

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 4F – Cornerstone Creek Project – Golden Valley
BCWMC September 17, 2015 Meeting Agenda
Date: September 9, 2015
Project: 23270051 2015 2058

4F Cornerstone Creek Project – Golden Valley

Summary:

Proposed Work: Demolition of two existing single family homes and construction of a multi-residential building

Basis for Commission Review: Use of underground storage for stormwater treatment

Impervious Surface Area: Increase 0.95 acres

Recommendation: Conditional approval

General Background & Comments

The proposed project includes demolition of two existing single family homes for the construction of a new multi-story residential building and installation of an underground stormwater treatment system. The project is in the Bassett Creek Main Stem subwatershed at 9300 and 9310 Golden Valley Road (near the northeast quadrant of the intersection of State Highway 55 and Interstate 169). The project site is 2.25 acres. The proposed project results in an increase of 0.95 acres of impervious surface and a total proposed impervious area of 1.26 acres.

Floodplain

The project does not involve work in the Bassett Creek floodplain.

Wetlands

The project does not involve work in wetlands. The City of Golden Valley is the LGU for administering the Minnesota Wetland Conservation Act of 1991.

Stormwater Management

Although the project results in a change of land use from single residential to multiple residential, Figure 5 in the Watershed Management Plan (September 2004) allows impervious coverage consistent with multiple residential land use. Under existing conditions a portion of the site drains south to Golden Valley Road and a portion of the site drains to a vegetated area to the north. Under proposed conditions the majority of the site will be routed to an underground stormwater management system in the southern portion of the site which will discharge to the south to the existing storm sewer system in Golden Valley Road.

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 4F – Cornerstone Creek Project – Golden Valley
Date: September 9, 2015
Page: 2
Project: 23270051 2015 2058

Water Quality Management

There is currently no water quality treatment provided on the site. Because the project is a residential development, the parcel size is greater than two acres, and the development contains four or more proposed living units, the project must meet the BCWMC's Level I water quality treatment requirements. An underground StormTech chamber is proposed to provide water quality treatment on site for the development. Sump manholes will be used to provide pretreatment.

Erosion and Sediment Control

Since the area to be graded is greater than 10,000 square feet, the proposed project must meet the BCWMC erosion control requirements. Proposed temporary erosion control features include silt fence a rock construction entrance, and temporary erosion control blanket.

