

**Review of Stormwater Analysis
For
21-27 Hancock Street
Report revised April 14, 2021**

Overview

The general approach to the analysis is correct. The design engineer did not take credit for infiltration and thus provided a more conservative analysis of the impact of the project. As shown in the summary the peak flow rates and runoff volumes are to Design Points 1 and 2 are reduced by the project.

The existing area has more impervious area than the proposed developed site; 17,504 square feet and 14,656 square feet respectively. The average runoff coefficient (CN) of the site as it exists is 67 while under proposed conditions the CN is 62. Since a higher CN means more runoff volume the project as proposed will have a smaller volume of runoff than the existing site.

The rate of flow (cfs) is dependent upon the time it will take for runoff to flow from the farthest point in the drainage area to the design point or the point at which the water exits the site. The longer the time of concentration (tc) the lower the rate. In both the flow to the northwest and to the northeast the time of concentration increases from existing to proposed conditions with a resulting decrease in peak flow rate.

Discrepancies within the program results

The overflow berm from the raingarden on sheet C2 is specified as elevation 26.37 and that elevation was used as the primary outlet elevations in the HydroCAD calculations. The highest level of the pond as shown in the calculations is 28.40. Yet the peak elevations for water for the 2, 10, 25 and 100 year storms are respectively 28.6, 28.75, 28.86 and 29.06. Spot elevations along the property line are at 28.75 which are lower than the water elevations for the 25 and 100 year storms.

The plans specify a 5 foot wide overflow berm yet the calculations are run with a 2.0' long weir.

The model for the Drywell includes an outlet through a 5 inch vertical orifice. There isn't any 5 inch outlet discharge shown in plan view.

Recommendations

The elevation errors, while an indication the plans need to be corrected, do not affect the final output of the calculations. The program is developed in such a manner that when the storage in

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the raingarden exceeds 93 cubic feet as shown in the calculations the excess flow will discharge over the 2 foot long Broad-Crested weir. The depth of water over the weir is the depth required to discharge the rate entering the pond. The end result is that the predicted levels of flow are correct but the engineering plans need to be changed to reflect the model and to prevent flooding onto the properties to the north.