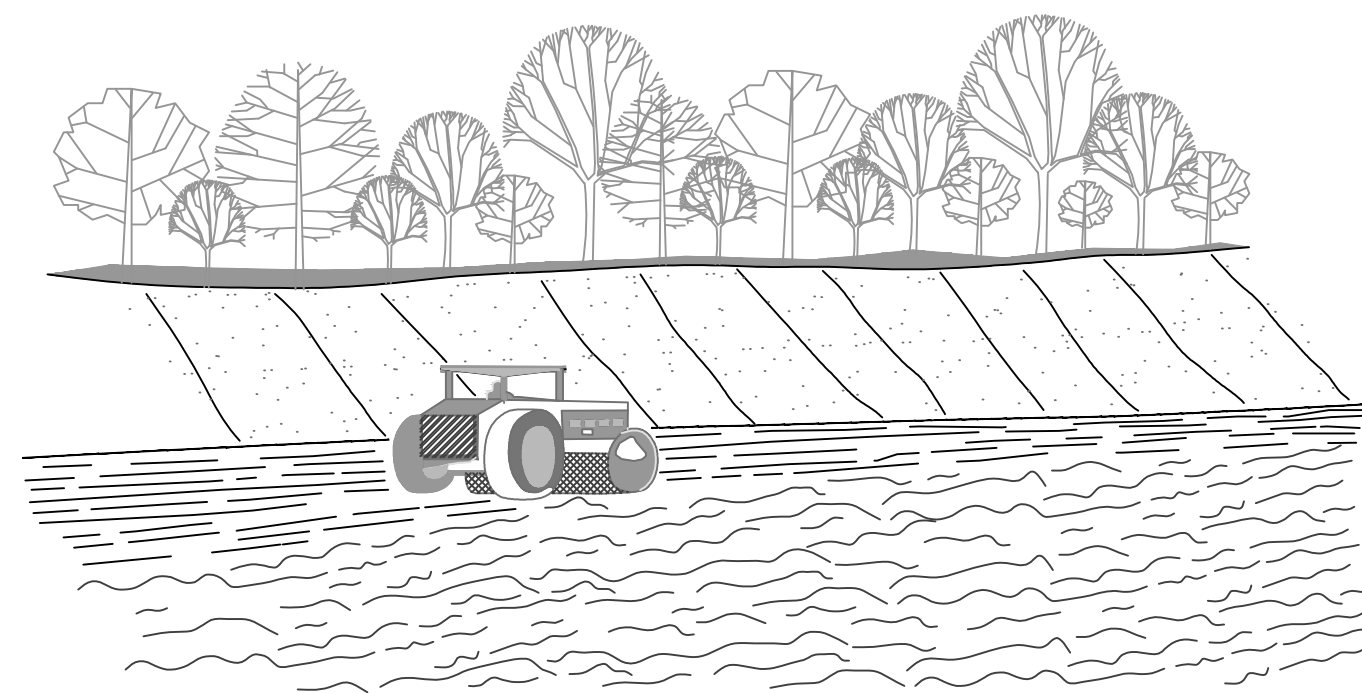
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

PROFILE AND CROSS SECTIONS CHANNEL "A" AND BASELINE 1 REGRADE

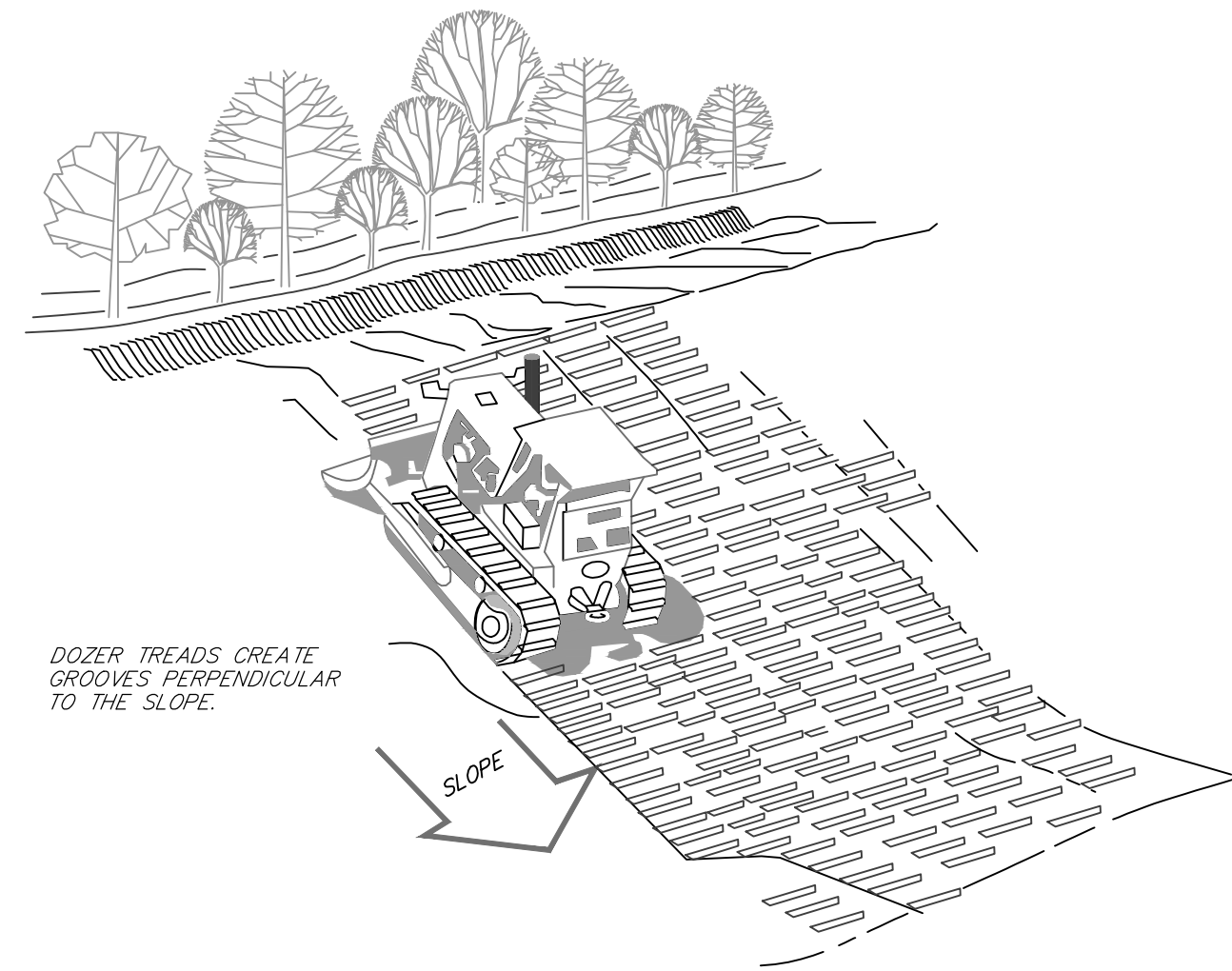
DRAWN BY: RCD
APPROVED BY:
DATE: 12/10/2014

SCALE: AS NOTED
SHEET NO. 4
OF 9



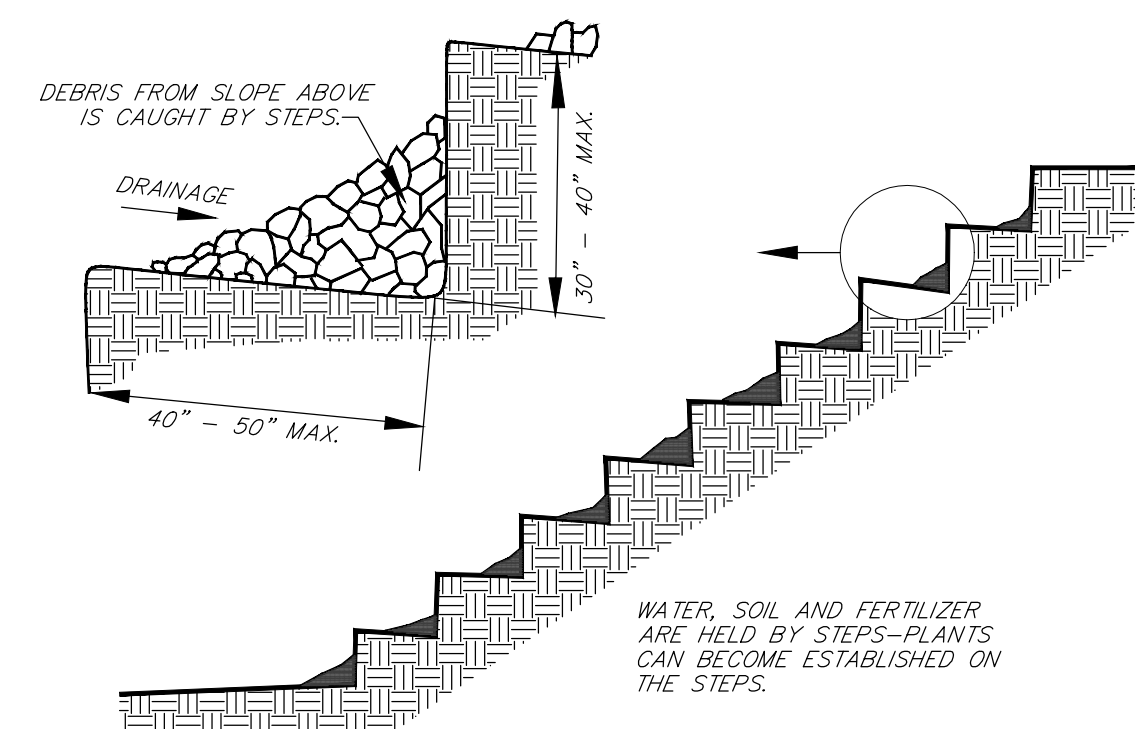
EACH LIFT OF THE FILL IS COMPACTED, BUT THE OUTER FACE OF THE SLOPE IS ALLOWED TO REMAIN LOOSE SO THAT THE ROCKS, CLOUDS, ETC. REACH THE NATURAL ANGLE OF REPOSE.

