Structural Assessment Report

For

Boyd Family Trust Residence

1250 Cliff Drive

EHLEN SPIESS & HAIGHT, INC.
1119 Garden Street
Santa Barbara, CA 93101
www.eshse.com

EHLEN SPIESS & HAIGHT, INC.
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January 13, 2015

Boyd Family Trust
c/o Ken Switzer
Berkshire Hathaway
Santa Barbara, CA

Subject: **Structural Assessment**
Boyd Family Trust Residence
1250 Cliff Drive
ESH 14-146

Dear Ken:

In accordance with our proposal dated December 14, 2014 we have made a limited structural assessment of the subject residence. Our work included a walkthrough of the residence including observations from the attic and crawl space, photographing key structural elements and building features and reviewing available documents in the City's archives. Our assessment did not include mold identification, toxic substance detection such as asbestos or an assessment of the roof membrane or other waterproofing systems. No drawings are available for the structure and the earliest recorded activity in the City's street file is a building permit for a shed roof dated January 23, 1940. Therefore the age of the structure is not known.

The rectangular shaped residence is a full two stories with approximately 4,400 square feet and it has a partial basement and crawl space under the remainder of the structure (See Figure 1). The first floor of the structure is approximately three feet above the surrounding exterior grade. At the main entrance to the residence on the south side, there is a large patio covered with a wood trellis. On the second floor on the south and west sides, the exterior walls are set back in order to create three exterior decks that occur at bedrooms. Interior walls are presumed to be framed with wood studs and have a plaster finish. The exterior walls are clad with wood shingles and brick veneer that extends from the exterior grade to approximately 24 inches above the first floor.

Based on observations in the attic and crawl space, the structure is wood framed. The shallow pitched roof is framed with 2x6 redwood joists spaced 32 inches on center and solid 1x sheathing. A building permit in the City's street file indicates that in 1994 the roofing was removed and new plywood with composite roof shingles were installed. The second floor ceilings are lath and plaster supported by 2x4 ceiling joists spaced 16 inches on center.

The first floor has wood joists with solid diagonal sheathing covered with hardwood flooring. At the exterior walls, the first floor joists bear on concrete foundation walls.

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Some cracking was noted in the concrete walls in the areas we observed. At the interior of the structure, the first floor joists bear on wood beams supported by wood posts. Although not visible, the posts appear to be supported on small pad footings. Other than maybe toenails, no connections were noted between the wood posts and the beams and no connections were noted at the base of the posts.

In general the basic structure appears to be sound, in relatively good condition given its age and the quality of the construction is equal to or better than similar residences of this vintage and type of construction. Wood members and shingles that have been exposed to weather on the exterior are obviously damaged in several areas due to dry rot and will need repair and/or replacement. The wood framing, however, observed from the attic and crawl space is in good condition with only minor signs of termite activity. The following specific conditions were observed:

1. There were some signs of termite activity observed in the attic, although no significant structural damage was noted (Photograph #1). Since we are not termite experts, we recommend that a pest control specialist perform a thorough inspection of the residence and determine if there is an active termite infestation that needs to be treated.
2. The ceiling over the bedroom on the second floor at the southeast corner is noticeably deflected due to the long span of the 2x4 ceiling joists and will need to be adjusted and strengthening to remove the sag (Photograph #2).
3. The typical roof joist is supported at the exterior wall, ridge line and by a 2x4 stud located roughly mid-span that bears on a wall below. There is only minimal attachment between the joist and the stud and the wall below (Photograph #3).
4. The first floor ceilings below the two exterior decks that occur on the second floor are significantly stained presumably due to water intrusion from above. We were unable to gain access to the exterior decks therefore the condition of the walking surface is not known. In addition, the condition of the wood framed decks could not be observed but some damage should be anticipated (Photograph #4).
5. Some cracking was noted in the concrete foundation walls but in general the concrete appears to be sound and in good condition. It is not known if there is concrete reinforcing steel in the footings and walls. Unreinforced concrete foundations may need some form of mitigation if seismic improvements, as discussed below, are made to the structure
6. There was one significant crack noted in the concrete foundation wall and brick veneer at the front of the house near the southeast corner. Based on the crack patter, it appears that the southeast corner of the house may have settled over time. A floor elevation survey will be necessary to confirm if settlement has occurred (Photographs #5 & #6). Due to the age of the structure, a soils investigation may

not have been conducted prior to construction. If it is determined that settlement has occurred, a Geotechnical Engineering investigation is recommended in order to determine the cause of the settlement and a plan for stabilizing this portion of the structure.

