

VOLUMETRIC ANALYSIS

This Narrative is intended to document Floodplain Conditions at the project site located at 1134 Main Street in Concord, MA. Current FEMA mapping indicates that a majority of the subject property is located within Flood Zone AE (Elevation 125.00 NAVD) per Community Panel #25017C 0359F (Eff. Date 7/7/2014). This Flood Zone indicates the extent of the statistical 100-yr. flood event. A copy of the FEMA map is appended to this report.

An interview with the Property Owner indicated no known history of flooding events at the site over the period of ownership (last 35 yrs.). As indicated above, the FEMA mapping was adjusted in 2014, and up to that time, the project site was not located in the jurisdictional flood zone.

The project site was developed in the late 1970's prior to the current floodplain designation and is currently a 1,270 SF bank branch with a canopy at the drive-up, along with paved driveways and a parking area consisting of approximately 10 parking spaces. The parking area is drained with a network of catch basins and manholes with piping connected to a municipal drainage system in Main Street. The floor grade of the existing building is approximately 0.8 ft. below the current 100-yr. flood elevation, and does not appear to be constructed with flood-proofing measures. Existing surface grades at the project are above elevation 122.0 to above 125.0.

The primary goal of the proposed site design is to construct the new bank building and related site elements in a manner where more flood storage is available on-site following development than exists at present. Meeting this design goal assures that the development is completed in compliance with the Massachusetts Wetlands Protection Act, local Conservation Commission regulations, and the Concord Floodplain Conservancy Overlay District requirements.

This goal is achieved where the existing and proposed elevation conditions are compared as a surface to determine incremental cuts and fills. We analyzed the available storage at each elevation to determine a reasonable footprint for the new building including allowances for sidewalks and perimeter grading, and the flood storage capacity to be gained when the existing structure was removed. In this manner, the site grading parameters were determined between the elevations of 122.0 to 125.0 at the project site.

The following Elevation table shows the results of this effort where we achieve compensatory storage in excess of incremental fills at each elevation and an overall "cut" to "fill" ratio of 1.5:1 in compliance with Floodplain Conservancy District requirements.

| <u>Elevation Range</u> | <u>Fill Volume</u> | <u>Cut Volume</u> | <u>Storage Gain</u> |
|------------------------|--------------------|-------------------|---------------------|
| 124-125 | 70 CY | 88 CY | +18 CY |
| 123-124 | 34.8 CY | 73.2 CY | +34.8 CY |
| 122-123 | <u>0</u> | <u>2.5 CY</u> | +2.5 CY |
| Total | 104.8 CY | 163.7 CY | |

Therefore, the design goals are met, where the compensatory storage is achieved at each incremental elevation with at least a 1:1 cut to fill ratio; and an overall cut to fill ratio of 1.5:1 to comply with the Floodplain Conservancy District Requirements (1.56:1 Actual).

The grading plan submitted with our Application achieves this compensatory storage goal.

Respectfully Submitted,
CORE STATES GROUP

Alan D. Roscoe, P.E.

