

BMP MAINTENANCE PLAN

THE PROPERTY OWNER IS RESPONSIBLE FOR MAINTENANCE OF THE STORMWATER CONVEYANCE SYSTEM, AND ALL OTHER PROPOSED BMP'S AS THE PROPERTY OWNER.

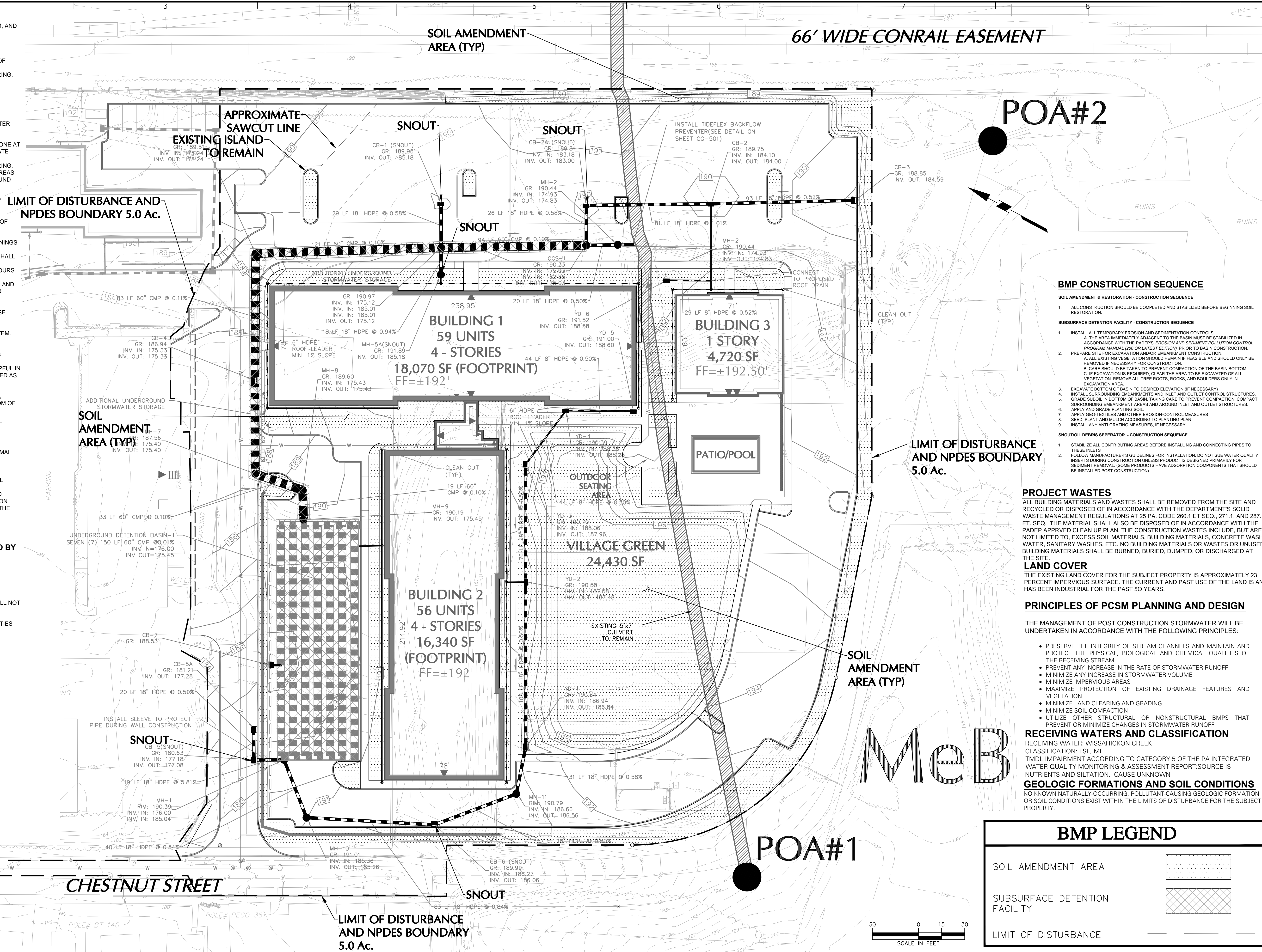
- 1) STORMWATER CONVEYANCE SYSTEM**
 - CATCH BASINS, MANHOLES AND PIPES TO BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST ANNUALLY AS WELL AS AFTER EVERY STORM EXCEEDING 1-INCH OF RAINFALL.
 - ALL STRUCTURAL COMPONENTS MUST BE INSPECTED FOR CRACKING, SUBSIDENCE, BREACHING, WEARING, AND DETERIORATION AT LEAST ANNUALLY.
- 2) SUBSURFACE DETENTION FACILITY**
 - THE SUBSURFACE BASIN MUST BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST ONCE A SEASON (FOUR TIMES A YEAR) AS WELL AS AFTER EVERY STORM EXCEEDING 1-INCH OF RAINFALL WITHIN ONE HOUR. SNOOT UNITS WILL BE INSTALLED AT THE INLETS DIRECTLY UPSTREAM OF THE SUBSURFACE BASIN. SEASONAL INSPECTIONS SHOULD BE ACCEPTABLE BECAUSE MATERIAL ACCUMULATION SHOULD BE MINIMIZED BY THE PROPER OPERATION OF THESE WATER QUALITY DEVICES.
 - SEDIMENT REMOVAL SHOULD TAKE PLACE WHEN ALL RUNOFF HAS DRAINED FROM AND THE BASIN IS REASONABLY DRY. DISPOSAL OF DEBRIS, TRASH, SEDIMENT, AND OTHER WASTE MATERIAL SHALL BE DONE AT SUITABLE DISPOSAL/RECYCLING SITES AND IN COMPLIANCE WITH ALL APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL WASTE REGULATIONS.
 - ALL STRUCTURAL COMPONENTS MUST BE INSPECTED FOR CRACKING, SUBSIDENCE, BREACHING, WEARING, AND DETERIORATION DURING ANY INSPECTIONS. THE CONDITION OF SURROUNDING ABOVEGROUND AREAS SHALL BE INSPECTED FOR EVIDENCE OF POTENTIAL FAILURES OR DETERIORATION OF THE UNDERGROUND SYSTEM.
 - IF STANDING WATER IS ENCOUNTERED IN THE SUBSURFACE FACILITY, THE WATER SHOULD BE PUMPED DOWNSTREAM THROUGH A SEDIMENT FILTER BAG. AFTER STANDING WATER IS REMOVED, THE FACILITY SHOULD BE INSPECTED AS USUAL. IF MODIFICATIONS TO THE FACILITY ARE REQUIRED TO ALLEVIATE STANDING WATER, THE PROPERTY OWNER SHALL HIRE A PROFESSIONAL ENGINEER TO REMEDY THE STANDING WATER ISSUE. ANY REMEDIES MUST BE APPROVED BY THE TOWNSHIP PRIOR TO THE START OF CONSTRUCTION.
- 3) STREET SWEEPING**
 - THE STREETS AND PARKING AREAS SHOULD BE CLEANED A MINIMUM OF THREE TIMES PER YEAR. CLEANINGS SHOULD OCCUR AROUND THE BEGINNING OF THE SPRING, SUMMER AND FALL SEASONS.
 - A VACUUM COMMERCIAL CLEANING UNIT SHALL BE USED. THE NON-POROUS AND POROUS PAVEMENT SHALL BE CLEAN AT THE SAME TIME.
