June 30, 2021

Karen Sherman
Town Planner
Holliston Planning Board
703 Washington Street
Holliston, MA 01746

Re: Stormwater Design Engineering Peer Review
"Eagle Path Definitive Subdivision" Holliston, MA
CMG ID 2021-118

Dear Karen,

CMG is providing this letter report detailing our engineering peer review of the stormwater management system design for the "Eagle Path Definitive Subdivision" in Holliston, MA. The project is located on a 6.2 +/- Acre parcel identified by the Town of Holliston's Tax Accessor's Map as Map 8.E, Block 3, Lot 19.3 (the "Site"). The project Applicant, *Eagle Path, LLC* is proposing a four (4) lot conventional residential subdivision within the Residential District.

CMG is in receipt of the following documents:

- Site Plans entitled "Eagle Path Definitive Subdivision in Holliston, Massachusetts" prepared by Guerriere & Halnon, Inc., dated April 29, 2021.
- "Stormwater Management Report – Eagle Path, Holliston, MA" prepared by Guerriere & Halnon, Inc., dated April 29, 2021.

CMG is providing the following list of technical comments based on review of the above-mentioned Site Plans and Stormwater Management Report:

General Engineering & Drainage Design Comments

1. The property area according to the design plans, project narrative, and assessor's card appears to be 6.29 Acres. The area analyzed in the submitted stormwater report appears to be 6.18 Acres. The total lot area should be included in the HydroCAD model.
2. Pre and Post Development Condition plans should provide a legend and clearly depict time of concentration flow paths, lengths, slopes and NRCS soil type limits.

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3. Pond 5P is not labelled and Subcatchment P-4 appears to be split into two areas as shown on Sheet 2 of 2, Post Development Conditions.

4. The proposed stormwater basin's outlet control pipe appears to have incorrect inlet invert and outlet invert elevations labelled on Sheets 4 & 5. (Plans show 345.00 and 344.50, assume inverts should be 245.00 and 244.50 respectively)

5. Water line is not shown on the roadway profile on Sheet 5 of 8. Ortho imagery of the site also shows a Fire Hydrant alongside Utility Pole 16. This hydrant should be shown in the plan set. Additionally, CMG recommends coordination with Holliston Water Department to verify if proposed water line connection to hydrant is possible instead of saw cutting and tapping in the Prospect Street right-of-way.

6. Proposed 6" underdrains should be shown connecting into each catch basin and inverts listed for each. Underdrains must also be shown on the roadway profile Sheet 5 of 8.

7. Drainage easement bearings and distances along with the width of the easement between Lot 3 & 4 are not shown on the plans.

8. Drain pipe type, length, and slopes should also be labelled on the plan view.

9. Holliston Subdivision Regulations Section 5.3.3 require all drain pipes to be reinforced concrete pipe. Infiltration basin detail on Sheet 8 of 8 references HDPE piping.

10. Drain Manhole and Catch Basin structure frames and grates should match those specified in Holliston Subdivision Regulations Section 5.3.4.

11. Plans should reference the specific FIRM flood plain map for this location to verify the Site is not in a flood plain.

12. The drain pipe inverts shown in the "Street Drainage Calculations" located in Appendix 8 of the Stormwater Report do not match the design plans.

Stormwater Standard 1: *No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth.*

13. The first 100 ft. of proposed roadway will be untreated as shown on the design plans. The plan depicts two (2) stone aprons on either side of the roadway. This section of roadway must be collected and routed through the appropriate stormwater management practices. It appears there is adequate elevation difference across the Site to install catch basins at Sta. 0+0 and pipe to the proposed stormwater basin at the rear of the Site.

14. Location of the proposed stormwater basin's 15" RCP outlet pipe may cause potential erosion issues to the abutting N/F Themeli property located northeast of the Site. Applicant's Engineer should provide additional information to verify the basin's outlet will not cause flooding or erosion on abutting property and/or relocate this discharge point in a manner to direct runoff towards the nearby wetlands.

15. Rip-rap aprons are not shown for proposed flared end sections for basin inlet and outlet control structures as necessary to dissipate flow and deter scouring of vegetated slopes. Applicant's engineer should also provide design calculations for proposed riprap aprons to verify the apron size will be able to handle 100-year flow events.

Stormwater Standard 2: *Stormwater management systems shall be designed so that post development peak discharge rates do not exceed pre-development peak discharge rates.*

16. Applicant's engineer should show approximate limits of paved driveways for each lot and include these areas in the HydroCAD calculations to verify all proposed impervious areas will not cause post-development peak discharges to exceed pre-development conditions.

17. HydroCAD calculations use a time of concentration (Tc) = 26.4 minutes based on woods and woodland for the combination of roadway and residential lots for Subcatchment P-4. CMG recommends a minimum Tc =5 min. be used for pavement surfaces and the roadway be broken out as a separate subcatchment.

