DRAINAGE REPORT

Dine-In Market & Boutique Hotel
63 Wheeler Avenue
SBL 201-9-3
Village of Warwick, Orange County, NY

Prepared for:

John Contreras
12 Black Walnut Drive
Warwick, NY 10990

JOB # 220115

NOVEMBER 2023

MJS ENGINEERING

MJS Engineering & Land Surveying, PC
261 Greenwich Avenue
Goshen NY 10924
845-291-8650

Table of Contents:

Appendices:

Appendix A - Underground Infiltration System Calculations

Summary of Drainage Impacts:

The Western Addition LLC site has been designed to mitigate the impact of the development. A catch basin in the parking lot will convey water to a rain garden located SW of the building. The roof drains will be directed to an underground infiltration system located NE of the building. Analysis shows the flow will be adequately handled by the drainage infrastructure and will not negatively impact downstream properties and/or drainage systems.

Background:

The existing site does not feature a drainage system. The N side of the site drains NE towards McEwen Street. The S side of the site drains S towards West Street.

Hydrology:

For the roof, the hydrologic analysis method used is the Water Quality Volume (WQv) from the NYS Stormwater Management Design Manual (NYSSMDM). The design storm is the 90th Percentile Rainfall, from Figure 4.1 of the NYSSMDM. The WQv was calculated for the roof area, which drains to the underground infiltration system located NE of the building. This system was designed to infiltrate the Runoff Reduction Volume (RRv) from the roof area into the underlying soils. During large storm events, the system will overflow to the surface, NE of the underground infiltration system.

For the parking lot, the SW side of the lot is tributary to a catch basin. The catch basin flows to a rain garden, located SW of the building. The rain garden will infiltrate the stormwater into the underlying soils.

Storm Drainage Conveyance Systems:

A storm drainage system for the proposed parking lot will consist of 1 inlet structure on the SE side of the parking area. This will be piped to the rain garden with 12” diameter HDPE. A HDPE end section will be installed at the outlet into the rain garden.

The roof drains will flow to the underground infiltration system. The underground infiltration system will consist of ADS SC-740 Stormtech Chambers. The underground infiltration system will be installed off-line, with overflow directed NE of the system.

Erosion & Sediment Control & Stormwater Management:

The project will follow the Erosion & Sediment Control provided in New York State Standards for Erosion and Sediment Control. Refer to the Erosion & Sediment Control Plan.

References:

New York State Department of Environmental Conservation (NYSDEC),
(January 2015), New York State Stormwater Management Design Manual, Albany, NY

New York State Dept. of Environmental Conservation, (November 2016), Standards and Specifications for Erosion and Sediment Control, Albany, NY

Record Plans: C-1 Site Plan
C-2 Notes
C-3 Existing Conditions & Demolition Plan
C-4 Grading & Drainage Plan
C-5 Details
8 SC-740 Standard Details

APPENDIX A

UNDERGROUND INFILTRATION SYSTEM CALCULATIONS

MJS ENGINEERING
& LAND SURVEYING P.C.
261 Greenwich Avenue
GOSHEN, NY 10924-2028
(845) 291-8650
(845) 291-8657 FAX

JOB 220115.01
SHEET NO. 1 OF
CALCULATED BY BGC DATE 10/25/23
CHECKED BY DATE
SCALE

WESTERN ADDITION LLC
UNDERGROUND INFILTRATION
SIZE UNDERGROUND INFILTRATION TO INFILTRATE WQ_V (90TH PERCENTILE STORM)
P = 1.4" FROM NYSDEC STORMWATER MANUAL

$$WQ_V = \frac{1.4 \times (0.05 + 0.009(100) \times 0.114\ AC}{12} = 550\ CF$$

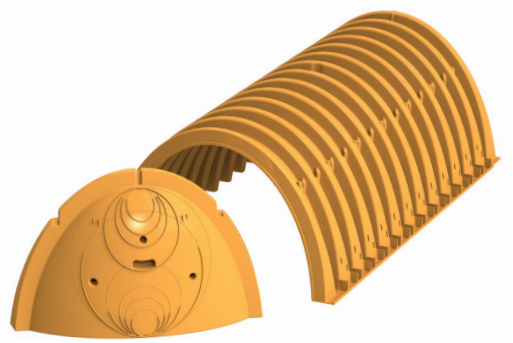
ROOF AREA = 4,959 SF = 0.114 AC

USE STORM TECH SC-740 CHAMBERS

$$\frac{550\ CF}{74.9\ CF/EA} = 7.4\ CHAMBERS \Rightarrow USE\ 8\ CHAMBERS$$

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 private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



Nominal Chamber Specifications
(not to scale)

