

**SERPA CONSTRUCTION LLC**

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October 15, 2018

Phil Regan  
Hutker Architects, Inc.  
79 Beach Rd.  
Vineyard Haven, MA. 02568

RE:  
8 Caleb's Pond Rd. Edgartown, MA

Dear Phil,

I have had the opportunity to thoroughly inspect the home at 8 Caleb's Pond Rd. in Edgartown over the last two weeks. The structure is in very poor condition and has clearly not been properly maintained for many years. In my opinion, this structure cannot be saved and should be demolished. Our company has restored several historic homes over the years and all were in much better condition than this home.

The building is currently sitting on brick piers and cement blocks on grade. These piers are sinking into the earth so all of the floors and walls are several inches out of level. The home has no insulation and no interior finish surfaces. The floors are sheathed over the floor joists and the walls and roof are sheathed over the exterior surface. The interior face of all of these surfaces has multiple layers of lead paint. The windows and doors are also covered in layers of lead paint and most are no longer functional. All exterior surfaces are beyond repair and will have to be replaced.

In order to renovate this home, all structural framing and sheathing would have to be disposed of because remediation would not be possible. All windows and doors would have to be replaced as well as all exterior finishes. For these reasons, I recommend the structure be demolished.

Sincerely,



Eric Serpa  
Partner  
Serpa Construction LLC



October 12, 2018

Phil Regan  
Hutker Architects, Inc.  
79 Beach Road  
Vineyard Haven, MA 02568

Re: Structural Walk-through Assessment  
8 Caleb Pond Road, Edgartown, MA

Dear Phil,

Per your request Siegel Associates has completed a structural inspection and evaluation of the building at 8 Caleb Pond Road in Edgartown, known by locals as Menaca Hill House. The building is currently significantly degraded, and your charge to us has been to identify an approach to reinforcing and improving upon the existing construction to prevent it from collapsing. Also the house is currently uninsulated and the owners are interested in improving the comfort and energy efficiency so it can be used during the summer shoulder months.

### Overview

A romantic narrative of the house from the book *"Chappaquiddick, That Sometimes Separated But Never Equal Island"* characterizes some of the structural issues we observed during our inspection as "charm", without a hint of the unsafe conditions that they represent. Two passages are particularly illustrative of this:

*"After decades of climate battering, there isn't a right angle in Menaca. The open second floor hall sags from a hundred summers filled with family and guests. Light penetrating walls and floorboards remind one of Menaca's unique visible history."*

*"Tempests seem to blow through it, not around it. This conclusion was drawn after watching the clapboard wall in my bedroom move six or seven inches in and out during the huge gusts of Hurricane Caroline in 1954."*

From a structural engineer's point of view, considering the degraded brick and loosely stacked block and wood foundations, significantly undersized floor joists and roof rafters, building walls made of plank with almost no studs to resist vertical gravity and horizontal wind loads, shed rafters sliding off support ledgers, and areas of framing rot, Menaca is currently more hazard than house.

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## General Building Description

The building is framed in wood and contains 2,400 square feet of space over two stories. We understand that the building was constructed in the late 1800s and was moved to its current location in 1930. The Edgartown Assessor's office lists 1930 as the year of its construction.

The two-story portion of the house is approximately 2,000 square feet and has intersecting gable roof forms with gable dormers. Two single story portions of the house appear to be additions that were completed at different times. One is a shed-roofed form that attaches to the rear of the two-story form, and the other is an offset gable roof form attached to the end of the shed roof addition. A covered porch wraps two sides of the two-story form and there is a second-level covered porch facing Chappaquiddick Road.

## Structural Description

- The exposed building foundation consists of 12 inch x 12 inch brick piers as well as loosely stacked CMU piers that bear on the soil and/or large stones. At the original portion of the house the tops of the brick piers are approximately 24 inches above grade, but the grade slopes up towards the rear so the top of piers are level with finished grade.
- Roof rafters above the single-story gable addition are 1 ½"x4" rafters spaced at 24 inches on center. There is no ridge board so the rafters butt together at the high point. The board roof sheathing is completely exposed to the interior. There is no insulation or finished ceiling material.
- Roof rafters above the shed roof addition are double 2x4s (2- 1 ½" x 3 ½") spaced at 24 inches on center with exposed board sheathing.
- The roof rafters above the two-story portion of the building are 1 ½" x 3 ½" spaced at 24 inches on center with exposed board sheathing. The rafters bear on top of the wall plate. There is a ½"x4" ridge board at the high points and there are 1" x 6" ceiling ties at every other rafter. The bottom of each ceiling tie is 8 feet above the finished floor and the bottom of the ridge board is 12'-6" above the finished floor.
- The second-floor joists vary in size from 2 ½" - 3" wide x 4 - 4 ½" tall, and are spaced at 18 - 20" on center. The board floor sheathing is exposed; there is no finished ceiling in any room. The second-floor joists are typically notched over the top of wall plate but there are some areas where the joists are let into the side of the wall plate.
- Studs in the walls are found at each corner plus on each side of each window. These studs vary in dimension between 1 ½" - 2 ½" wide x 3 ½" deep. There is no regular pattern of studs in the walls, so the walls are made of plank only.

