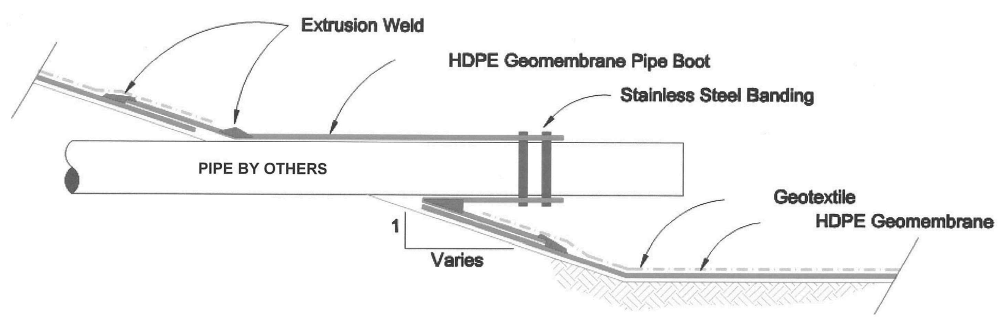
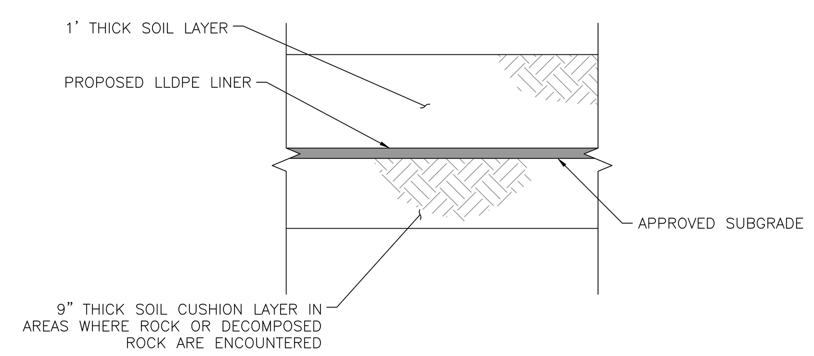
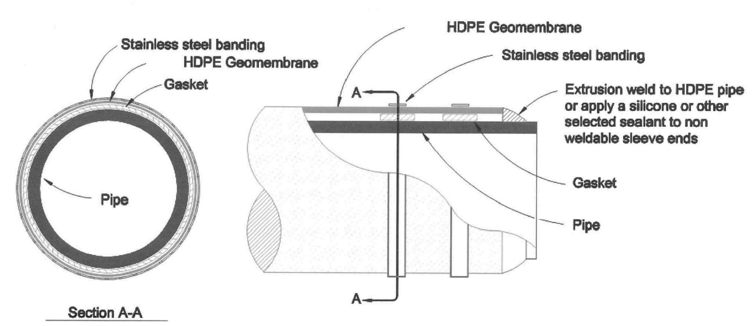
MUNICIPAL, COUNTY, STATE AND MUA DETAILS TO SUPERCEDE DYNAMIC ENGINEERING DETAILS WHERE APPLICABLE



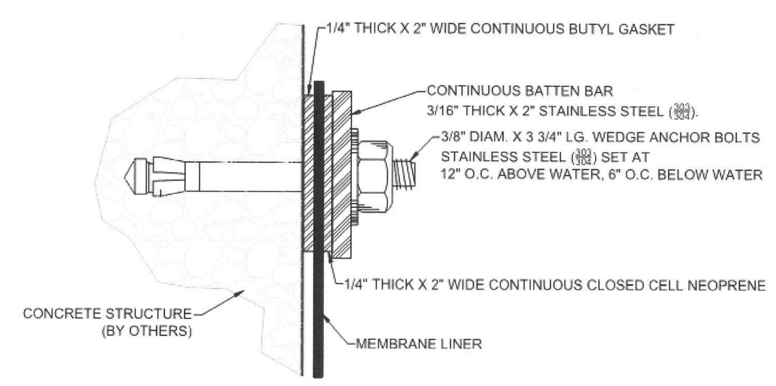
TYPICAL SLOPE PENETRATION DETAIL
NOT TO SCALE
NOTE: DETAIL DEPICTED WAS OBTAINED FROM ATLANTIC LINING CO., INC.



