EROSION & SEDIMENTATION CONTROL PLAN NOTES

1. Only limited disturbance will be permitted to provide access to install silt fence barriers.
2. Erosion and sediment control Best Management Practices (BMPs) must be constructed, stabilized, and functional before site disturbance begins within the BMP contributory drainage area.
3. After final site stabilization has been achieved (uniform 70% perennial vegetative cover or better where revegetated), temporary erosion and sediment control BMPs must be removed. Areas disturbed during removal of BMPs must be stabilized immediately.
4. Stockpile heights must not exceed 35 feet. Stockpile slopes must be 2:1 or flatter.
5. Until the site is stabilized, all erosion and sediment control BMPs must be maintained properly. Maintenance must include inspection of all erosion and sediment control BMPs after each runoff event and on at least a weekly basis (see details for additional requirements). All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, remulching and renetting must be performed within 48 hours or sooner if so specified for a given BMP. If erosion and sediment control BMPs fail to perform as expected, replacement BMPs or modifications of those installed will be required. The site Construction Foreman or his designee must insure that weekly and post-runoff inspections are completed and shall oversee any required preventative and remedial maintenance work.
6. Sediment removed from BMPs must be placed within the limits of disturbance in an area protected by BMPs and promptly stabilized to avoid future re-entrainment.
7. Any waste materials generated by (including wastes associated with the operation and maintenance of earthmoving equipment and construction materials such as geotextile, pipe, revegetation supplies, etc.) or encountered during construction will be recycled, scrapped, or disposed of in permitted facilities in accordance with all applicable state and federal regulations as needed.
8. With the exception of those areas draining to silt fence, all stormwater runoff shall be routed through existing treatment components during construction that will serve as sediment removal facilities during construction activities.
9. Though all cut and fill material will be used and/placed on site, it is the responsibility of the operator to perform due diligence and determine if any fill material imported from off site is Clean Fill. Clean Fill is defined as: Uncontaminated, non-water soluble, non-decomposable, inert, solid material. The term includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and is recognizable as such. The term does not include materials placed in or on the waters of the commonwealth unless otherwise authorized. (The term "used asphalt" does not include milled asphalt or asphalt that has been processed for re-use.).

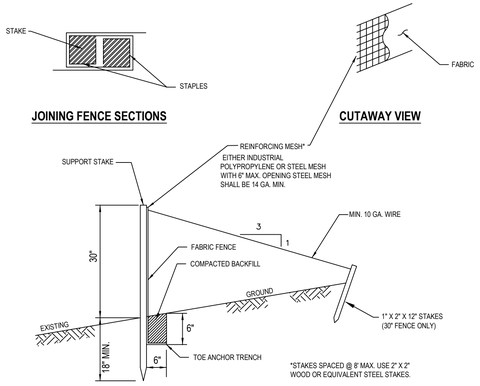
TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS

Temporary

Species: Annual Ryegrass (PA DOT Formula E)
Pure Live Seed: 88% Application Rate: 48 LB./AC.
Fertilizer Type: None Liming Rate: 0 T./AC.
Mulch Type: Hay or Straw Mulching Rate: 3.0 T./AC.

Permanent

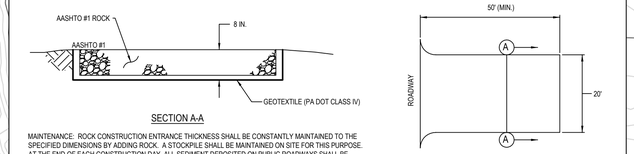
(Species - Application Rate): Orchard Grass - 10 LB./AC.; Timothy - 10 LB./AC.; White Dutch Clover - 3 LB./AC.; Alsike Clover - 3 LB./AC.; Ladino Clover 3 LB./AC.; Birdsfoot Trefoil (Empire Variety) - 13 LB./AC.; Winter Wheat - 60 LB./AC. (Winter wheat for fall planting or spring oats at 34 LB./AC. for spring planting. Winter rye or annual rye grass at 25 LB./AC. may also be used.) Kentucky 31 Tall Fescue shall not be used.
Min. Purity: 90% Min. Germination: 80%
Fertilizer Type: 10-20-20 Fertilizer Appl. Rate: 500 LB./AC.
Liming Rate: 5.0 T./AC. Mulch Type: Hay or Straw
Mulching Rate: 3.0 T./AC.
Preferred Seeding Season Dates: 3/15 to 6/1; 8/1 to 10/15



