DRESDNER ROBIN

ENGINEERING REPORT

99 STORMS AVE & 253 MONTICELLO AVE

BLOCK 15003, LOTS 18 & 19

CITY OF JERSEY CITY, HUDSON COUNTY, NEW JERSEY

DRESDNER ROBIN PROJECT No. 11104-001

PREPARED FOR
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DATE
OCTOBER 1, 2021
LAST REVISED JULY 2022

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1.0   INTRODUCTION

This report has been prepared to accompany a Preliminary Site Plan Application for a proposed mixed-use development at 99 Storms Avenue and 253 Monticello Avenue (Block 15003, Lots 18 & 19) in the City of Jersey City, Hudson County, New Jersey. This report should be reviewed in conjunction with a certain set of drawings titled "*Preliminary and Final Site Plan 99 Storms Ave. & 253 Monticello Ave., Block 15003, Lots 18 & 19, City of Jersey City, County of Hudson, New Jersey*" prepared by Dresdner Robin. This report has been prepared to demonstrate that the proposed site improvements meet the criteria of the following standards:

- Article VI "*Stormwater Control*" of Chapter 345 "*Zoning*" from the Code of the City of Jersey City;
- New Jersey Residential Site Improvement Standards (NJ.A.C. 5:21) and,
- The Standards For Soil Erosion and Sediment Control In New Jersey.

All elevations cited in this report are referenced to North American Vertical Datum 1988

2.0   EXISTING CONDITIONS

The project is located on Block 15003, Lots 18 and 19 in the City of Jersey City, Hudson County, New Jersey and contains 8,984 square-feet (sf) or 0.21 acres (Ac) of land. The property is generally bound on the south by Monticello Avenue, Storms Avenue to the east and residential properties to the north and west. The property is in the NC, Neighborhood Commercial Zoning District based on the Jersey City Zoning Map. The property is outside of the limits of the 100-year flood hazard-area (Zone AE) for Hudson River in accordance with Flood Insurance Rate Map No. 34017C0102E (revised preliminary December 20, 2013). The New Jersey Department of Environmental Protection (NJDEP) NJ-GeoWeb website records the property within the Metropolitan Planning Area (PA1) and approximated centroid coordinates of N 688,808 feet, E 611,706 feet (New Jersey State Plan 1983).

As of 2013, the property was occupied by residential uses with approximately 3,773 sf (or 0.09 Ac) of impervious area (42% of the total lot area) and 5,209 sf (or 0.12 Ac) of pervious areas (58% of the total lot area). Since 2013, the property has remained the same.

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Figure 1: 2012 Conditions (Courtesy GoogleEarth)

Figure 2: 2018 Conditions (Courtesy GoogleEarth)

The property generally slopes from the east and west to the south towards Monticello Avenue. Elevations ranging from 71-feet-to 69-feet. Monticello and Storms Avenue are occupied by water mains, gas mains and telecommunication services and a combined sewer pipe in Storms Avenue.

3.0   PROPOSED CONDITIONS

3.1.1   Project Description

The Applicant is proposing to consolidate the properties into a single lot, constructing a 6-story mixed use building comprised of retail space, lobby, back of house space and 5 stories of residential units. There is a total of 50 units between 6 floors.

3.1.2   Stormwater Analysis Applicability

In accordance with the municipal land use ordinance and the New Jersey Residential Site Improvement Standards (N.J.A.C. 5:21), the project is not considered a "major development" because the improvements will ultimately not disturb more than one quarter acre of land. As a result, attenuation of stormwater runoff will not be provided. All stormwater runoff from the project will solely be from the roof of the project and discharge from the property through a conveyance pipe into the new municipal conveyance system.

3.1.3   Groundwater Recharge

The cited regulations specify minimum design and performance standards for groundwater recharge; however, in accordance with the New Jersey Stormwater Management Rules at N.J.A.C. 7:8-5.4(a)2.ii., the groundwater recharge requirement does not apply to project within the "urban redevelopment area", which includes the Metropolitan Planning Area as defined by the Stormwater Management Rules.

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3.1.4 Water Quality

The cited regulations specify "major developments" that create at least 0.25 acres of new or additional impervious surface must include stormwater management measures to reduce the post-constructed load of total suspended solids (TSS) in stormwater runoff generated from the water quality storm by 80% of the **anticipated load** [emphasis added]" from the development site. This project is not a "major development" in accordance with the cited regulations. Furthermore, according to the Stormwater Management Rule Frequently Asked Questions section on the NJDEP website, the Department states in Response 7.5:

> *"Clean roof runoff and runoff from lawns, walkways, patios or decks do not have to be treated for TSS removal."*

Because of the Department Response 7.5, we infer the areas which would contribute to the **anticipated load** will be all impervious areas inclusive of roofs. As shown in the application drawings, the proposed building will occupy the entire property; therefore, water quality treatment is not required for this parcel. As a result, the provision of water quality treatment is not required for the project.

3.1.5 Water Quantity

The project does not meet the requirements of a "major development". As such, water quantity will not be provided. Stormwater Conveyance System

The proposed stormwater conveyance system has been designed using Manning's Equation for a 25-year storm event. The proposed system can adequately handle the anticipated storm event as shown in the calculations provided in the Appendix.

3.2 Sanitary Sewer System

The JCMUA maintains a 35" x 24" brick combined sewer fronting the project in Storms Avenue. Flow within the sewer is conveyed to the Passaic Valley Sewerage Commission (PVSC) treatment plant for treatment and discharge.

The projected sanitary flow for the project is 8,221 gpd. The Applicant will apply for a Treatment Works Approval from the NJDEP because the anticipated flow is greater than 8,000 gpd. A copy of the projected sanitary flow calculations is provided in the Appendix section of this report.

