

# DRESDNER ROBIN

## STORMWATER MANAGEMENT AND ENGINEER'S REPORT

DEVELOPMENT BLOCK E

LOT 1.15 OF BLOCK 751

CITY OF BAYONNE, HUDSON COUNTY, NEW JERSEY

DRESDNER ROBIN PROJECT NO.: 11855-001

**PREPARED FOR**

RAMANI GROUP  
109 WALNUT STREET  
ROSELLE PARK, NJ 07204

**PREPARED BY**

DRESDNER ROBIN  
1 EVERTRUST PLAZA, SUITE 901  
JERSEY CITY, NJ 07302

**DATE**  
**JUNE 2022**

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MATTHEW J. NEULS  
PROFESSIONAL ENGINEER  
NJ LICENSE NO. 24GE04313300

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1	PURPOSE .....	1
1.2	PROJECT DESCRIPTION .....	1
<b>2.0</b>	<b>STORMWATER MANAGEMENT</b> .....	<b>1</b>
2.1	PURPOSE AND NEED.....	2
2.2	GROUNDWATER RECHARGE .....	2
2.3	WATER QUALITY.....	2
2.4	WATER QUANTITY .....	2
2.5	PIPE CONVEYANCE .....	3
2.6	CONCLUSION .....	3
<b>3.0</b>	<b>WATER AND SEWER DEMAND</b> .....	<b>4</b>
3.1	SANITARY SEWER .....	4
3.2	WATER SERVICE.....	4

## LIST OF APPENDICES

Appendix A	Sanitary Sewer Demand Calculations
Appendix B	Water Service Demand Calculations
Appendix C	Storm Pipe Conveyance Calculations

## 1.0 INTRODUCTION

### 1.1 PURPOSE

This report has been prepared to demonstrate how the proposed improvements meet the criteria of the following standards:

- New Jersey Residential Site Improvement Standards (N.J.A.C. 5:21) (published July 21, 2014).
- Stormwater Management Rules (N.J.A.C. 7:8) (amended March 2, 2020).
- Safe Drinking Water Act Rules (N.J.A.C. 7:10) (amended January 4, 2011).
- Pollutant Discharge Elimination System Rules (N.J.A.C. 7:14A) (amended January 5, 2009).
- Chapter 30 "Stormwater Control" of the City of Bayonne's municipal code.

### 1.2 PROJECT DESCRIPTION

The project site contains approximately 3.57 acres and has frontage along Chosin Few Way and East 40<sup>th</sup> Street. The site is governed by the Harbor Station South Redevelopment Plan and is presently vacant.

The applicant proposes a 26 story residential tower, wrapped by a 6 story mixed use building and a 6 story parking garage, within the northwestern portion of the site. Portions of the site which are not a part of this project will remain vacant and are part of later phases of the development. The project also includes the buildout of sidewalk along East 40<sup>th</sup> Street and Chosin Few Way, with a plaza area along the sidewalk at East 40<sup>th</sup> Street.

### 1.3 FLOOD ELEVATIONS

The Project Site is located within regulated flood zone Zone AE (EL. 13) with a Base Flood Elevation (BFE) of 13.0' referenced to the North American Vertical Datum of 1988 (NAVD88), as depicted on the FEMA Preliminary Flood Insurance Rate Map (PFIRM) for Hudson County, New Jersey, Panel 111 of 118, City of Bayonne.

The site is located in a tidal area, and per the NJAC 7:13 Flood Hazard Area Control Act Rules, Section 3 "Determining the Flood Hazard Area and Floodway," the Flood Hazard Area Design Flood Elevation (DFE) in tidal water areas (Method 2, FEMA Tidal method) is equivalent to the BFE. Thus, the DFE for the subject site is elevation 13.0' NAVD88.

## **2.0 STORMWATER MANAGEMENT**

### **2.1 PURPOSE AND NEED**

The proposed development will disturb more than 1 acre of land; therefore, the project is defined as a “major development” in accordance with the City of Bayonne’s stormwater control ordinance described above as well as New Jersey’s Stormwater Rules at NJAC 7:8. As a result, these regulations mandate the proposed development incorporate measures to address groundwater recharge, stormwater quality, and stormwater quantity.

### **2.2 GROUNDWATER RECHARGE**

The regulations cited above specify minimum design and performance standards for groundwater recharge; however, in accordance with N.J.A.C. 7:8-5.4(a)2.ii., the groundwater recharge requirement does not apply to previously disturbed project sites within the “Metropolitan Planning Area PA-1 Zone”, which includes the project site, which has been previously disturbed; therefore groundwater recharge is not required for this project.

