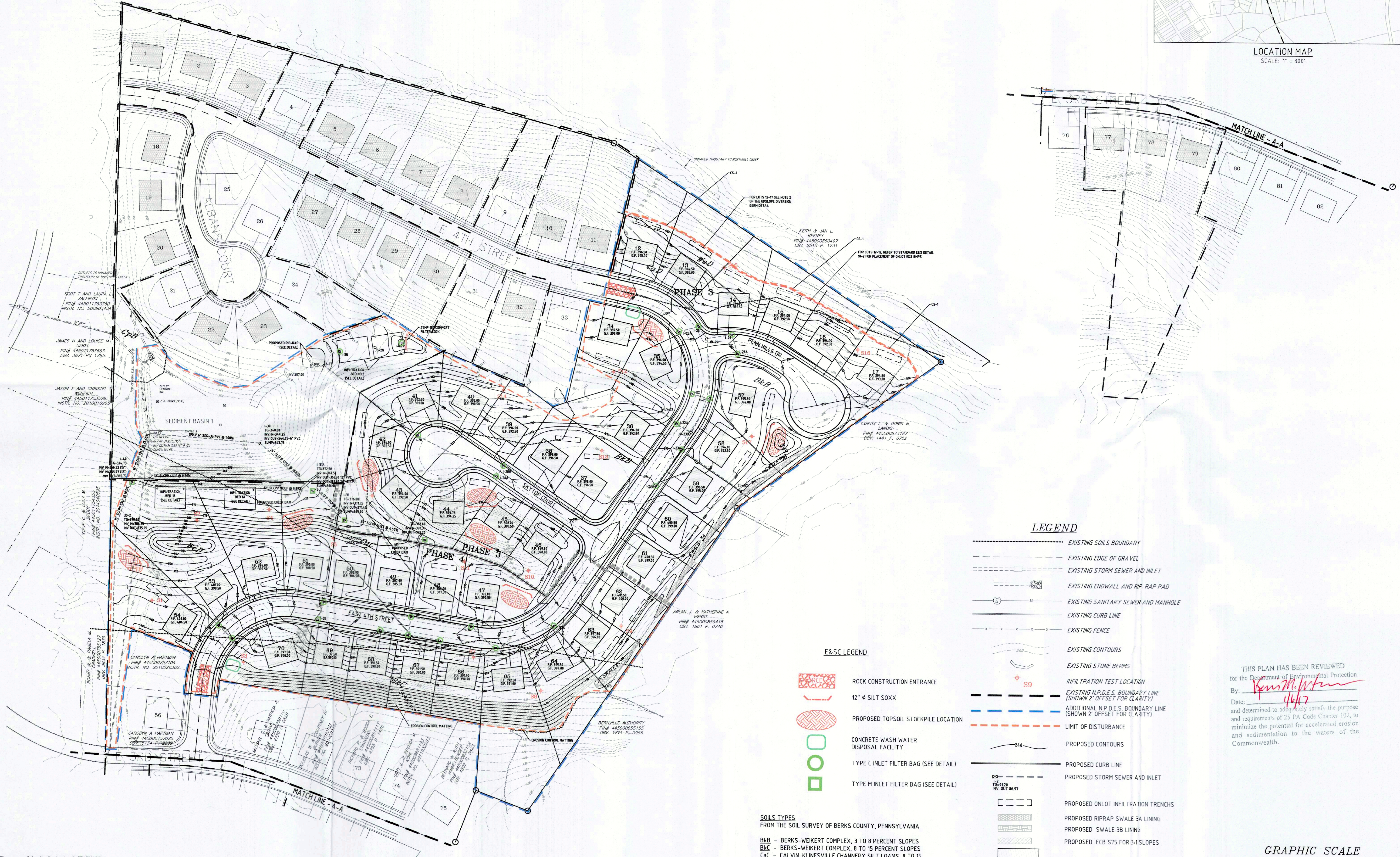
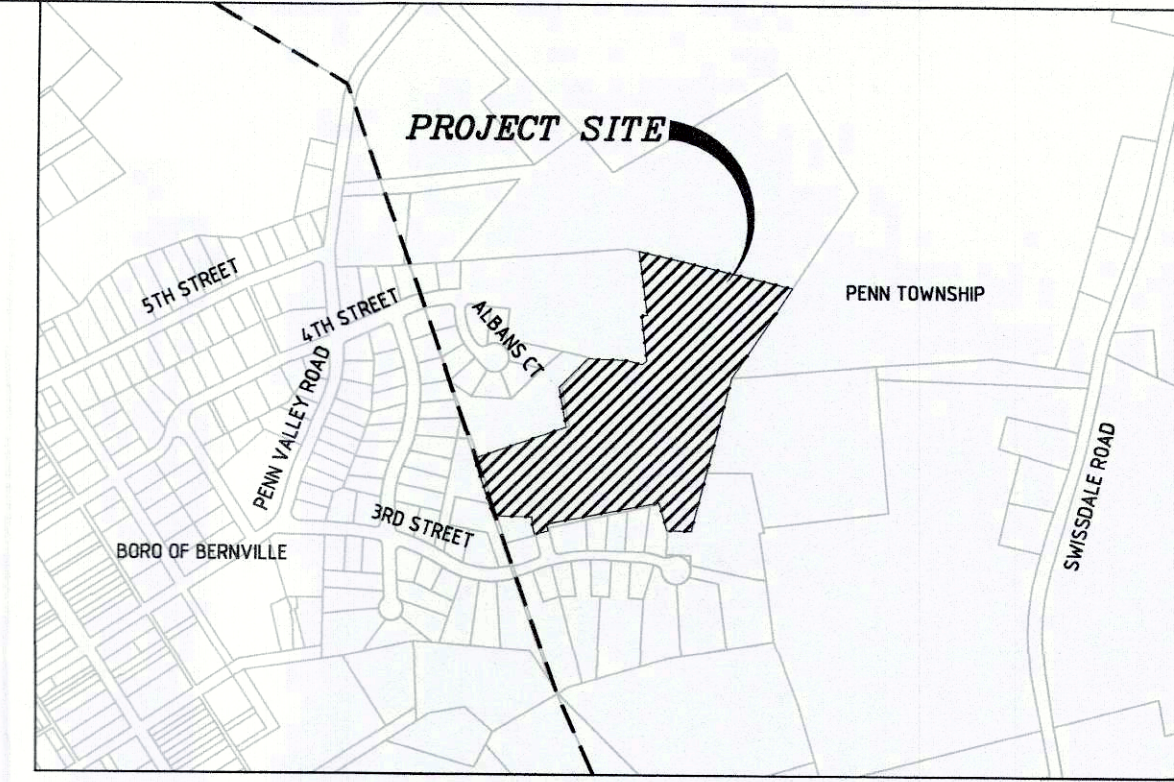
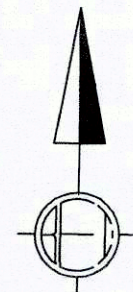






PROJECT TITLE: MAJOR MODIFICATION TO NPDES PERMIT #PAG02000614051  
 PENN HILLS PHASES 3 & 4



LEGEND

- EXISTING SOILS BOUNDARY
- - - EXISTING EDGE OF GRAVEL
- - - EXISTING STORM SEWER AND INLET
- - - EXISTING ENDWALL AND RIP-RAP PAD
- ⊙ EXISTING SANITARY SEWER AND MANHOLE
- EXISTING CURB LINE
- - - EXISTING FENCE
- - - EXISTING CONTOURS
- - - EXISTING STONE BERMS
- ⊕ EXISTING INFILTRATION TEST LOCATION
- - - EXISTING N.P.D.E.S. BOUNDARY LINE (SHOWN 2' OFFSET FOR CLARITY)
- - - ADDITIONAL N.P.D.E.S. BOUNDARY LINE (SHOWN 2' OFFSET FOR CLARITY)
- - - LIMIT OF DISTURBANCE
- - - PROPOSED CONTOURS
- PROPOSED CURB LINE
- - - PROPOSED STORM SEWER AND INLET
- - - PROPOSED ONLOT INFILTRATION TRENCHES
- - - PROPOSED RIPRAP SWALE 3A LINING
- - - PROPOSED SWALE 3B LINING
- - - PROPOSED ECB 575 FOR 3:1 SLOPES
- AREA OF MINIMIZED DISTURBANCE
- AREA OF MINIMIZED SOIL COMPACTION

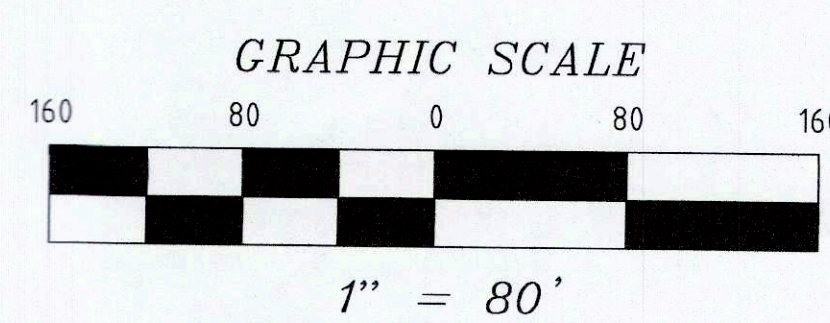
E&S LEGEND

- ⊕ ROCK CONSTRUCTION ENTRANCE
- ⊕ 12" Ø SILT SOXX
- ⊕ PROPOSED TOPSOIL STOCKPILE LOCATION
- ⊕ CONCRETE WASH WATER DISPOSAL FACILITY
- ⊕ TYPE C INLET FILTER BAG (SEE DETAIL)
- ⊕ TYPE M INLET FILTER BAG (SEE DETAIL)

SOILS TYPES FROM THE SOIL SURVEY OF BERKS COUNTY, PENNSYLVANIA

- BhB - BERKS-WEIKERT COMPLEX, 3 TO 8 PERCENT SLOPES
- BhC - BERKS-WEIKERT COMPLEX, 8 TO 15 PERCENT SLOPES
- CaC - CALVIN-KLINESVILLE CHANNERY SILT LOAMS, 8 TO 15 PERCENT SLOPES
- CaD - CALVIN-KLINESVILLE CHANNERY SILT LOAMS, 15 TO 25 PERCENT SLOPES
- CpB - COMLY SILT LOAM, 3 TO 8 PERCENT SLOPES
- WeD - WEIKERT-BERKS COMPLEX, 15 TO 25 PERCENT SLOPES

THIS PLAN HAS BEEN REVIEWED for the Department of Environmental Protection  
 By: *Gregg A. Bogia*  
 Date: 11/17/2015  
 and determined to adequately satisfy the purpose and requirements of 25 PA Code Chapter 102, to minimize the potential for accelerated erosion and sedimentation to the waters of the Commonwealth.



DATE	2015-10-24	REVISION	REVISED PER BECD COMMENTS VIA EMAIL DATED 10-28-2015
DATE	2015-10-15	REVISION	REVISED PER BECD COMMENT LETTER DATED 10-06-2015

**BEI**  
 BOGIA ENGINEERING INC.  
 COMMONWEALTH OF PENNSYLVANIA  
 REGISTERED PROFESSIONAL ENGINEER  
 GREGG A. BOGIA  
 ENGINEER  
 44503-0  
 [Signature]

