GREEN INTERNATIONAL AFFILIATES, INC.
239 LITTLETON ROAD, SUITE 3 WESTFORD, MA 01886
T: (978) 923-0400 | F: (978) 399-0033 | WWW.GREENINTL.COM

June 20, 2018

Ms. Amy Green
Conservation Coordinator
Town of Littleton Conservation Commission
Shattuck Street Municipal Building
37 Shattuck Street, Room 303
Littleton, MA 01460

Subject: Engineering Review Services of NOI Application for "Proposed Distribution Center - 151 Taylor Street Project" Littleton Conservation Commission

Dear Ms. Green:

Pursuant to our agreement with the Town of Littleton, Green International Affiliates, Inc. (Green) is submitting this letter report of the findings from our peer review of the stormwater/drainage components of the Notice of Intent Application Package for the "Proposed Distribution Center - 151 Taylor Street Project".

This peer review investigates the documentation for compliance with Article XVI Wetlands and Floodplain Regulations (§ 173-72 - § 173-77) of the Code of the Town of Littleton, Massachusetts, Chapter 173, Zoning Bylaw, Chapter 38, Article II - Stormwater Management and Erosion Control Bylaw, and the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, Section 40) and regulations (310 CMR 10.55). This review included an examination of the following documents:

- Plans titled "Proposed Distribution Center – 151 Taylor Street, Littleton, MA 01460" prepared by MetroWest Engineering, Inc., dated June 4, 2018 and containing eight (8) sheets;
- Document titled "Notice of Intent for 151 Taylor Street, Littleton, MA", prepared by MetroWest Engineering, Inc., dated June 2018, including Site Plan Review Checklist and Special Permit Application;
- Report titled "Stormwater Report" prepared by MetroWest Engineering, Inc., dated June 2018.

Green offers the following comments resulting from our review of the above documents as they pertain to the cited regulations. Please note that this peer review is not a complete review of the project design and does not relieve the Applicant and Engineer of meeting all requirements of local, state and federal regulations.

Plans:

1. The plans show two Stormceptor STC 900i models as inlet-type Stormceptor water quality units. Our understanding is that the STC 450i is the only model of Stormceptor that can be configured to include an inlet. The Applicant should revisit the Stormceptor model numbers to determine if the Stormceptor 900i models can be replaced with the STC 450i models when considering the capacity. If 450i structures have inadequate capacity, the Applicant should consider installing catch basins with deep sumps and hoods, which would then outlet to Stormceptor 900 units.

2. The porous asphalt areas indicated on the plans are shown with significant slopes. Porous asphalt areas with significant slopes could result in flow discharging through the porous asphalt at the low end of the walkway. As a result, we recommend providing check dams at regular intervals below the porous asphalt to prevent this condition, creating cells.

3. The plans show a 2:1 slope along the south side of the porous asphalt fire lane. Given the proximity to the porous asphalt, water in this system may break out through the slope, which could result in a slip surface between the subgrade material and topsoil. We recommend the Applicant revise the grading to provide a flat area between the porous asphalt area and the top of slope to prevent breakout and resultant deterioration of the slope.

4. Northwest of Monarch Drive, a depression with no outlet will result from the proposed grades. Based on the soil information provided, it appears that the topsoil will be the restricting layer, as the subgrade material appears to be free-draining. As a result, we recommend proposing a drywell with perforated pipe or another similar device to encourage infiltration and to prevent this area from experiencing ponding.

5. The northeast infiltration system has been designed without an overflow. While unlikely given the free-draining soils, flooding could result at the building in the the event of a system failure. We recommend the Applicant revise the design to include an overflow from the system to eliminate the potential for this condition.

6. Information appears to be missing from the 12" level spreader detail. The Applicant should revise the detail.

7. Based on the grading in the southern portion of the site, stormwater is conveyed from the southeast of the building by a swale, toward the retaining wall southwest of the building. We recommend the Applicant incorporate weep holes into the retaining wall to prevent ponding behind the wall.

