CHISVETTE ENGINEERING

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UTILITY ENGINEERING REPORT

Proposed Mixed-Use Building
147-151 Academy Street
Block 12309, Lot 3.01
Jersey City, Hudson County, NJ

Revised November 9, 2023

Prepared for:

Laxmi Ma Academy URE, LLC
2449 J.F. Kennedy Boulevard
Jersey City, NJ 07304

Prepared by:

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STATE OF NEW JERSEY MARK CHISVETTE No. GE28164 LICENSED PROFESSIONAL ENGINEER

11/10/23

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Introduction

Laxmi Ma Academy URE, LLC proposes to construct a multi-story, mixed-use building on the southwest corner of the intersection of Academy Street and Gray Street in Jersey City. The site is identified as Lot 3 of Block 12309 on city tax maps. This report details the stormwater runoff, water demands and sanitary sewer demands of the proposed development and addresses compliance with the stormwater management regulations of Jersey City.

The site is located in the Journal Square 2060 Redevelopment Plan Area of Jersey City, specifically in the Zone 4, Neighborhood Mixed Use, of the redevelopment area. The property is approximately 0.12 acres in size. The property is currently in use as a parking lot.

The site is in the combined sewer service area of Jersey City with combined sewers and six-inch water mains along both fronting streets. The site is not located within a Flood Hazard Area, as shown on the "Preliminary December 20, 2015" F.E.M.A. Flood Insurance Rate Maps.

Proposed Development

The subject development involves the construction of a proposed 8-story mixed-use building. The building will consist of residential common areas on the ground level and residential apartment units on floors two through eight, with a total of 69 apartment units. The proposed building footprint will effectively cover the entire lot. No on-site parking is proposed.

Stormwater Management

As stated in the Residential Improvement Standards (RSIS) N.J.A.C. 5:21-7.5, storm water management shall comply with the NJDEP Stormwater Management Rules (N.J.A.C. 7:8). The NJDEP regulations for quantity control, quality treatment and groundwater recharge only apply if the proposed project increases impervious area by 1/4-acre or entails an acre of disturbance. Per RSIS Stormwater Management Rules, any development that meets the definition of a "Major Development" is must meet the requirements of the New Jersey Stormwater Management Rules (N.J.A.C 7:8-5.5). This project does not meet the definition of a major development since the total disturbed area is less than one acre, and the additional proposed impervious area is less than one-quarter acre.

The Jersey City Stormwater Ordinance defines a major development as one that adds or replaces 5,000 of impervious area. The subject project will replace 5,150 square feet of impervious are. Therefore, under the municipal code definition, the project is a major development. Since the project is in a combined sewer area, the proposed peak runoff rates for the 2-year, 10-year and 100-year storms must be reduced to 50%, 75% and 80%, respectively, of existing conditions.

The proposed building will include 2,600 square feet of 12" deep intensive green roof. The green roof will provide both runoff detention and runoff volume reductions. As a result of the reduce rates of runoff associated with the proposed green roof, total site runoff rate reductions will exceed those required by municipal code. Additionally, green roof qualifies as a "green infrastructure" stormwater measure for quantity control as stipulated in the

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stormwater ordinance. The existing and proposed runoff rates for each design storm are tabulated below.

EXISTING AND PROPOSED PEAK STORMWATERR RUNOFF RATES						
		Existing Conditions		Proposed Conditions		
Design Storm	Rainfall Intensity (in/hr)	Runoff Coefficient	Peak Runoff Rate (cfs)	Allowable Runoff Rate (cfs)	Runoff Coefficient	Peak runoff Rate (cfs)
2-YR	4.6	0.99	0.55	0.27	0.49	**0.27**
10-YR	6.1	0.99	0.72	0.54	0.63	**0.46**
100-YR	8.0	0.99	0.95	0.76	0.78	**0.75**

Quality Treatment

As stated above, this project does not meet the definition of major development under the state stormwater rules. Also, the Jersey City municipal ordinance specifically exempts projects served by the combined sewer system from water quality requirements. Furthermore, nearly all of the runoff from the completed project will consist of roof runoff, which is considered clean under the state and municipal stormwater standards. Therefore, no water quality measures are required.

