

## BOB EASTON AIA ARCHITECT

1505 EAST VALLEY ROAD, SUITE E

MONTECITO, CA 93108

805 969-5051

805 969-3292

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Subject: Alterations to All Saints by the Sea Episcopal Church

Regarding: New Structural Work

All Saints by the Sea Church was originally built in 1900. There is evidence of additions and alterations over the years hence. The church was substantially rebuilt in 1930 with an enlargement of the sanctuary and inclusion of the iconic hammerhead arches framing the nave. There is little written evidence of the extent of damage to the bell tower and building sustained in the 1925 earthquake, but we know the church was closed for a month afterward.

There was substantial renovation and addition work done in 1960 and we have the architectural and structural drawings documenting the work done at that time. Unfortunately, the western half of the building was not affected by the work. There was not then and is not now a proper foundation under this half of the building, the wood floor and wall framing is just resting on a pile of stones, unsecured, with no connecting bolts. The wall framing is in poor condition, the side walls sagging 2 to 3 inches, with the southwest corner visibly drooping, the wall leaning out of plumb. The wood floor framing is also in woeful condition, areas sagging because of no support.

These and other structural inadequacies have inspired the church to undertake this major renovation. Bruce Resnick of Parker Resnick Structural Engineers was hired to prepare a Schematic Structural Assessment to evaluate the overall structural condition, to identify significant structural concerns, and provide recommendations for structural strengthening.

The report recommended the bell tower be rebuilt first, followed by renovation of the church. Also noted is that since the building is a single story wood framed building in apparent good condition there are no code requirements for mandatory seismic retrofits. However the report notes that in the event of a major earthquake, the inadequate stone foundations could crack and fail, allowing the building to move off the foundations, leading to significant damage or partial collapse of the building. Recommended was extensive addition of seismic strengthening; plywood shear walls, steel moment frames and steel brace frames tied to new foundations. As we have progressed in producing the engineered construction drawings, we have

uncovered finishes to look at roof structure connections. These discoveries substantiate the need for significant new seismic wall and roof bracing.

The new seismic bracing to bring the building up to substantial conformance with recent code requirements include the addition of eight new steel brace frames and moment frames anchored into new concrete foundations. These perimeter and interior foundations will be connected to a new concrete floor slab. New wood flooring will be bonded to the slab. This system is recommended by the acoustical consultant of the new organ builder in order to enhance the reverberation of the church interior, enhancing the quality of the new organ sound.

The new floor and foundation structure is also tied to a new concrete basement. The existing basement is not properly waterproofed, allowing water vapor to have permeated the existing wooden organ pipes and windchests, causing mold and dry rot, and corrosion to the electronic organ operation. The new basement floor and walls will be sealed with proper state of the art waterproofing. The new basement will allow room for a new HVAC system, organ operating equipment, and storage space.

Besides the new foundations, new exterior framed walls, being structurally tied to the seismic bracing will add substantially to the buildings strength and ability to support the reinstalled stained glass.

The existing roof structure will be retained and tied to the newly braced walls. The structural connections will be enhanced to insure the building will now become a singular whole. The existing roofing will be removed and new shear plywood will tie together the varied roof lines. Over this will be installed new framing to enclose insulation, electrical conduits, and fire sprinkler pipes, improving the appearance of the ceilings. New roofing that matches the existing will top off the roofs.

The building and immediate grounds will be tested for and remediated of hazardous materials such as lead, asbestos, and chrysotile before construction begins. This work will be done and documented by licensed environmental testing and remediation professionals to standards established by the federal Environmental Protection Agency, and will be completed before construction will begin.

The renovation work is voluntary, but to be done in order to preserve this significant and well loved historical building for another hundred years of service to the community.