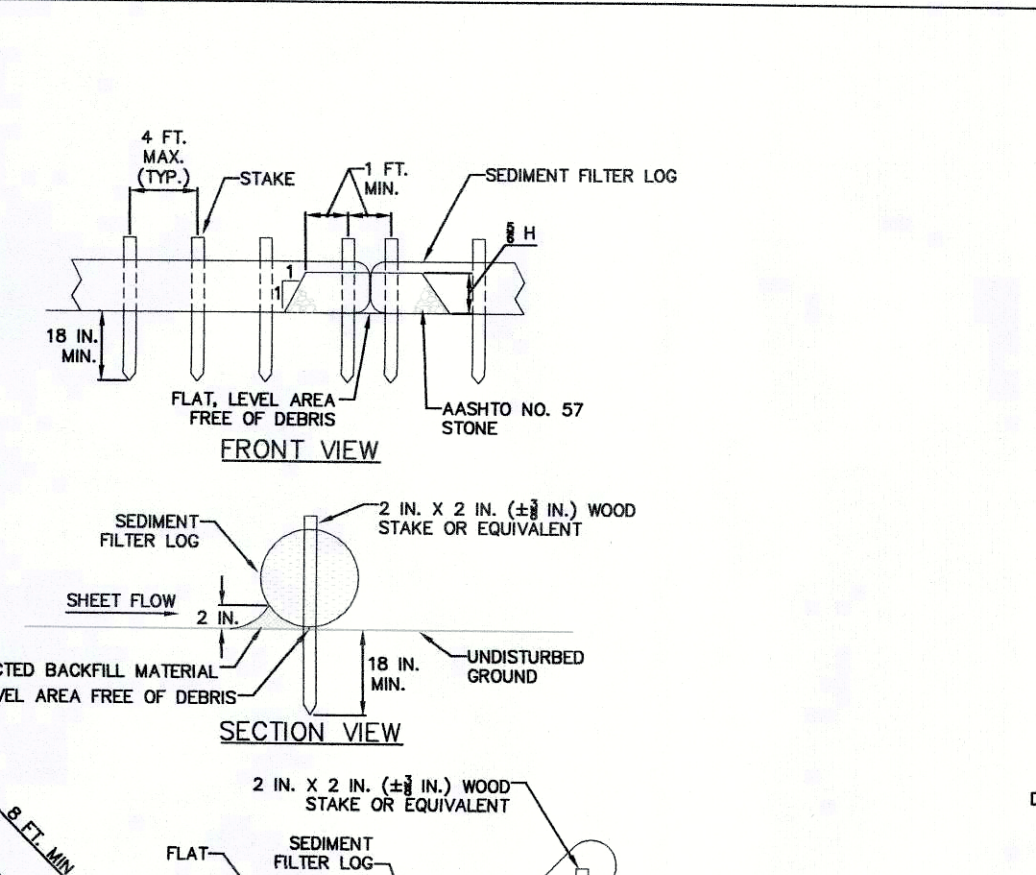
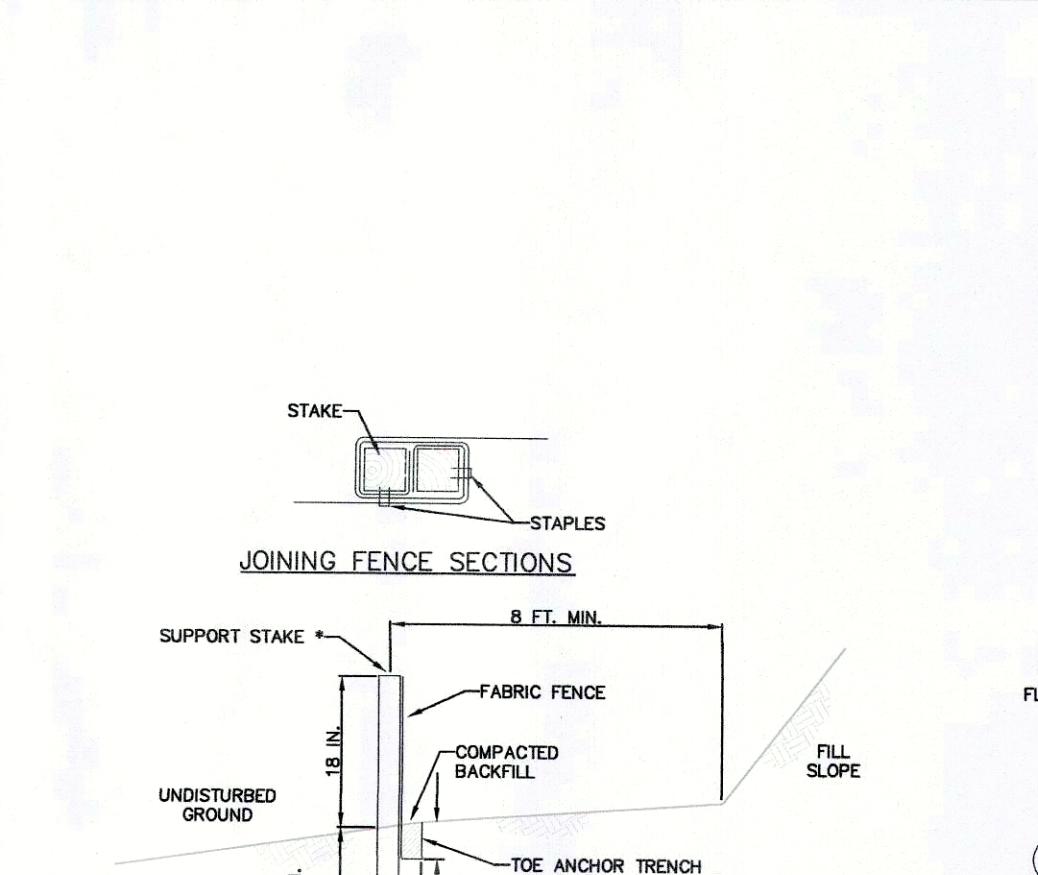
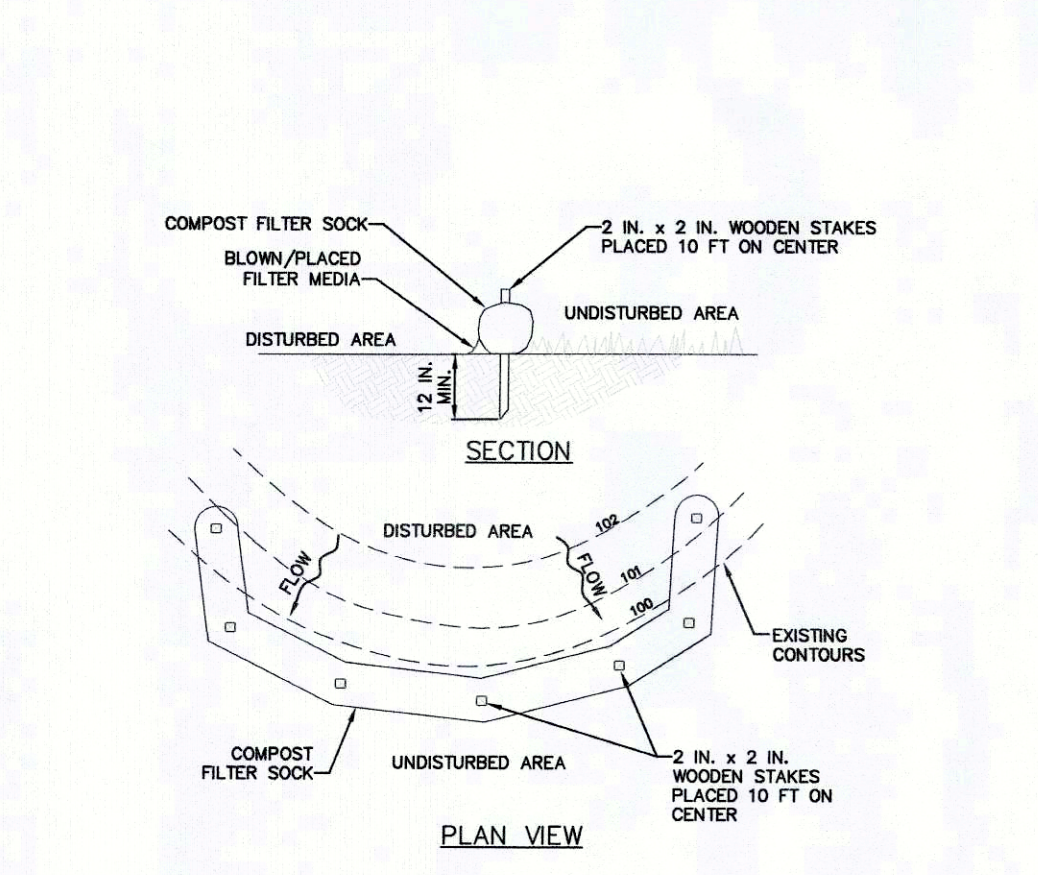
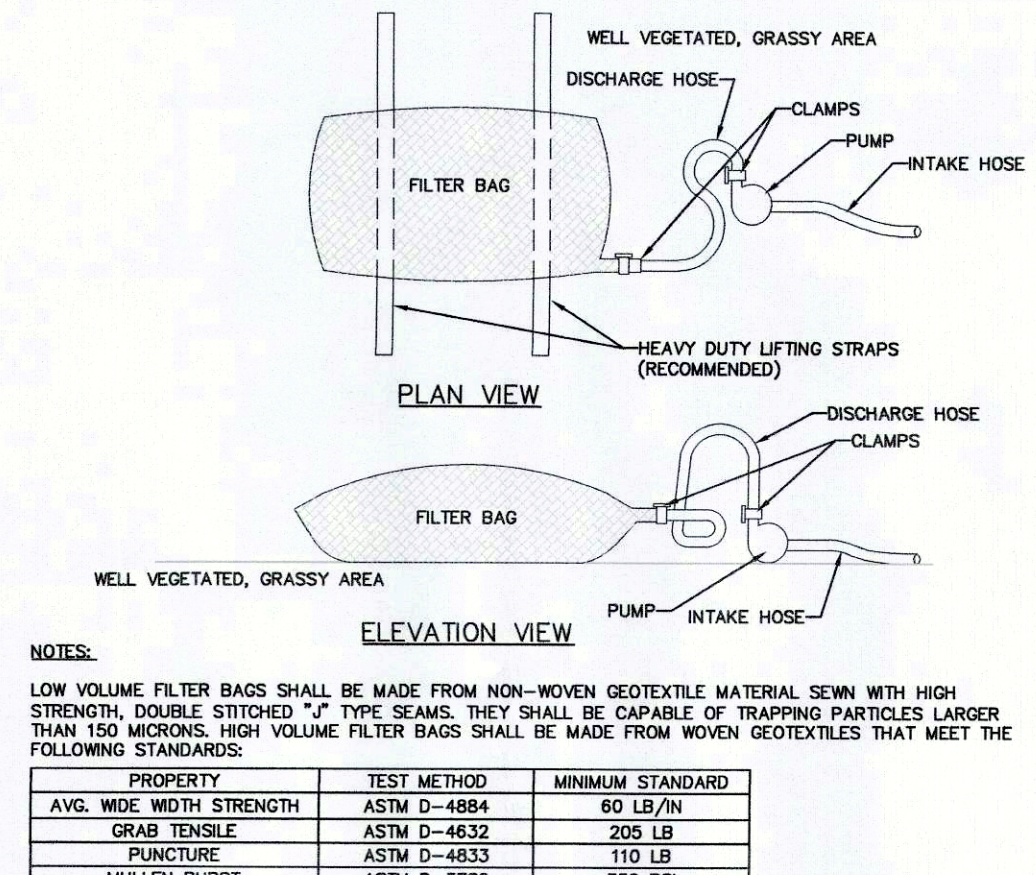
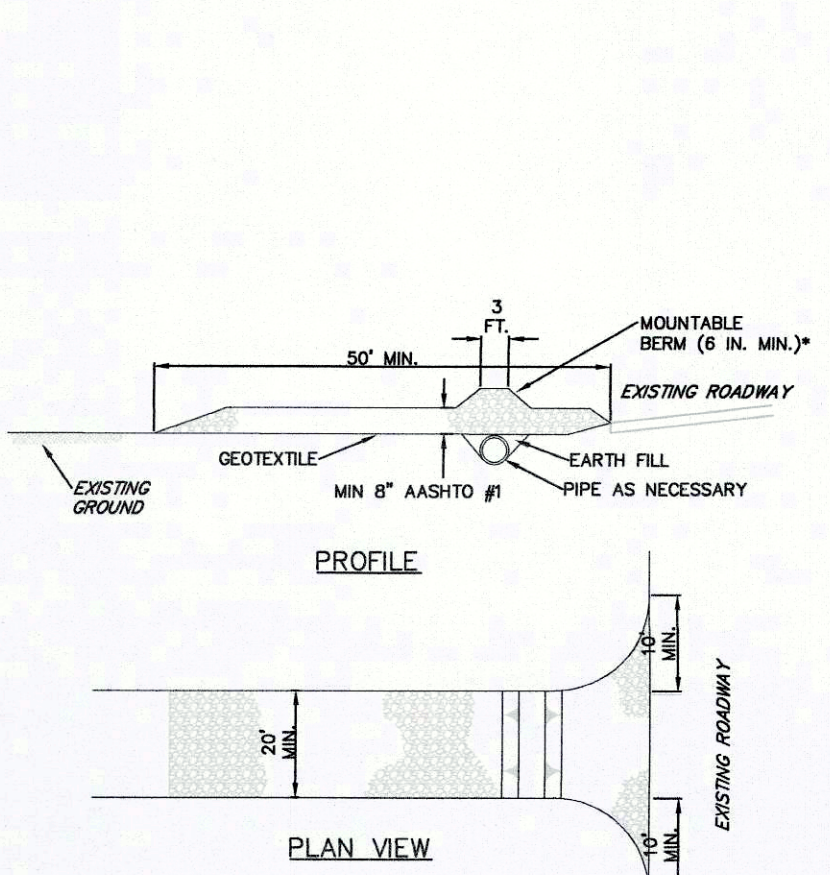
BOGIA ENGINEERING INC.  
 1340 PENN AVENUE, WYOMISSING, PA 19610  
 PHONE: 610-678-3071 FAX: 610-678-3577  
 WWW.BOGIAENG.COM  
 MAJOR MODIFICATION TO NPDES PERMIT #PAG02000614051  
 FINAL PLAN  
 NPDES BOUNDARY

FALLA DEVELOPMENT, LP  
 105 LAKEVIEW DR  
 HARLEYSVILLE, PA  
 JOB: PENN HILLS PHASES 3 & 4  
 PENN TOWNSHIP  
 BERKS COUNTY  
 PENNSYLVANIA

PIN: -  
 CHECKED BY: MAM  
 DRAWN BY: RTL  
 DATE: 2016-10-25  
 SCALE: 1"=80'  
 DRAWING: D-12  
 PROJECT: 2015-072  
 SHEET: 2 OF 6

Before You Dig Approach to PENNSYLVANIA STOP CALL 1-800-246-1789 TOLL FREE  
 NOTE:  
 The location of underground utilities shown on this plan are based on pavement markings by utility owners and surface facilities, and are approximate only. It shall be the contractor's responsibility to verify the exact location and depth of utilities prior to any earthmoving activities.  
 The Pennsylvania One-Call serial number for this project is 2015-3401862





**NOTES:**  
 REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.  
 RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.  
 MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.  
 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. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY. EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITIONS ARE ALLEVIATED OR INSTALL WASH BACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE CHANNELS IS NOT ACCEPTABLE.

**NOTES:**  
 A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.  
 BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5% FOR SLOPES EXCEEDING 5% CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.  
 NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.  
 THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.  
 THE PUMPING RATE SHALL NOT BE GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATED AND SCREENED.  
 FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS IDENTIFIED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

**NOTES:**  
 SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.  
 COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.  
 TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.  
 ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.  
 COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.  
 BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS. PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.  
 UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

**NOTES:**  
 FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.  
 FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.  
 SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.  
 SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.  
 ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4-4).  
 FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

**NOTES:**  
 SEDIMENT LOG PLACEMENT AREA SHALL BE PREPARED SO THAT IT IS FREE OF ALL DEBRIS, INCLUDING ROCKS, STICKS, ROOTS, ETC. A 2 IN. LAYER OF COMPACTED FILL MATERIAL SHALL BE PLACED ON THE UPSLOPE SIDE OF THE LOG TO PREVENT UNDERCUTTING. WHERE MORE THAN ONE LOG IS REQUIRED TO OBTAIN SPECIFIED LENGTH, LOGS SHALL BE TIGHTLY ABUTTED AND SECURELY STAKED (OR OVERLAPPED BY 12 IN. MIN.). A LAYER OF AASHTO NO. 57 STONE SHALL BE PLACED WHERE ABUTTING LOGS COME TOGETHER (EXTENDING 2 FT. ON BOTH SIDES OF THE LOG). A 6 IN. THICK LAYER OF COMPOST ON THE UPSLOPE SIDE MAY BE SUBSTITUTED FOR THE STONE. SEDIMENT FILTER LOGS SHALL BE PLACED AT EXISTING LEVEL GRADE. ENDS SHALL BE EXTENDED UPSLOPE AT 45 DEG. TO THE MAIN FILTER LOG ALIGNMENT FOR A MINIMUM OF 8 FEET.  
 SEDIMENT FILTER LOGS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT DEPOSITS SHALL BE CLEANED FROM THE LOG WHEN IT REACHES HALF THE HEIGHT OF THE LOG. DAMAGED FILTER LOGS SHALL BE REPLACED WITHIN 24 HOURS OF INSPECTION. A SUPPLY OF FILTER LOGS SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE.