 - TO LIMIT THE DISRUPTION TO THE USE OF THE PROPERTY, SWEEPING SHALL OCCUR DURING OFF HOURS. TYPICALLY, THE EARLY MORNING IS THE OPTIMAL TIME FOR A COMMERCIAL FACILITY.
 - THE PROPERTY OWNER SHALL POST SIGNS TO RESTRICT PARKING AND NOTIFY TENANTS OF THE DATE AND APPROXIMATE TIME OF THE SWEEPING. NOTIFICATION SHOULD OCCUR NO LESS THAN 2 DAYS PRIOR TO SWEEPING.
- 4) SOIL AMENDMENT & RESTORATION**
 - THE SOIL RESTORATION PROCESS MAY NEED TO BE REPEATED OVER TIME, DUE TO COMPACTION BY USE AND/OR SETTLING.
- 5) SNOOT OIL/DEBRIS SEPARATOR**
 - THE OIL/DEBRIS SEPARATOR SHALL BE INSPECTED ALONG WITH THE STORMWATER CONVEYANCE SYSTEM. FIRST YEAR ONLY RECOMMENDATIONS:
 - MONTHLY MONITORING OF A NEW INSTALLATION AFTER THE SITE HAS BEEN STABILIZED.
 - MEASUREMENTS SHOULD BE TAKEN AFTER EACH RAIN EVENT OF .5 INCHES OR MORE, OR MONTHLY, AS DETERMINED BY LOCAL WEATHER CONDITIONS.
 - CHECKING SEDIMENT DEPTH AND NOTING THE SURFACE POLLUTANTS IN THE STRUCTURE WILL BE HELPFUL IN PLANNING MAINTENANCE. RAINFALL VOLUME VS. SEDIMENT AND DEBRIS CAPTURE CAN THEN BE PLOTTED AS AN ACCURATE PREDICTOR OF SERVICE INTERVALS.
 - FOR ONGOING MAINTENANCE AFTER FIRST YEAR:
 - THE POLLUTANTS COLLECTED IN SNOOT EQUIPPED STRUCTURES WILL CONSIST OF FLOATABLE DEBRIS, TRASH AND OILS ON THE SURFACE OF THE CAPTURED WATER, AND GRIT AND SEDIMENT ON THE BOTTOM OF THE STRUCTURE.
 - IT IS BEST TO SCHEDULE MAINTENANCE BASED ON THE SOLIDS COLLECTED IN THE SUMP.
 - OPTIMALLY, THE STRUCTURE SHOULD BE CLEANED WHEN THE SUMP IS HALF FULL (E.G. WHEN 2 FEET OF MATERIAL COLLECTS IN A 4 FOOT SUMP, CLEAN IT OUT).
 - FOR FLOATABLES AND TRASH ONLY (WITH OR WITHOUT TRASHSCREEN), SERVICE WHEN 6-INCHES OF FLOATING MATERIAL ACCUMULATES ON SURFACE ABOVE STATIC WATER LEVEL.
 - STRUCTURES SHOULD ALSO BE CLEANED IF A SPILL OR OTHER INCIDENT CAUSES A LARGER THAN NORMAL ACCUMULATION OF POLLUTANTS IN A STRUCTURE.
 - MAINTENANCE SHOULD BE PERFORMED WITH A VACUUM TRUCK.
 - IN THE CASE OF AN OIL SPILL, THE STRUCTURE SHOULD BE SERVICED IMMEDIATELY.
 - ALL COLLECTED WASTES MUST BE HANDLED AND DISPOSED OF ACCORDING TO LOCAL ENVIRONMENTAL REQUIREMENTS.
 - TO MAINTAIN THE SNOOT HOODS THEMSELVES, AN ANNUAL INSPECTION OF THE ANTI-SIPHON VENT AND ACCESS HATCH MUST BE PERFORMED. FLUSHING OF THE VENT IS NEEDED TO MAINTAIN THE ANTI-SIPHON PROPERTIES. OPENING AND CLOSING THE ACCESS HATCH IS ALSO REQUIRED TO PROPERLY MAINTAIN THE STRUCTURAL COMPONENTS OF THE SNOOT.

