

DESIGN SUMMARY

DESIGN LIFE: 15 - 25 YEARS (ASSUMING PROPER MONITORING AND MAINTENANCE)

DESIGN FLOW
 MAX HYDRAULIC DESIGN: 1,000 GPM
 MAX TREATMENT DESIGN: 747 GPM
 AVERAGE DESIGN: 117 GPM

DESIGN TREATMENT LOAD
 MAX DESIGN TREATMENT LOAD:
 1,020 LB/DAY ACIDITY
 148-296 LB/DAY IRON
 128 LB/DAY ALUMINUM
 AVERAGE DESIGN TREATMENT LOAD:
 166 LB/DAY ACIDITY
 23 LB/DAY IRON
 15 LB/DAY ALUMINUM

LEGEND

- TREATMENT SYSTEM COMPONENT
- INTERMEDIATE CONTOUR
- INDEX CONTOUR
- 12" SCH40 PVC PIPE
- 10" SCH40 PVC PIPE
- 6" SDR35 PVC PIPE
- - - 6" SDR35 PVC PIPE (PERFORATED)
- 6" SCH40 PVC PIPE
- - - 4" SDR35 PVC PIPE (PERFORATED)
- - - Z-PILE
- EMERGENCY SPILLWAY (GRASS)
- EMERGENCY SPILLWAY (ROCK)
- - - EX. RAILROAD
- - - EX. GUIDE RAIL
- EX. STREAM
- EX. ROAD (PAVED)
- EX. POND / WATER SURFACE
- EX. BUILDING / STRUCTURE
- EX. CULVERT
- ▽ WATER SAMPLE POINT

NOTE:
 THE DIFFERENCE IN THE WATER ELEVATION BETWEEN THE CONCRETE RISER AND FLOW SPLITTER BOX SHOULD BE LESS THAN 0.3'. AN INCREASE IN HEAD DIFFERENTIAL BETWEEN WATER ELEVATION IN THE CONCRETE RISER VERSUS WATER ELEVATION IN THE FLOW SPLITTER BOX MAY BE A RESULT OF PLUGGING OF THE RAW WATER PIPELINE, INDICATING THAT THE PIPE SHOULD BE CLEANED.

GENERAL NOTES

1. Base map contours derived from a 2006 bare-earth digital elevation model constructed from PAMAP LiDAR elevation points by PA DCNR, Bureau of Topographic and Geologic Survey [PA State Plane - South (US Survey Foot) NAD83 (Vertical datum - NAVD88)]. Select topographic and cultural features from 2006 PAMAP aerial photos obtained from www.pasda.psu.edu and USGS 7.5' Commodore, PA (PR1993). Additional information from 2020 / 2021 site investigations by BioMost, Inc. Elevation bench marks set by BioMost, Inc Mars, PA.
2. Vertical Control established by setting a GPS control point with a survey-grade GPS unit (BM1).
3. All dimensions are in feet unless otherwise noted. All slope designations are H:V.
4. For simplicity, the property lines, and tree lines are not shown on this map. All aspects of this project lay entirely within the property owned / controlled by Dennis J Richards. **This is not a property survey.**
5. #67 Limestone supplied by Allegheny Mineral, Worthington, PA 92.47% CaCO3 (Vanport Limestone).
6. Dashed contours are closed depressions.
7. Jennings-type Vertical Flow Pond (JVFP) acid load treatment capacity (i.e., lb acid/cy/day) follows information presented at the American Society of Reclamation Sciences 2019 Annual Conference, Big Sky, Montana, "Performance Evaluation of the North Fork Montour Run Passive Treatment System": https://www.asrs.us/wp-content/uploads/2021/09/8A_1100_Danehy.pptx

AS-BUILT SITE PLAN VIEW

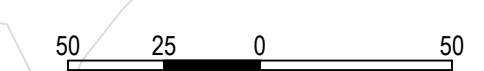
RICHARDS PASSIVE SYSTEM REHABILITATION

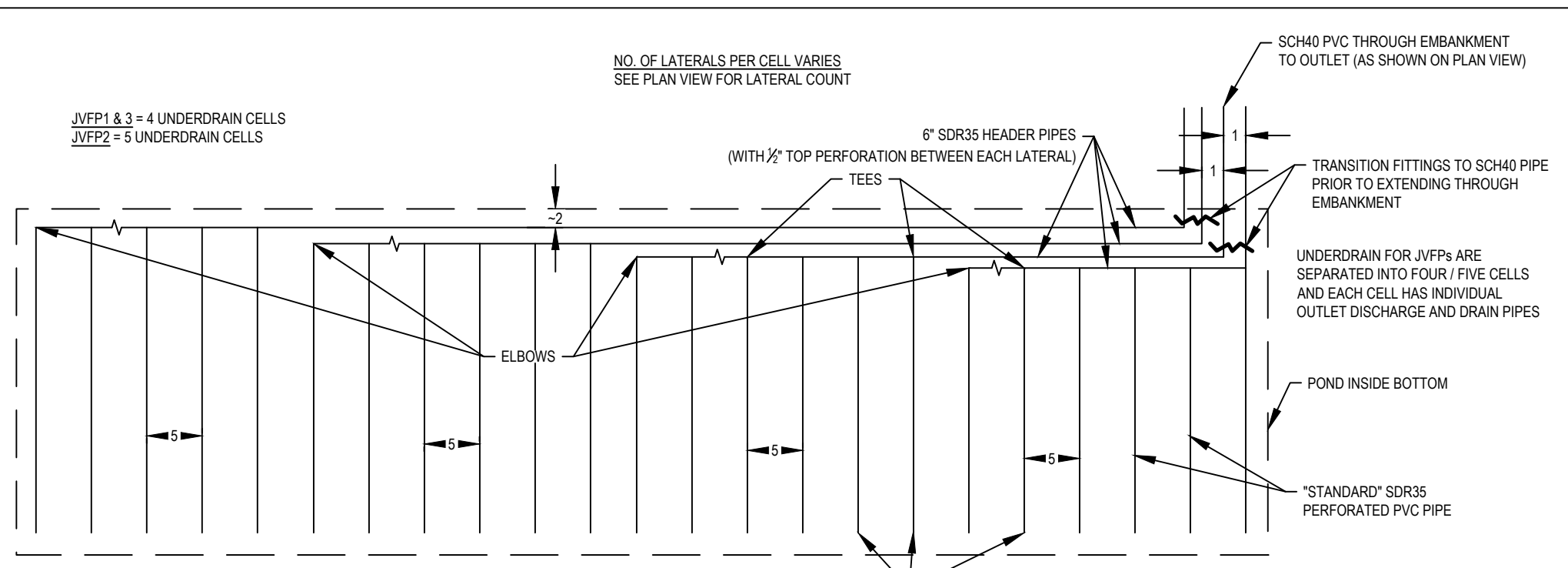
for
Blacklick Creek Watershed Association
 Cherryhill Township, Indiana County, Pennsylvania