FILL SLOPE TREATMENT

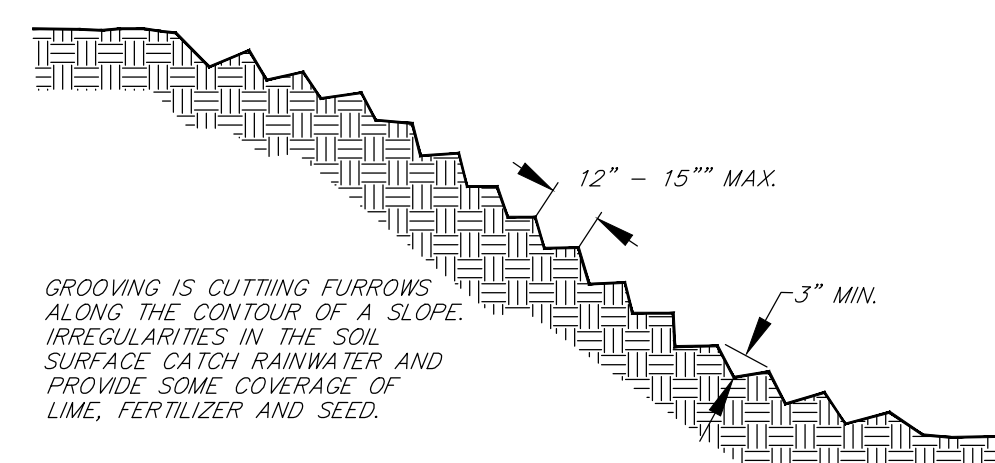


DOZER TREADS CREATE GROOVES PERPENDICULAR TO THE SLOPE.

TRACKING

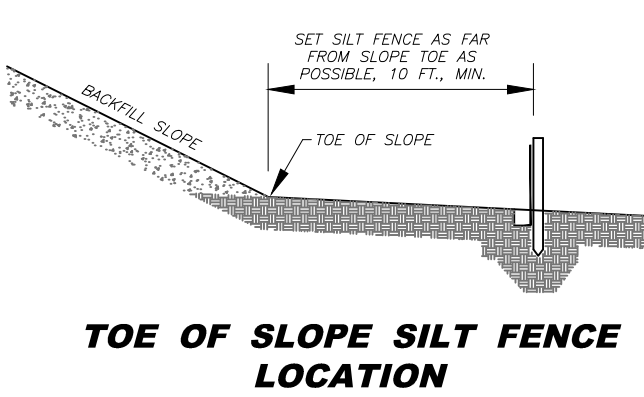
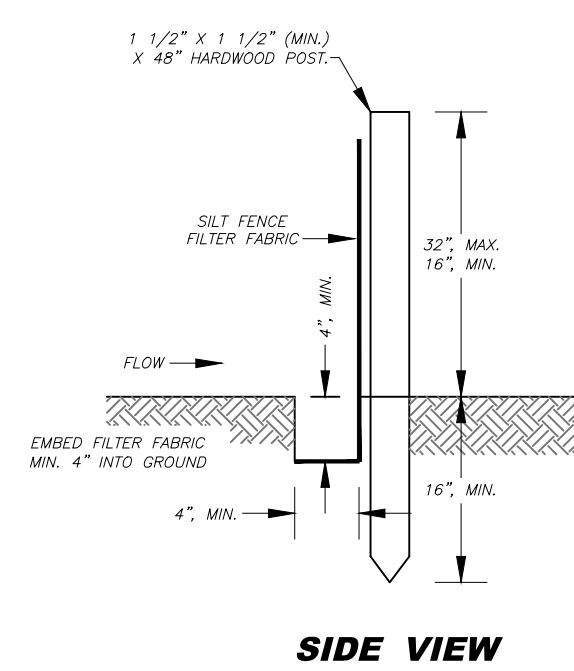
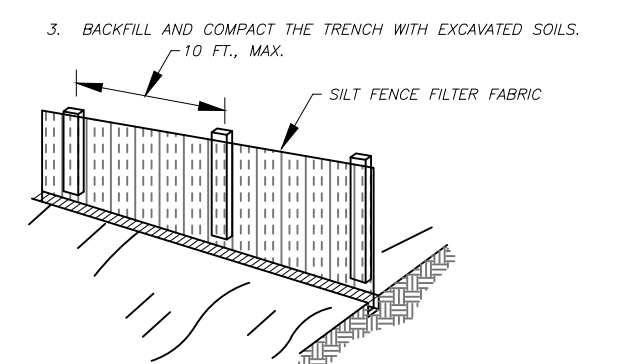
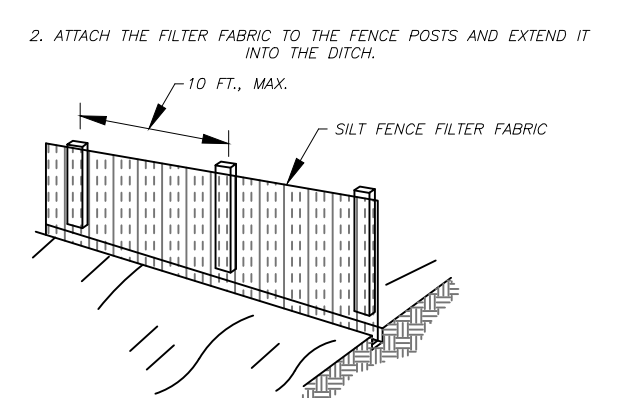
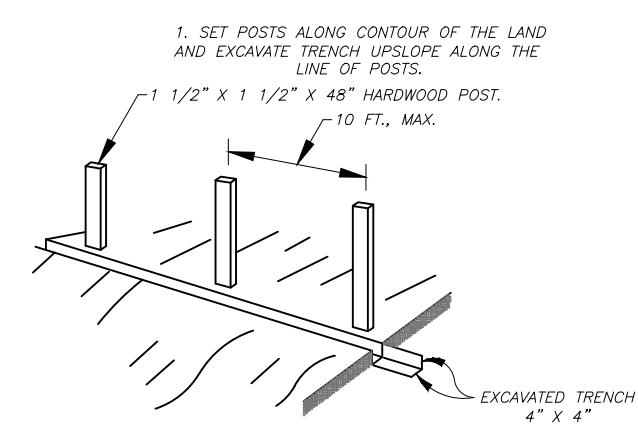


STAIR STEPPING CUT SLOPES



GROOVING IS CUTTING FURROWS ALONG THE CONTOUR OF A SLOPE. IRREGULARITIES IN THE SOIL SURFACE CAUGHT RAINWATER AND PROVIDE SOME COVERAGE OF LIME, FERTILIZER AND SEED.

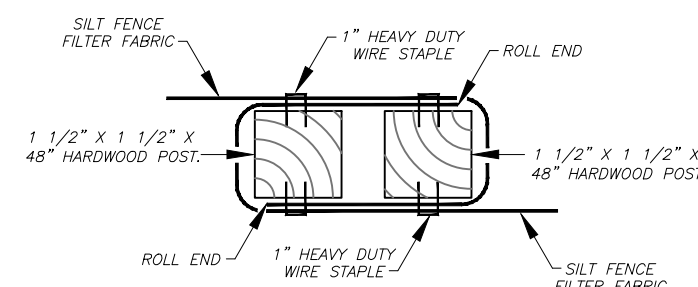
GROOVING SLOPES



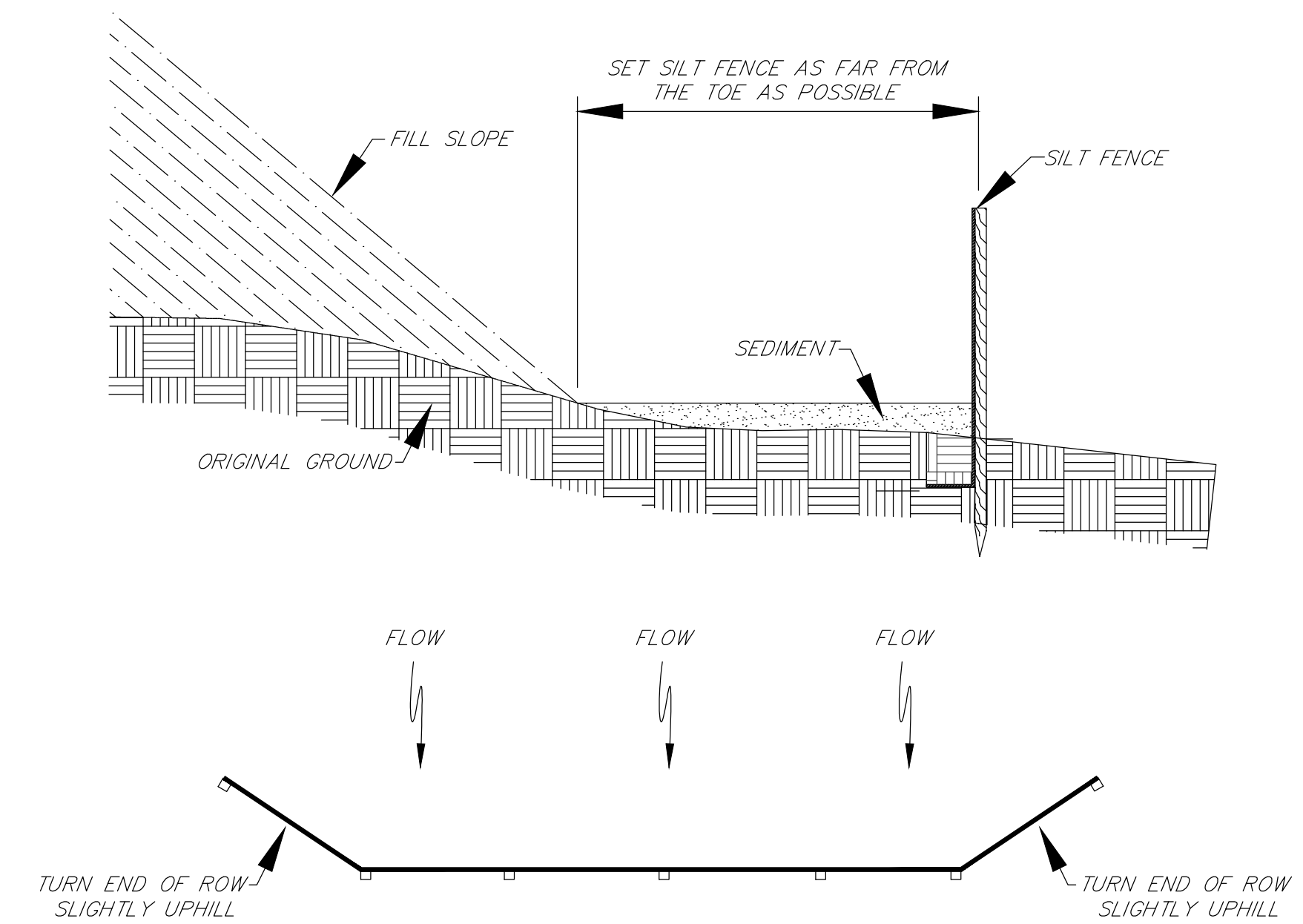
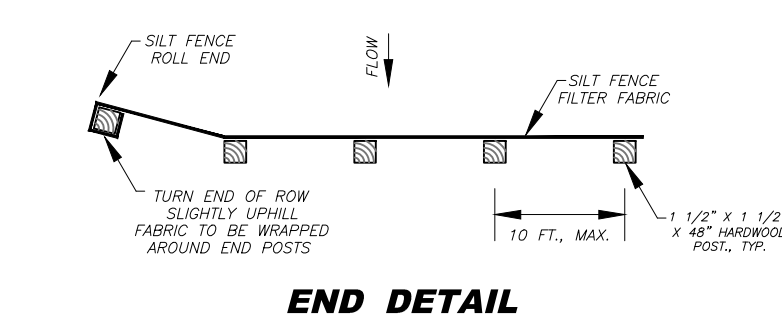
SILT FENCE