FILTER FABRIC FENCE MUST BE INSTALLED AT EXISTING LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST EXTEND AT LEAST 8 FEET UPSLOPE AT 45° TO THE MAIN FENCE ALIGNMENT.
SEDIMENT MUST BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE REPLACED WITH A ROCK FILTER OUTLET WITHIN 24 HOURS.
FOR WOOD STAKES, 2" X 2" (+/- 3/8") ACTUAL SIZE, NOT NOMINAL.
PADOT CLASS 3, TYPE B, SEDIMENT CONTROL

30" HIGH REINFORCED FILTER FABRIC FENCE

Horizontal Scale: None Vertical Scale: None



MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.

ROCK CONSTRUCTION ENTRANCE

Horizontal Scale: None Vertical Scale: None

LEGEND

- PROP. TREATMENT SYSTEM COMPONENT
- PROP. INDEX CONTOUR
- PROP. INTERMEDIATE CONTOUR
- PROP. 12" SCH40 PVC PIPE
- PROP. 10" SCH40 PVC PIPE
- PROP. 8" SDR35 PVC PIPE
- PROP. 8" SDR35 PVC PIPE (PERFORATED)
- PROP. 8" SCH40 PVC PIPE
- PROP. 4" SDR35 PVC PIPE (PERFORATED)
- PROP. EMERGENCY SPILLWAY (GRASS)
- PROP. ROCK LINED CHANNEL
- PROP. SILT FENCE (E&S CONTROL)
- EX. RAILROAD
- EX. SOIL UNIT BOUNDARY
- EX. STREAM
- EX. ROAD (PAVED)
- EX. INTERMEDIATE CONTOUR
- EX. INDEX CONTOUR
- EX. POND / WATER SURFACE
- EX. BUILDING / STRUCTURE
- EX. CULVERT

REPRESENTATIVE AMD CHARACTERISTICS

Point		Flow	pH	Acid	T Fe	T Mn	T Al	Sulfates
EXISTING TREATMENT POND OUTLET	AVG.	~200	3.4	131	17	1	11	393
	DESIGN	~300	2.5	215	37	2	17	802

Flow in gpm; concentrations in mg/L
Water quality samples date between 2002 to 2020, the most recent monitoring (2020) performed by BioMost, Inc. (data available online at www.datashed.org)

DESIGN SUMMARY

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

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

LOADING
MAX / DESIGN TREATMENT LOADINGS:
1,021 LB/DAY ACIDITY
218 LB/DAY IRON
128 LB/DAY ALUMINUM
AVERAGE DESIGN TREATMENT LOADINGS:
166 LB/DAY ACIDITY
23 LB/DAY IRON
15 LB/DAY ALUMINUM