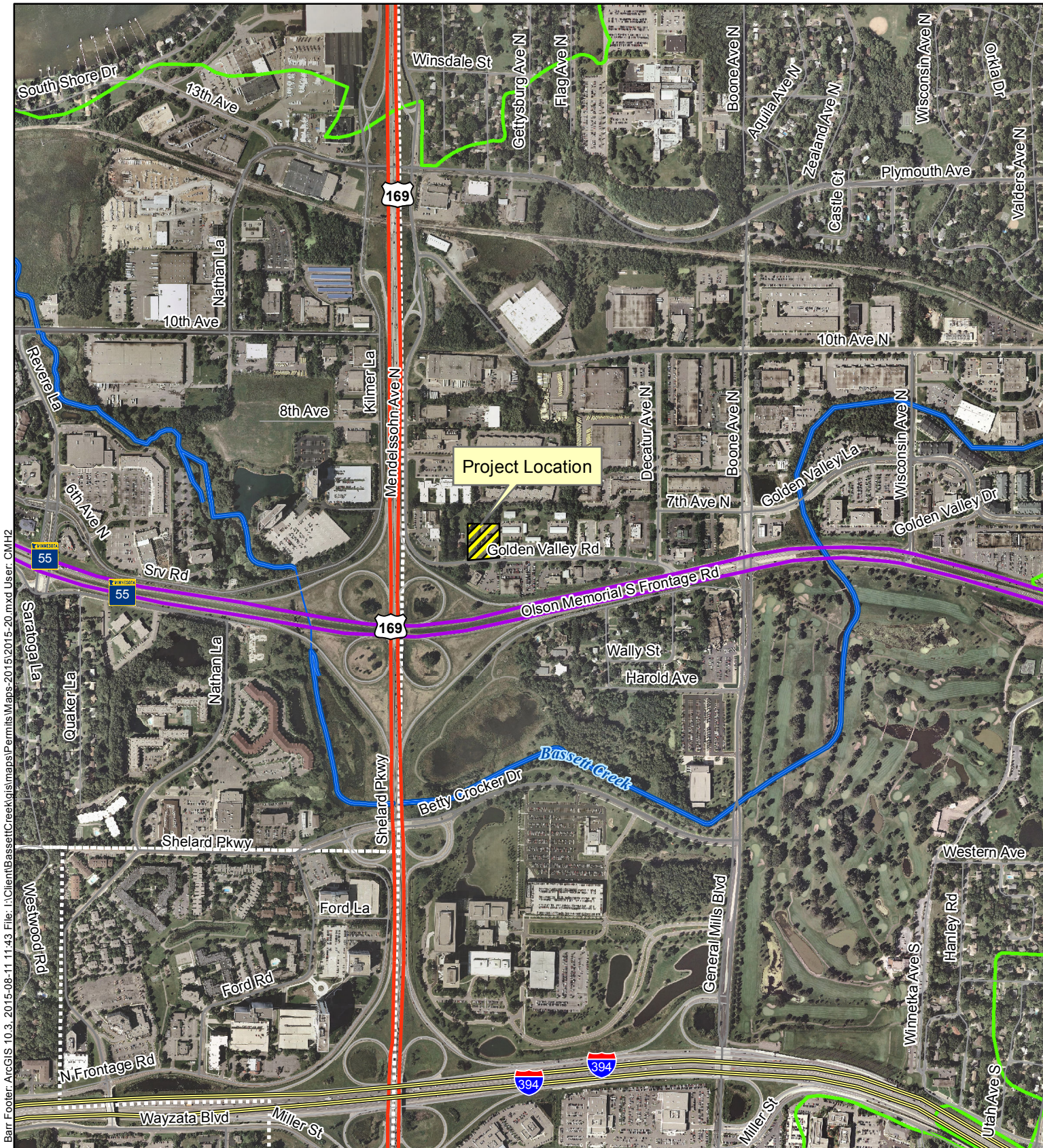
Recommendation

Conditional approval based on the following comments:

1. Due to the size of the site, intermediate silt fence may be necessary for effective erosion control depending on the phasing and area disturbed during construction.
2. The silt fence for the select site demolition should be continuous with the construction entrance such that sediment laden water cannot leave the site between the construction entrance and the silt fence.
3. Silt fence or other perimeter control (including a construction entrance with a berm) should be continuous across the site entrances such that sediment laden water cannot leave the site between the construction entrance and the silt fence.
4. Inlet protection should be shown for CB6.
5. The construction entrance must have a berm with a minimum height of 2 feet above the adjacent roadway and with maximum side slopes of 4:1.
6. The following erosion control notes should be added to the plans:
 - All exposed soil areas must be stabilized as soon as possible, but in no case later than 7 days after the construction activity has temporarily or permanently ceased (the project is within 1 mile of Bassett Creek).
 - A temporary vegetative cover consisting of a suitable, fast-growing, dense grass-seed mix spread at 1.5 times the usual rate per acre must be specified. If temporary cover is to remain in place beyond the present growing season, two-thirds of the seed mix shall be composed of perennial grasses.
7. The design assumes Type B soils with 0.8 inches/hour infiltration rate. This review assumes that the soil borings referenced on Sheet C100 reflect the infiltration rate used in design.







To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 4F – Cornerstone Creek Project – Golden Valley
Date: September 9, 2015
Page: 3
Project: 23270051 2015 2058

8. The seasonally high water table must be far enough below the bottom of the Stormtech system to allow the system to function hydraulically and to allow trapping and treatment of pollutants by the soil. The seasonally high groundwater table is recommended to be at least 3 feet from the bottom of the Stormtech system cross section.
9. A maintenance agreement for the StormTech system must be developed between the owner and the City of Golden Valley.
10. Revised drawings must be provided to the BCWMC Engineer for final review and approval.



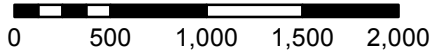
Barr Footer: ArcGIS 10.3, 2015-08-11 11:43 File: I:\Client\BassettCreek\gis\maps\Permits\Maps-2015-2015-20.mxd User: CMH2

Imagery Source: Aerial Express (2009)

-  Project Location
-  Bassett Creek
-  WMC Boundary
-  Major Subwatershed
-  Municipality
-  Stream



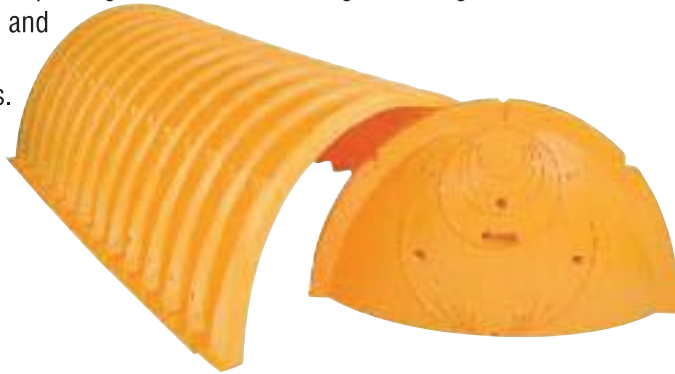
Feet



**LOCATION MAP
APPLICATION 2015-27
Cornerstone Creek
Golden Valley, MN**

StormTech SC-740 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots thus maximizing land usage for commercial and municipal applications.



