



HanoverEngineering

April 23, 2024

Nicholas Youssef
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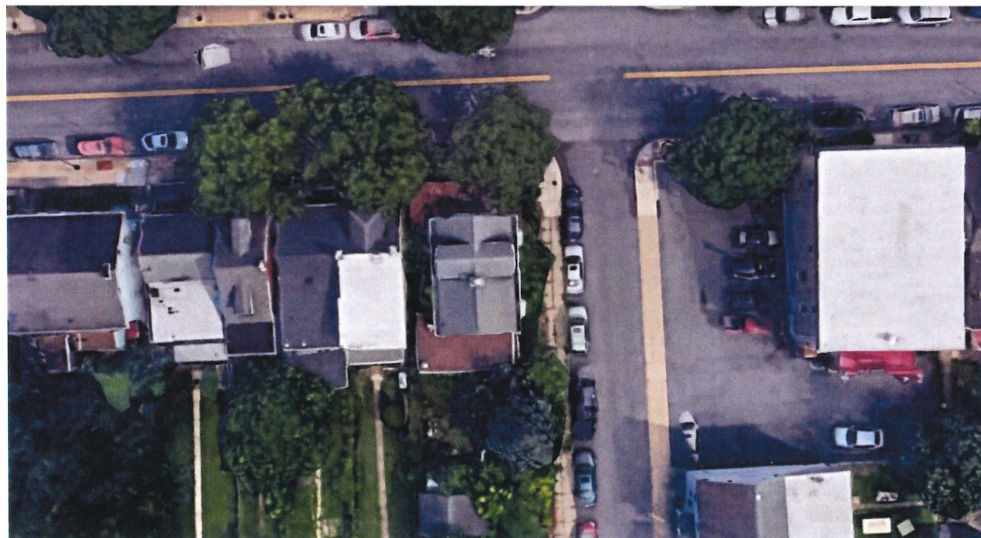
RE: Structural Evaluation
330 East Fourth Street
City of Bethlehem, Northampton County
Hanover Project 5161

Dear Nicholas Youssef:

In response to your request, Peter Chase, PE, of Hanover Engineering Associates, Inc., performed a structural evaluation of the referenced structure on April 17, 2024. This structure is a three-story frame house on a masonry foundation, with a full basement, approximately one hundred and ten (110) years old. It appears to have been used as a single-family residence and has a detached garage. The house faces roughly north.

The structure is in the Southside Historic Conservation District.

The Historic Conservation Commission (HCC) is a separate historic review board that reviews modifications to the exterior of buildings in both the South Bethlehem Historic Conservation District and the Mount Airy Neighborhood District on the West Side. The Commission meets on the third Monday of every month at 6:00 PM in Town Hall. Complete applications must be received two weeks before the meeting date to be placed on the agenda for the next meeting. The same application is used for the HCC as for the HARB. Design Guidelines are also available for the South Side, along with Storefront Guidelines and Sign Guidelines.



Plan from Above (from google earth)

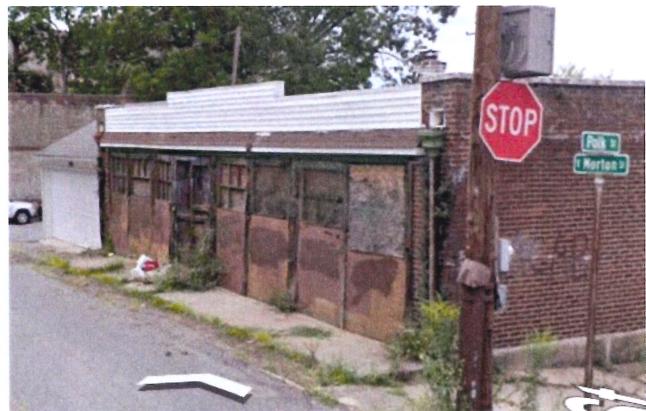


Front of Residence (North Elevation) (from google earth)

As noted above, the house is three-story. The rear of the house appears to be an addition added to the first floor of the original structure and is composed of two rooms: possibly intended as a kitchen and a “mud room”. However, the entire structure is in very poor condition. Much of the framing is exposed and portions of the supporting masonry, including brickwork and the rubble stone foundation is in serious distress. The detached garage is extremely damaged and can only be addressed by full demolition.