PmA
DkD
HsF
W
GcF
GnD
BhF
ItD
PoA
SR-403
TWO LICK CREEK
EXISTING MINE WATERS CONVEYANCE CHANNEL
EXISTING MINE DRAIN LOCATION
EX. ~31,000 SQ FT SETTLING POND 64 LB/DAY FE @ 10 G/SM/D
EXISTING 12" RPDE N-12 OUTLET PIPE LEAVE AS AUXILIARY OUTLET INLET INV. 1260.7 OUTLET INV. 1261.1
PROPOSED 12" HDPE N-12 OUTLET PIPE INLET INV. 1255.0 OUTLET INV. 1254.0
BAFFLE CURTAIN (1FT HEIGHT)
PLACE / SPREAD SPENT MEDIA EVENLY IN EXISTING POND AS LOW PERMEABILITY LINER IN SETTLING POND 1
TOP OF 6" PIPE ELEV. 1260.75
INV. ELEV. 1255.0
INSTALL SEEP COLLECTION DRAIN (PIPE INV. ELEV. 1255.0)
INSTALL 80FT-LONG 36" N-12 CULVERT AND CROSSING FOR CONSTRUCTION (LEAVE IN IF LANDOWNER AGREES)
INSTALL SOLID SDR35 PIPE (INV. ELEV. 1255.0)
TOP BERM 1266.0
BOT 1255.0
RECONFIGURE / ENLARGE EX SLUDGE POND AS JVFP (JVFP 3)
28% OF FLOW @ 300 GPM = 84 GPM
1500 TONS LIMESTONE
370 CY SPENT MUSHROOM COMPOST
740 CY WOODCHIPS
TOTAL AS-PLACED VOLUME: 1667 CY
MAX ACID LOAD @ 0.15 LB/D/CY = 250 LB/DAY
1 FT UNDRAIN STONE: 408 CY = + 61 LB/DAY
TOTAL ACID LOAD TREATED: 311 LB/DAY
INSTALL MINERAL CSA LINER
PLACE / SPREAD SPENT MEDIA & EXCESS FILL IN EXISTING TREATMENT WETLAND AS NEEDED
INSTALL PVC Z-PILES AS DIRECTIONAL FLOW BARRIERS IN EXISTING WETLAND (TYP.)
RECONFIGURE / ENLARGE EX. VFP AS JVFP (JVFP 1)
28% OF FLOW @ 300 GPM = 84 GPM
1500 TONS LIMESTONE
370 CY SPENT MUSHROOM COMPOST
740 CY WOODCHIPS
TOTAL AS-PLACED VOLUME: 1667 CY
MAX ACID LOAD @ 0.15 LB/D/CY = 250 LB/DAY
1 FT UNDRAIN STONE: 374 CY + + 56 LB/DAY
TOTAL ACID LOAD TREATED: 306 LB/DAY
INSTALL MINERAL CSA LINER
BENCHMARK 1 ELEV. 1269.95
EX. 33" SS CMP (ROAD CULVERT)
ROCK CONSTRUCTION ENTRANCE (SECONDARY)
FLOW SPLITTER
EXISTING 6" TERRACOTTA PIPE
CLEAN EXISTING 12" PVC SYSTEM INLET PIPE (AS NEEDED)
12" BYPASS VALVE
EX. VFP2A
EX. VFP2B
RECONFIGURE / ENLARGE EX. VFP2 A/B AS JVFP (JVFP 2)
44% OF FLOW @ 300 GPM = 132 GPM
2350 TONS LIMESTONE
570 CY SPENT MUSHROOM COMPOST
1170 CY WOODCHIPS
TOTAL AS-PLACED VOLUME: 2611 CY
MAX ACID LOAD @ 0.15 LB/D/CY = 392 LB/DAY
1 FT UNDRAIN STONE: 541 CY + + 81 LB/DAY
TOTAL ACID LOAD TREATED: 473 LB/DAY
USE EXISTING CLAY LINER (SAVE AND REPLACE CLAY FROM MIDDLE EMBANKMENT AREA)
EX. 18" CMP (ROAD CULVERT)
ROCK CONSTRUCTION ENTRANCE (PRIMARY)
TOP OF 6" PIPE ELEV. 1260.75
INV. ELEV. 1255.0
EX. 12" SCH40 PVC
REMOVE EXISTING LEVEL SPREADER
IMPROVE EXISTING DIRECTIONAL BAFFLE
EX. ~50,000 SQ FT TREATMENT WETLAND 103 LB/DAY FE @ 10 G/SM/D
EX. ROAD CULVERT SIZE AND MATERIAL UNKNOWN
1270
1260
60 30 0 60

