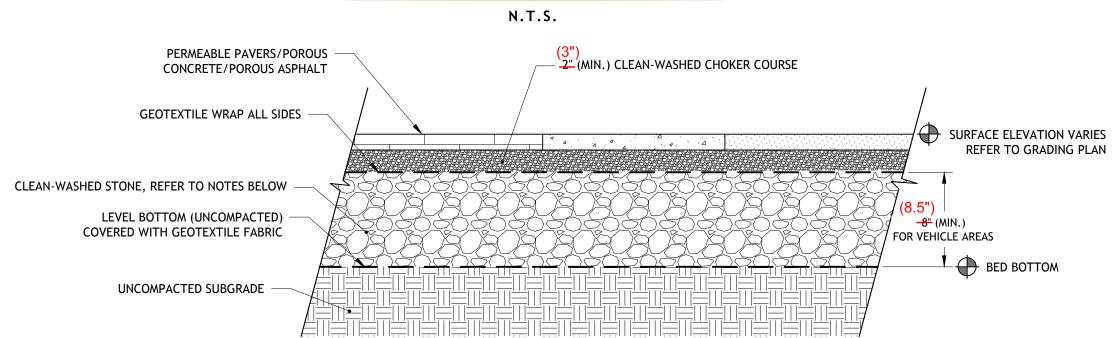


- 1. GREEN ROOF GROWING MEDIUM SHALL BE A LIGHTWEIGHT MINERAL MATERIAL WITH A MINIMUM OF ORGANIC MATERIAL AND MEET THE FOLLOWING SPECIFICATIONS:
 - MOISTURE CONTENT AT A MAXIMUM WATER HOLDING CAPACITY (ASTM E2399 OR FLL): ≥ 35%
 - POROSITY AT MAXIMUM WATER HOLDING CAPACITY (ASTM E2399 OR FLL): ≥ 6% • TOTAL ORGANIC MATTER (MSA): 3-8%
 - pH (MSA): 6.5-8.0
 - SOLUBLE SALTS (DPTA SATURATED MEDIA EXTRACTION): ≤ 6 mmhos/cm
 - WATER PERMEABILITY (ASTM E2399 OR FLL): ≥ 0.5 IN/MIN GRAIN-SIZE DISTRIBUTION, AS RECOMMENDED BY FLL
 - THE NUTRIENTS SHALL BE INITIALLY INCORPORATED IN THE FORMULATION OF A SUITABLE MIX
- FOR THE SUPPORT OF THE SPECIFIED PLANT MATERIALS THE MEDIUM SHALL WITHSTAND FREEZE/THAW CYCLES
- 2. GEOTEXTILE SHALL CONSIST OF POLYPROPYLENE FIBERS AND MEET THE FOLLOWING SPECIFICATIONS:

GRAB TENSILE STRENGTH (ASTM-D4632) > OR = 120 LBS. MULLEN BURST STRENGTH (ASTM-D3786) > OR = 225 LBS. FLOW RATE (ASTM-D4491) > OR = 95 GAL./MIN./FT² UV RESISTANCE AFTER 500 HRS. (ASTM-D4355) > OR = 70%

HEAT-SET OR HEAT CALENDARED FABRICS ARE NOT PERMITTED

GREEN ROOF DETAIL



- 1. ALL AGGREGATES WITHIN POROUS PAVER BED SHALL BE CLEAN-WASHED, DEFINED AS HAVING LESS THAN 0.5% WASH LOSS, BY MASS, WHEN TESTED PER THE AASHTO T-11 WASH LOSS TEST.
- 2. CHOKER COURSE AGGREGATE SHALL MEET THE FOLLOWING SPECIFICATIONS:

REQUIRED CHOKER COURSE GRADATION					
U.S. STANDARD SIEVE SIZE	PERCENT PASSING				
1-½" (37.5 mm)	100				
1" (25 mm)	95 - 100				
½" (19 mm)	25 - 60				
#4 (4.75 mm)	0 - 10				
#8 (2.36 mm)	0 - 5				

3. GEOTEXTILE SHALL CONSIST OF POLYPROPYLENE FIBERS AND MEET THE FOLLOWING SPECIFICATIONS: GRAB TENSILE STRENGTH (ASTM-D4632) > OR = 120 LBS.