8. The 12" outlet pipe for the northwest subsurface system is shown at invert elev. 235.4'. As the top of the galley is at elev. 236.1', the top of the outlet pipe will be higher than the top of galley. The Applicant should revise the design to ensure the constructability of the system.

Stormwater Report:

9. The watershed plan for post-development conditions only shows existing grading. We recommend that this plan be modified to include proposed drainage and grading to clearly demonstrate watershed delineations.

10. Based on the watershed figures, the total pre-development and post-development drainage areas appear to match; however, the area totals on these figures indicate that the total post-development is over 1.5 acres less than the pre-development drainage area. The Applicant should check these areas and revise as necessary to correct any discrepancies.

11. It appears that the northwest portion of post-development basin 3 on the post-development watershed plan should be included in post-development basin 10, as it appears to drain toward the catch basin in the northwest corner of the parking area. The Applicant should revise the watershed plan and calculations accordingly.

12. The technical manual for the Stormceptor OSR is included the Stormwater Report; however, this is inconsistent with the STC models proposed in the design. The Applicant should revise the Stormwater Report or design plans and details to eliminate this discrepancy.

13. It is unclear how the existing storage volume and overflow configurations were determined. The Applicant should revise Chapter 1 of the Stormwater Report to clarify their assumptions.

14. As the Hydraflow calculations indicate the rain garden overtops during the 100-year storm, we recommend the overflow spillway be redesigned to include rip rap for slope protection.

Article XVI Wetlands and Floodplain Regulations:

15. Upon a preliminary review using MassGIS, a FEMA 100-year flood hazard area AE is located near the northern corner of the site. While the work area appears outside of this flood hazard area, the Applicant should review FEMA Flood Insurance Rate Maps to determine the elevation associated with the zone AE to confirm that no portion of the work area is below this elevation.

Chapter 38, Article II - Stormwater Management and Erosion Control Bylaw:

16. Locations of temporary sediment basins are unclear. If the Applicant intends to use the proposed rain garden area as a temporary sediment basin during construction and the Commission decides to allow this condition, we recommend that the Commission include the following conditions in any approval:

    a. To minimize impact on the infiltration capacity of the final rain garden, temporary sediment basins should be excavated to no deeper than 12" above the final bottom of rain garden elevation.

    b. The Applicant shall monitor temporary sediment basins during construction to confirm that the basin is dewatering within 72 hours. If the basin fails to dewater within 72 hours, the Town may require the Applicant to perform corrective action.

    c. Following stabilization of all tributary areas and flushing/cleaning of the upstream closed drainage system, the rain garden shall be excavated to final grades and stabilized.

    d. Following construction, if the rain garden does not appear to be functioning as designed, the Town may require demonstration of actual infiltration rates using a Double-Ring Infiltrometer.

17. While the erosion control barrier at the southwest corner of the site is proposed within the 50' No Disturb Zone, we take no exception to this location, as the erosion control barrier is being installed in an existing lawn area, along the existing tree line.

18. Per § 38-17.C(5), site plans must indicate estimated seasonal high groundwater elevations in areas to be used for stormwater retention, detention, or infiltration. Test pits were not performed at the locations of the bio-cells and a subsurface infiltration system in the northeast portion of the site. Confirmatory test pits are required at each infiltration basin to confirm that seasonal high groundwater is at a sufficient depth to allow compliance with the requirements of Vol. 2, Ch. 2 of the Massachusetts Stormwater Handbook. We recommend that the Commission require the results of the confirmatory test pits in this location as a condition to any approval

19. Per § 38-18.A(3), owner signatures are required for the Operation and Maintenance Plan. The Applicant should revise the O&M Plan to include these signatures.

20. Section 6 of the 2017 CGP requires that SWPPP team members receive training to comply with the requirements of the CGP. The SWPPP contains no information regarding the members of the team or their responsibilities. The Applicant should document the assembly of the SWPPP team, define the responsibilities of each member, and have each team member certify that they have an understanding of the SWPPP. This documentation should be included in the SWPPP, as specified in Section 7.2.2 and Section 7.2.8 of the CGP.