**NOTES:**  
 THE UPSLOPE DIVERSION CHANNEL SHOULD BE INSTALLED WHEREVER THE LOT EXTENDS MORE THAN 150 FEET ABOVE THE ROADWAY OR WHERE RUNOFF FROM AREAS ABOVE THE LOT IS NOT OTHERWISE DIVERTED AWAY FROM THE LOT. THE CHANNEL SHOULD BE PROPERLY SIZED AND PROVIDED WITH A SUITABLE PROTECTIVE LINING. THE DESIGNER AND/OR CONTRACTOR MUST EXERCISE CAUTION TO PROTECT ALL DOWNSTREAM PROPERTY OWNERS WHEN SELECTING A DISCHARGE POINT FOR THIS CHANNEL.  
 STANDARD CONSTRUCTION DETAIL #10-1 TYPICAL ON-LOT BMPs FOR LOT ABOVE ROADWAY

STANDARD CONSTRUCTION DETAIL #3-1  
ROCK CONSTRUCTION ENTRANCE  
NOT TO SCALE

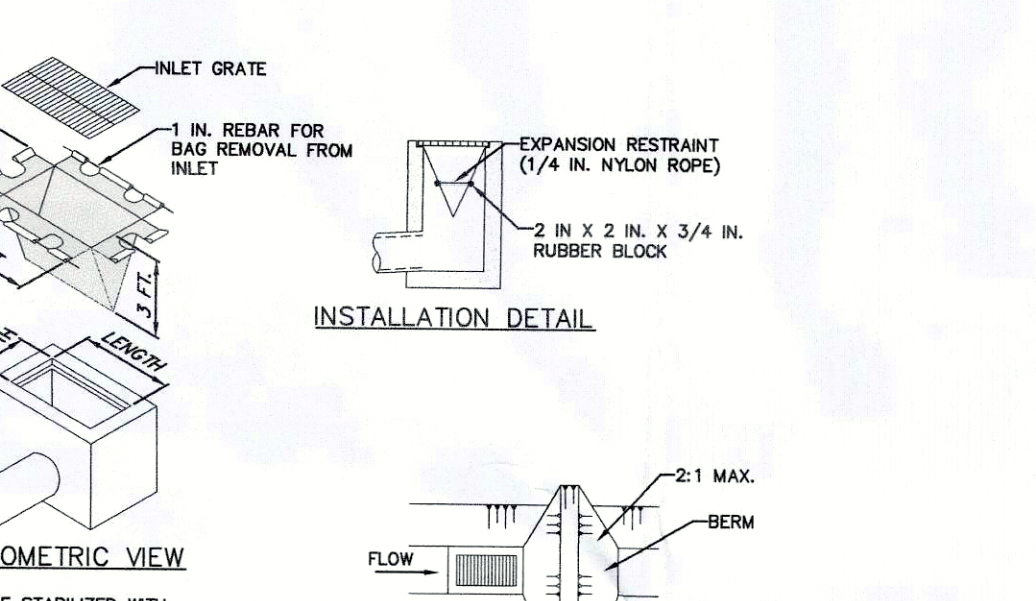
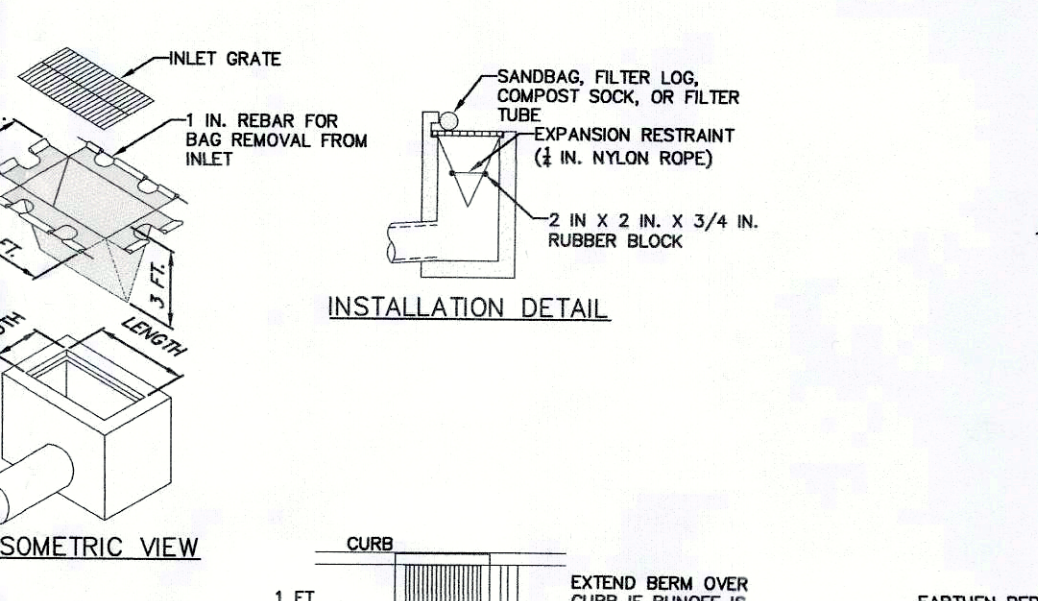
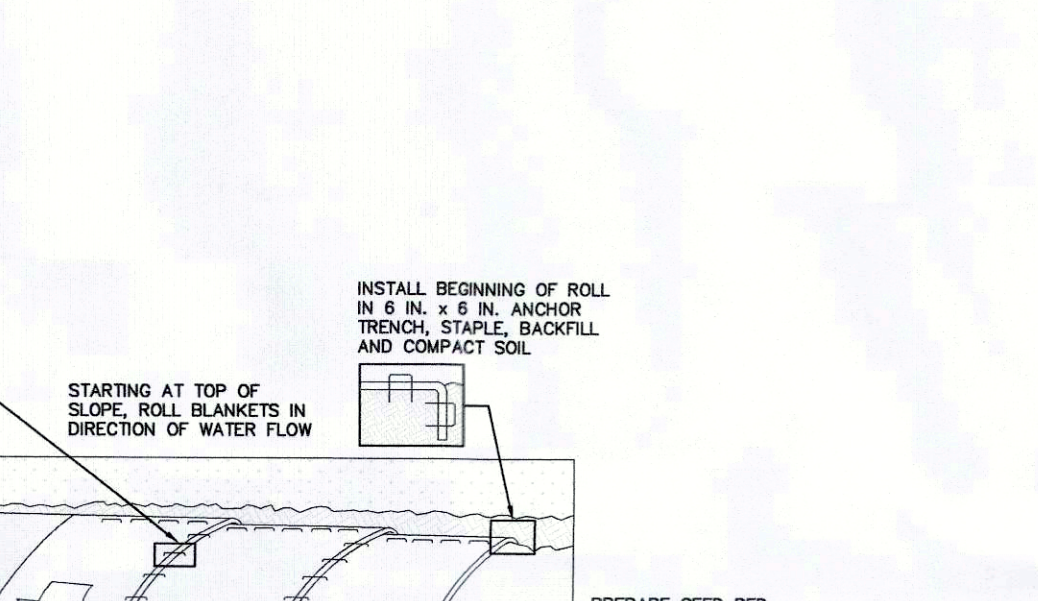
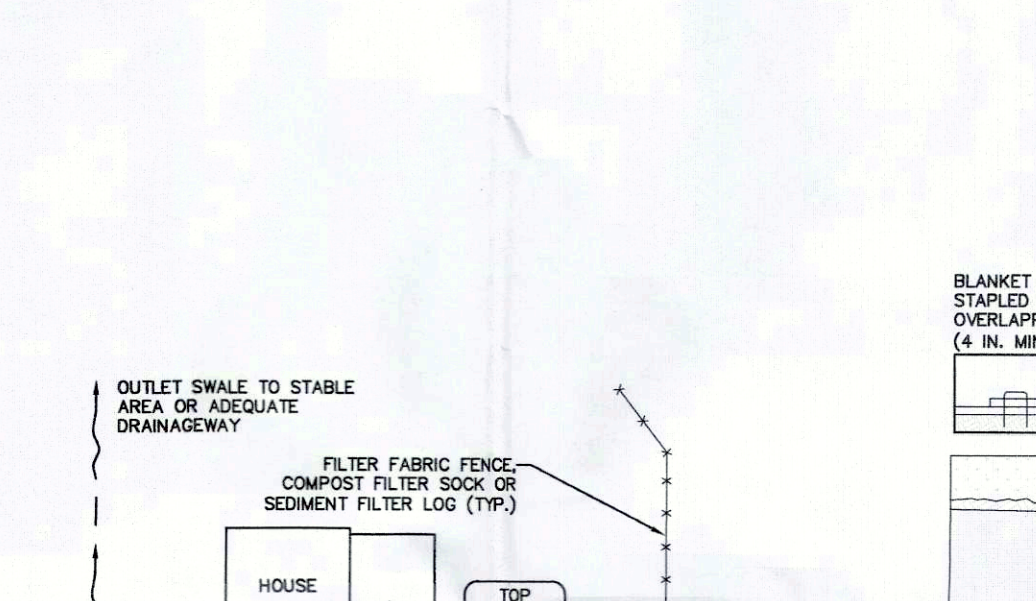
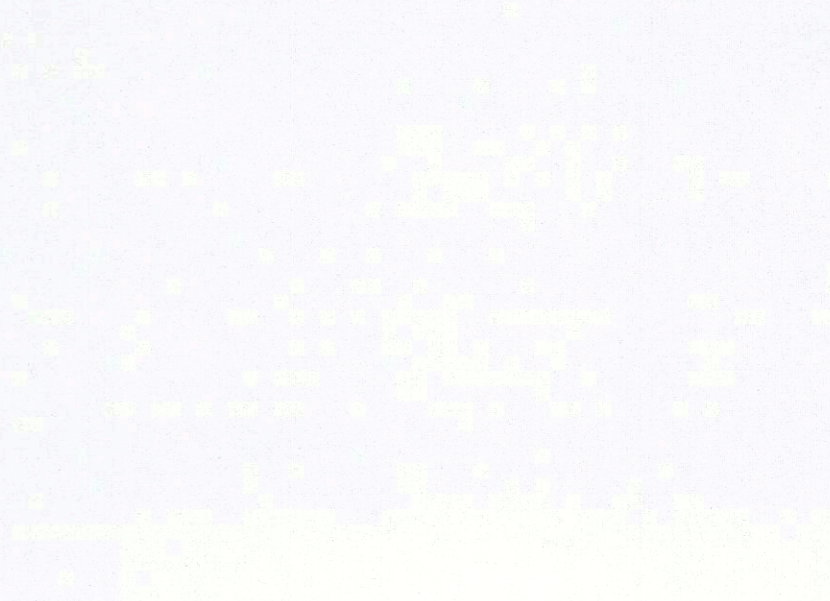
STANDARD CONSTRUCTION DETAIL #3-16  
PUMPED WATER FILTER BAG  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-1  
COMPOST FILTER SOCK  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-2  
STANDARD SILT FENCE (18\"/>

STANDARD CONSTRUCTION DETAIL #4-3  
SEDIMENT FILTER LOG (FIBER LOG)  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #10-1  
TYPICAL ON-LOT BMPs FOR LOT ABOVE ROADWAY  
NOT TO SCALE



**NOTES:**  
 THE AREA DOWNSLOPE OF THE FILTER FENCE/COMPOST SOCK BARRIER/SEDIMENT FILTER LOG MAY NOT BE UNDER DEVELOPMENT OR OTHERWISE DISTURBED.  
 THE UPSLOPE DIVERSION CHANNEL SHOULD BE INSTALLED WHEREVER RUNOFF FROM AREAS ABOVE THE LOT ARE NOT OTHERWISE DIVERTED AWAY FROM THE LOT. THE CHANNEL SHOULD BE PROPERLY SIZED AND PROVIDED WITH A SUITABLE PROTECTIVE LINING. THE DESIGNER AND/OR CONTRACTOR MUST EXERCISE CAUTION TO PROTECT ALL DOWNSTREAM PROPERTY OWNERS WHEN SELECTING A DISCHARGE POINT FOR THIS CHANNEL.  
 IN AREAS WHERE SLOPE IS AT AN OBLIQUE ANGLE TO THE ROADWAY, BUMPS SHALL BE ADJUSTED ACCORDINGLY.  
 DIVERSION CHANNEL, W/ OUTLET TO ROADSIDE DITCH OR STORM SEWER SYSTEM, BUT NOT ONTO STREET OR ROADWAY.

**NOTES:**  
 SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.  
 PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.  
 SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.  
 BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.  
 THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.  
 BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

**NOTES:**  
 MAXIMUM DRAINAGE AREA = 1/2 ACRE.  
 INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.  
 ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.  
 AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS. A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.  
 INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED 50 AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.  
 DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

**NOTES:**  
 MAXIMUM DRAINAGE AREA = 1/2 ACRE.  
 INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.  
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 DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

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 INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED 50 AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.  
 DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

**NOTES:**  
 THE AREA DOWNSLOPE OF THE FILTER FENCE/COMPOST SOCK BARRIER/SEDIMENT FILTER LOG MAY NOT BE UNDER DEVELOPMENT OR OTHERWISE DISTURBED.  
 THE UPSLOPE DIVERSION CHANNEL SHOULD BE INSTALLED WHEREVER RUNOFF FROM AREAS ABOVE THE LOT ARE NOT OTHERWISE DIVERTED AWAY FROM THE LOT. THE CHANNEL SHOULD BE PROPERLY SIZED AND PROVIDED WITH A SUITABLE PROTECTIVE LINING. THE DESIGNER AND/OR CONTRACTOR MUST EXERCISE CAUTION TO PROTECT ALL DOWNSTREAM PROPERTY OWNERS WHEN SELECTING A DISCHARGE POINT FOR THIS CHANNEL.  
 IN AREAS WHERE SLOPE IS AT AN OBLIQUE ANGLE TO THE ROADWAY, BUMPS SHALL BE ADJUSTED ACCORDINGLY.  
 DIVERSION CHANNEL, W/ OUTLET TO ROADSIDE DITCH OR STORM SEWER SYSTEM, BUT NOT ONTO STREET OR ROADWAY.