SILT FENCE NOTES:

1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO ALIGNMENT LENGTH TO AVOID JOINTS. WHERE JOINTS ARE UNAVOIDABLE, THE FABRIC SHALL BE SPICED TOGETHER AT A SUPPORT POST BY TIGHTENING THE POST OF EACH ROW AROUND EACH OTHER.
2. FILTER FABRIC SHALL BE FACED SECURELY TO THE UPSLOPE SIDE OF THE SUPPORT POSTS USING ONE INCH MINIMUM LONG HEAVY-DUTY WIRE STAPLES OR 16" MINES WITH EIGHT INCHES MINIMUM OF FABRIC EXTENDED INTO THE TRENCH. DO NOT STAPLE FABRIC TO TREES.
3. COMPACTED SOIL BACKFILL SHALL BE PLACED IN THE 4" BY 4" TRENCH ATOP THE EXTENDED FABRIC.
4. POSTS SHALL BE CONSTRUCTED OF 1 1/2" x 1 1/2" (MIN.) HARDWOOD OR 2" x 4" PINE BY 48" LONG.
5. FILTER FABRIC SHALL BE NON-WOVEN "MIRAFI 100", "EXXON GTF 180" OR EQUAL.
6. APPROVED PREFABRICATED UNITS INCLUDE "GEOPAG", "ENVIROFENCE", OR APPROVED EQUAL.
7. THE MAXIMUM RUN OF SLOPE ABOVE A ROW OF SILT FENCE IS 110 FEET.

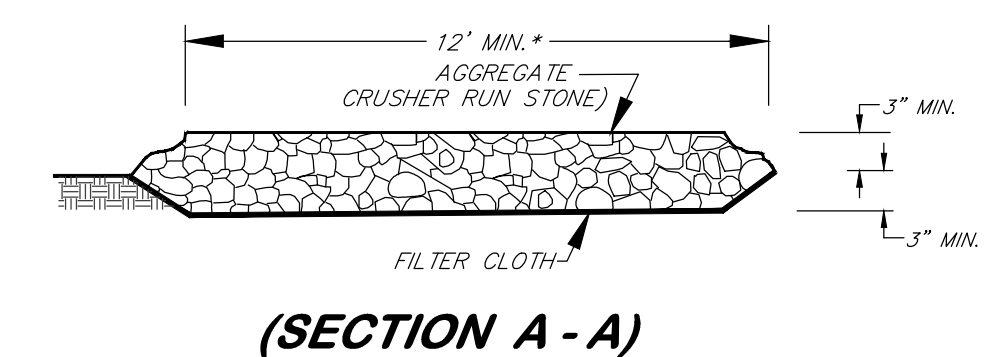
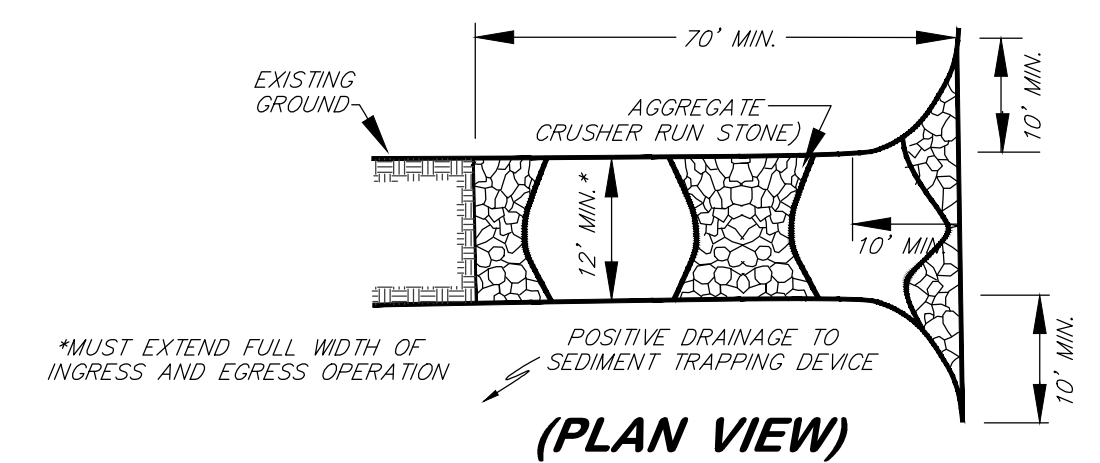
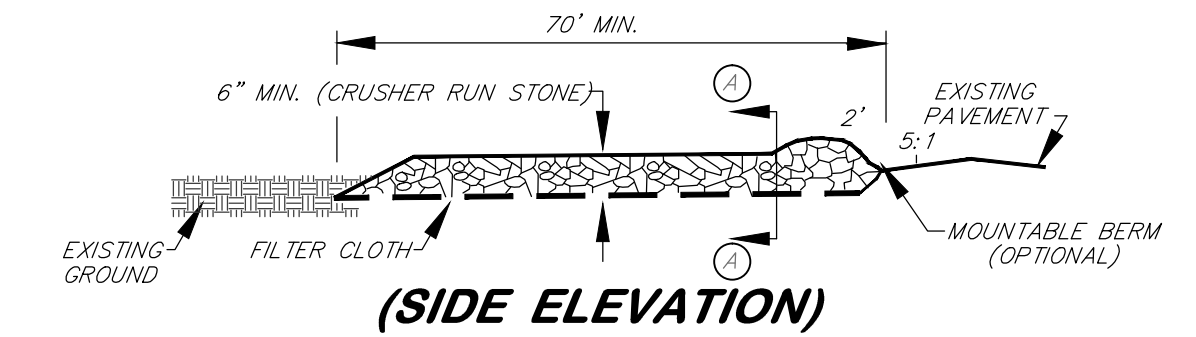


END LAP TOP VIEW



PLACEMENT OF SILT FENCE

(FIG. 3.27.1)



STONE CONSTRUCTION ENTRANCE

(FIG. 3.02.1)

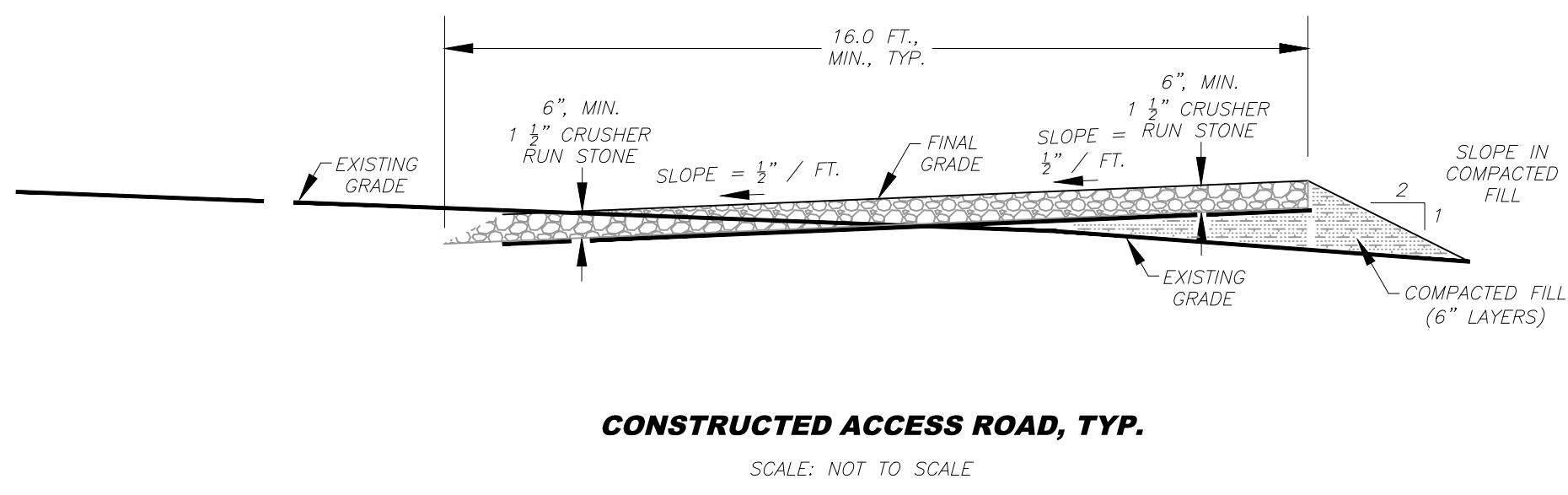
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