### **2.3 WATER QUALITY**

Per NJDEP, “Stormwater management measures shall only be required for water quality control if an additional one-quarter acre of impervious surface is being proposed on a development site.” (N.J.A.C. 7:8-5.5). Since the proposed increase in impervious surface coverage is in excess of the threshold of ¼ acre, non-structural water quality treatment measures are necessary for compliance with this requirement. The site has NJDEP Waterfront Development approved water quality treatment units (Vortechs) constructed within Flagship Street and Goldsborough Drive along their collection line, which have been sized appropriately to handle stormwater from the Project Site. The stormwater infrastructure proposed with this phase of the project will collect along East 40<sup>th</sup> Street to the north, flow downstream along Chosin Few Avenue to the west, and ultimately tie into the existing water quality infrastructure within Goldsborough Drive.

### **2.4 WATER QUANTITY**

The City of Bayonne’s Stormwater Control Ordinance requires “major developments” to demonstrate through hydrologic and hydraulic analysis that the post-constructed stormwater runoff rates and volumes leaving the site meet specific criteria. The requirements state that proposed peak runoff rates shall be reduced to 50%, 75% and 80% of existing rates for the 2-

year, 10-year and 100-year storm events respectively. However, in tidal flood hazard areas, stormwater runoff quantity analysis in accordance with (a)3i, ii and iii above shall only be applied if the increased volume of stormwater runoff could increase flood damages below the point of discharge. Because the proposed storm sewer improvements at the project site will be handled by existing storm infrastructure within Goldsborough Drive and discharged directly to a stable outfall in the Hudson River approximately 2,500 feet downstream of the site and increased volume is not anticipated to increase flood damages below the point of discharge, water quantity analysis is not required.

## **2.5 PIPE CONVEYANCE**

The proposed on-site storm sewer collection system has been designed to collect runoff from the proposed plaza/sidewalk areas, parking garage, and proposed building and is designed to handle the 25 year storm. As noted above, the proposed on-site storm sewer conveyance system will connect to the existing stormwater infrastructure located in Goldsborough Drive and discharge into the Hudson River.

## **2.6 CONCLUSION**

In conclusion, the project includes minimal stormwater infrastructure which will tie into existing stormwater infrastructure in Goldsborough Street prior to its discharge to the Hudson River via an existing outfall. The project is exempt from groundwater recharge requirements, is relying on existing infrastructure to meet water quality regulations, and is not required to perform water quantity analyses because the stormwater is not anticipated to increase flood damages below the point of discharge. The project is not anticipated to have any negative impacts on the drainage patterns of the site, neighboring properties, or the area as a whole.

## **3.0 WATER AND SEWER DEMAND**

### **3.1 SANITARY SEWER**

This project proposes to construct approximately 600 linear feet of new sewer main which will connect to existing sewer main in Goldsborough Drive, to the south of the site. which collects from residential areas located at the north of the project site, will remain in place. This project does not propose a connection to said main. Sewer from the proposed building will tie into the sewer main that will be constructed during this project. The main will tie into the existing sewer main on

West 5<sup>th</sup> street. The projected sanitary flow can be found in Appendix A, which was developed based upon the New Jersey Technical Requirements for Treatment Works Approvals at N.J.A.C. 7:14A-23.3.

Because the anticipated flow to be generated by the development is greater than 8,000 gallons per day, a Treatment Works Approval will be required from the New Jersey Department of Environmental Protection (NJDEP) prior to construction.

### **3.2 WATER SERVICE**

Water service to the project site is provided by Suez Northern New Jersey. We assume, based on the existence of fire hydrants, that a water main exists in Chosin Few Avenue, located to the west of the project site. The project survey will be updated to confirm this assumption. The project propose a water lateral to the building to connect into the assumed water in Chosin Few Way. The proposed connections, valve enclosure and other related improvements will be confirmed upon the survey update and will be designed to be consistent with Suez details and standards and coordinated with the utility.

The estimated average-daily and peak water demand for the development can be found in Appendix B, which was calculated in accordance with Table 5.1 and 5.2 of the New Jersey Residential Site Improvements Standards (N.J.A.C. 5:21-5.1) and the Safe Drinking Water Act Rules (N.J.A.C. 7:10-12.6, Table 1: Average Daily Water Demand).

**APPENDIX A**

**SANITARY SEWER DEMAND**

**CALCULATIONS**

# DRESDNER ROBIN

6/27/2022

## SANITARY SEWER CALCULATIONS

DEVELOPMENT BLOCK E  
LOT 1.15 OF BLOCK 751  
CITY OF BAYONNE, NEW JERSEY 07002  
DR PROJECT NO. 11855-001

Type of Establishment	Measurement	# Units	GPD/Unit	GPD
Studio	Per Dwelling	48	150	7,200
1 Bedroom	Per Dwelling	135	150	20,250
2 Bedroom	Per Dwelling	56	225	12,600
3 Bedroom	Per Dwelling	42	300	12,600
Retail	Sq. Ft.	7,268	0.100	727
Flow Received				100%
Total Flow (GPD) ( $Q_{\text{projected}}$ )				53,377
Total Flow (CFS) ( $Q_{\text{projected}}$ )				0.083