StormTech SC-740 Chamber (not to scale)

Nominal Chamber Specifications

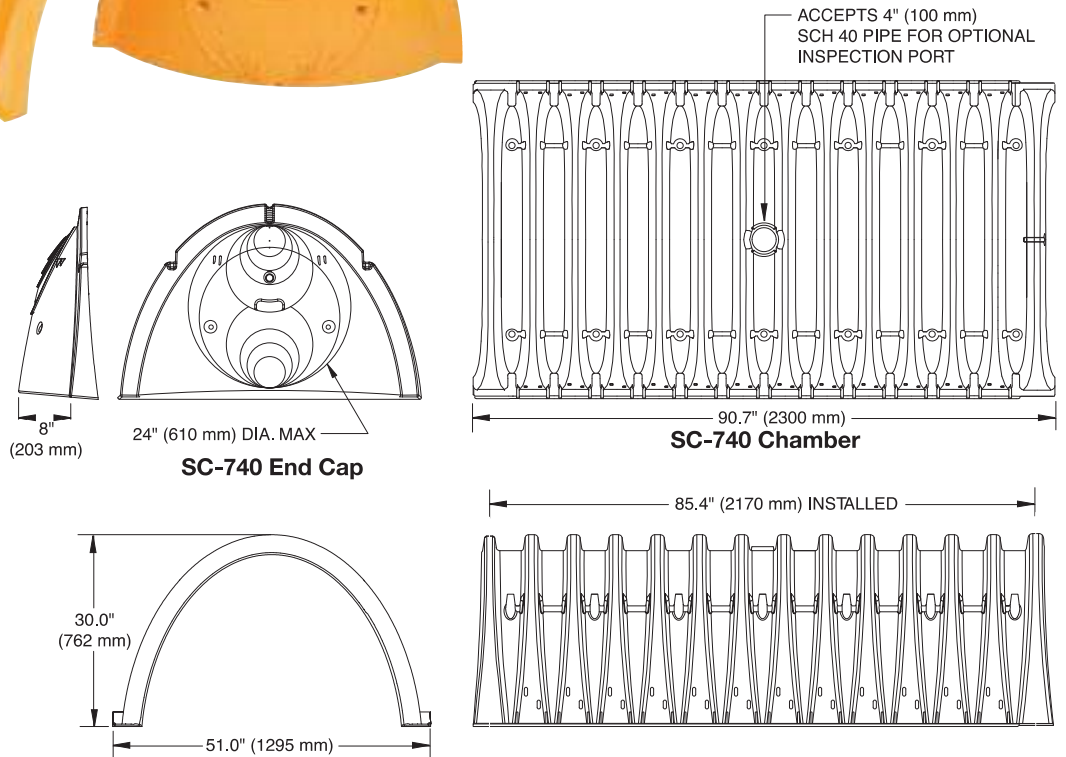
Size (L x W x H)
85.4" x 51.0" x 30.0"
(2170 x 1295 x 762 mm)

Chamber Storage
45.9 ft³ (1.30 m³)

