

October 7, 2020

Mr. Stephen Gagnon, Engineering Department Administrator
City of Methuen
Engineering Department
41 Pleasant Street
Methuen, MA 01844

SUBJECT: Proposed Accessory Building
Saisa Realty, LLC
228-254 Pleasant Street
Map 812 Block 59 Lot 99



Dear Mr. Gagnon:

Greenman-Pedersen, Inc. (GPI), on behalf of our client, Saisa Realty, LLC, has prepared the following information to summarize the proposed drainage improvements for the above referenced project. Saisa Realty, LLC is proposing to construct a new 2,176 square foot (1-story) building consisting of four garage bays and a break room at the northeast corner of the site as well as a new concrete dumpster pad. The majority of the proposed building is located within the footprint of the existing parking lot and the proposed layout will result in a decrease in impervious coverage on-site of approximately 300 square feet.

Proposed stormwater control measures include a subsurface infiltration system consisting of Stormtech SC-310 chambers encased in crushed stone and a crushed stone drip edge. The infiltration system will be connected to the gutter downspouts to provide groundwater recharge for the southern portion of the proposed building roof. The crushed stone drip edge will promote groundwater recharge for stormwater runoff from the northern portion of the proposed building. Stormwater runoff from the paved parking areas adjacent to the proposed building will continue to flow similar to existing conditions.

Each of the proposed stormwater control measures is designed to store and infiltrate the water quality volume (WQV) of half of the proposed building roof. The water quality volume (VWQ) is the volume of impervious surfaces times the water quality depth (DWQ). For sites with the potential to generate over 1,000 vehicle trips per day, the water quality depth is 1 inch.

$$V_{WQ} = D_{WQ} * A_{impervious}$$
$$V_{WQ} = 1 \text{ in} \left(\frac{1 \text{ in}}{12 \text{ ft}} \right) * 2,176 \text{ sf} = 182 \text{ c.f.}$$

The subsurface infiltration system consists of two SC-310 chambers and crushed stone which provides 96 cubic feet of storage. The crushed stone drip strip is 2 feet wide by 2 feet deep by 68 feet long and provides 109 cubic feet of storage. A total of 205 cubic feet of storage is provided, exceeding the 182 cubic feet required. Refer to the attached volume calculations.

In conclusion, due to the proposed net reduction in impervious area and the construction of the underground infiltration system and crushed stone drip strip, the project will result in a decrease in peak rates of runoff from the site, provide an increase in groundwater recharge, and represent an improvement over existing conditions.

Saisa Realty, LLC
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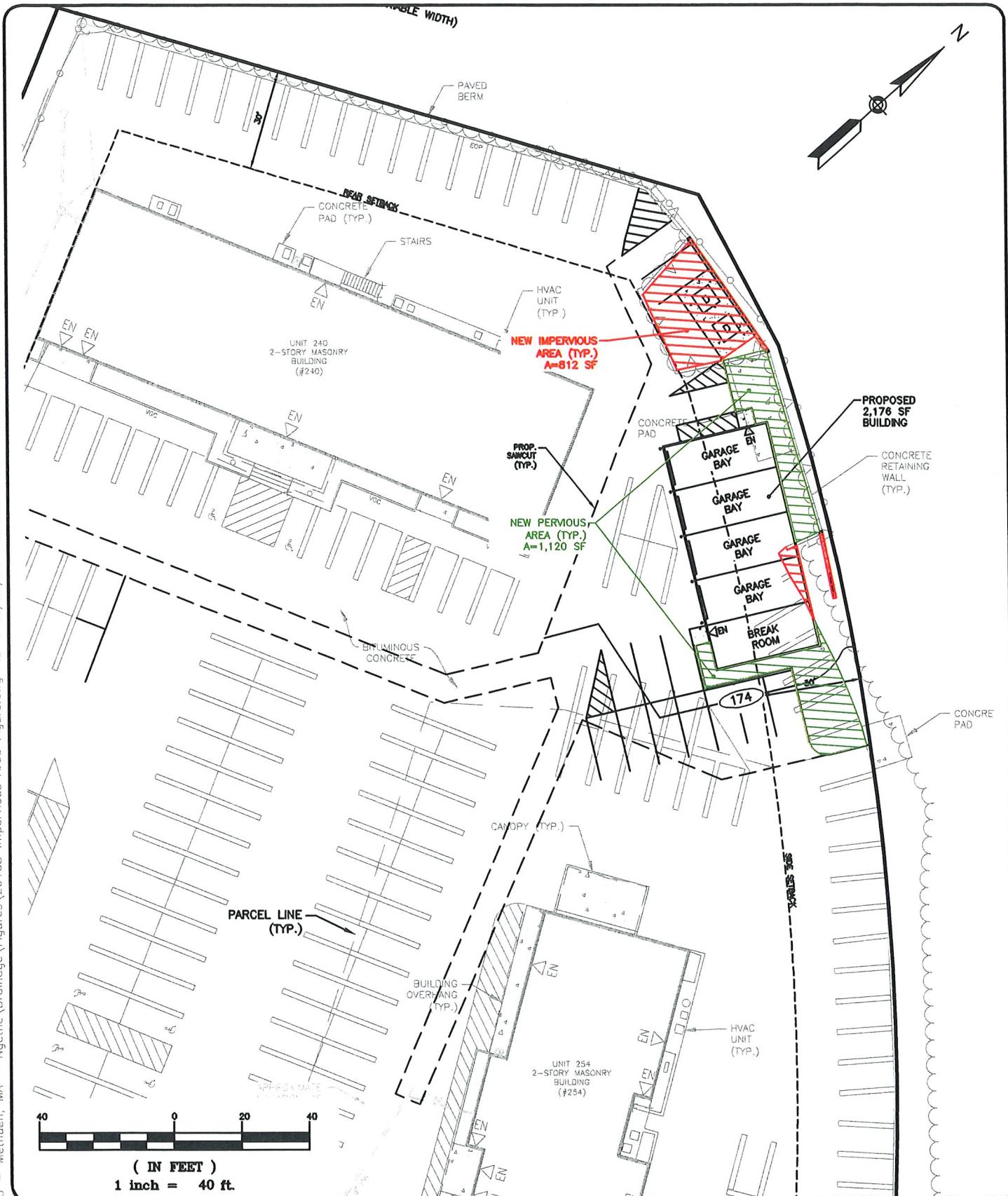
If you have any questions or need additional information please feel free to call me at 603-374-7912.

