

M1529-002
May 20, 2020

Rick Taintor, AICP
Community Planning Consultant
Town of Durham

Re: **Mill Plaza Redevelopment
Response to Stormwater Review Comments**

Dear Mr. Taintor,

This letter is in response to comments from the "Initial Stormwater Peer Review", letter from Horsley Witten Group (HW), dated May 4th, 2020. As you are aware, we had a video conference with you, Janet Bernardo, PE from Horsley Witten Group, Emily Innes from Harriman, and Sean McCauley representing Colonial Durham Associates, on May 13th, 2020 to review the comments from the letter. The following information is being provided as part of the response to these comments:

- Boring Logs and Location Plan
- Surface Area Treatment Plan
- Underground Detention Basin Buoyancy Calculation
- Rain Garden Drawdown Hydrograph Table
- Revised Rip-Rap Calculations
- Long Term Operation and Maintenance Plan, Sheets 6-2 and 6-3
- Site Plan, C-102, dated May 20th, 2020
- Grading Plan, C-103, dated May 20th, 2020
- Details Plan, C-501, dated May 20th, 2020
- Details Plan, C-502, dated May 20th, 2020
- Details Plan, C-506, dated May 20th, 2020
- Details Plan, C-508, dated May 20th, 2020
- Site Sections, A30.1, dated May 20th, 2020
- Landscape Plan Parking Island Study, L00.71, dated May 20th, 2020
- Landscape Overall Plan, L2.0, dated May 20th, 2020
- Planting Plan, L2.1, dated May 20th, 2020
- Planting Plan, L2.2, dated May 20th, 2020
- Planting Plan, L2.3, dated May 20th, 2020
- Roof Planting Plan, L2.4, dated May 20th, 2020
- New England Wetland Plants – Conservation Seed Mix Cut Sheet
- New England Wetland Plants – Erosion Control and Restoration Seed Mix Cut Sheet
- New England Wetland Plants – Wetmix Seed Mix Cut Sheet

The following are responses (in **bold**) to the comments (in *italics*) from the review letter:

1. *The Applicant has proposed an increase in impervious area of approximately 17,415 square feet (sf). Per the Alteration of Terrain Regulations and the NHSWM, HW recommends that the Applicant include calculations to verify that an adequate groundwater recharge volume (GRv) and water quality volume/flow (WQV/WQF) treatment will be provided to compensate for the loss of pervious cover.*

The WQV/WQF for the project is being provided within the proposed rain garden, gravel wetland and by the Jellyfish Filter. Groundwater recharge is limited on the site due to the silty and clayey soils (Hydrologic Soil Group C&D



soils), and shallow bedrock in the northern portion of the site. However, groundwater recharge will be provided below the proposed rain garden. Final calculations of the WQV/WQF and GRV will be provided as part of the state Alteration of Terrain (AOT) Permit application. The boring logs describing the soils have been included with this letter.

2. *The entire parcel is 449,328 sf. The existing site has 275,725 sf of impervious surface (61% of total site) and the proposed site has 293,140 sf of impervious area (65% of total site). In accordance with the definition of redevelopment under Section 15.10 of the Site Regs, "Any creation of new impervious area over portions of the site that are currently pervious is required to comply fully with the requirements of this manual." HW recommends that the Applicant provide the required documentation illustrating that the new impervious area, which appears to be a portion of Building C in the northeast corner of the lot complies, fully with the Site Regs including Section 15.4.2 for New Development. HW further recommends that the Applicant clearly document how the redevelopment portion of the site complies with Section 15.4.3.2 of the Site Regs.?*

Documentation of compliance with the Town of Durham Site Plan Regulations was included with the Stormwater Management Report. In addition, we have included a plan showing the extent of the impervious areas on-site for both the "Redevelopment Area" and "New Development Area. 98% of the impervious area from the entire site will now be treated where no treatment was provided before.

3. *In accordance with 15.4.2.3.i measures shall be taken to control the post-development peak rate of runoff and control the runoff volume. The Applicant has proposed three stormwater practices which will control the peak rate of runoff for the 1-inch, 2-year, 10-year, 25-year, and 100-year storm events so that it does not exceed pre-development flows, however the runoff volume for all storm events analyzed will increase with the proposed design. HW recommends that the Applicant clarify how it is complying with the Durham Site Regs for the increased impervious surface and verify that the proposed increase in stormwater volume will not create a flooding issue within College Brook.*

As discussed on our video conference on May 13th, the volume of stormwater runoff from the site will not contribute to flooding of College Brook, as it is riverine system that flows to Mill Pond, before entering the Great Bay and eventually the Atlantic Ocean. As long as the volume of runoff is properly detained, and the rate of stormwater runoff is reduced, there should be no impact on flooding. The Stormwater Management Report documents reductions in the rate of stormwater runoff from the site in all storms including the 100-year storm.

4. *In accordance with Section 15.4.3 of the Site Regs for Redevelopment Projects with more than 40% existing impervious surface coverage, stormwater shall be managed for water quality in accordance with one of three specific techniques. HW recommends that the Applicant clearly document how it is meeting the redevelopment stormwater criteria.*

Please see response to comments 1 and 2 above.