MULLEN BURST STRENGTH (ASTM-D3786) > OR = 225 LBS. FLOW RATE (ASTM-D4491) > OR = 95 GAL./MIN./FT²

UV RESISTANCE AFTER 500 HRS. (ASTM-D4355) > OR = 70% HEAT-SET OR HEAT CALENDARED FABRICS ARE NOT PERMITTED

4. POROUS BITUMINOUS ASPHALT:

• BITUMINOUS SURFACE SHALL BE LAID WITH A BITUMINOUS MIX OF 5.75% TO 6% BY WEIGHT DRY AGGREGATE. IN ACCORDANCE WITH ASTM D6390, DRAIN DOWN OF THE BINDER SHALL BE NO GREATER THAN 0.3%. AGGREGATE MATERIAL IN THE ASPHALT SHALL BE CLEAN, OPEN-GRADED, AND A MINIMUM OF 75% FRACTURED WITH AT LEAST ONE FRACTURED FACE BY MECHANICAL MEANS OF EACH INDIVIDUAL PARTICLE LARGER THAN $\frac{1}{4}$ ", AND IT SHALL HAVE THE FOLLOWING GRADATIONS:

POROUS ASPHALT BINDER COURSE AGGREGATE GRADATION

U.S. STANDARD SIEVE SIZE	PERCENT PASSING BY WEIGHT
1"	100%
3/4"	90-100%
1/2"	80-100%
3/8"	50-80%
#4	10-20%
#8	5-10%
#40	3-8%
#200	0-3%

POROUS ASPHALT WEARING COURSE AGGREGATE GRADATION						
U.S. STANDARD SIEVE SIZE	PERCENT PASSING BY WEIGHT					
5/8"	100%					
1/2"	95-100%					
3/8"	70-95%					
#4	20-40%					
#8	10-20%					
#40	0-8%					
#200	0-3%					

• NEAT ASPHALT BINDER MODIFIED WITH AN ELASTOMERIC POLYMER TO PRODUCE A BINDER MEETING THE REQUIREMENTS OF PG 76-22 AS SPECIFIED IN AASHTO MP-1. THE ELASTOMER POLYMER SHALL BE STYRENE-BUTADIENE-STYRENE (SBS), OR APPROVED EQUAL, APPLIED AT A RATE OF 3% BY WEIGHT OF THE TOTAL BINDER.

• HYDRATED LIME SHOULD BE ADDED AT A DOSAGE RATE OF 1% BY WEIGHT OF THE TOTAL DRY AGGREGATE TO MIXES CONTAINING GRANITE. HYDRATED LIME SHALL MEET THE REQUIREMENTS OF ASTM C 977. THE ADDITIVE MUST BE ABLE TO PREVENT THE SEPARATION OF THE ASPHALT BINDER FROM THE AGGREGATE AND ACHIEVE A REQUIRED TENSILE STRENGTH RATIO (TSR) OF AT LEAST 80% ON THE ASPHALT MIX WHEN TESTED IN ACCORDANCE WITH AASHTO T 283. THE ASPHALTIC MIX SHALL BE TESTED FOR ITS RESISTANCE TO STRIPPING BY WATER IN ACCORDANCE WITH ASTM D-1664. IF THE ESTIMATED COATING AREA IS NOT ABOVE 95 PERCENT, ANTI-STRIPPING AGENTS SHALL BE ADDED TO THE ASPHALT.

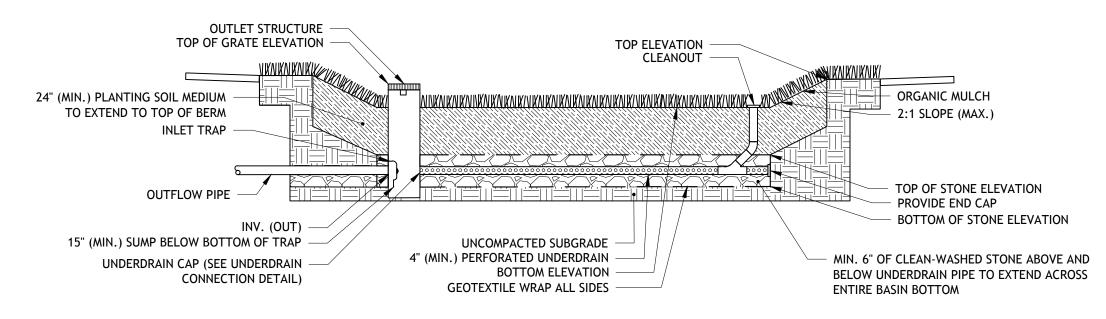
• THE ASPHALTIC MIX SHALL BE TESTED FOR ITS RESISTANCE TO STRIPPING BY WATER IN ACCORDANCE WITH ASTM D-3625. IF THE ESTIMATED COATING AREA IS NOT ABOVE 95 PERCENT, ANTI-STRIPPING AGENTS SHALL BE ADDED TO THE ASPHALT.