Scale: 1"=50' December 2021

Center of Project
 Lat: 40-39-47
 Lon: -78-58-52
 Deg-Min-Sec

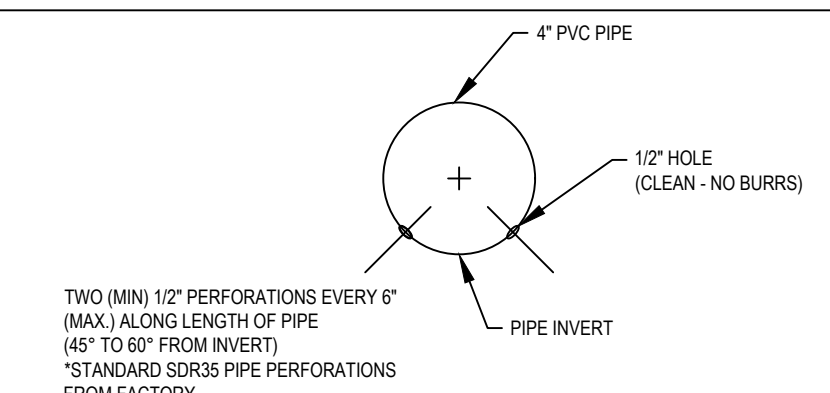
BioMost, Inc., Mars, Pennsylvania
 Mining and Reclamation Services www.biomost.com





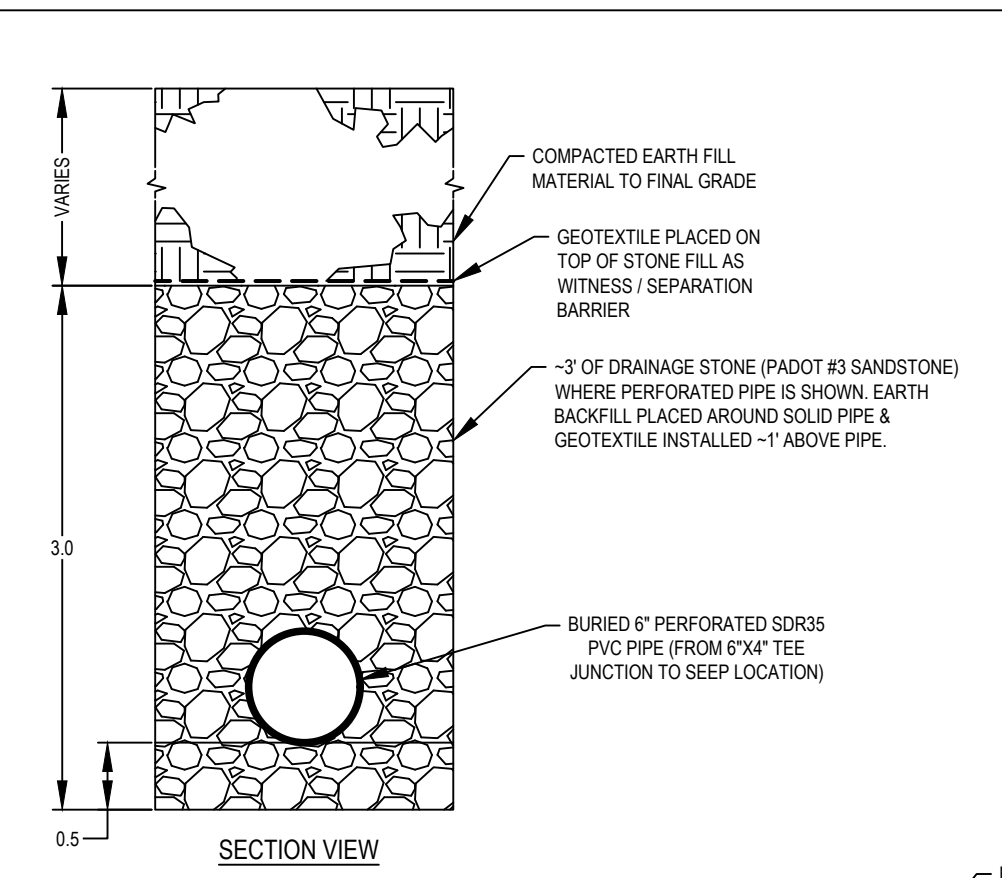
JENNINGS VERTICAL FLOW POND (JVFP) PIPE PLAN (TYPICAL)

