



DRAINAGE SUMMARY
August 26, 2024
Revised September 5, 2024

**AP 18, Lot 42
151 State Street
Bristol, RI 02809**

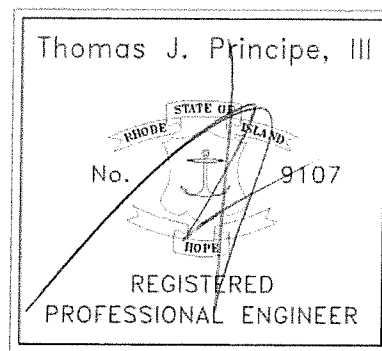
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This stormwater management analysis and accompanying HydroCAD design calculations were prepared in support of the redevelopment of 151 State Street, Bristol, Rhode Island.

The existing site contains an existing historic school building (Oliver School) with paved access, parking, and associated utilities. The majority of the existing site is paved (approximately 93%), with a small portion of lawn to the rear. The mapped soil beneath the site is NP (Newport urban land complex - hydrologic group C designation) according to the USDA Soil Survey. Currently, most of the site stormwater flows west and south towards State Street, although a portion flows to the rear of the lot. Neither portion of the property contains any stormwater controls or treatment.

The proposed development consists of retaining the existing building and re-organizing the parking to reduce the number of spaces that front on State Street, reducing the overall amount of pavement on the site, and minimal re-grading. There is an existing curb line along the western property line that is proposed to be removed and replaced, as this curbing assists in directing flows towards State Street rather than towards the abutter. The parking that is proposed to be located in the rear where the existing lawn area is present will be permeable pavement. The roof currently discharges to the existing pavement areas via downspouts. The majority of these downspouts will continue to discharge to the pavement areas, with the exception being two of the front downspouts discharging into a rain garden/bioretention area in the southwest corner where pavement will be removed and the area re-graded. Another downspout on the east side of the building will need to be redirected due to a proposed ADA ramp, and will be directed into a landscaped area in the side yard.

The stormwater design calculations focus on demonstrating the proposed site predominantly handles the intensity from the 1, 10, 25, and 100-year storm events while providing some water quality treatment and recharge that is not currently provided. As a result, the post-development flow rates to the design points referenced above have been reduced below the pre-development flows to the greatest extent possible.

The site has been divided into two subwatershed for the pre-development conditions (rear and road), and three sub-watersheds for the post development conditions (road, post, and uncontrolled).

Below is a summary of the HydroCAD analysis comparing pre-development and post-development flow rates for the project at the project design point:

	<u>151 STATE STREET</u>			
	1-YEAR	10-YEAR	25-YEAR	100-YEAR
PRE-STATE	0.48 cfs	0.88 cfs	1.09 cfs	1.56 cfs
POST STATE	0.33 cfs	0.82 cfs	1.04 cfs	1.52 cfs
PRE-REAR	0.28 cfs	0.56 cfs	0.72 cfs	1.04 cfs
POST-REAR	-0- cfs	-0- cfs	0.28 cfs	1.20 cfs

While incorporating the measures described above and taking advantage of the natural slopes and contours of the site, the project is able to achieve a decrease in stormwater runoff rate off of the property for all storm events. There is an increase to the rear during the 100-year storm event, but this is offset by the reduction towards the front. Thus, typical post-development impacts to downstream properties and water resource areas have been effectively mitigated.

APPENDICES

- A. HydroCAD 1.2" Water Quality Volume Calculations
- B. HydroCAD 1, 10, 25, & 100-year Storm Calculations
- C. Watershed Maps