

TRAFFIC ENGINEERING EVALUATION

PROPOSED REDEVELOPMENT AQUAVIEW BLOCK 751, LOT 1.06 CITY OF BAYONNE HUDSON COUNTY, NEW JERSEY

Prepared for:

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INTRODUCTION

The purpose of this Traffic Engineering Evaluation is to assess the traffic impacts associated with the redevelopment of the subject property known as Lot 1.06 in Block 751 located on Flagship Street in the Harbor Station South Redevelopment Plan area in the City of Bayonne, Hudson County. The site is approximately 2.76 acres. The site is currently vacant.

The proposal is to construct a mixed-use building consisting of 159 units of multifamily housing (mid-rise) in five stories over approximately 8,745 square feet of ground floor commercial space and a parking capacity for 166 parked vehicles, including 46 standard surface parking spaces in the garage and a surface lot with 120 parking spaces. There are 7 ADA compliant parking spaces proposed for Aquaview.

EXISTING CONDITIONS

The site is located on the west side of Flagship Street, adjacent to and north of the Waterview Luxury Apartments, which are in the northwest corner of the intersection of Goldsborough Drive with Flagship Street. The site is currently vacant. The property is part of the Harbor Station South Redevelopment Plan area. The surrounding properties generally consist of a mix of commercial and residential uses.

Mass Transportation Options

At the intersection of 45th Street with Avenue E, which is approximately 1 mile or a 20-minute walk from the proposed development, there is the 45th Street Hudson-Bergen Light Rail station, which provides mass transit service to Manhattan, Jersey City, Hoboken, and other destinations. The frequency, variety, and proximity of public transportation makes this residential option good for residents who would use mass transportation and possibly own fewer personal automobiles.

DEVELOPMENT PROPOSAL

The proposed development consists of the construction of a six-story building with 159 units of multifamily housing (mid-rise) in five stories over approximately 8,745 square feet of ground floor commercial spaces, with a covered parking garage consisting of 46 parking spaces and 120 surface parking spaces, including a total of 7 ADA compliant parking spaces. Proposed access to the site would be provided by three driveways; one driveway on Flagship Street and one driveway on Road A to access the parking lot, and one driveway on Road A to access the covered parking area with the mechanical stacker spaces.

TRIP GENERATION

According to the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers, Multifamily Housing (Mid-Rise) includes apartments, townhouses, and condominium located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Trip generation for the proposed 159-unit, residential building was calculated using the current NJDOT HAPS Trip Generation Rates, published on February 8, 2019. Table 1 - Trip Generation Summary (Using NJDOT HAPS Trip Generation Rates), tabulates the trip generation for the proposed 159-units of Multifamily Housing (Mid-Rise) and 8,745 square feet of Shopping Center space. As shown in Table 1, the proposed 159-units of Multifamily Housing (Mid-Rise) would generate 57 new vehicle trips during the AM peak hour, 70 new vehicle trips during the PM peak hour, and 70 new trips during the Saturday peak hour. The approximately 8,745 square feet of Shopping Center space would generate 8 trips during the AM peak hour, 98 trips during the PM peak hour, and 90 trips during the Saturday peak hour. Based on this small square footage of Shopping Center space, the pass-by percentage is calculated to be greater than 79 percent during the PM peak hour and 38 percent during the Saturday peak hour, which means a Shopping Center space like this generates most of their trips from local traffic that is already in the area passing by the site, not traffic drawn from the region at large. Also, based on the small square footage all the trips associated with this small neighborhood Shopping Center space would be a high percentage of pedestrian trips and would primarily serve the surrounding residents. Therefore, the vehicle trip generation calculations would be considered conservative.

Redevelopment of Lot 1.06 is included in the Harbor Station South Redevelopment Plan and the traffic associated with Lot 1.06 was anticipated in the overall Access Permit Application to NJDOT.

PARKING GENERATION

The Harbor Station South Redevelopment Plan requires 1.1 parking spaces per unit, where 175 parking spaces are required. The Harbor Station South Redevelopment Plan requires 3 parking spaces per 1,000 square feet of commercial space, where 26 parking spaces are required. The total parking requirement would be 201 parking spaces, where 166 parking spaces are proposed.

