

---

Project:	Self-Storage Facility	From:	Brad Johnson, EIT
Location:	387 Church Street, New Bedford, MA		Frank Holmes, PE
Project No.:	210801511	Date:	May 11, 2018

---

**Reference:** Self-Storage Facility - 387 Church Street: Stormwater Management System

BRK 1, LLC (Proponent) is proposing the conversion of an existing industrial building to a self-storage facility at 387 Church Street in New Bedford, Massachusetts (Project). Additionally, the Project will include the redevelopment of land outside the existing building footprint. This includes selective asphalt resurfacing, reconfigured parking areas, modified building entrances and loading bays, increased green space, and stormwater quality and quantity measures.

The existing site is developed as a 78,505-square foot industrial building with an impervious parking area. Impervious area accounts for approximately 92% of the site's current surface cover. Currently, the building's roof drain system conveys runoff directly to New Bedford storm drain infrastructure in Church Street. The majority of surface runoff flows southeast towards Church Street. A portion of this runoff is captured by a singular catch basin at the southeast corner of the property before discharging directly to New Bedford storm drain infrastructure in Church Street. Runoff not captured by this catch basin discharges overland to Church Street. An additional catch basin is located at the northeast corner of the property; however, this catch basin only captures surface runoff from the parcel of land directly north of the Project site. The site's existing storm drain infrastructure does not detain or treat stormwater runoff.

The proposed stormwater management system has been designed in accordance with the City of New Bedford's *Stormwater Management Rules and Regulations (City Standards)*. Section 3.2.B.12 of the *City Standards* states that "Redevelopment projects are presumed to meet the specified stormwater requirements described in the Stormwater Rules and Regulations of the City of New Bedford if...a combination of impervious area reduction and implementation of stormwater management practices...is equal to or exceeds 40%" from existing conditions. *City Standards* defines a redevelopment as "any construction, alteration, or improvement on land that contains existing impervious cover, including all projects requiring Planning Board Site Plan Review, and provided that the activity does not involve an increase in the net amount of impervious cover." Additionally, Section 3.2.B.13 of the *City Standards* states that redevelopment projects "retain the first one (1) inch of runoff from all impervious cover on site."

By altering and improving land that contains existing impervious cover and reducing the net amount of impervious cover, the Project meets the definition of a redevelopment. The Project reduces the amount of impervious parking and driveway area on site, thus reducing the total site impervious area, by 26%. This area is replaced by lawn, landscaped, and bioretention areas. The proposed stormwater management system, which includes two bioretention areas, controls and treats 26% of the site's proposed impervious area. The summation of these percentages exceeds 40%; therefore, the Project complies with Section 3.2.B.12 of the *City Standards*. Additionally, the Project retains a storage volume equal to product of one-inch times the site's remaining paved impervious areas; therefore, the Project complies with Section 3.2.B.13 of the *City Standards*.

Documents and calculations are attached to this memorandum and support the Project's compliance with *City Standards*.

Attachments:

1. Stormwater Management Summary
2. Stage-Area-Storage Tables for Bioretention Areas

Project: Self-Storage Facility  
387 Church Street, New Bedford, MA  
Calculation: Stormwater Management Summary

Author: Brad Johnson, EIT  
Checked: Frank Holmes, PE  
Date: May 11, 2018

## Stormwater Management Summary Table

<b>Total Lot Area (sf)</b>	<b>180,000</b>
<b>Existing Impervious Area (sf)</b>	<b>165,706</b>
<b>Proposed Impervious Area (sf)</b>	<b>123,398</b>
<b>Reduction in Impervious Area (sf)</b>	<b>42,308</b>
<b>Reduction in Impervious Area (%)</b>	<b>26%</b>
<b>Proposed Impervious Area Discharging to Bioretention Areas (sf)</b>	<b>31,528</b>
<b>Proposed Impervious Area Discharging to Bioretention Areas (%)</b>	<b>26%</b>
<b>Percent Impervious Area Reduction + Percent Impervious Area Treated</b>	<b>52%</b>
<b>Proposed Non-Roof Impervious Area x One-Inch (cf)</b>	<b>3,741</b>
<b>Storage Provided* - Bioretention Area 1 "BIO1" (cf)</b>	<b>3,714</b>
<b>Storage Provided* - Bioretention Area 2 "BIO2" (cf)</b>	<b>147</b>
<b>Cumulative Storage Provided (cf)</b>	<b>3,861</b>

\*Storage provided defined as volume below lowest outlet elevation. Refer to Grading and Drainage Plan for outlet elevations. Refer to Stage-Area-Storage tables for volume below outlet elevation.



