



July 14, 2022

Frontier Housing  
Stephanie Cooley  
5445 Flemingsburg Rd.  
Morehead, KY 40351

Structural Observation  
Hayswood Hospital  
2-98 W 4<sup>th</sup> St.  
Maysville, KY

Ms. Cooley,

Per your request, Yeiser Structural has performed a visual observation of the above referenced project to determine the existing structural deficiencies and any anticipated repairs. Per information obtained, the proposed use of the structure is to become apartments.

The original structure (North Wing) was constructed in 1915 and consists of brick masonry walls with a 1-way concrete slab in the hallway and a ribbed concrete slab utilizing corrugated metal forms in the patient rooms. The South Annex is comprised of a concrete slab supported by concrete beams on concrete columns. The West Annex is assumed to be a separate addition as its structure is a concrete slab over metal deck on steel bar joists supported by brick masonry walls. The walkways between the North Wing and South Annex are similar construction to the West Annex.

The original 2-story structure has been extended vertically to accommodate a 3<sup>rd</sup> floor with steel bar joists on steel beams and steel columns. This addition includes a 4<sup>th</sup> story penthouse whose floor is concrete over metal deck. Refer to the attached site plan for designations of annexes.

Per our observation, the following deficiencies were noted:

- There are several concrete ribbed beams where the bottom of the rib has cracked concrete, exposing the steel reinforcement (See Picture 1). This exposed reinforcement is severely deteriorated and is, in some locations, no longer bonded to the concrete. The concrete debris shall be removed and new steel reinforcement shall be added on the bottom of the rib to become the new structural support. There were (23) instances where this was observed, although there are likely more that could not be observed due to debris.
- At the ribbed concrete slab, the metal deck forms are severely deteriorated. Although not a structural concern, the falling debris caused by continued deterioration could become hazardous or unsightly. It is recommended that the metal forms be cleaned of deterioration and painted with a rust-inhibiting paint.
- All structural steel, with the exception of the 3<sup>rd</sup> story addition on top of the original structure, is severely deteriorated with significant portions of the steel being delaminated (See Pictures 2-5). This steel shall be completely demolished. The areas affected include West Annex roof, Walkways, stair structures, and exterior brick opening lintels.
- The structural steel on the 3<sup>rd</sup> story roof addition has slight deterioration. The deterioration shall be cleaned, and the steel shall be painted with a rust-inhibiting paint. The steel roof deck in this area is severely deteriorated and shall be replaced. (See Picture 6)

- There are several cracks in the concrete slabs at the South Annex (See Picture 7), which do not appear to have caused significant structural damage. These cracks shall be sealed with an epoxy sealant to prevent deterioration.
- The exterior concrete masonry walls of the penthouse have cracked in several locations (See Picture 8). These cracks shall be tuck pointed to prevent water infiltration.
- There are several cracks in the exterior brick veneer (See Picture 9) and there are instances where the mortar in the stone foundation of the original structure is crumbling (See Picture 10). These locations shall be tuck pointed to prevent water infiltration.

Overall, the building structure appears to be in fair condition. The masonry walls are in excellent condition and may be utilized with only minor maintenance, same as the concrete framing in the South Annex. The concrete framing in the North Wing is in disrepair in locations but the reinforcement of these areas is not a high-cost item. The major concern rests in the deteriorated steel framing. The areas as noted in the report to be demolished are high-cost items if they are to be rebuilt to usable condition. Although repairs could be performed to exterior opening lintels, these repairs are unsightly. Repairing back to its original condition will likely entail demolishing brick to install a new lintel and then replacing the brick in kind.

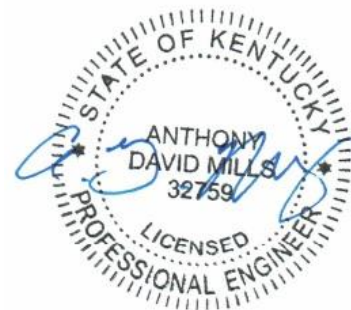
Rehabilitating this structure into an apartment complex will not require additional reinforcement, outside the items detailed in this report and unobserved conditions, because an apartment building shall support a live load of 40 psf, same as hospitals. Therefore, the existing structure is grandfathered into past code requirements and does not require analysis or reinforcement. The exception to this would be if there are public gathering rooms above the basement level, as these types of areas require a live load of 100 psf.

