

west virginia department of environmental protection

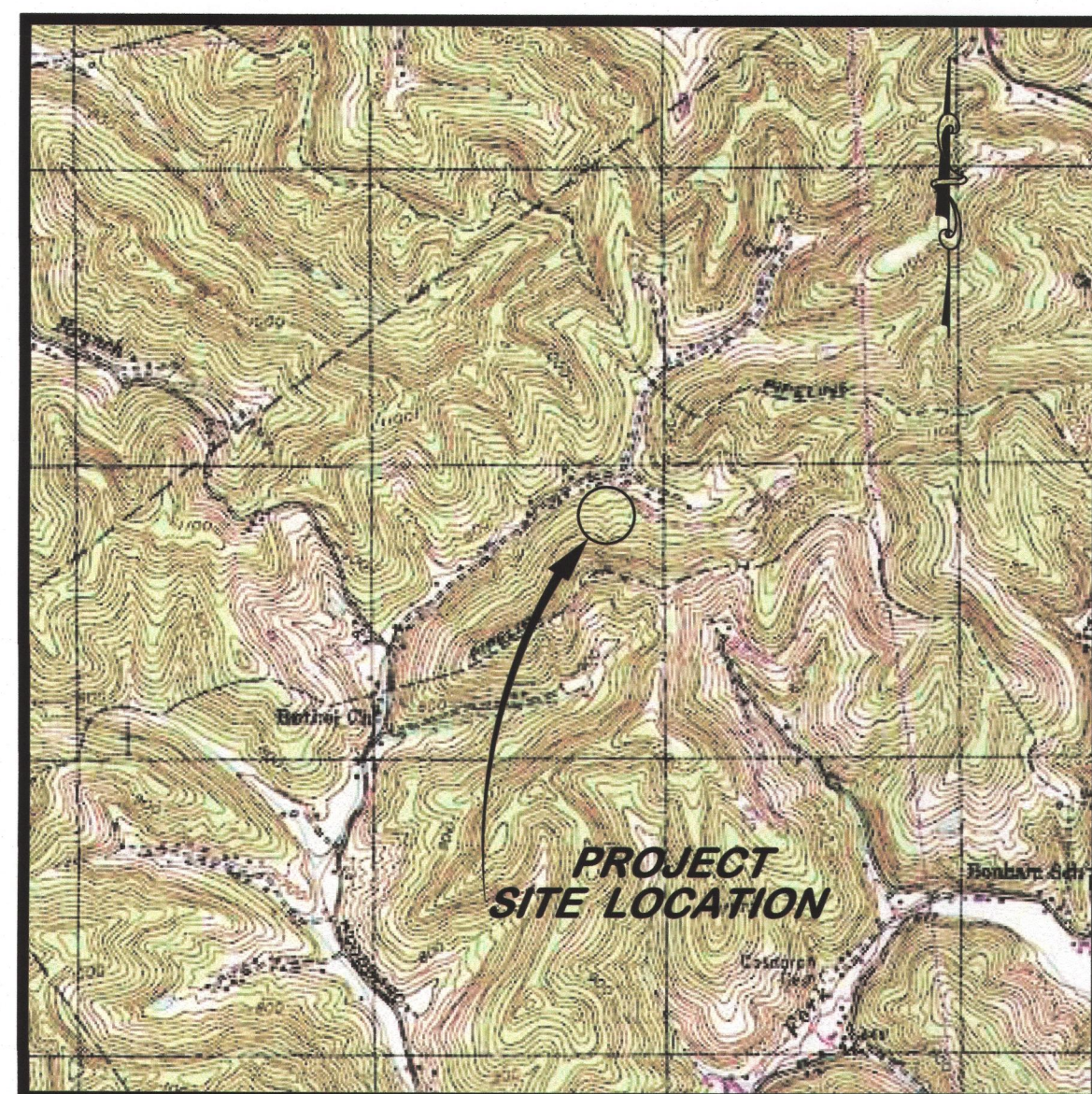
EARL RAY TOMBLIN, GOVERNOR **RANDY C. HUFFMAN, CABINET SECRETARY**

OFFICE OF ABANDONED MINE LANDS AND RECLAMATION

**LYNN BROOK (BOYD) DRAINAGE
PHASE 2**

NEAR CHARLESTON
KANAWHA COUNTY, WEST VIRGINIA

VICINITY MAP



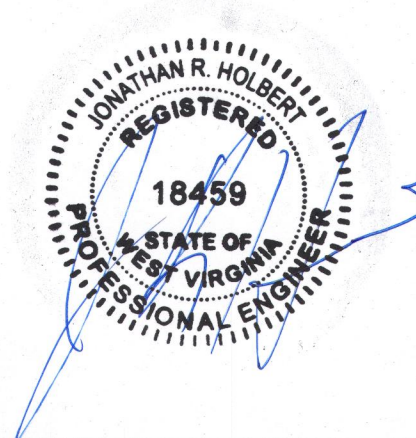
USGS 7.5' QUAD (POCATALICO)

INDEX TO SHEETS

SHEET NO.	DESCRIPTION
2	EXISTING CONDITIONS AND TAX MAP OVERLAY
3	SEDIMENT CONTROL AND RECLAMATION PLAN
4	CHANNELS "A", "B" AND "C" PROFILE VIEW
5	UNDERDRAINS "A", "B", "C", "D" AND "E" PROFILE VIEW
6	CONSTRUCTION DETAILS
7	CONSTRUCTION DETAILS (2)
8	WET MINE SEAL AND ROCK CHECK DAM DETAILS

BID SCHEDULE

ITEM NO.	Qty	Unit	DESCRIPTION	UNIT PRICE
1.0	1	LS	Mobilization and Demobilization (Limited to 10% of Total Bid)	LS
2.0	1	LS	Construction Layout (Limited to 5% of Total Bid)	LS
3.0	1	LS	Quality Control (Limited to 3% of Total Bid)	LS
4.0	1	LS	Site Preparation (Limited to 10% of Total Bid)	LS
4.1	425	TN	Temporary Access Road	\$
5.1	1,300	LF	Silt Fence	\$
5.2	50	TN	Stabilized Construction Entrance	\$
5.3	10	EA	Rock Check Dam	\$
6.0	1	LS	Revegetation	LS
7.1	850	LF	Grout Filled Fabric Lined Channel	\$
7.2	1	EA	Type "A" Manhole	\$
7.3	350	LF	4 x 4' Underdrain Type 1	\$
7.4	200	LF	4 x 4' Underdrain Type 2	\$
7.5	110	LF	Underdrain Conveyance Pipe	\$
8.1	1	EA	Wet Mine Seal	\$
8.2	70	LF	Mine Seal Conveyance Pipe	\$
8.3	20	EA	Soda Ash Briquettes (50 lb bag)	\$

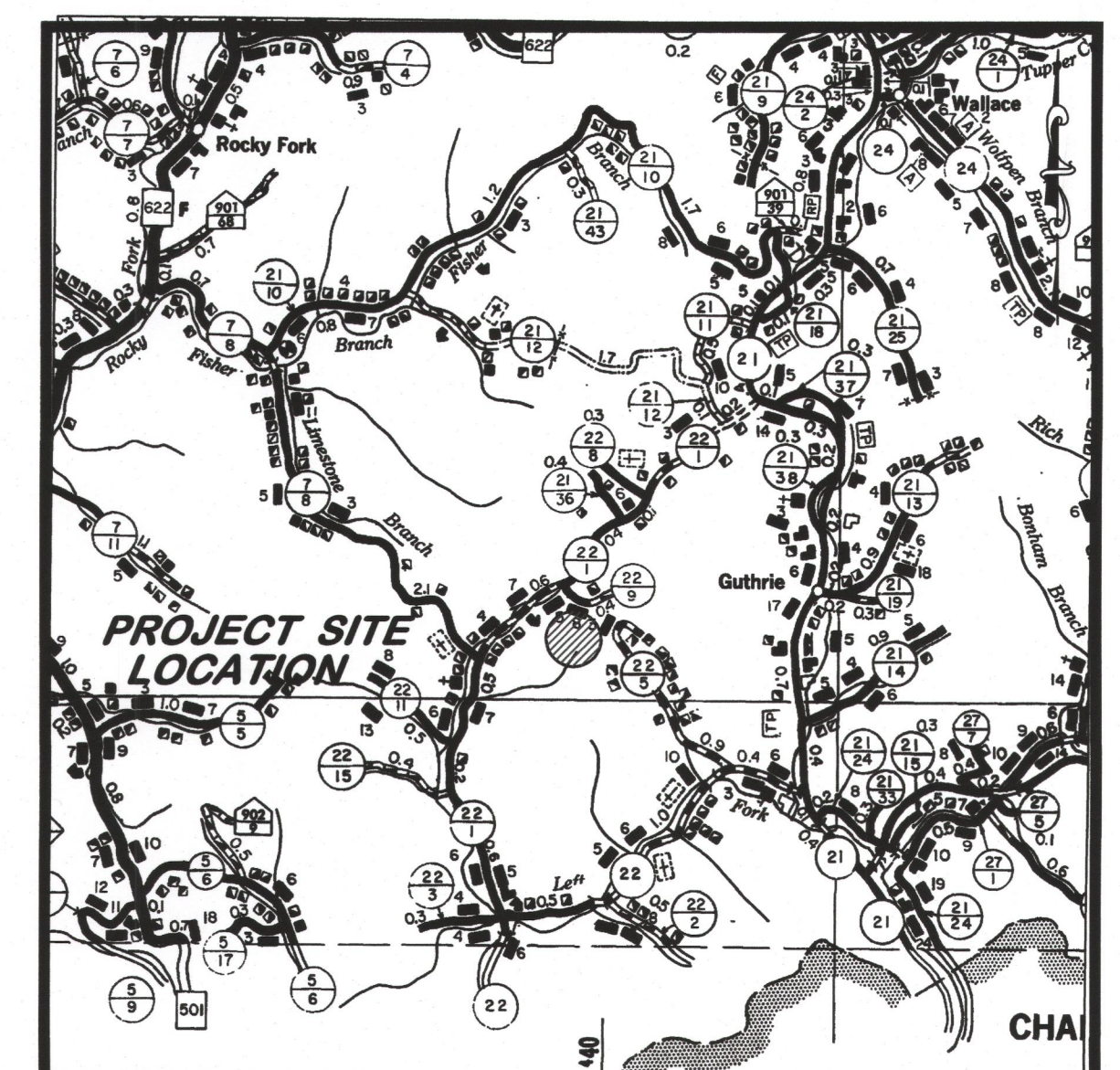


APPROVED

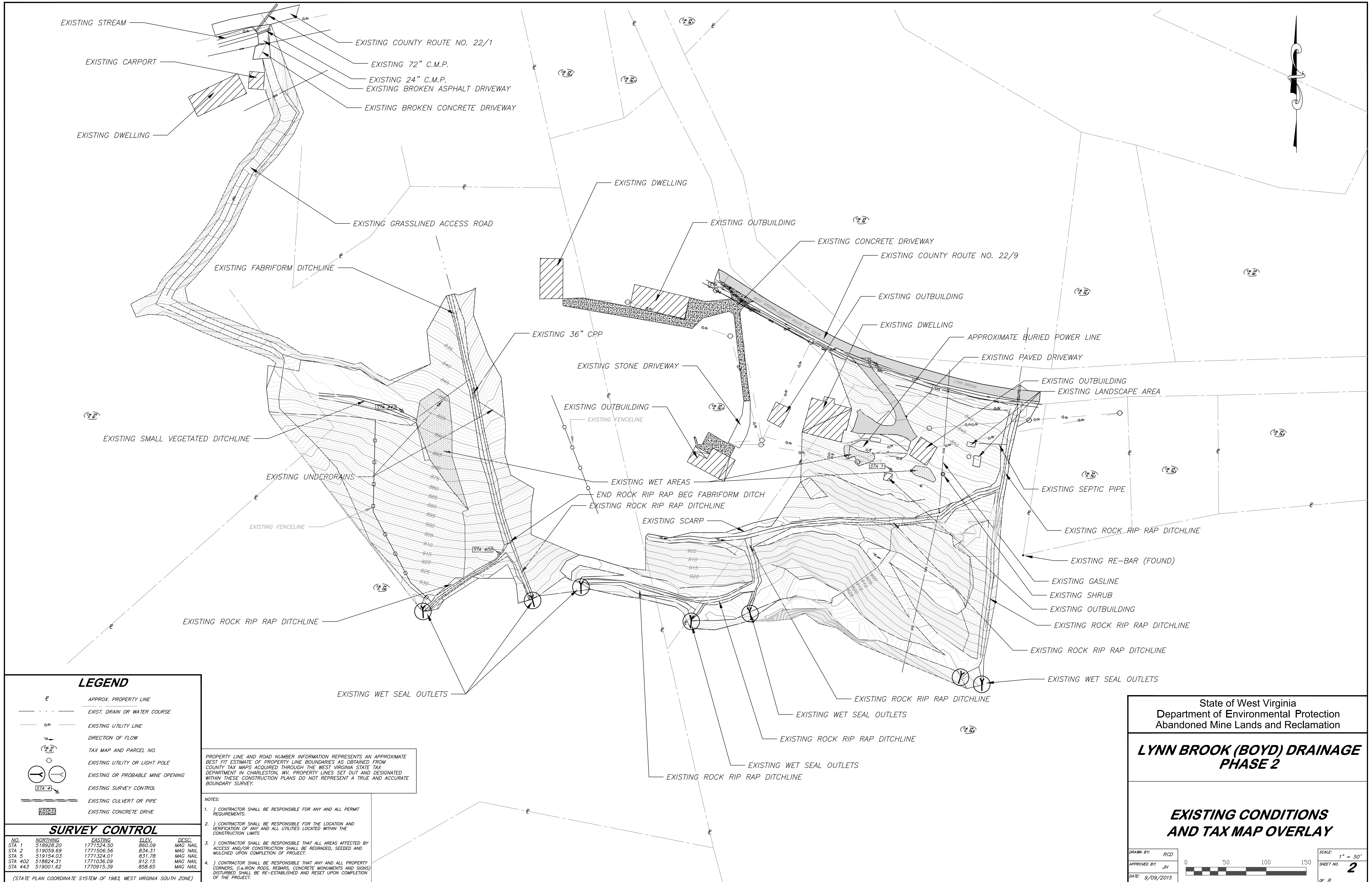
2/9/16

DATE

LOCATION MAP



COUNTY HIGHWAY MAP, 1" = 1 MI.



LEGEND

- APPROX. PROPERTY LINE
- EXIST. DRAIN OR WATER COURSE
- EXISTING UTILITY LINE
- DIRECTION OF FLOW
- TAX MAP AND PARCEL NO.
- EXISTING UTILITY OR LIGHT POLE
- EXISTING OR PROBABLE MINE OPENING
- EXISTING SURVEY CONTROL
- EXISTING CULVERT OR PIPE
- EXISTING CONCRETE DRIVE

SURVEY CONTROL

NO.	NORTHING	EASTING	ELEV.	DESC.
STA 1	518928.20	1771524.50	860.09	MAG NAIL
STA 2	519059.69	1771506.56	834.31	MAG NAIL
STA 5	519154.03	1771324.01	831.78	MAG NAIL
STA 402	518824.31	1771036.09	912.15	MAG NAIL
STA 443	519001.62	1770915.39	858.65	MAG NAIL

PROPERTY LINE AND ROAD NUMBER INFORMATION REPRESENTS AN APPROXIMATE BEST FIT ESTIMATE OF PROPERTY LINE BOUNDARIES AS OBTAINED FROM COUNTY TAX MAPS ACQUIRED THROUGH THE WEST VIRGINIA STATE TAX DEPARTMENT IN CHARLESTON, WV. PROPERTY LINES SET OUT AND DESIGNATED WITHIN THESE CONSTRUCTION PLANS DO NOT REPRESENT A TRUE AND ACCURATE BOUNDARY SURVEY.

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.) CONTRACTOR SHALL BE RESPONSIBLE THAT ALL AREAS AFFECTED BY ACCESS AND/OR CONSTRUCTION SHALL BE REGRADED, SEEDED AND MULCHED UPON COMPLETION OF PROJECT.
4.) CONTRACTOR SHALL BE RESPONSIBLE THAT ANY AND ALL PROPERTY CORNERS, (i.e. IRON RODS, REBARS, CONCRETE MONUMENTS AND SIGNS) DISTURBED SHALL BE RE-ESTABLISHED AND RESET UPON COMPLETION OF THE PROJECT.

