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July 20, 2018

Ms. Maren Toohill
Planning Administrator/Permit Coordinator
Town of Littleton Planning Board
Shattuck Street Municipal Building
37 Shattuck Street, Room 303
Littleton, MA 01460

**Subject: Engineering Review Services of Site
Plan/Special Permit Application for
"The Crossings at Foster Street"
Littleton Planning Department**

Dear Ms. Toohill:

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 Site Plan and Special Permit Application Package for "The Crossings at Foster Street".

This peer review investigates the documentation for compliance with Chapter 173, Zoning Bylaw, Chapter 38, Article II - Stormwater Management and Erosion Control Bylaw. This review included an examination of the following documents:

- Plans titled "Site Plan Review/Special Permit – 245 Foster Street "The Crossings at Foster Street" prepared by Markey & Rubin, Inc., dated May 24, 2018 and containing eleven (11) sheets;
- Report titled "Stormwater Drainage Report – The Crossings at Foster Street," prepared by Markey & Rubin, Inc., dated May 24, 2018;
- Application Package titled "245 Foster Street, Littleton, MA," prepared by Markey & Rubin, Inc., dated May 18, 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. The highlighted items below are items that we have deferred to or made a recommendation to the Planning Board.

Plans:

1. No accessible parking spaces are shown on the plans. The Applicant should revise the plans to comply with 521 CMR 23.00: Parking and Passenger Loading Zones.
2. A 50' No Disturbance Area is shown on the plans per the Town of Littleton Wetland Protection Regulations. Additionally, there is a 100' Wetland Buffer per the Wetlands Protection Act that is not shown on the plans. An infiltration basin and the MBTA driveway is proposed within the 50' No Disturbance area of the wetland and a portion of the MBTA parking lot and driveway appears to be within the 100' Buffer. This will have to be approved by the Town of Littleton Conservation Commission.

3. No test pits are shown in the area of the Infiltration Basin behind the building. As the basin is located directly next to the wetland, it is unlikely that the required 2-foot vertical separation between the bottom of the basin and the seasonal high groundwater table will be met. Test pits should be performed in this area to demonstrate that adequate separation to seasonal high groundwater is present.
4. The Applicant should include details for the infiltration beds located behind the building and the infiltration basins.
5. The low point in the driveway behind the building is below elevation 266 and the bottom of the infiltration basin is at elevation 265. The plans show that stormwater in the driveway will be collected in catch basins and piped to the infiltration basin, however, sufficient pipe cover is not provided. The Applicant should review the design to ensure sufficient pipe cover is provided everywhere and include rims and inverts for all structures on the plans.
6. The water main is currently shown in conflict with drain structures in some locations.
7. Cape Cod Berm is indicated along the driveway to the MBTA lot. Will the same type of curb be used in the front parking area? The Detail shown on D2 is labeled "Bituminous Berm". Is this the same as Cape Cod Berm, or something else? Also, a "Sloped Granite Curb" detail is shown on D2. Please indicate where that is to be used on the Site Plan.
8. The finished grade along the front of the building is sloped indicating a stepped foundation. Assuming there will be entries at the rear of the building, the Applicant should show, using spot elevations, what grading is proposed there. The Applicant should consider the finished grade next to the foundation and what amount will be visible.
9. The Applicant should indicate sizes of utility pipes on the plans.
10. The Applicant should confirm that adequate water is available from the Town water main to service the proposed development both for regular operations and during a fire. Is a separate fire service required?
11. Porous pavement is proposed in the MBTA parking lot in the back that is surrounded on three sides by a 10'-23' high retaining wall. This wall should have a drainage system installed behind it with pipe penetrations to relieve hydrostatic pressure from water built up behind the wall. Water draining through the porous pavement will be collected by this drainage system and be released through the weep holes in the wall, rather than fully infiltrating into the ground. The Applicant should account for this in the design and stormwater calculations.
12. The MBTA parking lot is sloped towards the wall. Is the pavement section designed to contain the 100-year storm? If not, the Applicant should consider the possibility that during a large storm, or if the porous pavement were to become clogged, runoff would pond along the edge of the wall and flood the parking area.
13. The large retaining wall will require fall protection. The Applicant should address this on the plans.
14. Contours are not drawn properly at the Subsurface Sewage Disposal System. The Applicant should show how proposed 262, 260, and 258 contours will match existing.