CRITICAL STAGE OF BMP INSTALLATION
 THE INSTALLATION OF THE SOIL AMENDMENT AND RESTORATION AND THE INSTALLATION OF THE SUBSURFACE DETENTION BASIN SHOULD BE INSPECTED BY A LICENSED PROFESSIONAL (ENGINEER OR ARCHITECT).

- NOTES:**
- AMBLER BOROUGH SHALL HAVE THE RIGHT TO ENTER PRIVATE PROPERTY TO INSPECT AND REPAIR, IF NECESSARY, ANY STORMWATER MANAGEMENT FACILITY.
 - ALL STORMWATER MANAGEMENT FACILITIES ARE A PERMANENT PART OF THE DEVELOPMENT AND SHALL NOT BE REMOVED, ALTERED OR MODIFIED WITHOUT PRIOR APPROVAL FROM THE BOROUGH OF AMBLER.
 - A WRITTEN REPORT DOCUMENTING EACH INSPECTION AND ALL BMP REPAIR AND MAINTENANCE ACTIVITIES SHALL BE MAINTAINED BY THE OWNER.

LEGEND	
SITE SYMBOLS	GRADING SYMBOLS
CURB LINE	EXISTING CONTOUR
EXISTING EDGE OF PAVEMENT LINE	PROPOSED CONTOUR
PROPOSED BUILDING LINE	EXISTING SPOT ELEVATION
PROPERTY LINE	PROPOSED SPOT ELEVATION
LOT LINE	TOP OF WALL ELEVATION
IRON PIN TO BE SET	BOTTOM OF WALL ELEVATION (AT GROUND SURFACE)
CONCRETE MARK TO BE SET	
WALPOLE FENCE	
WROUGHT IRON FENCE	
RETAINING WALL	
PROPOSED GUARDRAIL	
GRADING/ACCESS EASEMENT	
UTILITY EASEMENT	
UTILITY SYMBOLS	
EXISTING STORM SEWER	EXISTING SANITARY SEWER MANHOLE
EXISTING SANITARY SEWER	EXISTING FIRE HYDRANT
EXISTING GAS MAIN EXISTING	EXISTING GAS VALVE
WATER MAIN EXISTING	EXISTING CATCH BASIN
OVERHEAD ELECTRIC	EXISTING WATER VALVE
PROPOSED STORM SEWER	EXISTING MANHOLE
PROPOSED SANITARY SEWER	EXISTING ELECTRIC POLE
PROPOSED WATER MAIN	PROPOSED WATER VALVE
PROPOSED ELECTRIC	PROPOSED HYDRANT
PROPOSED GAS	

LIMIT OF DISTURBANCE AND NPDES BOUNDARY 5.0 Ac.



- BMP CONSTRUCTION SEQUENCE**
- SOIL AMENDMENT & RESTORATION - CONSTRUCTION SEQUENCE**
- ALL CONSTRUCTION SHOULD BE COMPLETED AND STABILIZED BEFORE BEGINNING SOIL RESTORATION.
- SUBSURFACE DETENTION FACILITY - CONSTRUCTION SEQUENCE**
- INSTALL ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS
 - A. THE AREA IMMEDIATELY ADJACENT TO THE BASIN MUST BE STABILIZED IN ACCORDANCE WITH THE PADEP'S EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, 2ND OR LATEST EDITION, PRIOR TO BASIN CONSTRUCTION.
 - PREPARE SITE FOR EXCAVATION AND/OR EMBANKMENT CONSTRUCTION.
 - A. EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BouldERS ONLY IN EXCAVATION AREA.
 - B. CARE SHOULD BE TAKEN TO PREVENT COMPACTION OF THE BASIN BOTTOM. C. IF EXCAVATION IS REQUIRED, CLEAR THE AREA TO BE EXCAVATED OF ALL VEGETATION. REMOVE ALL TREE ROOTS, ROCKS, AND BouldERS ONLY IN EXCAVATION AREA.
 - EXCAVATE BOTTOM OF BASIN TO DESIRED ELEVATION (IF NECESSARY).
 - INSTALL SURROUNDING EMBANKMENTS AND INLET AND OUTLET CONTROL STRUCTURES.
 - GRADE SUBSOIL IN BOTTOM OF BASIN, TAKING CARE TO PREVENT COMPACTION, COMPACT SURROUNDING EMBANKMENT AREAS AND AROUND INLET AND OUTLET STRUCTURES.
 - APPLY AND GRADE PLANTING SOIL.
 - APPLY GEO-TEXTILES AND OTHER EROSION-CONTROL MEASURES (SEED, PLANT AND MULCH ACCORDING TO PLANTING PLAN).
 - INSTALL ANY ANTI-GRAZING MEASURES, IF NECESSARY.
- SNOOT/OIL DEBRIS SEPARATOR - CONSTRUCTION SEQUENCE**
- STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING AND CONNECTING PIPES TO THESE INLETS.
 - FOLLOW MANUFACTURER'S GUIDELINES FOR INSTALLATION. DO NOT USE WATER QUALITY INSERTS DURING CONSTRUCTION UNLESS PROVEN TO BE DESIGNED PRIMARILY FOR SEDIMENT REMOVAL. (SOME PRODUCTS HAVE ADSORPTION COMPONENTS THAT SHOULD BE INSTALLED POST-CONSTRUCTION)

PROJECT WASTES
 ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. THE MATERIAL SHALL ALSO BE DISPOSED OF IN ACCORDANCE WITH THE PADEP APPROVED CLEAN UP PLAN. THE CONSTRUCTION WASTES INCLUDE, BUT ARE NOT LIMITED TO, EXCESS SOIL MATERIALS, BUILDING MATERIALS, CONCRETE WASH WATER, SANITARY WASHES, ETC. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.

LAND COVER
 THE EXISTING LAND COVER FOR THE SUBJECT PROPERTY IS APPROXIMATELY 23 PERCENT IMPERVIOUS SURFACE. THE CURRENT AND PAST USE OF THE LAND IS AND HAS BEEN INDUSTRIAL FOR THE PAST 50 YEARS.

- PRINCIPLES OF PCSM PLANNING AND DESIGN**
- THE MANAGEMENT OF POST CONSTRUCTION STORMWATER WILL BE UNDERTAKEN IN ACCORDANCE WITH THE FOLLOWING PRINCIPLES:
- PRESERVE THE INTEGRITY OF STREAM CHANNELS AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE RECEIVING STREAM.
 - PREVENT ANY INCREASE IN THE RATE OF STORMWATER RUNOFF
 - MINIMIZE ANY INCREASE IN STORMWATER VOLUME
 - MINIMIZE IMPERVIOUS AREAS
 - MAXIMIZE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION
 - MINIMIZE LAND CLEARING AND GRADING
 - MINIMIZE SOIL COMPACTION
 - UTILIZE OTHER STRUCTURAL OR NONSTRUCTURAL BMPS THAT PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF

RECEIVING WATERS AND CLASSIFICATION
 RECEIVING WATER: WISSAHICKON CREEK
 CLASSIFICATION: TSF, MF
 TMDL IMPAIRMENT ACCORDING TO CATEGORY 5 OF THE PA INTEGRATED WATER QUALITY MONITORING & ASSESSMENT REPORT-SOURCE IS NUTRIENTS AND SILTATION. CAUSE UNKNOWN

GEOLOGIC FORMATIONS AND SOIL CONDITIONS
 NO KNOWN NATURALLY-OCCURRING, POLLUTANT-CAUSING GEOLOGIC FORMATION OR SOIL CONDITIONS EXIST WITHIN THE LIMITS OF DISTURBANCE FOR THE SUBJECT PROPERTY.