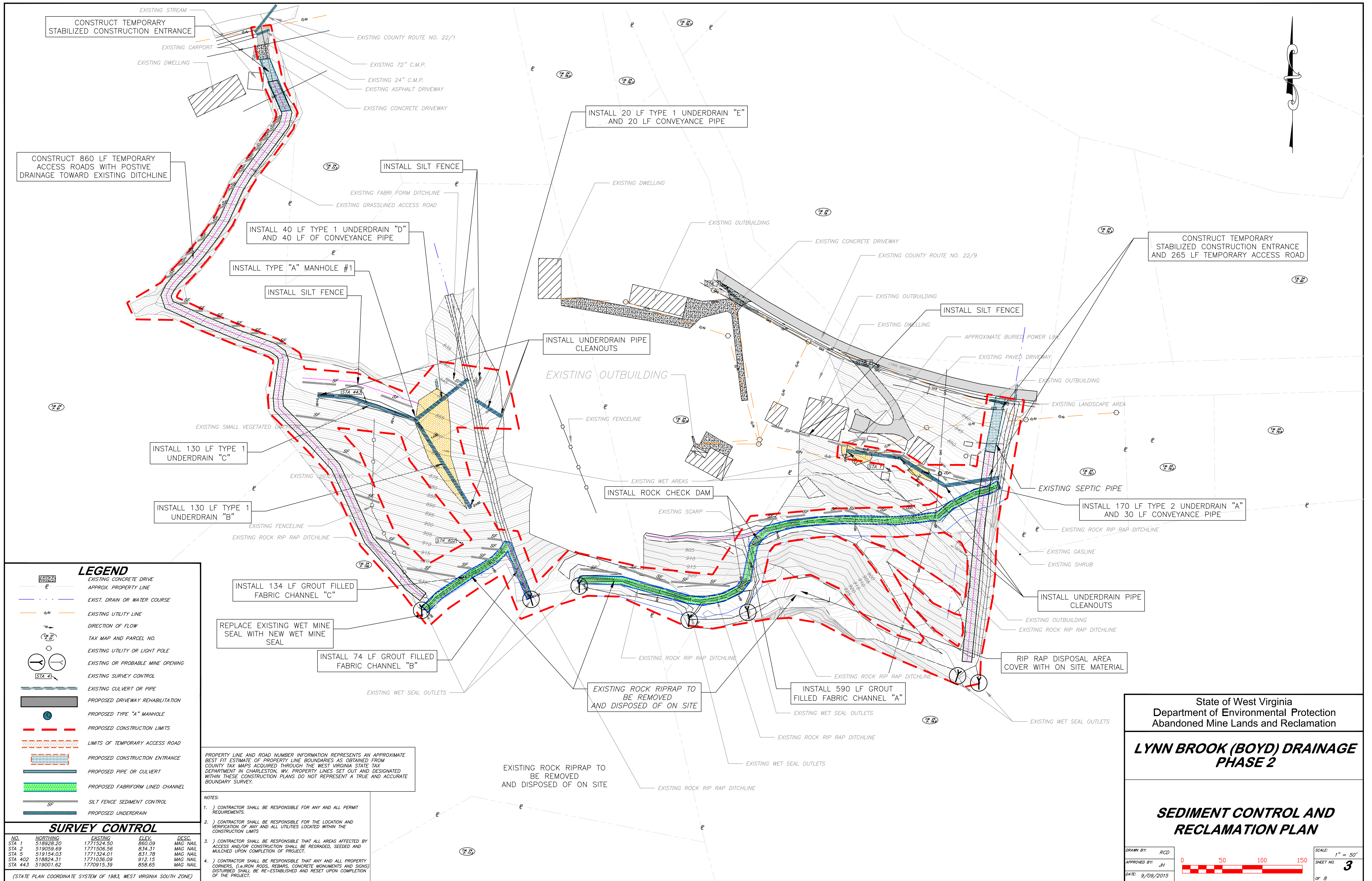
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

**LYNN BROOK (BOYD) DRAINAGE
PHASE 2**

**EXISTING CONDITIONS
AND TAX MAP OVERLAY**

DRAWN BY: RCD
APPROVED BY: JH
DATE: 9/09/2015

SCALE: 1" = 50'
SHEET NO. 2
OF 8



LEGEND

- EXISTING CONCRETE DRIVE
- APPROX. PROPERTY LINE
- EXIST. DRAIN OR WATER COURSE
- EXISTING UTILITY LINE
- DIRECTION OF FLOW
- TAX MAP AND PARCEL NO.
- EXISTING UTILITY OR LIGHT POLE
- EXISTING OR PROBABLE MINE OPENING
- EXISTING SURVEY CONTROL
- EXISTING CULVERT OR PIPE
- PROPOSED DRIVEWAY REHABILITATION
- PROPOSED TYPE "A" MANHOLE
- PROPOSED CONSTRUCTION LIMITS
- LIMITS OF TEMPORARY ACCESS ROAD
- PROPOSED CONSTRUCTION ENTRANCE
- PROPOSED PIPE OR CULVERT
- PROPOSED FABRIFORM LINED CHANNEL
- SILT FENCE SEDIMENT CONTROL
- PROPOSED UNDERDRAIN

SURVEY CONTROL

NO.	NORTHING	EASTING	ELEV.	DESC.
STA 1	518928.20	1771524.50	860.09	MAG NAIL
STA 2	519059.69	1771506.56	834.31	MAG NAIL
STA 5	519154.03	1771324.01	831.78	MAG NAIL
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NOTES:

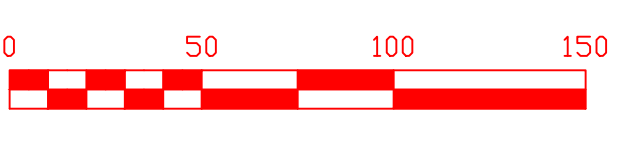
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State of West Virginia
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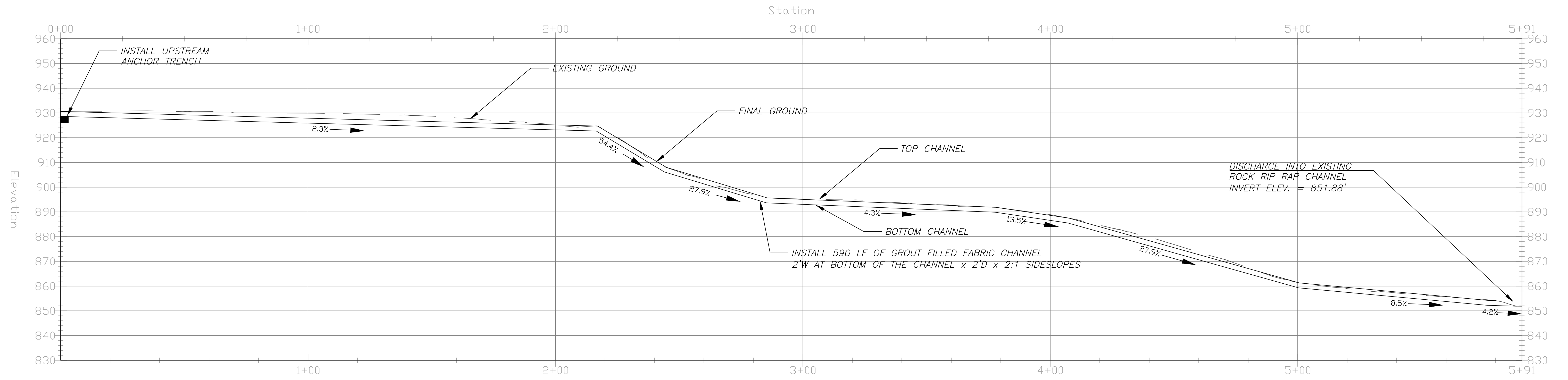
**LYNN BROOK (BOYD) DRAINAGE
PHASE 2**

**SEDIMENT CONTROL AND
RECLAMATION PLAN**

DRAWN BY: RCD
APPROVED BY: JH
DATE: 9/09/2015

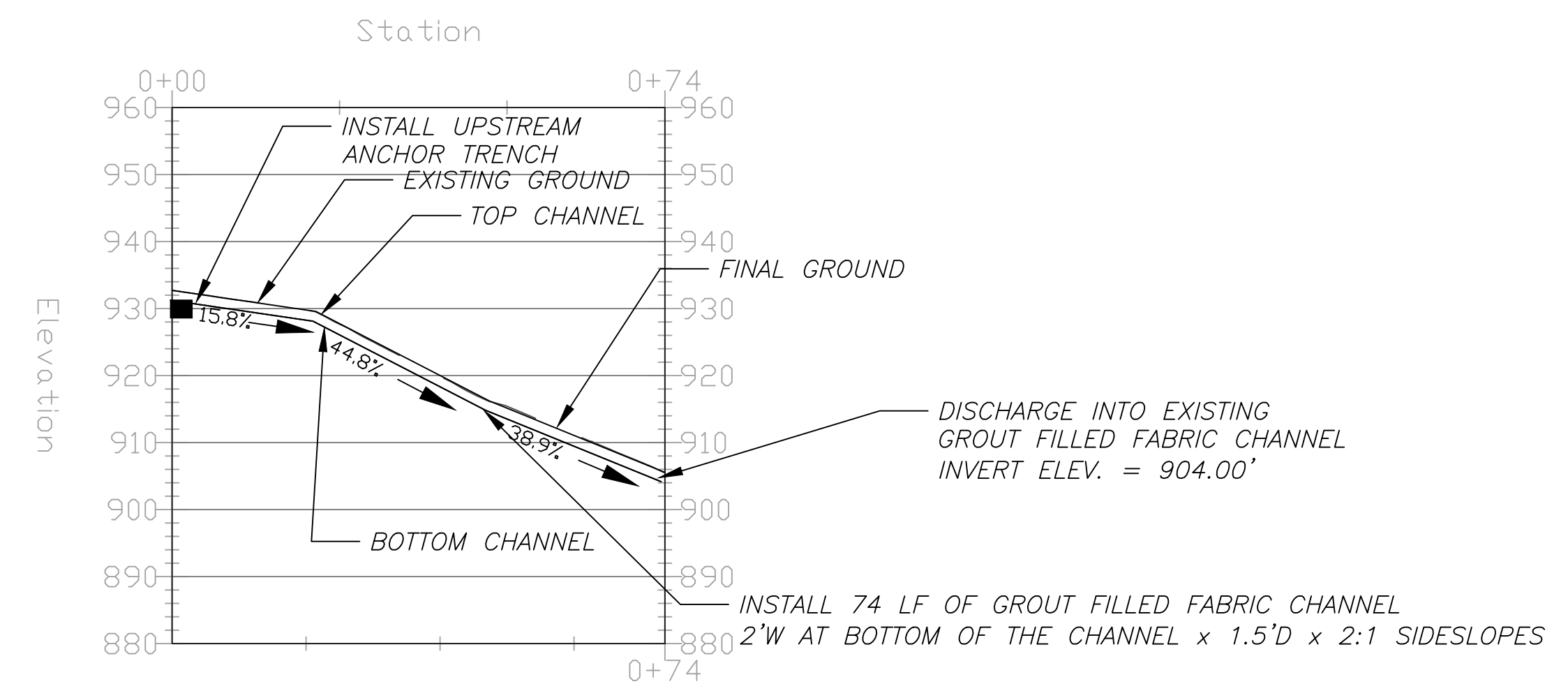


SCALE: 1" = 50'
SHEET NO. **3**
OF 8



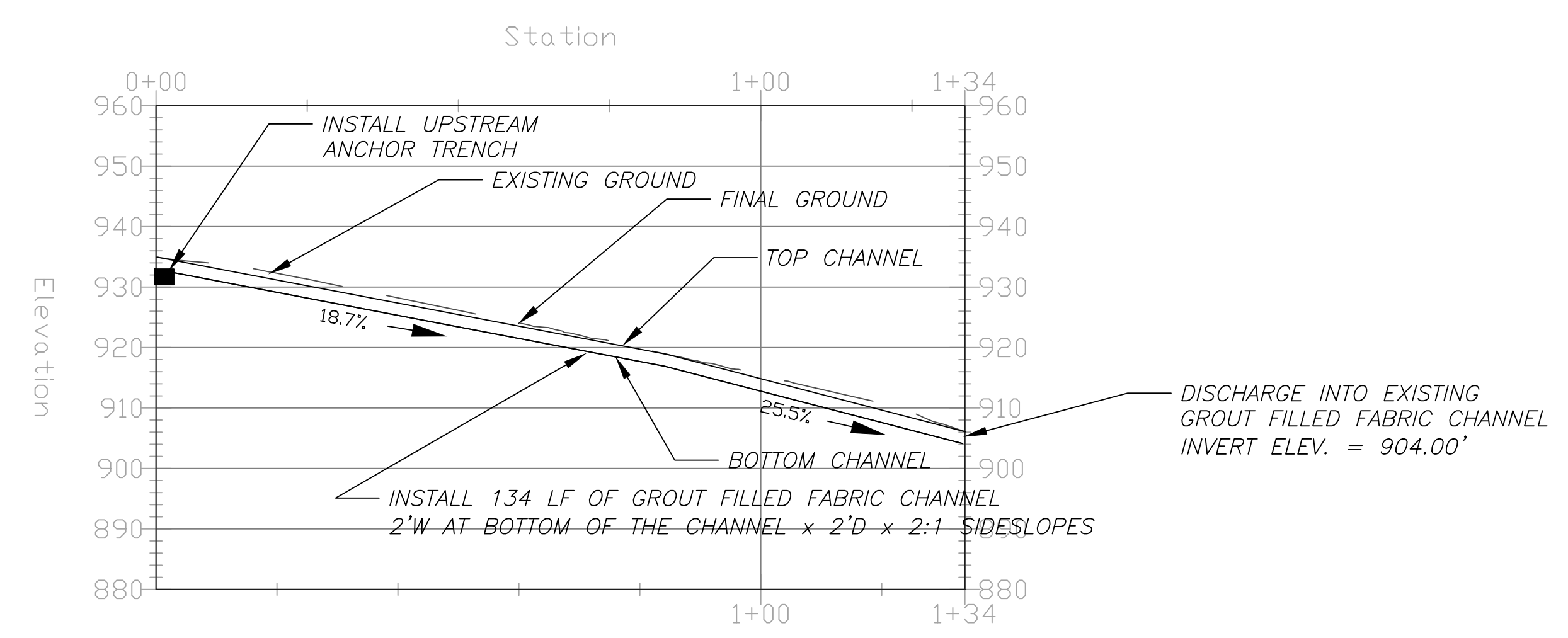
GROUT FILLED FABRIC CHANNEL "A" PROFILE

SCALE: 1" = 20'



GROUT FILLED FABRIC CHANNEL "B" PROFILE

SCALE: 1" = 20'



GROUT FILLED FABRIC CHANNEL "C" PROFILE

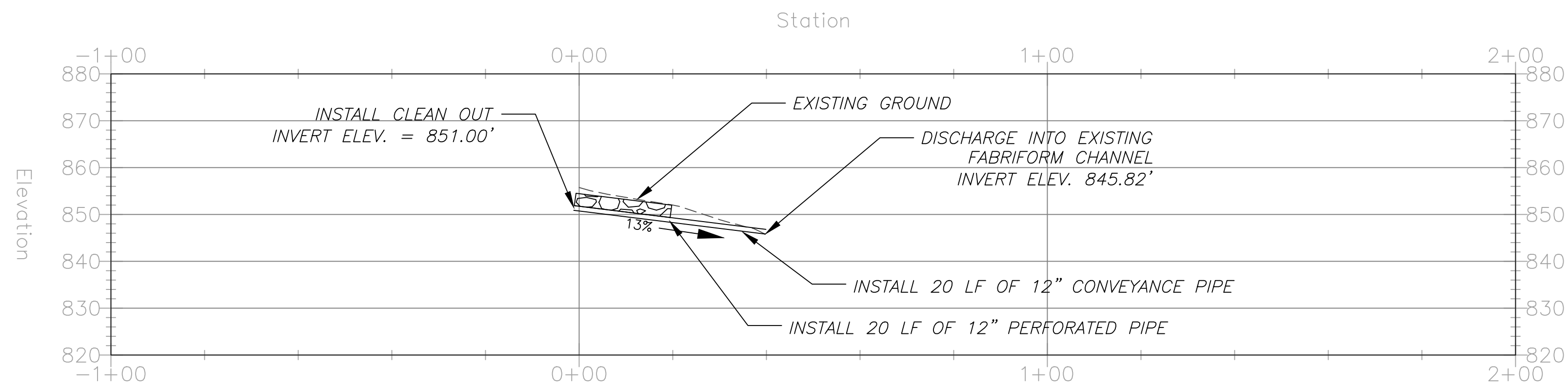
SCALE: 1" = 20'