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3.3   Water Supply

The JCMUA maintains an 8-inch diameter water main within Monticello Avenue and Storms Avenue. The project will be served by a new 6-inch diameter cement lined-ductile iron pipe (CLDIP) lateral that will connect to the existing municipal supply system within Monticello Avenue. The estimated average daily water demand and peak daily demand for the project are 5,744 gpd and 17,232 gpd, respectively. A copy of the water demand calculations is provided in the Appendix section of this report

The Applicant will apply for a water service connection with the JCMUA under a separate cover.

4.0   CONCLUSION

This report has been prepared as required by the municipality and demonstrates the proposed development will meet the objectives of minimizing impacts to environmentally-sensitive areas, stormwater quality, stormwater quantity and flood-related matters at the source by land management and source control whenever possible.

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APPENDIX A

SANITARY SEWER CALCULATIONS

99 STORMS AVE. & 253 MONTICELLO AVE.
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Type of Establishment	Measurement	# Units	GPD/Unit	GPD
Studio	Per Dwelling	15	150	2,250
1 Bedroom	Per Dwelling	30	150	4,500
2 Bedroom	Per Dwelling	5	225	1,125
3 Bedroom	Per Dwelling	0	300	0
Office	Sq. Ft.	0	0.100	0
Retail	Sq. Ft.	6,151	0.100	615
_blank	0	0	0.000	0
_blank	0	0	0.000	0
_blank	0	0	0.000	0

Projected Estimates per N.J.A.C. 7:14A-23.3

Flow Received	100%
Total Flow (GPD) ($Q_{projected}$)	8,490
Total Flow (CFS) ($Q_{projected}$)	0.013

Pipe Length (LF)	Diameter (in)	Material	Slope	n*
28	6	DIP	2.00%	0.013

* Per JCMUA Rules and Regulations, Section 5.01

Half Flow Pipe Capacity	
Depth of Flow, h (in)	3
h/D	0.500
Pipe Radius, r (ft)	0.250
Circ. Segment Height, h (ft)	0.250
Central Angle, θ (radians)	3.142
Cross-Sectional Area, A (ft^2)	0.098
Wetted Perimeter, P (ft)	0.785
Hydraulic Radius, R (ft)	0.125
Discharge, Q (cfs)	0.398
$Q_{projected}$ (x2) (cfs)	0.026
Pipe % Full [(A/A$_{full}$)*100%]	50.00%
Average Velocity, V (ft/sec)	4.052
Q_{pipe} > 2x$Q_{projected}$	**TRUE**
V ≥ 2.2 ft/sec	**TRUE**
Therefore, design is	**ADEQUATE**

Actual Pipe Velocity	
**Depth of Flow, h (in)	0.530
Pipe Radius, r (ft)	0.250
Circ. Segment Height, h (ft)	0.044
Central Angle, θ (radians)	1.207
Cross-Sectional Area, A (ft^2)	0.009
Wetted Perimeter, P (ft)	0.302
Hydraulic Radius, R (ft)	0.028
Pipe % Full [(A/A$_{full}$)*100%]	4.34%
Actual Velocity, V (ft/sec)	1.502

**Must have h < r

Compare	
Discharge, Q (cfs)	0.013
$Q_{projected}$, (cfs)	0.013

Equations used for calculations:

Manning's Formula:

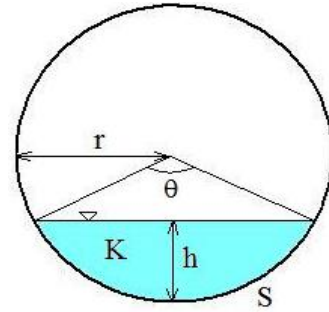$$Q = \left(\frac{1.49}{n}\right) AR^{2/3}\sqrt{S}$$

Q = Flow Rate, (ft^3/s)

n = Manning's Coefficient

A = Flow Area, (ft^2)

R = Hydraulic Radius, (ft)

S = Channel Slope, (ft/ft)

$$\theta = 2\arccos\left(\frac{r - h}{r}\right)$$

$$A = \frac{r^2(\theta - sin\theta)}{2}$$

$$P = r\theta$$

APPENDIX B

DRESDNER ROBIN

WATER DEMAND CALCULATIONS
99 STORMS AVE. & 253 MONTICELLO AVE.
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Residential Demand[1]

Type of Establishment	Measurement	# Units	GPD/Unit	Daily Demand (GPD)	Daily Demand (MGD)	Peaking Factor	Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
Studio	Per Dwelling	15	95	1,425	0.001	3	4,275	0.004
1-Bedroom	Per Dwelling	30	95	2,850	0.003	3	8,550	0.009
2-Bedroom	Per Dwelling	5	140	700	0.001	3	2,100	0.002
3-Bedroom	Per Dwelling	0	215	0	0.000	3	0	0.000
Total Units		50						
Total Residential Demand				4,975	0.005		14,925	0.015

Non-Residential Demand[2]

Type of Establishment	Measurement	# Units	GPD/Unit	Daily Demand (GPD)	Daily Demand (MGD)	Peaking Factor	Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
Office/Retail	SF	6,151	0.125	769	0.001	3	2,307	0.002
Total Non-Residential Demand				769	0.001		2,307	0.002

	Daily Demand (GPD)	Daily Demand (MGD)		Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
Total Site Demand	5,744	0.006		17,232	0.017

Notes:

[1] Residential demand as per N.J.A.C. 5:21-5.1

[2] Non-residential demand as per N.J.A.C. 7:10-12.6 (Table 1)