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July 30, 2020

Wayland Planning Board
Town of Wayland
c/o Mr. Sarkis Sarkisian
Town Planner
41 Cochituate Road
Wayland, Massachusetts 01778

RE: Five Paths Residential Development Definitive Subdivision
Wayland, MA
Definitive Subdivision and Stormwater Management Design Peer Review

Dear Planning Board Members and Sarki:

BSC Group, Inc. (BSC) has completed a peer review of the Definitive Subdivision Plans and Stormwater Management Design for the Five Paths Residential Development Definitive Subdivision submission. This work is being undertaken under BSC's contract dated September 10, 2019, as approved by the Town of Wayland on September 13, 2019.

BSC is aware that the Five Paths Definitive Subdivision is on the agenda for the Board's meeting scheduled for Tuesday, August 4, 2020. BSC offers the following peer review comments for the Board's consideration regarding the Definitive Subdivision Plans and Stormwater Management Design for the Five Paths Residential Development.

BASIS OF CURRENT REVIEW

For this peer review, BSC reviewed the following documents:

Planning Board:

- Definitive Residential Subdivision Plan Five Paths, Wayland, MA, prepared by Goldsmith, Prest & Ringwall, Inc., dated July 2019, revised through July 14, 2020;
- Residential Development Definitive Subdivision Application, Five Paths, Wayland, MA prepared by Goldsmith, Prest & Ringwall, Inc., dated July 2019, revised July 2020;
- Stormwater Management Report, Five Paths Tax Map 39, Parcel 15A, Wayland MA prepared by Goldsmith, Prest & Ringwall, Inc., dated July 2019, revised July 14, 2020;

- Long Term Pollution Prevention & Stormwater Management Plan, Five Paths Tax Map 39, Parcel 15A, Wayland MA prepared by Goldsmith, Prest & Ringwall, Inc., dated July 2019, revised July 14, 2020;
- Site visit with Julia Junghanns, Director of public Health and Linda Hansen, Conservation Administrator, on Friday, September 13, 2019.

Applicable Regulations:

- Town of Wayland Subdivision Rules and Regulations, Adopted October 1, 1968, Revised September 4, 2001 and August 15, 2015;
- Massachusetts Department of Environmental Protection (DEP) Massachusetts Stormwater Handbook;
- The Town of Wayland Bylaws, Chapter 193, Stormwater and Land Disturbance;
- Standard Engineering Practices.

PROJECT REVIEW COMMENTS

BSC offers the Planning Board the following comments based on our preliminary review of the project and information detailed above.

I. Procedural Items and/or misc. comments

a. The current submittal is a substantial revision of the originally proposed project development as shown on the plans and other submittal materials dated July 2019. The currently proposed Definitive Subdivision will create a total of three building lots and provide approximately 7.2 acres of land to be use for open space/conservation purposes. In general, the currently proposed development results in substantially less impacts to the existing site than would have been associated with the originally proposed development program. For example, the previous development proposal would have required extensive cut on and earth removal from the site. The currently proposed development program substantially reduces onsite cut and will require approximately 2,300 cubic yards of fill material to be brought onsite.

b. In order to reduce the overall project impacts, the applicant proposes to minimize proposed onsite impervious areas by requesting waivers from the standard subdivision regulations, including reduced pavement width, certain right of way width, geometric design

standards, and roadway construction standards. It is noted that the Board has recently granted some of these waivers for the definitive subdivision located at 81 West Plain Street. BSC believes these waivers are reasonable for the proposed development.

c. With the change in the proposed development program, and the Definitive Subdivision Plans and supporting documents, revised through July 2020, most of BSC comments noted in our first peer review letter, dated September 16, 2019, have been addressed or are no longer applicable e.g.as there are no longer any surface detention areas, our September 16, 2019 letter comments do not apply to the current development proposal.

II. Definitive Subdivision Site, Revised through July 14, 2020

a. Site Layout and Utilities Plan, Sheet C4.2, Site Grading and pavement Plan, Sheet C4.3, and Roadway Plan and Profile, Sheet C5.1: These plans indicate that a wooden guard rail is proposed to be installed along the northern side of the proposed driveway from approximately Station 0+50 to 2+00. Vertical granite curbing will also be installed along this side of the driveway.

As this portion of the driveway is in a fill area, the proposed site topography north of the driveway drops off sharply at a 1.5 to 1 (60%) slope to match the existing grade. The curb and guard rail provide protection for vehicles travelling in either direction from moving off the driveway and down this steep slope.

From driveway Station 2+00 up to 3+50, the proposed driveway grade is close to existing grade. On the northern side of the driveway, the existing grade slopes away from the driveway at a slope of 1 to 8 or 9 (10-12% slope). The driveway in this area has a flatten "S" configuration with a roadway surface slope transitioning from just over 3% to just under 6%. In icy or wintery conditions, it is possible vehicles coming down this portion of the driveway could slide across the pavement surface, move over the curb and down into the offsite area.

BSC would recommend the applicant consider extending the proposed guard rail along the northern side of the driveway up to Station 3+50.

b. Site Stabilization Plan, Sheet C4.5, and Erosion and Sedimentation Control Plan, Sheet C6.1: These plans indicate the measures to be implemented for site stabilization and erosion control during and throughout construction and provide details for the various sedimentation and erosion control measures noted on the plan. A General Sequence of Construction is provided on this plan. Item 1 of this Sequence notes: "Establish limit of work by installing perimeter straw bales and orange construction fencing. ….."