15. The roadway profile appears to be designed to meet a design speed of 20MPH, which is appropriate for this development. The Applicant should consider lengthening the vertical curve located at Sta. 6+90 to eliminate the short vertical tangents.
16. The roadway has a profile grade of +2.50% where it meets the parking lot at Sta. 11+90± and the parking lot has a cross slope of -5.0%, resulting in a change in grade of 7.5%. This change in slope may result in vehicles bottoming out. The Applicant should consider revising the design to provide a smoother transition into the parking lot.
17. The Applicant should review the applicability of Notes 13-16 on Sheet S1. It is the reviewer's understanding that the site will not be accepted by the Town.
18. It may be difficult for the people who park in the MBTA parking lot to walk all the way through the site and down Foster Street to get to the commuter rail. There is sidewalk provided through the site but no sidewalk on Foster Street is existing or shown in the plans. The Applicant should also consider adding a connection from the southerly end of the parking lot to the sidewalk currently proposed.
19. The plans show proposed grading in the right-of-way that flattens the grade significantly and may achieve better site distances, however, the Applicant should consider whether the existing utility poles need to be reset or relocated and clearly indicate this on the plans.

Special Permit Submission Requirements Comments:

20. The following were either not included in the submittal or not shown on the plans, but are required by Page 3 of the Special Permit Application:
 - Inventory of natural features
 - Environmentally sensitive zones
 - Construction limit line
 - Setback lines
 - Loading spaces and turning radii in parking lots
 - Gas and electric utility lines
 - Sight lines for proposed driveways
 - Material of proposed retaining wall
 - Location of dumpsters and screening details
 - A block containing the following:
 - Proposed percentages of building coverage and impervious surface coverage
 - Proposed maximum height of all existing and proposed buildings and other structures in feet and stories
 - Method of calculation for parking spaces
 - Proposed number of handicap parking spaces required and provided
 - Trip generation of proposed uses
 - Traffic Impact Assessment

Zoning Bylaw Comments:

21. § 173-18-B of the Zoning Bylaw indicates that the visibility of parking areas from public ways and residences be minimized. A dense collection of trees exists throughout the entire roadway frontage. Additionally, near the middle of the Foster Street frontage, is an existing rock mound that further restricts visibility into the site. The current plans show that this area will be cleared and flattened to meet the road grades of Foster Street, thereby increasing visibility from the road and

the house across the street. We respectfully defer to the Planning Board for a determination on this item.

22. § 173-18-C of the Zoning Bylaw states that major topographic changes be minimized. The proposed 10 to 23 foot retaining wall shown on the plans near the proposed MBTA parking lot constitutes a major topographic change to that portion of the site. Also, as mentioned in the comment above, an existing 10-foot-high rock mound is proposed to be flattened. We respectfully defer to the Planning Board for a determination on this item.
23. Per § 173-18-D, the Planning Board shall determine if there is adequate access to each structure for fire and service equipment. We take no exception to the proposed site layout regarding this requirement; however, the Board may wish to seek input from the fire and police departments.
24. The proposed parking lot shown for the building does not appear to meet the minimum parking requirements indicated in § 173-32.B for any occupancy type. It is unclear what type of occupancy the building will end up having. The Applicant should provide a parking schedule clearly showing how the minimum parking requirements are being met or request a waiver from this requirement.
25. Per § 173-33, adequate off-street loading facilities and space must be provided. Please show location(s) of loading facilities that do not block parking spaces in front of the building.
26. Checking conformance with § 173-35, § 173-37, and § 173-39 and building height requirements in the Intensity Use Schedule requires review of architectural plans which were not provided. This review is also excluded from Green's scope of work.
27. § 173-44 states that ample corner vision be provided to intersections and street lines, and this is not provided with the southern entrance/exit to the site. A tree has been proposed close to the intersection behind the stop sign to a driver exiting the site. This could create difficulty for the driver when trying to safely pull out of the site. A sight distance evaluation should be performed.
28. If a drive-through or take-out only restaurant is proposed, it would need to be approved by the Board of Appeals as stated in § 173-26.
29. § 173-32.C.3 states that a parking lot of the proposed size must be shielded from residential use or a public way by a 4-foot-wide row of densely plated shrubs or by a fence that is at least 4 feet tall. These requirements are not met on the site plans.
30. There is a stop sign placed in the Right of Way at the north exit of the project. This does not conform to § 173-34.C. The stop signs are also labeled "ST" in the detail but are shown as "SS" on the plans.

Aquifer and Water Resource District Special Permit Comments:

31. Per § 173-62.D.1, a complete list of all chemicals, pesticides, fuels, and other potentially toxic or hazardous materials to be used or stored on the premises, along with a description of protection and prevention measures, shall be provided when applying for a special permit. The Applicant should supply the complete list with the required information.
32. Per § 173-62.D.2, a description of potentially toxic or hazardous wastes to be generated, along with the storage and disposal method, shall be provided when applying for a special permit. The Applicant should supply the description with the required information.