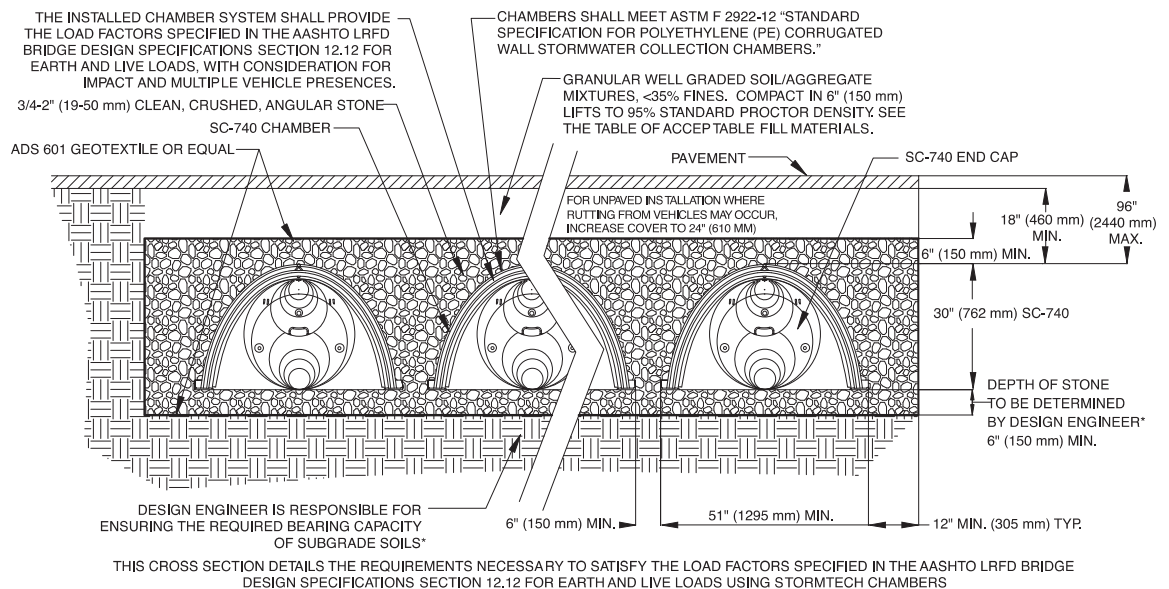
Minimum Installed Storage*
74.9 ft³ (2.12 m³)

Weight
74.0 lbs (33.6 kg)

Shipping
30 chambers/pallet
60 end caps/pallet
12 pallets/truck



Typical Cross Section Detail (not to scale)



SC-740 Cumulative Storage Volumes Per Chamber

Assumes 40% Stone Porosity. Calculations are Based Upon a 6" (152 mm) Stone Base Under the Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage Ft ³ (m ³)	Total System Cumulative Storage Ft ³ (m ³)
42 (1067)	45.90 (1.300)	74.90 (2.121)
41 (1041)	45.90 (1.300)	73.77 (2.089)
40 (1016)	Stone 45.90 (1.300)	72.64 (2.057)
39 (991)	Cover 45.90 (1.300)	71.52 (2.025)
38 (965)	45.90 (1.300)	70.39 (1.993)
37 (948)	45.90 (1.300)	69.26 (1.961)
36 (914)	45.90 (1.300)	68.14 (1.929)
35 (889)	45.85 (1.298)	66.98 (1.897)
34 (864)	45.69 (1.294)	65.75 (1.862)
33 (838)	45.41 (1.286)	64.46 (1.825)
32 (813)	44.81 (1.269)	62.97 (1.783)
31 (787)	44.01 (1.246)	61.36 (1.737)
30 (762)	43.06 (1.219)	59.66 (1.689)
29 (737)	41.98 (1.189)	57.89 (1.639)
28 (711)	40.80 (1.155)	56.05 (1.587)
27 (686)	39.54 (1.120)	54.17 (1.534)
26 (660)	38.18 (1.081)	52.23 (1.479)
25 (635)	36.74 (1.040)	50.23 (1.422)
24 (610)	35.22 (0.977)	48.19 (1.365)
23 (584)	33.64 (0.953)	46.11 (1.306)
22 (559)	31.99 (0.906)	44.00 (1.246)
21 (533)	30.29 (0.858)	41.85 (1.185)
20 (508)	28.54 (0.808)	39.67 (1.123)
19 (483)	26.74 (0.757)	37.47 (1.061)
18 (457)	24.89 (0.705)	35.23 (0.997)
17 (432)	23.00 (0.651)	32.96 (0.939)
16 (406)	21.06 (0.596)	30.68 (0.869)
15 (381)	19.09 (0.541)	28.36 (0.803)
14 (356)	17.08 (0.484)	26.03 (0.737)
13 (330)	15.04 (0.426)	23.68 (0.670)
12 (305)	12.97 (0.367)	21.31 (0.608)
11 (279)	10.87 (0.309)	18.92 (0.535)
10 (254)	8.74 (0.247)	16.51 (0.468)
9 (229)	6.58 (0.186)	14.09 (0.399)
8 (203)	4.41 (0.125)	11.66 (0.330)
7 (178)	2.21 (0.063)	9.21 (0.264)
6 (152)	0	6.76 (0.191)
5 (127)	0	5.63 (0.160)
4 (102)	Stone Foundation 0	4.51 (0.125)
3 (76)	0	3.38 (0.095)
2 (51)	0	2.25 (0.064)
1 (25)	0	1.13 (0.032)

Note: Add 1.13 cu. ft. (0.032 m³) of storage for each additional inch (25 mm) of stone foundation.

Storage Volume Per Chamber

	Bare Chamber Storage ft ³ (m ³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (305)	18 (460)
StormTech SC-740	45.9 (1.3)	74.9 (2.1)	81.7 (2.3)	88.4 (2.5)

Note: Storage volumes are in cubic feet per chamber. Assumes 40% porosity for the stone plus the chamber volume.