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

**LYNN BROOK (BOYD) DRAINAGE
PHASE 2**

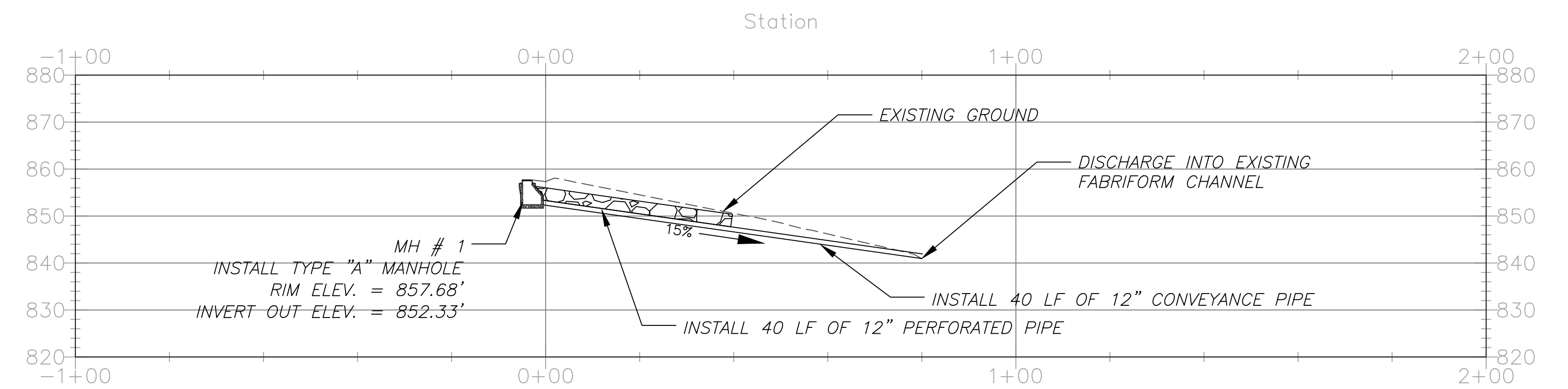
**CHANNELS "A", "B" AND "C"
PROFILE VIEW**

DRAWN BY: RCD	SCALE: 1" = 20'
APPROVED BY: JH	SHEET NO. 4
DATE: 9/17/2015	OF 8



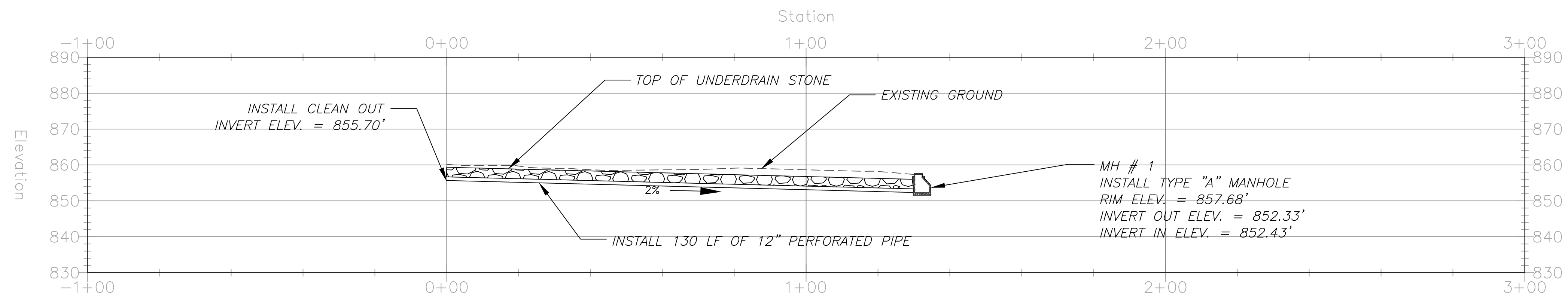
TYPE 1 UNDERDRAIN "E" PROFILE

SCALE: 1" = 20'



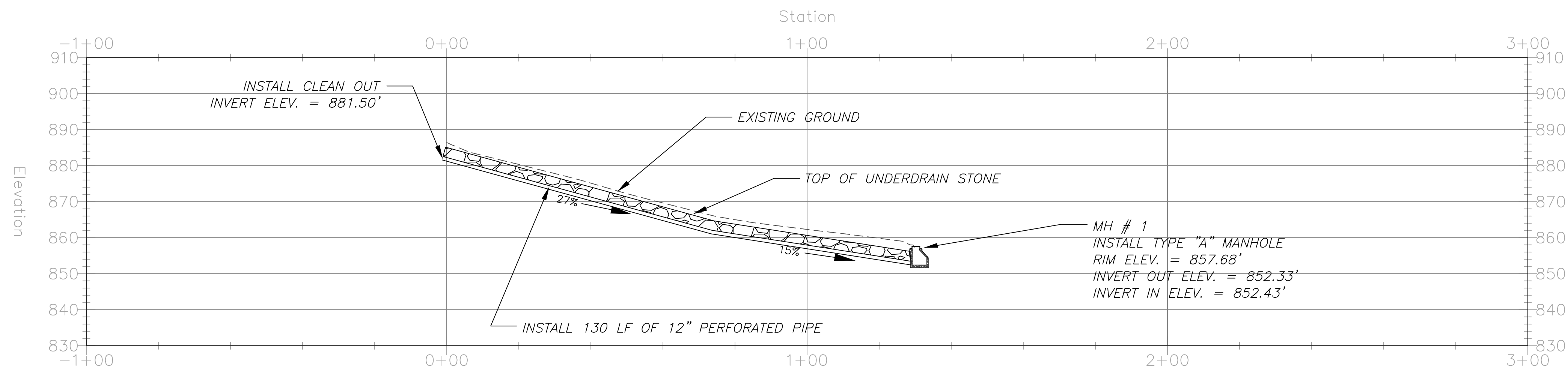
TYPE 1 UNDERDRAIN "D" PROFILE

SCALE: 1" = 20'



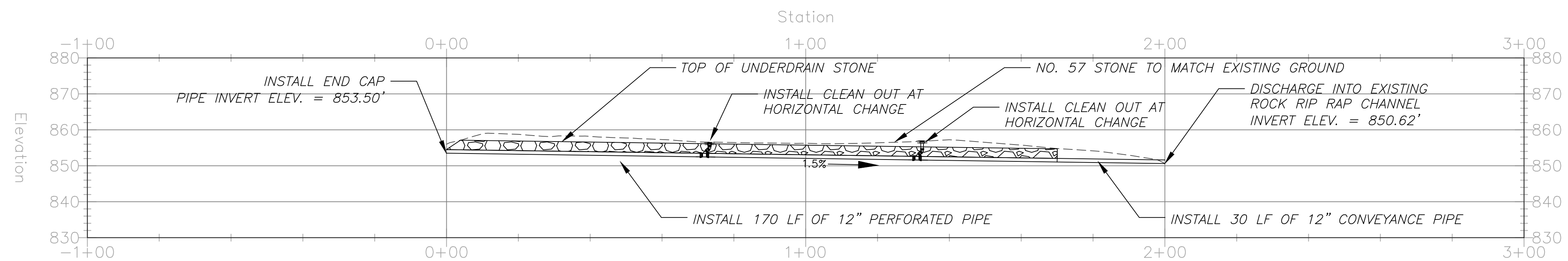
TYPE 1 UNDERDRAIN "C" PROFILE

SCALE: 1" = 20'



TYPE 1 UNDERDRAIN "B" PROFILE

SCALE: 1" = 20'



TYPE 2 UNDERDRAIN "A" PROFILE

SCALE: 1" = 20'

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

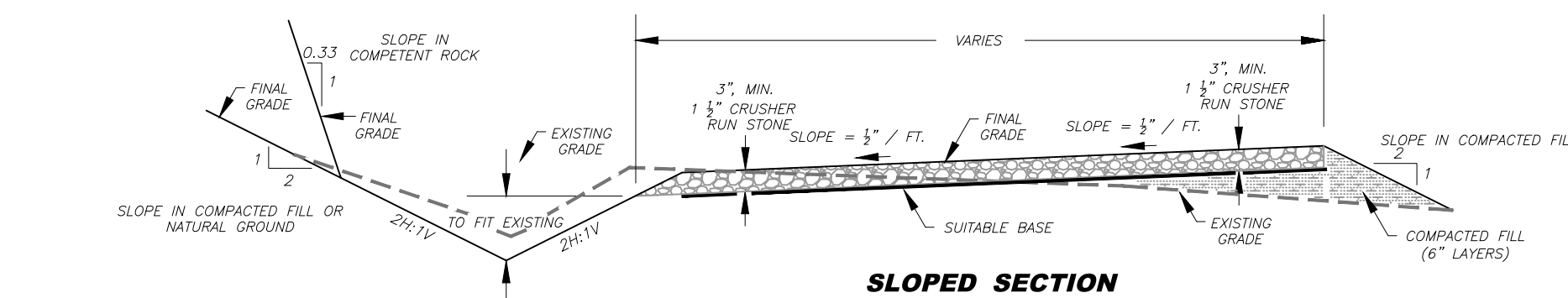
**LYNN BROOK (BOYD) DRAINAGE
PHASE 2**

**UNDERDRAINS "A", "B", "C",
"D" AND "E"
PROFILE VIEW**

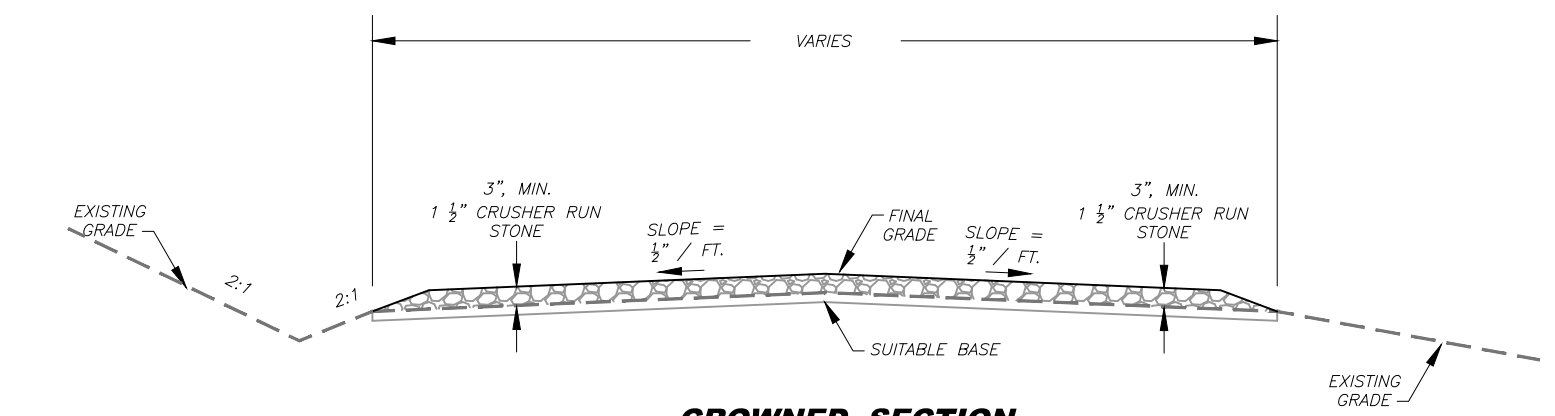
DRAWN BY: RCD
APPROVED BY: JH
DATE: 9/17/2015



SCALE: 1" = 20'
SHEET NO. 5
OF 8



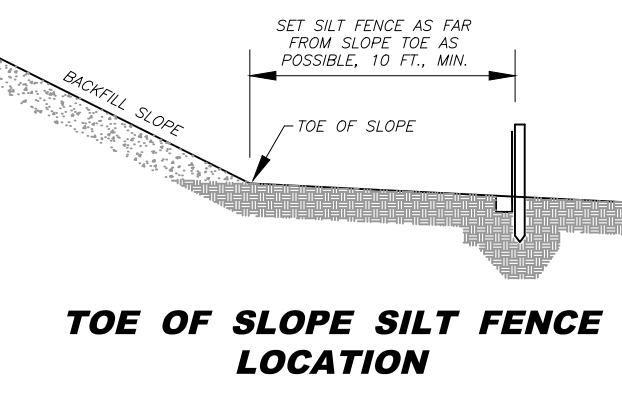
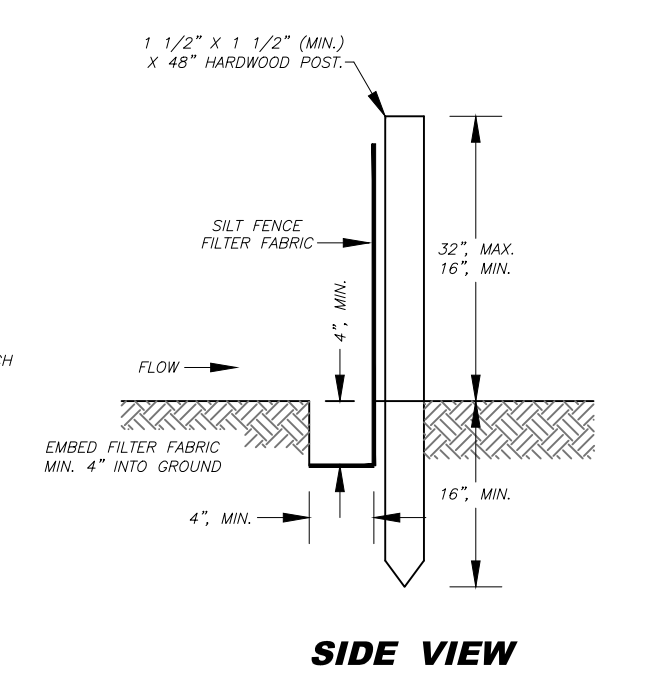
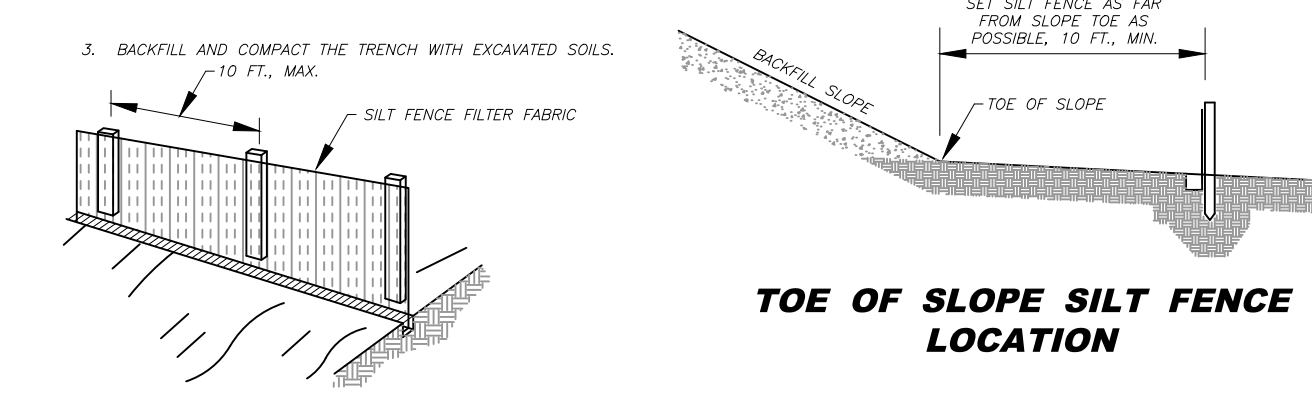
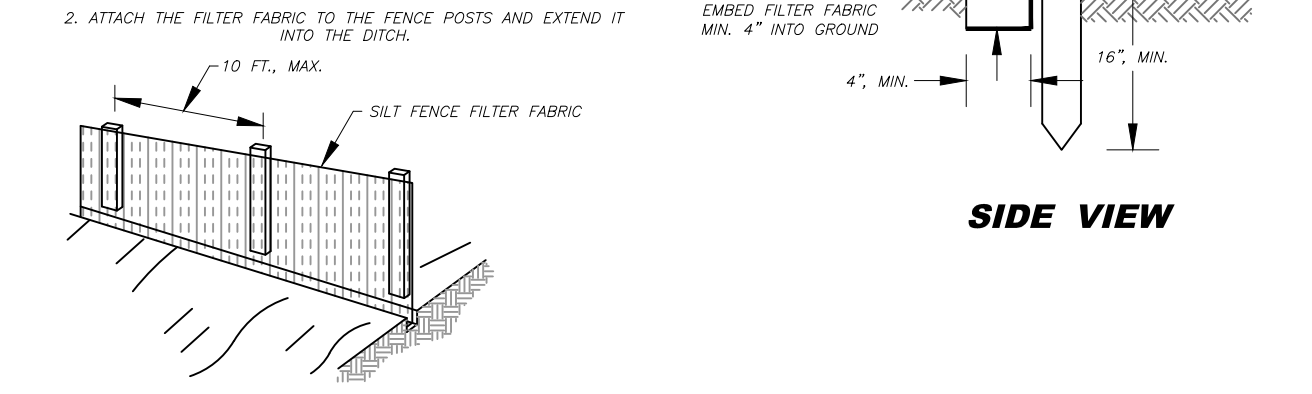
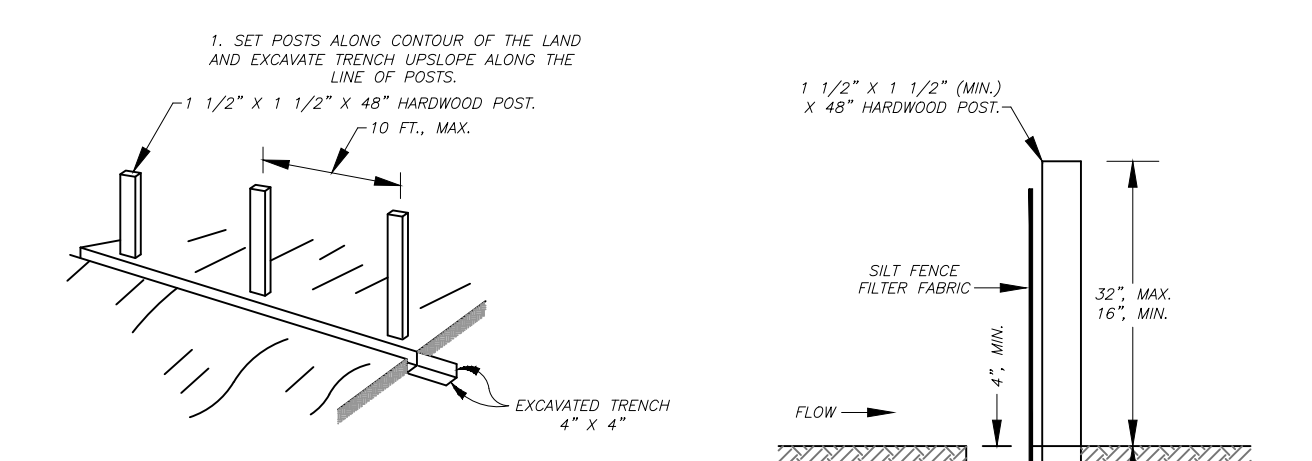
- NOTES:
1. ROADWAY SURFACE MAY BE SLOPED TO EITHER SIDE AS TOPOGRAPHY AND CONDITIONS WARRANT.
 2. 1 1/2" CRUSHER RUN STONE SHALL BE COMPACTED AS APPROVED BY THE ENGINEER.