RAIN GARDEN LINER DETAIL
NOT TO SCALE

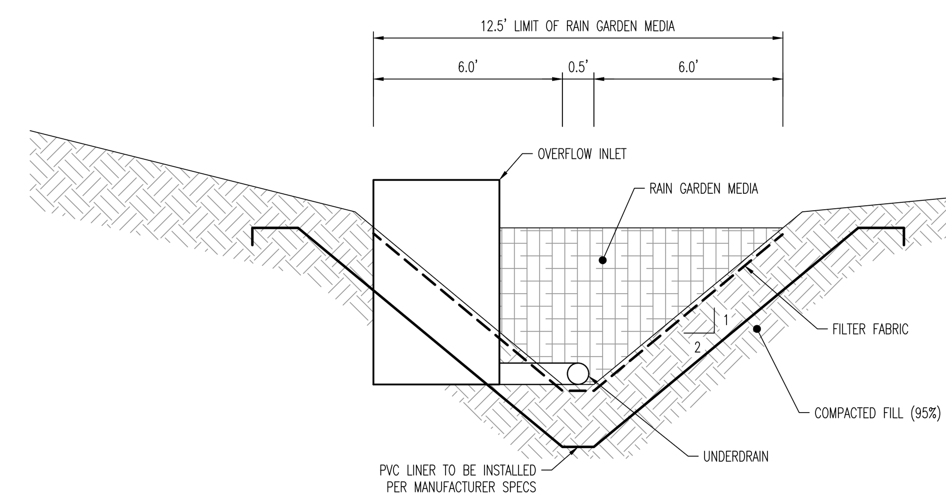


PIPE PENETRATION DETAIL
NOT TO SCALE
NOTE: DETAIL DEPICTED WAS OBTAINED FROM ATLANTIC LINING CO., INC.

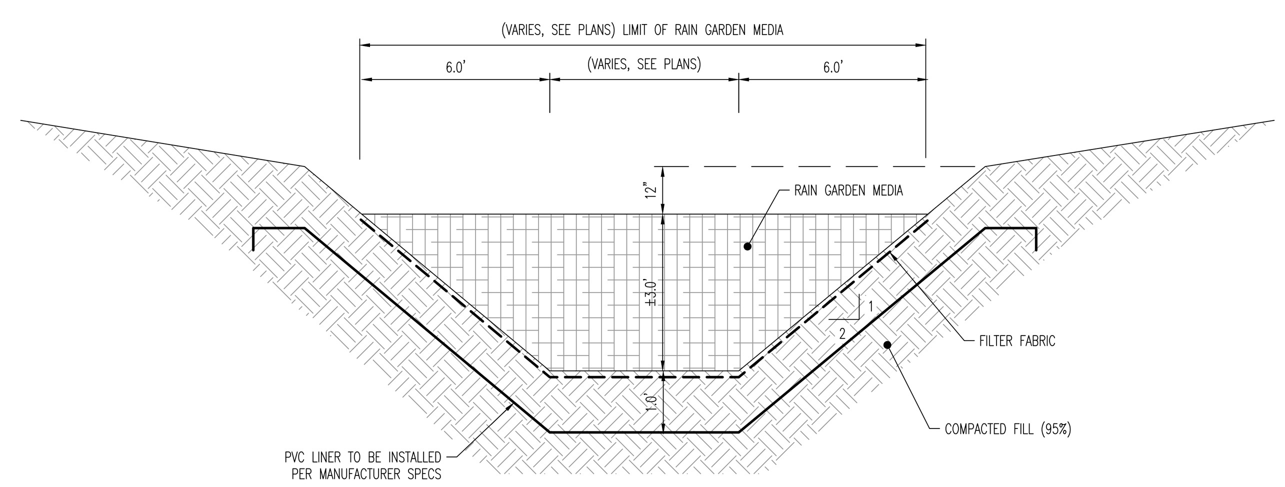


BATTEN DETAIL
NOT TO SCALE
NOTE: DETAIL DEPICTED WAS OBTAINED FROM ATLANTIC LINING CO., INC.