Horizontal Scale: None Vertical Scale: None



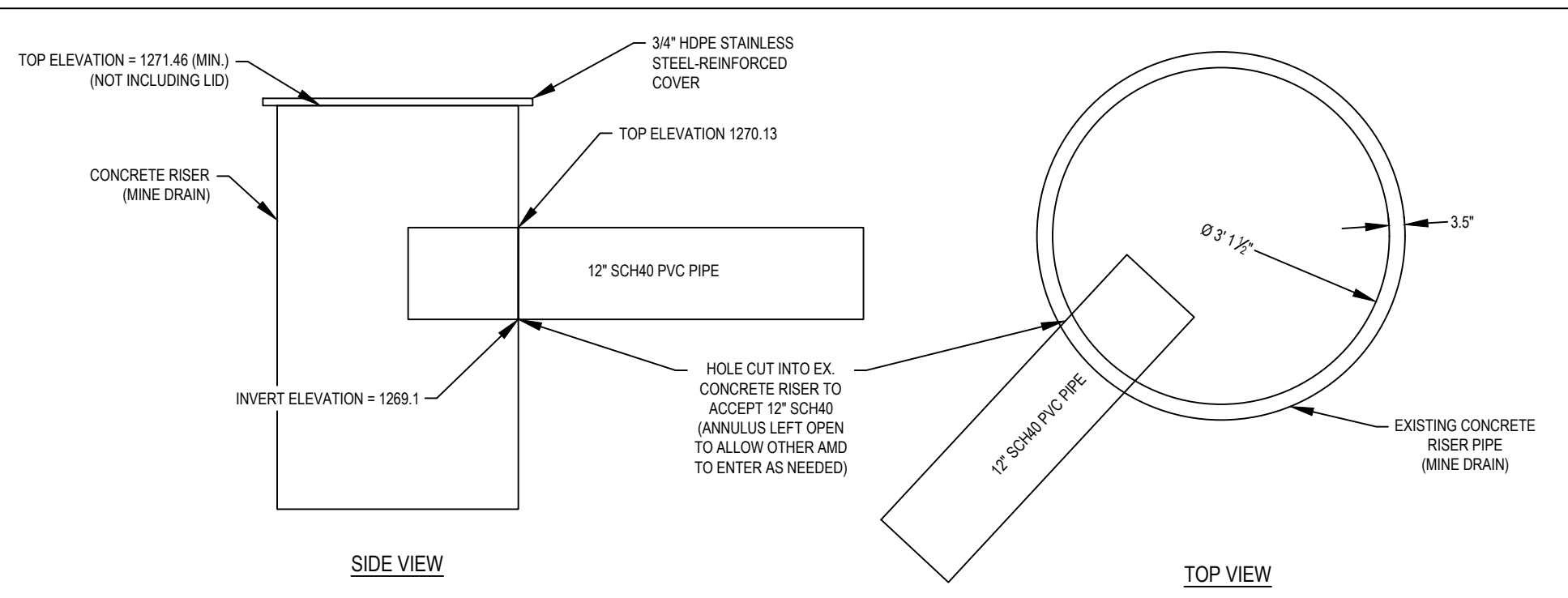
JVFP PIPE PERF. DETAIL

Horizontal Scale: None Vertical Scale: None



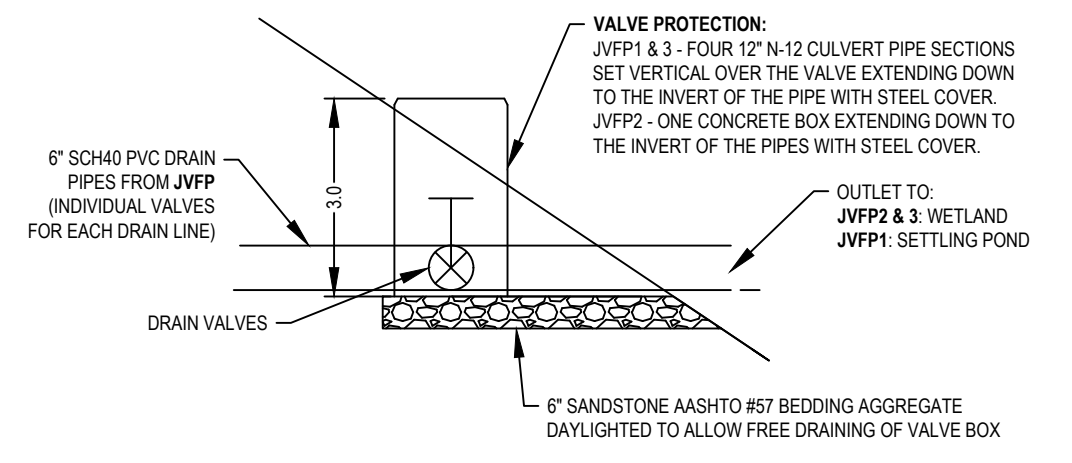
FRENCH DRAIN

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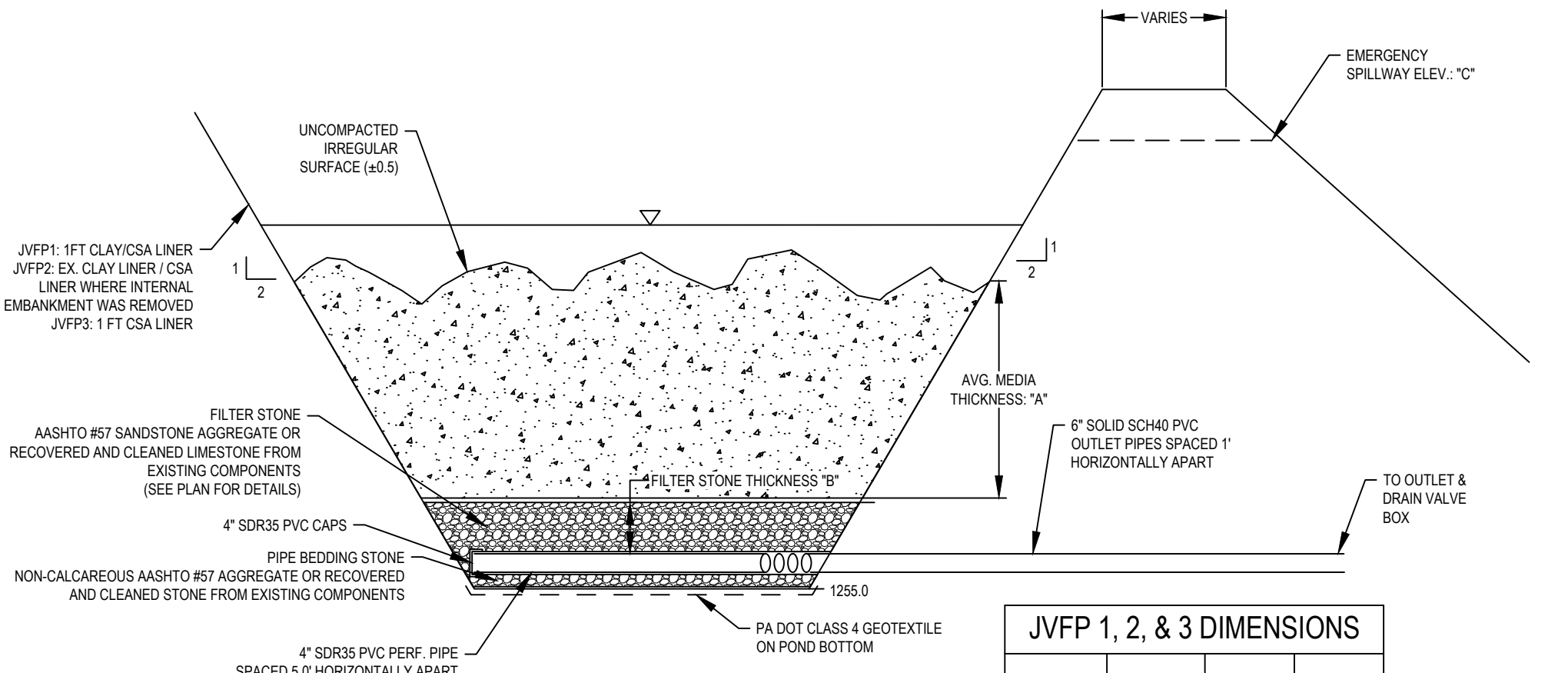