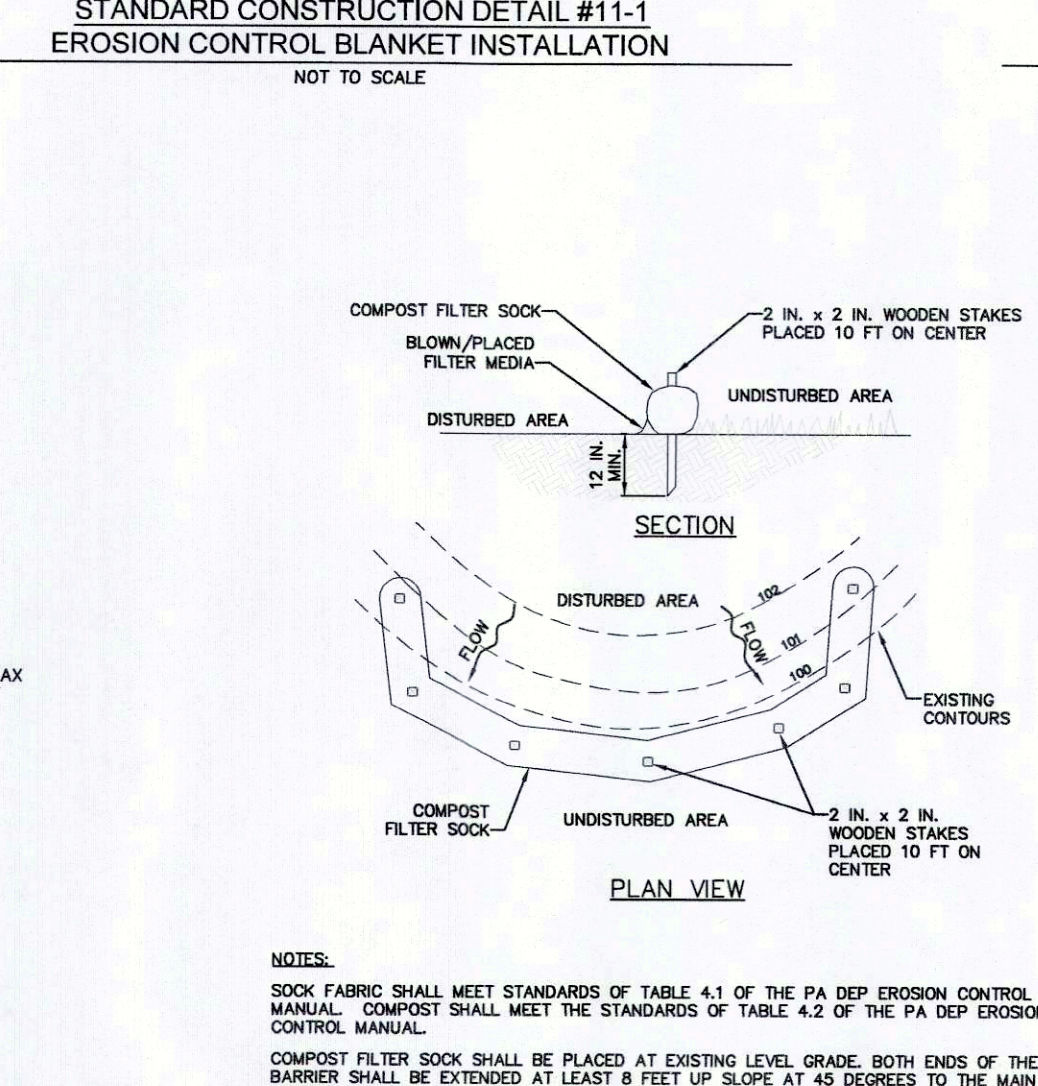
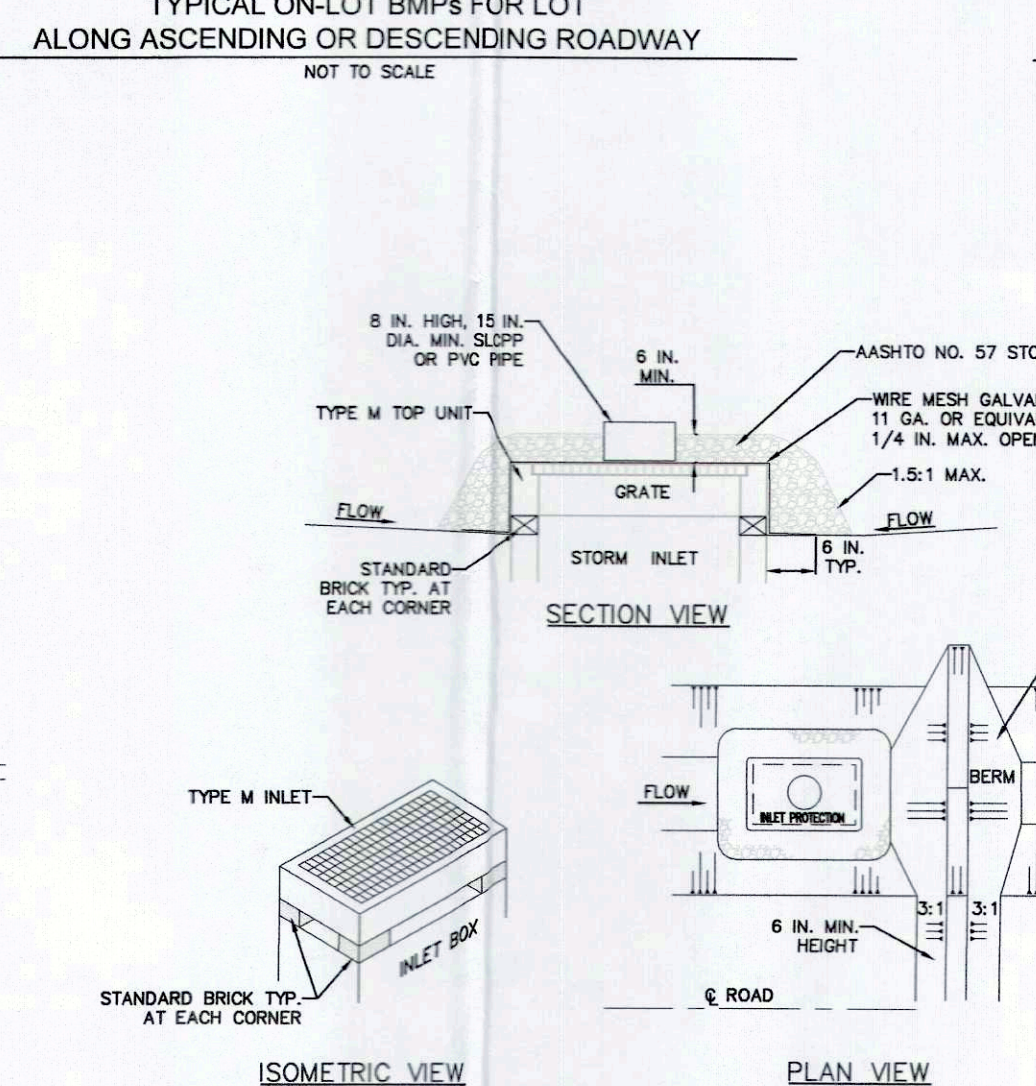
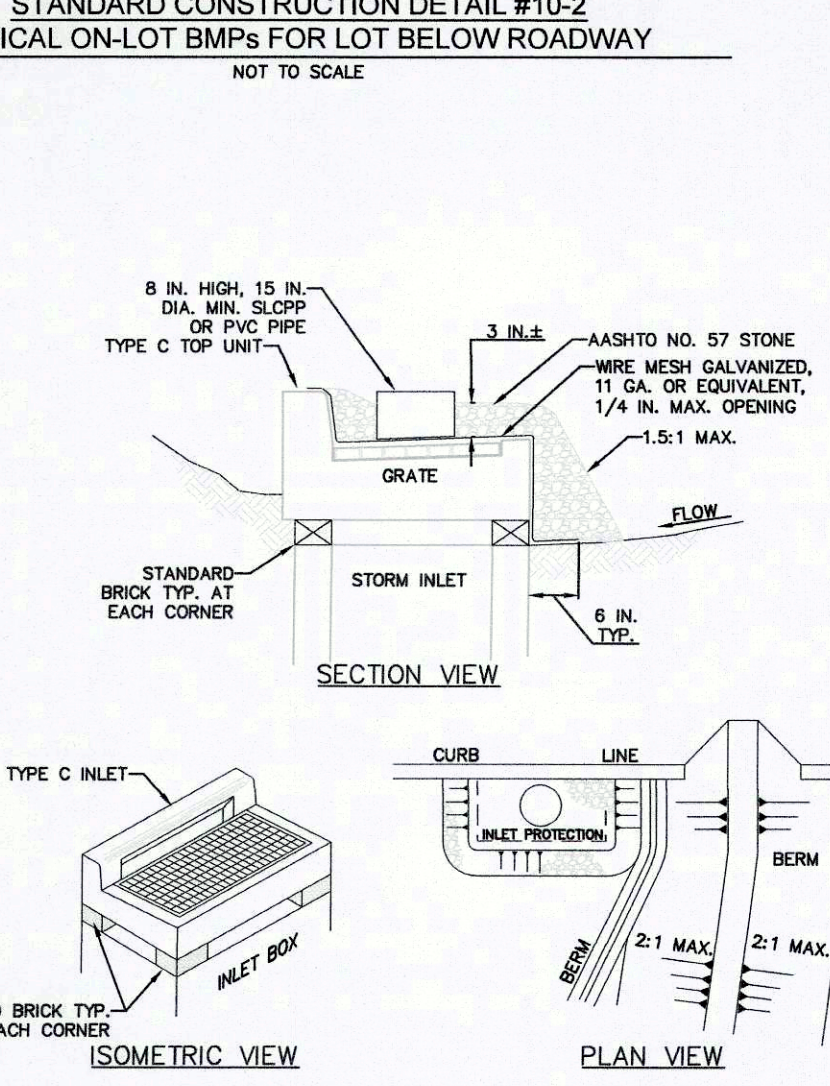
STANDARD CONSTRUCTION DETAIL #10-2  
TYPICAL ON-LOT BMPs FOR LOT BELOW ROADWAY  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #10-3  
TYPICAL ON-LOT BMPs FOR LOT ALONG ASCENDING OR DESCENDING ROADWAY  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #11-1  
EROSION CONTROL BLANKET INSTALLATION  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-15  
FILTER BAG INLET PROTECTION - TYPE C INLET  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-16  
FILTER BAG INLET PROTECTION - TYPE M INLET  
NOT TO SCALE



**NOTES:**  
 SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.  
 COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.  
 TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.  
 ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.  
 COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.  
 BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS. PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.  
 UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

**NOTES:**  
 MAXIMUM DRAINAGE AREA = 1/2 ACRE.  
 INLET PROTECTION SHALL NOT BE REQUIRED FOR INLETS TRIBUTARY TO SEDIMENT BASINS OR SEDIMENT TRAPS. ALTERNATE TYPE C INLET PROTECTION CAN BE USED ON ONE ACRE MAXIMUM DRAINAGE AREA WITH 15 IN. OVERFLOW PIPE AND 4 IN. HEAD.  
 BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT LOW POINTS. EARTHEN BERMS SHALL BE STABILIZED WITH VEGETATION AND MAINTAINED UNTIL ROADWAY IS STONED OR TRIBUTARY AREA IS PERMANENTLY VEGETATED. ROAD SUBBASE BERMS SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED.  
 INLETS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED WITHIN 24 HOURS OF INSPECTION.  
 FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 INCH THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

**NOTES:**  
 INLET PROTECTION SHALL NOT BE REQUIRED FOR INLETS TRIBUTARY TO SEDIMENT BASINS OR SEDIMENT TRAPS. ALTERNATE TYPE C INLET PROTECTION CAN BE USED ON ONE ACRE MAXIMUM DRAINAGE AREA WITH 15 IN. OVERFLOW PIPE AND 4 IN. HEAD.  
 BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT LOW POINTS. EARTHEN BERMS SHALL BE STABILIZED WITH VEGETATION AND MAINTAINED UNTIL ROADWAY IS STONED OR TRIBUTARY AREA IS PERMANENTLY VEGETATED. ROAD SUBBASE BERMS SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED.  
 INLETS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED WITHIN 24 HOURS OF INSPECTION.  
 FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 INCH THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

STANDARD CONSTRUCTION DETAIL #4-22  
ALTERNATE TYPE C INLET PROTECTION - NOT AT GRADE  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-23  
ALTERNATE TYPE M INLET PROTECTION - NOT AT GRADE  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-1  
COMPOST FILTER SOCK  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-15  
FILTER BAG INLET PROTECTION - TYPE C INLET  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-16  
FILTER BAG INLET PROTECTION - TYPE M INLET  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #10-2  
TYPICAL ON-LOT BMPs FOR LOT BELOW ROADWAY  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #10-2  
TYPICAL ON-LOT BMPs FOR LOT BELOW ROADWAY  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #10-3  
TYPICAL ON-LOT BMPs FOR LOT ALONG ASCENDING OR DESCENDING ROADWAY  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #11-1  
EROSION CONTROL BLANKET INSTALLATION  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-15  
FILTER BAG INLET PROTECTION - TYPE C INLET  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-16  
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STANDARD CONSTRUCTION DETAIL #11-1  
EROSION CONTROL BLANKET INSTALLATION  
NOT TO SCALE

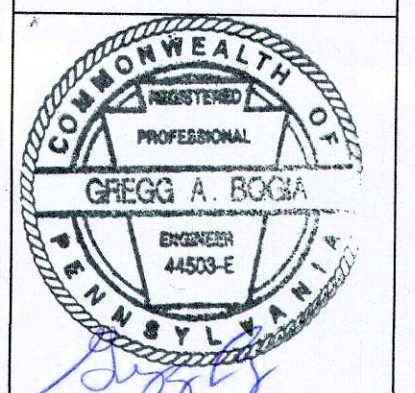
STANDARD CONSTRUCTION DETAIL #4-15  
FILTER BAG INLET PROTECTION - TYPE C INLET  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #4-16  
FILTER BAG INLET PROTECTION - TYPE M INLET  
NOT TO SCALE