RAIN GARDEN LINER DETAILS
NOT TO SCALE

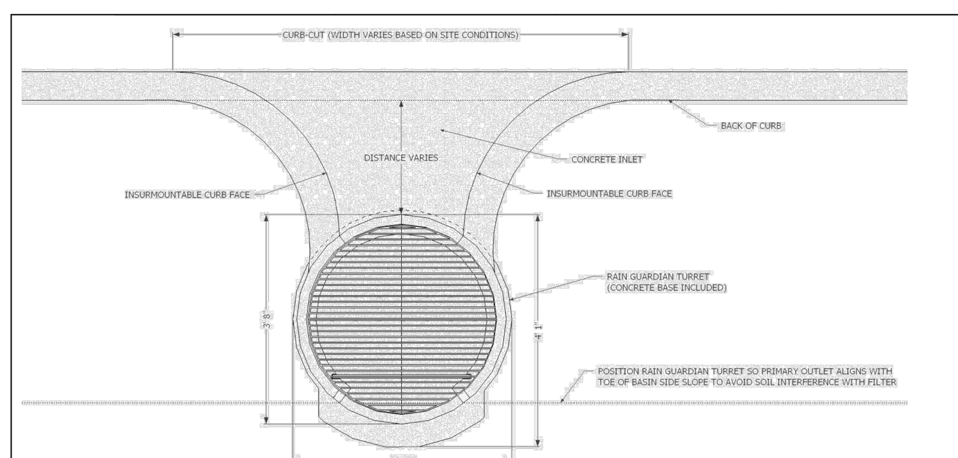


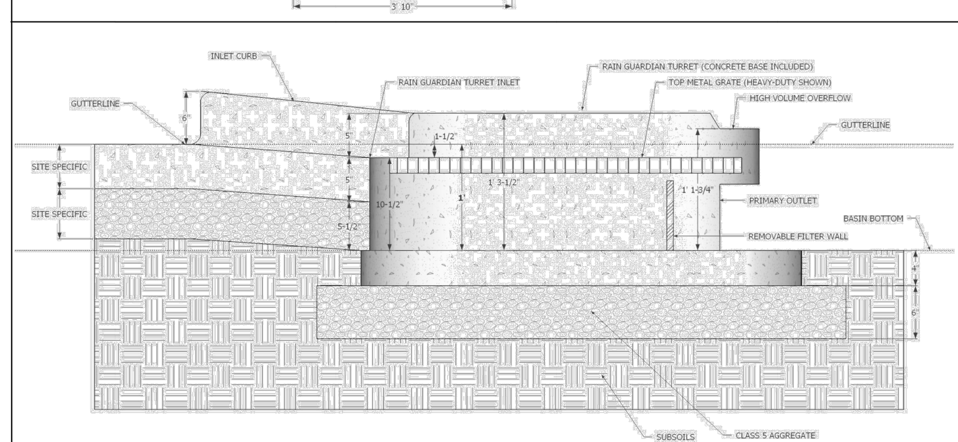
TYPICAL RAIN GARDEN SECTION A-A
NOT TO SCALE



TYPICAL RAIN GARDEN SECTION B-B
NOT TO SCALE

NOTE:
1. ALL STRUCTURAL SITE CONCRETE SHALL BE 4,500 PSI AIR ENTRAINED.
2. VIBRATORY CONSOLIDATION SHALL BE PROVIDED FOR SUCH ITEMS AS BOLLARDS AND FOOTINGS AND/OR AT THE DIRECTION OF THE TOWN ENGINEER.