MINE DRAIN CONNECTION

Horizontal Scale: None Vertical Scale: None



DRAIN VALVE / PROTECTION STRUCTURE (TYPICAL)

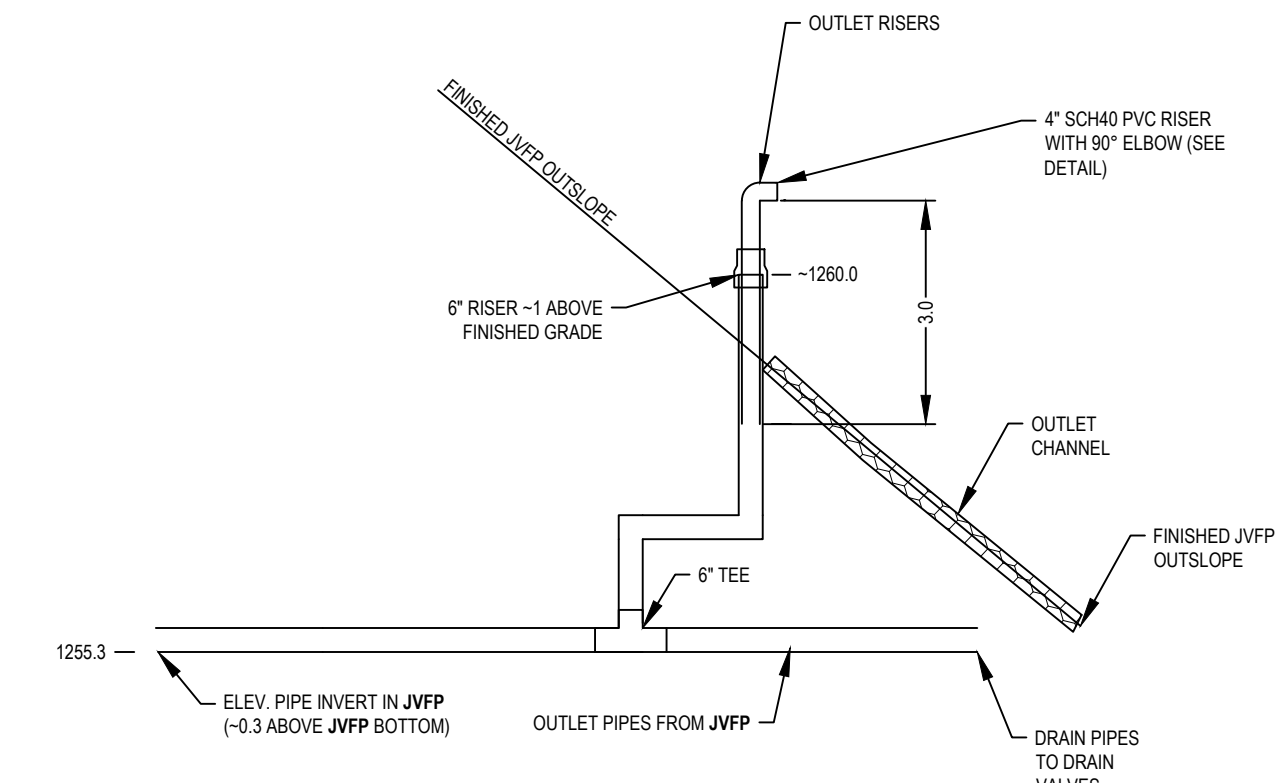
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JENNINGS-TYPE VERTICAL FLOW POND 1, 2, & 3 (JVFP1, 2, & 3) TYPICAL

