

Horsley Witten Group

Sustainable Environmental Solutions

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October 27, 2021

Mr. Rick Taintor, AICP
Community Planning Consultant
Durham Planning Board
8 Newmarket Road
Durham, NH 03824

Re: Stormwater Peer Review – Revised Site Plan
Mill Plaza Redevelopment
7 Mill Road, Unit L, Durham, NH

Dear Mr. Taintor,

The Horsley Witten Group, Inc. (HW) is pleased to provide the Durham Planning Board with this letter report summarizing our review of the updated Site Plans and stormwater management for the proposed Mill Plaza Redevelopment project at 7 Mill Road, noted as Map 5, Lot 1-1, in Durham, New Hampshire. Tighe & Bone prepared the application on behalf of Colonial Durham Associates, LP (Applicant).

The Applicant is proposing to redevelop an existing shopping center and parking lot. The proposed project includes maintaining one building which currently contains Hannaford Supermarket, noted as Existing Building A, and demolishing the second building on the site. Two mixed-use buildings, labeled Proposed Building B and Proposed Building C, will be constructed. The Applicant is proposing to reconfigure the parking lot, install a walkway extending from the site, install utilities, and improve the stormwater management. The proposed stormwater management system includes a rain garden, a constructed gravel wetland, and an underground detention system with several proprietary water quality treatment units providing pretreatment. Catch basins, roof leaders, and drainage piping provide stormwater conveyance to the stormwater management practices. The site discharges stormwater via singular 36-inch culvert with riprap protection to the adjacent stream.

College Brook runs parallel to the southwestern property boundary, and wetlands have been delineated surrounding the brook. A portion of the existing and proposed pavement falls within the 75-foot Upland Wetland Protection Buffer. A small portion of the existing and proposed pavement falls within the 25-foot Shoreland Buffer. The 100-year *Federal Emergency Management Agency* (FEMA) floodplain boundary is located adjacent to College Brook outside of the limit of work.

HW's last review of the project was conducted May 20, 2020. HW participated in a virtual meeting with the Applicant on October 21, 2021 to understand the extent of changes for the updated site design. HW received the following documents and plans on October 11, 2021:

- Stormwater Management Report for Mill Plaza Redevelopment, Durham, NH, prepared by Tighe & Bond, dated May 23, 2018, last revised October 8, 2021 (102 pages); and

- Site Plans for Mill Plaza Redevelopment, Durham, NH, prepared by Tighe & Bond and Harriman Associates, dated May 23, 2018, and revised through October 8, 2021, which includes:
 - Cover Sheet
 - Notes and Legend Sheet G-101 (1/2/2020)
 - Existing Conditions and Demolition Plan C-101 (3/10/2021)
 - Site Plan C-102 (10/8/2021)
 - Grading, Drainage, and Erosion Control Plan C-103 (10/8/2021)
 - Utilities Plan C-104 (10/8/2021)
 - Conceptual Utility Easement Plan C-105 (10/8/2021)
 - Erosion Control Notes and Details Sheet C-501 (5/20/2021)
 - Details Sheets (2 sheets) C-502 to C-503 (10/8/2021)
 - Truck Turning Plan C-601 (10/8/2021)
 - Buffer Coverage Plan C-701 (10/8/2021)
 - Buffer Restoration Plan C-702 (10/8/2021)
 - Landscape Overall Plan L2.0 (10/8/2021)
 - Planting Plan (3 sheets) L2.1 to L2.3 (10/8/2021)
 - Roof Planting Plans L2.4 (10/8/2021)
 - Planting Details (3 sheets) L3.0 to L3.2 (10/8/2021)
 - Hardscape Overall Plan L4.0 (10/8/2021)
 - Hardscape Plan (2 sheets) L4.1 to L4.2 (10/8/2021)
 - Exterior Elevations (2 sheets) A20.1 to A20.2 (10/8/2021)
 - Renderings (3 sheets) A20.3 to A20.5 (10/8/2021)
 - Site Sections A30.1 (10/8/2021)
 - Rendered Perspective (2 sheets) A40.1 to A40.2 (10/8/2021)
 - Electrical Site Lighting Plan ES10.1 (10/8/2021)
 - Electrical Site Plan ES20.1 (10/8/2021)

Stormwater Management Review

As noted, HW last reviewed the stormwater management design in May 2020, and was satisfied that the Applicant had adequately responded to our comments and complied with the Town of Durham and New Hampshire regulations. It is HW's understanding that the changes to the overall site design did not majorly impact the proposed stormwater management design. HW offers the following synopsis and comments on the updated stormwater management design:

1. The proposed development maintains peak rate attenuation and runoff volumes and continues to satisfy New Hampshire and Town of Durham requirements. HW has compiled the tables on the following page summarizing the revised peak runoff rates for pre- and post-development conditions as well as the peak volumes for predevelopment conditions, the approved May 2020 design, and the modified October 20201 design.

