

MetroWest Engineering, Inc.

January 4, 2021

Wellesley Department of Public Works
Engineering Division
2 Municipal Way
Wellesley, MA 02481
Attention: George J. Saraceno, Senior Civil Engineer

RE: 11 Caroline Street, Wellesley, Review of Adequacy for New Home

Dear Mr. Saraceno:

I have received your letter to the Wellesley Planning Director dated December 18, 2020 with review comments regarding the site plan set for improvements to the property at 11 Caroline Street in Wellesley. The Civil drawings, Sheets One through Six have been revised to address the comments from your letter and have a revision date of December 28, 2020. I offer the following comments in response, following the same format as your letter. Please note that responses are listed below the original comment in bold.

Drainage

1. We recommend that Total Suspended Solids (TSS) and Total Phosphorus Calculations be provided with the Hydrologic Assessment for the two on-site infiltration systems.

Proposed subsurface infiltration system 1 has been designed to store and infiltrate runoff from the roof surface of the new house. Consistent with Mass DEP Stormwater Management Policy, the infiltration system has a TSS removal credit of 80-percent (80.0%) although little or no TSS will be entering this infiltration system as the proposed roof surface will discharge runoff with little or no sediment.

Proposed subsurface infiltration system 2 will receive runoff from a portion of the proposed driveway. Runoff leading to this infiltration system will receive treatment by street sweeping and a deep sump catch basin.

Driveway and parking lot sweeping - 5% (BMP1)
Deep sump catch basin - 25% (BMP2)
Infiltration System – 80% (BMP3)

Parking Lot Sweeping:

Average Annual Load (1.00) * BMP1 Removal Rate (0.05) = 0.05
(0.95 of the TSS load remains)

Deep Sump Catch Basin:

TSS load remaining (0.95) * BMP2 Removal Rate (0.25) = 0.24
(0.71 of the TSS load remains)

Infiltration System:

TSS load remaining (0.71) * BMP3 Removal Rate (0.80) = 0.57

(0.14 of the TSS load remains)

Final TSS Removal Rate: $1.00 - 0.14 = 0.86$ (86% TSS Removal)

Total phosphorous leaving the site will be reduced in the post-development condition by approximately 0.05 pounds per year as demonstrated in the following calculations.

Baseline Phosphorous Load

Total Site Area = 0.40 acres

Phosphorous Load Export Rate (PLER) = 0.49 lbs./acre year

Baseline Phosphorous Load = 0.40 acres x 0.49 lbs./acre year = 0.20 lbs./year

Proposed Phosphorous Load

Total site area less area flowing to infiltration systems = 0.30 acres

Phosphorous Load Export Rate (PLER) = 0.49 lbs./acre year

Proposed Phosphorous Load = 0.30 acres x 0.49 lbs./acre year = 0.15 lbs./year

Water and Sewer

1. The Superintendent of the Water and Sewer Division has reviewed the existing water and sewer in Caroline Street and determined that both are adequate for the proposed house. A six-inch water main and an eight-inch sewer main that connect between Abbott Road and Clovelly Road are located in the street. A fire hydrant is located within 100-feet of the subject parcel. A sewer manhole is located within the gravel portion of the road.

No response required for this comment.

DPW Comments

1. On the Existing Conditions Plan, Sheet 1 of 6, the plan indicated that a gas line passes through a buried SMH in Caroline Street. This should be field verified and determine if corrective action is required.

The location of the gas line as indicated on the Existing Conditions Plan is based on gas line markings that were on the ground when our field survey was performed in August 2019. The existing sewer manhole frame and cover is below grade in Caroline Street. The inside of the sewer manhole was inspected, and no gas line was observed within the sewer structure. The existing gas line within Caroline Street was, most likely, incorrectly marked on the ground as the sewer frame and cover are below grade.

2. The Proposed Site Plan, Sheet 5 of 6, shows a proposed retaining wall along the easterly side of the property. A detail for the proposed wall should be provided on the plans.

A retaining wall detail has been added to the *Proposed Details Plan*, Sheet 6 of 6.

3. Provide a detail for the proposed driveway that shows the dimensions for the driveway off Caroline Street.

A detail of the proposed driveway has been added to the *Proposed Details Plan*, Sheet 6 of 6 and dimensions showing the width of the driveway have added to the *Proposed Layout Plan*, Sheet 3 of 6.

4. The plans show a drainage system, two catch basins and a drain manhole and one sewer manhole near a dry stream bed, which are located beyond the subject property. The dry stream bed should be labeled Caroline Brook. We recommend that the designer add existing conditions linework such as the roadway layout, parcel lines, utilities and house locations to the plan.

Additional survey work was performed to locate the house and driveway on the abutting lot to the south and edges of pavement and utilities in Caroline Street south of the subject property. This information is shown on *The Existing Conditions Plan*, Sheet 1 of 6 and *Proposed Site Plan*, sheet 5 of 6.

5. We recommend that any fill brought to the site be inspected by an engineer prior to unloading onto the site.

A note has been added to the *Proposed Grading Plan*, Sheet 4 of 6 recommending the inspection of fill material or for the site contractor to provide trucking receipts detailing date and quantity of fill received at the site upon request of the Wellesley Engineering Department or the Design Engineer.

6. Provide the cut and fill calculations for the project. How many trucks will be requires to deliver fill to the site?

Cut and fill calculations have been performed and shown on the *Proposed Grading Plan*, Sheet 4 of 6. The project will require 563 cubic yards of fill to be imported to the site and would require approximately 30 truck loads (based on 10-wheel dump truck with 20-cubic yard capacity.)

7. The private way, Caroline Street, is in poor condition in front of the property with large potholes throughout. Photographs are provided, see enclosure 1. We recommend paving the road along the entire frontage of the lot, edge of road to edge of road. Any paving work would require new sub-base material and paving the binder and top course with a centerline and cross slope of grade at 2% on either side.

The applicant has agreed to grading and paving the traveled way in Caroline Street in front of the subject property. A detail showing the proposed road cross section has been added to the Proposed Site Plan, Sheet 5 of 6.

The existing pavement on the northerly side of Caroline Street extends approximately 10-feet into the section of Caroline Street adjacent to the subject property. Approximately 72-linear feet of roadway (measured along centerline) would require reconstruction and not 94 linear feet as indicated in the cost estimate. This would yield an area of approximately 1,300 square feet requiring gravel, grading and pavement thereby reducing the quantities and total cost associated of grading and paving. The following materials are estimated to be required for this operation:

**Base Gravel = 50 cubic yards
Binder Course Asphalt = 20 tons
Top Course Asphalt = 13 tons
Unclassified Excavation = 50 cubic yards**


The applicant is hopeful that some reduction in the cost estimate provided can be achieved due to the reduced quantities of materials at the same unit costs.

8. Provide a note on the Erosion and Sediment Control Plan, sheet 2 of 6, that silt sacks should be provided for the two catch basins in front of the site on Caroline Street. Provide a detail of the silt sacks on the Erosion and Sediment Control Plan.

Notes calling for the installation of silt sacks in the two existing drain catch basins in Caroline Street has been added to the *Erosion and Sediment Control Plan*, Sheet 2 of 6. A detail of the silt sack has been added to the *Erosion and Sediment Control Plan*, Sheet 2 of 6.

Please feel free to contact me should you have any questions or if you require any additional information.

Sincerely yours,



Brian Nelson, P.E.
Project Engineer