- NOTES:
1. PRIOR TO STONE PLACEMENT, GRADE SUITABLE SUBGRADE INTO "CROWNED" OR "SLOPE TO DITCH" CONFIGURATION AS DIRECTED BY THE ENGINEER. REMOVING, REFILL, AND COMPACT SOFT SPOTS AS DIRECTED BY THE ENGINEER. ALL OUT/FILL SLOPES SHALL BE 3:1:1V.
 2. 1 1/2" CRUSHER RUN STONE SHALL BE COMPACTED AS APPROVED BY THE ENGINEER.

TEMPORARY ACCESS ROAD CONSTRUCTION

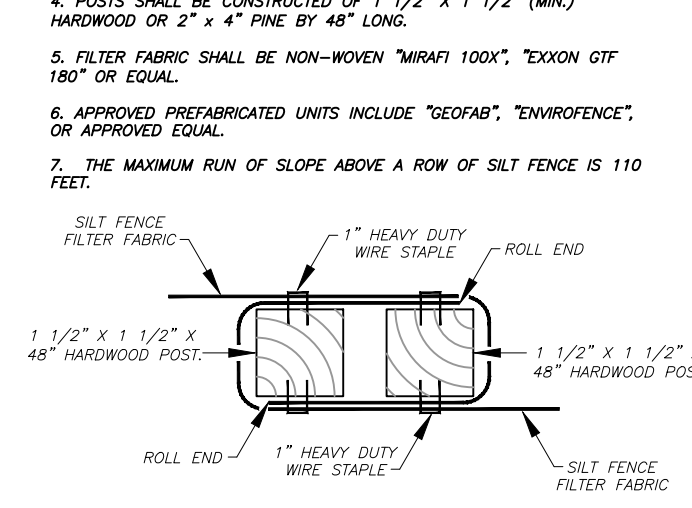
NOT TO SCALE



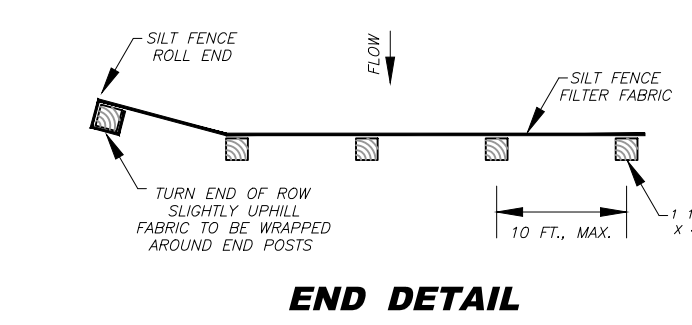
SILT FENCE

NOT TO SCALE

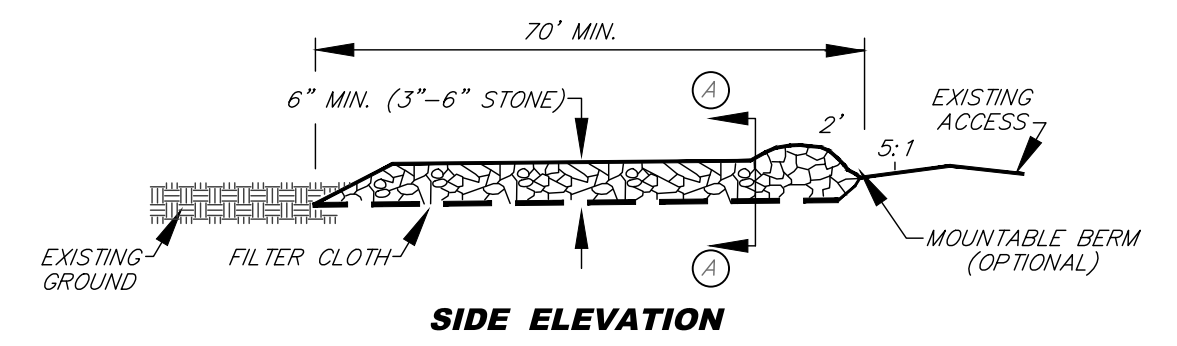
- SILT FENCE NOTES**
1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO ALIGNMENT LENGTH TO AVOID JOINTS. WHERE JOINTS ARE UNAVOIDABLE, THE FABRIC SHALL BE SPICED TOGETHER AT A SUPPORT POST BY TWISTING THE POST OF EACH RUN AROUND EACH OTHER.
 2. FILTER FABRIC SHALL BE FASTENED SECURELY TO THE UPRIGHT SIDE OF THE SUPPORT POSTS USING ONE INCH, MINIMUM LONG HEAVY-DUTY WIRE STAPLES OR 1/2\"/>



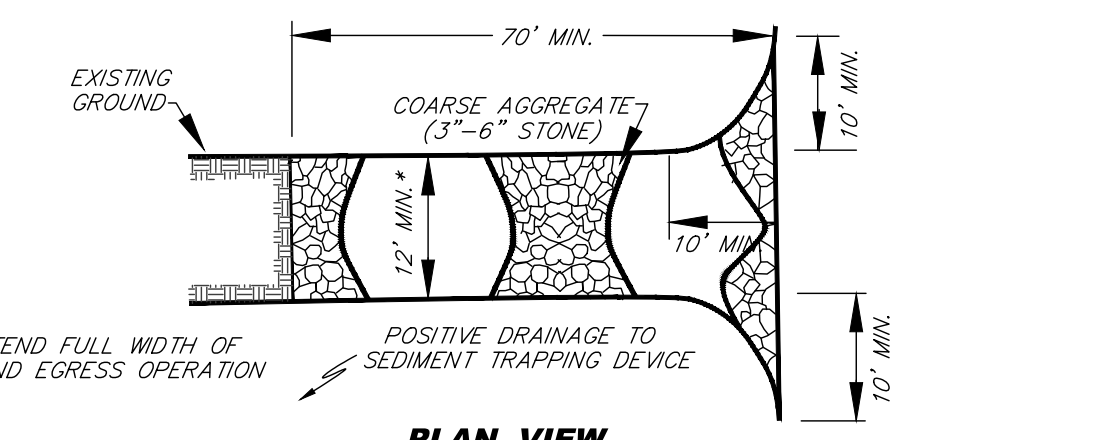
END LAP TOP VIEW



END DETAIL

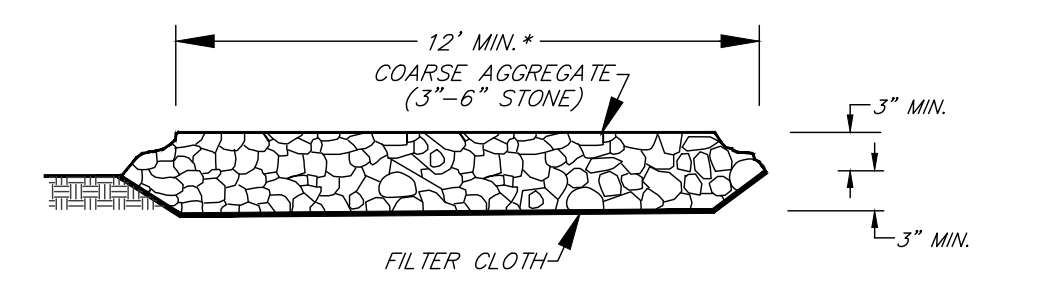


SIDE ELEVATION



PLAN VIEW

*MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION

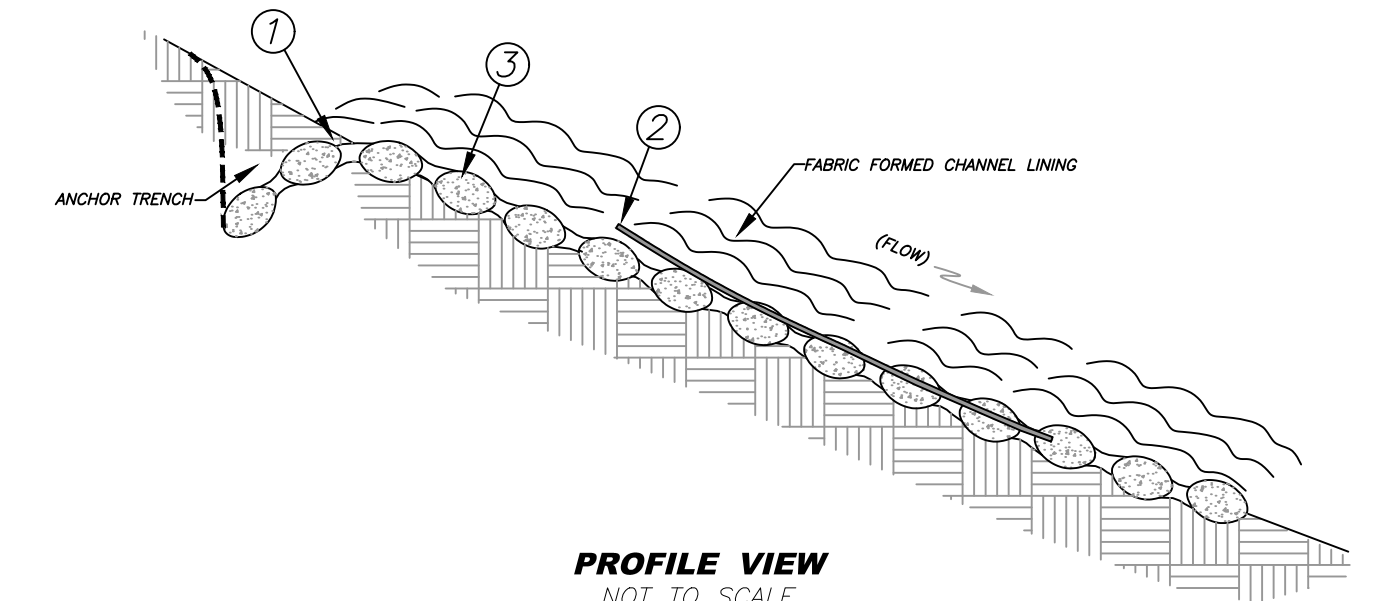


SECTION A - A

CERTAIN INSTALLATIONS SHALL WARRANT THE ADDITION OF A 3" THICK "CAP" LAYER OF 1 1/2" CLEAN STONE, WHEN INSTALLED AT THE LOCATION OF AN EXISTING DRIVEWAY OR VEHICULAR ACCESS. FOR ALL INSTALLATIONS, CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF SUCH.

