



Engineers
 Planners
 Surveyors
 Landscape Architects
 Environmental Scientists

Corporate Headquarters
 331 Newman Springs Road, Suite 203
 Red Bank, NJ 07701
 T: 732.383.1950
 F: 732.383.1984
 www.maserconsulting.com

MEMORANDUM

To: Borough of Red Bank Zoning Board of Adjustment

From: Jeromie P. Lange, PE, PP, CME, CFM, EXW

Date: November 14, 2019

**Re: Bifurcated Use Variance Site Plan Application
 Pre- vs. Post-Development Stormwater Runoff Analysis
 141 West Front Street
 Block 34, Lots 3.01, 25 and 26
 Borough of Red Bank, Monmouth County, New Jersey
MC Project No. 19003629A**

The subject property contains multiple existing structures including an office building, restaurant, parking garage, and an auto body shop. The proposed development consists of a residential apartment structure being constructed over the existing restaurant and adjacent parking garage. The project also includes an expansion of the existing parking garage, new lobby areas, elevators, revised vehicular and pedestrian access to the site, upgrades to the existing open space area and streetscape along with other typical appurtenant site improvements. The project will disturb approximately 1.3 acres of ground surface. There are municipal storm sewers on the streets surrounding the site. The site drains to these sewers under existing conditions and will continue to under proposed conditions.

The existing and proposed impervious coverage is summarized in the following table:

EXISTING CONDITIONS		
	AREA	PERCENT COVER
EXISTING BUILDING FOOTPRINT	58,028 SF INCLUDES 25,400 SF OF GARAGE ROOF PARKING	50.5%
EXISTING PAVEMENT	15,732 SF	13.7%
EXISTING SIDEWALK/ CONCRETE	18,051 SF	15.7%
TOTAL EXISTING IMPERVIOUS SURFACE	91,811 SF	80.0%

PROPOSED CONDITIONS		
	AREA	PERCENT COVER
PROPOSED BUILDING FOOTPRINT (INCLUDES PROPOSED ROOF GARDENS)	71,708 SF	62.4%
PROPOSED PAVEMENT	8,532 SF	7.4%
PROPOSED SIDEWALK/CONCRETE	16,956 SF	7.4%
TOTAL PROPOSED IMPERVIOUS SURFACE	97,196 SF	84.6%



As demonstrated above the project will result in an increase of 5,385 sf (0.12 acre) in impervious surface. The increase consists entirely of roof area which is considered clean runoff. The project will result in a reduction of 32,600 SF of TSS loading surface (pavement and rooftop parking). The proposed project will therefore result in an improvement in water quality.

Based on the NRCS Web Soil Survey, the soils on site and in the surrounding downtown areas are mapped Urban Land (Unrated). The areas to the south and east of the urban area are mapped Freehold-Urban land complex and the areas north and west are mapped Freehold sandy loam, both of which are Hydrologic Group B. Therefore, it can be assumed for the purposes of this memo that the underlying soils on the site are Hydrologic Group B consistent with the surrounding areas.

The project will disturb more than one acre and is therefore classified as a major development for stormwater management. The increase in impervious areas is less than a quarter acre so stormwater quality requirements do not apply. The site is located in the Metropolitan Planning Area PA1 and meets the definition of “urban redevelopment” so no groundwater recharge is required.

In order to assess the stormwater impacts associated with the project Maser Consulting has reviewed the Pre and Post Development, on-site drainage area being modified by the project. Peak rates of runoff were calculated using the Natural Resource Conservation Service Unit Hydrograph method and the HydroCAD v10.10 hydrologic/hydraulic model from HydroCAD Software Solutions. Weighted runoff curve numbers (CN) were computed based on hydrologic soil type and groundcover. Since the majority of the existing and proposed sites are impervious with storm sewers, a 6-minute time of concentration (Tc) was used.

The analysis showed that although there were changes to the ground cover in the drainage area the changes only increase the weighted CN of the site by one number with an existing CN of 91 and a proposed CN of 92. Therefore, this project will have a negligible increase on the runoff volume and peak flow rate to the existing storm sewers, as demonstrated in the table below. The modeling results below are based on separate impervious and pervious hydrographs.

	EXISTING PEAK RUNOFF RATE (CFS)	EXISTING RUNOFF VOLUME (ACRE-FT)	PROPOSED PEAK RUNOFF RATE (CFS)	PROPOSED RUNOFF VOLUME (ACRE-FT)
2 YEAR	9.17	0.55	9.66	0.58
10 YEAR	10.99	0.93	11.38	0.96
25 YEAR	14.16	1.20	14.55	1.24
100 YEAR	20.06	1.71	20.45	1.76

In conclusion the project will be considered a major development for stormwater management. The project will be exempt from water quality and groundwater recharge requirements. There is a minimal increase in peak rates of stormwater runoff and volume. The intent is to manage this increase in runoff using green infrastructure in the landscaped areas of the open space and the



modeling of the proposed rooftop gardens as green roof per NJDEP BMP criteria (the rooftop area has been modeled as impervious for this preliminary analysis). Should the Board grant the “D” variances sought under this bifurcated application, a full site plan, stormwater management design and stormwater management report (including requisite geotechnical information) will be prepared. Full stormwater compliance including an analysis of the adjacent storm sewers will be addressed in this manner as part of a subsequent site plan application.

\\HQFAS1\General\Projects\2019\19003629A\Reports\Drainage\191114_jpl_Drainage Memo.docx