
June 09, 2020

Mr. John Love
Chairman – Zoning Board of Appeals
Town of Holliston
703 Washington Street
Holliston, MA 01746

**Re: Civil Engineering Peer Review “Geoffrey Park” 40B Comprehensive Permit Project
Indian Ridge Road South Holliston MA
CMG ID 2020-131**

Dear Mr. Love,

CMG is providing this letter report detailing our engineering peer review of the proposed “Geoffrey Park” Site Development Plan of Land, a 40B Comprehensive Permit Project located at 0 Indian Ridge Road in Holliston, MA (the “Site”). The project is located on a 12.67 +/- Acre parcel within an “Agricultural Residence B” zoning district.

The Applicant proposes to construct a 24 Unit single family home residential development with 8 homes under MGL Chapter 40B for affordable housing. The proposed project driveway access requires crossing an existing intermittent stream and a portion of the project is within the 100-FT buffer zone of a bordering vegetated wetlands.

CMG is in receipt of the following documents:

- “Site Development Plan of Land A 40B Comprehensive Permit Project “Geoffrey Park” Holliston, Massachusetts” prepared by GLM Engineering Consultants, Inc., date 2/29/20, revise date 5/14/20.
- “Stormwater Management Report Off Indian Ridge Road South Holliston MA” prepared by GLM Engineering Consultants, Inc., date 5/14/20.

It is our understanding the site development plans are in the initial stages of the 40B design process. Therefore, we offer both a review of the project’s general civil engineering and stormwater management system design along with recommendations for additional technical information necessary to fully evaluate the project. CMG provides the following technical comments for consideration by the Zoning Board of Appeals (ZBA).

General Comments

1. List of Exceptions – in accordance with the Chapter 40B process, the Applicant is to submit a detailed list of exceptions to the regulations. The “Preliminary Request for Waivers” date March 11, 2020 only provides a summary of the overall local regulations and not specific waivers detailing specific Article & Section numbers. CMG recommends the Applicant provide a detailed list of waivers from local zoning and subdivision regulations. The list will provide CMG and the Board with an understanding to the degree of compliance planned for this project.
2. Architectural Style - Two (2) examples of single family architectural building style and floor plans are provided. However, only one single story cape style Design 152596 appears to be shown on the plans. Design 152641 is not shown.
3. Two-family duplex homes are proposed on Lot 14 and 15. It is unclear if these homes will also have garages. CMG recommends architectural floor plans and elevations be provided for these units for review by the Board. Our experience is this information is necessary for the Board to judge the project.
4. Environmental Resource Area – The plans do not reference the date of the wetland flagging but only the company, Applied Ecological Sciences, which performed the delineation. In addition the project proposes an intermittent stream crossing at the entrance to the project.

Determination of the environmental resource areas and their site planning implications are regulated through the Conservation Commission through the Wetlands Protection Act, among other regulations, which is not exempted by the 40B process. Wetlands delineations are typically only valid for three years. Therefore, the Board should consider requesting additional information relating to the wetland flagging to insure the environmental resource areas are adequately defined.

5. Sanitary Disposal – The project proposes a shared septic system for the 24 unit housing project. All houses will have individual septic tanks piped to a common gravity sewer system. The gravity sewer system will drain to a 10,000 gallon holding tank with sewer pumping station located adjacent to Lot 2 on the lower portion of the Site. Sanitary sewage will be pumped via a subsurface force main to a shared soil absorption field located in the northwest corner of the Site.

The current plan set does not provide estimated sewage flow rates or preliminary design data. CMG believes the proposed septic system design will be regulated under State Title V regulations by MassDEP due to the size of the development. CMG recommends the Applicant provide additional information relative to the on-site feasibility of the area proposed for the shared soil absorption system and proposed sewer pump station.

6. Additional topographic information is needed on the adjacent property at 10 Indian Ridge Road to determine if there are potential issues relating to the proposed soil absorption system grading and required breakout distances.