STABILIZED CONSTRUCTION ENTRANCE

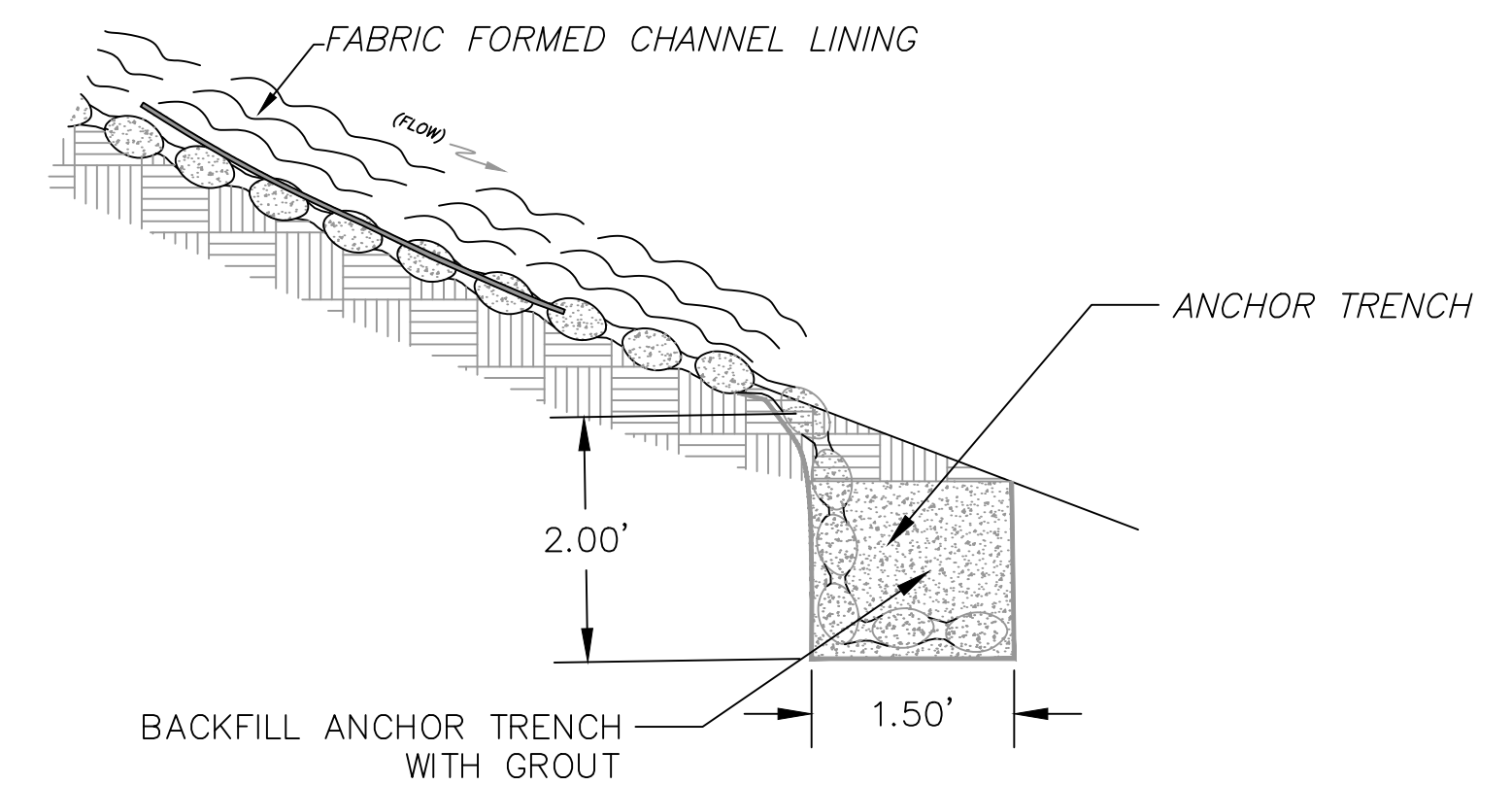
NOT TO SCALE



PROFILE VIEW

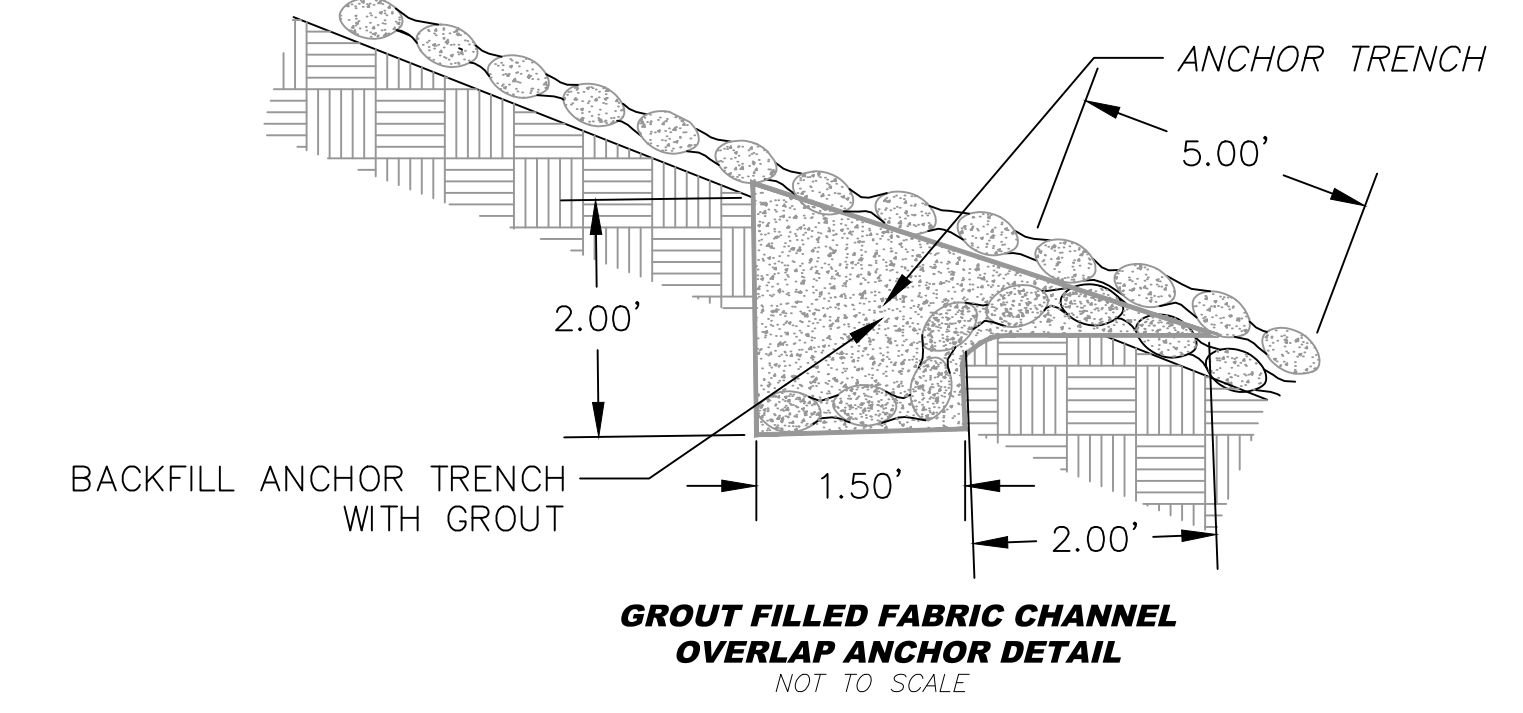
NOT TO SCALE

- GENERAL NOTES:
1. CIRCLED NUMBERS INDICATE SEQUENCE OF MORTAR/GROUT INJECTIONS.
 2. INJECT MORTAR/GROUT THROUGH THE UPPER LAYER OF THE FABRIC ON ABOUT 8" TO 10" CENTERS.
 3. LOCATE TOP EDGE OF FABRIC FORM AT LEAST 2' ABOVE ANTICIPATED FLOW DEPTH.
 4. LOCATE LOWER EDGE OF FABRIC FORM AT LEAST 2' BELOW DISCHARGE POINT TO STABLE SLOPE (ANCHOR TRENCH).



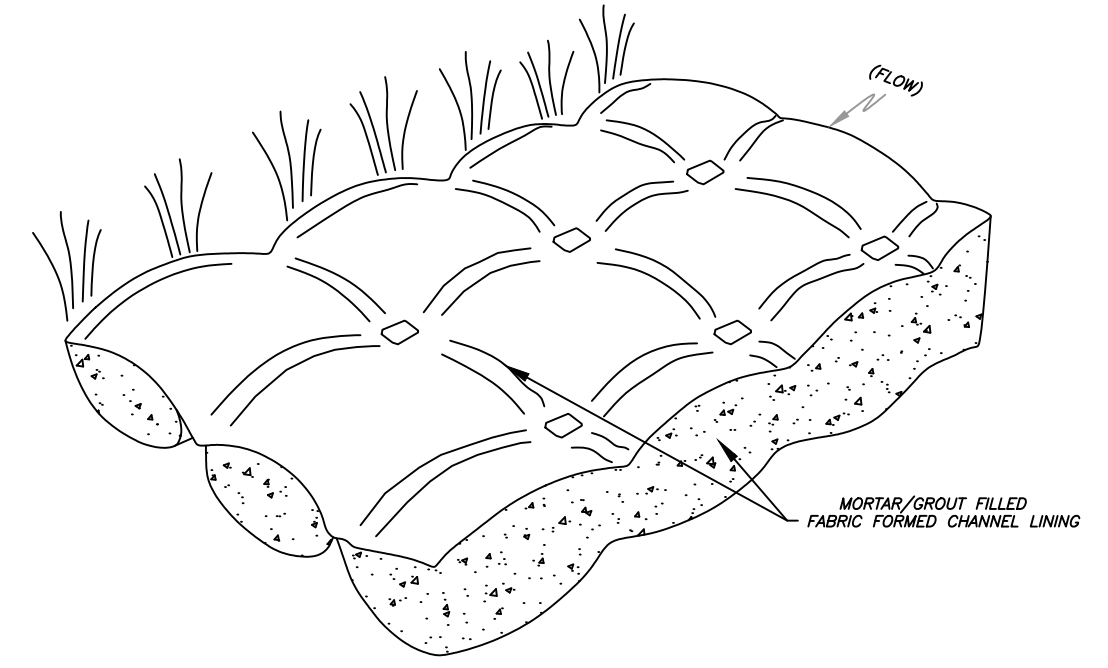
GROUT FILLED FABRIC CHANNEL DOWNSTREAM ANCHOR TRENCH

NOT TO SCALE



GROUT FILLED FABRIC CHANNEL OVERLAP ANCHOR DETAIL

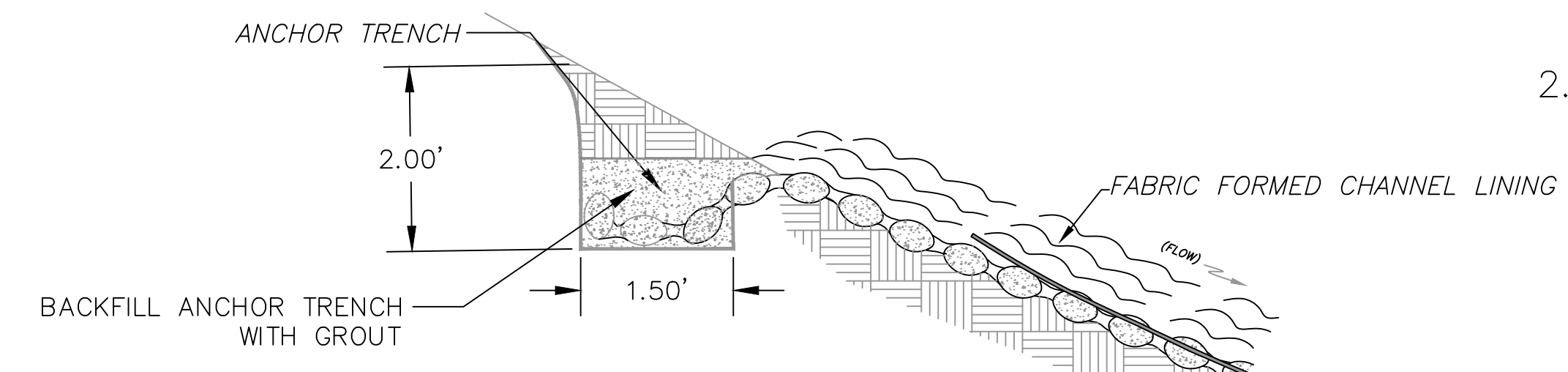
NOT TO SCALE



CONCEPTUAL VIEW

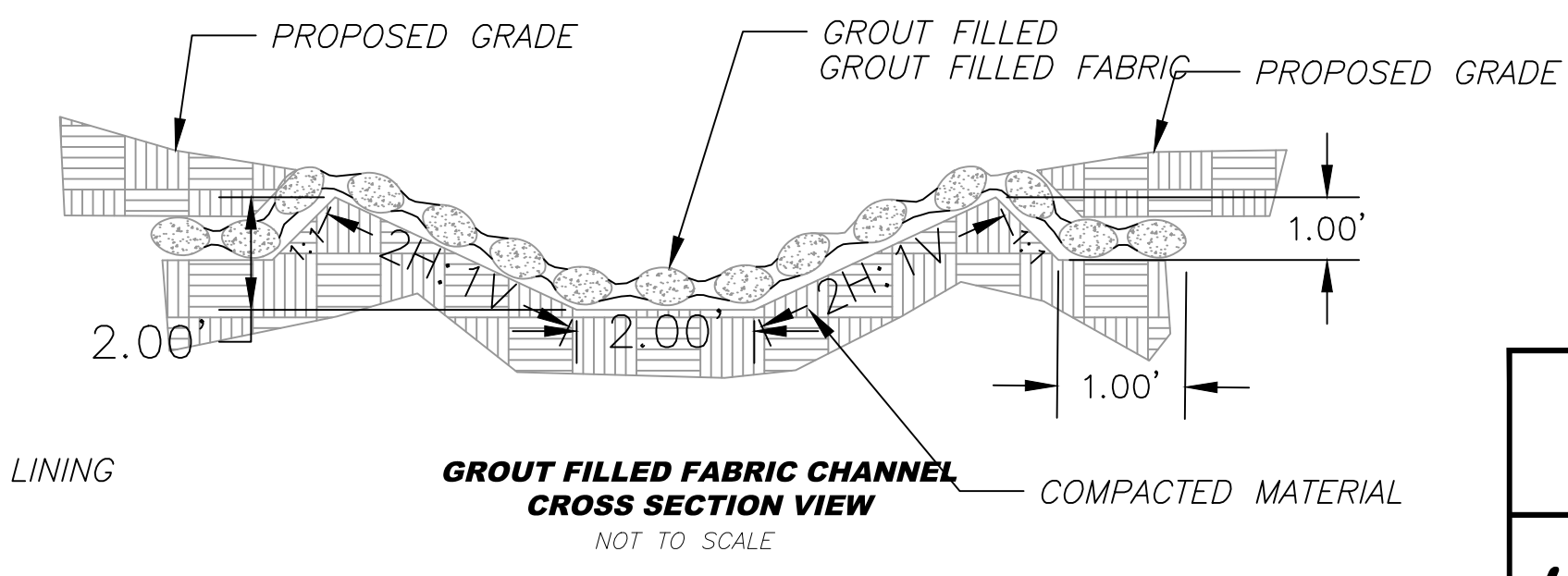
FABRIC FORMED CHANNEL LINING

NOT TO SCALE



GROUT FILLED FABRIC CHANNEL UPSTREAM ANCHOR TRENCH

NOT TO SCALE



GROUT FILLED FABRIC CHANNEL CROSS SECTION VIEW

NOT TO SCALE

COMPACTED MATERIAL

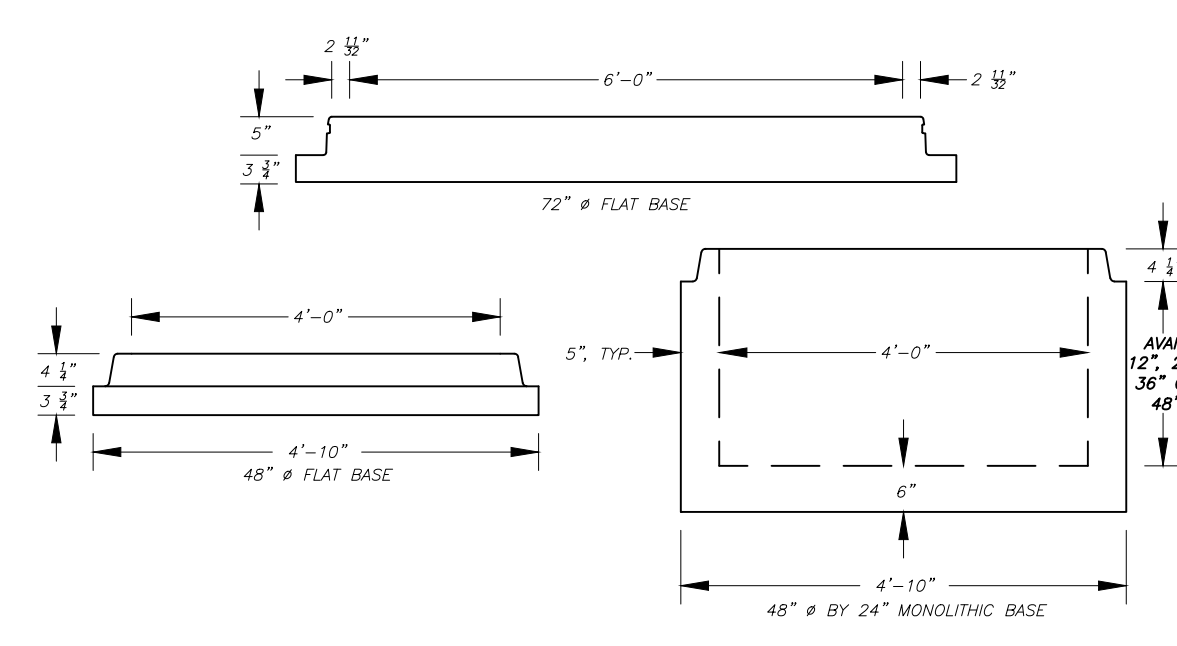
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

