

ABBREVIATED STORMWATER MANAGEMENT REPORT

for

PAVONIA AVENUE MULTI-FAMILY RESIDENTIAL

located at

549 & 551 PAVONIA AVENUE
BLOCK 9606, LOTS 41 & 42

in

CITY OF JERSEY CITY
HUDSON COUNTY, NJ

has been prepared for

Journal Square Improvement, LLC

34 South Dean Street, Suite 200
Englewood, NJ 07631

on

April 14, 2023
InSite Project No. 23-2088-01

Andrew J. Grover, PE
NJPE 47123



InSite Engineering, LLC

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1.0 INTRODUCTION

On behalf of the applicant, Journal Square Improvement, LLC, this report was prepared for the proposed project titled “Pavonia Avenue Multi-Family Residential” located in the City of Jersey City in Hudson County, NJ. The applicant is proposing to redevelop the existing property to construct a 6-story residential building with 30 dwelling units, utility service laterals, and landscaping. The purpose of this report is to demonstrate the project is in compliance with the Jersey City Stormwater Control Ordinance, Section §345-74.

2.0 PROJECT SUMMARY

The property consists of two parcels designated as Block 9606, Lots 41 and 42 which will be consolidated into one lot with a combined area of 0.16 acres. The property has frontage to Pavonia Avenue to the north and is bound by a surface parking lot to the west, residential properties to the south, and a multi-story residential building to the east. There are currently two residential buildings on site with a concrete area dedicated for parking in the front and pavers in the rear. The total existing impervious area is approximately 4,390 square feet. Existing drainage patterns show surface runoff flowing to the rear before leaving the property along the eastern property line. There are currently no existing stormwater management practices observed on site.

The project proposes to demolish the two existing buildings to construct a 6-story multi-family residential building with a rooftop common area, outdoor patio in the rear, utility infrastructure, and landscaping. The limit of disturbance is approximately 8,170 square feet and the total proposed impervious area is approximately 5,960 square feet resulting in an increase of approximately 1,570 square feet of impervious area. Roof drainage will be collected and conveyed to a single 12-inch diameter HDPE drainage pipe tying into the 24-inch combined sewer system on Pavonia Avenue. Permeable pavers will be used to retain stormwater runoff collected from the rear patio, which will tie into the sump pump to pump up to the combined sewer system.

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3.0 STORMWATER DESIGN

According to the Jersey City Stormwater Ordinance, Article §345-74, the project is considered a “minor development” since the total disturbance is less than 10,000 square feet and the creation of impervious area is less than 5,000 square feet. Based on Section 6 of the ordinance, 0.6 gallons of stormwater must be retained using green infrastructure practices for every square foot of impervious area. This is achieved using permeable pavers as summarized below:

Required Volume

Total impervious area	= 5,960 SF
Required volume	= 5,960 x 0.6
	= 3,576 gallons (478 CF)

Permeable Pavers

Area of permeable pavers	= 610 SF
Depth of stone storage layer	= 2 ft
% void of storage layer	= 40%
Proposed volume	= 610 x 2 x 40%
	= 488 CF

The permeable paver system will include a 4-inch perforated PVC underdrain connected to a drain inlet with a discharge pipe tying into the footing drain system of the building.

1.1 25-Year Storm Peak Flow Rate (Rational Method)

The peak roof runoff for the 25-year storm was determined using the Rational Method as shown below:

$$Q_p = CIA$$

where,

Q_p = Peak Flow Rate, cfs

C = ‘C’ value (impervious roof) = 0.99

I = Storm Intensity = 8.0 in/hr (25-year storm with T_c = 6 min.)

A = Roof area and rear pavers = 5,540 SF x (1 Ac/43,560 SF) = 0.13 Ac

$$Q_p = 0.99 \times 8.0 \times 0.13 = \mathbf{1.03 \text{ cfs}}$$

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1.2 Proposed Lateral Connection Capacity Analysis

The proposed building contains a single 12-inch HDPE drainage lateral that has been sized to sufficiently convey the calculated flows from the building. This is demonstrated using Manning's Equation as shown below:

$$Q_d = 1.486/n \times A \times R^{2/3} \times S^{1/2}$$

where,

Q_d = Pipe capacity, cfs

N = Manning's Roughness Coefficient (HDPE = 0.013)

A = Flow Area = 0.785 SF

R = Hydraulic Radius = A/WP = 0.25 FT

S = Pipe Slope, ft/ft

$$Q_d = 1.486/(0.013) \times (0.785) \times (0.25)^{2/3} \times (0.005)^{1/2} = \mathbf{2.52 \text{ cfs}}$$

Pipe Capacity > 25-year Peak Flow Rate

$$2.52 \text{ cfs} > 1.03 \text{ cfs}$$

As shown above, a 12-inch HDPE drainage pipe with a minimum slope of 0.5% has sufficient capacity to convey runoff generated from the roof (4,860 SF) and the rear permeable pavers (590 SF).