CONSTRUCTION SCHEDULE & BMP INSTALLATION SEQUENCE

1. Install filter fence barriers #1 & 2 along the existing mine water conveyance channel, down-gradient of the proposed crossing.
2. Clear and grubb areas to be affected during construction, while maintaining drainage to existing treatment components.
3. Install the seep collection drain. Construct a temporary coffer dam to allow for the mine water discharge to be pumped around the active construction of the seep drain.
4. While the mine water discharge is being pumped around the area, install the 36" culvert for the channel crossing at the location shown on the Drawings. This will allow for the crossing to be constructed in predominantly 'dry' conditions to achieve proper compaction around the culvert pipe.
5. Remove spent organic treatment media (to be placed in existing settling pond and or existing treatment wetland).
6. Wash and recover existing limestone to be stockpiled on-site for use in proposed underdrain construction of rebuilt Jennings-Type Vertical Flow Ponds (JVFPs).
7. Enlarge Ex VFP2A & VFP2B into a single structure and rebuild the treatment component (JVFP2) using new materials.
8. Expand the existing sludge pond to the dimensions shown on the Drawings and convert the component into JVFP3.
9. Expand the existing VFP to the lines and grades shown on the Drawing and rebuild the treatment component (JVFP1) using new materials.
10. Excess earth fill material shall be placed within the existing treatment system footprint i.e. into the existing settling pond and treatment wetland (or along existing embankments as needed).
11. Grade all affected areas to blend with surrounding topography, loosely spread best on-site soil and revegetate treatment system area per permanent seeding specifications as soon as possible or within 1 week after construction is complete.
12. Remove all temporary BMPs upon establishing permanent uniform 70% perennial vegetative cover .

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 limited 2020 site investigations by BioMost. Elevation bench marks set by BioMost, Inc Mars, PA. All existing conditions are to be field verified by the contractor as needed.
2. Vertical Control established by setting a GPS control point near the site with a Survey Grade GPS unit.
3. Stream presence/extent determined from "blue lines" of USGS map - locations revised based on LiDAR contours.
4. All dimensions are in feet unless otherwise noted. All slope designations are H:V.
5. For simplicity, the property 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.**
6. Proposed structures may be altered to suit field conditions.
7. All limestone to be 90%CaC03 or better (Not just 90% CCE).
8. Soil unit boundaries and data from websoilsurvey.nrcs.usda.gov accessed May 2020.
9. Site Limits of Disturbance (LOD) are less than 1 Acre in size. Please note that areas within the the footprint of the existing treatment system are excluded from this determination (only new construction or system expansion is included in acreage calculations for the LOD).

SITE PLAN VIEW / E&S PLAN

RICHARDS PASSIVE TREATMENT SYSTEM REHABILITATION

for

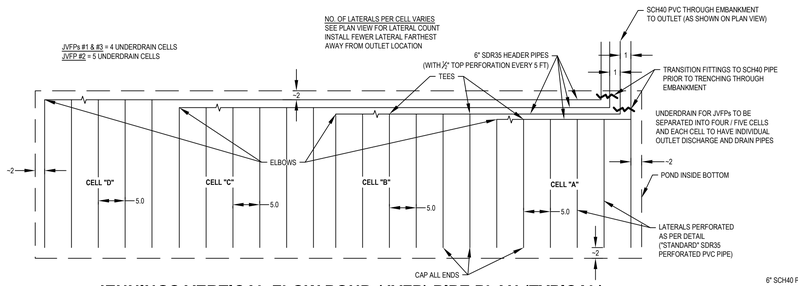
Blacklick Creek Watershed Association

Cherryhill Twp., Indiana County, Pennsylvania

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

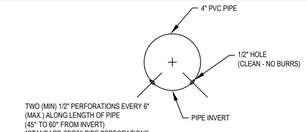
Scale: 1"=60' June 2020

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



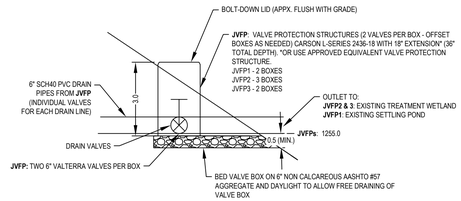
JENNINGS VERTICAL FLOW POND (JVFP) PIPE PLAN (TYPICAL)