Amount of Stone Per Chamber

ENGLISH TONS (CUBIC YARDS)	Stone Foundation Depth		
	6"	12"	18"
StormTech SC-740	3.8 (2.8 yd ³)	4.6 (3.3 yd ³)	5.5 (3.9 yd ³)
METRIC KILOGRAMS (METER ³)	150 mm	305 mm	460 mm
StormTech SC-740	3450 (2.1 m ³)	4170 (2.5 m ³)	4490 (3.0 m ³)

Note: Assumes 6" (150 mm) of stone above, and between chambers.

Volume of Excavation Per Chamber

	Stone Foundation Depth		
	6" (150 mm)	12" (305 mm)	18" (460 mm)
StormTech SC-740	5.5 (4.2)	6.2 (4.7)	6.8 (5.2)

Note: Volumes are in cubic yards (cubic meters) per chamber. Assumes 6" (150 mm) of separation between chamber rows and 18" (460 mm) of cover. The volume of excavation will vary as the depth of the cover increases.

STANDARD LIMITED WARRANTY OF STORMTECH LLC ("STORMTECH"): PRODUCTS

- (A) This Limited Warranty applies solely to the StormTech chambers and endplates manufactured by StormTech and sold to the original purchaser (the "Purchaser"). The chambers and endplates are collectively referred to as the "Products."
- (B) The structural integrity of the Products, when installed strictly in accordance with StormTech's written installation instructions at the time of installation, are warranted to the Purchaser against defective materials and workmanship for one (1) year from the date of purchase. Should a defect appear in the Limited Warranty period, the Purchaser shall provide StormTech with written notice of the alleged defect at StormTech's corporate headquarters within ten (10) days of the discovery of the defect. The notice shall describe the alleged defect in reasonable detail. StormTech agrees to supply replacements for those Products determined by StormTech to be defective and covered by this Limited Warranty. The supply of replacement products is the sole remedy of the Purchaser for breaches of this Limited Warranty. StormTech's liability specifically excludes the cost of removal and/or installation of the Products.
- (C) **THIS LIMITED WARRANTY IS EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.**
- (D) This Limited Warranty only applies to the Products when the Products are installed in a single layer. **UNDER NO CIRCUMSTANCES, SHALL THE PRODUCTS BE INSTALLED IN A MULTI-LAYER CONFIGURATION.**
- (E) No representative of StormTech has the authority to change this Limited Warranty in any manner or to extend this Limited Warranty. This Limited Warranty does not apply to any person other than to the Purchaser.
- (F) Under no circumstances shall StormTech be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the Products, or the cost of other goods or services related to the purchase and installation of the Products. For this Limited Warranty to apply, the Products must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and StormTech's written installation instructions.
- (G) **THE LIMITED WARRANTY DOES NOT EXTEND TO INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES. STORMTECH SHALL NOT BE LIABLE FOR PENALTIES OR LIQUIDATED DAMAGES, INCLUDING LOSS OF PRODUCTION AND PROFITS; LABOR AND MATERIALS; OVERHEAD COSTS; OR OTHER LOSS OR EXPENSE INCURRED BY THE PURCHASER OR ANY THIRD PARTY, SPECIFICALLY EXCLUDED FROM LIMITED WARRANTY COVERAGE ARE DAMAGE TO THE PRODUCTS ARISING FROM ORDINARY WEAR AND TEAR; ALTERATION, ACCIDENT, MISUSE, ABUSE OR NEGLIGENCE; THE PRODUCTS BEING SUBJECT TO VEHICLE TRAFFIC OR OTHER CONDITIONS WHICH ARE NOT PERMITTED BY STORMTECH'S WRITTEN SPECIFICATIONS OR INSTALLATION INSTRUCTIONS; FAILURE TO MAINTAIN THE MINIMUM GROUND COVERS SET FORTH IN THE INSTALLATION INSTRUCTIONS; THE PLACEMENT OF IMPROPER MATERIALS INTO THE PRODUCTS; FAILURE OF THE PRODUCTS DUE TO IMPROPER SITING OR IMPROPER SIZING; OR ANY OTHER EVENT NOT CAUSED BY STORMTECH. THIS LIMITED WARRANTY REPRESENTS STORMTECH'S SOLE LIABILITY TO THE PURCHASER FOR CLAIMS RELATED TO THE PRODUCTS, WHETHER THE CLAIM IS BASED UPON CONTRACT, TORT, OR OTHER LEGAL THEORY.**