East Elevation



North Elevation of Garage (from google earth)

The basement is divided into two areas, a main, larger, area and a smaller front room. In general, this front room is in better condition. The basement is full under most of the house but does not extend to under the back rooms of the first floor. Though the basement walls perform the primary function of retaining exterior fill, they do not exclude all surface water – much of which appears to have puddled on the main floor of the basement. The basement beams supporting the joists of the first floor appear to have suffered distress, and their supporting posts are not in good condition. However, the joists themselves appear sound, although their connection to and support by the basement walls is of inconsistent quality. At the southwest of the main basement, there is a depressed “cistern” structure. This part of the structure, composed of masonry and some timbers, is in poor condition – its actual original purpose is unknown.



Main Basement



Front Basement

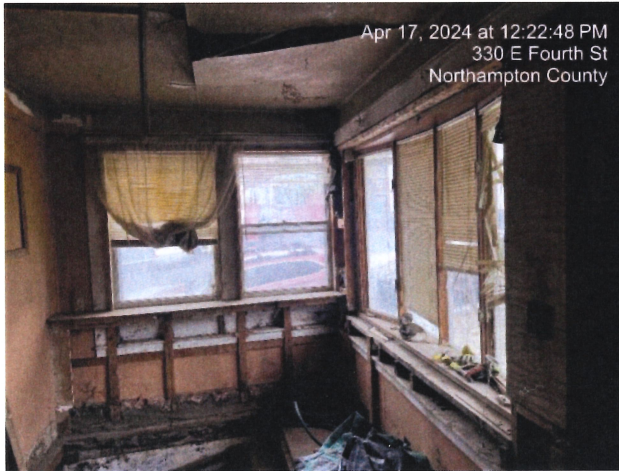


Joist Support on Foundation Wall



Basement Cistern

The first floor is in fair condition – the distressed condition of the floor joists underneath has not produced unevenness in the walking surface; but as previously noted, the underlying joists are not entirely trustworthy – either in design capacity or in construction. The condition of the back rooms (the addition to the first floor) is not satisfactory. The access to the basement is via a hatch in the floor of the “mud room” in this area.



1st Floor “Mud Room”

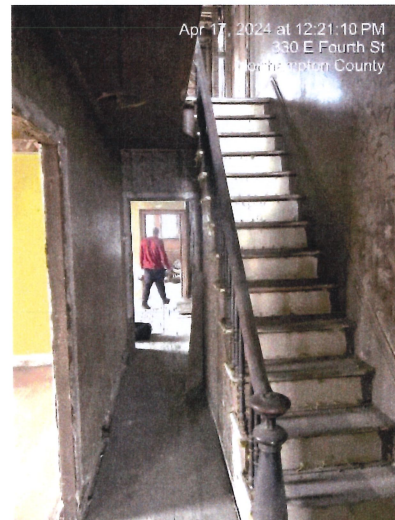


Exposed Joists in Ceiling of “Dining Room” – note also Steel Bearing Beam

Also of concern is the distress of the second-floor joists, visible in the “dining room” of the first floor. The suspended ceiling in this room has been removed, revealing this framing – which includes a conventional steel beam running north-south. Although the framing appears sound, it is unclear if it adequately supports current standard loadings; the timber joists are especially suspect. The suspended ceiling of the “living room”, immediately to the north, is still in place, but it is assumed that the concealed floor framing in this area is similar, with similar misgivings. The front hall, exposed and not supporting the upper floors, is framed more adequately, and appears to be in better overall condition.



Front Hall



Staircase 1st to 2nd Floor

The second floor is accessed via a standard staircase from the first floor and appears to be in similar condition to the first floor. However, the curtain wall separating the two rear rooms looks to be inadequately supported by the first-floor framing, and the joists at the northwest are embedded into a failing brick wall.