STANDARD CONSTRUCTION DETAIL #10-2  
TYPICAL ON-LOT BMPs FOR LOT BELOW ROADWAY  
NOT TO SCALE

REVISED PER BCO COMMENTS VIA EMAIL DATED 02-28-2016  
 REVISED PER BCO COMMENT LETTER DATED 02-26-2016  
 REVISED PER BCO COMMENT LETTER DATED 02-26-2016  
 REVISED PER BCO COMMENT LETTER DATED 02-26-2016  
 DATE

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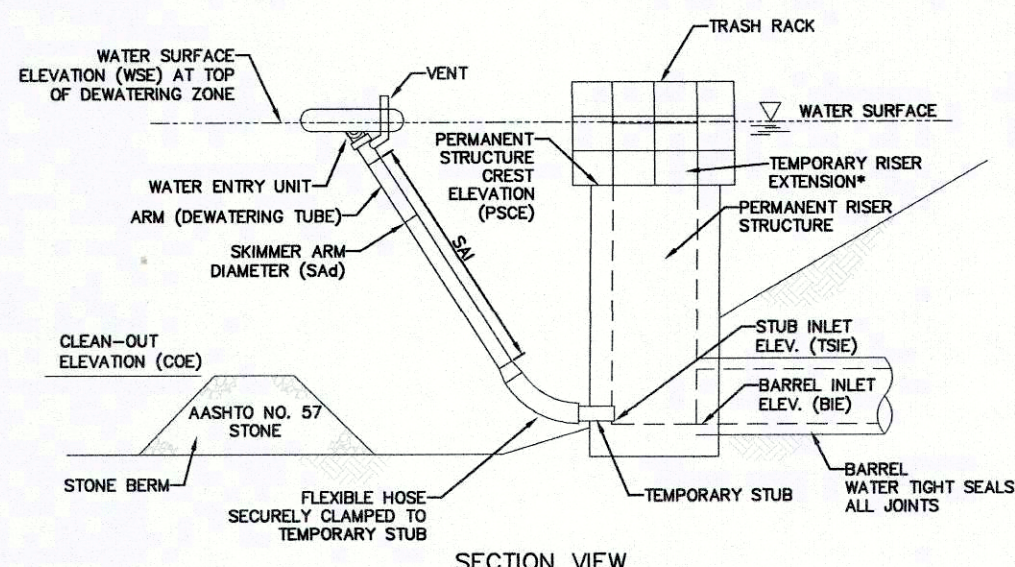


BOGIA ENGINEERING INC.  
 1340 PENN AVENUE, WYOMISSING, PA 19610  
 PHONE: 610-678-3071 FAX: 610-678-3517  
 WWW.BOGIENG.COM  
 MAJOR MODIFICATION TO NPDES PERMIT #PA02000614051  
 FINAL PLAN  
 E & S DETAILS

FALLA DEVELOPMENT, LP  
 105 LAKEVIEW DR  
 HARLEYSVILLE, PA  
 JOB: PENN HILLS PHASES 3 & 4  
 PENN TOWNSHIP  
 BERKS COUNTY  
 PENNSYLVANIA  
 PIN: -  
 CHECKED BY: MAM  
 DRAWN BY: RTL  
 DATE: 2016-02-15  
 SCALE: 1"=60'  
 DRAWING: D-2.1  
 PROJECT: 2015-072  
 SHEET: 3 OF 6

THIS PLAN HAS BEEN REVIEWED for the Department of Environmental Protection  
 By: *Gregg A. Bogia*  
 Date: 4/4/17  
 and determined to adequately satisfy the purpose and requirements of 25 PA Code Chapter 102, to minimize the potential for accelerated erosion and sedimentation to the waters of the Commonwealth.





BASIN NO.	WATER SURFACE ELEV. (WSE) (FT)	SKIMMER				FLEXIBLE HOSE	
		ORIFICE DIA. (IN)	ORIFICE HEAD (FT)	ARM DIA. (IN)	ARM LENGTH (FT)	DIA. (IN)	LENGTH (FT)
1	347.00	5"	6.63	6	10'	PVC	6" x 2' CPP

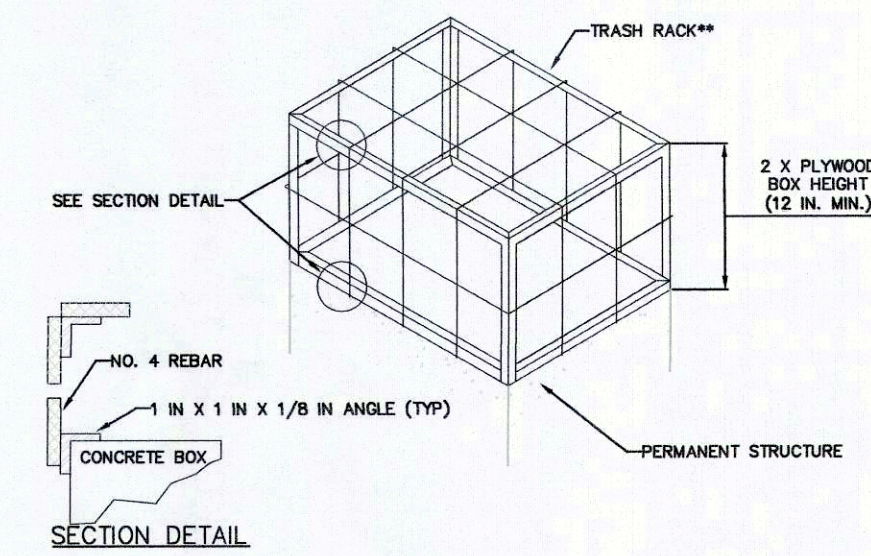
TEMPORARY STUB	INVERT DIA. (IN)	MATERIAL	PERMANENT RISER		BARREL DIA. (IN)	BARREL LENGTH (FT)
			ORIFICE DIA. (IN)	ORIFICE HEAD (FT)		
6"	341.50	DIP	347.00	4	2	343.37

**NOTES:**

ALL ORIFICES ON PERMANENT RISER BELOW TEMPORARY RISER EXTENSION SHALL HAVE WATER-TIGHT TEMPORARY SEALS PROVIDED. TEMPORARY STUB INVERT ELEVATION SHALL BE SET AT OR BELOW SEDIMENT CLEAN-OUT ELEVATION.  
A ROPE SHALL BE ATTACHED TO THE SKIMMER ARM TO FACILITATE ACCESS TO THE SKIMMER ONCE INSTALLED.  
SKIMMER SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.  
ANY MALFUNCTIONING SKIMMER SHALL BE REPAIRED OR REPLACED WITHIN 24 HOURS OF INSPECTION.  
ICE OR SEDIMENT BUILDUP AROUND THE PERMANENT SPILLWAY SHALL BE REMOVED AS TO ALLOW THE SKIMMER TO RESPOND TO FLUCTUATING WATER ELEVATIONS.  
SEDIMENT SHALL BE REMOVED FROM THE BASIN WHEN IT REACHES THE LEVEL MARKED ON THE SEDIMENT CLEAN-OUT STAKE OR THE TOP OF THE STONE BERM. SEE STANDARD CONSTRUCTION DETAIL #7-3 FOR CONFIGURATION OF STONE BERM.

**STANDARD CONSTRUCTION DETAIL #7-2  
SKIMMER ATTACHED TO PERMANENT RISER**

NOT TO SCALE



**NOTES:**

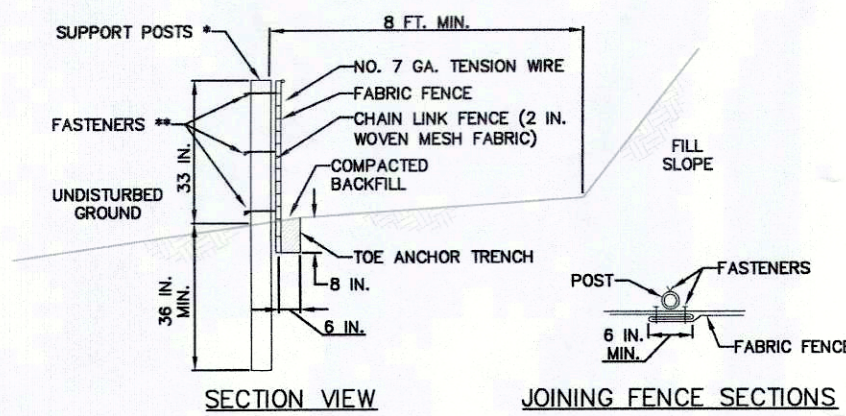
BOX SHALL BE BOLTED, STRAPPED, OR OTHERWISE SECURED TO THE PERMANENT RISER.

ALL JOINTS SHALL BE WATER TIGHT.

CLOSED OR DAMAGED SPILLWAYS SHALL BE REPAIRED IMMEDIATELY. TRASH AND OTHER DEBRIS SHALL BE REMOVED FROM THE BASIN AND RISER.

**STANDARD CONSTRUCTION DETAIL #7-10  
TEMPORARY RISER EXTENSION AND  
TRASH RACK FOR PERMANENT STRUCTURE**

NOT TO SCALE



\* POSTS SPACED AT 10 FT. MAX. USE 2-1/2 IN. DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.  
\*\* CHAIN LINK TO POST FASTENERS SPACED AT 14 IN. MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL WIRE. FABRIC TO SHAW FASTENERS SPACED AT 24 IN. MAX. ON CENTER.

**NOTES:**

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.  
FABRIC WIDTH SHALL BE 42 IN. MINIMUM.

POSTS SHALL BE INSTALLED USING A POSTHOLE DRILL.

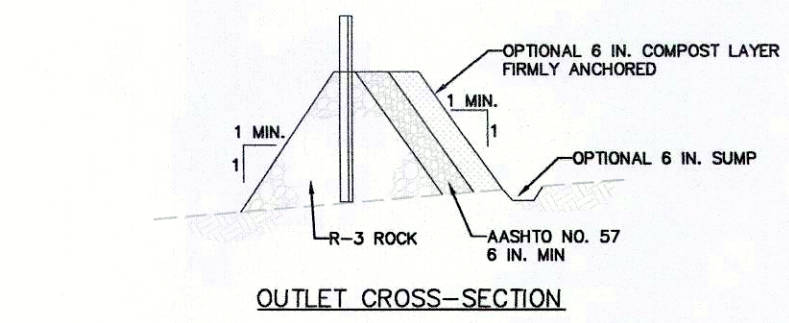
CHAIN LINK SHALL BE GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2-1/4 IN. OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. NO. 7 GAGE TENSION WIRE TO BE INSTALLED HORIZONTALLY THROUGH HOLES AT TOP AND BOTTOM OF CHAIN-LINK FENCE OR ATTACHED WITH HOG RINGS AT 5 FT. MAX. CENTERS.

SILT FENCE SHALL BE PLACED AT LEVEL, EXISTING GRADE, BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.  
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

**STANDARD CONSTRUCTION DETAIL #4-10  
SUPER SILT FENCE**

NOT TO SCALE



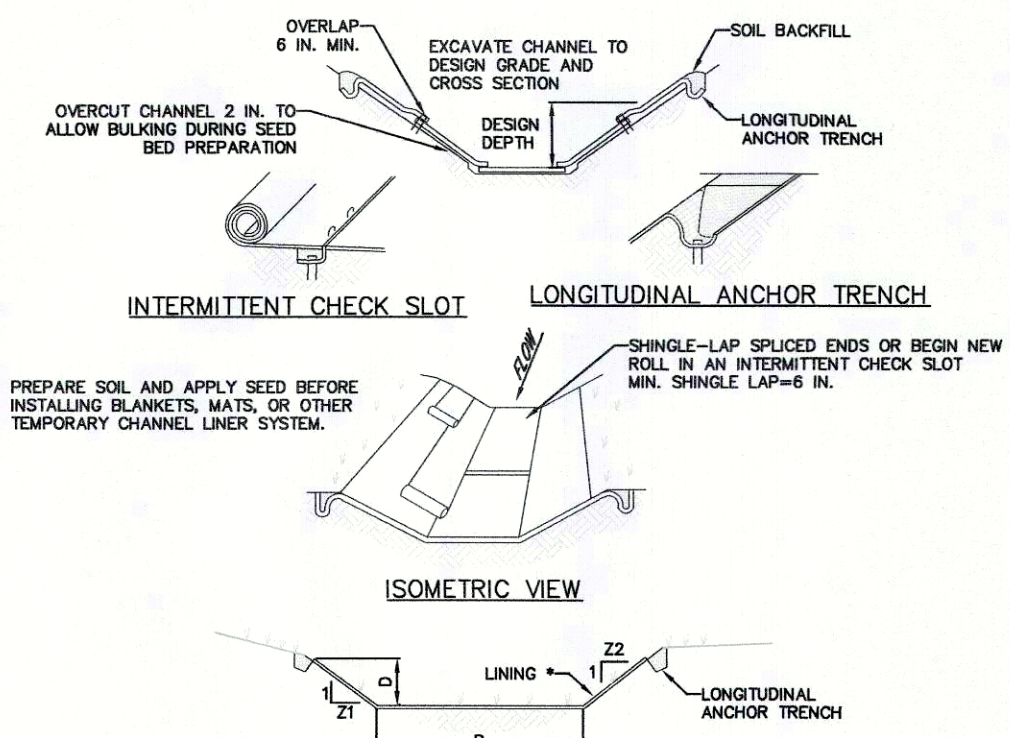
A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIERS HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HO AND EV WATERWAYS.  
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

**NOTES:**

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

**STANDARD CONSTRUCTION DETAIL #4-6  
ROCK FILTER OUTLET**

NOT TO SCALE



\* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION.

**NOTES:**

ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

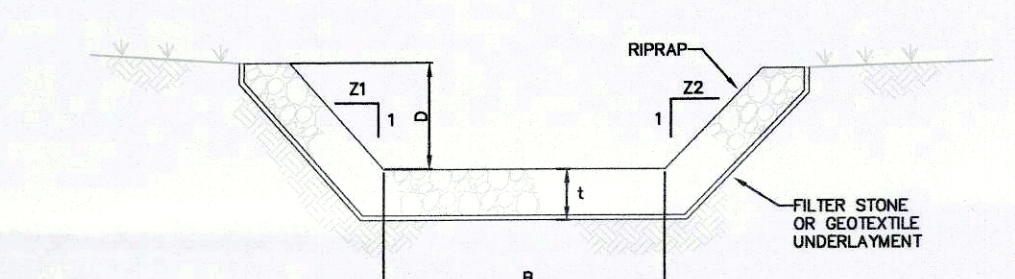
CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 50% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH T (FT)	Z1 (FT)	Z2 (FT)	LINING *
3B	ALL	3'	1'	VARIES	3	3	ECS-2
4	ALL	4'	1'	VARIES	3	3	ECS-2

**STANDARD CONSTRUCTION DETAIL #6-1  
VEGETATED CHANNEL**

NOT TO SCALE



CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.