Sincerely,
Greenman-Pedersen, Inc.



David R. Jordan, PE, PLS, LEED AP
Senior Project Manager

Cc: Anthony Ngethe, Saisa Realty, LLC



IMPERVIOUS AREA FIGURE
228-254 PLEASANT STREET
METHUEN, MA

GPI | Engineering
Design
Planning
Construction Management

603.893.0720 **GPINET.COM**

DRAWN BY: CNM
PROJECT #: 2020165

DATE: 10/7/2020

REV.: -

FIGURE

1

2020165 BMP Sizing

Prepared by Greenman-Pedersen, Inc.

HydroCAD® 10.10-4a s/n 01710 © 2020 HydroCAD Software Solutions LLC

228-254 Plesant St - Methuen, MA
NRCC 24-hr D 2-Year Rainfall=3.10"

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Summary for Pond 1P: ADS Stormtech

Volume	Invert	Avail.Storage	Storage Description
#1A	170.60'	67 cf	4.83'W x 17.44'L x 2.33'H Field A 197 cf Overall - 29 cf Embedded = 167 cf x 40.0% Voids
#2A	171.10'	29 cf	ADS_StormTech SC-310 +Cap x 2 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
96 cf			Total Available Storage

Storage Group A created with Chamber Wizard

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Pond 1P: ADS Stormtech - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

2 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 15.44' Row Length +12.0" End Stone x 2 = 17.44'
Base Length

1 Rows x 34.0" Wide + 12.0" Side Stone x 2 = 4.83' Base Width

6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

2 Chambers x 14.7 cf = 29.5 cf Chamber Storage

196.7 cf Field - 29.5 cf Chambers = 167.2 cf Stone x 40.0% Voids = 66.9 cf Stone Storage

Chamber Storage + Stone Storage = 96.4 cf = 0.002 af

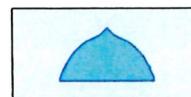
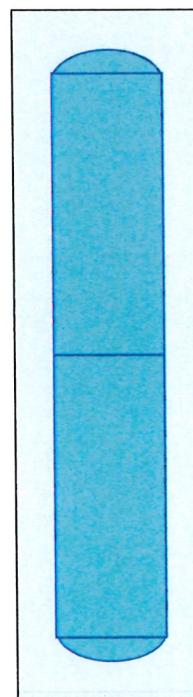
Overall Storage Efficiency = 49.0%

Overall System Size = 17.44' x 4.83' x 2.33'

2 Chambers

7.3 cy Field

6.2 cy Stone



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Summary for Pond 2P: Drip Strip

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	109 cf	2.00'W x 68.00'L x 2.00'H Prismatoid 272 cf Overall x 40.0% Voids