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September 21, 2023

Duxbury Zoning Board of Appeals
Town Hall
878 Tremont Street
Duxbury, MA 02332

Subject: **50 Railroad Avenue – Comprehensive Permit**

Dear Board Members:

This is to advise that we have reviewed the following documents related to the subject project:

- Site Development Plan (11 sheets), revised September 12, 2023, prepared by Crowell Engineering (Crowell)
- Drainage Analysis, revised August 31, 2023, prepared by Crowell
- Stormwater Management Policy, revised August 31, 2023, prepared by Crowell
- Wetlands Drainage Analysis, revised August 31, 2023, prepared by Crowell

The documents have been revised to address comments contained in our June 21, 2023 letter to the Board as well as emails and telephone conversations we have had with Mr. Crowell. Below are the comments from our June 21 letter in plain text, followed by the current status of each in **bold text**.

1. Based on our review of the documents, we do not believe there is sufficient information for us to determine whether the development may be constructed as shown on the plans. **See comments below.**

    a. As noted above, proposed water, gas and electric/communication utilities are not shown on the plans. **Addressed – proposed water, gas and electric/communication utilities are shown on the plans.**

    b. The proposed sewerage and septic system are shown graphically on the Septic Plan (Sheet 6), but most of the components are not labeled. It is also not clear where the reserve area for the soil absorption system is located. Elevations of the test holes performed for the septic system should coincide with the elevations of the plan. **Septic components are now labeled on the plans and the elevations between test holes and septic design are consistent. However, Reserve Area 2 crosses over one water line and it is within ten feet of another water line, which is not permissible under**

Title 5[1]. Additionally, the proposed soil absorption system is an alternative system (Presby), and Section II.6.c) of the MassDEP "Standard Conditions for Alternative Soil Absorption Systems with General Use Certification and/or Approved for Remedial Use,"[2] revised March 5, 2018, requires that the plans "must clearly indicate an area for a full-sized conventional primary SAS and a full-sized conventional reserve area." The design calculations on Sheet 7 show that the reserve area meets the full-size requirements, but the primary soil absorption system is the Presby system and it is reduced by 40%. We don't believe that there is sufficient room on the site for full-size conventional primary and reserve soil absorption systems, especially since Reserve Area 2 cannot be configured as shown on the plans and will need to be reduced.

c. The Lighting Plan (Sheet 9) does not include any lighting information. **The lighting information shown on the plan is a legend that has a symbol for "post lights (onion lights)" and locations of the post lights. Specification should be provided or specified on the plans.**

d. The Conservation & Landscape Plan (Sheet 10) does not show any proposed landscaping, nor does it show erosion controls. **Landscaping is shown on Sheet 9. It consists of a stockade fence along a portion of the 114 Alden Street property line; arborvitaes along the Duxplex property line; a combination of hydrangea & beach grass in the green spaces in front of the units; and loam and seed in all other areas. Erosion controls are shown graphically and detailed on Sheet 10 but they are not labeled in plan.**

e. Additional construction details are required, including a pavement section, curbing, walks, basin details, etc. **Some details have been added to the plans but there should be details for the wet basins and the walks.**

f. Three test pit logs are shown on the plans but there appears to be additional test hole locations shown. All soil testing information should be provided. **Addressed – test pit logs for all test pits excavated on site have been provided.**

2. A mounding analysis is required for the septic system to demonstrate that the required five feet of separation from seasonal high groundwater will be provided when the mound is added to the groundwater elevation (310 CMR 15.212(2) and 15.240(12)). **No mounding analysis has been submitted for the septic system.**

[1] See attached emails between Bob Crowell and Brett Rowe (MassDEP) where Mr. Rowe confirms that the water line cannot pass through the reserve area.
[2] Excerpts attached.