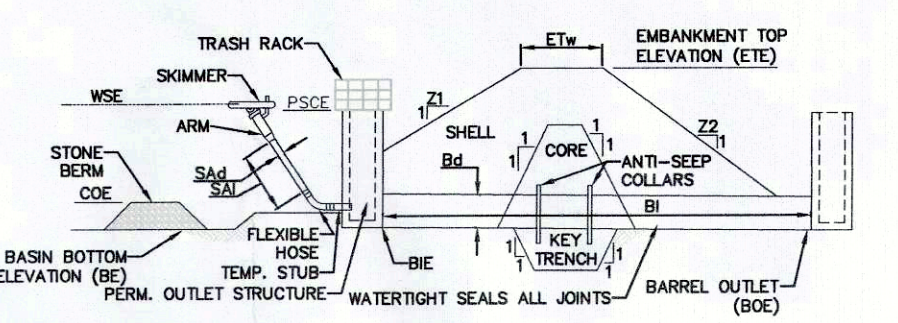
CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	Z1 (FT)	Z2 (FT)	RIPRAP GRADATION N (R-)	RIPRAP DEPTH (IN)	UNDERLAYER	UNDERLAYER THICKNESS
3A	ALL	3	2	3	3	4	18"	ASHITO #3	4"

**NOTES:**

FILTER STONE UNDERLAYMENT FOR BED SLOPES 2:0.10 FT/FT (10%) SHALL BE USED.  
CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.  
CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE.  
DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.  
THE MINIMUM ROCK THICKNESS (t) SHALL BE 1.5 TIMES THE MAX ROCK SIZE.

**STANDARD CONSTRUCTION DETAIL #6-3  
RIPRAP CHANNEL**

NOT TO SCALE



BASIN NO.	Z1 (FT)	Z2 (FT)	EMBANKMENT		CLEAN OUT ELEV. (FT)	BOTTOM ELEV. (FT)
			TOP WIDTH (FT)	KEY TRENCH DEPTH (FT)		
1	3	3	362.00	3'	341.50	339.00

SKIMMER DIA. S48 (IN)	LENGTH S48 (FT)	MATERIAL	OUTLET BARREL		LENGTH S48 (FT)	OUTLET ELEV. (FT)
			INLET DIA. (IN)	INLET ELEV. (FT)		
6"	10	PVC	18"	341.50	66	340.64

**NOTES:**

SEDIMENT BASINS, INCLUDING ALL APPURTENANCE WORKS, SHALL BE CONSTRUCTED TO THE DETAIL AND DIMENSIONS SHOWN ON THE E&S PLAN DRAWINGS.

AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO A DEPTH OF TWO FEET PRIOR TO ANY PLACEMENT AND COMPACTION OF EARTHEN FILL. IN ORDER TO FACILITATE MAINTENANCE AND RESTORATION, THE POOL AREA SHALL BE CLEARED OF ALL BRUSH, TREES, AND OBJECTIONABLE MATERIAL. FILL MATERIAL FOR THE EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN LAYERED LIFTS OF NOT MORE THAN 6 TO 9 IN. THE MAXIMUM ROCK SIZE SHALL BE NO GREATER THAN 2/3 THE LIFT THICKNESS.

UPON COMPLETION, THE EMBANKMENT SHALL BE SEED, MULCHED, BLANKETED OR OTHERWISE STABILIZED ACCORDING TO THE SPECIFICATIONS OF THE E&S PLAN DRAWINGS. TREES SHALL NOT BE PLANTED ON THE EMBANKMENT.

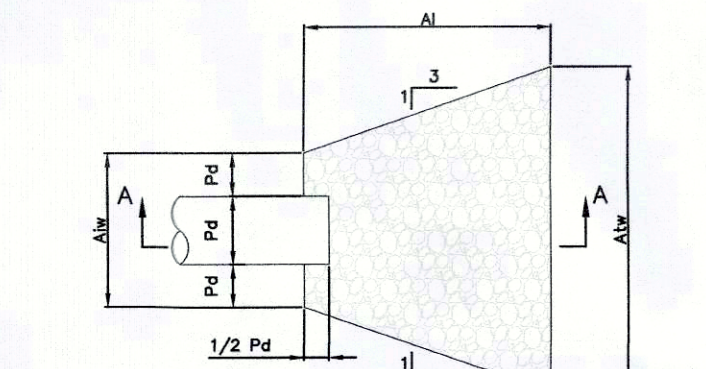
INSPECT ALL SEDIMENT BASINS ON AT LEAST A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. PROVIDE ACCESS FOR SEDIMENT REMOVAL AND OTHER REQUIRED MAINTENANCE ACTIVITIES. A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT ELEVATION ON THE STAKE AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS. DISPOSE OF MATERIALS REMOVED FROM THE BASIN IN THE MANNER DESCRIBED IN THE E&S PLAN.

BASIN EMBANKMENTS, SPILLWAYS, AND OUTLETS SHALL BE INSPECTED FOR EROSION, PILING AND SETTLEMENT. NECESSARY REPAIRS SHALL BE IMMEDIATELY DISPLACED RIPRAP WITHIN THE OUTLET ENERGY DISSIPATER SHALL BE REPLACED IMMEDIATELY.

ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED INSIDE THE BASIN BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY. THE DEVICE SHOWN IN STANDARD CONSTRUCTION DETAIL #7-8 MAY BE USED TO DENATELOR SATURATED SEDIMENT PRIOR TO ITS REMOVAL. ROCK FILTERS SHALL BE ADDED AS NECESSARY.

**STANDARD CONSTRUCTION DETAIL #7-4  
SEDIMENT BASIN EMBANKMENT AND SPILLWAY DETAILS - SKIMMER**

NOT TO SCALE



ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SOOAR AROUND THE PIPE.

**STANDARD CONSTRUCTION DETAIL #9-2  
RIPRAP APRON AT PIPE OUTLET  
NO FLARED ENDWALL**

NOT TO SCALE

PIPE DIA. (IN)	RIPRAP SIZE (IN)	RIPRAP THICK. (IN)	RIPRAP LENGTH (FT)	APRON WIDTH (FT)	APRON LENGTH (FT)
1-27	15	6	12	20	10
1-27	PVC	6	3	6	10

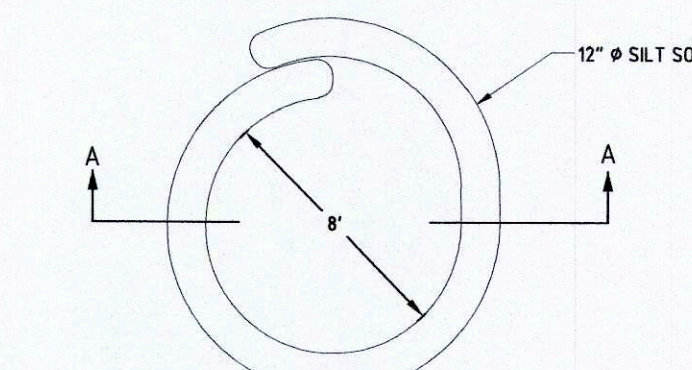
**NOTES:**

ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SOOAR AROUND THE PIPE.

THIS PLAN HAS BEEN REVIEWED for the Department of Environmental Protection  
By: *Ken M. Wilson*  
Date: 1/6/17  
and determined to adequately satisfy the purpose and requirements of 25 PA Code Chapter 102, to minimize the potential for accelerated erosion and sedimentation to the waters of the Commonwealth.



**CONCRETE WASH WATER DISPOSAL FACILITY DETAIL**

NO SCALE  
NOTES:  
CLEAN OUT WHEN CONCRETE FINES ARE 8" DEEP. DISPOSE CONCRETE FINES PROPERLY.  
LOCATE A MINIMUM OF 50' FROM STORM DRAINS, OPEN DITCHES OR SURFACE WATERS.

BOGIA ENGINEERING INC.  
 134.0 PENN AVENUE, WYOMISSING, PA 19380  
 PHONE: 610-678-3071 FAX: 610-678-3517  
 WWW.BOGIAENG.COM  
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 E & S C DETAILS  
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 REGISTERED PROFESSIONAL ENGINEER  
 GREGG A. BOGIA  
 EXPIRES 44503-E  
 FALLA DEVELOPMENT, LP  
 105 LAKEVIEW DR  
 HARLEYSVILLE, PA  
 JOB: PENN HILLS PHASES 3 & 4  
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 DATE: 2016-02-15  
 SCALE: 1"=60'  
 DRAWING: D-2.2  
 PROJECT: 2015-072  
 SHEET: 4 OF 6



**Construction Sequence**

All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed in compliance with Chapter 102 regulations before any following stage is initiated. Clearing and grubbing shall be limited only to those areas described in each stage.

At least 7 days before starting any earth disturbance activities, the Contractor shall contact all contractors involved in those activities, the landowner, all appropriate Municipal officials, the E & S Plan preparer, and a representative of the Berks County Conservation District to schedule an on-site pre-construction meeting. Also, at least 3 days before starting any earth disturbance activities, all contractors involved in those activities shall notify the Pennsylvania One Call System, Inc. at 1-800-242-1776 for buried utilities location.

Before initiating any revision to the approved E & S Plan or revisions to other plans that may affect the effectiveness of the approved E & S Plan, the Contractor must receive approval of the revisions from the Berks County Conservation District. The Contractor shall assure that the approved E & S Plan is properly and consistently implemented. Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the Contractor shall implement appropriate best management practices to eliminate the potential for accelerated erosion and/or sediment pollution.

The Contractor shall remove from the site, recycle or dispose of all building materials and wastes in accordance with the Department's Solid Waste Management Regulations at 25 PA Code 2601 et seq., 271.1 et seq. and 287.1 et seq. The Contractor shall not illegally bury, dump or discharge any building material or wastes at the site.

Before disposing of soil or receiving borrow for the site, the Contractor must assure that each spoil or borrow area has an E&S Plan approved by the applicable County Conservation District, and which is being implemented and maintained according to Chapter 102 regulations. The operator shall notify the Berks County Conservation District in writing of all receiving spoil and borrow areas when they have been identified.

Any area disturbed by construction shall be stabilized if construction is delayed for whatever reason for four days or more.

No more than 15,000 sq. ft. of disturbed area shall be at final grade without initiating seeding and mulching as outlined in the Seeding and Mulching Appendix.

The limit of disturbance shall be marked with construction fencing prior to disturbance activities commencing.

This development has already been rough graded and the sediment basin is in use for the earlier permitted phases. Swales have been constructed and stabilized.

**Sequences:**

- 1. Maintain a rock construction entrance and mountable stone filter berm at the end of paving on East 4<sup>th</sup> Street, just north of its intersection with East 3<sup>rd</sup> St., and at the end of the paving on E. 4th Street. All construction vehicles, including suppliers and subcontractors, shall enter and leave the site only at these designated locations.
- 2. Install filter fabric fence, silt fence and Filtrax Silt Soxx at the designated locations.
- 3. Perform an inspection on the existing sediment basin. Repair and/or restore any substandard conditions of the existing sediment basin to meet the design specifications/plan details as indicated on the E&S Plans.
- 4. Upon the installation or stabilization of all perimeter sediment control BMPs and at least 3 days prior to proceeding with both earth disturbance activities, the permittee or co-permittee shall provide notification to the department or authorized conservation district.
- 5. At any time after Sequence 4, construct the cross-country and under-road sanitary sewer line / water line / storm sewer. Construct the stormwater system from ES-32C to ES-21 and the 6" PVC from the existing inlet in the sediment basin to JB-2 to I-4-2. Install I-30 and then the 6" PVC from the existing inlet in the sediment basin to I-30, then install the storm sewer system from I-30 to I-31A to I-31 to I-32 to I-33 to I-36 to I-37 to I-37A to I-37B. Install the remainder of the inlets and piping connected to I-33 located in E. 4<sup>th</sup> Street. Concurrently, install the storm sewer system from I-27 to I-28 to I-28A and I-28B. Install the storm sewer system from ES-21 to I-22A to JB-23D to I-23A to ES-32C. Install the remainder of the inlets connected to JB-23D located in E. 4<sup>th</sup> Street. Immediately after construction of a storm inlet, construct the inlet berm and/or inlet protection. After completion of rough grading and the storm sewer and utility line construction, construct the concrete curb. Fine grade and compact the roadway subgrade, and place the compacted subbase. Construct the bituminous base course and/or binder course. The wearing course may be constructed at any time afterwards.
- 10. Rough grade the remainder of the site, per the grading shown on the plans, in order to allow the stormwater system to function prior to construction of individual lots.
- 11. House construction may begin on a lot-by-lot basis at any time after the site has been rough graded and the storm sewer downslope of the proposed construction area has been installed within the street. The area for the on-lot infiltration bed is to be protected by fencing. As individual lots are developed, lawn areas shall be topsoiled, fine graded and permanently stabilized as quickly as practicable upon completion of the exterior house construction. Construct the sidewalk on a lot-by-lot basis as each house is completed. Prior to applying topsoil, construct the on-lot amended soil and infiltration BMP. Construction of the on-lot infiltration beds is a critical stage of BMP installation and must be observed by a licensed professional.
- 12. Notify the Berks County Conservation District once the construction of Infiltration Beds #1A and 1B and 2 has been planned. BCCD may require an inspection prior to the installation of infiltration facilities to ensure that upslope drainage areas have been permanently stabilized.
- 13. Construct Infiltration Beds #1A and 1B and 2 in accordance with the General Construction Notes on Plan. Temporarily block the pipe openings into the beds with 1/2" marine grade plywood to prevent storm flows from entering Infiltration Bed. Do not remove the plywood until detention Basin 1 has been permanently stabilized (per Stabilization Notes, Note 6) and contributing drainage area is stabilized. Construction of Infiltration Beds #1A and 1B and 2 is a critical stage of BMP installation and must be observed by a licensed professional.
- 14. Maintain Sediment Basin 1 until all upslope areas have been permanently stabilized. Remove accumulated sediment, repair as necessary.
- 15. The Berks County Conservation District is to be contacted prior to the conversion or removal of all primary E&S BMPs. The District may require a site inspection at this time. Prior to removal of temporary E&S BMPs, vegetated areas must achieve a minimum 70% perennial vegetative cover over the entire disturbed area, and roadways shall at least have a clean subbase in place.
- 16. Maintain Filtrax Silt Soxx, inlet filter bags and filter fabric fence until all upslope areas have been permanently stabilized with paving or minimum 70% vegetative cover. After permanent stabilization is achieved (per Stabilization Notes, Note 6), remove inlet filters and filter fabric fences. Permanently stabilize all areas disturbed during removal of the E&S BMPs.
- 17. The sediment basin will be converted to a permanent detention basin by removal of the skimmer, temporary riser and associated structures, and baffles. Construct the amended soils per detail on sheet 2015-072-D-PCSM-3 and spread topsoil on the basin bottom and interior slopes below the clearest elevation. Permanently stabilize all topsoiled or disturbed areas. Remove the outlet structure trash rack and plywood box. Install the structural steel inlet grate, and remove the temporary kneeout for the rectangular orifice. Remove the skimmer and CMP over the interior of the detention basin achieves permanent stabilization and install the permanent orifice plate on the outlet headwall. Construction of the amended soils in the detention basin is a critical stage of BMP installation and must be observed by a licensed professional.
- 18. Within 30 days after the completion of earth disturbance activities authorized by this permit, including the permanent stabilization of the site and proper installation of PCSM BMPs in accordance with the approved PCSM Plan, or upon submission of the NOT if sooner, the permittee shall file with the department or authorized conservation district a statement signed by a licensed professional and the permittee certifying that the work has been performed in accordance with the terms and conditions of this permit and the approved E&S and PCSM Plans. Completed certificates are needed to ensure that all work is performed in accordance with the terms and conditions of the permit and the approved E&S and PCSM Plans.