LYNN BROOK (BOYD) DRAINAGE PHASE 2

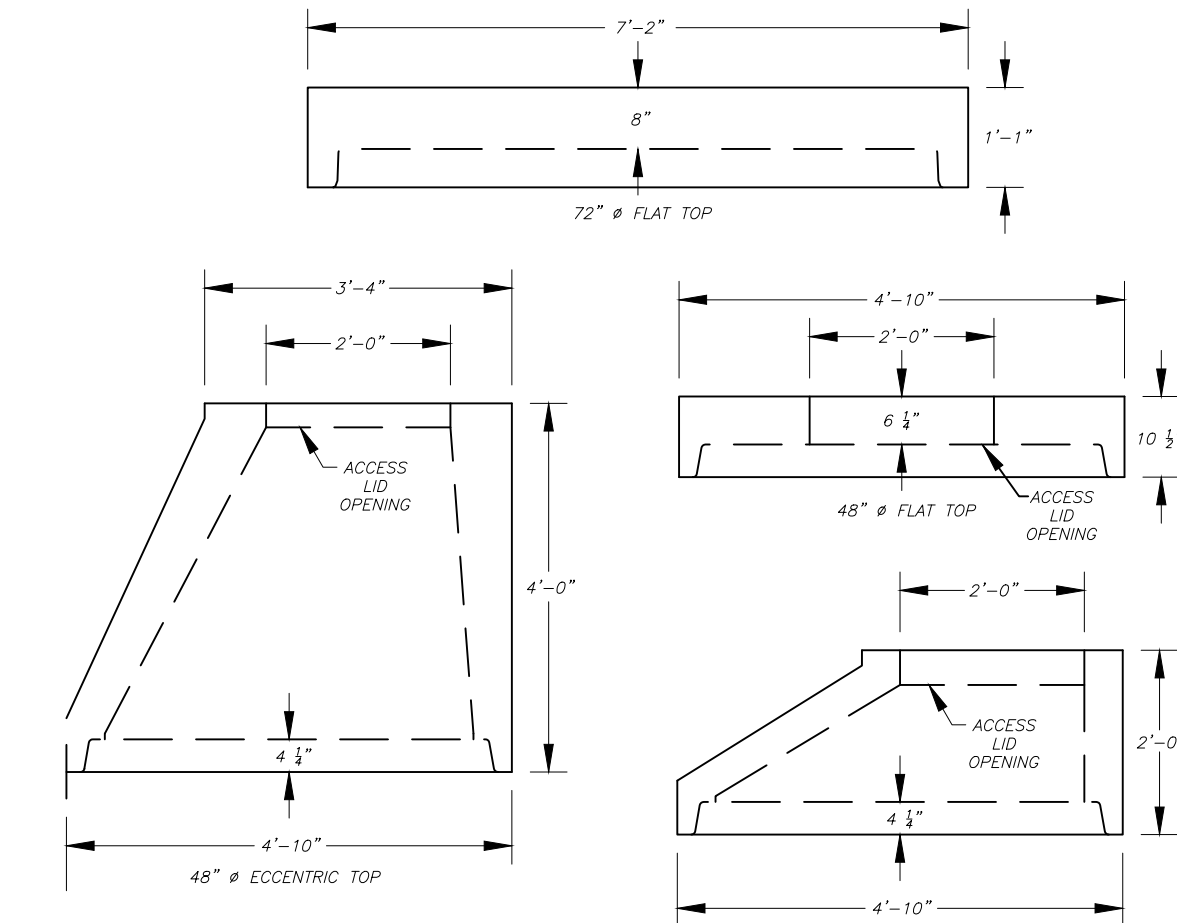
CONSTRUCTION DETAILS

DRAWN BY: RCD
APPROVED BY: JH
DATE: 9/21/2015

SCALE: AS NOTED
SHEET NO. 6
OF 8



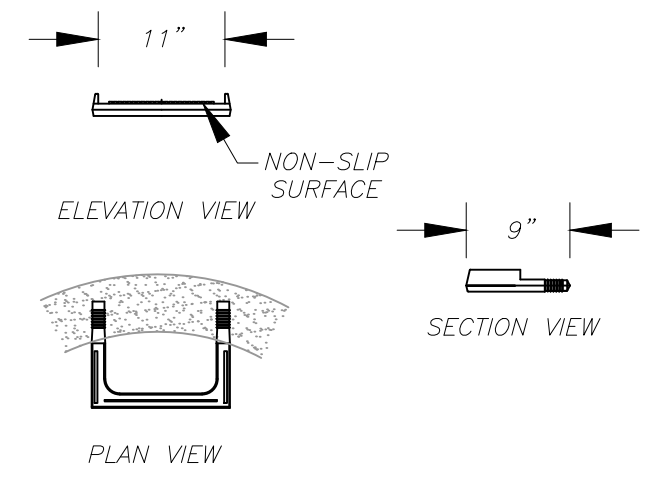
TYPE "A" MANHOLE BASE



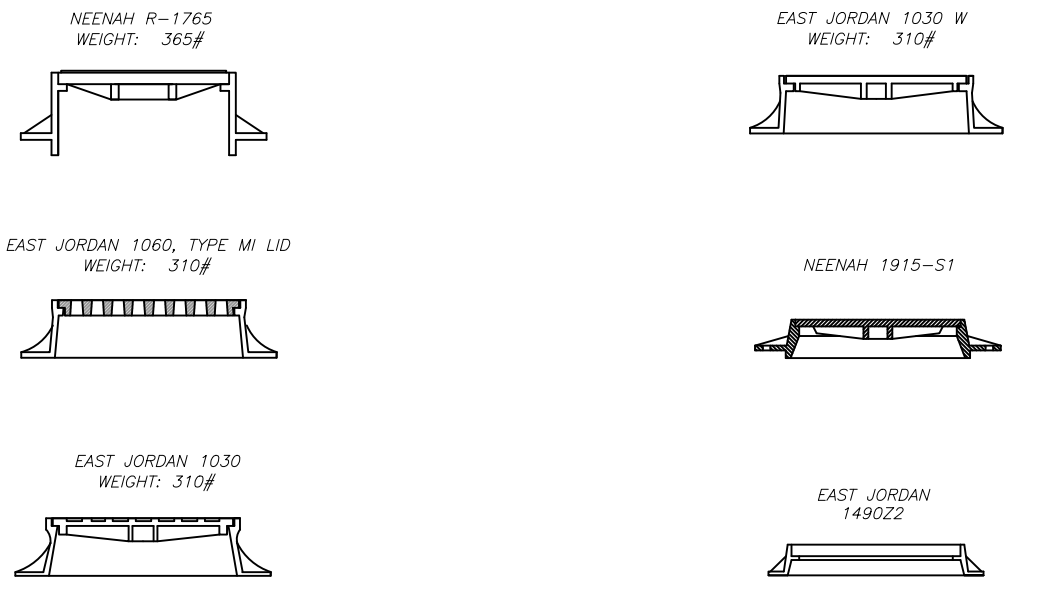
TYPE "A" MANHOLE TOPS

TYPE "A" MANHOLE

NOT TO SCALE



TYPE "A" MANHOLE 11" STEP

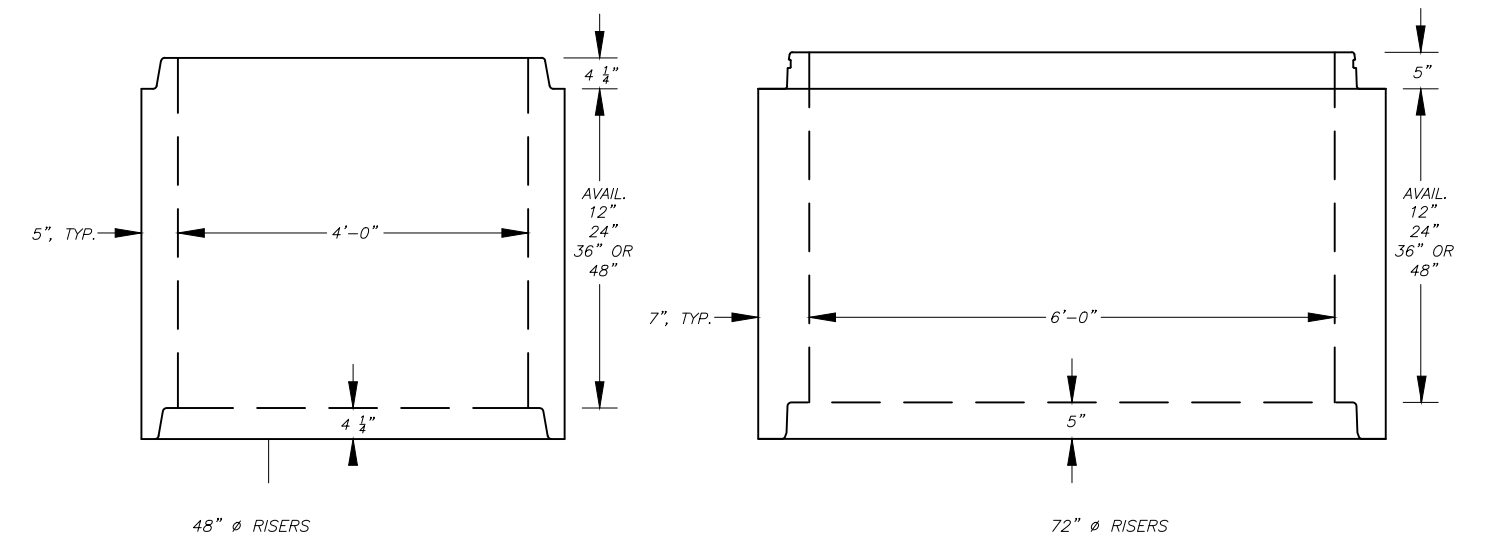


TYPE "A" MANHOLE FRAMES AND COVERS

- NOTES:
- UNITS SHOWN ARE PRE-CAST.
 - MINIMUM HEIGHT OF RISER ABOVE TOP OF PIPE IS 25% OF THE DIAMETER OF PIPE.
 - RISER AND BOTTOM SECTIONS MAY BE USED IN ANY COMBINATION TO PRODUCE MANHOLE OF DESIRED DEPTH. FLAT TOPS WILL ONLY BE USED AS APPROVED BY THE ENGINEER.
 - JOINTS SHALL CONSIST OF MORTAR OR SEALED O-RINGS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
 - THE MANHOLE BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS.

TYPE "A" MANHOLE

NOT TO SCALE

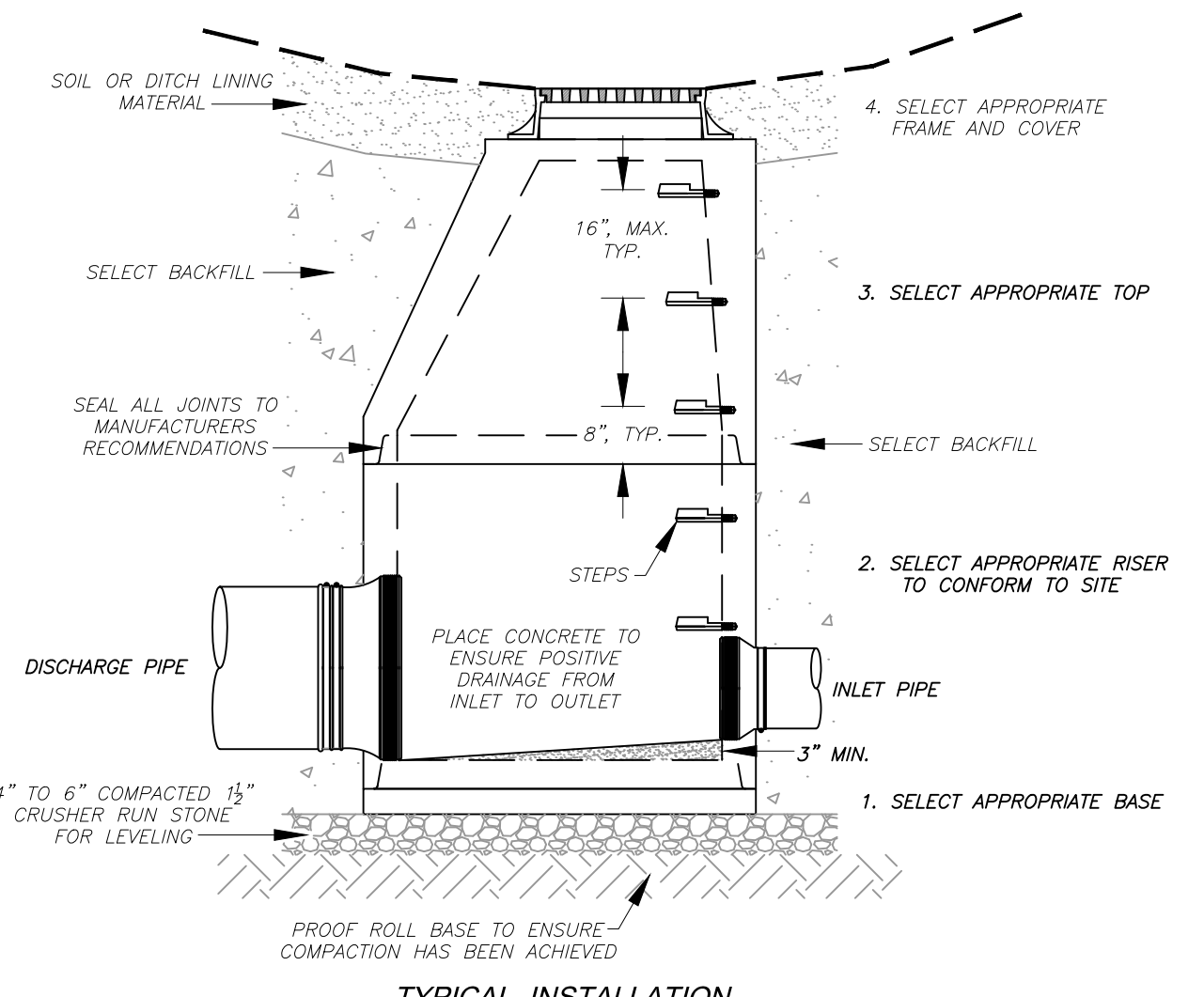


PRESS-SEAL GASKETS TYPE "A" MANHOLE RISERS

TYPE PIPE AND SIZE	ITEM NUMBER
6" Ø PVC PIPE	12Y PSX
8" Ø PVC PIPE	12M PSX
10" Ø PVC PIPE	16Y PSX
12" Ø PVC PIPE	16M PSX
18" Ø PVC PIPE	22M PSX
24" Ø RCP	34L PSX

(OR APPROVED EQUALS)