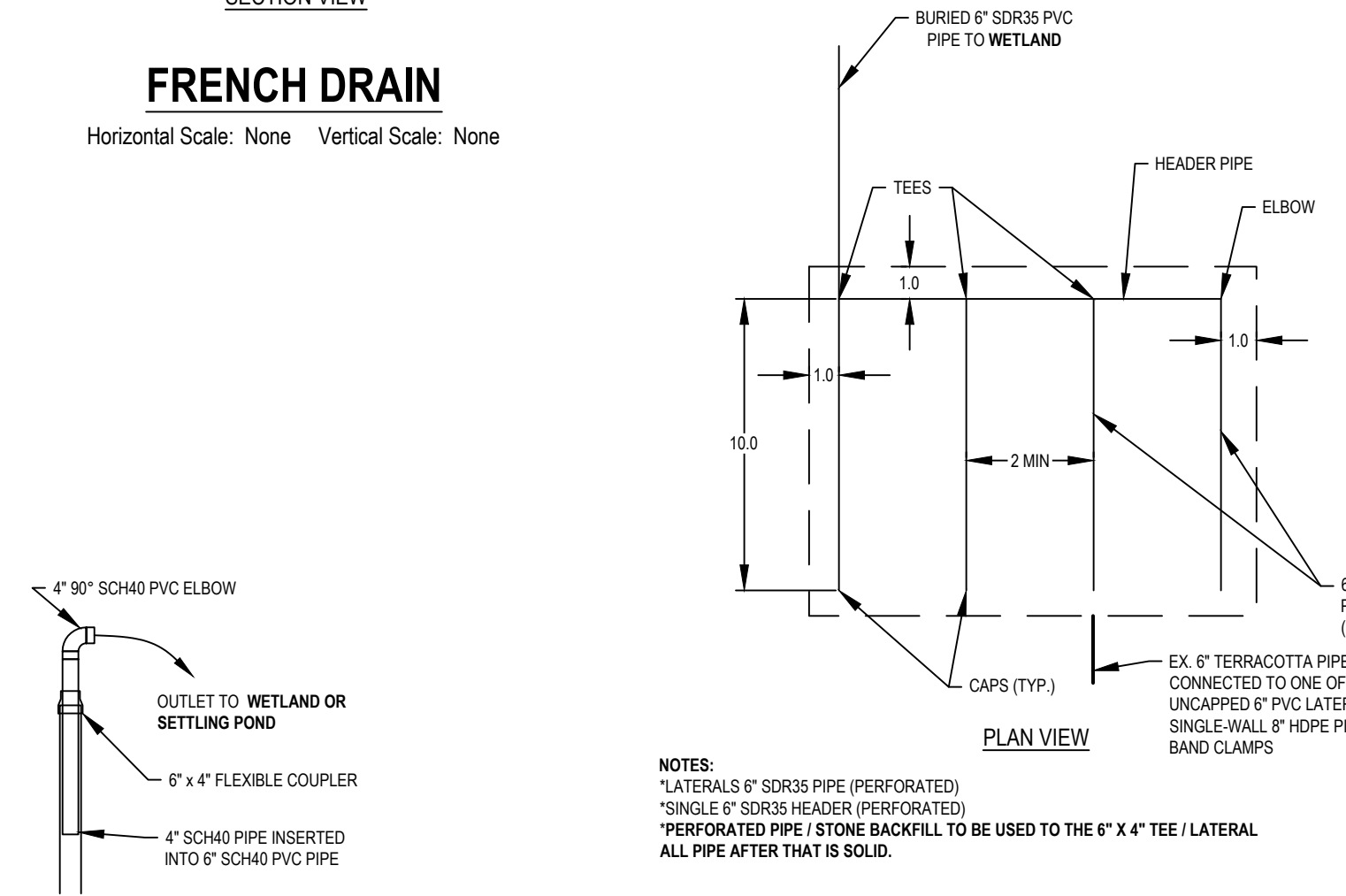
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JVFP 1, 2, & 3 DIMENSIONS			
POND	"A"	"B"	"C"
JVFP1	3.5	0.6	1264.0
JVFP2	4.1	0.9	1265.6
JVFP3	3.9	0.3	1263.6