Size (L x W x H)
85.4" x 51" x 30"
2,170 mm x 1,295 mm x 762 mm

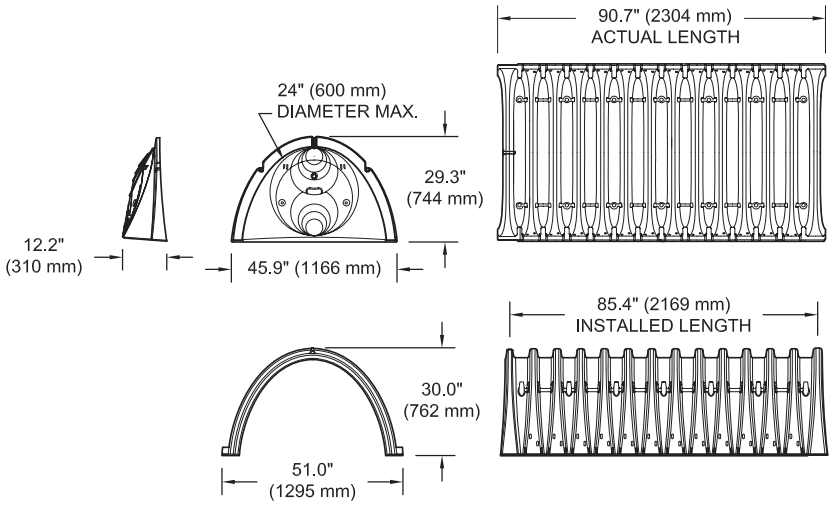
Chamber Storage
45.9 ft³ (1.30 m³)

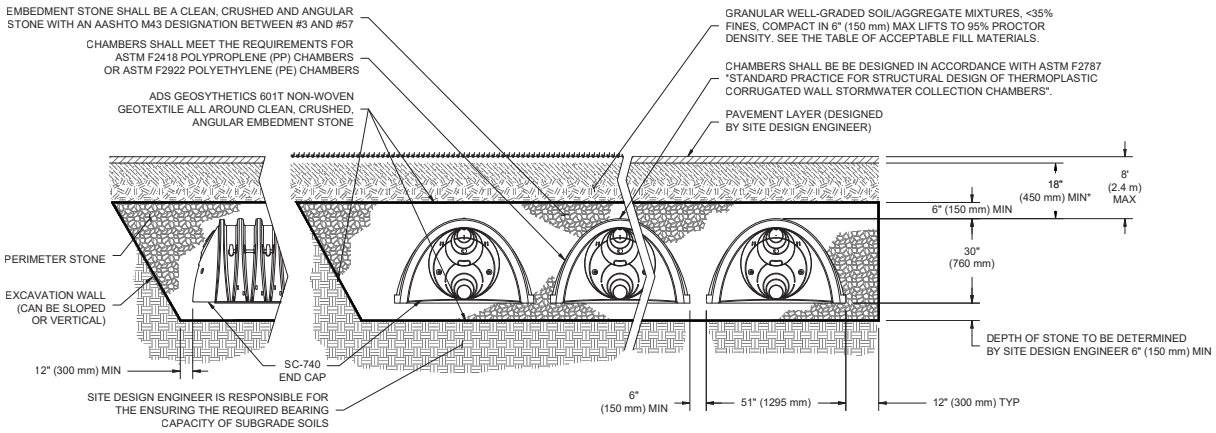
Min. Installed Storage*
74.9 ft³ (2.12 m³)

Weight
74.0 lbs (33.6 kg)

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

*Assumes 6" (150 mm) stone above, below and between chambers and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

ADS StormTech™

StormTech SC-740 Specifications

Cumulative Storage Volumes Per Chamber

Assumes 40% Stone Porosity. Calculations are Based Upon a 6” (150 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
42 (1067)	45.90 (1.300)	74.90 (2.121)
41 (1041)	45.90 (1.300)	73.77 (2.089)
40 (1016)	45.90 (1.300)	72.64 (2.057)
39 (991)	45.90 (1.300)	71.52 (2.025)
38 (965)	45.90 (1.300)	70.39 (1.993)
37 (940)	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)	1.85 (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 (0)	6.76 (0.191)
5 (127)	0 (0)	5.63 (0.160)
4 (102)	0 (0)	4.51 (0.128)
3 (76)	0 (0)	3.38 (0.096)
2 (51)	0 (0)	2.25 (0.064)
1 (25)	0 (0)	1.13 (0.032)

Stone Cover

Stone Foundation

Note: Add 1.13 ft³ (0.032 m³) of storage for each additional inch (25 mm) of stone foundation.

Storage Volume Per Chamber ft³ (m³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
SC-740 Chamber	45.9 (1.3)	74.9 (2.1)	81.7 (2.3)	88.4 (2.5)

Note: Assumes 6” (150 mm) stone above chambers, 6” (150 mm) row spacing and 40% stone porosity.

Amount of Stone Per Chamber

English Tons (yds³)	Stone Foundation Depth		
	6”	12”	16”
SC-740	3.8 (2.8)	4.6 (3.3)	5.5 (3.9)
Metric Kilograms (m³)	**150 mm**	**300 mm**	**450 mm**
SC-740	3,450 (2.1)	4,170 (2.5)	4,490 (3.0)

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

Volume Excavation Per Chamber yd³ (m³)

	Stone Foundation Depth		
	6 (150)	12 (300)	18 (450)
SC-740	5.5 (4.2)	6.2 (4.7)	6.8 (5.2)

Note: Assumes 6” (150 mm) of row separation and 18” (450 mm) of cover. The volume of excavation will vary as depth of cover increases.

ADS StormTech products, manufactured in accordance with ASTM F2418 or ASTMF2922, comply with all requirements in the Build America, Buy America (BABA) Act.

Working on a project?
Visit us at adspipe.com/stormtech and utilize the Design Tool

ADS StormTech™

adspipe.com
800-821-6710