**Stage-Area-Storage for Pond BIO1:**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
81.10	2,688	0	82.16	4,175	3,630
81.12	2,715	54	82.18	4,204	3,714
81.14	2,742	109	82.20	4,233	3,798
81.16	2,770	164	82.22	4,261	3,883
81.18	2,797	219	82.24	4,290	3,969
81.20	2,824	276	82.26	4,319	4,055
81.22	2,852	332	82.28	4,348	4,141
81.24	2,879	390	82.30	4,377	4,229
81.26	2,907	448	82.32	4,406	4,316
81.28	2,934	506	82.34	4,435	4,405
81.30	2,962	565	82.36	4,465	4,494
81.32	2,990	624	82.38	4,494	4,583
81.34	3,017	684	82.40	4,523	4,674
81.36	3,045	745	82.42	4,552	4,764
81.38	3,073	806	82.44	4,581	4,856
81.40	3,100	868	82.46	4,610	4,948
81.42	3,128	930	82.48	4,640	5,040
81.44	3,156	993	82.50	4,669	5,133
81.46	3,184	1,057	82.52	4,698	5,227
81.48	3,211	1,120	82.54	4,728	5,321
81.50	3,239	1,185	82.56	4,757	5,416
81.52	3,267	1,250	82.58	4,787	5,511
81.54	3,295	1,316	82.60	4,816	5,607
81.56	3,323	1,382	82.62	4,845	5,704
81.58	3,351	1,449	82.64	4,875	5,801
81.60	3,379	1,516	82.66	4,905	5,899
81.62	3,407	1,584	82.68	4,934	5,997
81.64	3,435	1,652	82.70	4,964	6,096
81.66	3,463	1,721	82.72	4,993	6,196
81.68	3,491	1,791	82.74	5,023	6,296
81.70	3,519	1,861	82.76	5,053	6,397
81.72	3,548	1,931	82.78	5,082	6,498
81.74	3,576	2,003	82.80	5,112	6,600
81.76	3,604	2,074	82.82	5,142	6,703
81.78	3,632	2,147	82.84	5,172	6,806
81.80	3,661	2,220	82.86	5,201	6,910
81.82	3,689	2,293	82.88	5,231	7,014
81.84	3,717	2,367	82.90	5,261	7,119
81.86	3,746	2,442	82.92	5,291	7,224
81.88	3,774	2,517	82.94	5,321	7,330
81.90	3,803	2,593	82.96	5,351	7,437
81.92	3,831	2,669	82.98	5,381	7,544
81.94	3,860	2,746	83.00	5,411	7,652
81.96	3,888	2,824	83.02	5,441	7,761
81.98	3,917	2,902	83.04	5,471	7,870
82.00	3,945	2,980	83.06	5,501	7,980
82.02	3,974	3,060	83.08	5,531	8,090
82.04	4,002	3,139	83.10	5,562	8,201
82.06	4,031	3,220			
82.08	4,060	3,301			
82.10	4,089	3,382			
82.12	4,117	3,464			
82.14	4,146	3,547			

**Stage-Area-Storage for Pond BIO2:**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
81.00	232	0	81.53	370	158
81.01	234	2	81.54	373	162
81.02	237	5	81.55	376	166
81.03	239	7	81.56	379	169
81.04	241	9	81.57	382	173
81.05	244	12	81.58	385	177
81.06	246	14	81.59	388	181
81.07	248	17	81.60	391	185
81.08	251	19	81.61	394	189
81.09	253	22	81.62	397	193
81.10	256	24	81.63	400	197
81.11	258	27	81.64	403	201
81.12	261	30	81.65	406	205
81.13	263	32	81.66	409	209
81.14	265	35	81.67	412	213
81.15	268	37	81.68	415	217
81.16	270	40	81.69	418	221
81.17	273	43	81.70	422	225
81.18	275	46	81.71	425	230
81.19	278	48	81.72	428	234
81.20	280	51	81.73	431	238
81.21	283	54	81.74	434	243
81.22	286	57	81.75	437	247
81.23	288	60	81.76	440	251
81.24	291	63	81.77	444	256
81.25	293	66	81.78	447	260
81.26	296	68	81.79	450	265
81.27	298	71	81.80	453	269
81.28	301	74	81.81	456	274
81.29	304	77	81.82	460	278
81.30	306	80	81.83	463	283
81.31	309	84	81.84	466	288
81.32	312	87	81.85	469	292
81.33	314	90	81.86	473	297
81.34	317	93	81.87	476	302
81.35	320	96	81.88	479	306
81.36	322	99	81.89	483	311
81.37	325	103	81.90	486	316
81.38	328	106	81.91	489	321
81.39	331	109	81.92	493	326
81.40	333	112	81.93	496	331
81.41	336	116	81.94	499	336
81.42	339	119	81.95	503	341
81.43	342	123	81.96	506	346
81.44	345	126	81.97	510	351
81.45	347	129	81.98	513	356
81.46	350	133	81.99	517	361
81.47	353	137	82.00	<b>520</b>	<b>366</b>
81.48	356	140			
81.49	359	144			
81.50	362	147			
81.51	365	151			
81.52	367	155			