**SEDIMENT CONTROL
TYPICAL DETAILS**

DRAWN BY: RCD
APPROVED BY:
DATE: 12/10/2014

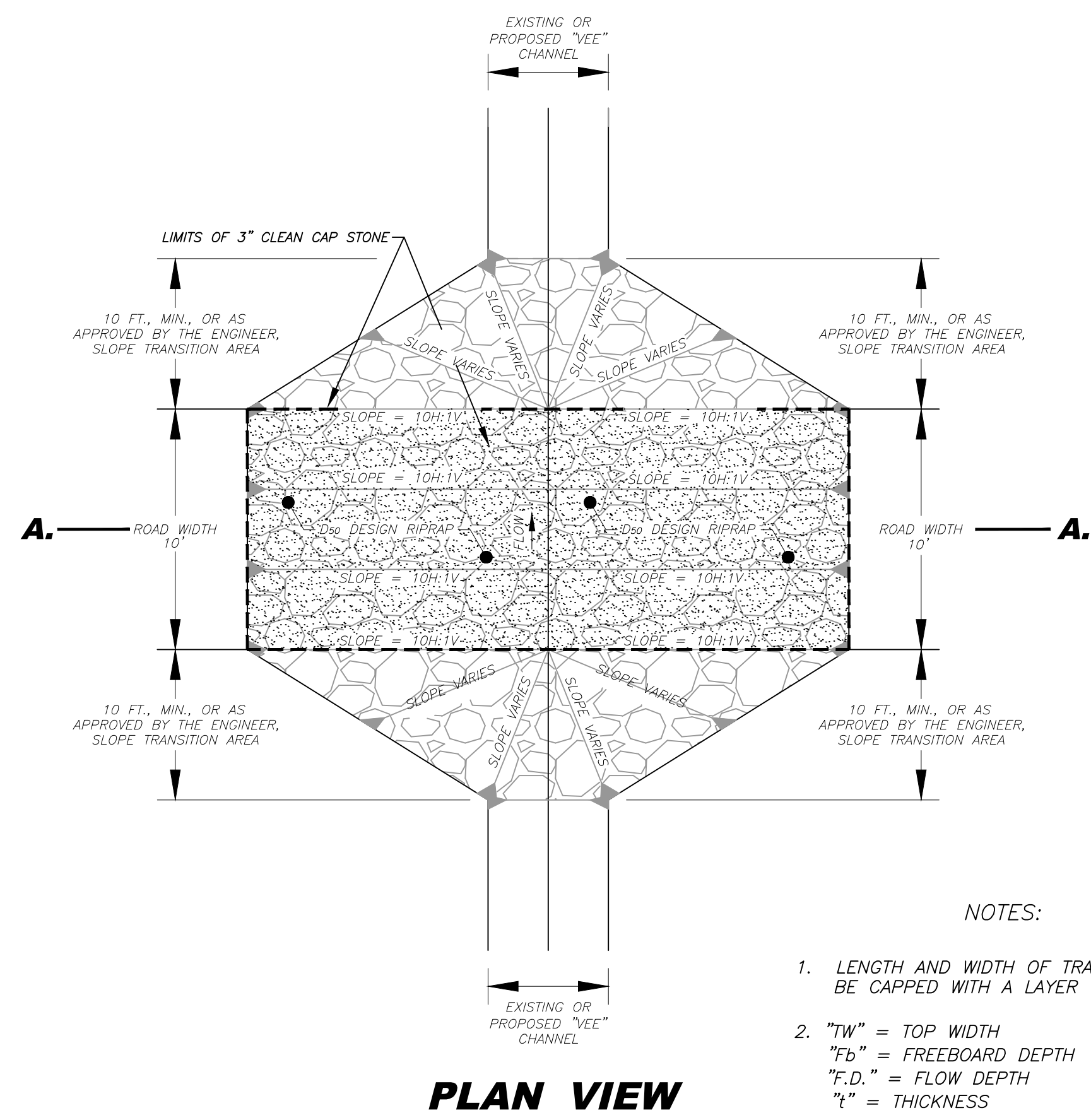
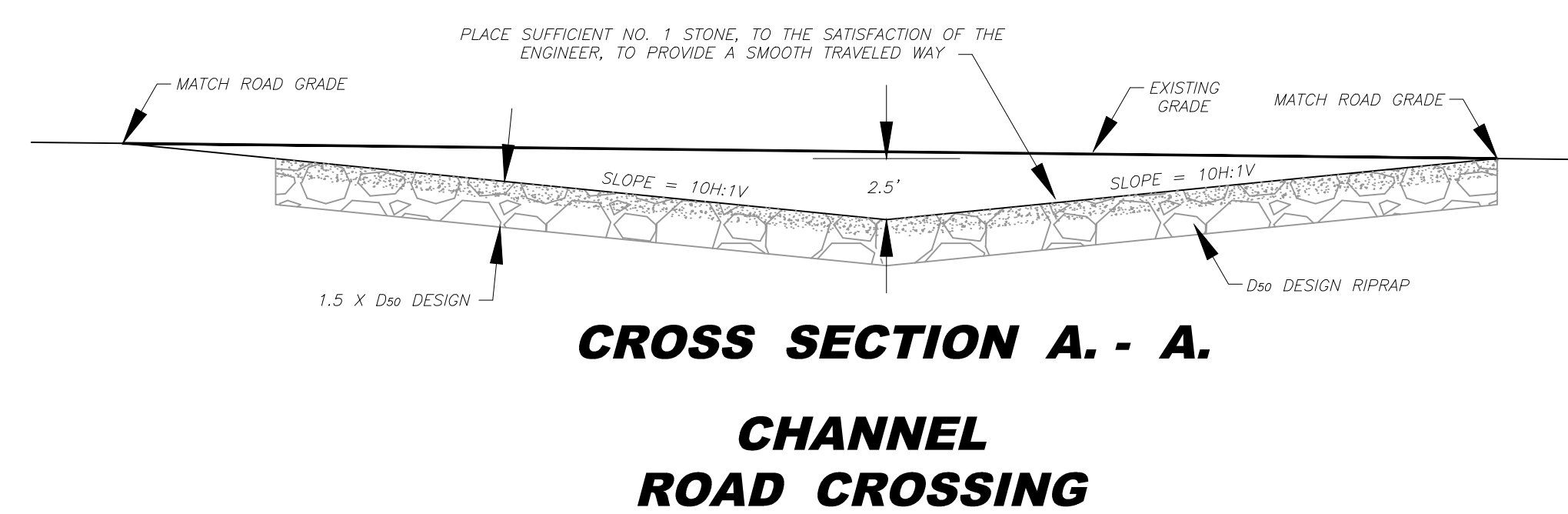
SCALE: NONE
SHEET NO. 5
OF 9



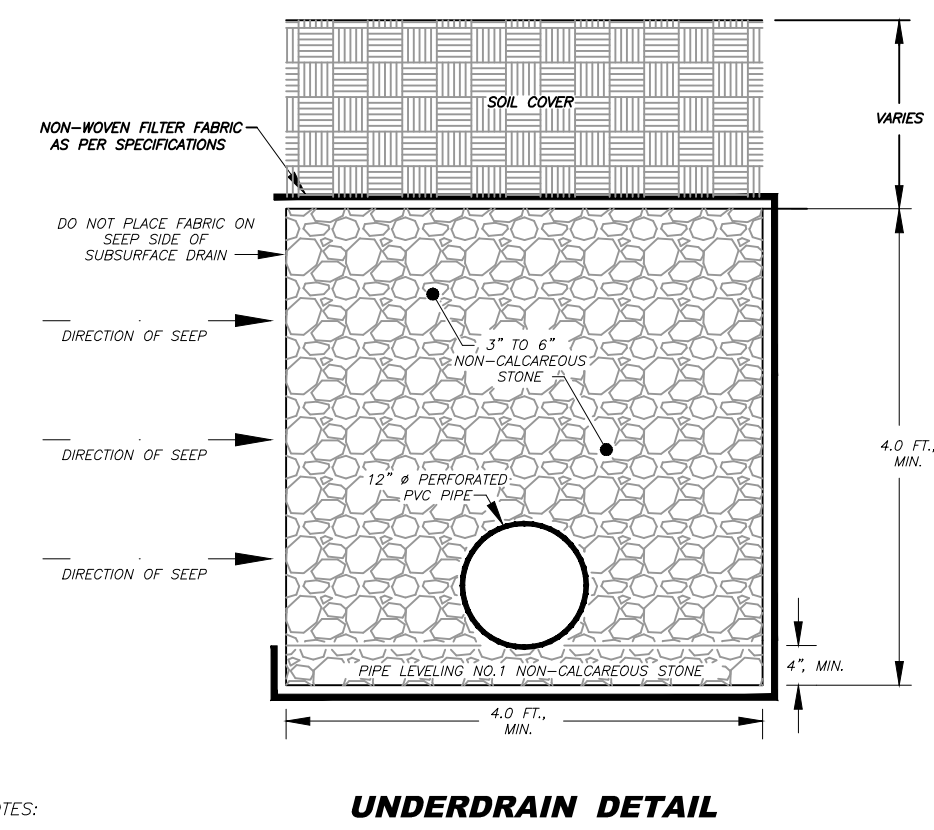
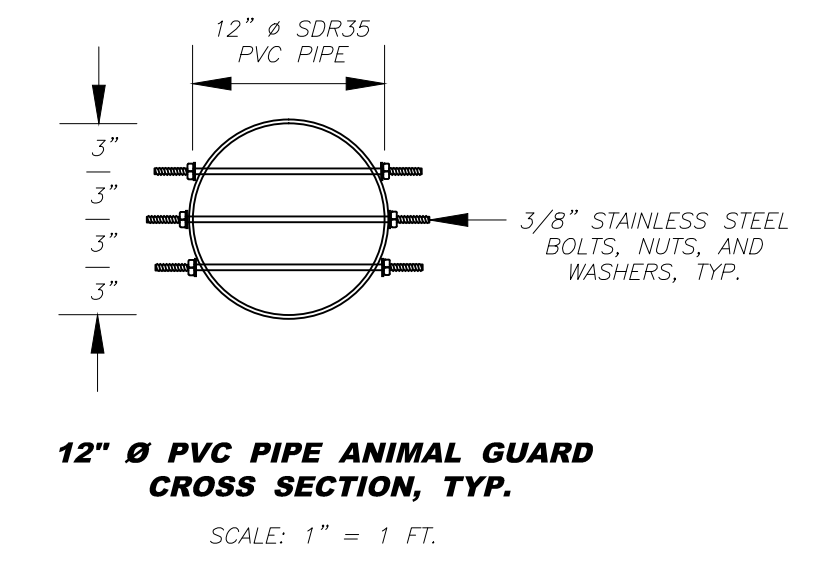
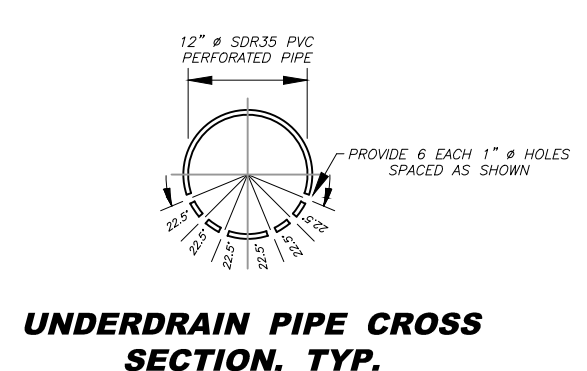
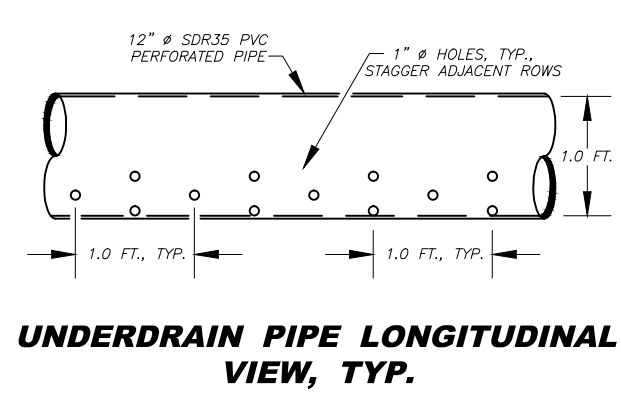
NOTES:
1. ROADWAY SURFACE MAY BE SLOPED TO EITHER SIDE AS TOPOGRAPHY AND CONDITIONS WARRANT.
2. 1 1/2" CRUSHER RUN STONE.