JVFP1, 2, & 3 OUTLET

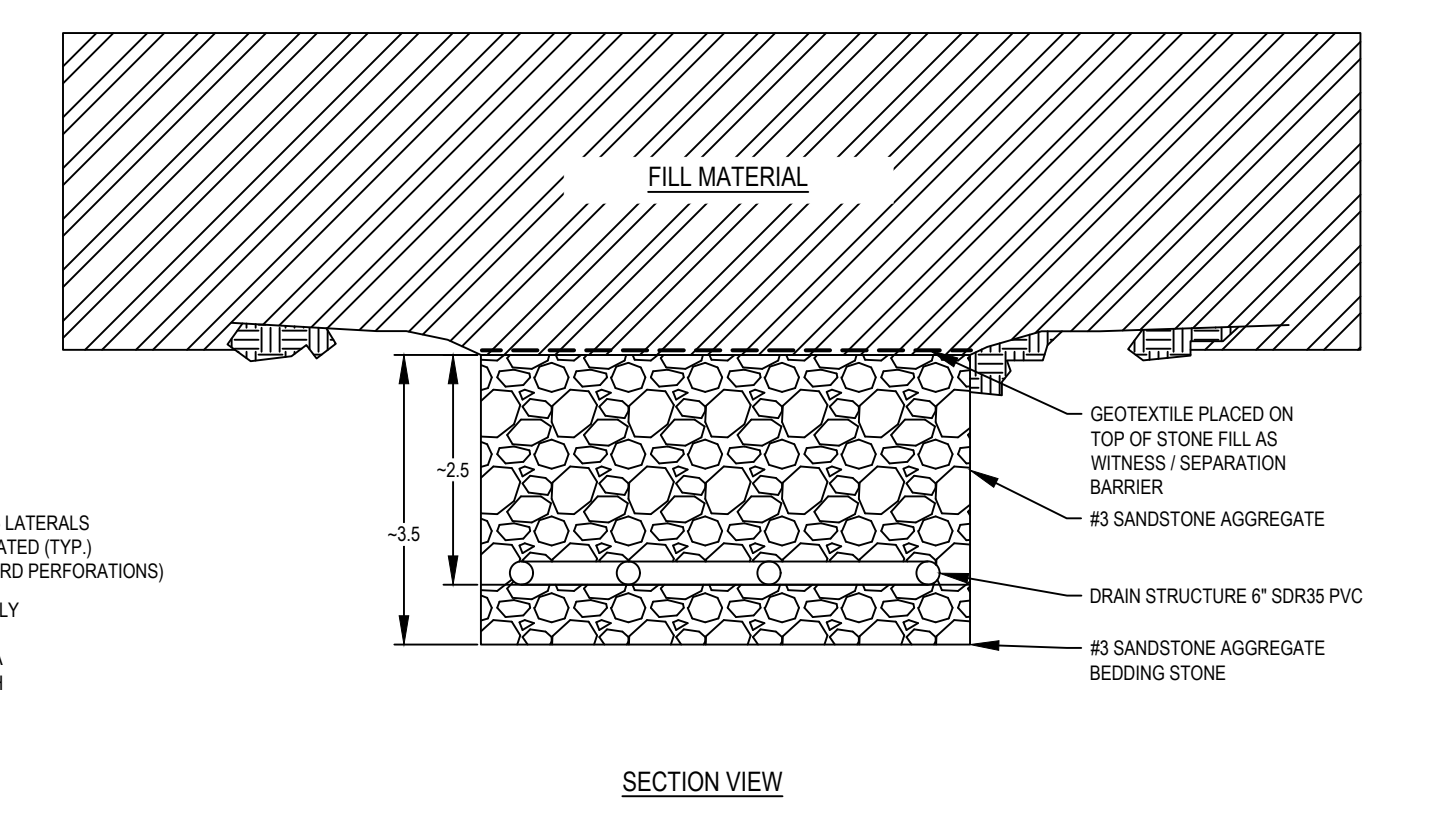
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OUTLET RISER

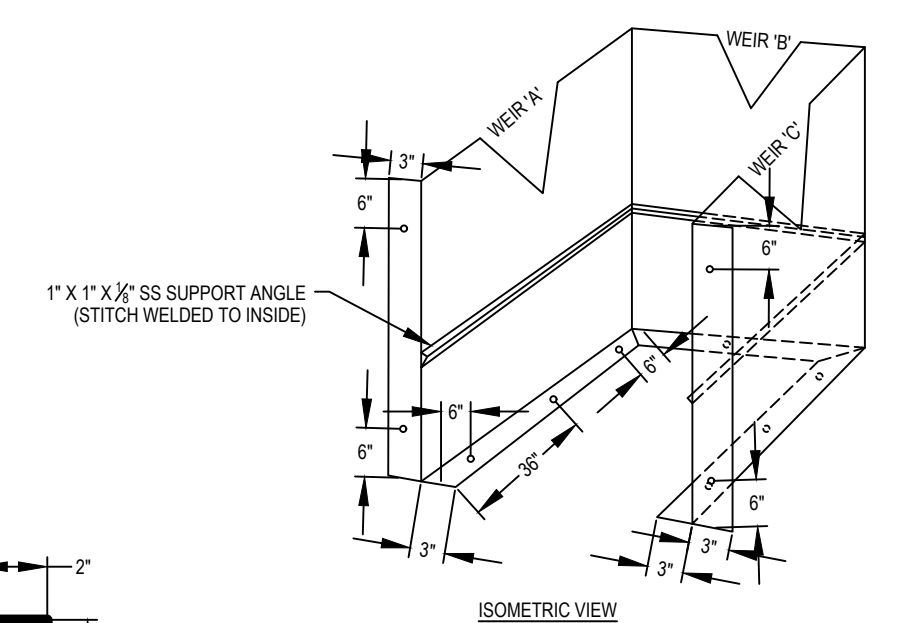
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(US PATENT # 7,232,278 - USED BY PERMISSION)