- The wall plate is typically 3-1/2" high and varies between 4 ¾ - 6" deep. There are two single 1 ½" x 3 ½" horizontal members along the gable end wall to provide bracing.
- The first-floor joists are 2x6s spaced at 20 inches on center. The joists are continuous over interior carrying beams. The underside of joists and the beams are all exposed.
- The beams are 4x6 members and bear on top of brick piers. The beams have been propped up with loose CMU piers at random locations. These beams span 7 - 8 ft between piers.
- The porch roof rafters are 2x6s spaced at 6 feet or so on center.

### **Structural Issues and Suggested Remedies**

#### Roof Rafters

Our calculations indicate that the house rafters are overstressed by 100% or more when subject to current code-prescribed dead and live loads. Insulation and sheetrock (not currently present) will add to this overstress, **and all rafters will need to be reinforced.**

Pronounced sagging and twisting of some of the rafters will make reinforcing difficult. The shed roof rafters do not have enough bearing on the existing ledger board and have pulled away from the ledger. Other rafters are rotted at their bearing point which compromises their ability to carry load.

The roof sheathing is exposed everywhere. There are a few isolated areas where the board sheathing has bowed or has significant splits/cracks. **These areas of sheathing will need to be replaced.**

**We recommend removal and replacement of the existing rafters and sheathing.**

#### Wall Framing

The wall plates beneath the rafters typically sag between the corner studs and the studs that frame the windows. They are functioning as shallow beams spanning 5 to 7 feet between the studs, but they are very undersized to carry the roof loads. This condition will worsen with rafter insulation and sheetrock.

**At a minimum the wall plates should be reinforced, or an infill studwall should be built inside the face of exterior sheathing to carry the plates and rafter loads.**

The walls themselves are inadequate as built, consisting of vertical boards only, and they span from first to second floor decks and from the second-floor deck up to the roof edges. This

explains the occurrence previously quoted from the *Chappaquiddick* book, in which the walls reported to displaced by 6-7" during Hurricane Caroline.

**Construction of an infill studwall can remedy this condition, although the exterior shingling will have to be removed so that the board sheathing can be nailed into the new studs.**

### Floor Framing

The second-floor joists are overstressed by 200-300% when we apply minimum code-prescribed dead and live loads for sleeping rooms. The amount of overstress varies depending upon span. The floors have sagged and typically crown in the middle of the room, sloping down and outwards by 2-3 inches. There is also significant bounce on the joists under foot traffic.

**We recommend reinforcing or replacement of the second-floor joists.** It should be noted that reinforcing will be challenging due to the crowning and sagging which complicates the alignment of new, straight members.

The floor joists ends along the Chappaquiddick Road side of the house are rotted and no longer have adequate bearing on the wall plate. **These joists will need to be reinforced and/or replaced.**

The first-floor joists are adequate to support code-prescribed dead and live loads, but the floors have significant sloping. The floors slope in multiple directions with an approximately 2"-3" difference between high and low points.

The beams supporting first and second floor framing are overstressed by 150 - 200%.

First floor beams are framed below the floor joists, and rest directly on brick and/or CMU piers, with wood padding on top of and sometimes below the piers. Some beams have crushed at the piers and are deteriorating. The beams and joists are all exposed, but the we were not able to access all areas to determine the condition of all beams due to limited height between grade and underside of framing.

**We recommend the reinforcing of all first-floor beams.**

### Foundation

Several brick piers have failed, with crumbled mortar and collapsing brick. Some piers are leaning significantly which compromises their carrying capacity. Many of the building foundation elements bear directly on grade with no frost-depth protection against heaving in winter.

**We recommend that new foundation elements be constructed beneath the entire building and that the footings beneath these elements be set at an elevation of at least four feet below finished grade.**

Lateral

Although this building has survived for over a century, in its present condition and as it continues to deteriorate, we consider it to be unsafe during high-wind events.

All of the traditional elements that stabilize a building against lateral force are absent in this building: The walls are composed of deteriorated board sheathing with neither stud nor other framing backup, there are only minimal fasteners between framing elements and their supports, and the building rests loosely on foundation elements. Tiedowns between the framing and foundation elements are non-existent. The foundation elements themselves, normally available as "anchorage" in conventionally framed buildings, are falling apart and simply rest on the ground surface.

**The lateral deficiencies can be remedied by the reframing of walls, reconstruction of building foundations, and installation of connections between the two.**

**Summary**

The Menaca Hill House has survived to the present day but is severely compromised due to poor design, poor detailing, and pervasive deterioration. In our opinion these deficiencies render the building unsafe in high wind conditions, and unless halted the deterioration will lead to a more broadly unsafe building in the future.

For ongoing summer use as well as for use into the shoulder seasons, complete reinforcing or reconstruction of the Menaca Hill House should be considered. Siegel Associates is available for additional consultation as options are evaluated.

Very truly yours,  
SIEGEL ASSOCIATES, INC.



Steven P. Siegel, P.E., Principal

# PRIOR

## ENVIRONMENTAL SERVICES

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Below is a brief summary of my findings at 8 Caleb Pond Ln, Edgartown, MA. The lead paint inspection report is attached and is the definitive document regarding lead-based paint for this property.

*Lead Based Paint (LBP) was detected on most painted surfaces.*



Exterior: Lead paint was detected (Positive) on most exterior components including windows and doors, upper trim, corner boards, and porch columns.

Interior LBP detected on:

- Painted wood walls and ceilings
- Interior doors, casings and frames
- Windows and window trim (interior and exterior)
- Floors
- Stair treads, risers and stringer

**September 24, 2018**

Prepared & Inspected by:

**Paula Prior**

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**Mashpee, MA 02649**

**DPH LIC # M3985**