BMP LEGEND

SOIL AMENDMENT AREA	
SUBSURFACE DETENTION FACILITY	
LIMIT OF DISTURBANCE	

AMBLER BOILER HOUSE

SOIL TYPE DESCRIPTIONS AND LIMITATIONS

Map Symbol	Soil	Hydrological Soil Group	Depth to Seasonally High Water Table (Ft)	Depth to Bedrock (Ft)	Soil Limitations
MeB	Man made, Shale and Sandstone Materials, Sloping	C	variable	variable	Variable Conditions, Possible Seasonal High water table

Notes: 1. For areas where seasonal high water table is a limitation, ponded water shall be pumped through a "filter bag" or to the sediment basin/trap.

REVISIONS

Date	Description	No.
12-18-13	PER DEP REVIEW LETTER	4.
10-3-13	BOROUGH COMMENTS	3.
7-05-13	E&S/NPDES SUBMISSION	2.
6-21-13	BOROUGH COMMENTS	1.

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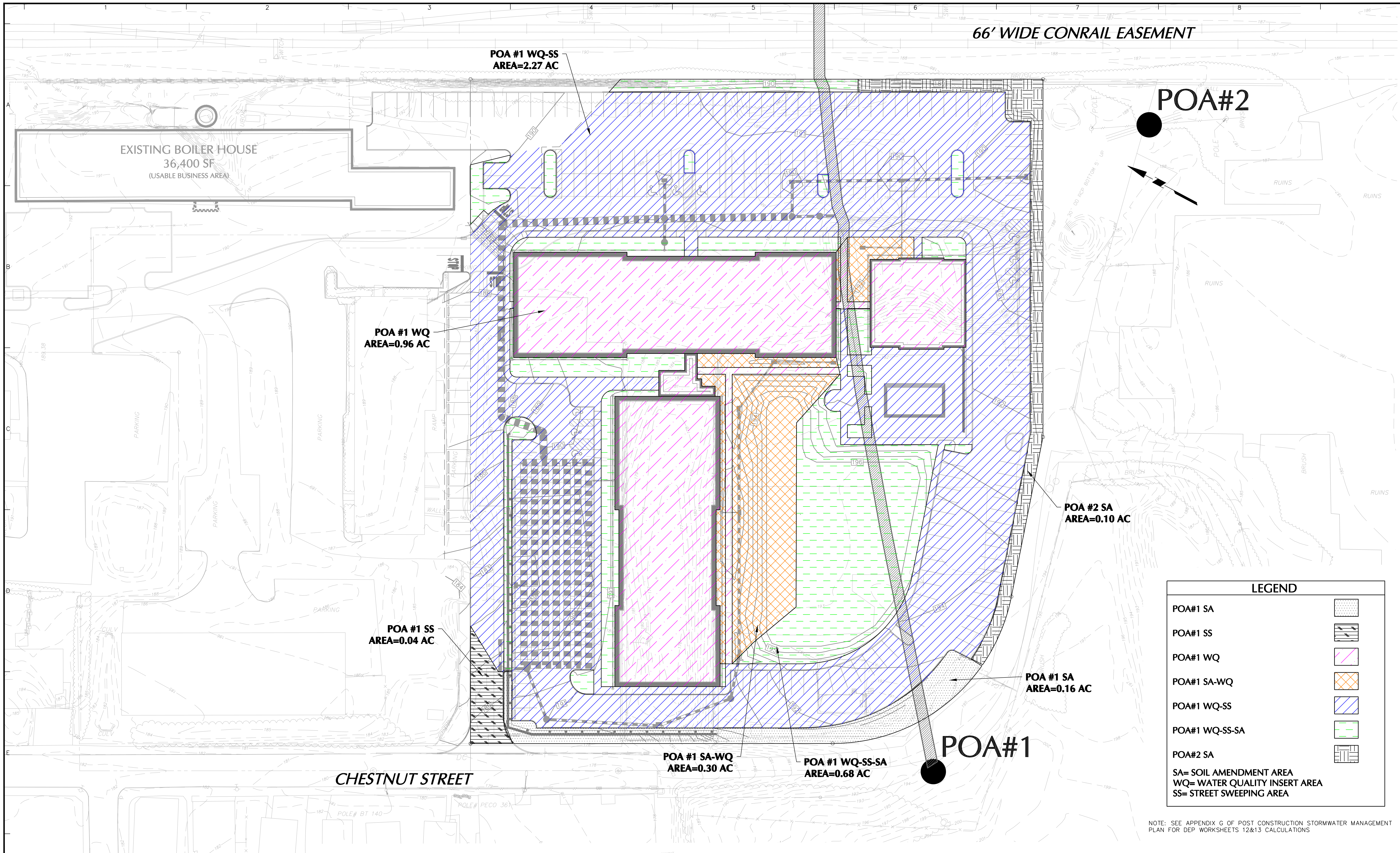
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 ABU DHABI ATHENS DOHA DUBAI ISTANBUL

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 Langan Engineering and Environmental Services, Inc.
 Langan International LLC
 Langan Group Inc. in Langan

Project
AMBLER CROSSINGS
 AMBLER BOROUGH
 MONTGOMERY COUNTY
 PENNSYLVANIA

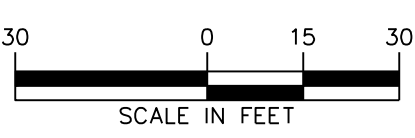
Drawing Title
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

Project No.	240025501	Drawing No.	
Date	4-9-13	PCSM-101	
Scale	1"=30'		
Drawn By	TFH	Sheet 15 of 26	



LEGEND	
POA#1 SA	
POA#1 SS	
POA#1 WQ	
POA#1 SA-WQ	
POA#1 WQ-SS	
POA#1 WQ-SS-SA	
POA#2 SA	
SA= SOIL AMENDMENT AREA WQ= WATER QUALITY INSERT AREA SS= STREET SWEEPING AREA	

NOTE: SEE APPENDIX G OF POST CONSTRUCTION STORMWATER MANAGEMENT PLAN FOR DEP WORKSHEETS 12&13 CALCULATIONS



Date	Description	No.
12-18-13	PER DEP REVIEW LETTER	3.
10-3-13	BOROUGH COMMENTS	2.
6-21-13	BOROUGH COMMENTS	1.

REVISIONS

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Project
AMBLER CROSSINGS
AMBLER BOROUGH
MONTGOMERY COUNTY
PENNSYLVANIA

Drawing Title
**POST CONSTRUCTION
STORMWATER
MANAGEMENT BMP
WATERSHED MAP**

Project No.	240025501	Drawing No.	PCSM-102
Date	4-9-13		
Scale	1" = 30'		
Drawn By	JKM		
			Sheet 16 of 26

SUBMISSION DATE: 2013-12-18
PROJECT No. 240025501
LANGAN

SOIL AMENDMENT & RESTORATION SPECIFICATIONS FOR MINOR COMPACTION

THE FOLLOWING SPECIFICATIONS ARE PROVIDED FOR INFORMATION PURPOSES ONLY. THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS, BUT ARE BY NO MEANS EXCLUSIVE OR LIMITING.

