

**DRAINAGE ANALYSIS**

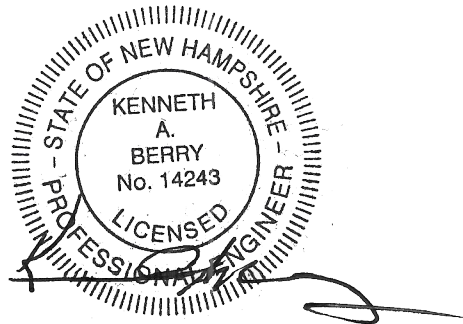
**66 Old Concord Turnpike**

Prepared for:

Sterling Realty  
66 Old Concord Turnpike

Prepared by:

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**335 Second Crown Point Road**  
**Barrington, NH 03825**



Project Number:  
DB 2018-110

**March 5, 2019**

## DESIGN METHOD OBJECTIVES

The applicant, Sterling Realty, is proposing to install a new garage style structure on the property located at 66 Old Concord Turnpike. This structure is to house typical maintenance equipment which is currently located outside. The structure size is proposed to be 1,450 square feet. The project site is located adjacent to the Oyster River and is located within the Stratified Drive Aquifer Overlay District with a coverage that exceeds 15%. Pursuant to the site review regulations, we have designed a system that captures this clean roof runoff and stores it for re-infiltration into the ground. From the NRCS websoil survey we found that the soils on site range from a very low to a very high infiltration rate. For the purposes of this design we assumed the infiltration rate to be close to zero inches per hour, and sized a structure to store the entire volume of water coming off the roof structure. This was done using a typical concrete drywell, with a stone jacket that is sized for the 50 Year / 24 Hour storm event.

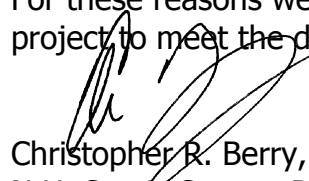
The analysis was conducted using data for; 2 Yr – 24 Hr (3.08”), 10 Yr – 24 Hr (4.66”), 25 Yr -24 Hr (5.90”), 50 Yr – 24 Hr (7.05”), and 100 Yr-24 Hr (8.44”) storm events. Rainfall quantities are based on the Extreme Precipitation Table for this location from the Northeast Regional Climate Center / Cornell University (<http://precip.eas.cornell.edu>), in accordance with Alteration of Terrain Administrative Code, ENV-Wq (Attached in Appendix 3).

Using HydroCAD simulation modeling, we placed this volume of water into the designed “container” with a near zero infiltration rate. The volume of the container is designed for the volume of runoff and therefore the system does not overflow / overtop. This is represented in the brief analysis provided. The volume of water into the system is


This is highly conservative methodology for two reasons:

- This methodology does not compare the flow from the existing area being covered. There is naturally some runoff from this footprint, which is not completely being removed. The entire area of the garage structure is now captured and re-infiltrated.
- The infiltration rate is set to nearly zero, which is not the natural condition. As the natural absorptive capacity increases, the “container size” would usually be decreased. In this case we designed a static model, assuming the entire volume would need to be held for a lengthy period of time.

For these reasons we feel this is the best low impact development design for this project to meet the design objectives of the regulations.



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