3. The required setback from an infiltration facility to a surface water (wetlands are considered surface waters) is fifty feet (see SMS Table 2.3, copy attached). Both of the proposed open-air infiltration basins and portions of the subsurface infiltration system are within fifty feet of the wetlands. **Addressed – the open-air basins are now designed as wet basins, not infiltration basins so the fifty-foot setback does not apply. The proposed subsurface infiltration system is set back a minimum of fifty feet from the wetlands. We note that since the two open-air basins are now wet basins and do not provide any groundwater recharge, there is an increase in post-development volume of runoff. We asked Mr. Crowell to quantify the impact the increase in volume would have on flooding levels in the receiving wetlands. His analysis, as well as our own analysis, indicate that the additional runoff volume will not increase flood levels in the receiving wetlands.**

4. The USGS topographic maps show a perennial stream within the wetland area at the rear of the site. The Applicant should document whether this stream is perennial or intermittent. If the stream is perennial, then there is a Riverfront Area associated with it and the project must comply with the Riverfront Area performance standards. **Addressed – the Applicant provided an Order of Resource Area Delineation from the Conservation Commission, dated January 9, 2018 indicating that the stream is in fact an intermittent stream, and therefore, does not have a Riverfront Area associated with it.**

5. The Proposed Waiver List only includes two waivers. Additional waivers will be required to construct the project as shown, particularly from the Duxbury Wetlands Protection Bylaw (Chapter 9) and the associated Duxbury Wetlands Regulations as they regulate the 100-foot buffer zone to wetlands. All required waivers should be included in the list. **We have not seen a revised waiver list.**

6. The architectural and civil plans for the six-unit building do not match. The overall length of the building is 140 feet on the architectural plans and 139 feet on the civil plans. The two middle units appear to be accurate but the outer two units on each end differ. **Addressed – the civil plans have been revised to match the architectural plans.**

<u>New Comments – September 12, 2023 Plans</u>

7. **Bearings are missing from the north and west property lines as well as from the drainage easement on the Duxplex property.**

8. **The Utility Plan (Sheet 5) shows that the existing 6-inch water main in Railroad Avenue will be replaced with an 8-inch water main from Alden Street about 290 feet along Railroad Avenue. The Applicant should confirm the limits of replacement (a note on the plan showing the end of the replacement main would define the limits).**

Please give us a call should you have any questions.

Very truly yours,

PGB Engineering, LLC

By:

Patrick G. Brennan, P.E.

PGB
enc.

Gmail Patrick Brennan <pgbengineeringllc@gmail.com>

50 Railroad Ave, Duxbury prop. waterline beneath Reserve Area for Presby SAS

Rowe, Brett (DEP) <brett.rowe@mass.gov> Thu, Jul 13, 2023 at 3:10 PM
To: Robert Crowell <crowelleng@gmail.com>, Patrick Brennan <pgbengineeringllc@gmail.com>

Bob,

Unfortunately, the water line needs to be moved. The reserve area can not have any permanent structures in it.

From: Robert Crowell <crowelleng@gmail.com>
Sent: Thursday, July 13, 2023 12:51 PM
To: Rowe, Brett (DEP) <brett.rowe@mass.gov>; Robert Crowell <crowelleng@gmail.com>; Patrick Brennan <pgbengineeringllc@gmail.com>
Subject: 50 Railroad Ave, Duxbury prop. waterline beneath Reserve Area for Presby SAS

Brett,

We are proposing a 12 unit condo project/40B.

We are using a Presby system for the SAS, The Reserve is comprised of 2 areas one being under

the entrance/parking area. The Water department is requiring a 6 " line with a 1" line entering each unit. The proposed 6" line crosses the Reserve area. Is this a problem?

In the last 38 years I have never seen a failed system built in the Reserve Area. The existing failed system is dug out and a new system is put in the same place/area. I am not aware of any regulation that prevents a waterline beneath the Reserve Area.

See the attached Plans

Sht 6 shows the layout & water lines

sht 7 is 80% complete elevations to be revised the design #'s are good

Have a meeting tonight If you can take a look at this would be greatly appreciated.