7. Roadway Geometry – The roadway is proposed as a 20-foot pavement width within a 50 ft right of way. The proposed roadway cross section is consistent with the Town of Holliston’s design standards for a “local residential” roadway. The proposed project will further extend the length of the existing Indian Ridge Road South dead-end. Recommend the Applicant include this in the request for waivers.
8. Pedestrian Circulation – The roadway proposes a 5-FT sidewalk with 8 FT adjacent grass strip throughout the majority of the project roadway. At the entrance to the project, the sidewalk is proposed directly adjacent to the Cape Cod berm from Station 0+50 to approximately Station 3+00 in the vicinity of the wetlands crossing. Applicant’s Engineer should consider use of an alternative type of curb such as 6” height vertical curbing in this area for pedestrian safety where the sidewalk is directly adjacent to the roadway.
9. Applicant’s engineer should review road, sidewalk, crosswalk, and proposed handicap ramp layout and grading for conformance with ADA / AAB regulations. Handicap ramp details are not provided and additional detail should be provided regarding the crosswalk between ramps at approximate STA. 6+50.
10. It is unclear if there is an existing sidewalk on Indian Ridge Road South which the project sidewalk could connect to as part of the existing cul-de-sac re-configuration.
11. There is no roadway lighting proposed for the project. CMG recommends the Applicant’s Engineer consider some level of lighting, especially on the sidewalk side of the road for pedestrian safety.
12. There is no Landscaping Plan or Details provided. CMG recommends the Applicant’s Engineer provide some form of landscape design plan showing street tree locations and typical residential unit planting schematic.
13. A “dog park” and “passive recreation amenities” are mentioned in the Comprehensive Permit Application materials, however, it doesn’t appear these areas are shown on the current plan.

Engineering Technical Review Comments

14. CMG recommends a summary table be provided on the Title Sheet tabulating building, parking, walks, roadway, total wetlands, wetland disturbance, wetland replication, remaining open space areas. The table should also include a summary of the 40B housing unit breakdown (25% affordable, and at least 5% fully accessible in accordance with ADA).
15. All Plan Sheets should provide a North Arrow and scale bar. Several sheets do not have either shown.
16. CMG recommends “Dig-Safe” notes be added to the Site Development Plan set.
17. Proposed street name and right of way width information should be shown on the Lot Layout Sheet 2 of 14.
18. The apparent easement depicted in the northwest corner of Parcel A should be labeled.

19. The existing easements located at the end of Indian Ridge Road are not labeled (i.e. drainage, utility, etc.). CMG recommends Applicant's Engineer confirm a water main loop connection is feasible through these easements.
20. Applicant should provide the Board with confirmation from the Town of Holliston Water Department that there will be adequate pressure and volume for the proposed project.
21. Existing Conditions plan Sheet 3 of 14 notes topographic survey is taken from an aerial survey but does not provide the vertical datum reference or date of survey. Applicant's Engineer should at a minimum field check a few spot elevations based on their wetland locations and verify there has been no change to the existing Site conditions shown.
22. Existing water utility size, type, and location at both the end of Indian Ridge Road and Indian Ridge Road South should be verified and shown on the plans.
23. Sheet 4 of 14 does not show the 100 ft. buffer zone for the southernmost wetlands in the vicinity of the Indian Ridge Road South cul-de-sac.
24. CMG recommends the Board consider requesting the Applicant's Engineer provide a separate Site Layout Plan to illustrate the overall site layout without the existing and proposed contours for clarity.
25. Plan should quantify proposed number of individual residential unit parking and guest parking areas. It is unclear if two-family units will have garages.
26. Stormwater Treatment Units area called out on Sheet 6 of 14 but no details are provided.
27. Existing left, right, and centerline grades should be labeled in the profile or a legend provided on Sheet 7 of 14.
28. Proposed 18" culvert crossing at approximate STA. 1+75 is not shown on Profile Sheet 7 of 14.
29. Subsurface utility pipe, size, type, length, and slope are not shown for pipes outside of the right of way.
30. Water line size and type is not shown in the profile view on Sheet 7 of 14.
31. Sewer force main pipe is not depicted in the profile view on Sheet 7 of 14.
32. CMG recommends schematic layout of subsurface Electric / Cable/ Telephone utilities be shown to insure they don't conflict with other utilities.
33. A stop sign and stop bar should be located at the proposed roadway intersection at approximate STA 16+25.
34. The proposed roadway intersection STA 5+00 / STA 16+47 slope exceeds 2% for greater than 150 ft. in all directions. Applicant's Engineer should explore alternatives to the 4 % plus slopes shown or provide supporting information the proposed intersection grades will provide safe stopping and sight distances within the development.

