

MEMORANDUM

Date:	April 9, 2020
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- To: Jeff Porter LLB Architects Worcester, MA
- Prepared By: James J. DeVellis, PE
- Project: Sharon Public Library Septic System Overview



DeVellis Zrein, Inc. has prepared the Septic System design plans for the proposed Sharon Public Library. The following summary provides an overview of the proposed septic system.

Design Overview

The System is comprised of a 3,000 gallon concrete septic tank, a concrete distribution box and a 30'x65' leaching area comprised of perforated PVC pipe and stone. The system is a gravity system with no pumping required.

Design Criteria

- (Title V) Massachusetts 310 CMR 15.000 State Environmental Code, Title 5: Standard requirements for the siting, construction, inspection, upgrade and expansion of on-site sewage treatment and disposal systems and for the transport and disposal of septage
- (Sharon BOH) Town of Sharon Article 7 of the Sharon Board of Health (BOH): Minimum requirements for Subsurface Disposal of Sanitary Sewage of the Regulations

System Location

The septic tank and leaching system exceeds the setback requirements from the building and the property lines.

DeVellis Zrein Inc.

Po Box 307 Foxborough, MA www.develliszrein.com

Groundwater Separation and Percolation Rate

The bottom of the designed leaching system is 7 feet above anticipated groundwater. This separation exceeds the separation requirements of 4 feet separation per Title V and the 5 feet separation per Sharon BOH.

The soil was tested and has a percolation rate of 2 minutes per inch for Title V design purposes. Sharon BOH exceeds Title V minimum standards with a requirement to use a minimum of 6 minutes per inch. The system was designed using the slower soil percolation rate which provides a safety factor of 3 by using a slower percolation rate than the soil actually has.

Soil testing was performed by a licensed soil evaluator and system designer and inspected by the Sharon BOH.

Estimated Design Flow

The estimated design flow is based on the building being fully occupied by 427 people every day. Full occupancy of 427 people using 3 gallons of water per each person produced an estimated 1,281 gallons per day of septic flow.

Although Title V is different from building code estimates, the firm of Robt. W. Hall Consulting Engineers, Inc. performed an independent analysis in March 2020 and estimated the library water usage (and resultant septic flow) at 612.8 gallons per day (engineering letter attached for reference).

The Title V design estimate of 1,281 gallons per day is greater than the 612.8 gallons per day estimate of water use calculated by Robt. W. Hall Consulting Engineers, Inc. by a factor of 2.

The stated purpose of Title V, 310 CMR 15.000 is "to provide for the protection of public health, safety, welfare and the environment by requiring the proper siting, construction, upgrade, and maintenance of on-site sewage disposal systems and appropriate means of the transport and disposal of septage"

Based on the above referenced regulatory requirements, soil testing and design it is our professional opinion that the project will have no adverse impact on the groundwater under the site or on the flow from the site.

DeVellis Zrein Inc.

ROBT. W. HALL CONSULTING ENGINEERS, INC

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Jeff Porter LLB Architects Worchester, Ma.

SHARON PUBLIC LIBRARY Re: Utility Usage

Dear Mr. Porter,

Consistent with you request the following is our approximation of the utility consumption rates for both electricity and water at the referenced site.

Electric:

Based on the information provided by the U.S. Energy Information Association, we determined the following. The building is primarily heated via. electricity for use as a library with an anticipated yearly loading of 16.8 Kwh/sq. ft. with 26,000 sq. ft. of usable space equating to 436,800 Kwh/year equating to roughly 36,375 Kwh per month and at the provided rate of \$.1065/Kwh a monthly cost of \$3,875.00 + monthly fees.

Water:

Based on the information provided by the U.S. Energy Information Association, we determined the following. Given the usage of the building and associated number of fixtures, a weekly operation totaling between 40 and 60 hours, utilizing the 25th percentile we have a value of 8.6 gallons per sq. ft. per year. With 26,000 sq. ft. of usable space we estimate a yearly water usage of 223,600 gallons per year or 612.6 gallons per day.

Please let us know if you have any questions or comments regarding the above.

Best Regards, Michael Bianchini P.E.

Bilis

Robt. W. Hall Consulting Engineers, Inc. March 31, 2020