Stormwater Standard 3: *Loss of annual recharge of groundwater shall be eliminated or minimized.*

18. NRCS Soil mapping provided in Appendix 2 of the Stormwater Report identifies Site soils as Hydrologic Group C/D and D. The curve numbers used in the HydroCAD calculations all reference Type D soils. This conflicts with the Rawls Rate listed in the Stormwater Report for Sandy Loam, Hydrologic Soil Group B. CMG recommends additional supporting information be provided to justify the 1.02 in/hr infiltration rate or consider in-situ permeability testing options.

19. HydroCAD model lists an infiltration rate = 5.00 cfs for stormwater Basin 5P which differs from the Rawls Rate listed in the report. The HydroCAD model should use the appropriate Rawls infiltration rate based on site soil conditions.

20. Required recharge volume calculation uses 0.25 in for Hydrologic Type C soils instead of 0.10 in. for Type D soils.

21. Infiltration basin berm must have an impervious clay core specified on the detail sheet.

22. Rip-rap stone sizes and materials should be specified for the forebay berm.

23. 15" outlet pipe is not shown on the Infiltration Basin detail on Sheet 8 of 8. Pipe appears to only have 0.25 ft. of cover (Holliston Subdivision Regulation Section 5.3.3 requires 36" minimum cover). CMG recommends Applicant's Engineer consider a different outlet structure design. (Also see Comment 14.)

24. Impervious areas for both proposed houses and proposed driveways should be accounted for to calculate the required recharge volume.

25. Portions of the proposed stormwater basin and associated sediment forebay do not meet the required 2' of vertical separation to estimated seasonal high groundwater (ESHGW). ESHGW in the vicinity of the proposed stormwater basin is identified at 30" below the ground surface in an area with sloping topography. Therefore the ESHGW elevation ranges between 243.5 ~ 241.5 within the limits of the proposed stormwater basin. ESHGW in the vicinity of the sediment forebay is between 242.5 ~ 245.5.

26. CMG recommends preliminary sizing and location of the proposed septic leach fields for each lot be shown on the Site Plans to verify conformance with required Title V setbacks from the proposed stormwater management structures.

27. A mounding analysis is not provided. The proposed stormwater infiltration basin bottom is within 4 ft. of estimated seasonal high groundwater.

Stormwater Standard 4: *Stormwater management systems shall be designed to remove 80% of the average annual post construction load of Total Suspended Solids (TSS).*

28. Holliston Subdivision Regulations Section 5.3.1 required treatment for first 1 in. of rainfall. Stormwater Report calculations reference the State standard WQV = 0.5 in.

29. The first 100 ft. of roadway is currently untreated. All roadway areas must be collected and treated in accordance with Standard 4 as the project is new development. (See Comment 13).

30. Stage-storage volume table for the proposed stormwater basin should be included to verify the basin's proposed storage volume below the lowest outlet invert elevation.

Stormwater Standard 5: *Land uses with higher potential loads (LUHPPL), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.*

31. Not applicable – Site is not a LUHPPL.

Stormwater Standard 6: *Stormwater discharges within a Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area.*

32. Not applicable – Site does not appear to discharge to a Zone II, Interim Wellhead Protection Area, or any other critical area.

Stormwater Standard 7: *Redevelopment Projects*

33. Not applicable – Site is considered "New" development

Stormwater Standard 8: *Construction period erosion and sedimentation control*

34. Proposed erosion control barrier should be extended along the entire rear property line of Lot 4 and along the Jewett & Hovsepian property lines and clearly labelled.

35. Limits of tree clearing (or proposed treeline) should be shown on the Demolition Plan.

36. The "Construction Phase Inspection Form", includes a Stormceptor as an inspection item. The site does not appear to utilize water quality units. Applicant's engineer should revise as needed.

37. Site is > 1 Acre therefore an EPA NPDES Construction General Permit (CGP) registration and SWPPP is required to be submitted prior to construction. CMG recommends the Planning Board make this a condition of approval.

Stormwater Standard 9: *Long term operation and maintenance (O&M) plan*

38. The proposed stormwater basin is not included in the Long-Term O&M Plan as a Best Management Practice (BMP).
39. Applicant's Engineer should include the written maintenance requirements for the stormwater basin, forebay, and riprap aprons in the O&M Plan.
40. The Long-Term O&M Plan states the site is to be serviced by municipal sewer, which does not appear to be correct.
41. Long Term O&M Plan does not include a description of public safety features or estimated operation and maintenance budget.
42. Operation and Maintenance Log form is not provided in the O&M plan. CMG recommends a corresponding Stormwater BMP figure also be included depicting the locations of all on-site stormwater piping and structures.
43. As the Responsible party will not be the final Owner of the parcel (Lot 3) where the Stormwater Basin BMP is located, a copy of the DRAFT – "plan and easement deed" that allows site access for the legal entity to operate and maintain BMP functions must be provided.

Stormwater Standard 10: *All illicit discharges to the stormwater management system are prohibited.*

44. A signed illicit discharge statement is not provided. CMG recommends the statement be included in the Site's Long-Term O & M Plan.

If you have any questions or need additional information, please contact me at (508) 864-6802.

Sincerely,
CMG ENVIRONMENTAL, INC.

David T. Faist, PE
Principal Engineer – Engineering Services