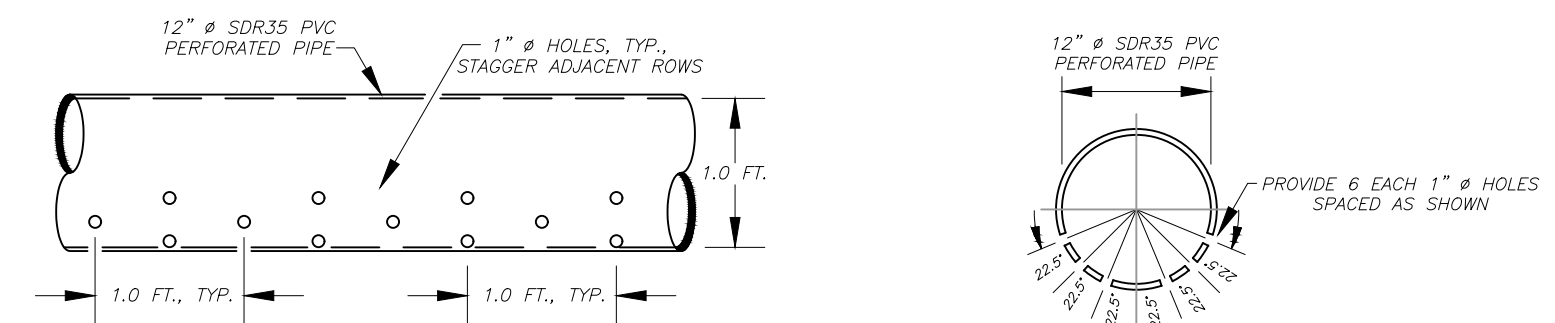
TYPE "A" MANHOLE PIPE GASKETS



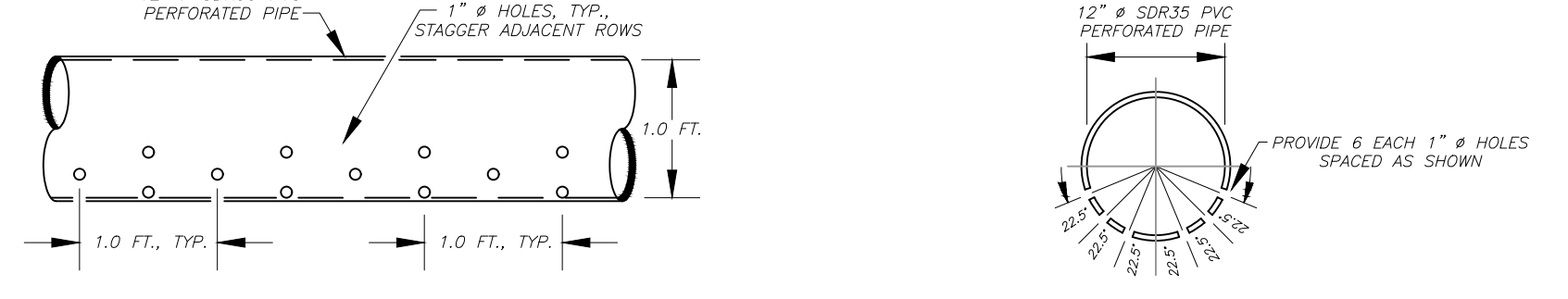
TYPICAL INSTALLATION

TYPE "A" MANHOLE

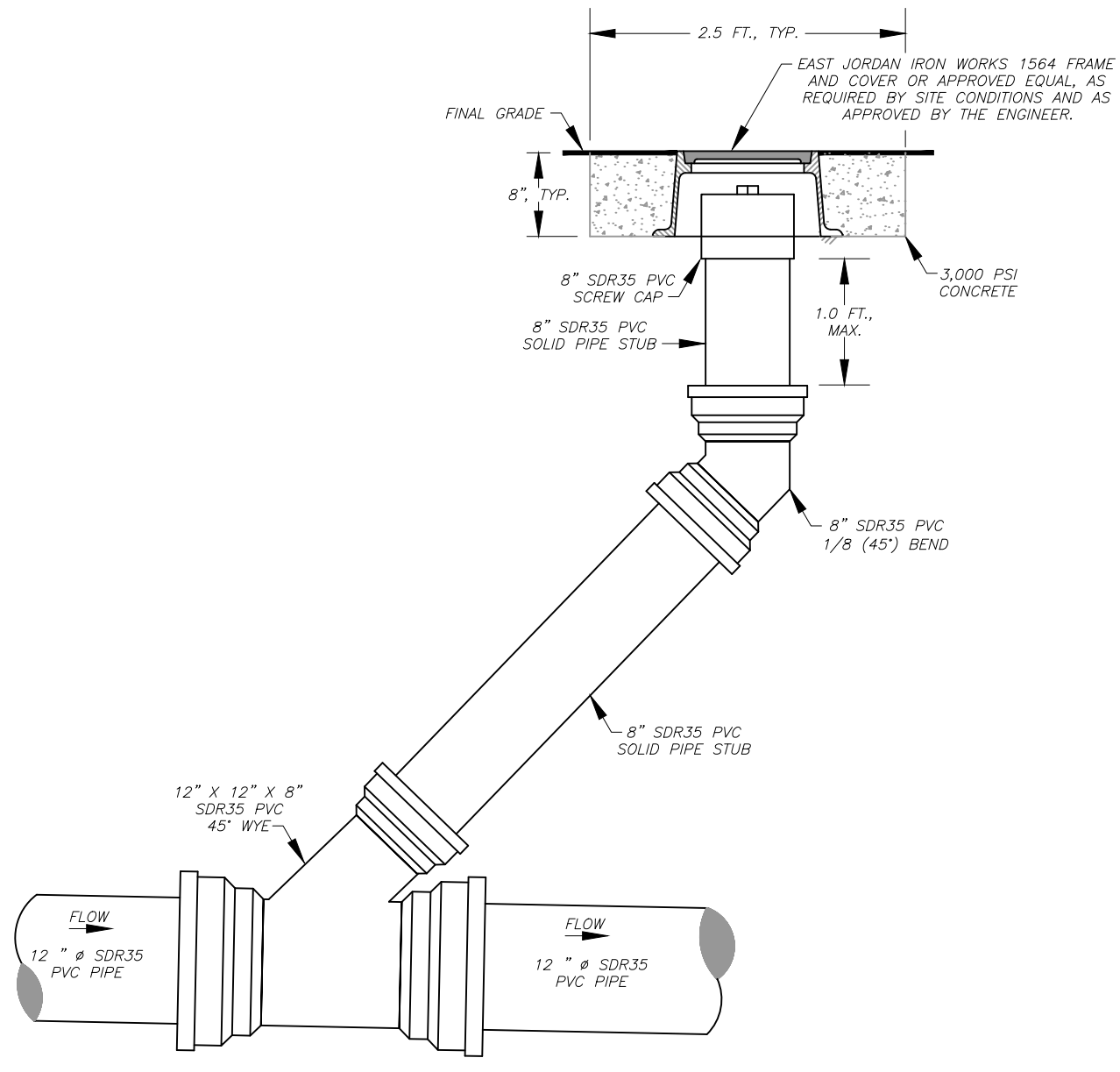
NOT TO SCALE



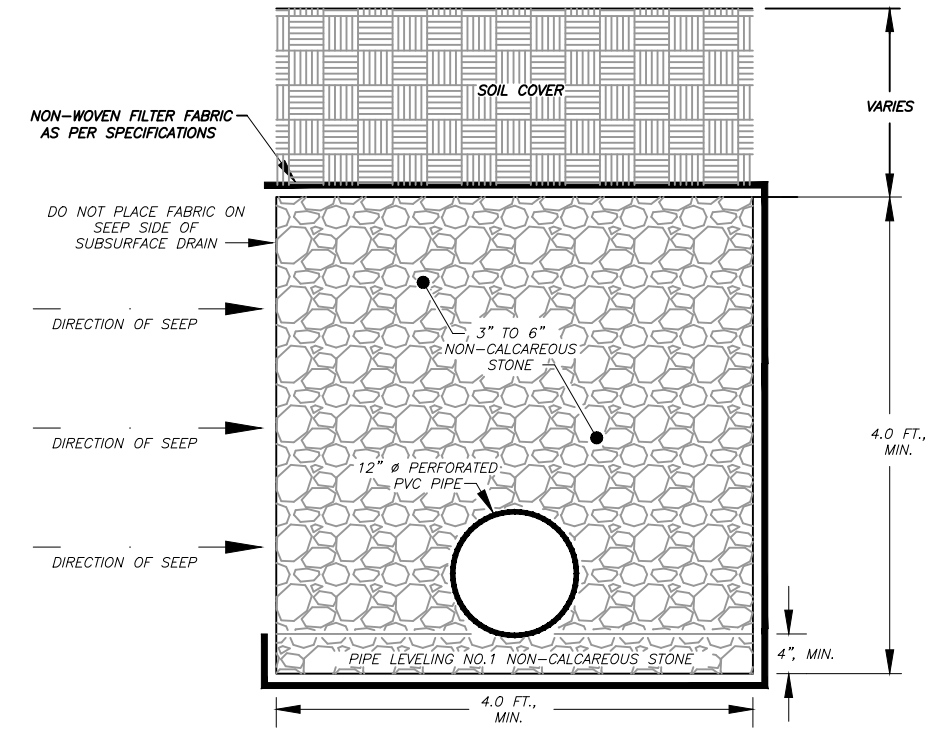
UNDERDRAIN PIPE LONGITUDINAL VIEW, TYP. UNDERDRAIN PIPE CROSS SECTION, TYP.



UNDERDRAIN PIPE LONGITUDINAL VIEW, TYP. UNDERDRAIN PIPE CROSS SECTION, TYP.



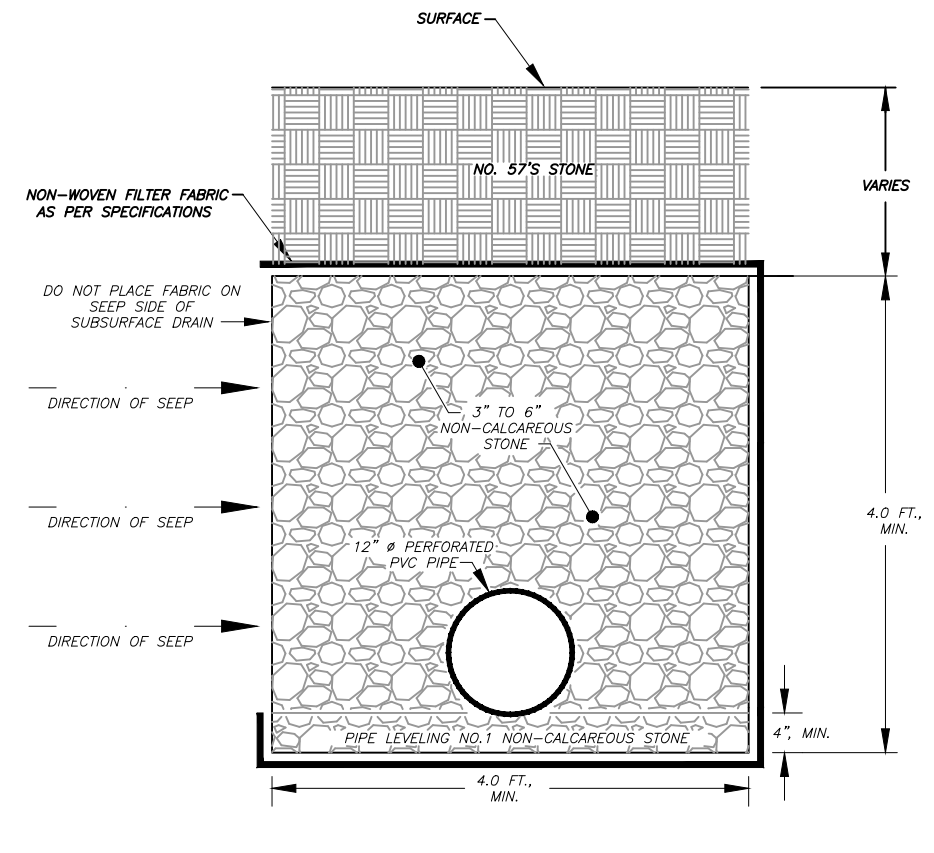
PIPE CLEAN OUT DETAIL



UNDERDRAIN DETAIL

TYPE 1' X 4' UNDERDRAIN UNDERDRAINS B, C, D AND E

NOT TO SCALE



UNDERDRAIN DETAIL

TYPE 2' X 4' UNDERDRAIN UNDERDRAIN A

NOT TO SCALE

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

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

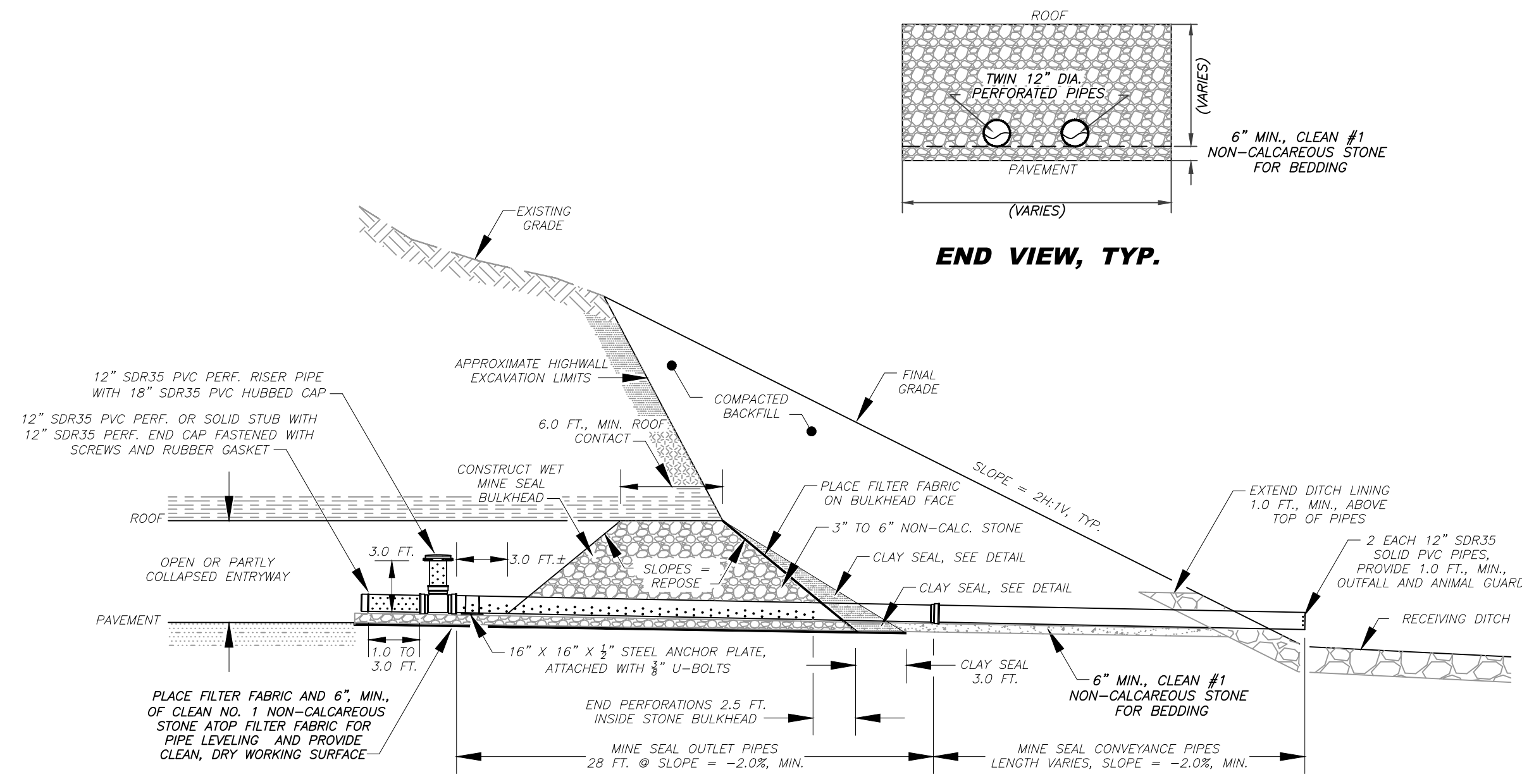
State of West Virginia
Department of Environmental Protection
Abandoned Mine Lands and Reclamation

LYNN BROOK (BOYD) DRAINAGE
PHASE 2

CONSTRUCTION DETAILS(2)

DRAWN BY: RCD
APPROVED BY: JH
DATE: 9/21/2015

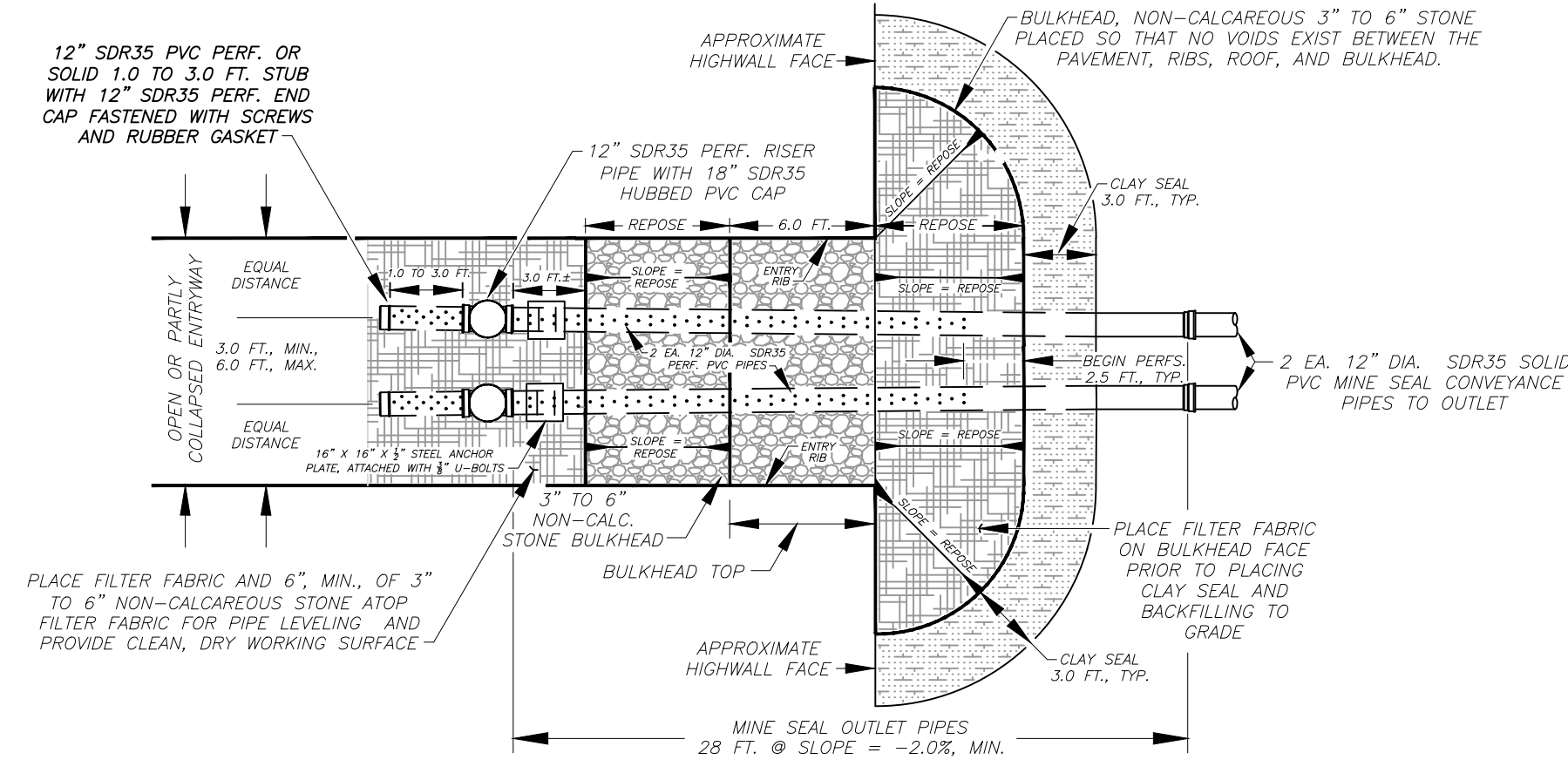
SCALE: AS NOTED
SHEET NO. 7
OF 8



PROFILE VIEW, TYP.