Peak Rate of Stormwater Discharge in Cubic Feet per Second (CFS)

Storm	Pre-Development	May 2020 Post-Development	October 2021 Post-Development
1-inch	3.34	2.09	2.29
2-year	24.93	8.67	9.22
10-year	40.69	24.02	29.44
25-year	52.99	41.30	48.82
50-year	64.44	54.41	62.31

Peak Volume of Stormwater Discharge in Acre-feet (af)

Storm	Pre-Development	May 2020 Post-Development	October 2021 Post-Development
1-inch	0.280	0.363	0.359
2-year	2.066	2.167	2.138
10-year	3.459	3.552	3.519
25-year	4.577	4.663	4.629
50-year	5.632	5.712	5.679

HW notes that the post-development rates generally increased from the previous (May 2020) design iteration, while total runoff volumes decreased. During the 25-year storm event the site discharges 7 cfs higher peak flow rates into College Brook than the previous design iteration. Most of this flow rate increase appears to be from the decreased footprint and storage volume of the Underground Detention Basin, with a larger weir and overflow control structure controlling outflow from the Detention Basin. HW recommends that the Applicant confirm that the statement above is accurate.

2. The updated site design shifts the drive aisle on the southern edge of the proposed development approximately 30 feet towards the proposed buildings. As a result, most proposed parking spaces are located outside of the 75-foot upland wetland protection buffer. 372 total parking spaces are proposed, a net decrease of 196 parking spaces from the previous (May 2020) design iteration. No further action needed.
3. The overall limit of disturbance has increased by approximately 16,000 square feet (sf), the majority of which appears to relate to grading in proximity to College Brook. HW recommends that the Applicant justify this increase in disturbance.

4. HW calculates a slope of 1 vertical to 2.25 horizontal (1:2.25) in the area above Proposed Building C2. A maximum slope of 1:3 maximum is considered best practice and typically requires slope stabilization. HW recommends that the Applicant consider reducing the slope in this area and confirm the riprap channel proposed provides adequate protection for the steep slope.
5. The provided stormwater calculations include eight (8) post-development drainage areas which appear to correlate to the updated drainage design. No further action needed.
6. HW notes that the riprap aprons at points of discharge appear to be adequate. For the riprap calculations, the incoming flow discharging to the constructed gravel wetland decreased, but the slope of the contributing 12-inch pipe and overall inflow into the gravel wetland has increased. HW recommends that the Applicant confirm this calculation is accurate.
7. The overall rain garden footprint appears to have increased slightly from the previous design iteration with no change to storage depths. However, the HydroCAD model indicates nearly double the storage volume for the rain garden at the peak elevation from the previous design. HW recommends that the Applicant confirm this storage volume is accurate.
8. The elevation callout for the rain garden on Sheet C102 indicates that the bottom of the rain garden basin is at elevation 31.5, while the provided detail and HydroCAD model indicates 32.5. HW recommends that the Applicant confirm the intended design elevations.
9. HW notes that the footprint and storage volume of the constructed gravel wetland has increased slightly from the previous design iteration. The constructed gravel wetland receives slightly more flow and still maintains peak rate attenuation. No further action needed.
10. HW notes that the overall footprint of the underground detention basin has decreased, and the available storage volume has decreased by 33% (12,000 cf), which appears to be a result of the reduced paving and disturbance area below Proposed Buildings B and C2. In addition, the overflow weir at the overflow control structure has been updated from a 4-foot-long weir to a 6-foot-long weir, resulting in a higher release rate from the detention basin. The proposed detention basin appears adequate, as it still provides peak rate attenuation and runoff volume reduction. HW recommends that the Applicant confirm the above information is accurate, otherwise no further action required.

Conclusions

HW believes that the project maintains compliance with the Town of Durham Site Regulations and New Hampshire requirements, pending the minor comments outlined above. The Applicant is advised that provision of these comments does not relieve it of the responsibility to comply with all Town Bylaws and Regulations, State of New Hampshire laws, and federal regulations as applicable to this project. We appreciate the opportunity to assist the Durham Planning Board on this project review. Please contact Janet Bernardo at 857-263-8193 or jbernardo@horsleywitten.com if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.



Janet Carter Bernardo, P.E.
Associate Principal



Peter Ogonek, E.I.T.
Project Engineer