Groundwater Recharge

The proposed site is delineated on the State Plan Policy Map as a Metropolitan Planning Area 1 (PA-1). Consequently according to N.J.A.C. 7:8-5.4(a) 2ii and the Jersey City stormwater ordinance section 345-74.4.-F.1b(2), the groundwater recharge requirement does not apply to this project.

Sanitary Sewer

The proposed project will include 69 residential units, consisting of 68 studios and 1 three-bedroom unit. The project will include no retail space. In accordance with New Jersey Department of Environmental Protection (NJDEP) standards in NJAC 7:14A-23, the projected average daily flow from this project will be approximately 10,500 gallons per day (gpd). Assuming the ratio of peak flow to average daily flow is four times the average daily flow, the peak sanitary flow from the site will be approximately 0.06 cubic feet per second (cfs).

It is proposed to connect the building to the combined sewer main on Academy Street. Since the project will generate more than 8,000 gpd average daily flow, a Treatment Works Approval (TWA) from the New Jersey Department of Environmental Protection will be required for the proposed sanitary sewer connection.

Water Service

Based on New Jersey Residential Site Improvement Standards (RSIS) Table 5.1 for "garden apartments", the proposed project will generate an average domestic water demand of 8,430 GPD. In accordance with standard Jersey City procedure, fire demand will be calculated based on a recent hydrant flow test and furnished to the JCMUA with the water connection application. At that time, the required water service lateral size can be verified.

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It is proposed to connect to the existing 6" water main on Gray Street. Hydrant flow tests will be performed prior to applying for connection permits to verify adequate pressure and flow is available for fire suppression needs. If needed, a booster pump will be provided within the building to achieve the required fire demand flow.

SANITARY SEWER DESIGN

PROJECT: 147 ACADEMY
LOCATION: 12309 - 2&3 - 147-151 ACADEMY STREET, Jersey City, NJ 07304
JOB #: 16109

DATE: 11/9/2023
BY: MC

Projected Flows:

Type of establishment	Measurement unit	GPD per unit	Number of units	Projected flow gpd
1-bedromm residential	Unit	150	68	10,200
2-bedroom residential	Unit	225	0	0
3-bedroom residential	Unit	300	1	300
Retail	SF	0.10	0	0
Total projected daily average flow (Qavg), gpd:				10,500

Design Flow (Qd):

Q_d =	Qavg x	4	<= ratio of peak to daily average
Q_d =	42000	gpd (gallons per day)	
Q_d =	0.042	MGD (million gallons per day)	
Conversion from MGD to cfs:	Q_d =	0.042 MGD x (1.54723 cfs / 1 MGD)	
Q_d =	0.065 cfs		

Sanitary Sewer Design Table:

	Pipe Section Characteristics						Flow Data @ Half Full		Design Data			
Design Flow Q_d (cfs)	Pipe Diameter D_f (in)	Pipe Material	Flow Area @ Half Full A_h (sf)	Hydraulic Radius R (ft)	Manning's n	Slope S (ft/ft)	Velocity in Pipe V_h (fps)	Flow in Pipe Q_h (cfs)	Percent of Full Flow $[Q_d /(2*Q_h)] \times 100$	Velocity in Pipe V_d (fps)	Flow in Pipe Q_d (cfs)	Depth of Flow D_d (in)
0.065	4.0	pvc	0.0436	0.0833	0.010	0.020	4.0	0.175	19.0%	3.0	0.065	1.150

Summary:

Minimum Slope =	0.0200 ft/ft	
Maximum Velocity =	4.01 fps	
Maximum Capacity =	0.350 cfs	0.226 mgd
Design Flow =	0.065 cfs	0.042 mgd

NOTE: Velocity at half full calculated using Manning's Equation $V = \frac{1.486}{n} R^{\frac{2}{3}} s^{\frac{1}{2}}$

Capacity at half full calculated using the Law of Continuity: Q=V*A
Design calculations and flows are based on NJDEP standards