



85 South Route 100, Allentown, PA 18106

610.398.0904 610.481.9098

barryisett.com

Date: 11/23/2020
Project #: 1075820.000
Service Task: 00OBS00

To: Mr. Joseph C. Posh
From: Ross C. Sotak, PE
RE: **14-18 3RD STREET – STRUCTURAL OBSERVATION**
Bethlehem, Pennsylvania

As per your request Mr. Ross Sotak our office made a visit to the above referenced site on November 18, 2020. The purpose of the visit was to observe the overall condition of the structure, identify any areas requiring repair or remediation, and to comment on the structures' adequacy for the proposed renovation. Below is a discussion of our observations:

The property consists of two buildings, both three stories in height and each with a basement, however the floor to floor heights differ with the 14 Building being approximately a half story taller than the 18 Building. Both buildings are wood framed roofs and floors supported by multiwythe brick load bearing walls. It is understood that the buildings have been vacant for approximately five years, with the most recent occupancy being retail at the first floor and apartments above.

While much of the structure is concealed by finishes, the portions that could be observed are in poor condition. In the basement of the 18 building many of the floor joists are either dry-rotted or rotted from water infiltration (Photos 1 and 2). There are framing members with noticeable deflections and a portion of the first floor has failed where water has deteriorated the joists (Photos 3 and 4).

On the north façade there is evidence of water damage within the wall on the eastern side as is evident by the efflorescence and the spalling of some of the brick (Photo 5). There is a crack in the façade where the two buildings meet, with the crack appearing to grow wider toward the top which could suggest the 18 building is settling and moving away from the 14 Building (Photo 6).

It is understood that several years ago the west wall of the building was impacted by a vehicle, necessitating the installation of the wood shoring on the exterior. This wood shoring has now deteriorated due to constant exposure to the elements (Photo 7). The wall was noticeably damaged by the impact as it's no longer plumb and straight as seen from the outside and there is a bulge on the wall on the inside (Photo 8).

The south elevation consists of exterior wood framed patios which are in poor condition due to prolonged exposure to the elements and would likely need to be rebuilt (Photo 9).

It's understood that the proposed project for this site is a six-story mixed use building with retail on the first floor and apartments above. The existing structure would not be capable of supporting that type of vertical expansion. The unreinforced brick walls and foundations do not have enough capacity to support three additional floors. Of particular concern is the west wall in the area of the vehicle impact, in that location the mortar joints have been broken, significantly reducing the

Field Observation Report

structural capacity of the wall. This wall will need to be completely rebuilt and/or have a new supplemental permanent structure installed. In addition to the walls and foundations, much of the wood framing will need to either be reinforced or replaced due to the deterioration outlined above.

Installing new structure within the existing buildings to support the added floors above would be challenging. Within the basement of the 18 Building there are numerous closely spaced brick piers supporting the first-floor framing. There is insufficient space available to install new foundations between the existing piers. While a deep foundation system, such as piles or helical piers, could reduce the foundation size, the very limited floor to floor height in the basement could make the installation very expensive if not impossible.

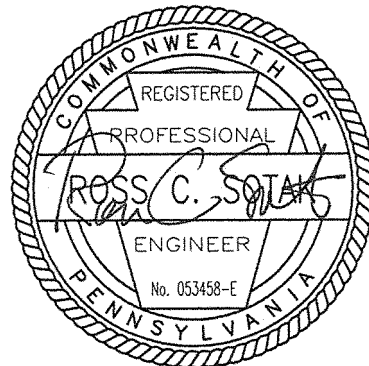
Cantilevering a new structure over top of the existing building entirely could be possible but at a substantial added cost. The cantilevered structure would need to be much larger than typical construction so as to control the deflections in the portion above and keep it completely separated from the existing building below. The magnified loads at the start of the cantilever would likely require a deep foundation system, versus standard spread footings, to help control settlement, minimize the footing sizes and allow the columns to be as close to the existing building as possible.

Finally, preserving the existing 3rd Street façade while removing the remainder of the building would be possible provided a new structure be installed prior to demolition. While the façade is not load bearing it gets its lateral support from wind and seismic forces from the structure behind it. This new structure would primarily serve as the temporary shoring for the wall during demolition and construction but could also serve as part of the permanent structure for the building above.

CONCLUSIONS

Based on our field observations, the condition of the existing buildings and the intended use of the site our office believes the existing buildings should be removed in favor of an entirely new structure. The existing building is not capable of supporting the proposed vertical expansion and based on the damage to much of the wood framing as well as the west exterior brick wall, much of the structure will require replacement. While adding structure through, or cantilevered over top of the existing, it would be at a significantly higher cost than new, conventional construction.

If you have any questions, please feel free to contact our office.



Field Observation Report



Photos 1 and 2 – Deteriorated floor framing.



Photo 3 and 4 – First floor failures.

Field Observation Report



Photo 5 – Water infiltration on north facade



Photo 6 – Crack in north façade – widening toward the top.

Field Observation Report



Photo 7 – Shoring on west wall.



Photo 8 – Interior of west wall.

Field Observation Report



Photo 9 – Patios on south elevation.

Field Observation Report