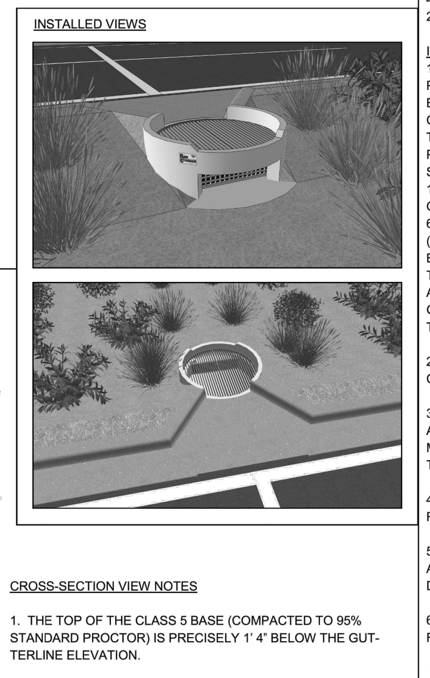




PLAN VIEW NOTES

1. INLET WIDTH AND DISTANCE BETWEEN BACK OF CURB AND RAIN GUARDIAN TURRET MAY VARY WITH SITE CONDITIONS.
2. CONCRETE BASE EXTENDS BEYOND THE FILTER WALL OF THE RAIN GUARDIAN TURRET TO SERVE AS A SPLASH DISSIPATOR.

INSTALLED VIEWS



CROSS-SECTION VIEW NOTES

1. THE TOP OF THE CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR) IS PRECISELY 1' 4" BELOW THE GUTTERLINE ELEVATION.

SPECIFICATIONS
1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (1,030 LBS). CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME). MANUFACTURED AND DESIGNED TO ASTM C858.
2. THREE-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
3. TWO-PIECE LIGHT-DUTY GALVANIZED GRATE (34.5 LBS/PIECE) FOR 541 LB CONCENTRATED LOAD OR 309 LB/SQ FT UNIFORM LOAD.
4. TWO-PIECE HEAVY-DUTY GALVANIZED GRATE (77.5 LBS/PIECE) FOR 2,456 LB CONCENTRATED LOAD OR 1,404 LB/SQ FT UNIFORM LOAD.

INSTALLATION NOTES
1. INSTALL THE CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR). THE DISTANCE FROM THE BACK OF THE CURB MAY VARY BASED ON SITE CONDITIONS, BUT CONSIDERATIONS SHOULD INCLUDE SLOPE OF THE INLET AND BASIN SIDE SLOPES ADJACENT TO THE RAIN GUARDIAN TURRET. POSITION RAIN GUARDIAN TURRET SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE TO AVOID SOIL INTERFERENCE WITH REMOVABLE FILTER WALL. EXCAVATE 1' 10" BELOW THE GUTTERLINE ELEVATION (I.E. THE BIORETENTION OVERFLOW ELEVATION) TO ACCOMMODATE THE 1' PONDING DEPTH, 6" CLASS 5 AGGREGATE, AND 4" RAIN GUARDIAN TURRET BASE (INCLUDED). THEREFORE, THE TOP OF THE CLASS 5 COMPACTED BASE IS PRECISELY 1' 4" BELOW THE GUTTERLINE ELEVATION. THE TOP OF THE RAIN GUARDIAN TURRET METAL GRATE WILL BE 10-1/2" ABOVE THE TOP OF THE CONCRETE BASE AND 1-1/2" BELOW THE GUTTERLINE ELEVATION TO ACCOMMODATE A SLOPED INLET FROM THE GUTTER TO THE RAIN GUARDIAN TURRET.

2. THE RAIN GUARDIAN TURRET SHOULD BE SET ON THE PREPARED CLASS 5 BASE.

3. INSTALL FRAMING FOR INLET BETWEEN RAIN GUARDIAN TURRET AND BACK OF CURB. TOP ELEVATIONS OF THE FRAMING SHOULD MATCH THE TOP OF THE CURB ON THE STREET SIDE AND THE TOP OF THE RAIN GUARDIAN TURRET ON THE BIORETENTION SIDE.

4. USE EXPANSION JOINT MATERIAL BETWEEN RAIN GUARDIAN TURRET AND BIORETENTION INLET.

5. SIDE CURBS OF THE POURED INLET MUST HAVE AN INSURMOUNTABLE PROFILE TO PREVENT WATER FLOW FROM OVERTOPPING THE DOWNSTREAM SIDE OF THE INLET.