4.0 CONCLUSION

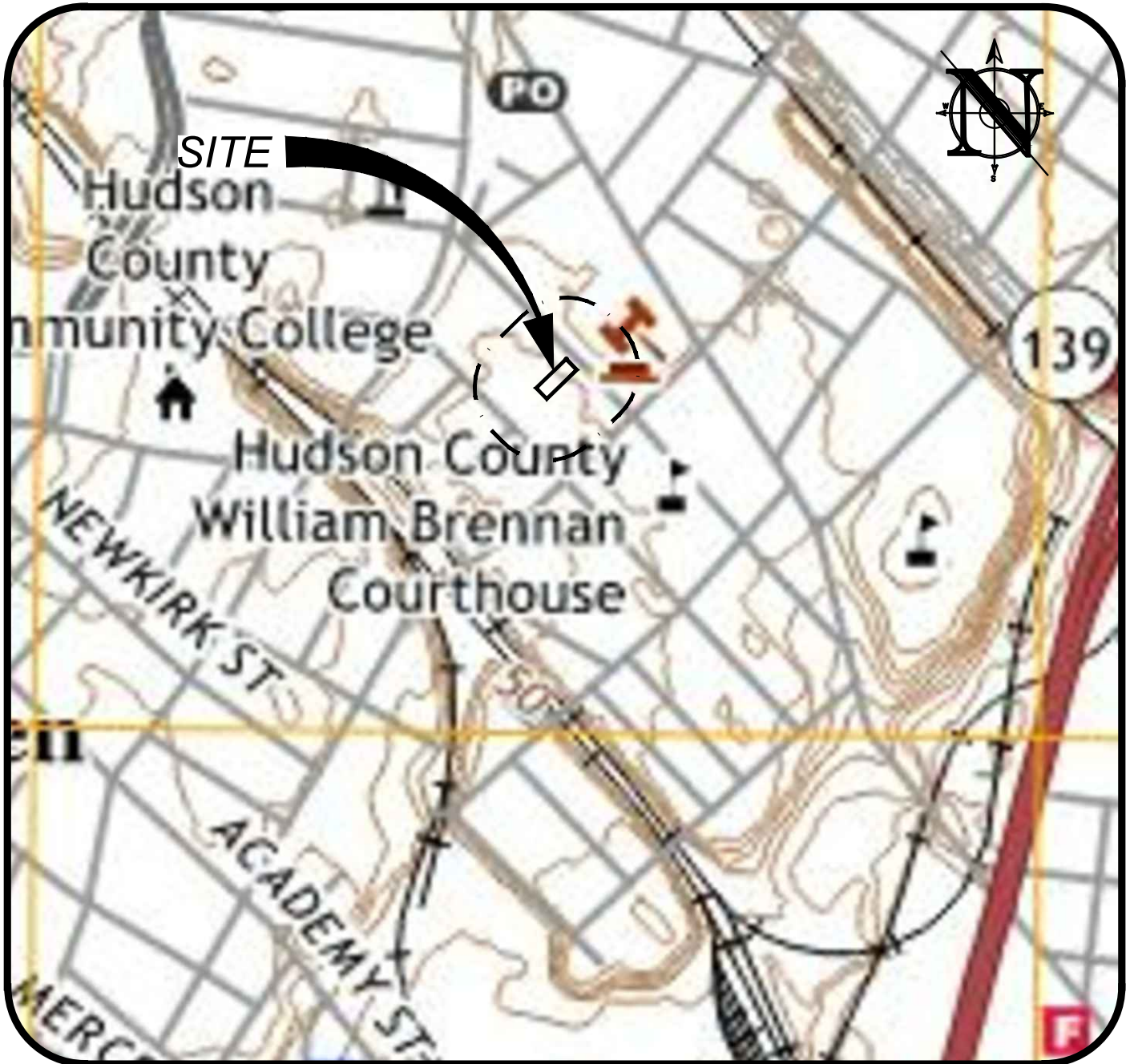
The analysis herein demonstrates that the proposed building service connection will adequately convey stormwater flows from the proposed project. In addition, the proposed permeable pavers are designed to satisfy the stormwater requirements set forth in the Jersey City Stormwater Ordinance for "minor developments."

APPENDIX A

USGS Map

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PLAN



SCALE : 1" = 500'

U.S. GEOLOGICAL SURVEY EXHIBIT



INSITE ENGINEERING, LLC
 CERTIFICATE OF AUTHORIZATION:
 24GA28083200
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SITE LOCATION:
 BLOCK 9606, LOT 41 & 42
 549 & 551 PAVONIA AVENUE
 JERSEY CITY, HUDSON COUNTY, NJ

REFERENCE:
 SOURCE OF MAP: UNITED STATES GEOLOGICAL SURVEY

INSITE PROJECT NO.
 08-2088-01
DRAWING NO.
 08-2088-01
DATE
 MARCH 31, 2023

REVISIONS