**General E & S Notes**

- 1. Only limited disturbance will be permitted to provide access to construct E&S BMPs and for grading and acquiring borrow to construct those controls.
- 2. Erosion and sediment control facilities must be constructed, stabilized and functional before general site disturbance within the tributary areas of those control facilities.
- 3. All erosion and sediment control facilities must be properly maintained until the area contributing to the facility has been permanently stabilized.
- 4. After final site stabilization has been achieved, temporary erosion and sediment controls must be removed. Areas disturbed during removal of the controls must be stabilized immediately.
- 5. At the end of each working day, any sediment tracked or conveyed onto a public roadway shall be removed and returned to the construction site. Removal may be completed through either the use of machinery or hand tools, but must never be washed off the roadway with water.
- 6. Sediment removed from E & S controls and facilities shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains or drainage swales and immediately stabilized, placed on topsoil stockpiles, or hauled off-site to a permitted construction or storage site.
- 7. All excavation for utility line installation shall be limited to the amount that can be excavated, installed, backfilled and stabilized within one working day. All excavated material shall be deposited on the upslope side of the trench. Within previous areas, if there is no other BMP downslope of the disturbance, all disturbed trenching areas for utility line installation shall be stabilized with S75B or ECS-1/B erosion control blanket.
- Within existing paved areas, all disturbed trenching areas shall be stabilized by immediately placing 4" minimum depth of compacted stone on the backfill up to paving grade or temporarily or permanently paving the trench.
- 8. No earth disturbance is permitted outside the delineated limit of construction without specific authorization from the Berks County Conservation District.
- 9. Alternate erosion control blankets (materials and installation specifications) must be approved by Bogia Engineering, Inc. and the Berks County Conservation District prior to installation.
- 10. Should unforeseen erosive conditions develop during construction, the Contractor shall take action to remedy such conditions and to prevent damage to adjacent properties as a result of increased runoff and/or sediment

displacement. Stockpiles of wood chips, hay bales, crushed stone and other mulches shall be held in readiness to deal immediately with emergency problems of erosion.

- 11. The Contractor is advised to become thoroughly familiar with the provisions of Appendix 64, Erosion Control Rules and Regulations, Title 25, Part 1, Department of Environmental Protection, Sub-Part C, Protection of Natural Resources, Article III, Water Resources, Chapter 102, Erosion Control.
- 12. A copy of the approved Erosion and Sediment Control Plan and narrative must be available at the project site at all times. The Contractor shall assure that an Erosion and Sediment Control Plan has been prepared, approved by the local Conservation District(s), and is being implemented and maintained for all soil and/or rock spoil and borrow areas, regardless of their locations.
- 13. The Contractor shall protect existing trees and shrubs in order to eliminate unnecessary damage.
- 14. All pumping of sediment-laden water shall be through a Dierbag filtration device or equivalent sediment removal facility, over non-disturbed vegetated areas. Discharge points should be established to provide for maximum distance to active waterways.
- 15. The Permittee(s) shall be responsible for the proper construction, stabilization and maintenance of all erosion and sediment controls and related items included within this Plan until the site is permanently stabilized.
- 16. The Permittee(s) shall be responsible for the proper construction, stabilization and maintenance of all erosion and sediment controls and related items included within this Plan until all lots are fully developed.
- 17. The Permittee(s) shall be responsible for the proper construction, stabilization and maintenance of all erosion and sediment controls associated with the infrastructure improvements.
- 18. All runoff from individual lot disturbance must be treated on that lot until the lot is stabilized. Installation and maintenance of on-lot E & S measures is the responsibility of the lot owner.
- 19. All earthmoving operations must be added as co-permittees to the NPDES Permit.

**Stabilization Notes**

- 1. Stockpile heights must not exceed 35', and stockpile slopes must be 2:1 or flatter.
- 2. Upon completion of an earth disturbance activity or any stage or phase of an activity, the Operator shall stabilize immediately the disturbed areas to protect from accelerated erosion. During non-germinating periods, mulch must be applied at the specified rates. Disturbed areas which are not at finished grade and which will be redisturbed within 1 year may be stabilized in accordance with the temporary seeding specifications. Disturbed areas, which are either at finished grade or will not be redisturbed within 1 year, must be stabilized in accordance with the permanent seeding specifications.
- 3. Diversion channels, sediment basins, sediment traps, swales and soil stockpiles must be stabilized immediately.
- 4. Hay or straw mulch must be applied at rates of at least 3.0 tons per acre. Straw and hay mulch should be anchored immediately after application to prevent being windblown. A tractor-drawn implement may be used to "crimp" the straw or hay into the soil. This method is limited to slopes no steeper than 3:1. The machinery should be operated on the contour. (Note: Crimping of hay or straw by running over it with tracked machinery is not recommended.)
- 5. Until the site has achieved final stabilization the Owner and/or Contractor shall properly implement, operate and maintain all of the best management practices. Maintenance shall include inspections of all erosion and sediment controls after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, remulching, and renetting, must be performed immediately.
- 6. An area shall be considered to have achieved final stabilization when it has a minimum of 70% uniform perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding or other movements.
- 7. Erosion control blankets or mulch with mulch coated netting or synthetic binders (see Seeding and Mulching Specifications, Section 3) must be installed on all disturbed slopes greater than 3:1.

**NPDES Permit Notes**

- 1. Upon reduction, loss or failure of the BMP's, the Permittee and Co-Permittee shall take immediate action to restore the BMP's or provide an alternative method of treatment.
- 2. Where E&S BMP's are found to be inoperative or ineffective during an inspection, or any other time, the Permittee and Co-Permittee shall immediately contact the Berks County Conservation District, by phone or personal contact, followed by the submission of a written report within 5 days of the initial contact.
- 3. Permittees requesting a renewal of coverage under a General Permit must submit to the Berks County Conservation District an administratively complete and acceptable NOI at least 90 days prior to the expiration date of coverage.
- 4. Notice of Termination. Where all Stormwater discharges associated with construction activity that are authorized by this permit are eliminated, and BMP's identified in the Post-Construction Stormwater Management (PCSM) Plan have been installed, the Permittee or Co-Permittee of the facility must submit a Notice of Termination (NOT) form that is signed in accordance with Part B.1.e (Signatory Requirements) of this permit to the Berks County Conservation District.
- 5. Site Inspections and Monitoring Reports. The Permittee and Co-Permittee(s) shall comply with all of the Monitoring and Reporting Requirements, as outlined in Part A.2 of the NPDES Permit. The Permittee and Co-Permittee(s) shall ensure that site inspections are conducted at least weekly and after each measurable precipitation event by qualified personnel, trained and experienced in E&S practices to ascertain that the E&S BMPs are operational and effective. A written report shall be kept for each inspection, in accordance with the requirements of Part A.2.a.

**Temporary Control Measures**

The temporary erosion and sediment control measures that will be implemented during construction include:

- 1. Installation of temporary rock construction entrances to reduce tracking of sediment onto roads by construction vehicles.
- 2. Temporary seeding and mulching of the topsoil stockpile, cut and fill slopes on lots, and all other disturbed areas where construction has ceased.
- 3. Installation of a temporary CMP riser on the detention basin outlet pipe to permit the basin to function as a temporary sediment basin and provide for settlement of suspended solids from the storm runoff entering the basin prior to its discharge from the site.
- 4. Installation of filter fabric fence downslope of the proposed fill slopes and topsoil stockpile to filter sediment-laden surface runoff prior to discharge from the construction site.
- 5. Installation of erosion control blankets in swales to reduce erosion and seed loss prior to germination.
- 6. Installation of inlet filter bags or crushed stone filters in/around storm inlets to prevent sediment from entering the storm sewer system.
- 7. Construction of a mountable stone filter berm across the roadway to filter roadway runoff prior to discharge from the site.
- 8. Maintenance of a temporary sediment basin to filter sediment-laden runoff collected by the roadside swales and storm sewer system.

**Permanent Control Measures**

The permanent erosion and sediment control measures that will be implemented during and after construction include:

- 1. Establishment of permanent vegetative cover by seeding and mulching of all disturbed areas in conjunction with landscaping ground cover.
- 2. Construction of bituminous paving on the proposed roads.
- 3. Storm inlets are provided with 18" deep sumps to collect sediment and debris.
- 4. Installation of permanent turf reinforcement or erosion control and revegetation mat in specified high flow velocity swales and below storm sewer outfalls.
- 5. Installation of rock lining in specified swales.
- 6. Construction of rip rap scour aprons above proposed headwalls.

**Responsible Persons**

Questions and comments concerning the implementation of this Erosion and Sediment Control Plan should be addressed to:

**Owner's Representative**  
Fred Lastris  
Falla Development, LP  
105 Lakeview Dr  
Harleysville, PA 19438  
Phone: 610-887-3699

**Plan Preparer**  
Bogia Engineering, Inc., Project Engineers  
1340 Penn Ave  
Wilmington, PA 19810  
Phone: 610-678-3071  
Attention: Mary Anne McCarthy, PE

**Plan Preparer's Qualifications**

Name: Mary Anne McCarthy, PE  
Education: Massachusetts Institute of Technology, Bachelor of Science in Civil Engineering  
Villanova University, Hydrology and Hydraulics

Training: BMP Training Session, Villanova University, March 2007  
NPDES Training, PA Department of Environmental Protection, November 2015

**Recent E&S Projects:**

Reading Health Physicians Network Ambulatory Center and Diamond Credit Union Land Development, Muhlenberg Township, Berks County  
Wentersville Hospital Driveaway, Lower Heidelberg Township  
Community Evangelical Free Church, Borough of Elverson  
McGlin Driveaway, Lower Heidelberg Township

**SEEDING AND MULCHING SPECIFICATIONS**

**Temporary Seeding And Mulching**

All disturbed areas where construction activity has ceased for 4 days or more shall be stabilized immediately as follows:

- a. Apply and work in where possible:
  - 1. Agricultural grade limestone at a rate of 1 ton per acre.
  - 2. 10-10-10 fertilizer at a rate of 500 lbs. per acre.
- b. Disturbed areas which are not at finished grade and which will be redisturbed within 1 year shall be seeded as follows:

From	Seed Species	Seeding Rate PLS* (lb/A)
April 1 <sup>st</sup> to August 15 <sup>th</sup>	a) Annual Ryegrass or b) Annual or Perennial Ryegrass/Spring Oats Mix	20/64 (2 bu.)
From August 16 <sup>th</sup> to October 15 <sup>th</sup>	a) Annual Ryegrass or b) Winter Rye	40 / 168 (3 bu.)
From October 15 <sup>th</sup> to April 1 <sup>st</sup>	Winter Rye	168 (3 bu.)

\* PLS = Pure Live Seed = (% Seed Purity) x (% Germination)

Total Seeding Rate = Seeding Rate PLS x 100  
PLS

- c. All seed shall be labeled and dated in accordance with U.S.D.A. Rules and Regulations under the Federal Seed Act, and Blue Tag certified seed shall be supplied wherever possible.
- d. Immediately after seeding, apply mulch in accordance with Section 3.
- e. During non-germinating periods (November 1<sup>st</sup> through March 31<sup>st</sup>), stabilize disturbed areas by one of the following procedures:
  - 1. After liming and fertilizing, seed winter rye at a rate of 168 lb/A and apply mulch at a rate of 3 tons per acre, or
  - 2. Apply wood chips to a minimum depth of 3 inches. Prior to liming, fertilizing and seeding and mulching in the spring, the wood chips shall be worked into the soil, or
  - 3. Temporarily apply mulch only at a rate of 3 tons per acre.

**NOTE:** All areas stabilized with temporary mulching only shall be limed, fertilized and permanently seeded and mulched immediately at the start of the new growing season.

**Permanent Seeding**

A minimum of 6" of topsoil shall be spread over all areas to be seeded. Topsoil shall be free of stones, sticks, waste material and similar debris. Frozen ground shall not be spread as topsoil, and topsoil shall not be spread on frozen ground. Topsoil shall be spread only when fertilizing and seeding operations are to follow immediately.

After spreading and raking the topsoil, spread and work agricultural grade limestone into the soil to a depth of 3" to 4" at a rate of 4 tons per acre or at a rate established by representative soil tests (minimum 1 test per 20 acres).

Immediately before seeding, 10-20-20 fertilizer shall be spread and worked into the soil to a depth of 1" at a rate of 1,000 lbs. per acre. Smooth and firm seed bed with cultipacker or similar equipment prior to seeding. Apply seed uniformly by broadcasting, drilling or hydroseeder. Cover seeds with 1/4" of topsoil with suitable equipment.