7. At the roof overhangs, many of the exposed wood members have significant damage due to dry rot and will need to be repaired and or replaced. In several areas and particularly at the 3 second floor balconies, the wood shingles appear to be stained and may be damaged due to water intrusion (Photographs #7 & #8).
8. In the areas of the crawl space that we were able to observe, there were no anchor bolts observed connecting the wood framing to the concrete foundation walls.
9. Around the perimeter of the structure there were several areas noted where the mortar in the brick veneer has deteriorated and will need to be repaired (Photograph #9).
10. At the southwest corner of the structure, a blue tarp has been installed to cover a portion of the exterior wall (Photograph #10). The conditions under the tarp are not known.

Based on our knowledge of similar wood framed structures of this age, we recognize that the subject residence has a number of characteristics important to good seismic performance in the event of strong ground shaking. Among them are its rectangular box shape, building symmetry, light timber frame construction, and the quality of construction. However, based on our observations and knowledge of similar structures, we also recognize that the structure has a number of structural deficiencies which are common to residence structures of this vintage and construction. The identified deficiencies are listed below and we would recommend that as part of a remodel of the residence the structure be retrofitted to mitigate the identified weaknesses:

- Inadequate connection of the wood frame to the concrete foundation walls.
- In the attic, there are weak connections between the roof rafters and the 2x4 stub columns which support the joist at their mid-span.
- In the attic, there is no blocking between the roof rafters at the exterior walls and therefore there is not a load path for transferring seismic loads from the roof diaphragm to the interior and exterior walls.
- In the crawl space, there are weak connections between the wood posts and the beams they support and the post and its foundations.
- Structures of this vintage generally do not have holddown anchors in the walls to resist the overturning forces that are generated by strong ground shaking.

- The exact construction of the interior and exterior walls is not known. The exterior walls may have wood boards under the shingles. We do know that structures of this vintage do not have plywood shear walls and the wind and seismic forces were generally assumed to be resisted by either diagonal wood braces in the wall or the interior plaster. The current California Building Code does not permit the use of plaster or drywall to resist seismic forces.
- The connection between the brick veneer and the wood framed walls is not known but is assumed to be minimal given the age of the structure.

This completes our structural assessment of the subject residence. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable engineers practicing in the structural field in this or similar locations at this time. The conclusions and recommendations contained in this report are based on our engineering judgment and experience. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for the Owner and his agents to be used during the process of selling the property. This report has not been prepared for the use by other parties and may not contain sufficient information for purposes of other parties or other uses.

We appreciate the opportunity to be of service to you and would be pleased to meet with you to discuss our findings in more detail and to answer any questions that you may have. If we can be of further service, please do not hesitate to call.