   Where the proposed roadway construction is located in areas that are below the existing site grades, the above measures are adequate. There are several areas along the driveway, e.g. the north side of the driveway from Station 0+00 to 4+00 and Station 5+40 to 6+00, and south of the proposed subsurface stormwater infiltration area on Proposed Lot 2, where additional perimeter controls appear to be warranted.

   BSC would recommend that in the areas of the proposed roadway and residential development where the limits of work are at or above the existing grade, a silt fence should be added to the perimeter erosion controls between the straw bales and orange construction fencing. The silt fence will provide an additional layer of sedimentation control, especially for the section of the driveway from Station 0+00 to 1+50 where a 1.5 to 1 fill slope is proposed. A silt fence detail should be added to the Erosion and Sedimentation Control Plan, Sheet C6.1.

c. Drainage Plan, Sheet C4.4, and Construction Details, Sheet C7.2: These plans provide the layout design and details of the proposed stormwater management system for the residential development. In general, these plans are well designed, detailed, and provide adequate handling and treatment of the stormwater runoff from the proposed driveway.

   BSC has two comments regarding these plans and details:

   1. There is no indication as to how the roof runoff from the proposed residences will be handled. While the Stormwater Management Report, Rev 1 - July 14, 2020 notes the underground infiltration system has been sized to accept the roof runoff (see comments on pages 3 and 4 of the Report), no details of the roof drainage connections to these systems are provided.

2. The invert elevations of the catch basins which feed into the underground infiltration chamber system labeled as IC-2 are not substantially higher than the outlet elevations from the infiltration systems.

   Specifically, the outlet drain manhole, OCS-2, from IC-2 has an outlet elevation of 296.5. The outlets from the three catch basins flowing into IC-2, Double catch basins DCB-5, DCB-6 and DCB-7 have inverts of 297.42, 297.01, and 297.01, respectively. The differences between the outlet elevation from IC-2 to the DCB inverts amounts to 0.92' for DCB-5 and 0.5' DCB-6 and 7.

   The concern is that water within IC-2 could create a backwater effect and flood into these DCB's, reducing their ability to convey the stormwater they collect into the infiltration chamber system. The outlet pipe for IC-2 has a diameter of 18", with a of 2.5%. The Hydrology Summary for 24-hr Storm table within the Stormwater Management Report indicates the peak discharge rate through the outlet pipe in OCS-2 would be 7.3 cfs for a 10-year frequency storm event and 11.3 cfs for a 25-year storm event. No hydraulic calculations are provided to determine whether the backwater from these peak flows would interfere with flow out of these DCB's and limit their ability to collect and convey stormwater runoff.

BSC would recommend the applicant:

1. **Provide details or design standards for the proposed connections from the residences;**
2. **Provide hydraulic calculations regarding the impact of flow out of OCS-2 or consider raising the inverts out of DCB's 5, 6, and 7 to the extent practical to minimize or eliminate the potential for backflow from OCS-2 into these DCB's.**

III Stormwater Management Report

a. Test Pit Information is provided for a series of soils excavations across the site.

Test pits were undertaken in the area of the Proposed Infiltration Chamber System IC-1. Based upon a review of these test pits the bottom of this infiltration will be located at an elevation at least 2' above the Estimated Seasonal High Groundwater (ESHG) Elevation. A percolation test conducted in this area indicated an Infiltration rate of 3 minutes per inch. This area appears suitable for infiltration and meets the MA DEP Stormwater Regulations for a subsurface stormwater infiltration system.

No test pits or soils investigations were undertaken within the area of Proposed Infiltration Chamber System IC-2. Soils investigations were undertaken for the proposed subsurface sewage systems on Lot 3, about 100' to the south of IC-2, and on Lot 2, about 60' to the west of IC-2. Depths to bedrock and estimated seasonal high ground water in these soils explorations varied from 5.4 to 9' (for bedrock) and 4.8 to 8.8' (for ESHG). The existing grade over these test pits ranged from elevation 299 to 308.

BSC would suggest that additional test pit excavations be undertaken within the area of Proposed Infiltration Chamber System IC-2, prior to the commencement of construction to confirm that the system, as designed, would be compliant with the MA DEP Stormwater Regulations. This could be included as a condition of an approval, should the Board so desire. If included as a condition, it is recommended that the test pit information obtained by provided to the appropriate Town agency or official for review and approval prior to construction of this system.

IV Long Term Pollution Prevention & Stormwater System Operation and Maintenance Plan (O&M Plan)

a. As the proposed development will disturb more than 1 acre of land, it will require the submission of a EPA NPDES permit application. This application will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP). The Site Stabilization Plan, Sheet C4.5, and Erosion and Sedimentation Control Plan, Sheet C6.1 provide some of the information required within the SWPPP.

The O&M Plan does provide a general outline and performance standards for the ongoing maintenance of the proposed stormwater management systems within this residential development. The O&M plan notes how critical the ongoing maintenance is for the long-term effectiveness and operation of the stormwater management system.

As with other recent projects, the ongoing maintenance of the onsite stormwater management systems will be undertaken by a Homeowner Management Association (HMA).

BSC recommends that the applicant provide a copy of the EPA NPDES application to the appropriate Town agency and/or staff.

BSC suggests that the applicant be required to provide a copy of the HMA agreement, particularly as it applies to the ongoing maintenance of the onsite stormwater management system.

We look forward to discussing this project with you further at the public hearing on Tuesday, August 4, 2020. Please feel free to contact me at (617) 896-4471 or fdipietro@bscgroup.com should you have any questions on the information in this report.

Sincerely
BSC Group, Inc.

Frank D DiPietro

Frank DiPietro, P.E.,

Senior Project Manager / Senior Associate

cc: Julia Junghanns, Director of Public Health
Linda Hansen, Conservation Administrator