5. *It appears that stormwater discharging from an area located north of the proposed development may run onto the site under existing and proposed conditions. HW recommends that the Applicant revisit the northern watershed delineation and verify that the catchment area includes the existing run-on from the abutting properties and demonstrate that the proposed stormwater practices can accommodate the stormwater running on to the site.*

As discussed on our May 13th video conference, the area of "run-on" from the abutting properties to the north of the site is negligible.

6. *Based on the Grading, Drainage, and Erosion Control Plan (Sheet C-103), it appears that stormwater runoff captured by proposed catch basin (PCB)-27 is not being treated prior to discharging into College Brook via proposed drain manhole (PDMH)-10. HW recommends that the Applicant revisit the stormwater management design to provide treatment to runoff captured by PCB-27.*

The area that drains to PCB-27 from the site is only a small portion of the entrance drive to site which would be considered "redevelopment". PCB-27 is replacing an existing catch basin and will add a sump and oil-water separator hood to provide a level of stormwater treatment above what exists today.

7. *It appears that the existing closed drainage system in Mill Street is being reconfigured prior to discharging into College Brook. The Applicant has not included the existing or proposed runoff in Mill Street in its stormwater analysis and does not appear to have addressed the reconfiguration to verify that the pipes have been adequately sized. HW recommends that the Applicant provide the closed drainage analysis for review and revisit the final discharge point at PDMH-10 to provide improvements to the water quality if feasible.*

PCB-27 replaces an existing catch-basin on Mill Road. The stormwater runoff from the site is being reduced to this location, and the existing pipe size (24") is not changing. Therefore, no further analysis of this pipe is required as the runoff is being reduced.

- 8.
- a. *Based on the Rain Garden Detail on Sheet C-506, the Applicant has proposed for the rain garden to be composed of a filter media layer, underlain by pea gravel, underlain by coarse gravel. Per NHSWM Vol. 2, HW recommends that the filter media layer of the rain garden be underlain by at least 1 foot of coarse gravel, followed by 3 inches of pea gravel.*

As discussed on video conference on May 13th, 2020, the detail meets the requirements of the NHDES. No further changes are required.

- b. *Per NHSWM Vol. 2, HW recommends that the Applicant provide calculations to demonstrate that the proposed rain garden will drain within 72 hours.*

Calculations have been provided as part of this response letter.

- c. *In the Applicant's HydroCAD analysis, the bottom elevation of the rain garden is modeled at 32.50. Based on the Rain Garden Detail, HW recommends that the Applicant revise the HydroCAD analysis to use a bottom elevation of 32.75 to account for the proposed 3-inch bark mulch layer.*

It is common practice to ignore the negligible volume of the 3" bark mulch layer when modeling rain gardens due to the high porosity of bark mulch. However, the detail has been updated to remove the bark mulch. This area will now be seeded with no bark-mulch.

9. *The Applicant has proposed to construct a gravel wetland as a filtration practice to treat a portion of the site's stormwater runoff. Per NHSWM Vol. 2, HW recommends that the Applicant revise the gravel wetland design to have an 8-inch layer of wetland soil, rather than the 6-inch layer illustrated in the Gravel Wetland Detail on Sheet C-506.*

The detail has been revised to add 2-inches of additional wetland soil.

10. *The Applicant has provided two riprap apron design calculations in the Stormwater Analysis – one for "Pond 2" and the other for College Brook. Sheet C-103 indicates the presence of three (3) riprap aprons proposed for the site: one in the rain garden, one in the gravel wetland, and one at an outfall into College Brook south of the gravel wetland (FES-1). HW recommends that the Applicant clarify which riprap apron dimensions correspond to which riprap locations on the plans, and revise the grading plan and/or detail to indicate the length, width, and depth of each apron. Further, HW recommends that the Applicant verify that sizing calculations have been provided for each riprap apron proposed.*

Revised rip rap apron calculations have been provided to clarify which set of calculations belong to each proposed apron. As discussed on our video conference on May 13th, rip rap apron calculations are not required for the rain garden. Additionally, the apron dimensions have been modified from the calculations based on the geometry of at the out letting pipe. For example, the rip rap apron for the outlet of the Gravel Wetland was modified so as not to extend into the wetland adjacent to College Brook since this area is an existing water way and a headwall with wingwalls is being used to help reduce the footprint of the apron.

11. *The Applicant has not included information regarding test pits or the estimated seasonal high water table (ESHWT) elevation. HW recommends that test pits be conducted within the footprints of the proposed stormwater management practices to determine the ESHWT at each location. The stormwater practices are not infiltrating therefore a separation to ESHGT is not necessary. However, the Applicant should clearly document that the bottom of the proposed systems will not intercept the ESHGT.*

As discussed on our May 13th video conference, there is not a concern of the separation from the ESHWT being provided for the rain garden (since it has an under drain below the filter media), for the gravel wetland (since it is designed to intercept the groundwater), or for the underground detention basin (since it is lined). Additionally, we have provided buoyancy calculations showing that the underground detention basin will not "float".

