

UTILITY ENGINEERING REPORT

Proposed Residential/Commercial Building
85-87 Monitor Street
Block 19003, Lots 10 & 11
Jersey City, Hudson County, NJ

June 8, 2023

Prepared for:

85 Monitor LLC
124 west 34th Street
Bayonne, NJ 07002

Prepared by:

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No. GE28164

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Introduction

85 Monitor LLC proposes to construct a multi-story, mixed-use building on Monitor Street mid-block between Maple Street and Johnston Avenue in the city of Jersey City. The site address is 85-87 Monitor Street and is identified on Jersey City Tax Maps as Lots 10 and 11 of Block 19003. This report details the stormwater runoff, sanitary sewer demands and water demands of the proposed development and addresses compliance with the stormwater management regulations of Jersey City.

Existing Conditions

The site is located in the in the T.O.D. West Zone of the Morris Canal Redevelopment Plan Area of Jersey City. The total site area is 3,333 square feet (0.077 acres). Each tax lot is occupied by a two-story residential dwelling with a small front stoop and concrete driveway. Combined, the two lots are 33.33 feet wide and 100 feet deep. According to a survey prepared by Pronesti Surveying, Inc., there is an apparent 2 foot wide gore along the rear of the property that is not included in the deeds for subject property or lots to the rear. For the purposes of this application, it is assumed that the apparent gore area is not part of the subject property.

The site is in the combined sewer service area of Jersey City with a 24-inch main in Monitor Street. City water is available through a newly constructed 12" water main in Monitor Street.

According to the most recent "Revised Preliminary" F.E.M.A. Flood Insurance Rate Map, dated January 30, 2015", the site is located in Zone AE, entirely within the 1% (100-year) flood area. This project is subject to New Jersey Department of Environmental Protection (NJDEP) flood hazard area regulations. The affective flood hazard elevation is 12.0 in the NAVD88 datum.

Proposed Development

The subject development involves demolition of the existing buildings and the construction of a proposed 6-story building mixed-use building, consisting of retail space on the ground floor and 10 two-bedroom residential units on the upper floors. The retail area will consist of approximately 1,570 square feet. No on-site parking is proposed. The proposed building will occupy the entire site.

Stormwater Management

As stated in the Residential Site 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 a "major development", defined as a project that increases impervious area by 1/4-acre or entails an acre of disturbance. This project does not meet the definition of a major development under the State definition 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 either entails one-acre of disturbance or "adds or replaces" more than 5,000 square feet of impervious area. The subject site is only 3,333 square feet, so it does not meet the city definition of a major development.

The Jersey City ordinance defines a "minor development" as one that "adds or replaces" between 1,000 and 5,000 square feet of impervious area. The subject project falls under the definition of a minor development. For a minor development, it is required to provide stormwater retention volume of 0.6 gallons per square foot of site area. Based on that, 2,000 gallons or 267 cubic feet (cf) of retention is required. It is proposed to accomplish this using a combination of green roof pans and rooftop planters. Retention calculations are shown below:

Required retention: $0.6 \text{ gal} \times 3,333 \text{ sf} = 2,000 \text{ gal} = 267 \text{ cf}$

Lower green roof 8" depth: $500 \text{ sf} \times 8"/12 \times 30\% =$	100 cf
Upper green roof 8" depth: $125 \text{ sf} \times 8"/12 \times 30\% =$	25 cf
Upper roof planters 24" depth: $426 \text{ sf} \times 24"/12 \times 30\% =$	<u>255 cf</u>
Total provided retention =	380 cf

As shown, the proposed retention exceeds the required volume and satisfies the minor development requirements of the stormwater ordinance. All of the site runoff consists of roof runoff. The site runoff will discharge directly to the existing combined sewer main in Monitor Street.

Quality Treatment

As stated above, this project does not meet the definition of major development under the state stormwater rules, so water quality control measures are not applicable. Also, the Jersey City municipal ordinance specifically exempts projects served by the combined sewer system from water quality requirements. Furthermore, 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). 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 10 two-bedroom residential units and 1,570 square feet of retail. In accordance with NJDEP standards in NJAC 7:14A-23, the projected average daily flow from this project will be 2,407 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 0.015 cubic feet per second (cfs). Sanitary waste will be carried by a 4" PVC pipe which will connect to the proposed 6" storm PVC lateral before discharging into the existing combined sewer main in Monitor Street. Sanitary demand and pipe flow calculations are provided with this report.

A connection permit from both the Jersey City Municipal Utilities Authority and the Passaic Valley Sewerage Commission will be required at the time of construction. Since the project will generate less than 8,000 gpd average daily flow, a Treatment Works Approval (TWA) from the NJDEP is not required.

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 1,947 GPD. The proposed building will be connected to the new 12" water main in Monitor Street with a 6" DIP fire/domestic lateral.

In accordance with standard 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. If needed, a booster pump will be provided within the building to achieve the required fire demand flow.

SANITARY SEWER DESIGN

PROJECT: 85-87 Monitor Street Residential Commercial Building
LOCATION: Block 19003, Lots 10 & 11
JOB #:

DATE: 6/8/2023
BY: M.C.

Projected Flows:

Type of establishment	Measurement unit	GPD per unit	Number of units	Projected flow gpd
1-bedroom residential	Unit	150	0	0
2-bedroom residential	Unit	225	10	2,250
3-bedroom residential	Unit	300	0	0
Retail	SF	0.10	1,571	157
Total projected daily average flow (Qavg), gpd:				2,407

Design Flow (Qd):

$Q_d =$	$Q_{avg} \times 4$	\leq ratio of peak to daily average
$Q_d =$	9628.4	gpd (gallons per day)
$Q_d =$	0.010	MGD (million gallons per day)
Conversion from MGD to cfs: $Q_d = 0.0096 \text{ MGD} \times (1.54723 \text{ cfs} / 1 \text{ MGD})$		
$Q_d =$	0.015 cfs	

Sanitary Sewer Design Table:

Design Flow Q_d (cfs)	Pipe Section Characteristics					Flow Data @ Half Full					Design Data		
	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 $[Q_d / (2 \cdot Q_h)] \times 100$	Velocity in Pipe V_d (fps)	Flow in Pipe Q_d (cfs)	Depth of Flow D_d (in)	
0.015	4.0	PVC	0.0436	0.0833	0.010	0.020	4.0	0.175	4.0%	2.0	0.015	0.547	

Summary:

Minimum Slope =	0.0200 ft/ft
Maximum Velocity =	4.01 fps
Maximum Capacity =	0.350 cfs
Design Flow =	0.015 cfs
	0.010 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: $Q = V \times A$
Design calculations and flows are based on NJDEP standards