

September 9, 2020

Mr. Harlan & Ms. Susan Stone
110 Five Mile River Road
Darien, CT 06820

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SEP 14 2020

TOWN OF DARIEN
PLANNING & ZONING

Reference: 108 Five Mile River Road
Proposed Swimming Pool Located in a Special Flood Hazard Area
Flood Zone Compliance Review
SEA Project No. 2020042

Dear Mr. & Ms. Stone:

Per your request, **SOUND ENGINEERING ASSOCIATES ("SEA")** has reviewed the proposed design for an inground swimming pool and associated structures located at 108 Five Mile River Road. The purpose of this review was to determine what measures are necessary for the proposed work to be compliant with applicable flood zone regulations.

The proposed activities located within the Special Flood Hazard Area (SFHA) include construction of an inground swimming pool, minor regrading of the lawn, and installation of a patio. Other structures proposed on the site such as the planter and retaining walls are outside of the SFHA and were not part of this review.

The following regulatory documents were part of this review:

- Section 820 "FLOOD DAMAGE PREVENTION," Town of Darien Zoning Regulations;
- 44 CFR 60.3 "FLOOD PLAIN MANAGEMENT CRITERIA FOR FLOOD-PRONE AREAS;" and
- ASCE 24-14 "FLOOD RESISTANT DESIGN AND CONSTRUCTION", as incorporated in the State Building Code.
- FIRM Panel No. 09001C0529G, with an effective date of 07/08/2013 as published by FEMA.

The proposed activities are illustrated on the following Project Drawings which are part of this submittal:

1. Zoning Location and Topographic Survey, prepared by William W. Seymour & Associates, PC, latest revision 9/02/2020;
2. Stone Residence Pool Project, Sheet 1, prepared by Jennifer Anderson Design & Development, dated 9/09/2020.

The subject property and abutting properties are adjacent to the Five Mile River and are located in the SFHA on FEMA Flood Insurance Rate Map (FIRM) Panel No. 09001C0529G, with an effective date of 07/08/2013. The property is subject to inundation by the 1% Annual Chance Flood (100-year flood) as defined by the Federal Emergency Management Agency (FEMA) and is exposed to coastal flooding during storm events, i.e. hurricanes and nor'easters, which impact the region. FEMA has published flood maps for this area for the purpose of insurance ratings. These maps are also used as reference by Design Professionals to prepare designs that are compliant with the National Flood Insurance Program (NFIP). The maps are periodically updated.

A copy of the FIRMette is enclosed. The flood zone designations include Zone AE with a Base Flood Elevation (BFE) of +13 ft, and Zone X. It is important to note that the Five Mile River, at this location, is tidally influenced

and is downstream of the "floodway" designated by FEMA. Therefore, regulations specific to floodways are not applicable.

FEMA defines Zone AE as "Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Zone X are areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood. (<https://www.fema.gov/glossary/flood-zones>).

Section 820 of the Darien Zoning Regulations, 44 CFR 60.3, and the State Building Code require that all new structures shall be designed (or modified) and adequately anchored to prevent floatation, collapse or lateral movement of the structure and be constructed with materials and utility equipment resistant to flood damage and shall be constructed by methods and practices that minimize flood damage. This means that inground swimming pools located in the SFHA shall be designed and constructed so as to prevent floatation in the event that floodwaters are higher than the swimming pool floor among other requirements. To prevent floatation, the pool must not become buoyant. This can be achieved by several methods, such as installation of pressure relief valves in the pool floor, anchoring the pool to resist buoyancy, or other means using sound engineering practice.

In accordance with ASCE 24-14, Section 9.6, inground pools that are not emptied for extended periods of time are not subject to floatation. The design of this inground pool is such that it will remain full year-round except when maintenance or repairs are being performed. For redundancy pressure relief valves will also be installed in the pool floor to allow rising groundwater to fill the pool should it be empty when this condition exists. Swimming pool equipment is proposed to be located outside of the SFHA and therefore is not subject to these requirements. Because the swimming pool is at grade and will not act as an obstruction to floodwaters.

With regard to the minor fill associated with the swimming pool, the proposed fill is less than 12 inches on the seaward end of the swimming pool. It is recognized that filling within the SFHA can increase the Base Flood Elevation. Flood Zone AE by definition may have waves under 3 feet high. Based on wave runup calculations for the proposed conditions, the proposed filling does not increase the BFE.

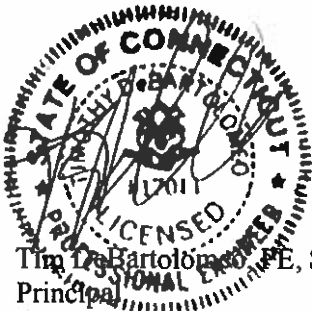
Lastly, the patio, partially located within the SFHA, shall be constructed of unreinforced frangible concrete and finish materials that will not impede floodwaters.

Based on the recommended design specified herein, the proposed inground swimming pool and associated structures located within the SFHA will be compliant with local, state, and federal regulations for structures located in the SFHA.

It is anticipated that this information is acceptable for submittal to the Town of Darien.

Very truly yours,

SOUND ENGINEERING ASSOCIATES



Tim De Bartolomeo, P.E., SECB
Principal

Copy: Mr. Mark Lebow, Wm Seymour & Associates, PC
Ms. Jennifer Anderson, Jennifer Anderson Design & Development