Horizontal Scale: None Vertical Scale: None



JVFP PIPE PERF. DETAIL

Horizontal Scale: None Vertical Scale: None



DRAIN VALVE / PROTECTION STRUCTURE (TYPICAL)

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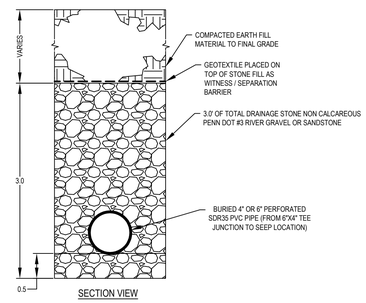

FRENCH DRAIN

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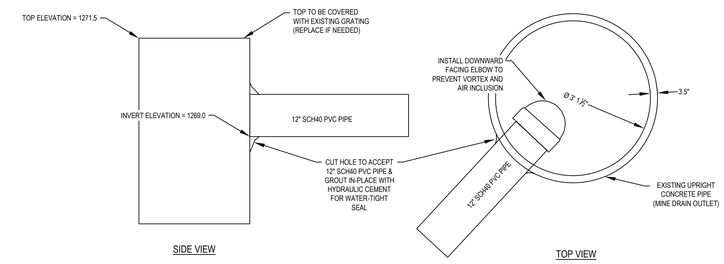

MINE DRAIN CONNECTION

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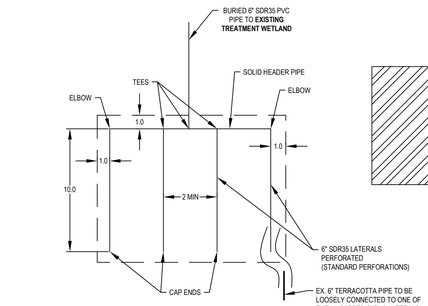
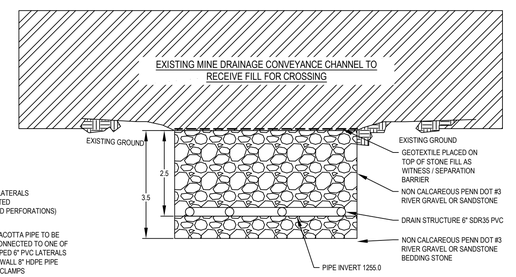
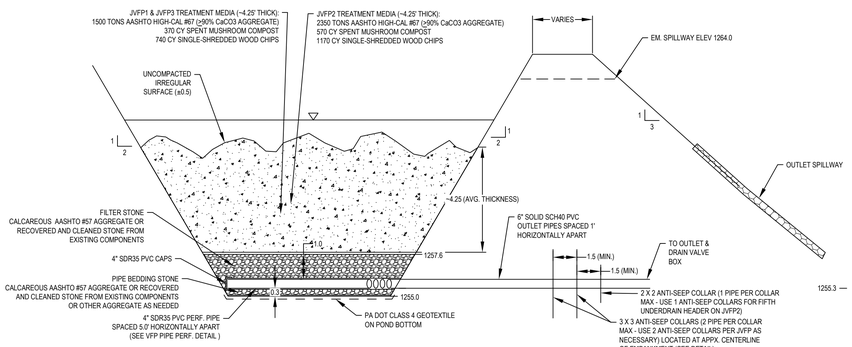




