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Duxbury Board of Health
Town Hall
878 Tremont Street
Duxbury, MA 02332

Subject: Keene's Mill Village – Septic System Design

Dear Board Members:

This is to advise that we have reviewed the following documents in support of the proposed septic system design for the Keene's Mill Village development off North Street:

- Conditional Site Plan (14 sheets), revised December 29, 2023, prepared by Grady Consulting LLC (Grady)
- Preliminary Site and Architecture Package (12 sheets), dated October 29, 2020, prepared by Union Studio Architecture & Community Design
- Transmittal letter, dated December 29, 2023, prepared by Grady with the following attachments:
 - Soil logs, various dates performed by various soil evaluators
 - MassDEP Modified General Use Certification for Enviro-Septic Wastewater Treatment System (Presby GUC), Modified February 22, 2022
 - MassDEP Standard Conditions for Alternative Soil Absorption Systems with General Use Certification and/or Approved for Remedial Use (Presby Standard Conditions), revised March 5, 2018

The purpose of our review has been to evaluate conformance with 310 CMR 15 - The State Environmental Code (Title 5) and the Town of Duxbury Supplementary Rules & Regulations to the State Environmental Code (R&R).

Background

The project consists of construction of sixteen, three-bedroom, single-family condominium units. Two of the units would be off the northwest corner of the intersection of North and Keene Street and these two units would be served by a shared septic system. The other fourteen units would be off a new driveway off the east side of North Street, and these units would be served by a second shared septic system. The project has been approved under a Comprehensive Permit (Chapter 40B) issued by the Duxbury Zoning Board of Appeals in 2023.

The septic design for the two-unit system would be a 660-gallon system consisting of a two-compartment 2,500-gallon septic tank, a 1,500-gallon pump chamber, a distribution box and a 13.5-ft. wide by 57-ft. long Presby Environmental Advanced Enviro-Septic soil absorption system bed with 420 linear feet of Enviro-Septic pipe.

The septic design for the fourteen-unit system would be a 4,620-gallon system consisting of a 10,000 gallon first compartment septic tank, followed by a 5,000 gallon second compartment septic tank, a 5,000-gallon pump chamber and a 2,000-gallon pump chamber (wet well); a splitter box, two distribution boxes and two 28.5-ft. wide by 102-ft. long Presby Environmental Advanced Enviro-Septic soil absorption system beds with a total of 3,600 linear feet of Enviro-Septic pipe.

The Board should be aware that we also reviewed the entire development project for the Zoning Board of Appeals during the Comprehensive Permitting process and we witnessed some of the soil testing that has been performed on site. During the permitting process we confirmed that the drainage design for the entire development is in compliance with all local, state and federal by-laws, rules and regulations.

Comments

1. For both systems we recommend that the low and high vents be located on opposite ends of the leaching beds to optimize air flow throughout the soil absorption systems.
2. The conventional system sizing on Sheet 5 for the fourteen-unit system should be based on 6,600 s.f. of leaching area, not the forty percent reduction allowed with the Presby system.
3. Reserve areas for both Presby systems should be shown on the plans.
4. The test holes for the two-unit system are not within the footprint of the system and there are no other test holes in close proximity. Test holes are required to be located within the footprint of the soil absorption system to verify soil and groundwater conditions.
5. The Pump Design information on Sheet 13 for the fourteen-unit system and on Sheet 6 for the two-unit system should be reviewed for accuracy. Both are the same and both appear to be incorrect.
6. The Chamber Storage Capacity information on Sheet 13 for the fourteen-unit system should be reviewed for accuracy. The length of force main and pump chamber capacities are incorrect (i.e. 10,000 and 3,000 gallon vs. 5,000 and 2,000 gallon). Dose volume calculations should also be revised.
7. The discharge line from the pumps in the fourteen-unit system is shown as four-inch inside the pump chamber (Sheet 13), yet the pump specification calls for a three-inch discharge and the force main is three-inch.
8. Both systems specify the same pump operating at the same head conditions. This should be checked.
9. The Control Panel Specifications on Sheet 6 indicate a four-float system for the two-unit system, yet a three-float system is shown within the Pump Chamber Detail.

10. The elevations listed for the tanks and floats on Sheet 13 are incorrect (they are in the 70's vs. 50's).
11. The inspection ports are required to be wrapped in geo-textile fabric.
12. Benchmarks should be shown on the plans within 75 feet of each proposed system.
13. The architectural plans show three bedrooms for the proposed units. However, each of the proposed unit types also shows a bonus room which could easily be converted to a bedroom. The Applicant should discuss this with the Board.
14. We note that if the system designs are approved there are several standard conditions that must be included in the approval for the Presby Enviro-Septic system.

Please give us a call should you have any questions.



Very truly yours,

PGB Engineering, LLC

By:

A handwritten signature in black ink that reads "Patrick G. Brennan".

Patrick G. Brennan, P.E.

PGB