Since the site provides 15% (31 parking spaces) of the required 201 parking spaces as Electric Vehicle Charging Stations (EVCS) per the NJ legislation C.40:55D-4, then a 10% reduction in the required parking spaces can be permitted, which would result in a reduction in the required parking by 20 parking spaces to 181 required parking spaces.

Shared Parking Technique

To justify the deviation from the 201 required parking spaces, an industry accepted technique called “shared parking” was employed. The parking analysis focused on the industry accepted “shared parking” technique, which involves calculating the hourly parking demand of each land use within a mixed-use development by using the temporal distribution of the parking demand of each land use, as provided in Parking Generation, 5th Edition, published by the Institute of Transportation Engineers (ITE). This effort involved determining the square footage of each commercial space (such as retail sales and service and restaurant) as well as the number of residential units, establishing the parking requirements for each individual land use from the local Ordinance parking requirements, minus the 10% for the EVCS, then totaling each hourly parking demand for each use in the proposed development to determine the peak parking demand and the associated hour of the day. These data are tabulated in an Excel spreadsheet, which allows input of the proposed square footage of each commercial use and number of residential units to determine a more realistic parking supply. The maximum parking demand for the entire redevelopment area for the single peak hour would be the minimum parking supply for the Aquaview proposed combination of land uses. We performed this shared parking analysis for a typical weekday and a typical Saturday.

We calculated the parking requirements of the 159 dwelling units and 8,745 square feet of commercial space as 6,845 square feet of restaurant space and 1,900 square feet of retail sales space based on the local Ordinance parking requirements for the individual uses proposed within the subject site minus 10% for the EVCS to be 181 parking spaces. We used the temporal distribution data provided in the Parking Generation, 5th Edition, published by the Institute of Transportation Engineers (ITE) for each land use to prepare the shared parking analysis.

Based on the hourly variation in parking demand from the data provided in Parking Generation, 5th Edition, we determined the peak parking demand for the combination of the land uses in the mixed-use development. We established the weekday and Saturday parking demand of the shared parking situation, as summarized in the Shared Parking Requirements Summary tables, attached. During the daytime hours, the residential cars are driven away from the site, while the commercial customers’ cars are driven to the site. In the late evening hours when the commercial establishments close and the residents return home the reverse parking demand would occur. With approximately 50 percent of the residential parking demand off-site during the midday hours, those vacant parking spaces are available for the commercial parking demands. We determined the maximum parking demand for the mixed-use development to be 157 parked cars between 12 midnight and 6 AM on a weekday and 157 parked cars from 12 midnight to 6 AM on a Saturday. No parking spaces should be reserved for any one use. All 166 proposed parking spaces should remain available for all users of the Aquaview mixed-use development. The proposed parking supply of 166 parking spaces would provide 5 percent more parking spaces than would be required using the results of 157 parked cars from the shared parking analysis. There are also 8 on-street parking spaces that have not been included

in the shared parking analysis. These 8 on-street parking spaces located along the site frontage on Flagship Street would be available for retail customers and residential visitors.

ITE Parking Generation, 5th Edition

For a 159-unit, multifamily housing (mid-rise) building, in a general urban/suburban setting/location with no rail transit within one-half mile with a total of 194 bedrooms, the peak parking demand would be an average of 93 parked cars and the range of the 95% confidence interval would be between 85 and 101 parked cars.

With the reduction of 20 required parking spaces based on the proposed 31 EVCS, the maximum peak parking demand of 157 parked cars will be satisfied by the proposed 166 parking spaces.

SITE PLAN REVIEW

The site plan proposes standard 9-foot wide by 18-foot long parking spaces and ADA compliant parking spaces.

The site driveway is proposed to be 24-feet wide. Within the parking garage, the main drive aisle is adequately sized at 24 feet wide to provide access into and out of each parking space, and the ADA compliant parking spaces.

The parking area is designed to accommodate ease of maneuvering for appropriate vehicle types. The surface parking spaces will be available to all residents, customers, and visitors on a first-come, first-served basis.

Due to the proximity of mass transportation, such as shuttle buses, light rail, and planned ferries, as well as local shopping, dining, and entertainment options, it is anticipated that many of the potential residents of this proposed multifamily housing complex would own fewer vehicles and would take advantage of the frequent commuter bus service and the surrounding amenities.

The ADA parking space is designed to be accessible. Adequate pedestrian access is provided between the building elevators and stairs and the parking area.