Very truly yours,

EHLEN SPIESS & HAIGHT, INC.
a California corporation

John W. Spiess, S.E. 2844

1/13/15

JWS/gmg
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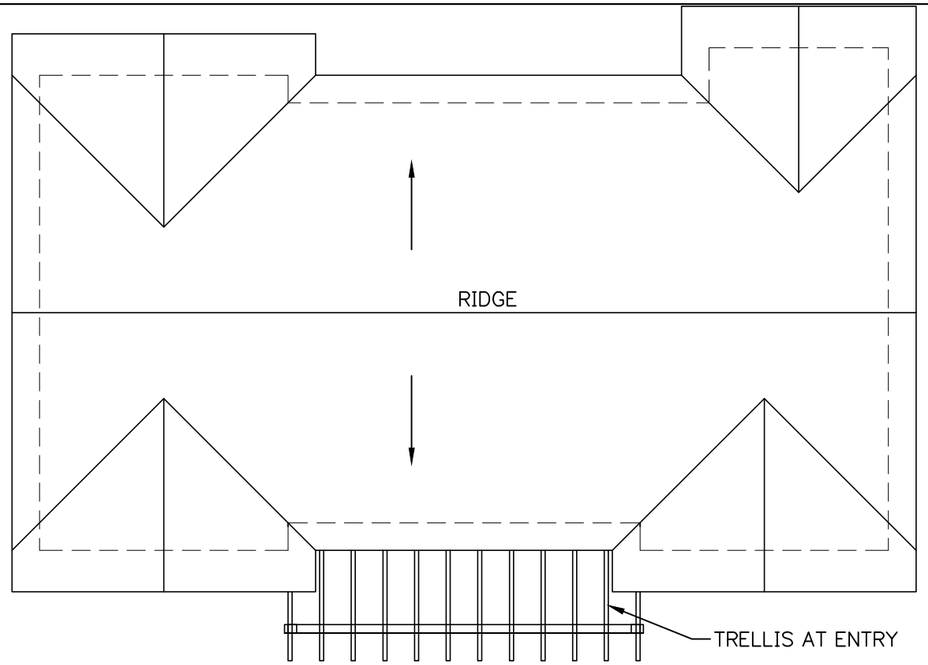
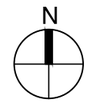
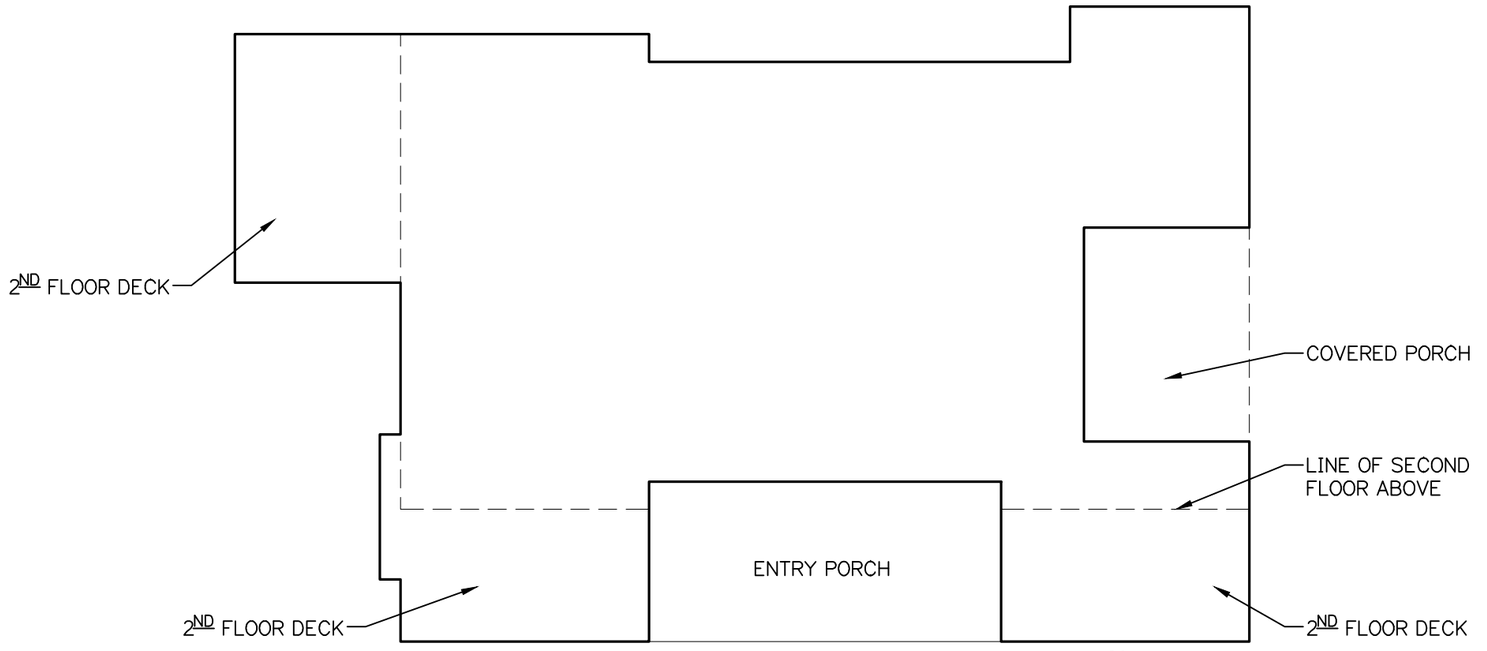


ROOF PLAN

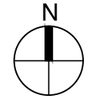
N.T.S.





FLOOR PLAN

N.T.S.



REVISIONS	BY

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STRUCTURAL ASSESSMENT REPORT FOR:

BOYD FAMILY TRUST RESIDENCE

1250 CLIFF DR. SANTA BARBARA, CA

ROOF AND FLOOR PLANS

Date:	01/13/15
ESH Job #:	14-146
Engineer:	JWS
Draftsman:	ER

Sheet

FIG.1

Photograph #1: Signs of Termite Activity

Photograph #2: Deflected Second Floor Ceiling Joists

Photograph #3: 2x4 Stud Supporting Roof Rafter

Photograph #4: Stained Ceiling at First Floor Below Exterior Balcony

Photograph #5: Crack In Foundation Wall On South Side

Photograph #6: Cracked Brick Veneer at Southeast Corner

Photograph #7: Damaged Exposed Wood Framing Below Roof Overhang

Photograph #8: Damaged Exposed Wood Framing Below Roof Overhang

Photograph #9: Deteriorated Mortar in Brick Veneer

Photograph #10: Tarp on West Side