ROCK RIPRAP SIZING

GRADATION	D ₅₀ = 12"
50%	12" - 18"
35%	6" - 12"
15%	3" - 6"



NOTES:
1. LENGTH AND WIDTH OF TRAVEL AREA OF CROSSING SHALL BE CAPPED WITH A LAYER OF 3" (NO.1) CLEAN STONE
2. "TW" = TOP WIDTH
"FD" = FREEBOARD DEPTH
"F.D." = FLOW DEPTH
"t" = THICKNESS



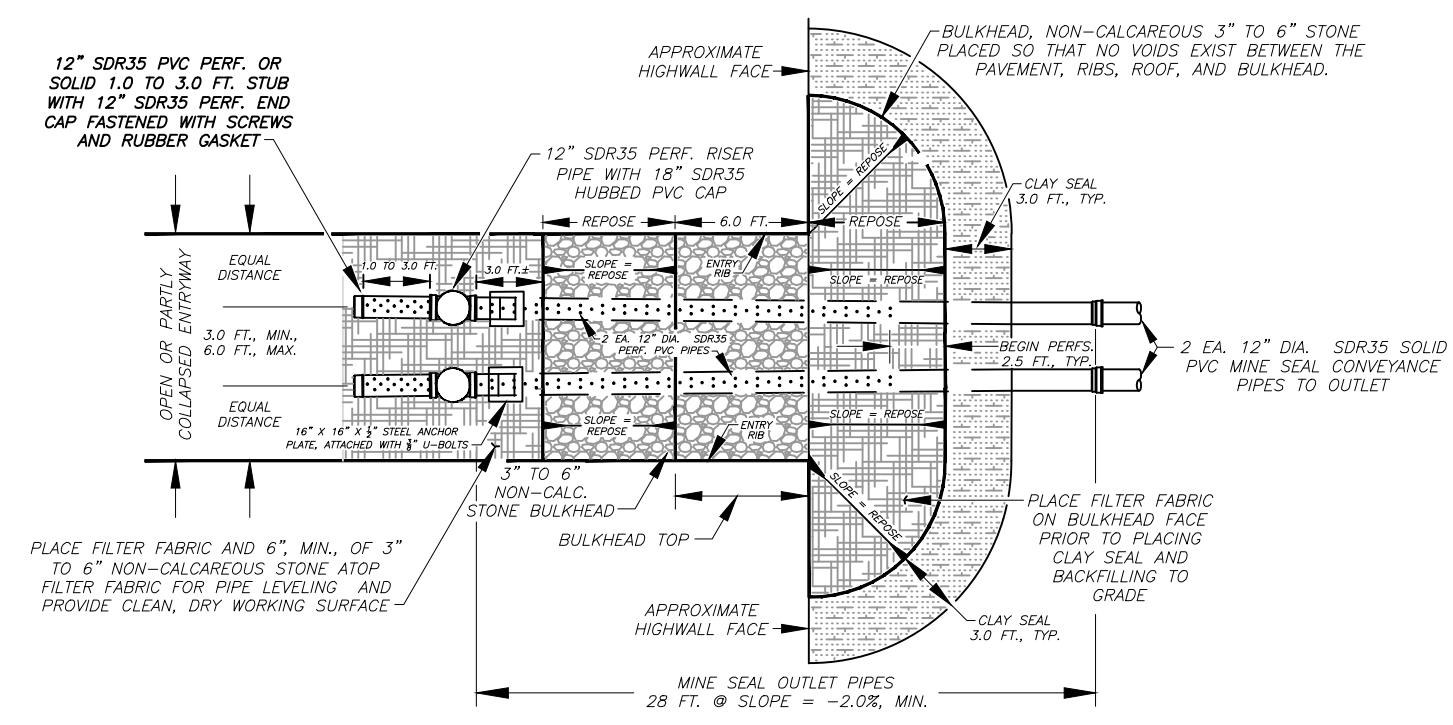
NOTES:
1. THE FILTER FABRIC SHALL BE OVERLAPPED 1.0 FOOT, MINIMUM, AT ALL JOINTS.

State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

TYPICAL DETAILS

DRAWN BY: RCD	SCALE: NONE
APPROVED BY:	SHEET NO. 6
DATE: 12/10/2014	OF 9

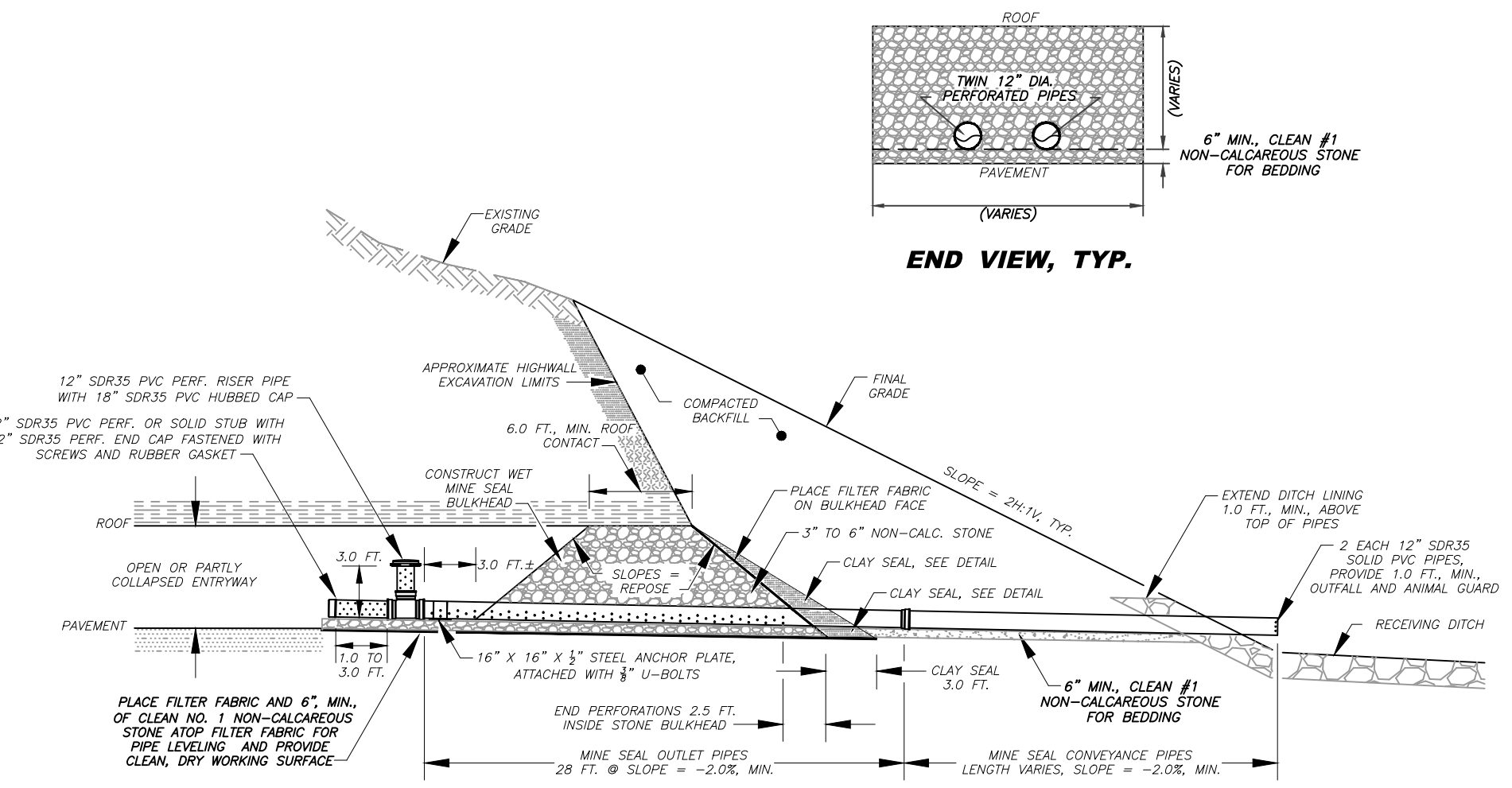


PLAN VIEW TOP OF BULKHEAD ELEVATION

- 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 8.0 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.