33. Per § 173-62.D.5, an analysis by a qualified engineer experienced in groundwater evaluation and/or geohydrology shall be provided when applying for a special permit. The Applicant should submit the analysis with the required information.
34. Per § 173-63.E, monitoring wells shall be constructed on the site as specified in the special permit, with reports to be submitted to the SPGA, the Board of Health and the Board of Water Commissioners. The Applicant should indicate on the plans where these monitoring wells will be constructed. We recommend that the number and location of these monitoring wells be coordinated with the Town of Littleton Water Department.

Stormwater Report:

35. Per Vol. 2, Ch. 2 of the Massachusetts Stormwater Handbook, infiltration BMPs require a minimum of two feet of separation to seasonal high groundwater elevation. Test pits are required where the infiltration BMPs are proposed to demonstrate the minimum separation is provided. No test pit information is provided in the report for any of the infiltration basins or underground recharge chamber areas. It's unclear what the perc test and test pits shown on the plans were used for and per Vol. 3, Ch. 1 of the Massachusetts Stormwater Handbook, percolation tests (used for septic system design) are not suitable to determine infiltration rates. The Applicant should provide the test pit and permeability test information.
36. Per Massachusetts Stormwater Standard No. 2, the post-development peak discharge rates should not exceed pre-development. The Applicant has indicated compliance with this requirement in a table for the 2-, 10-, and 100-year storm events, however, the HydroCAD outputs only include the 100-year storm pre-developed conditions flow rates and the 2-year post-development. The Applicant should include the HydroCAD outputs for all storm events listed.
37. Under the Standard 3 explanation in Section 3 of the Stormwater Drainage Report, Hydrologic Soil Group (HSG) C soils are used to determine the recharge volume. The NRCS Web Soil Survey Map shows HSG A and B soils present on site. It is noted that an excess of storage volume is provided, and the design may meet the requirement, however the Applicant should revise the calculations using HSG A and B soils or provide reasoning for using HSG C soils.
38. An infiltration rate of 0.27 in/hr is used to calculate the 72-hour drawdown. The Applicant should provide test pits data for areas within the footprints of the BMPs to demonstrate that the selected infiltration rate is consistent with the soils.
39. The stormwater report mentions a Bradford Pond Drive under the Standard 5 explanation in Section 3. The Applicant should explain where Bradford Pond Drive is in relation to this project.
40. Runoff from the MBTA parking lot is removed from the HydroCAD output. The Applicant should further demonstrate that the pavement section has the capacity to store runoff from all storm events up to the 100-year and that no runoff will leave the site.
41. The Applicant should identify the Stormceptor model(s) selected for use on this project.

Stormwater Management and Erosion Control Bylaw Comments:

42. Per § 38-16.C.5 of the Littleton Stormwater Management and Erosion Control Bylaws, the plans should show a delineation and number of square feet of the land area to be disturbed. The Applicant should revise the plans to indicate this amount.

43. Per the Massachusetts Stormwater Handbook, Standard 8, projects that disturb one or more acres of land are required to obtain coverage under the NPDES Construction General Permit issued by the EPA and prepare a Stormwater Pollution Plan (SWPPP). This document must be submitted prior to construction. We recommend that the Planning Board include this requirement as a condition to any approval.
44. Per § 38-17.C.8, the Applicant should clearly show all components of the proposed drainage system on the plans. The HydroCAD output provided indicates a weir and an orifice are proposed as the outlet control for the infiltration basins, however, these are not shown on the plans.
45. Per § 38-18.B.2, maintenance specifications should be included for all components of the stormwater system. The infiltration basins and infiltration beds are not addressed in the Operations and Maintenance portion of the Stormwater Drainage Report.
46. If the Applicant intends to use the proposed infiltration basins as temporary sediment basins during construction and the Planning Board and Conservation Commission decide to allow this condition, we recommend that the following conditions be included in any approval:
 - To minimize impact on the infiltration capacity of the final infiltration basin, temporary sediment basins should be excavated to no deeper than 12" above the final bottom of infiltration basin elevation.

Exclusions:

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

- Review of the Special Permit Application Package for compliance with other Local, State or Federal codes, ordinances or laws not mandated by the Code of the Town of Littleton, Massachusetts, Chapter 173, Zoning Bylaw;
- Review of any previously approved plans, reports or applications for compliance with Local, State or Federal codes, ordinances or laws;
- Confirmation of any delineated resource areas;
- Review of landscape planting and site lighting photometrics;
- Review of septic system design;
- Review of the project during construction;
- Review of architectural plans;
- Structural review of retaining walls;

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.



Courtney Semlow, P.E.
Project Manager

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