6. REMOVABLE FILTER WALL SHOULD BE INSTALLED WITH FILTER FABRIC FACING THE RAIN GUARDIAN TURRET INLET.

MANUFACTURED BY:
Cretex Concrete Products

RAIN GUARDIAN
PRETREATMENT FOR BIORETENTION
Rain Gardens • Swales • Filtration Basins • Infiltration Basins
www.RainGuardian.biz

RAIN GUARDIAN TURRET
PRETREATMENT CHAMBER
BIORETENTION PONDING DEPTH: 1'
TYPICAL DETAIL

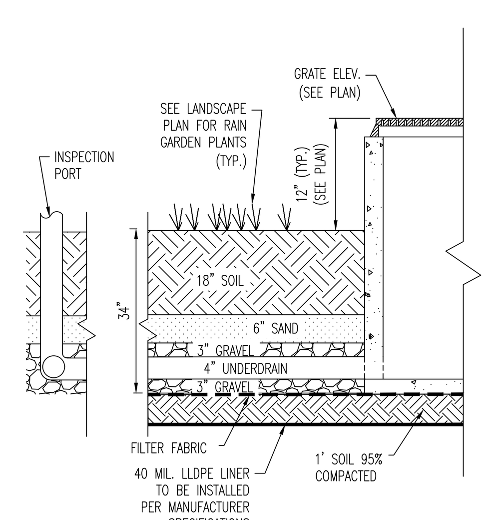
REVISION HISTORY			
REV	BY	DATE	DESCRIPTION
A	MDH	12/1/15	TURRET—1'
SCALE	VARIABLE		
U.S. PATENT	8,501,016		

Anoka Conservation District
1318 McKay Dr. NE, Suite 300
Ham Lake, MN 55304
763-434-2030

RAIN GUARDIAN TURRET DETAIL
NOT TO SCALE

RAIN GARDEN GENERAL NOTES:

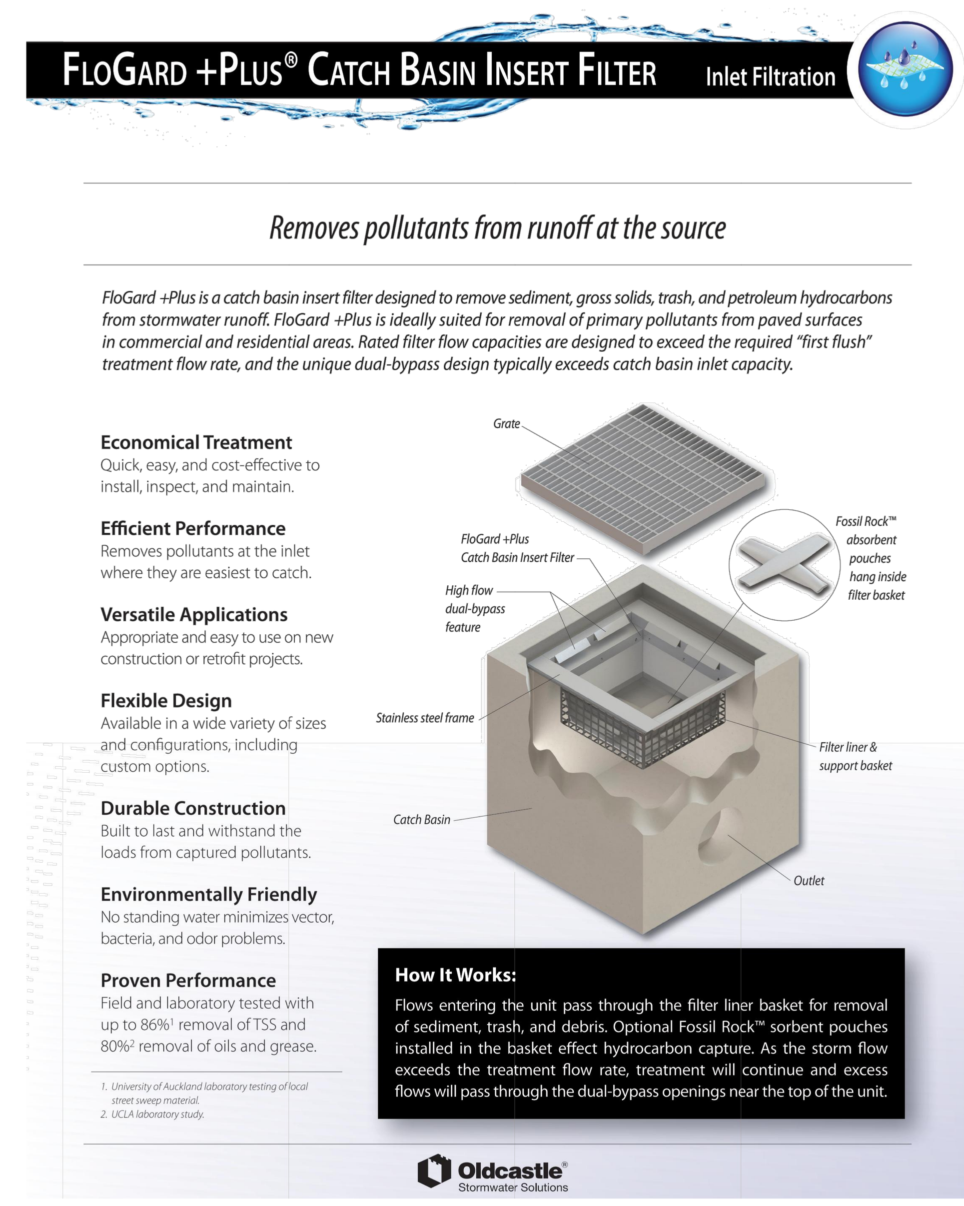
1. SOIL BED MUST BE A MINIMUM OF 18 INCHES IN DEPTH AND CONSISTS OF THE FOLLOWING MIX, BY WEIGHT:
   - -85 TO 95% SAND, WITH NO MORE THAN 25% OF SAND AS FINE OR VERY FINE SANDS.
   - -NO MORE THAN 15% SILT AND CLAY WITH 2% TO 5% CLAY CONTENT.
   - -ENTIRE MIX MUST THEN BE AMENDED WITH 3 TO 7% ORGANICS BY WEIGHT.
   - -MINIMUM PERMEABILITY OF SOIL BED 8 INCHES/HR (4 IN/HR DESIGN).
2. PRE-MIXED SOIL MUST BE CERTIFIED BY VENDOR OR PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY TO MEET THE REQUIREMENTS ON NOTE 1 ABOVE.
3. THE PH OF THE SOIL BED MATERIAL MUST RANGE FROM 5.5 TO 6.5.
4. MATERIAL MUST BE PLACED IN LIFTS NOT TO EXCEED 8 INCHES. ADDITIONAL MATERIAL MAY BE REQUIRED TO ACCOUNT FOR SETTLING OVER TIME.
5. FILTER FABRIC IS REQUIRED ALONG THE SIDES AND THE BOTTOM. ADDITIONAL LOCATIONS MAY BE REQUIRED BASED ON DETAIL.
6. SAND LAYER MUST BE 6 INCHES IN DEPTH AND MUST CONSIST OF CLEAN MEDIUM – AGGREGATE CONCRETE SAND (AASHTO M-6/ASTM C-33). MINIMUM PERMEABILITY RATE SHOULD BE TWICE THE DESIGN PERMEABILITY RATE OF SOIL BED.
7. GRAVEL LAYER MUST CONSIST OF 0.5 TO 1.5 INCHES CLEAN, BROKEN STONE OR PEA GRAVEL (AASHTO M-43) PERMEABILITY RATE SHOULD BE TWICE THE DESIGN PERMEABILITY RATE OF SAND LAYER.
8. INSPECTION PORTS MUST BE LOCATED AT UPSTREAM ENDS OF THE PERFORATED UNDERDRAIN.