Thanks in advance,

Bob Crowell

Crowell Engineering

(774) 283-0443

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Standard Conditions for Alternative Soil Absorption Systems with General Use Certification and/or Approved for Remedial Use

Revised: March 5, 2018

These Standard Conditions apply to Alternative Soil Absorption System (Alt. SAS) technologies for disposal-only as well as for technologies providing both treatment and disposal. Currently these approved alternative technologies include the following,

Alt. SAS Disposal-Only,

- **Contactor, Field Drain Contactor, and Recharger Chambers,** by Cultec, Inc.
- **Biodiffuser &ARC Chambers,** by Infiltrator Systems, Inc.
- **Infiltrator Chambers,** by Infiltrator Systems, Inc.
- **Eljen Mantis M5,** by Eljen Corp.

Alt. SAS Treatment with Disposal - Patented Sand Filters,

- **Eljen GSF Geotextile Sand Filter System,** by Eljen Corp.
- **Enviro-Septic Wastewater Treatment System,** by Presby Environmental, Inc.
- **Advanced Enviro-Septic System**, by Presby Environmental, Inc.
- **Simple-Septic Wastewater Treatment System**, by Presby Environmental, Inc.
- **Infiltrator ATL system,** by Infiltrator Systems, Inc.
- **GeoMat Leaching System,** by Geomatrix Systems, LLC.

An alternative SAS may be appropriate for new construction, increases in flow, or for the upgrade of an existing failing, failed, or nonconforming system where reducing the disturbance of the site is desired.

Alternative Disposal-Only technologies approved by the Department may be substituted for conventional SAS's allowed under Title 5. The alternative Chamber technologies, when compared to conventional Title 5 chambers, provide options from some of the Title 5 requirements such as offering plastic instead of concrete chambers and eliminating the need for stone aggregate around the chamber while allowing higher loading rates and reduced effective leaching area. Other options include Chambers installed with aggregate meeting the requirements of Title 5, however Alternative Chambers used with aggregate are not allowed higher loading rates which must remain the same as required by Title 5 for conventional chambers with aggregate. In addition to alternative Chambers,

disposal-only approved Alt. SAS technologies also include the Mantis M5 pipe and sand System design.

Alternative Treatment with Disposal technologies approved by the Department refer to alternative leaching systems that have demonstrated higher removal of organics and suspended matter prior to the percolation of wastewater into underlying unsaturated pervious soils when compared to conventional leaching systems. Higher loading rates are allowed than would be permissible with a conventional design and additional relief from other design standards is permissible for upgrades.

A System approved under these Standard Conditions consists of a septic tank conforming to the requirements of Title 5, either conventional or I/A approved, followed by the Alt. SAS which may provide for a reduced effective leaching area.

The use of an approved Alt. SAS, subject to these Standard Conditions, requires among other things:

- A Disclosure Notice in the Deed to the property for installed Systems according to the following:
  - when installing an Alt. SAS Disposal-Only System (chambers or Eljen Mantis M5) a Disclosure Notice in the Deed to the property is not required;
  - when installing an Alt. SAS Treatment with Disposal-Patented Sand Filters System under the General Use Certificate a Disclosure Notice in the Deed to the property is not required;
  - when installing an Alt. SAS Treatment with Disposal-Patented Sand Filters System under the Approval for Remedial Use a Disclosure Notice in the Deed to the property is required in accordance with 310 CMR 287(10);
- Certifications by the Designer and the Installer (310 CMR 15.021(3));
- Notification within 24 hours by the System Owner to the Local Approving Authority (LAA) of any System failure;
- When System requires pumping prior to the SAS, 24-hour emergency wastewater storage capacity above the elevation of the high level alarm;
- System Owner Acknowledgement of Responsibilities, in accordance with these standard conditions and the Technology Approval's Special Conditions.

This Approval **does not** address the use of the following alternative SAS's, which are covered under separate Title 5 I/A Program Approvals:

a) Drip Dispersal Systems

b) Bottomless Sand Filters

Definitions and References

The term "System" refers to the approved technology in combination with the other components of an on-site treatment and disposal system that may be required to serve a facility in accordance with 310 CMR 15.000.

The term "Approval" or "Certification" refers to these Standard Conditions; the Special Conditions contained in the Technology Approval, the General Conditions of 310 CMR 15.287, and any Attachments.

The phrase "new construction" always refers to construction of a new facility or any increase in actual or design flow to any existing system above the approved capacity.