WET MINE SEAL

NOT TO SCALE

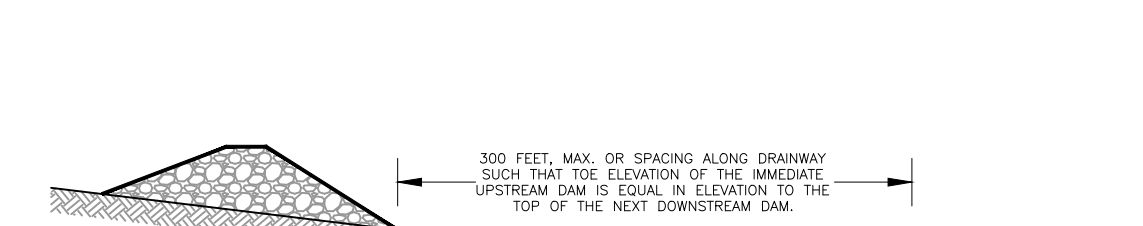


PLAN VIEW TOP OF BULKHEAD ELEVATION

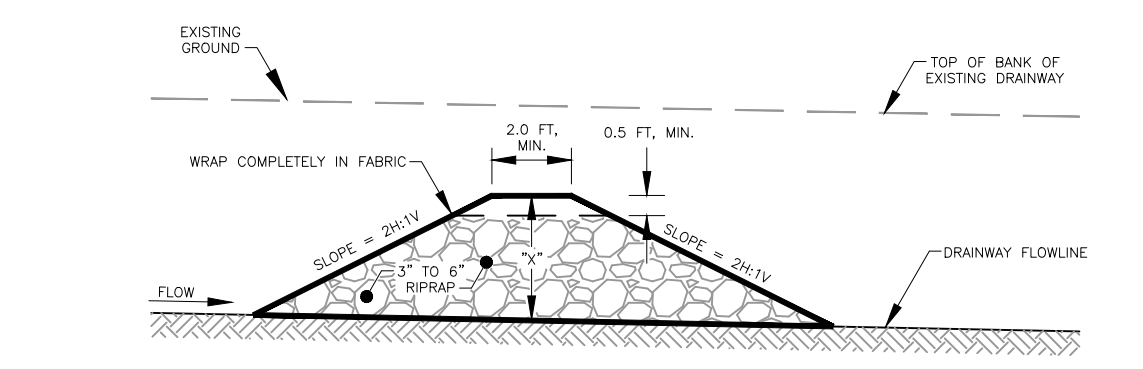
- NOTES:
1. THE TWO (2) JOINTS (28.0 FEET) OF MINE SEAL OUTLET PIPES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "WET MINE SEALS" REGARDLESS OF WHERE THESE PIPES END IN THE INSTALLATION.
 2. THE MINE SEAL CONVEYANCE PIPE LENGTHS VARY AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "MINE SEAL CONVEYANCE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

WET MINE SEAL

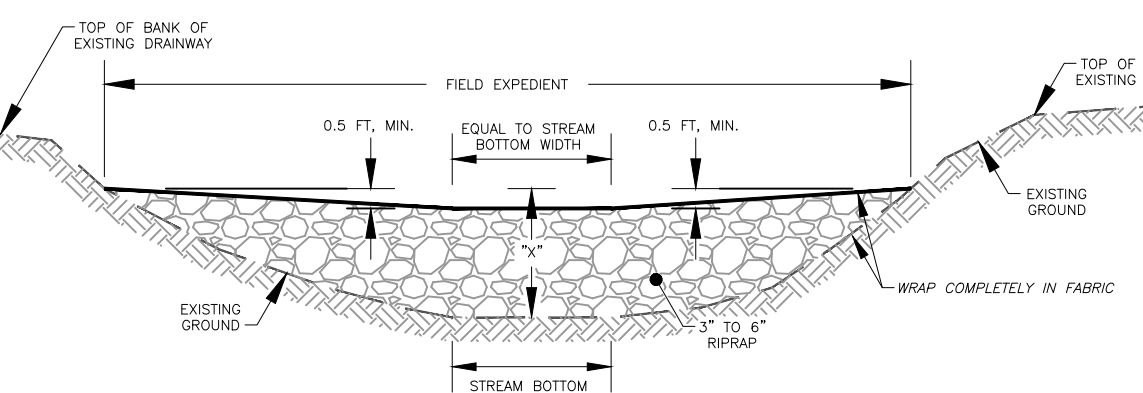
NOT TO SCALE



CHECK DAM SPACING ALONG PROFILE



PROFILE VIEW

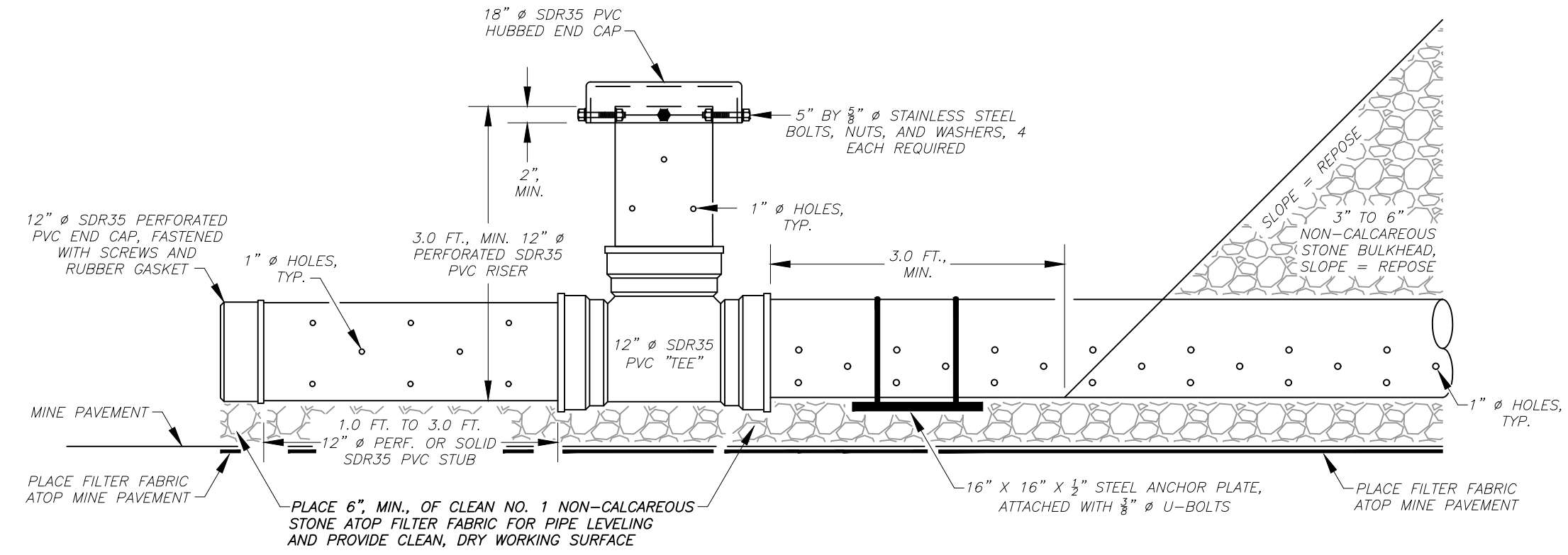


CROSS SECTION VIEW

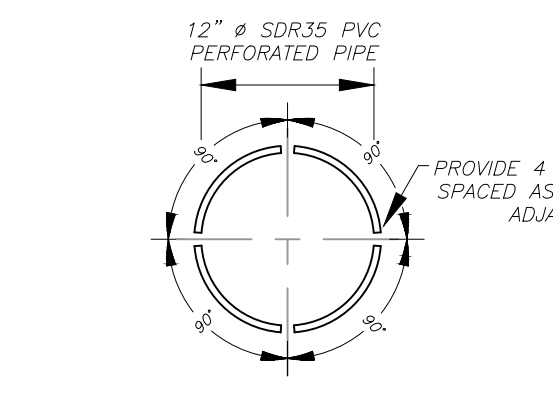
- NOTES:
1. "H" DIMENSION AS DETAILED BY THE SPECIFICATIONS, FOR SEDIMENT CONTROL. THE MAXIMUM HEIGHT OF THE ROCK CHECK DAM IS 3 FEET. HOWEVER, ROCK CHECK DAMS CAN BE CONSTRUCTED IN SMALLER SIZES. THE CENTER OF THE ROCK CHECK DAM SHALL BE 0'-4" LOWER THAN THE OUTER EDGES AS SHOWN.
 2. ROCK CHECK DAMS ARE NORMALLY INSTALLED IN EXISTING DRAINAGE AND THE TOP CROSS SECTION OF THE DAM SHOULD HAVE A LEVEL CENTER SECTION THE SAME WIDTH AS THE EXISTING CHANNEL. BOTTOM AND 0'-4" 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 "V" SHAPED OR EXISTING "V" SHAPED DITCHES SHALL BE 0'-4" LOWER THAN AND SLOPED TO THE OUTER TOP SIDES 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.

**DETAIL 5.6.1
ROCK CHECK DAM**

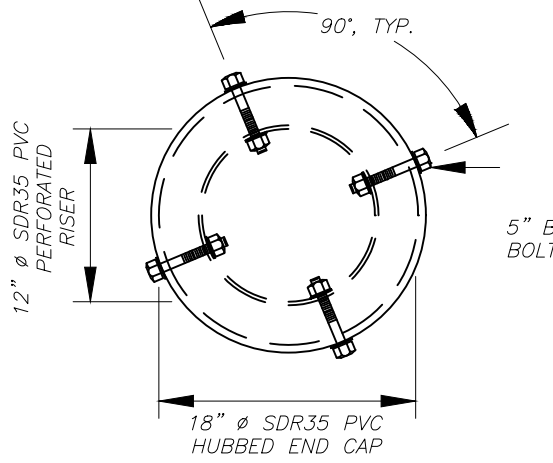
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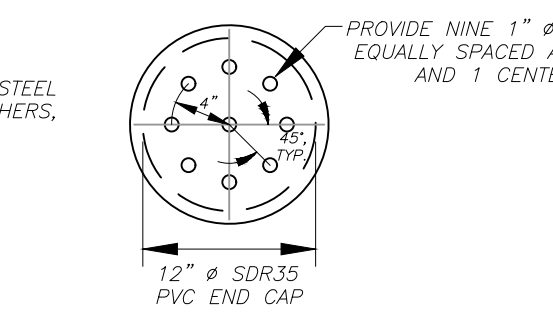
"TEE" RISER DETAIL



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



RISER CAP DETAIL

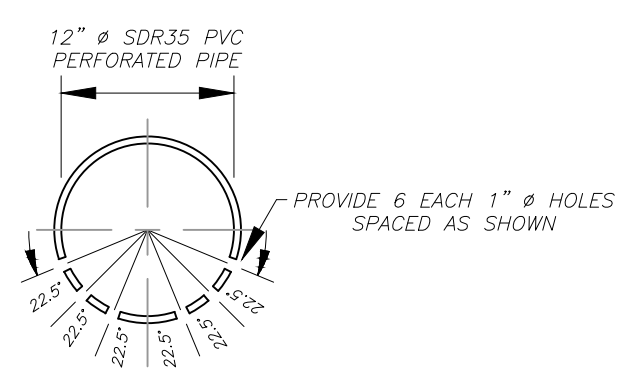


PERFORATED END CAP

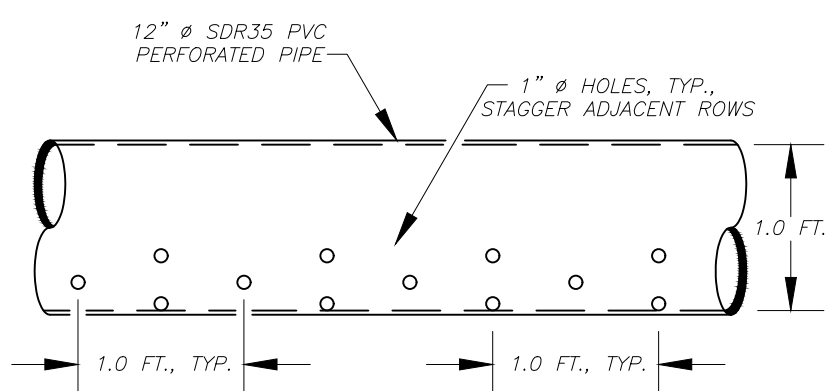
NOTE:
AVOID OVER-TIGHTENING NUTS AND BOLTS AS DAMAGE TO THE 18" SDR35 PVC HUBBED CAP MAY OCCUR

WET MINE SEAL

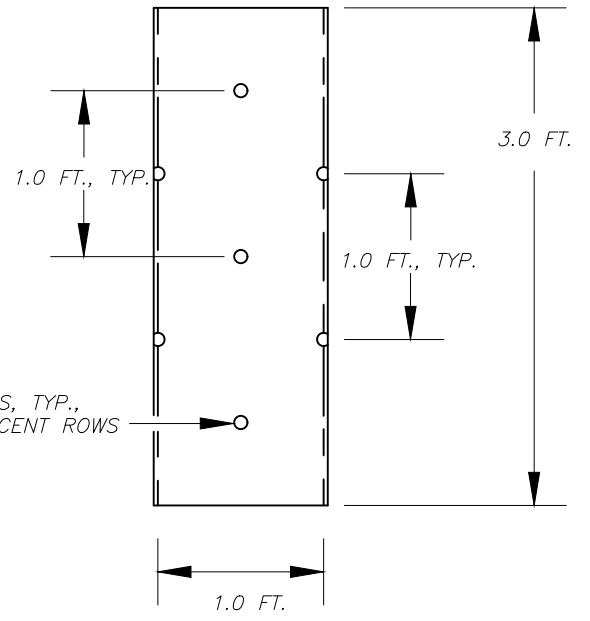
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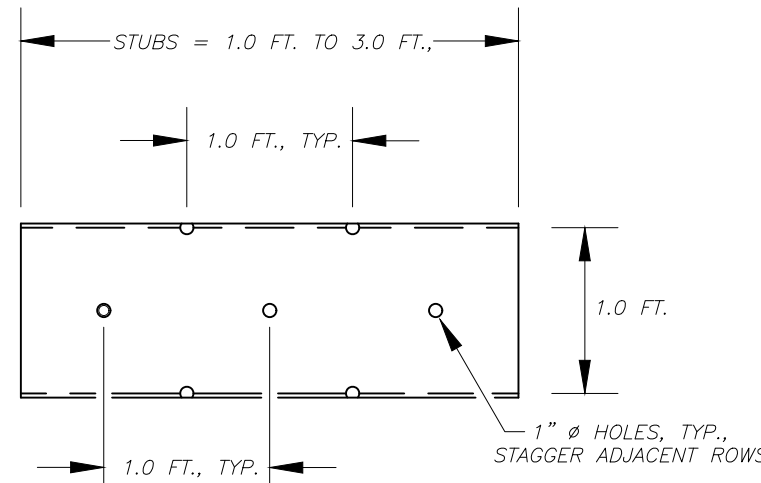
WET MINE SEAL OUTLET PIPES CROSS SECTION, TYP.



WET MINE SEAL OUTLET PIPES LONGITUDINAL VIEW, TYP.



WET MINE SEAL RISER PIPES ELEVATION VIEW, TYP.

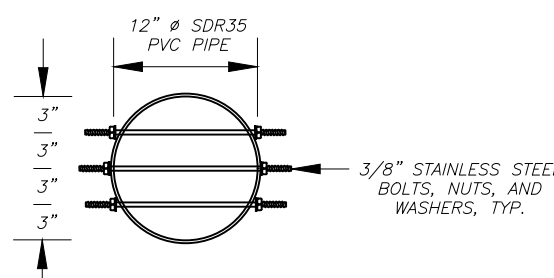


WET MINE SEAL STUBS LONGITUDINAL VIEW, TYP.

WET MINE SEAL PIPE DETAILS, TYP.

WET MINE SEAL

NOT TO SCALE



12" SDR35 PVC PIPE ANIMAL GUARD CROSS SECTION, TYP.

SCALE: 1" = 1 FT.

ANIMAL GUARD DETAIL

NOT TO SCALE

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

**LYNN BROOK (BOYD) DRAINAGE
PHASE 2**

**WET MINE SEAL AND
ROCK CHECK DAM DETAILS**

DRAWN BY: RCD
APPROVED BY: JH
DATE: 9/22/2015

SCALE: AS NOTED
SHEET NO. 8
OF 8