Adequate sight distance is provided from the proposed driveway on Flagship Street. With a posted speed of 25 MPH, the design speed of Flagship Street is 30 miles per hour thus resulting in a recommended stopping sight distance of 200 feet, in accordance with A Policy on Geometric Design of Highways and Streets (AASHTO). The available sight distance is over 200 feet in each direction from the proposed site driveway.

CONCLUSIONS

It is our professional opinion that the traffic associated with the proposed 159-unit, Multifamily Housing (Mid-Rise) building with approximately 8,745 square feet of commercial space is included and anticipated in the Harbor Station South Redevelopment Plan.

By implementing a shared parking technique, the proposed 166 parking spaces would adequately serve the needs of the project's residents, visitors, and customers. The surface parking spaces would be available to customers of the commercial spaces, visitors to the residents, and residents who may require an additional parking space. The site plan is designed with adequate parking and circulation for the residents, visitors, and customers of the project.

In conclusion, the development of this project would have no significant impact on the traffic operations of area roadways and intersections and would have no impact on local parking conditions.

The foregoing is a true representation of my findings.



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**TABLE 1 - TRIP GENERATION SUMMARY (USING NJDOT HAPS TRIP GENERATION RATES)
 AQUAVIEW, BLOCK 751, LOT 1.06
 FLAGSHIP STREET, BAYONNE, HUDSON COUNTY, NJ**

LAND USE		UNITS OF MEASURE (X)	AM PEAK HOUR	PM PEAK HOUR	WEEKDAY DAILY TRIPS	WEEKEND PEAK HOUR	WEEKEND DAILY TRIPS
CODE	LAND USE DESCRIPTION						
221	Multifamily Housing (Mid-Rise)	159	57	70	865	70	781
820	Shopping Center	8,745	8	98	1147	90	403
TOTAL SITE-GENERATED DRIVEWAY TRIPS			65	168	2011	160	1184

PASS-BY CREDIT (-80% PM; -38% SATURDAY)

-35

TOTAL SITE-GENERATED NEW TRIPS

126

Table 2 - Parking Calculations
AQUAVIEW, BLOCK 751, LOT 1.06
FLAGSHIP STREET, BAYONNE, HUDSON COUNTY, NJ

Bayonne - Liberty Harbor North Redevelopment Plan		
Parking Required/DU	DUs	
1.1	159	175
Parking Required per 1,000 SF		
3	8745	26
TOTAL REQUIRED PARKING SPACES		201

Electric Vehicle Charging Stations (EVCS) (15%)	30.17
Number of EVCS Proposed	31
Reduction of 10% of Required Spaces	-20

Total Required Parking Spaces with EVCS Credit	181
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Total Proposed Parking Spaces	166
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Equivalent Parking Supply is LESS than Required

SEE SHARED PARKING CALCULATIONS

166

is LESS than

REQUIRED
<u>181</u>

ITE Average	Total BRs	Parked Cars
0.48	194	93
ITE 95% Confidence Range		Parked Cars
0.44	to 0.52	85 to 101

Proposed Equivalent Number of Parking Spaces per Bedroom	0.86
0.86 is GREATER THAN the 95% Confidence Interval of 0.44 to 0.52 Parked Cars Per Bedroom	

SOURCE: *Parking Generation, 5th Edition*, published by the Institute of Transportation Engineers

SHARED PARKING REQUIREMENTS SUMMARY

INSTITUTE OF TRANSPORTATION ENGINEERS - SHARED PARKING METHODOLOGY

AQUAVIEW, BAYONNE (LOT 1.06)	PARKING SPACES REQUIRED		PARKING GENERATION, 5TH EDITION, ITE	
	Variable	Minimum Off-street		
Proposed Development				
Rates -- Square feet per space				
High-TO, S-D Restaurant (BL&D)	sq ft/space	333		
Shopping Center (Wkdy-Non-Dec)	sq ft/space	333		
Parking Required per 1,000 SF or Unit				
High-TO, S-D Restaurant (BL&D)	1000 sq ft	3.00		
Shopping Center (Wkdy-Non-Dec)	1000 sq ft	3.00		
Multifamily Housing (Mid-Rise)	1 bedroom	1.10		
Multifamily Housing (Mid-Rise)	2 bedroom	1.10		
Ordinance parking requirements				
High-TO, S-D Restaurant (BL&D)	6,845	20		
Shopping Center (Wkdy-Non-Dec)	1,900	6		
One-bedroom Apartments	124	136		
Two-bedroom Apartments	35	39		
Total required spaces		201		
Spaces provided		190		
Subtotals				
Totals				
INTERIM TOTAL				