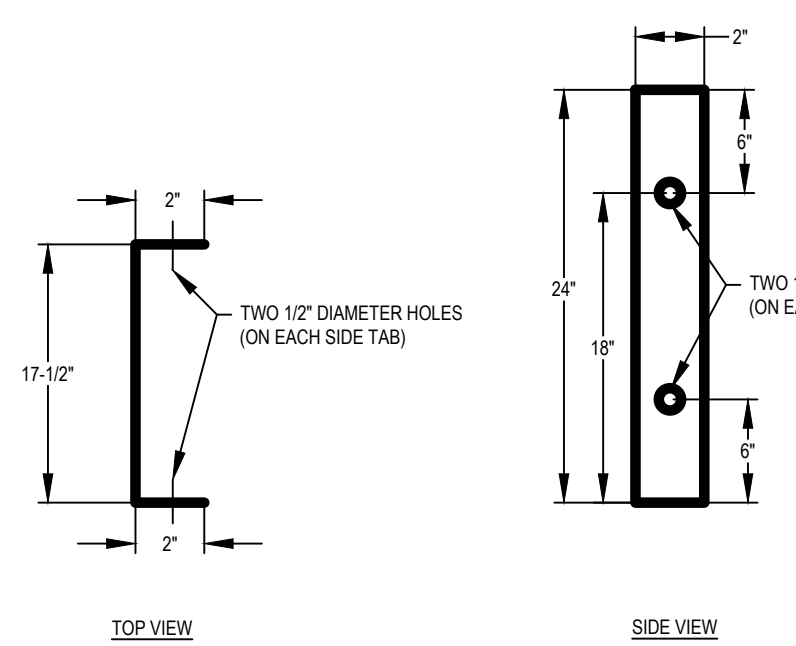
SEEP COLLECTION DRAIN

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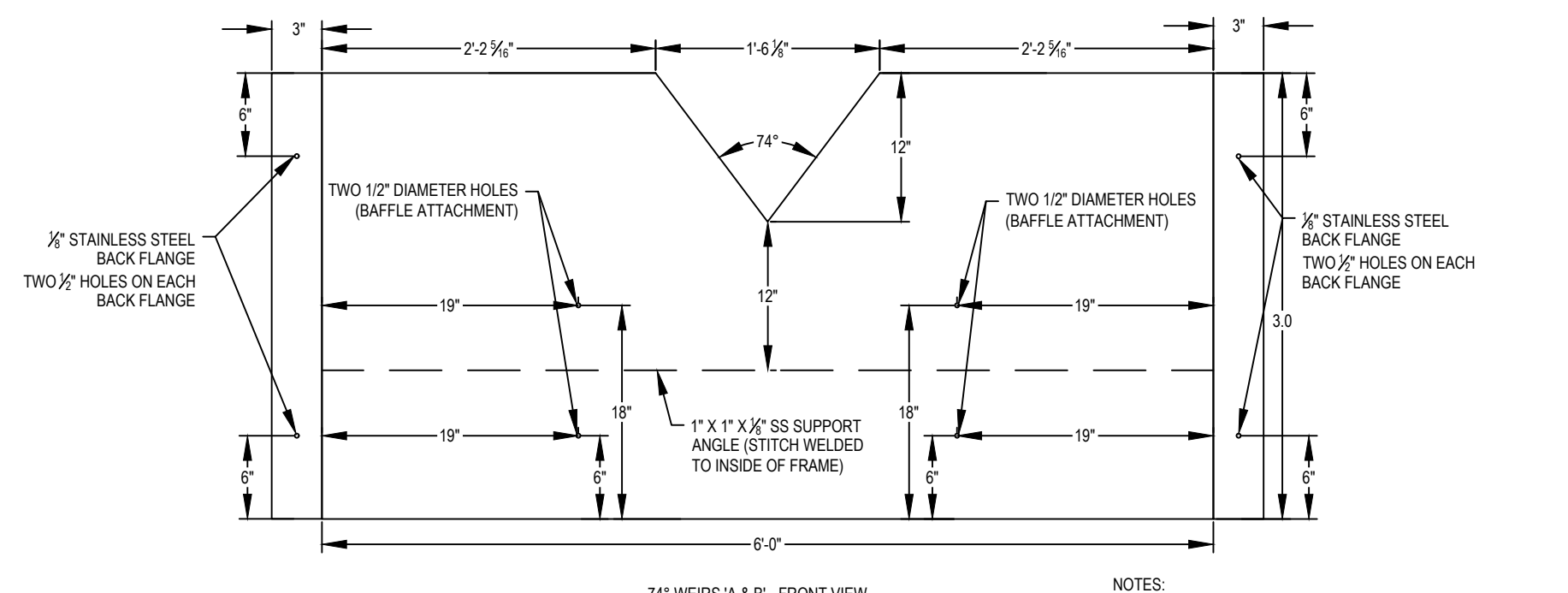
WEIR FLANGES