LLDPE RAIN GARDEN LINER GENERAL NOTES:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE RAIN GARDEN LINER, FOR ENGINEER'S APPROVAL, SHOWING THE PROPOSED PANEL LAYOUT IDENTIFYING SEAMS AND DETAILS. SEAMS SHOULD GENERALLY FOLLOW THE DIRECTION OF THE SLOPE. BUTT SEAMS OR ROLL-END SEAMS SHOULD NOT OCCUR ON A SLOPE UNLESS APPROVED BY THE OWNER'S REPRESENTATIVE. BUTT SEAMS ON A SLOPE, IF ALLOWED, SHOULD BE STAGGERED.
2. THE GEOMEMBRANE SHALL BE INSTALLED TO THE LIMITS SHOWN ON THE PROJECT DRAWINGS AND AS SHOWN ON APPROVED PANEL LAYOUT DRAWINGS. TEXTURED LINER SHALL BE INSTALLED ON ALL SLOPES EXCEEDING 6 HORIZONTAL TO 1 VERTICAL. SMOOTH LINER SHALL BE INSTALLED IN ALL OTHER AREAS.
3. GEOMEMBRANE SHALL BE INSTALLED ON AN APPROVED SUBGRADE CONSISTING OF SMOOTH COMPACT SOILS FREE FROM FOREIGN DEBRIS AND SHARP ROCK. A MINIMUM 9-INCH THICK SOIL CUSHION LAYER SHALL BE PROVED BETWEEN ALL DECOMPOSED ROCK AND ROCK.
4. NO VEHICULAR TRAFFIC SHALL TRAVEL ON THE GEOMEMBRANE OTHER THAN AN APPROVED LOW GROUND PRESSURE VEHICLE OR EQUIVALENT.
5. SAND BAGS OR EQUIVALENT BALLAST SHALL BE USED AS NECESSARY TO TEMPORARILY HOLD THE GEOMEMBRANE MATERIAL IN POSITION UNDER THE FORESEEABLE AND REASONABLY – EXPECTED WIND CONDITIONS. SAND BAG MATERIAL SHALL BE SUFFICIENTLY CLOSE-KNIT TO PREVENT SOIL FINES FROM WORKING THROUGH THE BAGS AND DISCHARGING ON THE GEOMEMBRANE.
6. GEOMEMBRANE PLACEMENT SHALL NOT BE DONE IF MOISTURE PREVENTS PROPER SUBGRADE PREPARATION, PANEL PLACEMENT, OR PANEL SEAMING. MOISTURE LIMITATIONS SHOULD BE DEFINED IN THE PRECONSTRUCTION MEETING.
7. DAMAGED PANELS OR PORTIONS OF THE DAMAGED PANELS WHICH HAVE BEEN REJECTED SHALL BE MARKED AND THEIR REMOVAL FROM THE WORK AREA RECORDED.
8. THE GEOMEMBRANE SHALL NOT BE ALLOWED TO "BRIDGE OVER" VOIDS OR LOW AREAS IN THE SUBGRADE. THE GEOMEMBRANE SHALL REST IN INTIMATE CONTACT WITH THE SUBGRADE.
9. NO GEOMEMBRANE MATERIAL SHALL BE SEAMED WHEN LINER TEMPERATURES ARE LESS THAN 32 DEGREES F.
10. NO GEOMEMBRANE MATERIAL SHALL BE SEAMED WHEN THE SHEET TEMPERATURE IS ABOVE 170 DEGREES F, AS MEASURED BY AN INFRARED THERMOMETER OR SURFACE THERMOCOUPLE.
11. SEAMING SHALL PRIMARILY BE PERFORMED USING AUTOMATIC FUSION WELDING EQUIPMENT AND TECHNIQUES, EXTRUSION WELDING SHALL BE USED WHERE FUSION WELDING IS NOT POSSIBLE SUCH AS AT PIPE PENETRATIONS, PATCHES, REPAIRS AND SHORT (LESS THAN A ROLL WIDTH) RUNS OF SEAMS.
12. SEAL ALL PENETRATIONS THROUGH LINER. PENETRATIONS SHALL BE CONSTRUCTED FROM THE BASE GEOMEMBRANE MATERIAL, FLAT STOCK OR PREFABRICATED BOOTS. THE PREFABRICATED OR FIELD ASSEMBLY SHALL BE FIELD WELDED TO THE PRIMARY GEOMEMBRANE AS TO PREVENT LEAKAGE.
13. THE GEOMEMBRANE SHALL CONSIST OF NEW, FIRST QUALITY PRODUCTS DESIGNED AND MANUFACTURED SPECIFICALLY FOR THE PURPOSE OF THIS WORK WHICH SHALL HAVE BEEN SATISFACTORILY DEMONSTRATED BY PRIOR TESTING SUITABLE AND DURABLE FOR SUCH PURPOSES. THE GEOMEMBRANE ROLLS SHALL BE SEAMLESS, 40-MIL, LINEAR LOW-DENSITY POLYETHYLENE (LLDPE – FORMULATED SHEET DENSITY ≤ 0.939 G/CC) CONTAINING NO PLASTICIZERS, FILLERS OR EXTENDERS AND SHALL BE FREE OF HOLES, BLISTERS OR CONTAMINANTS, AND LEAK FREE VERIFIED BY 100% IN LINE SPARK OR EQUIVALENT TESTING. THE GEOMEMBRANE SHALL BE SUPPLIED AS A CONTINUOUS SHEET WITH NO FACTORY SEAMS IN ROLLS. THE GEOMEMBRANE WILL MEET THE PROPERTY REQUIREMENTS AS SHOWN IN GRI GM17, TABLES 1(A) AND 2(A).
14. ALL TEXTURED LINERS SHALL HAVE A MINIMUM INTERFACE FRICTION ANGLE OF 27 DEGREES WITH THE SUBGRADE AND FILL SOILS.