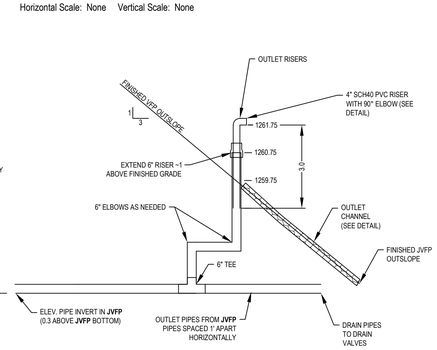
SEEP COLLECTION DRAIN

Horizontal Scale: None Vertical Scale: None



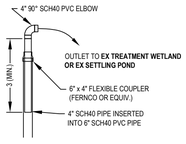
JENNINGS VERTICAL FLOW POND (JVFP) TYPICAL

Horizontal Scale: None Vertical Scale: None



VFP OUTLET

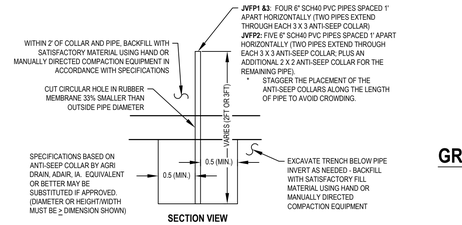
Horizontal Scale: None Vertical Scale: None



OUTLET RISER

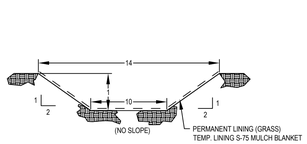
Horizontal Scale: None Vertical Scale: None

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



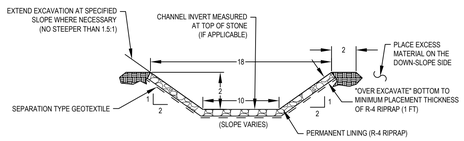
ANTI-SEEP COLLAR

Horizontal Scale: None Vertical Scale: None



GRASS-LINED EM. SPILLWAY (TYPICAL)

Horizontal Scale: None Vertical Scale: None



ROCK-LINED EM. SPILLWAY CHANNEL (TYPICAL)

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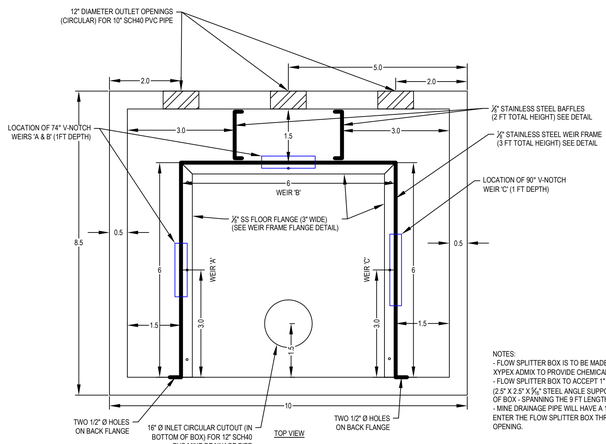
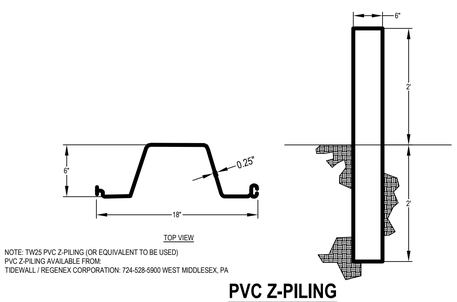


NOTES:
- FLOW SPLITTER BOX IS TO BE MADE OF CONCRETE THAT SHALL INCLUDE XYPEX ADMIX TO PROVIDE CHEMICAL RESISTANCE.
- FLOW SPLITTER BOX TO ACCEPT 1" STEEL GRATING FOR TOP ENCLOSURE (2.5" X 2.5" X ¼" STEEL ANGLE SUPPORT TO BE CAST INTO THE TOP MIDDLE OF BOX - SPANNING THE 9 FT LENGTH).
- MINE DRAINAGE PIPE WILL HAVE A 12" PVC TEE (UPRIGHT) INSTALLED TO ENTER THE FLOW SPLITTER BOX THROUGH THE FLOOR AT THE INDICATED OPENING.