- SCOPE
 - THIS SPECIFICATION COVERS THE USE OF COMPOST FOR SOIL AMENDMENT AND THE MECHANICAL RESTORATION OF COMPACTED, ERODED AND NON-VEGETATED SOILS. SOIL AMENDMENT AND RESTORATION IS NECESSARY WHERE EXISTING SOIL HAS BEEN DEEMED UNHEALTHY IN ORDER TO RESTORE SOIL STRUCTURE AND FUNCTION, INCREASE INFILTRATION POTENTIAL AND SUPPORT HEALTHY VEGETATIVE COMMUNITIES.
 - SOIL AMENDMENT PREVENTS AND CONTROLS EROSION BY ENHANCING THE SOIL SURFACE TO PREVENT THE INITIAL DETACHMENT AND TRANSPORT OF SOIL PARTICLES.
- COMPOST MATERIALS
 - COMPOST PRODUCTS SPECIFIED FOR USE IN THIS APPLICATION ARE DESCRIBED IN TABLE 1. THE PRODUCT'S PARAMETERS WILL VARY BASED ON WHETHER VEGETATION WILL BE ESTABLISHED ON THE TREATED SLOPE.
 - ONLY COMPOST PRODUCTS THAT MEET ALL APPLICABLE STATE AND FEDERAL REGULATIONS PERTAINING TO ITS PRODUCTION AND DISTRIBUTION MAY BE USED IN THIS APPLICATION. APPROVED COMPOST PRODUCTS MUST MEET RELATED STATE AND FEDERAL CHEMICAL CONTAMINANT (E.G., HEAVY METALS, PESTICIDES, ETC.) AND PATHOGEN LIMIT STANDARDS PERTAINING TO THE FEEDSTOCKS (SOURCE MATERIALS) IN WHICH IT IS DERIVED.
 - VERY COARSE COMPOST SHOULD BE AVOIDED FOR SOIL AMENDMENT AS IT WILL MAKE PLANTING AND CROP ESTABLISHMENT MORE DIFFICULT.
 - NOTE 1 - SPECIFYING THE USE OF COMPOST PRODUCTS THAT ARE CERTIFIED BY THE U.S. COMPOSTING COUNCIL'S SEAL OF TESTING (STA) PROGRAM (WWW.COMPOSTINGCOUNCIL.ORG) WILL ALLOW FOR THE ACQUISITION OF PRODUCTS THAT ARE ANALYZED ON A ROUTINE BASIS, USING THE SPECIFIED TEST METHODS. STA PARTICIPANTS ARE ALSO REQUIRED TO PROVIDE A STANDARD PRODUCT LABEL TO ALL CUSTOMERS, ALLOWING EASY COMPARISON TO OTHER PRODUCTS.
- SUB-SOILING TO RELIEVE COMPACTION
 - BEFORE THE TIME THE COMPOST IS PLACED AND PREFERABLY WHEN EXCAVATION IS COMPLETED, THE SUBSOIL SHALL BE IN A LOOSE, FRIABLE CONDITION TO A DEPTH OF 8 INCHES BELOW FINAL TOPSOIL GRADE AND THERE SHALL BE NO EROSION RILLS OR WASHOUTS IN THE SUBSOIL SURFACE EXCEEDING 3 INCHES IN DEPTH.
 - TO ACHIEVE THIS CONDITION, SUBSOILING, RIPPING, OR SCARIFICATION OF THE SUBSOIL WILL BE REQUIRED AS DIRECTED BY THE OWNERS REPRESENTATIVE, WHEREVER THE SUBSOIL HAS BEEN COMPACTED BY EQUIPMENT OPERATION OR HAS BECOME DRIED OUT AND CRUSTED, AND WHERE NECESSARY TO OBLITERATE EROSION RILLS. SUB-SOILING SHALL BE REQUIRED TO REDUCE SOIL COMPACTION IN ALL AREAS WHERE PLANT ESTABLISHMENT IS PLANNED. SUB-SOILING SHALL BE PERFORMED BY THE PRIME OR EXCAVATING CONTRACTOR AND SHALL OCCUR BEFORE COMPOST PLACEMENT.
 - SUBSOILED AREAS SHALL BE LOOSENED TO LESS THAN 1400 KPA (200 PSI) TO A DEPTH OF 8 INCHES BELOW FINAL TOPSOIL GRADE. WHEN DIRECTED BY THE OWNER'S REPRESENTATIVE, THE CONTRACTOR SHALL VERIFY THAT THE SUB-SOILING WORK CONFORMS TO THE SPECIFIED DEPTH.
 - SUB-SOILING SHALL FORM A TWO-DIRECTIONAL GRID. CHANNELS SHALL BE CREATED BY A COMMERCIALY AVAILABLE, MULTI-SHANKED, PARALLELOGRAM IMPLEMENT (SOLID-SHANK RIPPER). THE EQUIPMENT SHALL BE CAPABLE OF EXERTING A PENETRATION FORCE NECESSARY FOR THE SITE. NO DISC CULTIVATORS, CHISEL PLOWS, OR SPRING-LOADED EQUIPMENT WILL BE ALLOWED. THE GRID CHANNELS SHALL BE SPACED A MINIMUM OF 12 INCHES TO A MAXIMUM OF 36 INCHES APART, DEPENDING ON EQUIPMENT, SITE CONDITIONS, AND THE SOIL MANAGEMENT PLAN. THE CHANNEL DEPTH SHALL BE A MINIMUM OF 8 INCHES OR AS SPECIFIED IN THE SOIL MANAGEMENT PLAN. IF SOILS ARE SATURATED, THE CONTRACTOR SHALL DELAY OPERATIONS UNTIL THE SOIL WILL NOT HOLD A BALL WHEN SQUEEZED. ONLY ONE PASS SHALL BE PERFORMED ON ERODIBLE SLOPES GREATER THAN 1 VERTICAL TO 3 HORIZONTAL. WHEN ONLY ONE PASS IS USED, WORK SHOULD BE AT RIGHT ANGLES TO THE DIRECTION OF SURFACE DRAINAGE, WHENEVER PRACTICAL.
 - EXCEPTIONS TO SUB-SOILING INCLUDE AREAS WITHIN THE DRIP LINE OF ANY EXISTING TREES, OVER UTILITY INSTALLATIONS WITHIN 30 INCHES OF THE SURFACE, WHERE TRENCHING/DRAINAGE LINES ARE INSTALLED, WHERE COMPACTION IS BY DESIGN (ADJUTMENTS, FOOTINGS, OR IN SLOPES), AND ON INACCESSIBLE SLOPES, AS APPROVED BY THE OWNER'S REPRESENTATIVE. IN CASES WHERE EXCEPTIONS OCCUR, THE CONTRACTOR SHALL OBSERVE A MINIMUM SETBACK OF 20 FEET OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ARCHEOLOGICAL CLEARANCES MAY BE REQUIRED IN SOME INSTANCES.
- COMPOST SOIL AMENDMENT QUALITY
 - THE FINAL, RESULTING COMPOST SOIL AMENDMENT MUST MEET ALL OF THE MANDATORY CRITERIA IN TABLE 4.
 - COMPOST SOIL AMENDMENT INSTALLATION
 - AFTER EXISTING TOPSOIL IS RE-SPREAD, SPREAD 2 INCHES OF APPROVED COMPOST ON EXISTING SOIL. TILL ADDED SOIL INTO EXISTING SOIL WITH A ROTARY TILLER THAT IS SET TO A DEPTH OF 6 INCHES. ADD AN ADDITIONAL 4 INCHES OF APPROVED COMPOST TO BRING THE AREA UP TO GRADE.
 - AFTER PERMANENT PLANTING/SEEDING, 2-3 INCHES OF COMPOST BLANKET WILL BE APPLIED TO ALL AREAS NOT PROTECTED BY GRASS OR OTHER PLANTS.

