April 18, 2011

Robert Patton, Commander
Veterans of Foreign Wars
Bill Motto Post 5888
846 Front Street
Santa Cruz, CA 95060

Subject: Veterans Memorial Building 846 Front Street, Santa Cruz.

Duquette Engineering has been asked to review documents regarding the subject building, comments on their findings and visit the site to observe the existing conditions. The documents provided are;

1. Seismic Evaluation Report by the Streeter Group.
2. Preliminary Geotechnical Assessment by Bauldry Engineering.
3. Letter prepared by Paul Cox
4. As-built drawings of the original construction.

Duquette Engineering has reviewed the documents and in general we agree with their findings, however, where we disagree is the level of retrofit required to provide life safety performance and the perception that the deficiencies identified are unique to this building or have become more severe with age.

Concrete, and masonry structures with wood diaphragms constructed prior to 1970 commonly have the following deficiencies in their order of importance;

- Insufficient anchorage of the walls to the wood diaphragms.
- Insufficient cross ties to fully develop the wall anchors.
- Insufficient shear transfer between the wood diaphragms and the perimeter shear wall elements.
- Insufficient diaphragm capacity.
- Insufficient collectors.
- Insufficient shear wall or weak story shear.
- Lack of proper detailing of the reinforcing steel to meet the current standard of practice. One of these details is minimum reinforcement standards.

The existing structure is a two story, cast-in-place reinforced concrete structure with wood frame roof and floor diaphragms and a full basement. This structure was constructed prior to 1932, and therefore has these deficiencies. These conditions have existed since the structure was built. During that time it has served the community well.

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This is a common issue with older structures throughout the City, County, State and Nation. If the building owner does not modify these structures in a way that will weaken the existing condition, State and local codes have no provisions that require retrofit. It is up to the owner to establish a level of acceptable risk for their properties and act accordingly. I would suggest that the county owns many of these older structures that they are working to maintain and repurpose. It is my understanding that the county has offered another older cast-in-place structure as a temporary home for the Veteran's group. This replacement structure most likely has many of the deficiencies identified in their current home and indicates an inconsistent approach to dealing with these older structures.

During our visual inspection of the Veteran's Building, we found a very well maintained building that had only one visible maintenance issue. In several areas particularly in the corners of the pilasters the concrete cover has spalled away and exposing rusted reinforcing steel. This condition is often caused by too little concrete cover. Moisture penetrates through the concrete cover and rusts the reinforcing steel, which expands and spalls the concrete cover away completely. This condition is easily repaired with modern concrete repair techniques and is clearly not a life safety concern.

We do not want to give the wrong impression, we believe that retrofit is the prudent course of action, however, our past experience is that owners would not evict good long standing tenants for this work to be accomplished and certainly not during the planning and permitting phases. Duquette Engineering is very experienced with retrofit of buildings of this type both historic and non-historic structures. The prevailing code for this building is the California Historic Building Code, CHBC. This code has provisions for retrofit of each of the deficiencies mentioned but with reduced loading requirements and room for engineering judgment when it comes to the minimum detailing requirements of the code.

The one deficiency that has not been mentioned to this point is the capacity of the foundations and liquefaction. There is no specific CHBC requirement for retrofit of foundations for liquefaction. Again this is not a condition that is unique to this building. In fact this soil condition most likely exists for every building within a few blocks of the site. It is our opinion that, when the remainder of the deficiencies have been corrected, foundation settlements due to liquefaction, will not create catastrophic or local collapse of the structure and therefore would not be a life safety concern.

To sum up Duquette engineering agrees that the structure should be retrofitted using the California Historic Building Code as the governing code. The minimum life safety retrofit should include retrofit of;

- Wall Anchorage to the wood diaphragms.
- Cross ties to fully develop the wall anchors.
- Shear transfer between the wood diaphragms and the perimeter shear wall elements.
- Diaphragm capacity.
- Collectors.
- Shear walls or weak story shear.

Much of this retrofit work can be accomplished with minimal disruption to tenants, if the work is properly phased.

We hope that the information and opinion provided is clear. If you have any questions or require additional information, please feel free to call.

Very Truly Yours,
DUQUETTE ENGINEERING

Steven P. Duquette SE
President