



September 17, 2018

Richard Baldino
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Re: Structural Assessment – Power House Building
Rock TENN Site
Otsego, MI

Dear Mr. Baldino,

The Mannik and Smith Group, Inc. (MSG) was retained by Sustainment & Restoration Services, LLC (SRS) to perform Structural Engineering Inspection services for the power house building of U.S. EPA Rock Tenn Site, located at 431 Helen Avenue in Otsego, Michigan. The power house building was visited on September 6, 2018. Present during the site visit were Mr. Hassan Marashli, PE and Mr. Daniel Capone of MSG and Mr. Raghu Nagam of SRS.

The power house building is planned for eventual demolition. The U.S. EPA plans to conduct necessary pre-demolition asbestos abatement activities as a means to assist the local government with redevelopment plans. SRS hired MSG to provide an assessment on the structural integrity of the building to determine if the existing structure is safe for abatement workers and recommend, if any, building fortifications necessary to ensure that the building exterior structures are not damaged or collapse during the asbestos abatement process.

The building has a main first level and basement level. Based on background provided to MSG by SRS, the analytical results of samples collected from the power house building and analyzed for asbestos in April 2018 by U.S. EPA contractor indicated five out of six samples as meeting the criteria of asbestos containing material (ACM). Potential ACM was observed on both levels of the building throughout both floor. Potential ACM was also observed crumbling from the boiler in the basement level.

The basement area showed that a big portion of the concrete slab supporting the first floor is severely damaged. The concrete of the slab and beams is spalling and the reinforcing steel is exposed, rusted and lost its bond to concrete. The shear and flexural capacity of the slab and beams supporting the first floor are severely compromised. Some of the concrete columns supporting the first floor had concrete spalling with exposed rusted steel. The load capacity of the damaged columns is compromised. See photos 1 through 3, attached.

The structure above the first floor supporting the roof and the exterior walls of the building has been altered presumably by salvage operations conducted since operations in the building ceased. Steel beams have been cut off and removed. This has affected the capacity of the structure supporting the exterior walls of the building and the capacity of the columns to take the vertical load of the roof. See photo 4.



TECHNICAL SKILL.
CREATIVE SPIRIT.

A portion of the foundation wall at the access opening in the south wall is missing and the concrete slab at the opening is not supported. See photo 5.

The exterior walls of building are showing cracks. This has been caused by the removal of structural members that were part of the bracing system for the walls. See photo 6.

In order for the building to be considered structurally sound for the asbestos abatement work to proceed, a number of structural fortifications to the building would be required.

- Brace basement wall where 1st floor slab is missing to provide lateral support to the wall. This can be achieved by providing a horizontal member on the wall and brace members either down to the basement slab on grade or horizontally into the side of the first floor concrete slab.
- Provide decking and shoring to severely damaged 1st floor concrete slab where reinforcing is exposed. (see photos 1 through 3). This may involve removing piping and conduits under the slab (which may be required by abatement contractor if containing asbestos) to place the decking and the shoring posts. The decking and shoring posts should be designed to take the weight of the concrete slab as well as the construction load. The construction load would include any scaffolding above the slab that would be required for the abatement work. No construction heavy equipment should be allowed to operate on the first floor slab. No stockpiling of material should be allowed on 1st floor.
- Provide shoring posts supporting 1st floor concrete slab or steel framing supporting 1st floor decking for all areas on 1st floor to be used during the abatement work. All other areas of the 1st floor should have access restricted.
- Provide continuous support to edge of concrete slab at the opening in the south wall where the foundation wall below the slab is missing. (see photo 6)
- Provide supporting members in the north south direction from the south wall to the first line of columns north of the wall (see photo 4) to replace the cut and removed beams above the first floor. Attach to the remaining stubs of the removed beams in the wall and the columns.
- Brace the four walls of the building. This may be done on the exterior of the building by providing horizontal supporting members mid height of the wall with struts down to ground.

The cost estimate for the structural fortification work ranges from \$65,000 to \$90,000. This assumes that the fortification measures implemented for the structure would be temporary in nature.

The cost estimate assumes that the fortification work could be conducted in Level D PPE, particularly the work in the basement to shore up the first floor slab. If it is deemed that asbestos would be disturbed during the required building fortification work, then fortification crews would require Level C PPE along with the appropriate training. The building under the present condition is not safe for workers to perform the asbestos abatement work without the suggested fortifications.

Should you have any questions, please call Dan Capone at (517) 881-8837 or Hassan Marashli at (734) 397-3100 ext. 6047.

Respectfully submitted,


Hassan Marashli, PE
Engineer



Photo 1: Concrete slab supporting the first floor.



Photo 2: Exposed steel in beams and columns supporting the first floor.



Photo 3: Exposed steel in beams and slab supporting the first floor.



Remaining stub
of removed beam

Remaining stub of
removed beam

South Wall

First interior line
of columns

Photo 4: Removed beams in south building wall to first interior line of columns

Vertical crack
in wall



Photo 5: East building wall.

Missing foundation
wall



Photo 6: Access opening in south wall.