Soil Texture	Ideal Bulk densities	Bulk densities that may affect root growth	Bulk densities that restrict root growth
	g/cm ³	g/cm ³	g/cm ³
Sands, loamy sands	<1.80	1.69	1.8
Sandy loams, loams	<1.40	1.63	1.8
Sandy clay loams, loams, clay loams	<1.40	1.6	1.75
Silt, silt loams	<1.30	1.6	1.75
Silt loams, silty clay loams	<1.10	1.55	1.65
Sandy clays, silty clays, some clay loams (35-45% clay)	<1.10	1.49	1.58
Clays (>45% clay)	<1.10	1.39	1.47

Source: Protecting Urban Soil Quality, USDA-NRCS

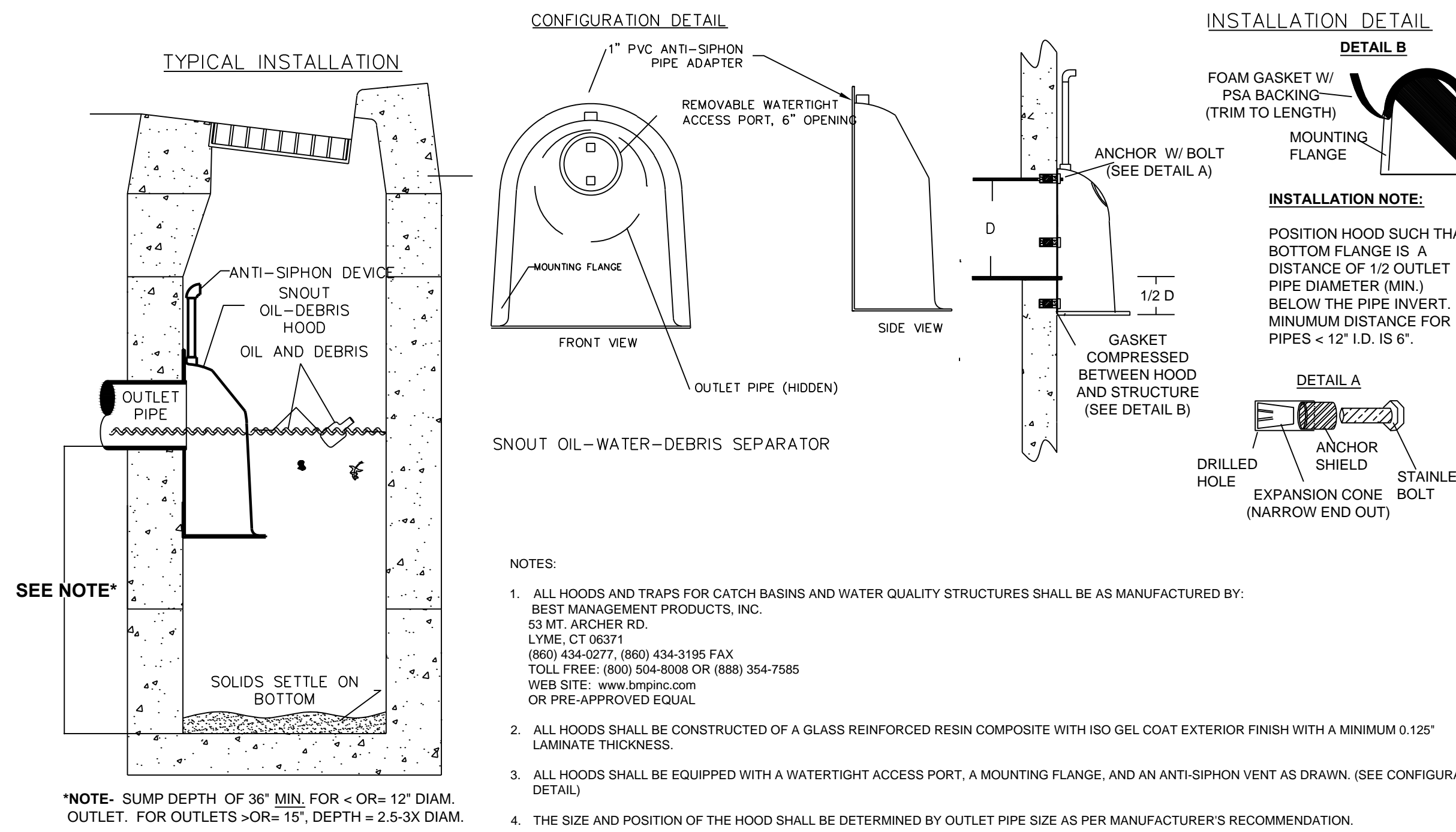
Table 4. Adsorbed Mass of Nutrients and Metals in Unvegetated Plot Runoff From 30-Minute, High-Intensity (100-mm/hr.) Rainstorm