Horizontal Scale: None Vertical Scale: None



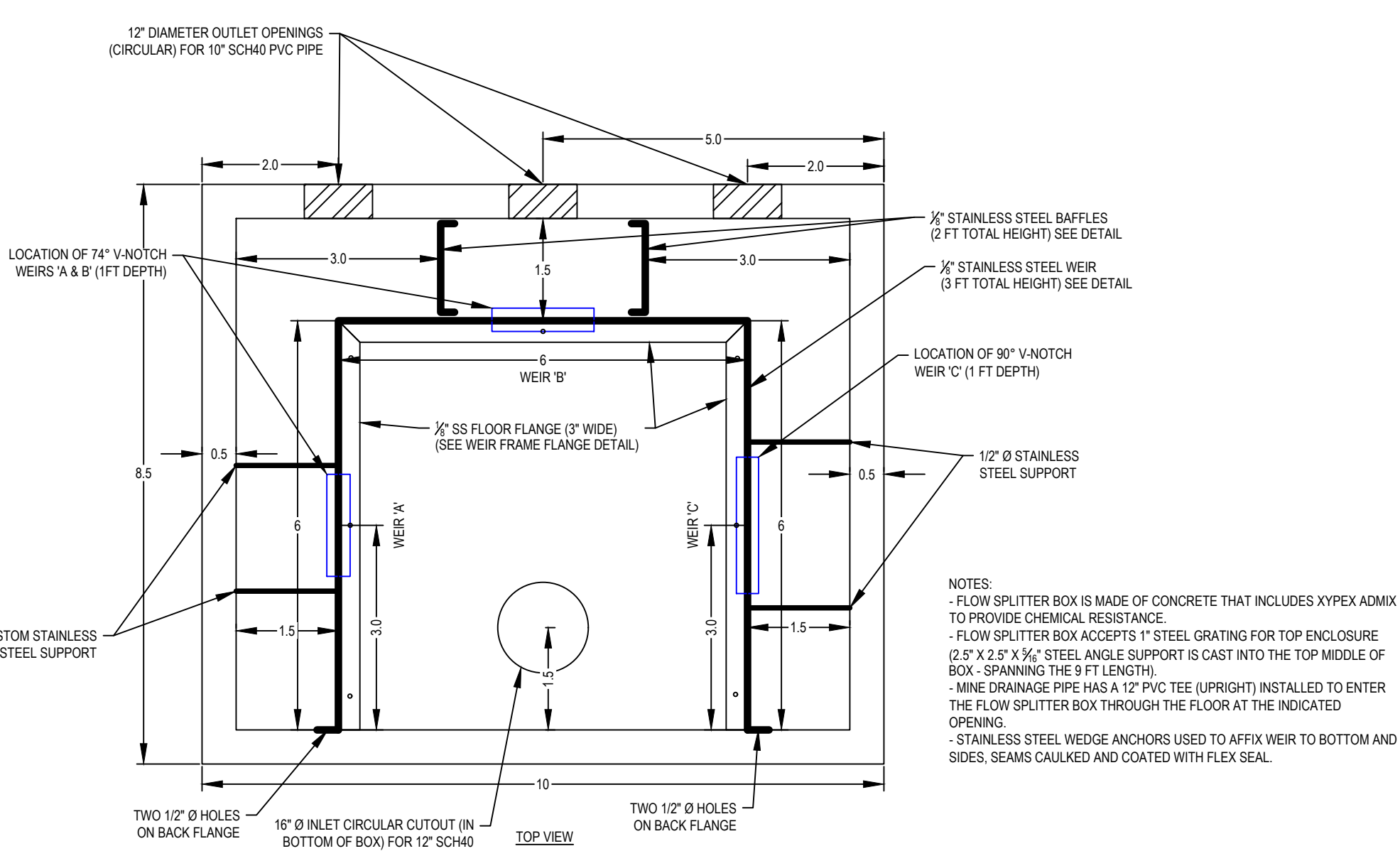
STAINLESS STEEL BAFFLES

Horizontal Scale: None Vertical Scale: None



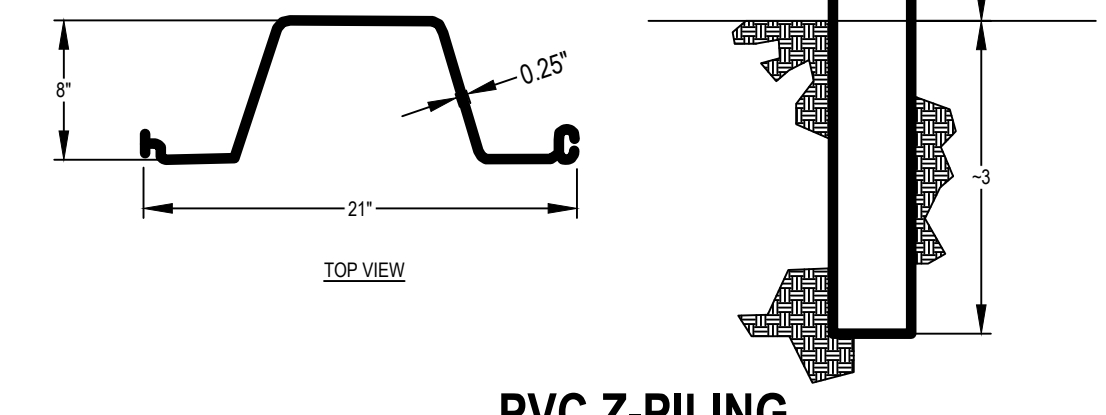
V-NOTCH WEIR CUTOUTS (90° & 74°)

Horizontal Scale: None Vertical Scale: None



FLOW SPLITTER

Horizontal Scale: None Vertical Scale: None



PVC Z-PILING

Horizontal Scale: None Vertical Scale: None

AS-BUILT DETAILS

RICHARDS PASSIVE SYSTEM REHABILITATION

for
Blacklick Creek Watershed Association
Cherryhill Twp., Indiana County, Pennsylvania

Scale: As Shown December 2021
BioMost, Inc., Mars, Pennsylvania
Mining and Reclamation Services www.biomost.com