Attachment M
Condition Assessment

BUILDING 90: W.W. ELDRIDGE BUILDING CONDITION ASSESSMENT

2700 Martin Luther King Jr. Ave SE
Washington, DC 20032

Report Date	February 20, 2015
WPM Project No.	D01.14013.00

GENERAL INFORMATION

Year Built	1929-1931	Construction Type	Concrete Frame with Masonry
No. of Floors	5 + basement	Floor Framing Type	Cast-in-Place Concrete
		Roof Framing Type	Wood

EXECUTIVE SUMMARY

Walter P. Moore and Associates, Inc. has completed an initial condition assessment of the referenced structure. This assessment consisted of a walkthrough visual review of only two areas of the building which had been identified as having structural roof failure, in order to identify the nature and extent of the damage. See Figure 1 for location of the two areas.

During this limited review, we documented the two local failures of the roof framing that will need to be repaired in order to halt continued water infiltration.

- In Area 1, an interior wood support frame has failed, allowing the sloped rafters to partially collapse, and create an opening in the roof. As described more fully in the report, the structural framing must be rebuilt, rafters repositioned and repaired, and the roofing & flashing repaired.
- In Area 2, the wood framing has failed at an area of flat roof, creating a structural failure and hazard that extends to the adjacent pitched clay-tile roof. The extensive deterioration of wood framing will require replacement of many of these structural members.

Figure 1. Aerial photo of Building 90 (Google Earth, Inc, 2015)

DOCUMENT REVIEW & EXISTING STRUCTURE

Document Review: No original drawings were made available for Building 90, although based on experience in other areas of the campus, they probably exist. In preparation of this report we reviewed the Historic Resource Survey conducted by EHT Traceries dated October 2011. This survey summarized historical and architectural information regarding the buildings in the St. Elizabeth's East Campus. No additional information relevant to this report has been provided to us.

Existing structural system: This five story hospital building is built with masonry walls, concrete floor slabs (see Photo 3), and wood roof and ceiling framing. It is possible that concrete frames are concealed in the masonry walls. Interior is finished with plaster walls and ceiling. Exterior cladding is brick masonry with limestone details. Roofing is both flat and pitched, the pitched portions roofed with clay tiles. We observed flat areas to be roofed with copper.

OBSERVATIONS

Representatives of Walter P Moore visited the project site on the morning of Thursday, January 15, 2015 to review the condition of the roof at St. Elizabeth's East Campus - Building 90 where two instances of roof failure had been observed in the southwest end (Area 1) and in the westernmost area of the building (Area 2). The building is not currently in use, and lacks environmental conditioning or regular maintenance therefore there is significant deterioration to interior finishes. The exterior brick and limestone façade is in fair condition, but with some areas showing a degree of deterioration due to weathering. Some clay tiles were observed to have dislodged or fallen, and significant areas of copper roofing have been removed, perhaps by scavengers.

The following observations were recorded:

AREA 1	PHOTO #
• Failure of the wood framing has created an opening which allows water to enter	1
• Interior wood structural support frame has failed	1, 2
• Rafters have displaced downward at their upper bearing point	1
• Wood frame and rafters are severely deteriorated at the area of the opening	1, 2
• Wood decking is deteriorated and has failed in a number of areas adjoining the opening.	2

AREA 2	PHOTO #
• Failure of wood framing and decking has created a large opening	5, 6
• Failed area has allowed ponding which is further overloading the deteriorated framing	4
• Copper roofing at the flat roof has been removed allowing water to enter	4, 5
• Flat framed wood rafters and ceiling supports are deteriorated and failed	6
• Metal ceiling support frame is deteriorated, and plaster has fallen in many areas	6

PHOTOGRAPHS

Photo 1. Area 1: Failure of wood frame

Photo 2. Area 1: Deterioration of rafters and decking

Photo 3. Underside of Area 1 showing concrete joists

Photo 4. Area 2: Loss of roofing and waterproofing membrane

Photo 5. Area 2: Opening in the roofing to exposing rafters

Photo 6. Area 2: Deterioration and failure of rafters

DISCUSSION

Water infiltration has led to deterioration of the wooden roof framing, resulting in structural failure of the roof in both Areas 1 & 2.

At Area 1, the structural repairs will be somewhat localized, and can be performed largely from the interior. Because the failure is due to the displaced rafters, repair work can be limited to temporary shoring and framing reinforcement to allow the rafters to be repositioned, and the roof opening closed and weatherproofed. The design for the new rafter support should take into account the capacity of the supporting concrete slab and joist framing.

In Area 2, the significant loss of roofing has exposed numerous roof and ceiling framing members to the elements, resulting in deterioration to many of these framing members. This framing appears to span to the exterior wall, therefore supporting not only the flat roof where failure is most evident, but also the pitched (clay tile) portion of the roof. Due to the extent of deterioration, the repair work should not proceed until the area has been made safe by temporary shoring, after which the scope of repair and replacement can be better defined with a more in-depth assessment.

RECOMMENDATIONS

We recommend that the repair scope be established after a more in-depth assessment and review of existing building drawings. The below stabilization scope of the recommendations is limited to structural and envelope stabilization in the two areas of roof failure that were analyzed. An outline of potential stabilization methods were determined to be as follows:

AREA 1

- Lift and temporarily support structural rafters in the original position
- Rebuild support for rafters, either to match existing wood frame, or with a temporary knee-wall
- Reinforce deteriorated rafters with local reinforcing and full length "sister" reinforcing
- Replace deteriorated wood deck
- Repair flashing and roofing membrane (described in more detail by others)

AREA 2

- Temporarily shore framing to allow work to be performed safely
- Remove remaining ceiling plaster, roofing to allow assessment of wood framing
- Reinforcing and replacement of deteriorated wood framing may include both flat and pitched roof
- Replace deck on new/reinforced rafters
- Replace waterproofing membrane and roofing

LIMITATIONS

The recommendations presented represent current technology for building renovation and maintenance. We have assumed the facility will continue in its present use and will require appropriate repairs and periodic maintenance. Proper design and installation of effective repairs and maintenance can significantly reduce further deterioration and the associated repair costs.

This report is not a warranty or guarantee of the items noted. The extent of our evaluation was limited and cannot guarantee that the condition assessment discovered or disclosed all possible latent conditions. The evaluation required that certain assumptions be made regarding existing conditions and some of these conditions cannot be verified without additional cost, or destroying otherwise adequate or serviceable portions of the facility. In this study, we did not include review of the design, inspection of concealed conditions, or detailed analysis, to verify adequacy of the structure to carry the imposed loads and to check conformance to the applicable codes. The assessment also does not provide specific repair details, construction contract documents, material specifications, details to develop construction cost, or information on means and methods of construction.

Any comment regarding concealed construction or subsurface conditions are our professional opinion, based on engineering experience and judgment, and derived in accordance with standard of care and professional practice.

This report has been prepared on behalf of and for the exclusive use of the CLIENT. This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party or used or relied upon by any other party, in whole or in part, without our prior written consent.