WET MINE SEAL

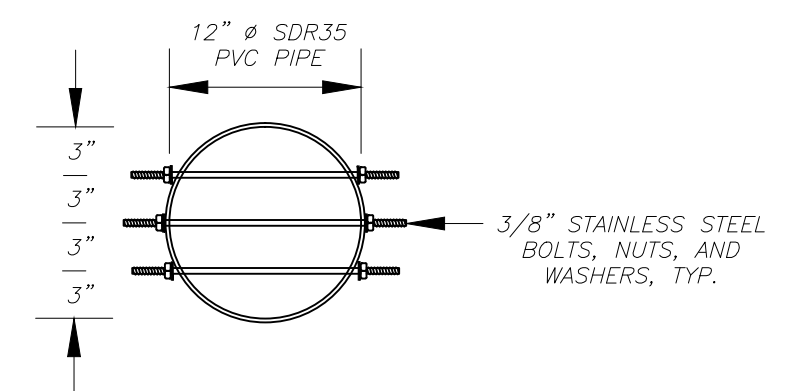
NOT TO SCALE



PROFILE VIEW, TYP.

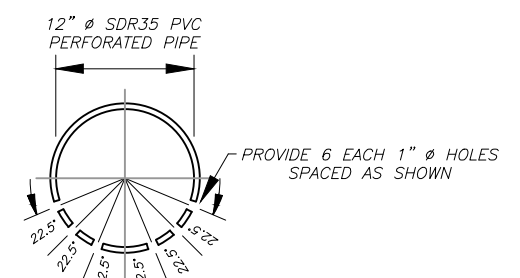
WET MINE SEAL

NOT TO SCALE

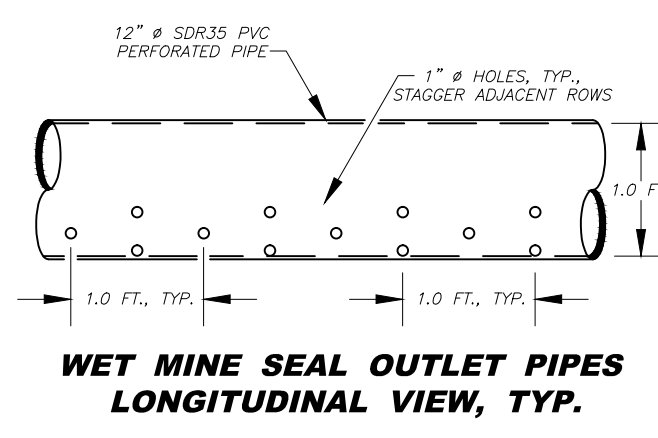


12" Ø PVC PIPE ANIMAL GUARD CROSS SECTION, TYP.

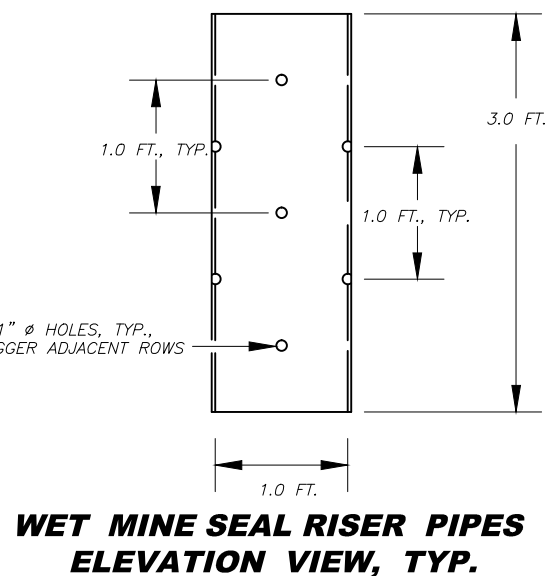
SCALE: 1" = 1 FT.



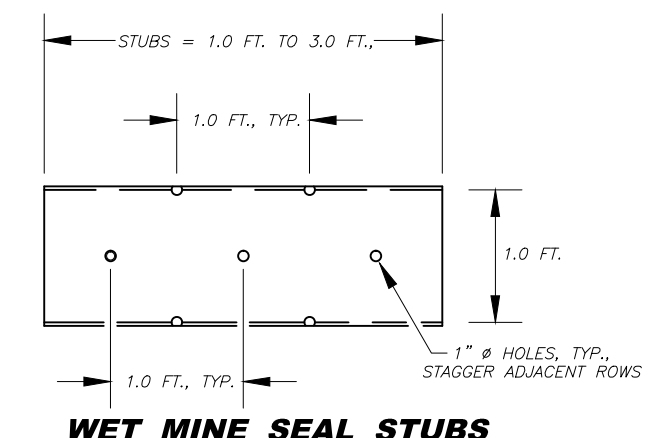
WET MINE SEAL OUTLET PIPES CROSS SECTION, TYP.



WET MINE SEAL OUTLET PIPES LONGITUDINAL VIEW, TYP.



WET MINE SEAL RISER PIPES ELEVATION VIEW, TYP.

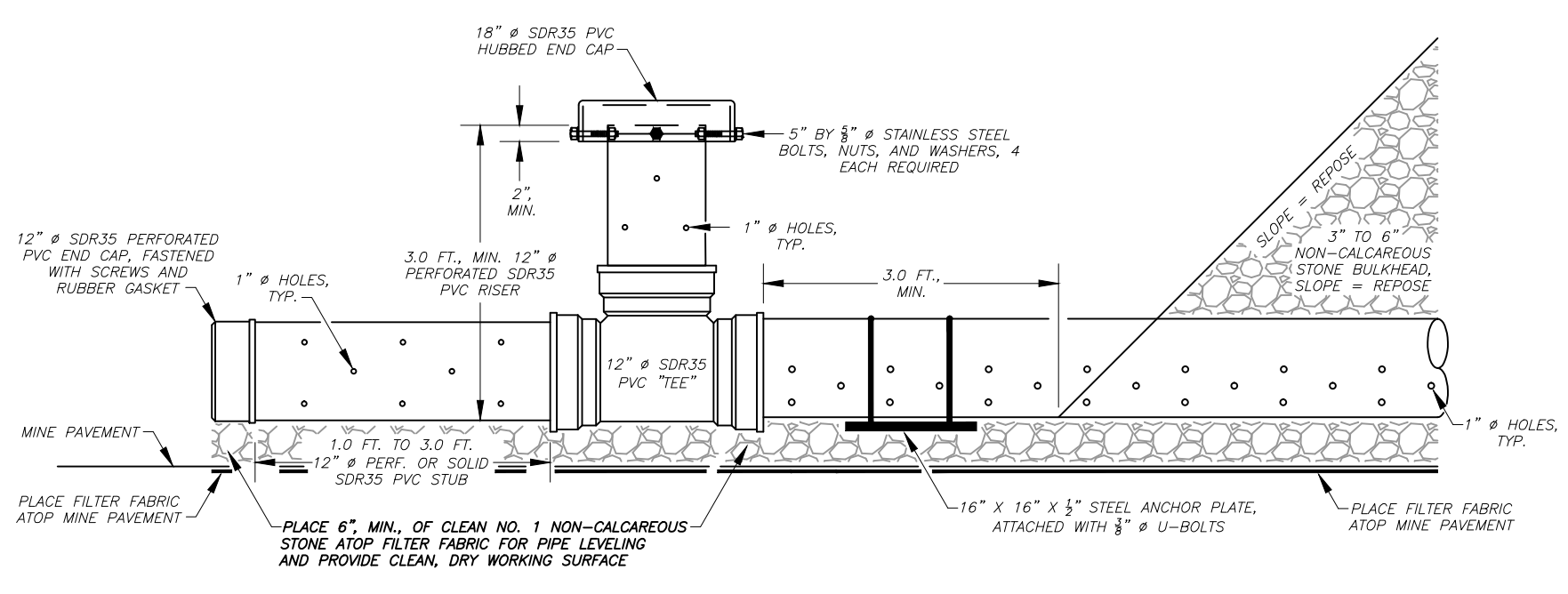


WET MINE SEAL STUBS LONGITUDINAL VIEW, TYP.

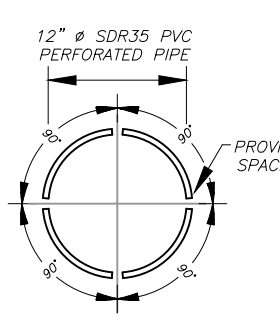
WET MINE SEAL PIPE DETAILS, TYP.

