

February 15, 2012

Smithsonian Institution  
Office of Engineering Design and Construction  
ATTN: Mary Kfoury  
Capital Gallery MRC 511  
PO BOX 37012  
Washington, DC 20013-7012

Re: OFEO Project No.: 1124108, SIB – Earthquake repairs

Dear Ms. Kfoury:

Please find attached a copy of our Field report from the 1/31/12 site visit. This report summarizes our assessment of the plaster damage in the Secretary's Office and the Regent's Room caused by the earthquake.

In summary, our team has determined that the cracks in the plaster in these areas do not indicate a structural problem and, in each location, appear to be the result of the unique wall construction of each location and the effect of the earthquake on the dissimilar substrates.

Based on this assessment, we do not expect additional effort to be required, and that after the inspections, the Smithsonian Institution was to proceed on patching the plaster at the probe locations.

Sincerely,



Troy Thompson, AIA  
Vice President

Attachments:

- 1/31/12 Field report

cc: Hal Davis, David Greenbaum, Marcus Wilkes, File



therefore more susceptible to cracking during the seismic event and subsequent broadcasting of the cracks through the finished plaster.

The crack directly above the Secretary's printer, west of the window, appeared to be a result of movement at a joint in the interior with that telegraphed through the plaster (Figure 3). The masonry joint occurs between the brick arch forming the window opening and additional masonry infill that creates the vertical jamb of the window pocket. The arch and the brick jamb are not coursed together and as such there is no mechanical connection between them.

Additionally, the integrity of the masonry infill at the jamb is much less consistent than that of the arch. Seismic accelerations of the building mass likely resulted in much greater horizontal displacements of the more loose brick and mortar at the jamb. The existence of a cavity between the interior brick and exterior stone withes and the observations of the exposed beam flange indicated that the interior masonry is not load-bearing. Based on this, and the fact that the cracks do not appear to extend through the exterior stone, we believe that these cracks do not pose a significant structural concern.

#### **Regents Room:**

A probe in the Regent's Room was only done on the eastern side of the bay window (Figure 4) opening and similar cracks occurred on the western wall of the opening at the same location. Based on the probes (Figure 5) and previous renovation construction photos (Figure 6), the cracks on both sides of the framed opening at the bay window extension occurred due to discontinuities in the back-up support for the plaster finish.

The plaster on the north side of the crack is applied to wood lathe which is built out in front of the masonry wall. The plaster on the south side of the crack is applied directly to the masonry surface. The differing back up materials creates the condition of a weak vertical plane where they meet. The observed cracks follow this plane closely. Again, these cracks do not indicate any signs of structural distress, and appear to be cosmetic only.

#### **Next Step recommendations:**

The observed earthquake damage does not appear to present a structural problem. The structural integrity of the observed areas is in no worse state than the pre-earthquake condition; therefore, immediate corrective structural work does not appear to be required. The Smithsonian Institution should proceed with patching the plaster at the probe locations.



Figure 1: View of probe locations in Secretary's Office



Figure 2: Probe in Southeast corner of Secretary's Office



Figure 3: Probe west of window in Secretary's Office ("above the printer" location).



Figure 4: Probe location at eastern side of bay window opening in Regent's Room.



Figure 5: View from scope showing both masonry back-up (to right) and plaster and lathe back-up (to left).



Figure 6: Photo of Regent's Room renovation circa 1968 showing exposed interior wall construction.

End of Report