FLOW SPLITTER

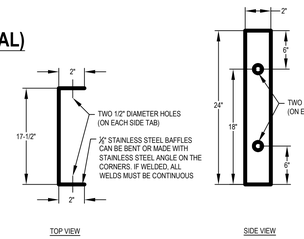
Horizontal Scale: None Vertical Scale: None



NOTE: TW25 PVC Z-PILING (OR EQUIVALENT TO BE USED)
PVC Z-PILING AVAILABLE FROM:
TIDEWALL / REGENEX CORPORATION: 724-528-6900 WEST MIDDLESEX, PA

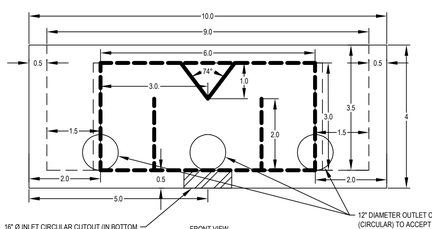
PVC Z-PILING

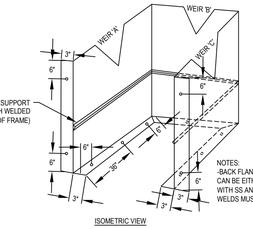
Horizontal Scale: None Vertical Scale: None

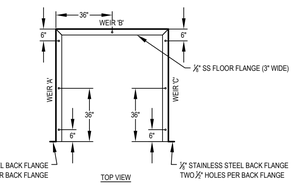


STAINLESS STEEL BAFFLES

Horizontal Scale: None Vertical Scale: None

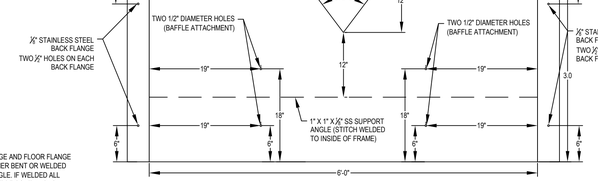




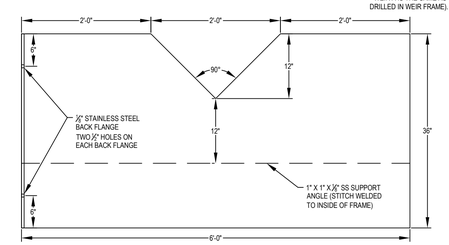


WEIR FRAME FLANGES

Horizontal Scale: None Vertical Scale: None



NOTES:
- WEIRS SHALL BE CUT CENTERED ON THE TOP OF EACH SIDE OF THE WEIR FRAME.
-1" X 1" X ⅛" ANGLE TO BE STITCH WELDED TO INSIDE FACE OF WEIR FRAME 1 FT BELOW THE POINT OF THE WEIR TO PROVIDE SUPPORT TO THE STRUCTURE.
- WEIR A IS THE SAME AS WEIR B (ONLY NO HOLES TO BE DRILLED IN WEIR FRAME).



V-NOTCH WEIR CUTOUTS (90° & 74°) ON WEIR FRAME

Horizontal Scale: None Vertical Scale: None

ROCK LINING TABLE		
NCSA # (AASHTO #)	AVG. STONE SIZE (d50)	MIN. DEPTH ("A")
(AASHTO #1)	NA	6"
R-3	3"	9"
R-4	6"	18"
*UNLESS SPECIFIED OTHERWISE		

CONSTRUCTION DETAILS

RICHARDS PASSIVE TREATMENT SYSTEM REHABILITATION

for

Blacklick Creek Watershed Association

Cherryhill Twp., Indiana County, Pennsylvania

Scale: As Shown June 2020

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