12. *The Applicant has included a Grass Lined Swale Detail on Sheet C-502, however HW was not able to locate the grass lined swale on the plans. HW recommends that the Applicant verify that a swale is proposed for the site and clearly label it on the plans.*

This detail has been removed from the plans.

13. *The Applicant has indicated on the Landscape Overall Plan (Sheet L2.0) that snow is to be stored on the islands of the parking lot. HW recommends that the Applicant confirm that no vegetation is proposed that would be negatively impacted within the snow storage locations, per Durham Site Regs III.9.3.1. Further, given the large footprint of the site and anticipated increased parking demands due to the proposed construction of two additional residential buildings, HW recommends that the Applicant provide a snow storage calculation per Durham Site Regs III.9.3.8.*

Snow storage and removal notes have been added to the Site Plan that require all snow not able to be stored on-site to be removed from the site. The notes also include a requirement that vegetation not be damaged by snow storage to the extent feasible, or it shall be replaced, and that snow shall not be pushed against, or into College Brook.

14. *On the Existing Conditions and Demolition Plan (Sheet C-101), the Applicant proposes that the ledge outcrop will be removed. HW recommends that the Applicant confirm whether blasting will occur. If blasting is anticipated, HW recommends that the Applicant prepare a blasting plan per Durham Site Regs III.3.7.*

A blasting plan will be provided by the contractor selected to perform this work prior to construction.

- 15.
- a. *Given the proximity of the site to College Brook, HW recommends that the Applicant revise the plans to designate a specific equipment and material storage/concrete washout area, per Durham Site Regs III.3.2.1.*

Notes have been added to the plans to require that material storage and concrete wash-out areas be greater than 50-feet from College Brook as requested by the Town Engineer.

- b. *HW recommends that the Applicant include instructions on the plan and clearly label the trees to be protected during construction per Durham Site Regs III.3.5.2. Further, HW recommends that construction fencing be installed around protected trees during construction activities, and that a construction fence or tree protection detail be included on the plans.*

A tree protection detail has been added to the plans with a note that the contractor shall walk the perimeter of the site with the Owner prior to construction to identify trees to be protected during construction. Specific trees were also noted on the plans to have tree protection installed.

- 16.
- a. *The Applicant has proposed a "Rain Guardian Turret" structure to be used as an inlet and debris filter at the proposed rain garden. HW recommends that the Applicant revise the LTOMP to include instructions to inspect/maintain the Rain Guardian Turret structure.?*

The LTOMP has been revised to include inspection and maintenance of the "Rain Guardian Turret" structures.

- b. *The Applicant has proposed oil/water separators to be installed at several catch basins throughout the site. HW recommends that the Applicant revise the LTOMP to include instructions to inspect/maintain the oil/water separators.*

The LTOMP includes instruction to inspect and maintain the catch basins on-site.

- c. *The Applicant has proposed that the underground detention basin be inspected and cleaned on an annual basis. HW recommends that the Applicant revise the inspection rate of the proposed underground detention basin to be two (2) times per year, per the NHSWM Vol. 2 instructions on underground infiltration basin maintenance.*

The LTOMP has been revised to change the inspection of the underground detention basin to be 2-times per year.

- d. *The Applicant has included a Snow & Ice Management section in the LTOMP, which includes instructions on salt management for deicing. Per Durham Site Regs III.15.4.2.f, HW recommends that the Applicant use a compound other than salt for deicing, such as sprayed-brine or sand, especially considering the proximity to College Brook. If salt is used, HW recommends that the Applicant revise the plans to specify the location of a salt storage structure per Durham Site Regs III.13.3.*

A salt storage structure is not proposed on-site. Salting and snow management will likely be handled by an off-site management company. Small amounts of salt for deicing may kept within buildings, or under cover on-site.

- 17. The Applicant has provided areas for snow storage on Sheet C-102. One of the areas designated as snow storage includes the gravel wetland. HW recommends that the Applicant does not store snow within the stormwater practices.

The plans have been revised to remove snow storage from the gravel wetland area.

- 18. *The Applicant has proposed a number of plantings in the Planting Plan (L2.1) and the Roof Plantings Plan (L2.4), several of which are either introduced species to New Hampshire or wholly non-native to New Hampshire based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). HW recommends that the Applicant revisit the Planting Plan per the Durham Site Regs III.15.4.2.3.*

As discussed at our video conference on May 13th, section 15.4.2.3 applies to stormwater management areas. The plantings within the proposed gravel wetland and rain garden, have been revised to meet these requirements.

If you have any questions or need any additional information, please do not hesitate to call me at 603-433-8818 or email me at jimpersechino@tighebond.com.

Very truly yours,

TIGHE & BOND, INC.



Joseph Persechino, PE
Senior Project Manager

Enclosures

J:\M\M1529 McCauley Realty Advisors, LLC\002-Mill Road Plaza\Report_Evaluation\Applications\Site Plan Review\20200506_Response Letter\20200520_Mill_Plaza_Response_Letter.docx