21. Section S of the SWPPP indicates that finish grades shall be no steeper than a slope of 3:1; however, the site plans indicate a 2:1 slope along the south side of the porous asphalt fire lane. While this 2:1 slope is proposed to be stabilized, the Applicant should revise the SWPPP to eliminate the discrepancy.

22. Section 2.2.10 of the 2017 CGP requires a description of storm drain inlets protection. The SWPPP indicates that the storm drains will be maintained by removing sediment but there is no information on how they will be protected. The Applicant should include the required information, including materials, maintenance, inspection schedule, and the party responsible for this maintenance.

23. The 2017 CGP requires the following documentation. The Applicant should revise the SWPPP accordingly:

    e. Section 1.1.7 requires determination if the project is in Indian country. The SWPPP does not include this information.

    f. Section 2.2.12 requires the location, size, and sizing of temporary sediment basins be included. The Applicant should revise the SWPPP to include this information.

    g. Sections 3.1, 3.2, and Appendix F require description of impaired waters or waters subject to TMDLs. In the description of Beaver Brook, it does not mention if it is an impaired water, subject to TMDLs. The Applicant should provide a determination and how the determination was made.

    h. Section 7.2 lists the requirements of the SWPPP contents. Many of these items are not included in the current SWPPP. For example, additional information is required regarding the nature of the anticipated construction activities and the risks that each activity poses, construction phasing, site map requirements, descriptions of specific stormwater control, stabilization measures to be used, etc. To comply with the requirements of Section 7.2, we recommend that the Applicant review Version 2.1 of the SWPPP Template.

Wetlands Protection Act:

24. Test pits were not performed at the locations of the bio-cells and a subsurface infiltration system in the northeast portion of the site. The calculations for this system used assumed infiltration rate of 8.27 in/hr based on a sand soil texture from Table 2.3.3. 1982 Rawls Rates from Vol. 3, Ch. 1 of the Massachusetts Stormwater Handbook. Confirmatory test pits are required at each infiltration basin to verify soil texture. We recommend that the Commission require the results of the confirmatory test pits in this location as a condition to any approval.

25. Per the Vol. 2 Ch. 2 of the Massachusetts Stormwater Handbook, rain gardens should be graded to allow for 6 to 8 inches of ponding. As currently designed, the design allows for a maximum of 5.5 feet of ponding. While this design exceeds the recommended ponding, the design includes a detailed planting schedule based on the level of saturation and limited ponding duration is

anticipated based on the high permeability of the in-situ soils. As a result, we take no exception to the proposed rain garden design.

26. Per the Vol. 2 Ch. 2 of the Massachusetts Stormwater Handbook, a stormwater BMPs must have a minimum of 2 feet of separation from seasonal high groundwater. Based on the test pit information, the estimated seasonal high groundwater may be less than two feet from the bottom of the proposed drywell within the rain garden. As the drywell is not being utilized to achieve peak rate attenuation in the calculations, we take no exception from separation being measured from the bottom of the rain garden. The test pit information indicates that the rain garden has the requisite separation from seasonal high groundwater.

27. Page 2 of the MassDEP Checklist for Stormwater Report is signed but not stamped. The responsible engineer for the should stamp this document.

Exclusions:

As indicated in the Scope of Services, this peer review does not include the following:

- Review of the Notice of Intent Application Package for items other than stormwater/drainage or for compliance with other Local, State or Federal codes, ordinances or laws not mandated by the Town of Littleton Zoning Bylaw, Stormwater Management and Erosion Control Bylaw, and the Massachusetts Wetlands Protection Act;
- Review of Notice of Intent Application;
- Review of any previously approved plans, reports or applications for compliance with Local, State or Federal codes, ordinances or laws;
- Review of the project during construction.

Several of the above comments include recommendations for the provision of additional drawing and document information. The updated information may result in the generation of additional comments once received and reviewed. Should you have any questions regarding this peer review please do not hesitate to contact us.

Sincerely,

Green International Affiliates, Inc.

Luke L. Boucher, P.E.
Project Manager

LB/jt

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