Back Room of 2nd Floor and Suspect Curtain Wall

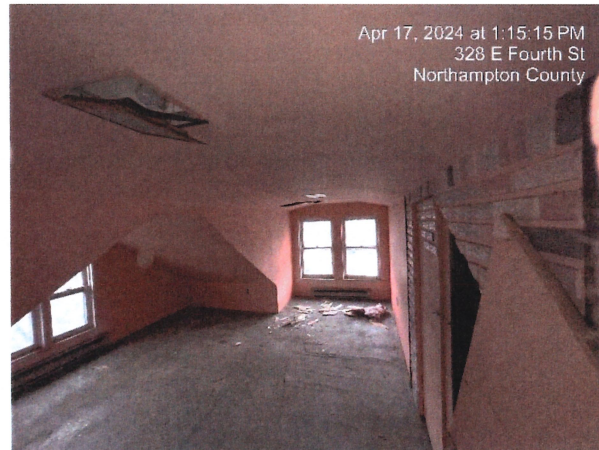


Typical Exposed Brickwork

The third floor is also reached by a standard staircase in good condition. This floor is separated into an attic with exposed rafters, no collar ties, and a floor of uncertain stability at the north end. The south portion at this level seems to be living space, of limited overhead clearance. The roof in this southern third floor varies from the standard A-frame seen in most of the structure, but appears to be in similar good condition, and is composed of conventional timber framing.



3rd Floor Attic



3rd Floor Living Space

The exterior of the structure has been covered in stucco, but appears to originally have been brick, some of which is visible inside the house.

There is a garden shed like out-building, in poor condition, located in the middle of the backyard. This structure appears to have been erected more recently than the main structure. As noted above, another detached building is the garage at the far north end of the property. This building is heavily distressed, and currently unsafe to enter. The roof has largely failed, as have most portions of the interior floor and all interior walls. The brickwork composing the east and west sides is generally failing, displaying gaps in the masonry and some vegetation ingress.



Garage Roof



Interior of Garage

As can be inferred by the observations noted above, it is uncertain that repairs to the main structure are warranted. As discussed, there are serious questions regarding the exterior walls and foundation. It is also of note that the framing appears suspect in the conditions of its support to the bearing walls. Although the floors are sound, it might be necessary to re-build them if the framing is replaced or renovated. The condition of the exterior of the building envelope could not be ascertained because of the stucco covering what is assumed to be original brickwork. It does seem that the roof is in good condition, although the rafter framing appears to be questionable in compliance with conventional construction practice.

My inspection only addressed limited structural aspects of the buildings on the property, as noted above, and was limited to a cursory inspection of the elements visible and accessible at the time of inspection. No exploratory investigations or testing was done. My evaluation is necessarily based on these limited observations and cannot guarantee that all defects were found or could be found. Except as noted above, I did not evaluate **nonstructural** issues, including, but not limited to, issues related to:

- **electrical systems; plumbing systems; heating, ventilation, and air treatment systems**
- **utility facilities and connections**
- **health and safety**
- **zoning and code compliance**
- **fire protection, fire separation; access/egress**
- **chimney, flue, etc.**
- **sanitation; sewer**

- **geotechnical; sinkholes**
- **user safety; public safety**
- **radon, animal damage, and wood-destroying insects**
- **asbestos, lead paint, other material hazards**
- **flooding and water damage**
- **drainage, hydraulics, hydrology, and stormwater management**
- **nonresidential uses**
- **occupancy and use**
- **mortgages, liens, public records, etc.**
- **workmanship**
- **landscaping**
- **roofing, siding**
- **cost estimating**
- **construction**
- **finish, trim, surface treatments, etc.**
- **insurance**
- **previous inspections, appraisals, evaluations, etc.**
- **repairs, renovation**

It is recommended that you retain this report for your records. Photographs of any new construction should be taken and filed with this report. If you have any questions or comments, please feel free to call this office at 610-691-5644.



Respectfully,

HANOVER ENGINEERING ASSOCIATES, INC.

Peter H. Chase

Peter H. Chase, PE
Reg. No. PE042715R

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