POROUS CONCRETE:

• POROUS CONCRETE SHALL UTILIZE PORTLAND CEMENT TYPE I OR II CONFORMING TO ASTM C 150 OR PORTLAND CEMENT TYPE IP OR IS CONFORMING TO ASTM C 595: • AGGREGATE SHALL BE NO. 8 COARSE AGGREGATE (3/8 TO NO. 16) PER ASTM C 33 OR NO. 89 COARSE AGGREGATE (3/8 TO NO. 50) PER ASTM D 448. • AN AGGREGATE/CEMENT RATIO RANGE OF 4:1 TO 4.5:1 AND A WATER/CEMENT RATIO RANGE OF 0.34 TO 0.40 SHOULD PRODUCE PERVIOUS PAVEMENT OF SATISFACTORY PROPERTIES IN REGARD TO PERMEABILITY, LOAD CARRYING CAPACITY, AND DURABILITY CHARACTERISTICS.

6. PERMEABLE PAVER AND GRID SYSTEMS:

• PERMEABLE PAVER AND GRID SYSTEMS SHALL CONFORM TO MANUFACTURER SPECIFICATIONS. • THE SYSTEMS SHALL HAVE A MINIMUM FLOW THROUGH RATE OF 5 IN/HR AND A VOID PERCENTAGE OF NO LESS THAN 10%. • GRAVEL USED IN INTERLOCKING CONCRETE PAVERS OR PLASTIC GRID SYSTEMS MUST BE WELL GRADED AND WASHED TO ENSURE PERMEABILITY.



BASIN	OUTLET STRUCTURE	TOP ELEVATION	BOTTOM ELEVATION	TOP OF STONE ELEVATION	BOTTOM OF STONE ELEVATION	TOP OF GRATE ELEVATION	UNDERDRAIN INVERT	INV. (OUT)	OUTFLOW PIPE (DIAM./MATERIAL)
BAS-1	"C" INLET	150.00	-146.00 -	-143.00 -	140.00	149.50	146.50	146.50	12" RCP
	·	1	(146.10)	(142.95)			1		1

1. TEXTURE OF PLANTING SOIL SHOULD CONFORM TO THE CLASSIFICATION WITHIN THE USDA TRIANGLE FOR SANDY LOAM OR LOAMY SAND. PLANTING SOIL SHOULD BE A MIXTURE OF SAND, SILT, AND CLAY PARTICLES AS REQUIRED TO MEET THE CLASSIFICATION. RANGES OF PARTICLE SIZE DISTRIBUTION, AS DETERMINED BY PIPETTE METHOD IN COMPLIANCE WITH ASTM F-1632:

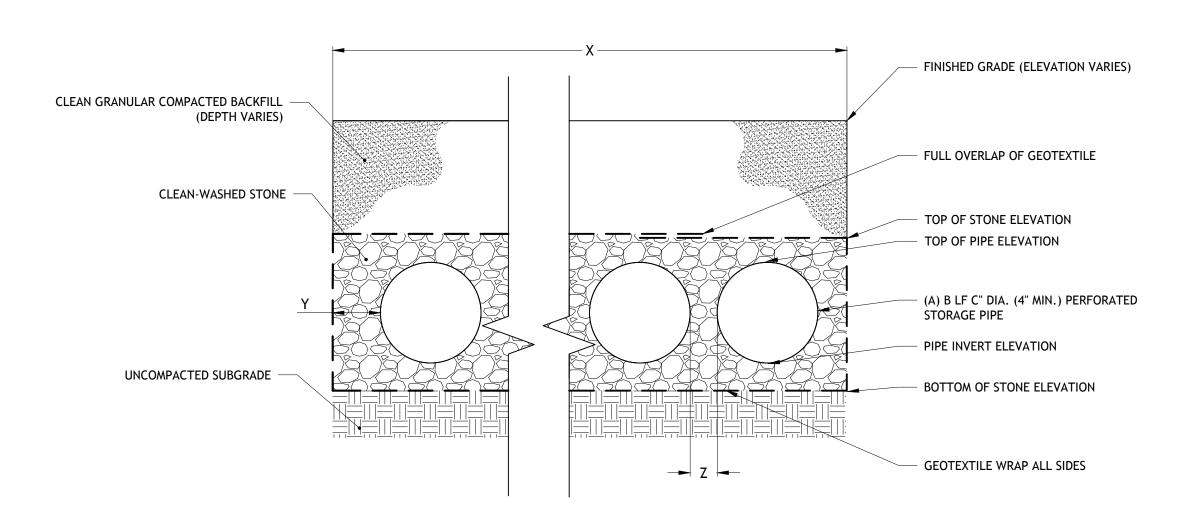
(0.05-2.0 mm) 50 - 85% (0.002 TO 0.05 mm) 40% MAXIMUM (LESS THAN 0.002 mm) 10% MAXIMUM GRAVEL (2.0 TO 12.7 mm) 15% MAXIMUM