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

Pipe	Length (ft)	n*	Slope	Diameter (in)
12" PVC		0.013	2.00%	12

Half Flow Pipe Capacity	
Depth of Flow, h (in)	6
h/D	0.500
Pipe Radius, r (ft)	0.500
Circ. Segment Height, h (ft)	0.500
Central Angle, $\theta$ (radians)	3.142
Cross-Sectional Area, A (ft <sup>2</sup> )	0.393
Wetted Perimeter, P (ft)	1.571
Hydraulic Radius, R (ft)	0.250
Discharge, Q (cfs)	2.526
$Q_{\text{projected}}$ (x2) (cfs)	0.165
Pipe % Full $[(A/A_{\text{full}})*100\%]$	50.00%
<b>Average Velocity, V (ft/sec)</b>	6.433
<b>Max. Capacity (MGD)</b>	1.359
$Q_{\text{pipe}} > 2xQ_{\text{projected}}$	<b>TRUE</b>
$V \geq 2.2$ ft/sec	<b>TRUE</b>
Therefore, design is	<b>ADEQUATE</b>

Actual Pipe Velocity	
**Depth of Flow, h (in)	2.080
Pipe Radius, r (ft)	0.500
Circ. Segment Height, h (ft)	0.173
Central Angle, $\theta$ (radians)	1.718
Cross-Sectional Area, A (ft <sup>2</sup> )	0.091
Wetted Perimeter, P (ft)	0.859
Hydraulic Radius, R (ft)	0.106
Pipe % Full $[(A/A_{\text{full}})*100\%]$	11.59%
<b>Actual Velocity, V (ft/sec)</b>	3.631

\*\*Must have  $h < r$

Compare	
Discharge, Q (cfs)	0.331
$Q_{\text{projected}}$ (cfs)	0.083



# DRESDNER ROBIN

6/27/2022

*Equations used for calculations:*

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Manning's Formula:

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

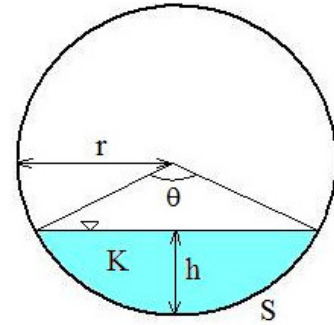
Q = Flow Rate, (ft<sup>3</sup>/s)

n = Manning's Coefficient

A = Flow Area, (ft<sup>2</sup>)

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**  
**WATER SERVICE DEMAND**  
**CALCULATIONS**

WATER DEMAND CALCULATIONS								
DEVELOPMENT BLOCK E								
LOT 1.15 OF BLOCK 751								
CITY OF BAYONNE, NEW JERSEY 07002								
DR PROJECT NO. 11855-001								
Residential Demand <sup>1</sup>								
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	48	80	3,840	0.004	3	11,520	0.012
1-Bedroom	Per Dwelling	135	120	16,200	0.016	3	48,600	0.049
2-Bedroom	Per Dwelling	56	175	9,800	0.010	3	29,400	0.029
3-Bedroom	Per Dwelling	42	270	11,340	0.011	3	34,020	0.034
Total Units		281						
<b>Total Residential Demand</b>				41,180	0.041		123,540	0.124
Non-Residential Demand <sup>2</sup>								
Type of Establishment	Measurement	# Units	GPD/Unit	Daily Demand (GPD)	Daily Demand (MGD)	Peaking Factor	Peak Daily Demand (GPD)	Peak Daily Demand (MGD)
Retail	SF	7,268	0.125	909	0.001	3	2,726	0.003
<b>Total Non-Residential Demand</b>				909	0.001		2,726	0.003
<b>Total Site Demand</b>				42,089	0.042		126,266	0.126

Notes:

<sup>1</sup> Residential demand as per N.J.A.C. 5:21-5.2

<sup>2</sup> Non-residential demand as per N.J.A.C. 7:10-12.6 (Table 1)

**APPENDIX C**  
**STORM PIPE CONVEYANCE**  
**CALCULATIONS**

### DRESDNER ROBIN DRAINAGE CALCULATIONS

MADE BY: GRG  
 REV. BY:

DATE: 6/27/22  
 DATE:

*RAINFALL CURVE: RSIS Standard*

PROJECT: Chosin Few  
 PROJECT NO.: 11855-001

		INLET				DES.				PIPE	Mannings	VELOCITY		FLOW	CAPACITY	% Full	
FROM	TO	AREA	"C"	CA	TC	STORM	"I"	"Qa"	SLOPE	DIAM	Number	(fps)	LENGTH	TIME (min)	Qf (cfs)	(Qa/Qf)	REMARKS
B INLET1	B INLET2	0.07	0.99	0.07	10	25	6.28	0.43	0.0100	24	0.013	7.20	25	0.1	22.6	2%	RCP
B INLET2	B INLET3	0.06	0.99	0.13	10	25	6.28	0.82	0.0100	24	0.013	7.20	200	0.5	22.6	4%	RCP