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September 27, 2018
Revised October 3, 2018 &
November 19, 2018

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

**Subject: Engineering Review Services of
Definitive Subdivision Application for
“Highland Park”
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 Definitive Subdivision Plan Application Package for “Highland Park”.

This peer review investigates the application package for compliance with the Code of the Town of Littleton, Massachusetts, Chapter 38, Article II - Stormwater Management and Erosion Control Bylaw, Chapter 173 - Zoning Bylaw and Chapter 249 - Subdivision of Land Regulations. Following our initial peer review letter, dated August 16, 2018, we received the following supplemental/revised documents from the Applicant:

- Plans titled “Definitive Subdivision Plan, An Open Space Development for Highland Park at 93 Foster Street, Littleton, Massachusetts” prepared by Stamski and McNary, Inc., dated May 23, 2018 and Revised August 17, 2018, September 14, 2018, October 12, 2018 & October 31, 2018 and containing eleven (11) sheets;
- Letter titled “Definitive Subdivision Plan “The Homes at Croft Common” 93 Foster Street (Previously known as “Highland Park”) with responses to comments, an updated traffic operations analysis, Development Statement, Definitive Development Impact Report, updated waiver list, construction management plan, and updated cost estimate;
- Revised Stormwater Operation and Maintenance Manual dated May 23, 2018 and revised August 17, 2018 and September 14, 2018
- Revised Highland Park Stormwater Report of unknown dated May 23, 2018 and revised August 17, 2018 and September 14, 2018
- Drainage maps dated April 5, 2018 and revised August 17, 2018 and September 14, 2018.

Green offers the following comments resulting from our review of the above supplemental/ revised documents as they pertain to the Code of the Town of Littleton, Massachusetts, Chapter 173, Zoning Bylaw and Chapter 249, Subdivision of Land 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 Record from meeting all requirements of local, state and federal regulations. **Please note that the highlighted items below either require action by the Applicant or are items that we have deferred to or made a recommendation to the Planning Board.**

Form C Comments:

Definitive Plan Comments:

12. Initial 08/16/2018 Comment: Per §249-32. F, the Applicant shall provide a typical street cross section that is to scale at 1" = 4'. The Applicant shall revise the scale of the typical street cross section shown on Sheet 8. Additionally, the typical section should also be revised to show a 2.0% cross slope with a crown at the centerline and a 1.5% (max) cross slope on the sidewalk. The roadway side slopes should be revised to be 4:1 or flatter per Figure 1. If sideslopes that are 3:1 or steeper are proposed, the Applicant should provide cross sections and show locations where guardrail is needed or demonstrate that guardrail is not required.

08/17/2018 Applicant Response: A "Street Cross Section, 1"=4'" detail has been added to sheet 7 and revised as requested. The area where the side slopes are steeper than 4:1 are in a cut situation, so guard rails are not required.

09/27/2018 Comment: We agree with the Applicant that guardrail will not be required in cut situations. The typical section indicates there is a 120-foot section of roadway where sideslopes will be 2:1, which will not provide sufficient snow storage. We recommend the Town DPW be consulted regarding the need for snow storage at this location.

08/17/2018 Applicant Response: The proposed road has been shifted slightly near STA 1+50 in order to get 3:1 grading on the sideslopes of the road. The "Street Cross Section" detail on sheet 7 has been updated accordingly.

11/19/2018: The roadway shift designed by the Applicant does not provide ideal roadway geometry; however, due to the site constraints and, low speed and low volume of the roadway; we take no further exception to the design. We recommend the Applicant remove the additional horizontal curve if field conditions allow during construction.

18. Initial 08/16/2018 Comment: The Applicant shall revise the roadway profile where it meets Foster Street to comply with Exhibit 6-14 A. The 7.0% grade break at the Foster Street intersection does not comply with the MassDOT PD&DG and may result in vehicles bottoming out as they attempt to enter or exit the roadway. The applicant should also evaluate if a cross culvert is required at this location.

08/17/2018 Applicant Response: The intersection as shown in Exhibit 6-14A was evaluated for this proposed road but determined not to be feasible due to topography. A low point right before the intersection of the proposed road with Foster Street would require catch basins, and runoff could not be routed from this location to the proposed Infiltration Basin #3 given the 2' separation from bottom of basin to groundwater. The catch basins in the proposed road are as close to the Foster Street intersection as possible while still being able to connect to Infiltration Basin #3. Also, there is a grade

break of 4.14% (9.14-5.0), which is less than the maximum grade break of 6% allowed per Table 249-43.3. A cross culvert is not necessary in a cut situation like this.

09/27/2018 Comment: The reviewer acknowledges that adding a low point at the bottom of Croft Circle would be infeasible due to the drainage concerns noted by the Applicant. However, we recommend the Applicant review the profile to reduce the 7.0% grade break at the intersection with Foster Street (5.0% on Croft Circle and 2.0% (assumed) on Foster Street). The current design will not provide a smooth transition from Foster Street to Croft Circle.

