November 30, 2021

55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

Mr. Ross Povenmire
Office of the Conservation Commission
Town of Boxford
7A Spofford Road
Boxford, Massachusetts 01921

Re: **Response to engineering review comments**
Harry Lee Cole School
Boxford, Massachusetts

Dear Mr. Povenmire:

We are in receipt of technical review comments from a third party peer reviewer for this project. These comments were provided pursuant to our application for a Stormwater Management Permit that is presently being considered by the conservation commission. We have received the following:

- A stormwater engineering review letter from Roux Associates, Inc. to the Office of the Conservation Commission, dated November 18, 2021

Our submission materials have been revised as described below to address each review comment and are included with the submission of this letter. The review comments from the documents referenced above have been reproduced below, followed by our response to each comment.

Review comments from Roux Associates, November 18, 2021:

1. For sites with activities that are not otherwise explicitly defined as having Land Uses with Higher Potential Pollutant Loads (LUHPPLs), such as gasoline stations, vehicle washing, or fleet storage areas, the apparent common criterium for defining if a site qualifies as a LUHPPL is generally the presence of parking lots with high-intensity-use. Parking lots with high-intensity-uses are generally referenced as those with "1,000 vehicle trips per day or more" in the *Massachusetts Stormwater Handbook*. Assuming this redevelopment project will not otherwise be classified as a LUHPPL, Roux accepts the response by W&S with respect to the intended use of deep hooded catch basins for petroleum removal purposes.

   Response: Acknowledged.

2. TSS Removal calculation for Subcatchment A3 lists a "Deep Sump and Hooded Catch Basin" prior to the "Bioretention Area" (BR-1) and the "Subsurface Infiltration Structure" (IS-1). Roux was not able to locate deep hooded catch basins which connect to BR-1 on the Revised Drawings. Recommend the Designer revisit this TSS removal calculation or identify the deep hooded catch basin.

   Response: The TSS removal calculation worksheet has been revised.

3. With respect to details presented in the Revised Civil Drawing (Sheet No. C505) for the "Bioretention Area" (BR-1):

- The Review Response Letter states: "The bioretention area is intended to function as an infiltrating bioretention area, which is consistent with what is shown in the plans and details (i.e. no underdrain or liner shown)." However, a 40 MIL polyvinyl liner is presented on Sheet No. C505 of the Revised Civil Drawings. Recommend Designer revisit their revision for consistency.

  Response: The detail on Sheet No. C505 has been revised to eliminate the liner and underdrain. The proposed bioretention area will allow infiltration, but please note that there is no credit taken for the recharge to groundwater that the practice will offer.

- As pre-treatment for BR-1 includes "grass and gravel" filtering strips, the Designer should demonstrate this pre-treatment option will not experience scouring from sheet flow entering BR-1.

  Response: An outlet protection sizing calculation has been prepared and inserted into the stormwater report showing the design flow velocity entering the bioretention area. Per said calculation, the velocity of the 10-year storm entering the practice is 0.11 feet per second. Per the Massachusetts Stormwater Handbook, practices receiving flows with velocities less than 2.5 feet per second will not experience scouring and outlet protection is optional.

4. For the subsurface detention system (Stormtech SC-740, "DS-1"):

- The Revised Documents indicate all four rows of SC-740 chambers are to be isolator rows. Typically Stormtech Isolator Rows are isolated from the other subsurface chambers and are not connected via pipe to the outfall control structures (in this instance OCS-3 from the Revised Civil Drawings). Recommend the designer provide plan and/or detail drawings showing the discharge configuration of DS-1.

  Response: A detail has been provided on sheet C508 showing the connection of the chamber system to OCS-3 and shop drawings will be provided by the manufacturer prior to construction. Flows will enter the system via the 12" manifold and 24" inlet pipe at ICS-3. Flows will be distributed through all four rows of chambers and will infiltrate below. Flows that infiltrate will be collected by the 6" underdrain pipe and will discharge to OCS-3. As flow is discharged to OCS-3, the water level within the structure will rise and will either discharge through the 3" orifice or over the top of the baffle wall. Flows will then exit OCS-3 via the 24" outlet pipe.

- Drawing C135 specifies the outfall baffle invert for OCS-3 as Elev. 89.95, the top of the chambers as Elev. 91.25, and the top of the stone as Elev. 91.75, and the HydroCAD report lists the peak elevation associated with the 100-year storm of the detention system as Elev. 90.44. Although highly dependent on the nearby groundwater table and downstream stormwater handling infrastructure inverts, recommend the Designer investigate if there is a possibility to provide additional subsurface storage by increasing the invert of the outfall baffle.

  Response: The invert of the baffle wall within OCS-3 has been raised to invert 91.25 in order to provide treatment to higher volumes. By increasing the elevation of the top of the baffle wall, we are increasing the efficiency of the underground chamber system by utilizing more of the available storage.

- Drawing C135 specifies the "12" HDPE Manifold" (the piping which distributes incoming flow to all of the chambers) invert as Elev. 89.95 and the outfall baffle invert for OCS-3 as Elev.

89.95. As the inverts are the same, it is questionable if flow will be evenly distributed across the chamber system or directly travel to the outfall structure. Recommend the designer verify flow will not short-circuit the other chambers and proceed directly to the outfall (Note: this recommendation may be unnecessary depending on the preceding recommendations).

Response: The invert of the baffle wall within OCS-3 has been raised to invert 91.25, which will eliminate the possibility of flows proceeding directly to the outfall.

5. The Illicit Discharge Compliance Statement (Attachment I) included with the Stormwater Report does not make a statement that no illicit discharges exist nor document efforts to investigate illicit discharges. Roux recommends the project proponent provide a signed statement which states there are no illicit discharges that meets the requirements outlined in the MA SW Handbook.

   Response: The illicit discharge compliance statement has been revised to include an appropriate statement to satisfy this request. The applicant will provide this document with signature.

We trust that our responses have adequately addressed the comments provided by Roux Associates. We look forward to answering any questions that you may have.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

James I. Pearson
Technical Specialist