All seed used shall be labeled in accordance with U.S.D.A. Rules and Regulations under the Federal Seed Act in effect at the time of purchase. Inert matter shall not exceed 15% and Blue Tag certified seed shall be supplied wherever possible. Seeding shall be done during periods from April 1<sup>st</sup> to October 15<sup>th</sup>, unless otherwise directed, and grass seed shall not be planted after a heavy rain or watering.

Lawn Areas:	Seed Species	Seeding Rate PLS (lb/A)	
a. Lawn Areas:	Kentucky Bluegrass (2 or more varieties - none greater than 50% of mix)	100	
	Perennial Ryegrass	40	
	Perennial Fescue	60	
	Annual Ryegrass	40	
b. Detention Basins (Interior Slopes) and Swales:	Kentucky 31 Tall Fescue	100	
	Perennial Ryegrass	30	
	Perennial Ryegrass	30	
2.2 Non-Mowed Areas with Slopes 2:1 or Steeper	a. Swales and Detention Basins:	Annual Ryegrass	40
		Crownvetch	20
		Kentucky 31 Tall Fescue, or Perennial Ryegrass	30
		b. Roadway Slopes:	Winter Rye or Spring Oats
Crownvetch	20		
Annual Ryegrass, or Perennial Ryegrass, or Kentucky 31 Tall Fescue	30		
2.3 Wet Areas	a. Shady Sites:	Red Top	15
		Kentucky 31 Tall Fescue	45
		Annual Ryegrass	45
		Beem Grass	45
b. Sunny Sites:	Kentucky 31 Tall Fescue	90	
	Kentucky Bluegrass	20	
	Perennial Ryegrass	20	
	White Clover	10	
Switchgrass	10		
2.4 Detention Basin Bottoms	Use the "New England Wetlands," New England Wetlands Plants, Inc.; Ernst Conservation Seeds "OBI Wetland Mix" (ERNMX-131), or approved equal. Seed at a rate specified by the manufacturer.		

**Mulching**

After temporary or permanent seeding, mulch shall be placed, anchored and maintained on the seeded areas until vegetation has been established. Mulching material shall be either cereal straw or grass hay, or a combination of both, free from any seed-bearing stalks or roots of noxious weeds. Mulch shall be placed immediately after seeding and shall be applied at a minimum rate of 3 tons per acre. Mulch shall be kept moist by watering to prevent blowing away, and shall be crimped into the soil on slopes no steeper than 3:1.

On slopes 3:1 or flatter mulch shall be held in place by a tractor drawn device that "crimps" the mulch into the soil.

On slopes steeper than 3:1, hay mulch shall be used and shall be held in place by one of the following methods, unless erosion control blanket is specified:

- 1) Synthetic binders such as Curasol, DCA-70, Petrosol, Terra-Tack, or approved equal applied as recommended by the manufacturer.
- 2) Netting made of lightweight biodegradable paper, plastic or cotton placed over mulch and anchored per manufacturer's specifications.

**Hydroseeding**

Line and seed shall be as specified in Sections 1 and 2, and 10-20-20 fertilizer shall be applied at a rate of 500 lbs. per acre. Tall Fescue seed shall be inoculated at 5 times the manufacturer's recommended rate. If fertilizer is combined with inoculant, the mixture shall not remain in a slurry for more than half an hour to an hour; if inoculant remains in the tank for more than 1 hour, add new supply of inoculant. Immediately after hydroseeding, apply hay or straw mulch in accordance with Section 3.

Hydroseeding shall be done during periods from April 1<sup>st</sup> to October 15<sup>th</sup>, unless otherwise directed and shall not be done after a heavy rain or watering.

**East Coast Erosion Control Blankets**

The following erosion control blankets and channel liners manufactured by East Coast Erosion Blanket shall be installed where specified to provide slope or channel protection:

Blanket	Description
ECS-1 and ECS-1B	Straw Blanket (light duty)
ECS-2 and ECS-2B	Straw Blanket (heavy duty)
ECS-2 and ECS-2B	Straw/Coconut Fiber Blanket
ECS-2S	Straw/Coconut Fiber Blanket with Seed
ECC-2	Coconut Fiber Channel Liner
ECC-3	Coconut Fiber Turf Reinforcement Mat
ECP-2	Polypropylene Double Net Turf Reinforcement Mat

The blankets and channel liners shall be installed on soil areas prepared and seeded as outlined in Sections 1 or 2, and the blanket/liner shall be in full contact with the underlying soil. Specific installation procedures and staple patterns for various applications shall be in accordance with the manufacturer's specifications.

**North American Green Erosion Control Blankets**

The following erosion control blankets and channel liners manufactured by North American Green, Inc. shall be installed where specified to provide slope or channel protection:

Blanket	Description
S75 and S75 BN	Straw Blanket (light duty)
S150 and S150 BN	Straw Blanket (heavy duty)
SC150 and SC150 BN	Straw/Coconut Fiber Blanket
C125 and C125 BN	Coconut Fiber Channel Liner
SC250	Straw/Coconut Fiber Turf Reinforcement Mat
CS50	Coconut Fiber Turf Reinforcement Mat
P300	Non-degradable Nylon Channel Liner
P550	3-Dimensional Polypropylene Fiber Matrix TRM

The blankets and channel liners shall be installed on soil areas prepared and seeded as outlined in Sections 1 or 2, and the blanket/liner shall be in full contact with the underlying soil. Specific installation procedures and staple patterns for various applications shall be in accordance with the manufacturer's specifications.

BOGIA ENGINEERING INC. 1340 PENN AVENUE, WYOMISSING, PA 19610 PHONE: 610-678-3071 FAX: 610-678-3517 WWW.BOGIAENG.COM MAJOR MODIFICATION TO NPDES PERMIT #PAG02000614051

THIS PLAN HAS BEEN REVIEWED for the Department of Environmental Protection By: [Signature] Date: 1/6/17 and determined to adequately satisfy the purpose and requirements of 25 PA Code Chapter 102, to minimize the potential for accelerated erosion and sedimentation to the waters of the Commonwealth.

DATE: 2016-02-15  
REVISED PER BCCD COMMENT LETTER DATED 12-04-2016  
REVISED PER BCCD COMMENT LETTER DATED 12-04-2016  
REVISED PER BCCD COMMENT LETTER DATED 10-12-2016  
REVISED PER BCCD COMMENT LETTER DATED 10-12-2016  
DATE: 2016-02-15  
REVISION

FALLA DEVELOPMENT, LP  
105 LAKEVIEW DR  
HARLEYSVILLE, PA  
JOB: PENN HILLS PHASES 3 & 4  
PENN TOWNSHIP  
BERKS COUNTY  
PENNSYLVANIA

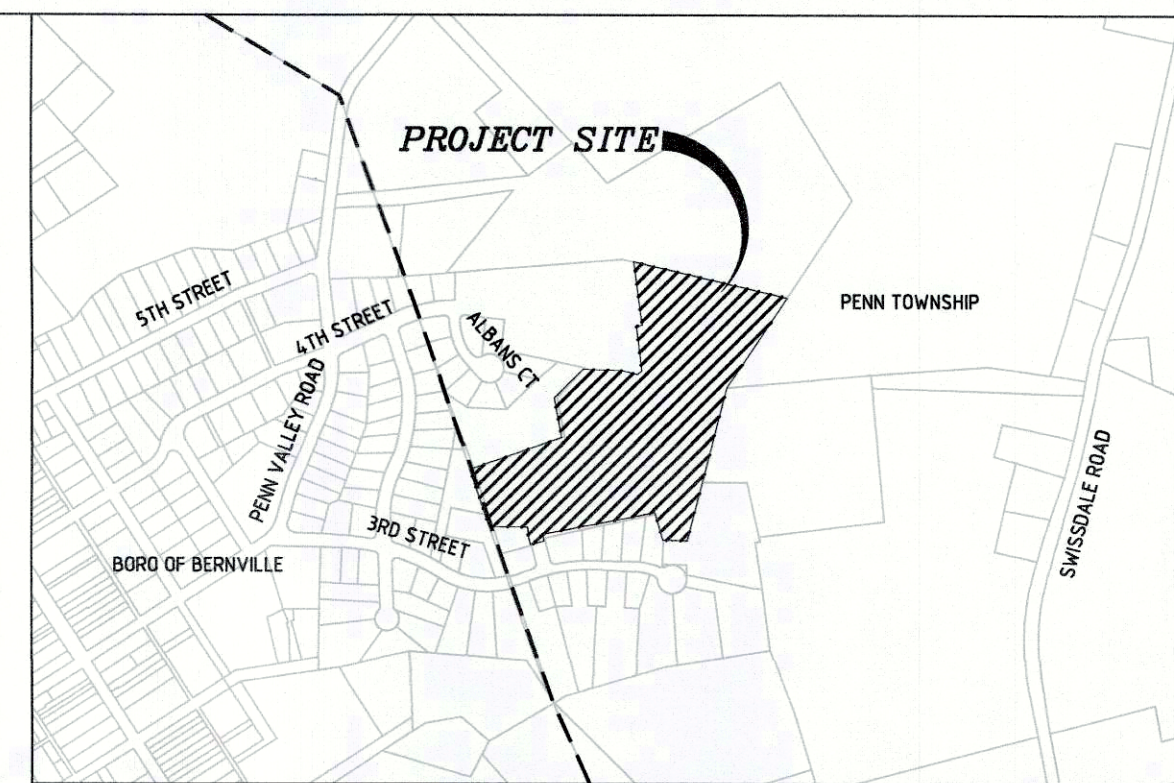
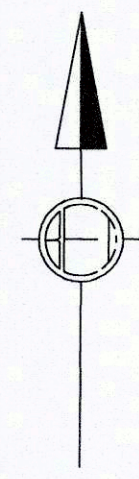
PIN: -  
CHECKED BY: MAM  
DRAWN BY: RTL  
DATE: 2016-02-15  
SCALE: NO SCALE  
DRAWING: D-31  
PROJECT: 2015-072  
SHEET: 5 OF 6







PROJECT TITLE: MAJOR MODIFICATION TO NPDES PERMIT #PAG02000614051  
 PENN HILLS PHASES 3 & 4



LOCATION MAP  
 SCALE: 1" = 800'



Before You Dig Anywhere in PENNSYLVANIA  
 STOP! CALL 1-800-242-1776 TOLL FREE

NOTE: The location of underground utilities shown on this plan are based on instrument markings by utility owners and surface facilities, and are approximate only. It shall be the contractor's responsibility to verify the exact location and depth of utilities prior to any excavating activities. The Pennsylvania One-Call serial number for this project is 2015-345862.

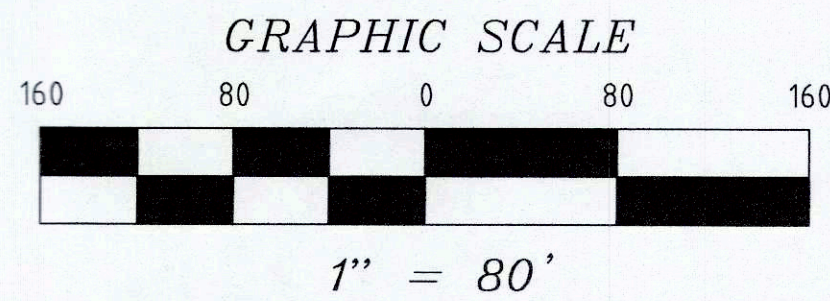
SOILS TYPES  
 FROM THE SOIL SURVEY OF BERKS COUNTY, PENNSYLVANIA

B&B - BERKS-WEIKERT COMPLEX, 3 TO 8 PERCENT SLOPES  
 B&C - BERKS-WEIKERT COMPLEX, 8 TO 15 PERCENT SLOPES  
 CaC - CALVIN-KLINESVILLE CHANNERY SILT LOAMS, 8 TO 15 PERCENT SLOPES  
 CaD - CALVIN-KLINESVILLE CHANNERY SILT LOAMS, 15 TO 25 PERCENT SLOPES  
 CbB - COMLY SILT LOAM, 3 TO 8 PERCENT SLOPES  
 WeD - WEIKERT-BERKS COMPLEX, 15 TO 25 PERCENT SLOPES

- LEGEND**
- EXISTING SOILS BOUNDARY
  - - - EXISTING EDGE OF GRAVEL
  - - - EXISTING STORM SEWER AND INLET
  - - - EXISTING ENDWALL AND RIP-RAP PAD
  - EXISTING SANITARY SEWER AND MANHOLE
  - EXISTING CURB LINE
  - - - EXISTING FENCE
  - - - EXISTING CONTOURS
  - - - EXISTING STONE BERMS
  - ⊕ S9 INFILTRATION TEST LOCATION
  - - - EXISTING N.P.D.E.S. BOUNDARY LINE (SHOWN 2' OFFSET FOR CLARITY)
  - - - ADDITIONAL N.P.D.E.S. BOUNDARY LINE (SHOWN 2' OFFSET FOR CLARITY)
  - - - EXISTING DRAINAGE AREAS (SHOWN 1' OFFSET FOR CLARITY)

THIS PLAN HAS BEEN REVIEWED  
 for the Department of Environmental Protection  
 By: *Kevin M. Moran*  
 Date: 1/4/17

and determined to substantially conform to the purpose and requirements of 25 P.A.C.S. § 102, to minimize the potential for accelerated erosion and sedimentation to the waters of the Commonwealth.



BOGIA ENGINEERING INC.  
 1340 PENN AVENUE, WYOMISSING, PA 19610  
 PHONE: 610-678-3071 FAX: 610-678-3517  
 WWW.BOGIAENG.COM  
 MAJOR MODIFICATION TO NPDES PERMIT #PAG02000614051  
 FINAL PLAN  
 EXISTING CONDITIONS PLAN  
 SHEET: 1 OF 1

BEI  
 BOGIA ENGINEERING INC.  
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COMMONWEALTH OF PENNSYLVANIA  
 REGISTERED PROFESSIONAL ENGINEER  
 GREGG A. BOGIA  
 ENGINEER 44003-E

REVISIONS:  
 2016-02-16 REVISED PER ECHO COMMENTS VIA EMAIL DATED 12-28-2016  
 2016-02-16 REVISED PER ECHO COMMENTS LETTER DATED 12-28-2016  
 2016-02-16 REVISED PER ECHO COMMENTS LETTER DATED 12-28-2016  
 2016-02-16 REVISED PER ECHO COMMENTS LETTER DATED 12-28-2016  
 DATE