35. Roadway profile exceeds 8% grade between STA 13+0 & 15+00. Applicant's engineer should evaluate whether this can be adjusted to provide a less steep approach to the intersection.
36. Curbing radii dimensions should be shown on the plan view on each profile sheet.
37. CMG recommends Profile Sheet 8 of 14 be revised so the Plan view is rotated 180 degrees to align with the profile stationing below. The profile alignment should also be revised so all of the elevation grid lines match up to the correct elevations and are not split as shown.
38. A subdrain should be provided for all roadway cut sections and depicted on the profile. CMG recommends subdrains be provided between STA. 10+25 and 16+00.
39. Typical Right of Way Cross Section detail should be revised to show the approximate force main and subdrain locations.
40. Roadway gravel base should be specified as “gravel conforming to Section M1.03.0 Type C of the Standard Specifications.
41. Wetland crossing cross section and retaining wall details are not provided.
42. CMG believes MassDEP will require the proposed intermittent stream crossing meet the State of Massachusetts Stream Crossing Standards based on our recent experience with similar projects. This will most likely require a three sided culvert design instead of the 18” culvert shown. Applicant's Engineer should explore this option and revise the plans accordingly.
43. Proposed wetland replication area grading and soil cross section is not shown. Additional detail is needed to evaluate if the design will provide adequate conditions for the proposed wetland plantings.

Stormwater Management Design Comments

44. Stormwater runoff from the first 250-FT of roadway is proposed to connect into the existing off-site Indian Ridge Road South catch basins located before the cul-de-sac. Applicant's Engineer should evaluate these catch basins and additional watershed area to determine if the off-site stormwater system has adequate capacity for this additional flow.
45. Additional off-site drainage area should be included in the evaluation of the stream culvert crossing design to determine the capacity needed. Available MassGIS Lidar topographic mapping and/or Streamstats web site may be used to provide this information.
46. Manning's Equation Table:
 - a. CB20 to DMH 19 should have a length of 15-FT
 - b. CB21 to DMH 19 should have a length of 10-FT
47. Not all catch basins and associated piping are listed on the Manning's Equation Table. CB10, CB11, CB23, CB24, CB27, & CB28 and associated drain manholes are not shown.

48. Catch basin inlet capacity evaluation should be provided to determine if additional catch basins, Massachusetts cascade grates, and/or double grate catch basins are required.
49. Stormwater report and checklist should both be stamped and signed by a State of Massachusetts Professional Engineer.

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.*

50. Rip-rap apron sizing calculations should be provided to insure the design will provide adequate erosion protection for the 25-year and 100-year storm events.
51. Rip-rap apron dimensions should be noted on the Site Plans and the detail should specify filter fabric and/or smaller diameter crushed stone for use underneath rip-rap stone.

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

52. NRCS soil survey notes the Site soils are Hydrologic Soil Type A. The proposed hydrologic design calculations assume Hydrologic Soil Type B soils. CMG is in agreement with this more conservative approach based upon on-site soil testing which identifies the top 24” layer of soil as a “sandy loam”.
53. Two (2) additional subcatchments and off-site stormwater discharge points appear to be located at the northwest corner of the property and should be included in both the Pre and Post development analysis. It appears there are two additional distinct off-site discharge points onto the #10 Indian Ridge Road property and the N/F Dillahunty property to the North in the area of the proposed septic system.
54. Total pre-development watershed area (DP1=593,502 s.f.) does not match post-development watershed area (DP2=601,961 s.f.). CMG recommends a table be provided summarizes pre and post watershed areas as these should be equal.
55. In the proposed condition overview section of the report, 25-year and 100-year volume outflow is slightly different than the HydroCAD calculations.
56. Pre and post-development mapping should provide a legend and label the lengths and slopes of all time of concentration flow paths.
57. The post –development HydroCAD models show a pond 6P, however, this node is not shown on the drainage mapping or routing diagram.
58. Reaches 1R and 2R are mislabeled on the Pre-development Runoff Area Plan.