WET MINE SEAL

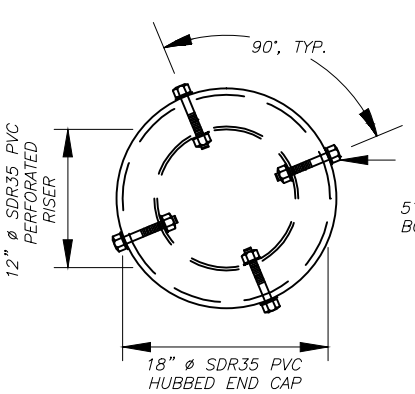
NOT TO SCALE



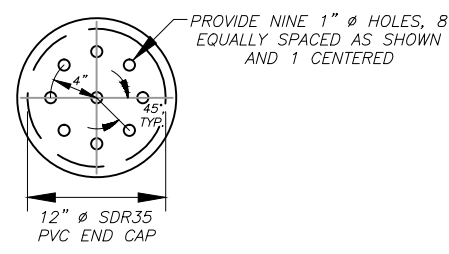
"TEE" RISER DETAIL



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



RISER CAP DETAIL



PERFORATED END CAP

WET MINE SEAL

NOT TO SCALE

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

State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

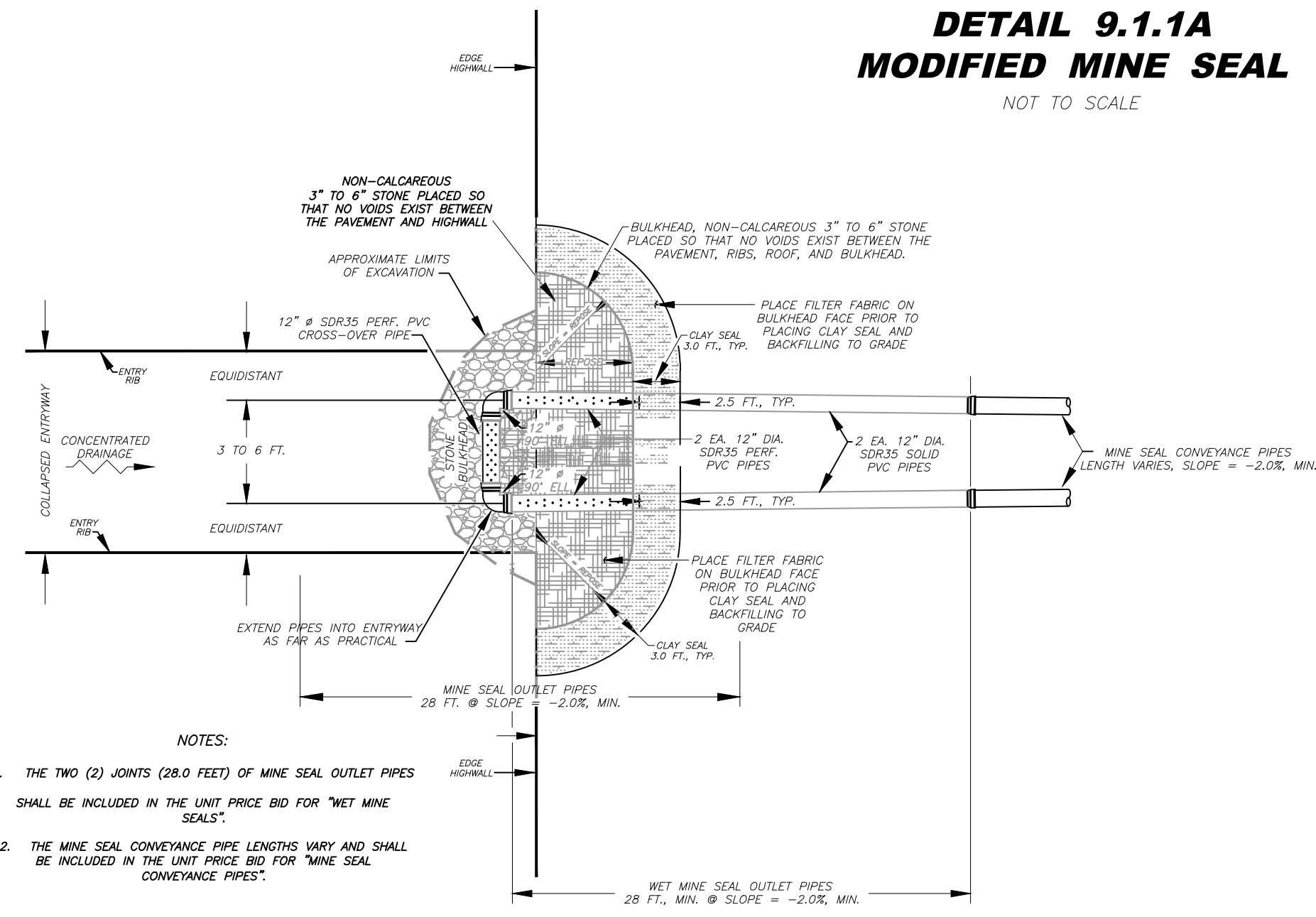
PIGTAIL BRANCH DRAINAGE

WET MINE SEAL

DRAWN BY: RCD
APPROVED BY:
DATE: 12/10/2014

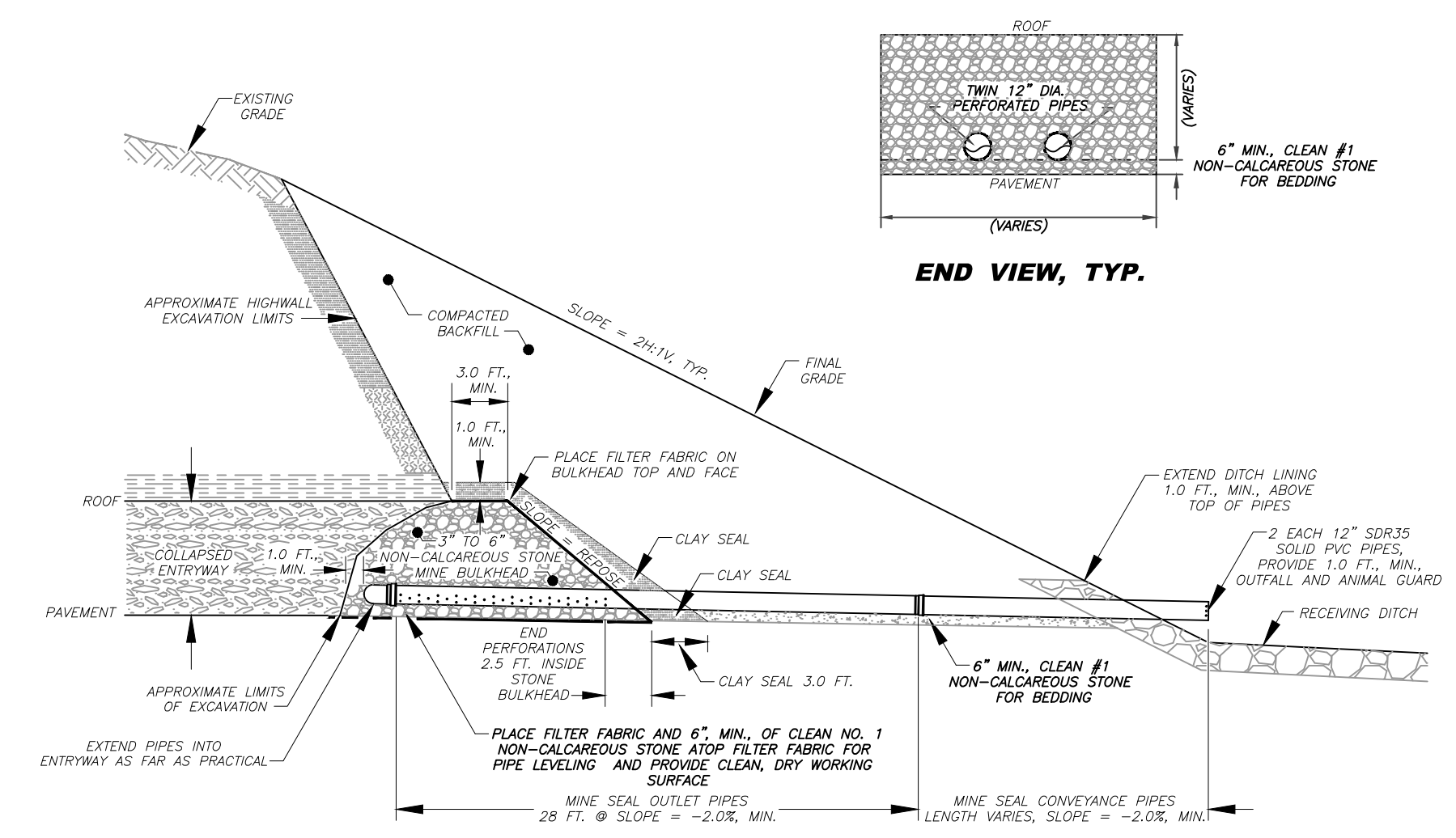
SCALE: NONE
SHEET NO: 7
OF 9

**DETAIL 9.1.1A
MODIFIED MINE SEAL**
NOT TO SCALE



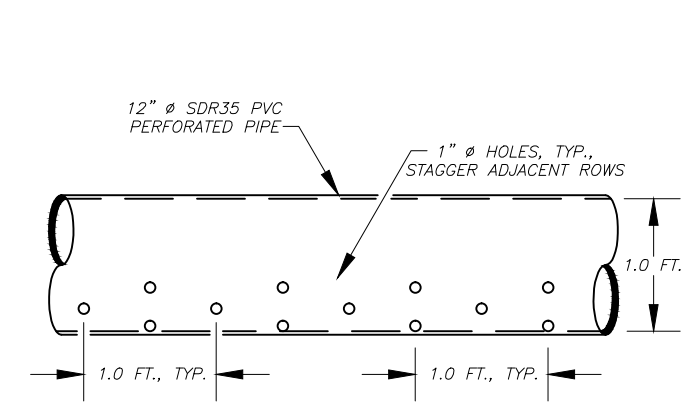
- NOTES:
1. THE TWO (2) JOINTS (28.0 FEET) OF MINE SEAL OUTLET PIPES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "WET MINE SEAL".
 2. THE MINE SEAL CONVEYANCE PIPE LENGTHS VARY AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "MINE SEAL CONVEYANCE PIPES".

PLAN VIEW, TOP OF BULKHEAD ELEVATION

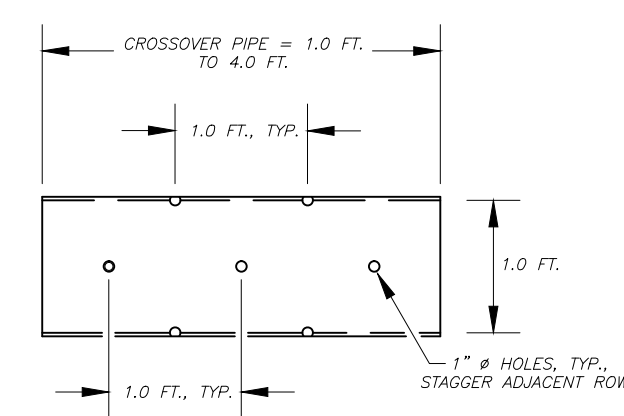


PROFILE VIEW, TYP.