The phrase "upgrade of a system" or the term "upgrade" or the term "remedial site" refers to any repair, modification, or replacement of a whole system or a component of an existing failing, failed or nonconforming system where there is no increase in the actual or design flow to the system.

The Conditions contained herein MUST be read in conjunction with any Special Conditions that are technology-specific.

I. Purpose

1. These Standard Conditions shall apply to all Alt. SAS technologies identified in a General Use Certification or a Remedial Use Approval as either a Disposal-Only technology or a Treatment with Disposal technology as listed above. In addition to the Special Conditions contained in the technology-specific Approvals, the System shall comply with all these "Standard Conditions for Alternative Soil Absorption Systems", except where stated otherwise in the Special Conditions.

2. The sale, design, installation, and use of the System shall be subject to these requirements for all systems that submit a complete Disposal System Construction Permit (DSCP) application after the effective date of these Standard Conditions. Existing systems and systems for which a complete DSCP application was submitted prior to the effective date of these requirements shall not be subject to the design and installation requirements, however, the System Owner, the Service Contractor, and the Company shall be subject to all other requirements contained herein.

3. With the other applicable permits or approvals that may be required by Title 5, the Approval authorizes the installation and use of the System in Massachusetts. All the provisions of Title 5, including the General Conditions for Alternative Systems (310 CMR 15.287), apply to the sale, design, installation, and use of the System, except those provisions that specifically have been varied by this Approval.

4. Provided that the Local Approving Authority (LAA) approves the System in conformance with the Department's Approval for the System, Department review and approval of the site-specific System design and installation is not required unless the Department determines on a case-by-case basis, pursuant to its authority at 310 CMR 15.003(2)(e), that the proposed System requires Department review and approval.

II. Design and Installation Requirements

1. Where any contradiction may exist in design standards between the Company guidance and the requirements of Title 5 or this Approval, the design shall meet the

standards of Title 5 and this Approval unless the Company guidance is more stringent.

2. In accordance with 310 CMR 15.240(6), absorption trenches should be used whenever possible. Accordingly, approved Disposal-Only and Treatment with Disposal Alt. SAS Systems shall be used in trench configuration whenever possible, unless a different configuration is allowed by the Approval(s) Special Conditions.

3. The Alternative System shall include a properly sized and constructed septic tank, designed in accordance with 310 CMR 15.223–15.229 or approved as an Alternative technology per 15.280-15.288, connected to the building sewer and followed in series by the approved Alternative Soil Absorption System. A 1,000 gallon septic tank may be allowed in accordance with the provisions of 310 CMR 15.404(3)(a).

4. The Alternative System shall be installed in a manner which does not intrude on, replace, or adversely affect the operation of any other component of the subsurface sewage disposal system.

5. The Designer shall be a Massachusetts Registered Professional Engineer or a Massachusetts Registered Sanitarian, including when designing systems for repair, provided that such Sanitarian shall not design a system with a discharge greater than 2,000 gallons per day.

6. For new construction or increases in flow, the System shall be subject to the following:
   a) The System may only be installed in soils with a percolation rate of up to 60 minutes per inch (MPI);
   b) A site evaluation, in compliance with 310 CMR 15.100 through 15.107, must be approved by the Approving Authority and the site must meet the siting requirements for new construction;
   c) The record drawings, approved by the LAA, must clearly indicate an area for a full-sized conventional primary SAS and a full-sized conventional reserve area that are for the sole purpose of on-site sewage disposal;
   d) Where the System has reduced the effective leaching area, as allowed by the Standard Conditions, the installation shall not disturb the site in any manner that would preclude the future installation of the conventional full-sized primary SAS without encroaching on the reserve area; and
   e) Except for the installed SAS, the System Owner shall not construct any permanent buildings or structures or disturb the site in any manner that would encroach on the area approved for a full-sized conventional primary SAS or the area approved for a full-sized conventional reserve SAS.

7. For the upgrade of a system, the installation of the proposed System shall be subject to the following:
   a) The System may only be installed in soils with a percolation rate of up to 90 minutes per inch (MPI);