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

59. Roof drain drywells should be provided for the rear roof drains on Lots 2, 3, 4, 5, 6, and 13 as they are not directed to the on-site stormwater infiltration basin. Standard 3 requires all new impervious areas to be recharged on-site.

60. Estimated seasonal high groundwater elevation separation distance and peak elevations for each design storm event should be shown on the Detention Basin Typical Section detail on Sheet 12 of 14.
61. Impervious clay barrier should be specified for the proposed stormwater basin berm on the detail shown on Sheet 12 of 14.
62. Basin bottom excavation notes that all topsoil and subsoil shall be removed from the bottom area of the basin, however, the drainage calculations are based on retaining the B-layer of "sandy loam" soils. Applicant's Engineer should provide a note to clarify.
63. Detention basin maximum depth should be limited to less than or equal to 6 ft., otherwise Massachusetts 302 CMR Section 10 Dam Safety regulations will most likely apply and need to be addressed.
64. Typographical error on Sheet 6 of 14 notes "10' Wide Top El. = 173.5", instead of 273.5.
65. Stage storage table should be provided for Detention basin 1P to confirm recharge volume.

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

66. Grading and Drainage plan notes the use of two (2) treatment units for roadway drainage but no details are provided as to sizing or TSS removal capacity. The O&M Plan notes use of a Stormceptor 450i which is typically a different model than the in-line units shown. Applicant's Engineer should provide water quality unit sizing calculations, TSS removal efficiency, and design details.
67. TSS Removal calculation worksheets should be updated to reflect the revised BMPs.

Stormwater Standard 5: *Land uses with higher potential pollutant 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.*

68. 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.*

69. Not Applicable – CMG does not believe the Site is located in a critical area based on available mapping.

Stormwater Standard 7: *Redevelopment Projects*

70. Not Applicable – Site is not a redevelopment project.

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

71. The Site is > 1 Acre therefore an NPDES SWPPP is required to be submitted prior to construction. CMG recommends the Zoning Board of Appeals make this a condition of approval.
72. Silt sack detail should specify type and material.
73. CMG recommends Mirafi 700x Filter Fabric or approved equal be specified for geotextile fabric beneath stone on construction entrance detail.
74. Erosion control should must be provided at the Northwest corner of the property to prevent off-site erosion relating to the septic soil absorption field construction.

Stormwater Standard 9: *Long term operation and maintenance plan*

75. A schedule summarizing inspection and maintenance tasks for all stormwater BMPS is not provided in the O&M Plan
76. Safety / trash grates designed to be removable for maintenance should also be provided for the two (2) detention basin "inlet" pipes and 8.5-IN x 37-IN weir opening on the outlet structure.
77. Stormwater basin is designed as an infiltration basin, however, the O&M plan identifies it as a detention / retention basin.
78. Stormceptor STC450i treatment catch basin units are listed in the O&M Plan but not shown on the plans or details.
79. Maintenance and inspection schedule for deep sump hooded catch basins and rip-rap aprons are not provided.
80. Post construction "operation and maintenance log form" is not provided.

Stormwater Standard 10: *Illicit discharges*

81. An Illicit Discharge Statement is provided, however, not signed by the property owner. CMG recommends the ZBA require a signed copy be provided as a condition of approval.

Please contact me if you have any questions or need additional information at (508) 864-6802.

Sincerely,
CMG ENVIRONMENTAL, INC.



David T. Faist, PE
Principal Engineer – Engineering Services

cc. Karen Sherman, Holliston Town Planner