Peak Parking Accumulation	ITE Code	Size Variable	Weekday Rate	Weekday	Sat Rate	Saturday
High-TO, S-D Restaurant (BL&D)	932	6,845 sq ft	3.00	20	3.00	20
Assumed capture parking				10%		10%
Net retail parking demand				18		18
Shopping Center (Wkdy-Non-Dec)	820	1,900 sq ft	3.00	6	3.00	6
Assumed capture parking				10%		10%
Net retail parking demand				5		5
Apartment -1 Shared Space/Unit	221	159 units	1.10	175	1.10	175
				10%		10%
Apartment -1 Reserved Space/Unit	221	159 units		157		157

C:\Users\Leek\Documents\WORK\GUPTA\Bayonne-Lot1.06\SharedParking_AquaviewREV-2.xlsx\SharedParkAnalysisSum

SHARED PARKING REQUIREMENTS SUMMARY

INSTITUTE OF TRANSPORTATION ENGINEERS - SHARED PARKING METHODOLOGY

WEEKDAY SHARED PARKING	Mixed Use Development <u>EVCS REDUCTION OF 10%</u>							Total Demand Aquaview
	MAXIMUM DEMAND		High-TO, S- D Restaurant (BL&D)	Shopping Center (Wkdy-Non-Dec)			Residential	
			18	5			157	157
6:00 AM	-	-	2	-	-	-	131	132
7:00 AM	-	-	4	-	-	-	112	116
8:00 AM	-	-	12	1	-	-	96	109
9:00 AM	-	-	13	2	-	-	87	101
10:00 AM	-	-	14	3	-	-	85	101
11:00 AM	-	-	15	4	-	-	83	102
12:00 PM	-	-	18	5	-	-	79	101
1:00 PM	-	-	16	5	-	-	77	98
2:00 PM	-	-	10	5	-	-	77	92
3:00 PM	-	-	7	4	-	-	79	90
4:00 PM	-	-	7	4	-	-	91	103
5:00 PM	-	-	11	4	-	-	101	116
6:00 PM	-	-	15	4	-	-	105	125
7:00 PM	-	-	14	4	-	-	110	128
8:00 PM	-	-	11	3	-	-	120	134
9:00 PM	-	-	7	2	-	-	131	140
10:00 PM	-	-	4	1	-	-	142	146
11:00 PM	-	-	-	-	-	-	146	146
12:00 AM	-	-	-	-	-	-	157	157
Peak parking accumulation Add 5% Overage								157 8
Total spaces required								166
SATURDAY SHARED PARKING	Mixed Use Development <u>EVCS REDUCTION OF 10%</u>							Total Demand Aquaview
MAXIMUM DEMAND			High-TO, S- D Restaurant (BL&D)	Shopping Center (Wkdy-Non-Dec)			Residential	
			18	5			157	157
6:00 AM	-	-	3	-	-	-	153	155
7:00 AM	-	-	5	-	-	-	150	154
8:00 AM	-	-	9	1	-	-	139	149
9:00 AM	-	-	13	2	-	-	131	146
10:00 AM	-	-	16	3	-	-	118	137
11:00 AM	-	-	18	4	-	-	112	134
12:00 PM	-	-	16	5	-	-	107	128
1:00 PM	-	-	14	5	-	-	104	123
2:00 PM	-	-	12	5	-	-	110	127
3:00 PM	-	-	8	5	-	-	109	121
4:00 PM	-	-	7	4	-	-	113	125
5:00 PM	-	-	7	4	-	-	116	128
6:00 PM	-	-	7	4	-	-	116	127
7:00 PM	-	-	10	4	-	-	115	129
8:00 PM	-	-	7	3	-	-	118	128
9:00 PM	-	-	6	3	-	-	123	132
10:00 PM	-	-	6	2	-	-	129	137
11:00 PM	-	-	-	-	-	-	139	139
12:00 AM	-	-	-	-	-	-	157	157
Peak parking accumulation Add 5% overage								157 8
Total spaces required								166