- 2. PLANTING SOIL SHOULD BE SCREENED AND FREE OF STONES LARGER THAN A HALF-INCH ($\frac{1}{2}$ "; 12.7 mm) IN ANY DIMENSION. NO MORE THAN TEN PERCENT (10%) OF THE SOIL VOLUME SHOULD BE COMPOSED OF SOIL PEDS GREATER THAN ONE INCH (1").
- 3. CLODS, OR NATURAL CLUMPS OF SOILS, GREATER THAN THREE INCHES (3") IN ANY DIMENSION SHOULD BE ABSENT FROM THE PLANTING SOIL. SMALL CLODS RANGING FROM ONE TO THREE INCHES (1-3") AND PEDS, NATURAL SOIL CLUMPS UNDER ONE INCH (1") IN ANY DIMENSION, MAY BE PRESENT BUT SHOULD NOT MAKE UP MORE THAN TEN PERCENT (10%) OF THE SOIL BY VOLUME.
- 4. THE pH OF THE PLANTING SOIL SHOULD HAVE A RANGE OF 5.8-7.1.
- 5. SOLUBLE SALTS SHOULD BE LESS THAN 2.0 mmhos/cm (dS/m), TYPICALLY AS MEASURED BY 1:2 SOIL-WATER RATIO BASIC SOIL SALINITY TESTING. SODIC SOILS (EXCHANGEABLE SODIUM PERCENTAGE (ESP) GREATER THAN 15 AND/OR SODIUM ADSORPTION RATIO (SAR) GREATER THAN 13) SHALL NOT BE ACCEPTABLE FOR USE REGARDLESS OF AMENDMENT.
- 6. ORGANIC CONTENT OF PLANTING SOIL SHOULD HAVE A RANGE OF THREE TO FIFTEEN PERCENT (3-15%) BY WEIGHT AS DETERMINED BY LOSS ON IGNITION (ASTM D2974). TO ADJUST ORGANIC CONTENT, PLANTING SOIL MAY BE AMENDED, PRIOR TO PLACING AND FINAL GRADING, WITH THE ADDITION OF ORGANIC COMPOST.
- 7. ALL AGGREGATE WITHIN THE STONE STORAGE BED SHALL BE CLEAN-WASHED, DEFINED AS HAVING LESS THAN 0.5% WASH LOSS, BY MASS, WHEN TESTED PER THE AASHTO T-11 WASH LOST TEST.
- 8. GEOTEXTILE SHALL CONSIST OF POLYPROPYLENE FIBERS AND MEET THE FOLLOWING SPECIFICATIONS:

GRAB TENSILE STRENGTH (ASTM-D4632) > OR = 120 LBS. MULLEN BURST STRENGTH (ASTM-D3786) > OR = 225 LBS. FLOW RATE (ASTM-D4491) > OR = 95 GAL./MIN./FT² UV RESISTANCE AFTER 500 HRS. (ASTM-D4355) > OR = 70% HEAT-SET OR HEAT CALENDARED FABRICS ARE NOT PERMITTED

BIOINFILTRATION/BIORETENTION BASIN DETAIL

N.T.S.



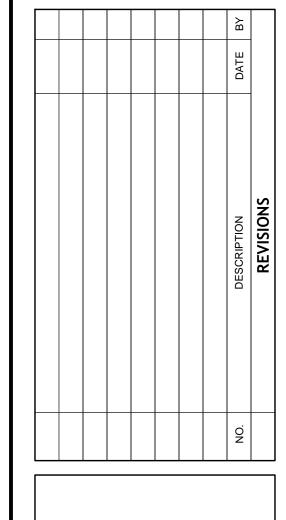
RIAL QUA	PIPE ANTITY	PIPE LENGTH	PIPE DIAMETER	STONE ELEVATION	ELEVATION	PIPE INV. ELEVATION	STONE ELEVATION	DIMENSION	DIMENSION	DIMENSION
E	3	56	6"	-147.65 -	146.00	145.50	-142.00	25'-0"	4'-0"	1'-7"
	E QUA	QUANTITY	QUANTITY LENGTH	QUANTITY LENGTH DIAMETER	QUANTITY LENGTH DIAMETER ELEVATION	E 3 56 6" 147.65 146.00	PE 3 56 6" — 147.65 146.00 145.50	PE 3 56 6" -147.65 146.00 145.50 -142.00	QUANTITY LENGTH DIAMETER ELEVATION ELEVATION PE 3 56 6" -147.65 146.00 145.50 -142.00 -25'-0"	QUANTITY LENGTH DIAMETER ELEVATION ELEVATION PE 3 56 6" -147.65 146.00 145.50 -142.00 25'-0" 4'-0"

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SUBSURFACE INFILTRATION BASIN (PIPE IN STONE) DETAIL

N.T.S.



CONSTRUCTION **DETAILS**

PROJECT NAME

Drwn/Chk By: Municipality: Philadelphia County: Philadelphia State: Pennsylvania

Scale: 1" = 20' Project Number:

File Name: Field Date:

Completed: Drawing Number: