



**STORM SEWER REPORT
PROPOSED RESIDENTIAL DEVELOPMENT
25 EAST 22ND STREET
BLOCK 206 LOT 1
BAYONNE, NEW JERSEY**

**SUBMITTED TO
BAYONNE PLANNING BOARD**

**SUBMITTED BY
22ND STREET PARTNERS URBAN RENEWAL LLC**

**PREPARED BY
DAL DESIGN GROUP
11 WEST 8TH STREET
BAYONNE, NEW JERSEY 07002**

JANUARY 21, 2021

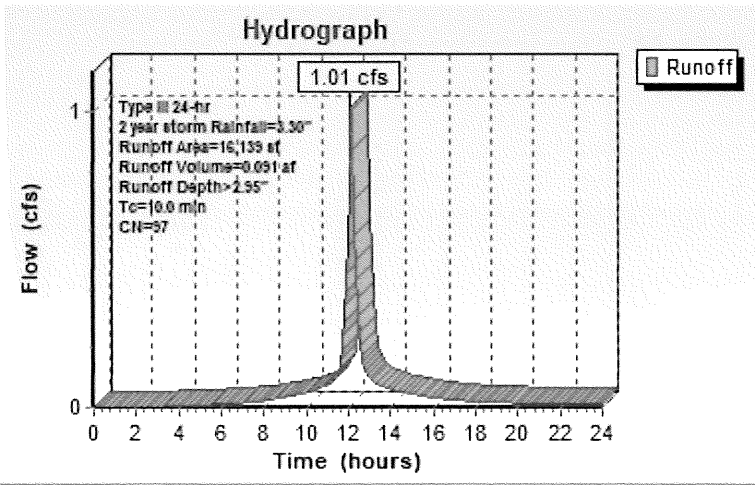
Models were developed for this analysis based on USDA Soil Conservation Service (SCS) Unit Hydrograph Methodologies and the SCS TR-20 runoff method. Runoff Hydrographs were developed for the purpose of this analysis based on USDA-SCS Type III storm distribution for a 24-hour period using the HydroCAD 10.00 Stormwater Modeling System developed by HydroCAD Software Solutions, LLC.

Three separate storms (2-year, 10-year, and 100-year frequencies) were modeled to determine pre-development flows. The detention system for the project was designed to reduce post-development peak runoff rates for the 2, 10, and 100-year design storm events to at least 50%, 75%, and 80%, respectively, of the pre-construction peak runoff rates. The three storms were modeled in the post-development condition to assess compliance with the design intent.

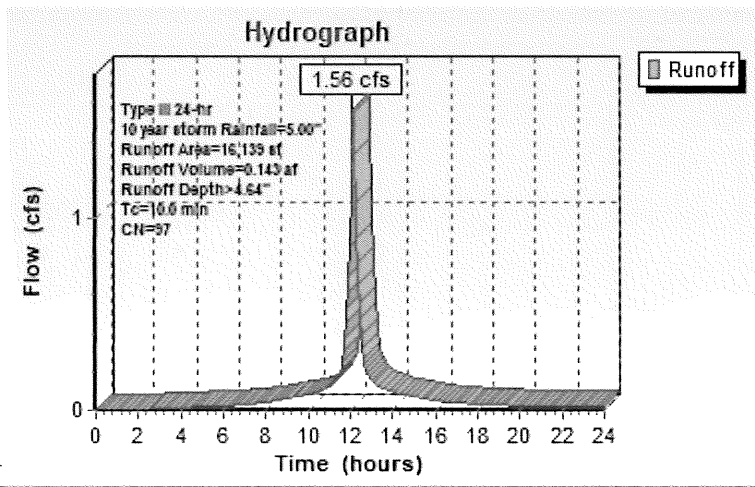
SOILS

Based upon the Hudson County Soils Survey information available from the USDA Natural Resources Conservation Service WebSoil Surveys, the soil characteristics are typical of Hydrologic Soil Group "D".

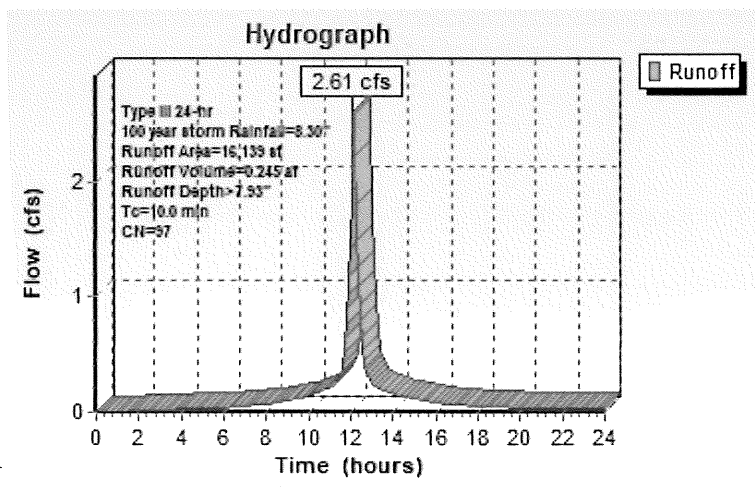
PRE - DEVELOPMENT HYDROGRAPHS



2 YR. HYDROGRAPH



10 YR. HYDROGRAPH



100 YR. HYDROGRAPH

SUBSURFACE DETENTION SYSTEM

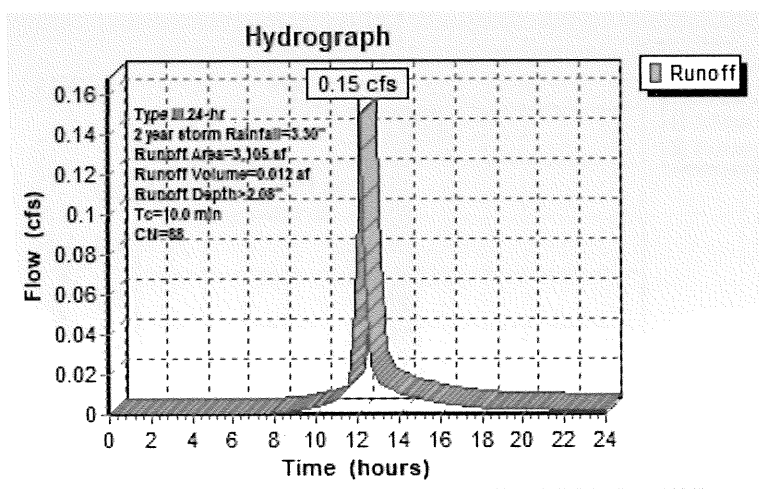
The underground storm water detention system draining to the combined sewer in East 22nd Street consists of a detention vault with a full capacity of 1436 cubic feet. Outlet control is provided by a flow control riser. Roof generated storm water is transported to this underground detention system via direct connection of roof leaders to the system. Site drainage from planters and sidewalk areas run overland. Site drainage from an interior easement area continues to be collected by an on-site storm sewer that discharges to the municipal system.

Outlet Connectivity

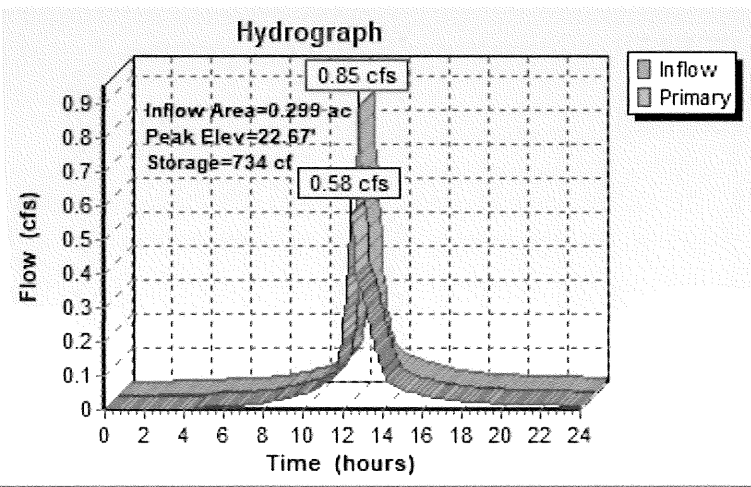
STRUCTRE	ELEVATION
Orifice (3.0")	19.70
Orifice (4.0")	22.50
Overflow at top of 8" riser	24.40
Maximum Elevation	24.90
Bottom of Sump	17.70

The following post development hydrographs are for the detention system proposed for the referenced property.

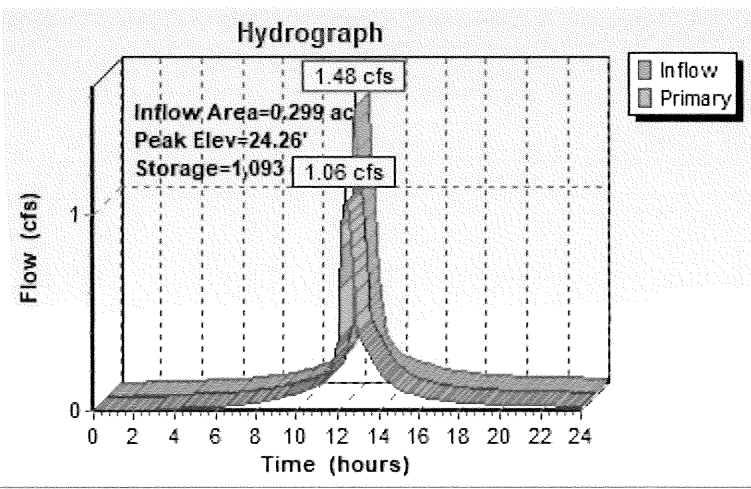
POST - DEVELOPMENT HYDROGRAPHS - non-detention site areas



2 YR. HYDROGRAPH



10 YR. HYDROGRAPH



100 YR. HYDROGRAPH

CONCLUSIONS

Based on the analysis, the proposed stormwater detention system reduces peak flows in the post-development condition.

The following table represents the peak runoff rates under existing and proposed conditions as well as the reduction in peak runoff rates achieved by the on-site stormwater detention system.

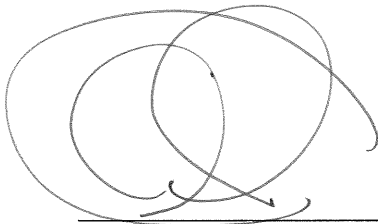
Peak Runoff Reduction

Storm Event (years)	Existing Flow (CFS)	Proposed Flow - no detention (CFS)	Proposed Flow - detention (CFS)	Total Proposed Flow (CFS)	Percent of Existing (%)
2	1.01	0.15	0.30	0.45	45
10	1.56	0.26	0.58	0.84	54
100	2.61	0.47	1.06	1.53	59

STORM SEWER LATERAL DESIGN

Storm sewer lateral sizing was determined using nomographs for solving Manning's Formula with given criteria of a 10" PVC pipe with a 2% slope and a Manning's roughness coefficient of 0.011.

Based on this initial data, the proposed 10" storm sewer has a carrying capacity of 3.50 cfs, and is sufficiently sized to accommodate the 100-year modeled runoff of 2.11 cfs for the building roof drainage assuming failure of the green roof system.



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President

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01/22/2021