Element	Compost Treatments		Conventional Treatments	
	Biosolids	Yardwaste	Bioindustrial Compost	Compacted Topsoil
	Geometric Mean (mg)			
Chromium	0.01 ^b	<0.01 ^a	<0.01 ^b	0.92 ^c
Copper	0.02 ^b	<0.01 ^a	0.01 ^b	1.03 ^c
Nickel	<0.01 ^b	<0.01 ^a	<0.01 ^b	0.96 ^c
Lead	0.01 ^b	<0.01 ^a	<0.01 ^b	1.82 ^c
Zinc	0.10 ^b	<0.01 ^a	0.03 ^b	6.55 ^c
Nitrogen	0.47 ^b	<0.01 ^a	0.09 ^{a,b}	266.65 ^c
Phosphorus	0.45 ^b	<0.01 ^a	0.09 ^{a,b}	36.47 ^c
Potassium	0.17 ^b	<0.01 ^a	0.09 ^{a,b}	103.94 ^c

Means within the same row with different letter designations are significantly different (p<0.05).

Highest Medium Lowest

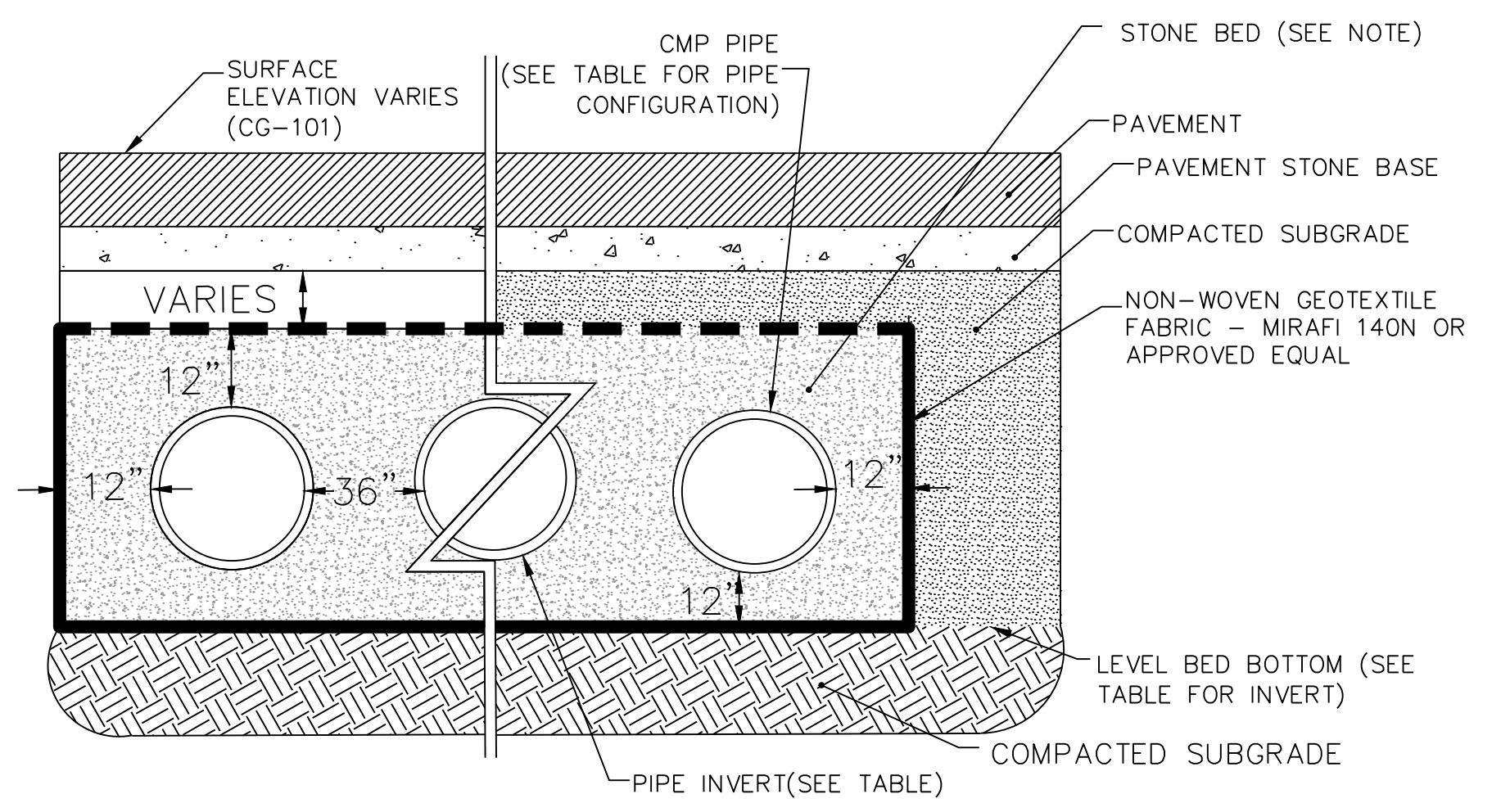
SOIL AMENDMENT SPECIFICATION



- NOTES:
- ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY: BEST MANAGEMENT PRODUCTS, INC. 53 MT. ARCHER RD. LYME, CT 06371 (860) 434-0277, (860) 434-3195 FAX TOLL FREE: (800) 504-8008 OR (888) 354-7585 WEB SITE: www.bmpinc.com OR PRE-APPROVED EQUAL.
 - ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM OF 0.125" LAMINATE THICKNESS.
 - ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT AS DRAWN. (SEE CONFIGURATION DETAIL)
 - THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION.
 - THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
 - THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 24" ACCORDING TO STRUCTURE CONFIGURATION.
 - THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
 - THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH 3/8" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL)
 - INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT. INSTALLATION KIT SHALL INCLUDE:
 - INSTALLATION INSTRUCTIONS
 - PVC ANTI-SIPHON VENT PIPE AND ADAPTER
 - OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
 - 3/8" STAINLESS STEEL BOLTS
 - ANCHOR SHIELDS
 - THE CONTRACTOR IS SPECIFICALLY MADE AWARE THAT OIL/DEBRIS HOODS MAY REQUIRE OVERSIZED STRUCTURES AND/OR DEEPER STRUCTURES TO ACCOMMODATE DEVICES. EXISTING STRUCTURES IN WHICH DEVICES ARE PROPOSED MAY REQUIRE REPLACEMENT IF UNDERSIZED. CONTRACTOR MUST INCLUDE REPLACEMENT OF EXISTING STRUCTURES RECEIVING SNOOT DEVICE IN BID AND VERIFY PRIOR TO INSTALLATION.