10/30/18 Applicant Response: Survey shots were taken in Foster Street to determine the slope of the road. In the area where Croft Circle is proposed to connect to Foster Street, the existing road is super elevated with the high side closer to Croft Circle.

11/19/18 Comment: The superelevation of Foster Street, as determined by the Applicant's survey, addresses Green's comment.

23. Initial 08/16/2018 Comment: Per §249-43. D, the Applicant shall make the nearest line of any driveway not closer than 50' from the intersection of two streets. The driveway for Lot 8 is located within 50-feet of an intersection. The Applicant should revise the plans accordingly.

08/17/2018 Applicant Response: The waiver request letter has been revised to include Lot 8's driveway being within 50' of an intersection (if deemed applicable). We view this road as an expanded cul-de-sac, for one street, therefore a waiver is not required.

09/27/2018 Comment: An additional waiver has been requested. We defer to the Board for a determination on this item.

37. Initial 08/16/2018 Comment: Per §249-85. D, streetlights are not required; however, the Board reserves the right to require street lighting. We respectfully defer to the Board for a determination on this item. We recommend street lights be installed at the Foster Street intersection.

08/17/2018 Applicant Response: There is a streetlight currently on Utility Pole #35, which is proposed to be relocated about 9' to make way for the proposed sidewalk. This light should be sufficient for the area where the proposed road meets Foster Street.

09/27/2018 Comment: The relocated utility pole and light should provide sufficient light at the Foster Street intersection. We feel this lighting is adequate for the subdivision; however, we defer to the Board if street lights are required within the subdivision.

Stormwater Report Comments:

Stormwater Management and Erosion Control Bylaw Comments:

38. Initial 08/16/2018 Comment: Per Page 8 of the "Checklist for Stormwater Report", the Applicant plans to submit a SWPPP before land disturbance begins. We recommend the Board require the submission of a SWPPP to the Town prior to the start of construction as a condition of approval.

08/17/2018 Applicant Response: No response required.

09/27/2018 Comment: We continue to recommend this requirement be a condition of approval.

69. Initial 08/16/2018 Comment: 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:

- a. 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.

08/17/2018 Applicant Response: No response required.

09/27/2018 Comment: We continue to recommend this requirement be a condition of approval.

74. Initial 08/16/2018 Comment: Per §38-18.C of the Stormwater Management and Erosion Control By-law, the Applicant shall include a mechanism for implementing and enforcing the Operations and Maintenance Plan in the case of stormwater BMPs that are serving more than one lot. The O&M provided names a responsible party for all O&M being the "condominium association", however it is assumed that the Town will be accepting the O&M of the above ground infiltration basins. It is also assumed that the dry wells and infiltration trenches will be the responsibility of the individual owners and not a condominium association. The Applicant should revise the Operations and Maintenance Manual to reflect the two scenarios.

08/17/2018 Applicant Response: The O&M has been revised to say that the individual homeowners shall be responsible for the inspection and maintenance of the infiltration trenches and drywells on their lots. The developer will be responsible for the inspection and maintenance of the infiltration basins and sediment forebays, street sweeping, snow removal, catch basins, and drainage manholes until street acceptance.

09/27/2018 Comment: We take no exception to the Applicant's response and defer to the Planning Board for acceptance of the requirements outlined in the Operation and Maintenance Manual assuming the Town accepts the infiltration basins and the streets. We recommend this be a condition of the final approval.

75. Initial 08/16/2018 Comment: Also, per §38-18.C, the Applicant shall provide a copy of the legal instrument that establishes the terms of and legal responsibility for the operation and maintenance of stormwater BMP's. We recommend the Planning Board include this as a condition of the approval.

08/17/2018 Applicant Response: No response required.

09/27/2018 Comment: We continue to recommend this requirement be a condition of approval.

Special Permit Application:

Chapter 173, Zoning Bylaws:

Traffic Impact and Access Study Comments:

Comments Received from Chris Stoddard, DPW Director via email on 8/16/18:

88. Initial 08/16/2018 Comment: The applicant is proposing to use the inside of the cul-de-sac for an open space park, the planning board should require an association be set up to maintain the park, as well as any appropriate easements to be set up. The Highway department does not have the budget or staff to maintain additional parks.

08/17/2018 Applicant Response: A Homeowner's Associates can be created should they not accept the park proposed inside the cul-de-sac.

09/27/2018 Comment: We recommend the Board require the Applicant to create a Homeowner's Association that will be responsible for maintaining the park; however, it should be clear the park is considered Open Space and can be used by the public at-large. We recommend this requirement be a condition of approval.

Requested Waivers:

§249-32 B. The plan shall be at the scale of one (1) inch equals twenty (20) feet or other scale approved by the Planning Board to accept to show details clearly and adequately and shall be identified as a Definitive Plan. **The proposed Definitive Plan is at a scale of one (1) inch equals forty (40) feet.**

Green's Comment: We take no exception to this waiver request and respectfully defer to the Board for a final determination on this item.