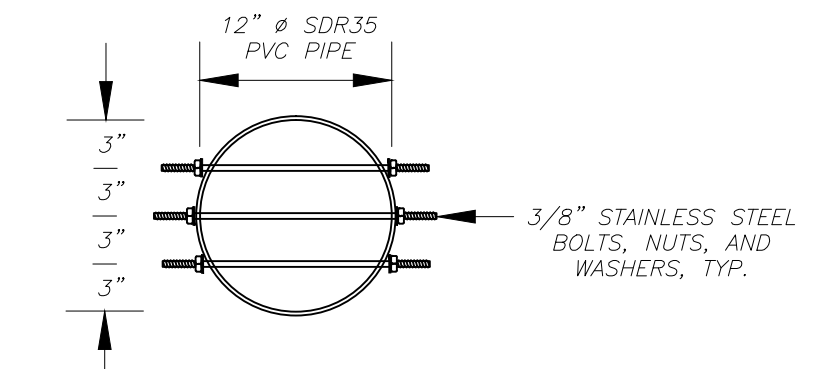
MODIFIED MINE SEAL
NOT TO SCALE



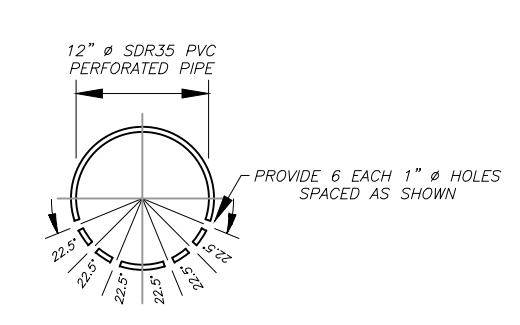
**MODIFIED MINE SEAL OUTLET PIPES
LONGITUDINAL VIEW, TYP.**



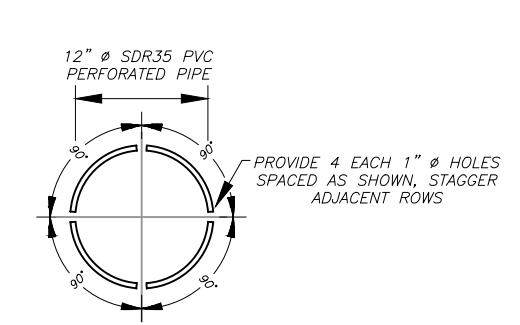
**MODIFIED MINE SEAL CROSS-OVER PIPE
LONGITUDINAL VIEW, TYP.**



**12" Ø PVC PIPE ANIMAL GUARD
CROSS SECTION, TYP.**
SCALE: 1" = 1 FT.



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



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

MODIFIED MINE SEAL PIPE DETAILS, TYP.

MODIFIED MINE SEAL
NOT TO SCALE

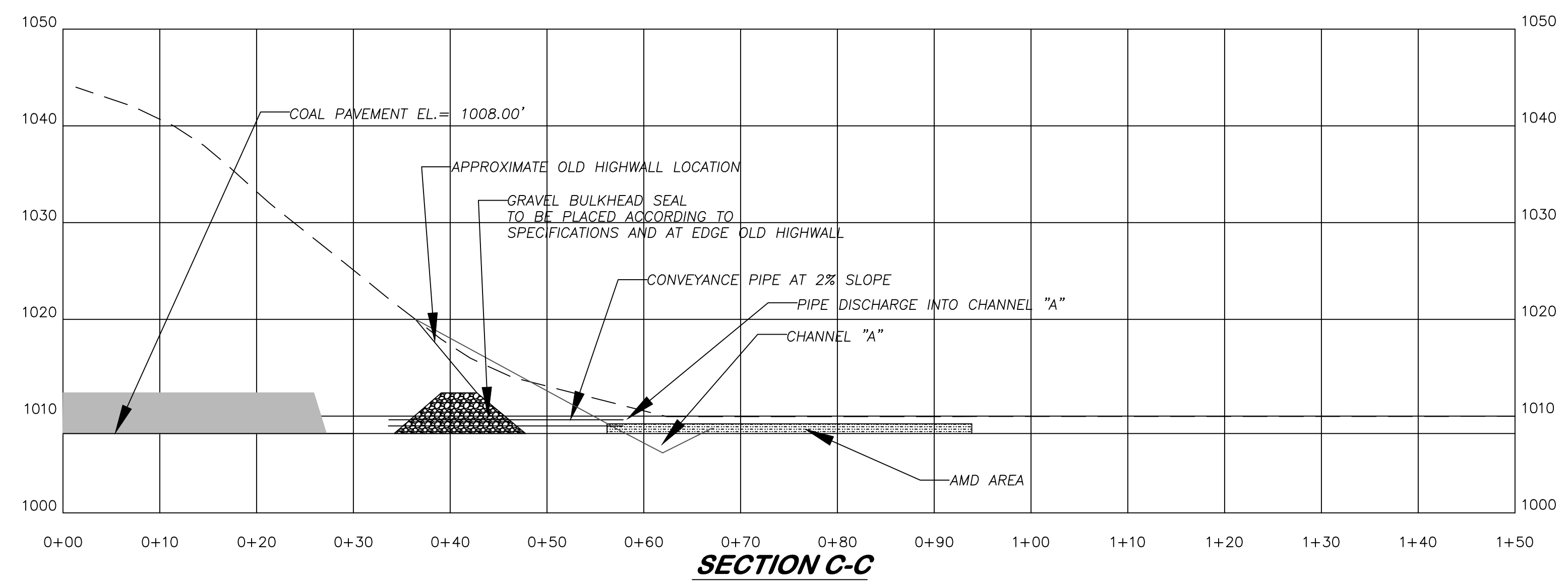
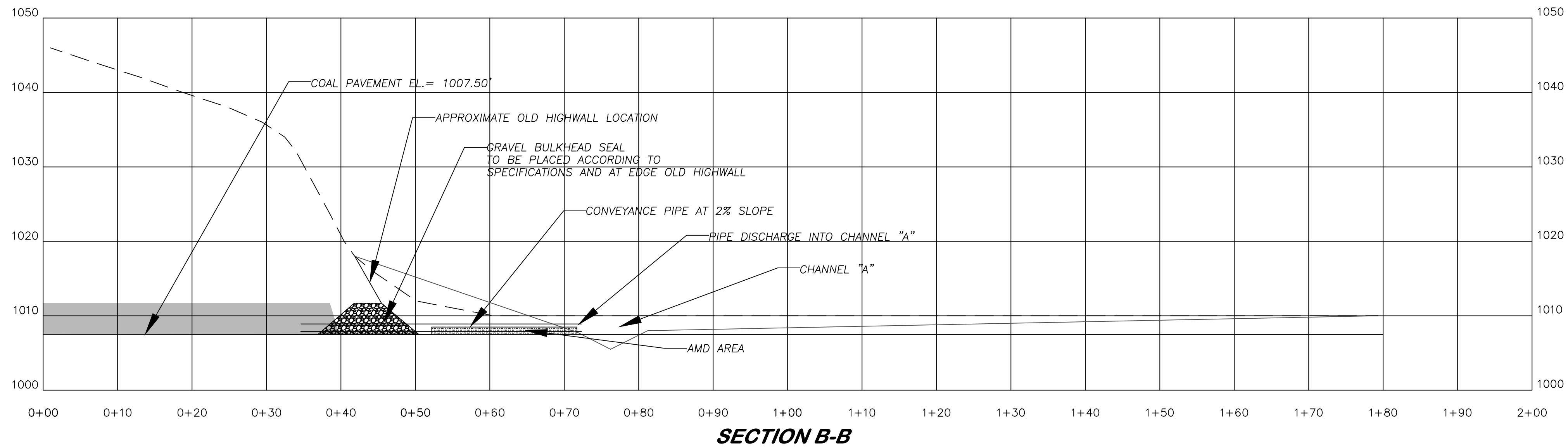
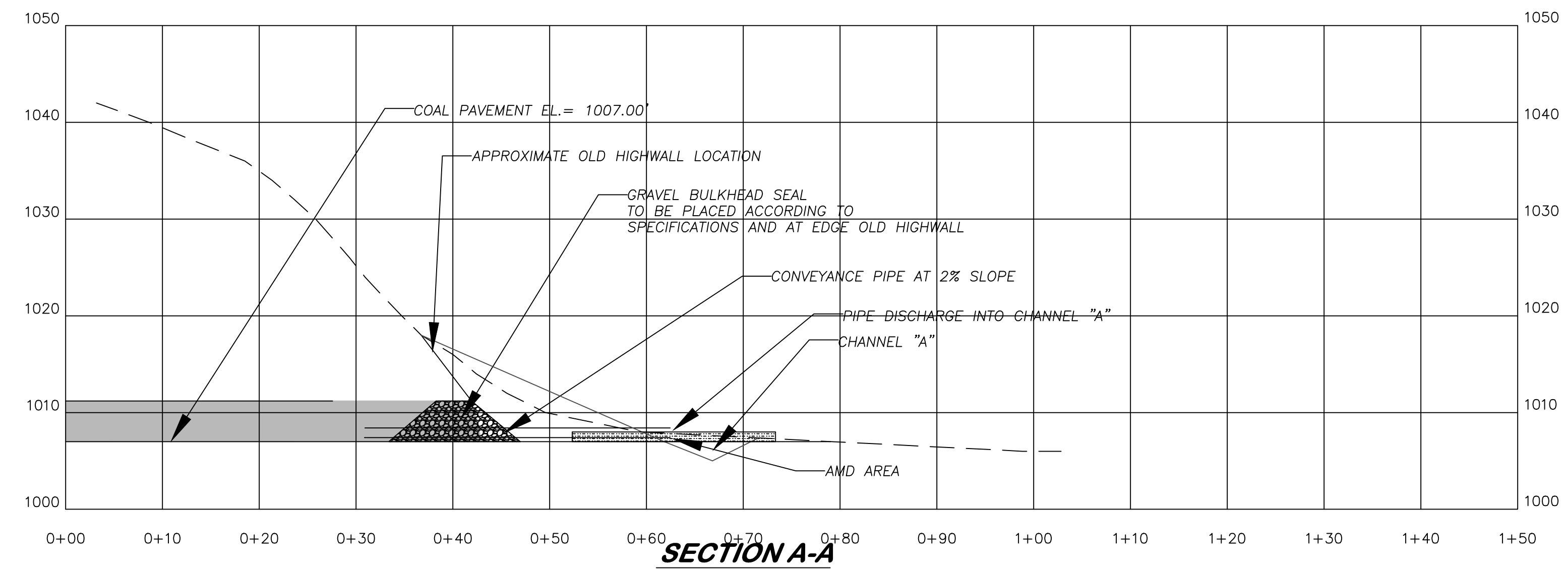
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

MODIFIED WET MINE SEAL

DRAWN BY: RCD
APPROVED BY:
DATE: 03/03/2015

SCALE: NONE
SHEET NO. **8**
OF 9



State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

PIGTAIL BRANCH DRAINAGE

**SITE 1
PORTAL CROSS SECTIONS**

DRAWN BY: RCD	SCALE: 1" = 10'
APPROVED BY: AW	SHEET NO. 9
DATE: 3/23/2015	OF 9