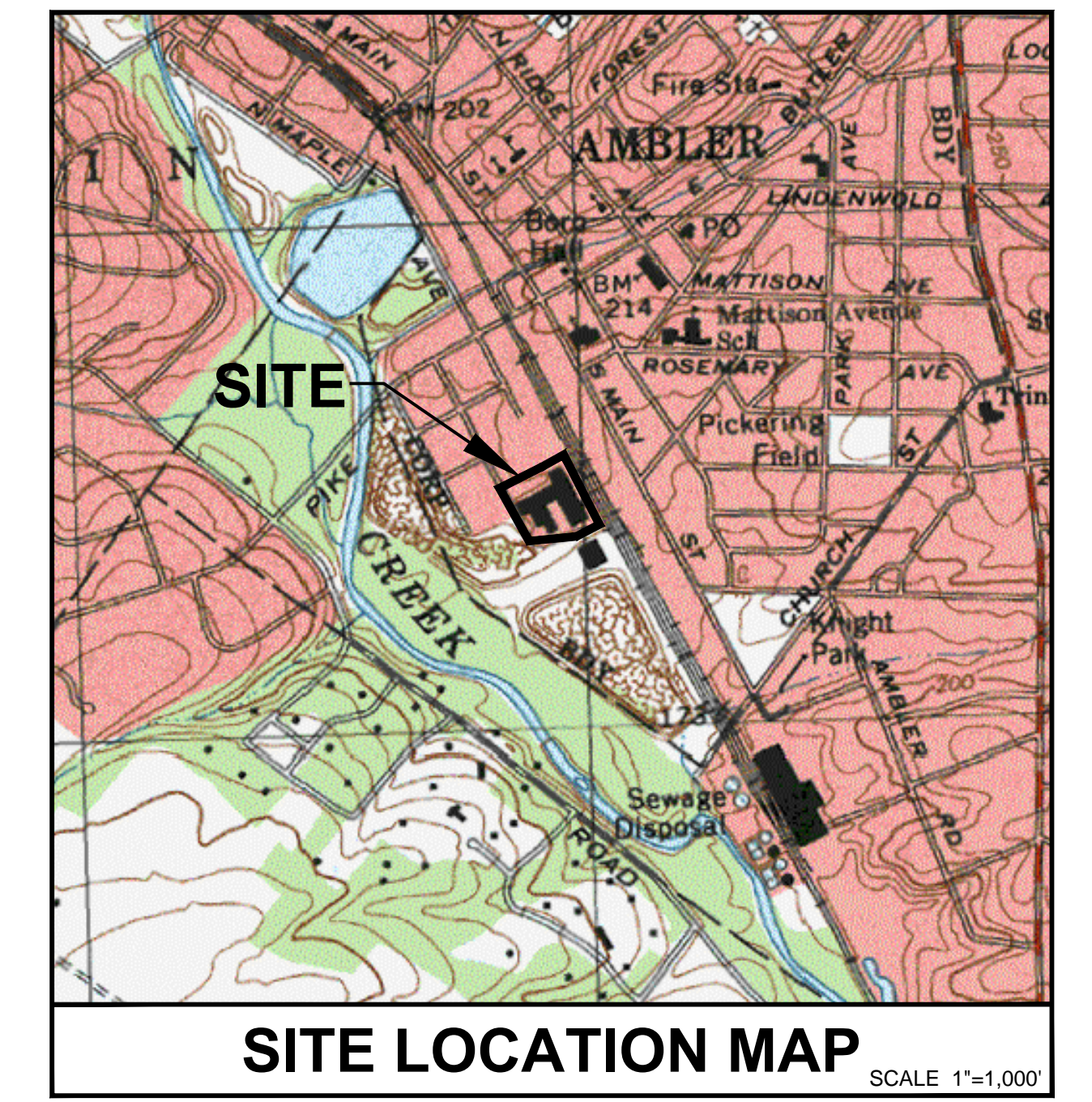
BMP 6.6.4 B SNOOT OIL/DEBRIS SEPARATOR

- NOTES:
- STORMWATER MANAGEMENT STONE BED SHALL BE 2-INCH TO 1-INCH UNIFORMLY GRADED COARSE AGGREGATE, WITH A WASH LOSS OF NO MORE THAN 0.5%, AASHTO SIZE NUMBER 3 PER AASHTO SPECIFICATIONS, PART 1, 19TH ED., 1998, OR LATER AND SHALL HAVE Voids 40% AS MEASURED BY ASTM-C29.
 - SEE DRAWING CG-201 FOR PIPE LAYOUT, CONNECTIONS AND INSPECTION PORTS.
 - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE STORMWATER SYSTEM TO THE DESIGN ENGINEER FOR REVIEW PRIOR TO ORDERING/CONSTRUCTION. THIS SUBMITTAL MUST INCLUDE THE WITHDRAWAL STRUCTURES AND CONNECTION TO THE UNDERGROUND STORMWATER SYSTEM.



UNDERGROUND DETENTION BASIN	STONE BED INVERT	PIPE INVERT	NUMBER, LENGTH, AND DIA. OF PIPE ROWS
UNDERGROUND DETENTION BASIN #1	INV=175.00	INV=176.00	7 - 150 LF 60-INCH CMP PIPES

SUBSURFACE DETENTION BASIN



SITE LOCATION MAP SCALE 1"=1,000'

Date	Description	No.
12-18-13	PER DEP REVIEW LETTER	4.
10-3-13	BOROUGH COMMENTS	3.
7-05-13	E&S/NPDES SUBMISSION	2.
6-21-13	BOROUGH COMMENTS	1.

REVISIONS

PROFESSIONAL ENGINEER PA Lic. No. PE-057145-E

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ABU DHABI ATHENS DOHA
DUBAI ISTANBUL

Langan Engineering, Environmental, Surveying and Landscaping Architecture, P.C.
Langan Engineering and Environmental Services, Inc.
Langan International LLC
Collectively known as Langan

Project

AMBLER CROSSINGS

AMBLER BOROUGH
MONTGOMERY COUNTY
PENNSYLVANIA

Drawing Title

POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS

Project No.	Drawing No.
240025501	
Date	4-9-13
Scale	N.T.S.
Drawn By	KG
	Sheet 17 of 26

PSCM-501

SUBMISSION DATE: 2013-12-18 PROJECT No. 240025501