§249-32 D. Site Plans and Profiles. For every street, there shall be a separate plan at 1"=20' and profiles at 1"=4' (Vertical), which is preferred, or plans at 1"=40' and profiles at 1"=8' (Vertical), showing the following data. **A profile of the proposed road is provided at 1"=40' and 1"=4' (Vertical).**

Green's Comment: We take no exception to this waiver request and respectfully defer to the Board for a final determination on this item.

§249-43 A (3). Dead end street shall be provided at the closed end with a turnaround having dimensions conforming to AASHTO Exhibit 5-8D. Only circular offset type is allowed. **A loop turnaround is provided per preliminary plan approval with an open space parcel in lieu of the cul-de-sac island for use as a park.**

Green's Comment: The proposed loop turnaround should provide adequate access for emergency vehicles. We take no exception to this waiver request and respectfully defer to the Board for a final determination on this item.

§249-43 D (10). Street intersections on all Collector and Arterial Streets, including but not limited to Great Road, King Street, Newtown Road, Shaker Lane, Goldsmith Street, Tahattawan Road, Harvard Road, Harwood Avenue, Foster Street, Taylor Street, and Whitcomb Avenue, shall be spaced not less than four hundred (400) feet apart.

The proposed road intersects with Foster Street and is only three hundred twenty-three (323) +/- feet as previously approved in the preliminary decision from the intersection of Mill Road and Foster Street.

Green's Comment: Green reviewed the intersection spacing during the Preliminary Plan phase. While the proposed design does not meet §249-43 D (10)., the design does meet the requirements of the MassDOT PD&DG. It is Green's understanding that this was previously approved and we take no exception to the waiver request.

§249-43 D (12). The nearest line of any driveway shall not be closer than fifty (50) feet from the intersection of any two (2) streets.

The nearest line of the proposed intersection of the proposed road and Foster Street is forty-four (44) +/- feet from the nearest line of the nearest abutting driveway.

Green's Comment: The Waiver requested appears to be for the driveway for 105 Foster Street; however, the Waiver request should also include the driveways for 96 Foster Street and possibly 92 Foster Street. There is also a driveway within the subdivision that is within 50-feet of an intersection. Based on the spacing of existing driveways on Foster Street, it may be infeasible for the Applicant to meet this requirement. Green respectfully defers the Board for a determination on this item.

§249-43 E (1). Cul-de-sac center islands shall be landscaped. Eight (8) feet width of gravel is required on the perimeter of the cul-de-sac, inside the curb. Low- maintenance groundcover shall be planted with topsoil and bark mulch, with trees screening any transformers or electrical equipment. Do not obstruct access.

The cul-de-sac center island, Open Space Parcel B, is proposed as a park. Trees shall be clustered in a manner to provide open space for park use.

Green's Comment: We take no exception to this waiver request and respectfully defer to the Board for a final determination on this item.

§249-51 H. The maintenance berm shall be flat and at least fifteen (15) feet in width. The pipe inlets discharging into the basin shall be at or above the 25-year storm event ponding elevation. A minimum thirty (30) foot setback as measured from the top of the inside slope to all property lines is required. **The proposed maintenance berms are a minimum of (6) six feet in width. The pipe inlets discharging into the basin are below the 25-year storm event ponding elevation. A portion of the proposed infiltration basins are to be constructed within 30' of property lines.**

Green's Comment: We recommend the Applicant provide addition information to support their waiver request. We respectfully defer to the Board for a final determination on this item.

09/27/2018 Comment: We continue to recommend the Applicant provide additional information to support the waiver request.

10/11/18 Applicant Response: The maintenance berm requirements for Basin 1 have been met. Since adequate access to Basin 2 and Basin 3 are from Croft Circle and the #93 driveway, respectfully, the berms have been reduced to 6-feet due to unique site constraints. Our office regularly designs infiltration basins with 6' wide berms.

11/19/2018 Comment: The information provided by the Applicant appears sufficient and we take no exception to the waiver request. We respectfully defer to the Board for a final determination on this item.

§259-59 C. Written Approvals. No Definitive Plan will be approved unless the developer submits written certification of approval of the design by all utilities which are to provide services within the subdivision.

A waiver is requested for written certification of approval of the design by all utilities which are to provide services within the subdivision.

Green's Comment: We recommend the Board require the certification for all utilities designed by the Applicant (i.e. storm drainage and domestic water); however, we respectfully defer to the Board for a final determination on this item.

Exclusions:

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

- Review of the Definitive Subdivision 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 38, Article II - Stormwater Management and Erosion Control Bylaw, Chapter 173 - Zoning Bylaw and Chapter 249 - Subdivision of Land Regulations;
- 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 septic system design;
- Review of the project during construction.

Ms. Maren Toohill

September 27, 2018/Revised October 3, 2018 & November 16, 2018

The Applicant has adequately address peer review comments. As noted above, there are several items that we have deferred to or made a recommendation to the Planning Board. Should you have any questions regarding this Peer Review please do not hesitate to contact us.

Sincerely,

Green International Affiliates, Inc.

Thomas Bigelow

Thomas Bigelow, P.E. (NH)
Project Manager

Courtney Semlow

Courtney Semlow, P.E., CFM, ENV SP
Project Manager

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