RAIN GARDEN SECTION DETAIL
NOT TO SCALE



FLOGARD +PLUS® CATCH BASIN INSERT FILTER Inlet Filtration

Removes pollutants from runoff at the source

FloGard +Plus is a catch basin insert filter designed to remove sediment, gross solids, trash, and petroleum hydrocarbons from stormwater runoff. FloGard +Plus is ideally suited for removal of primary pollutants from paved surfaces in commercial and residential areas. Rated filter flow capacities are designed to exceed the required "first flush" treatment flow rate, and the unique dual-bypass design typically exceeds catch basin inlet capacity.

Economical Treatment
Quick, easy, and cost-effective to install, inspect, and maintain.

Efficient Performance
Removes pollutants at the inlet where they are easiest to catch.

Versatile Applications
Appropriate and easy to use on new construction or retrofit projects.

Flexible Design
Available in a wide variety of sizes and configurations, including custom options.

Durable Construction
Built to last and withstand the loads from captured pollutants.

Environmentally Friendly
No standing water minimizes vector, bacteria, and odor problems.

Proven Performance
Field and laboratory tested with up to 86%[1] removal of TSS and 80%[2] removal of oils and grease.

1. University of Auckland laboratory testing of local street sweep material.
2. UCLA laboratory study.

How It Works:
Flows entering the unit pass through the filter liner basket for removal of sediment, trash, and debris. Optional Fossil Rock™ sorbent pouches installed in the basket effect hydrocarbon capture. As the storm flow exceeds the treatment flow rate, treatment will continue and excess flows will pass through the dual-bypass openings near the top of the unit.

Oldcastle® Stormwater Solutions

CATCH BASIN INSERT FILTER DETAIL
NOT TO SCALE

DYNAMIC • ENGINEERING • EARTH • SURVEY • TRAFFIC

REV.	DATE	COMMENTS	BY

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

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DESIGNED BY: WB
CHECKED BY: WB
CHECKED BY: –

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PROPOSED BRIDGE POINT 78
TOWN OF PHILLIPSBURG & TOWNSHIP OF LOPATCONG
WARREN COUNTY, NEW JERSEY
BRIDGE

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JOSEPH G. JAWORSKI
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 36618

TITLE:
CONSTRUCTION DETAILS

SCALE: (H) AS (V) SHOWN
DATE: 06/09/2021
PROJECT No: 1313-99-026

SHEET No: 34 OF 34
Rev. #: 0

Plotted: 06/09/21 – 8:41 PM, By: jgerdes
File: P:\DEPC PROJECTS\1313 Bridge Development Partners, LLC\99-026 Phillipsburg – Road Blvd\Dwg\Site Plans Amended\D131399026SD00.dwg, ---> 34 CONSTRUCTION DETAILS