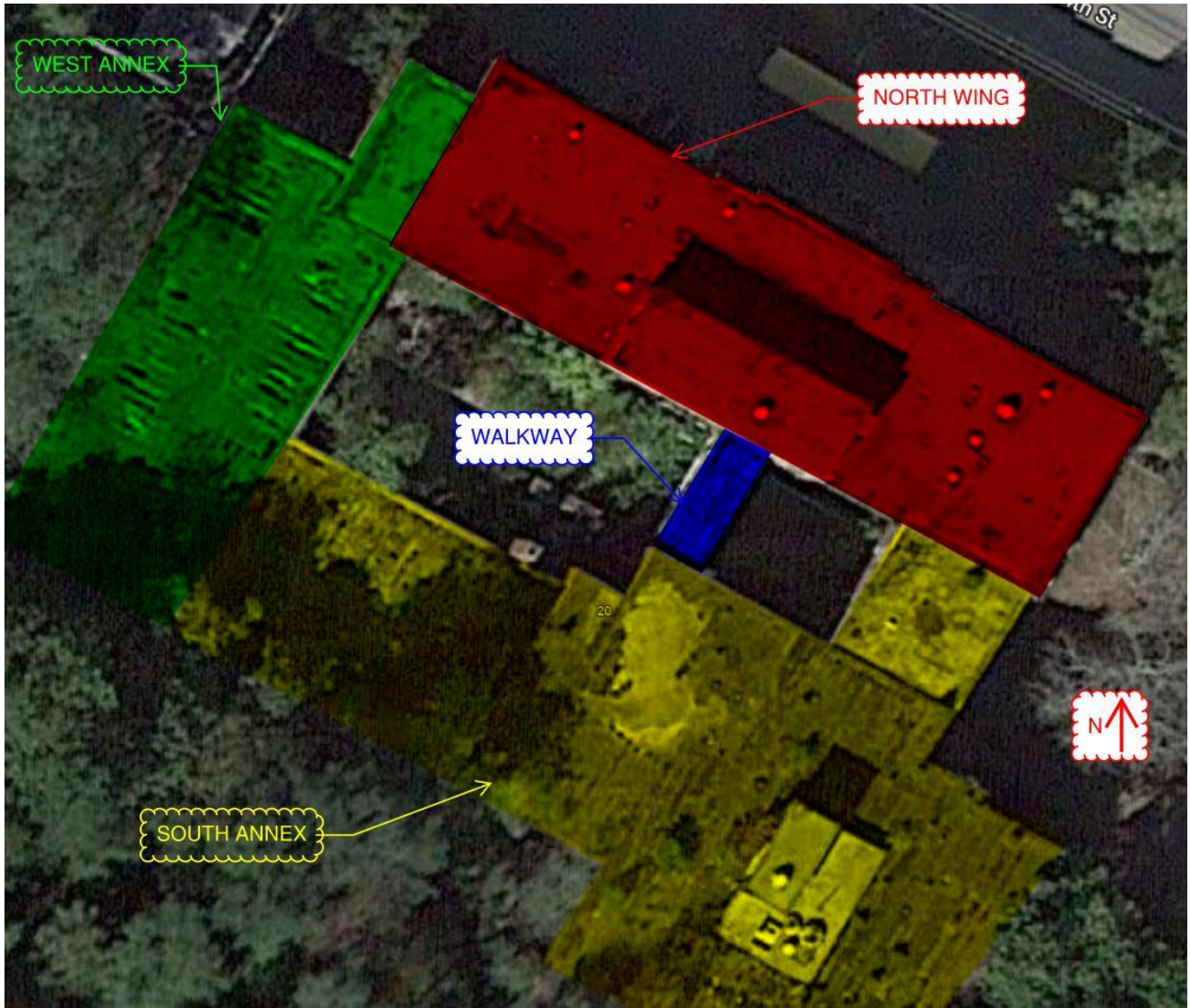
Please let us know if you have any questions.

Best,



Dave Mills, PE





Site Plan of the site showing building designations.



Picture 1: Concrete at the ribbed beams have cracked and exposed the reinforcement, allowing significant deterioration to occur.



Picture 2: The West Annex roof has collapsed, exposing the structural steel to the elements, and has caused significant deterioration.



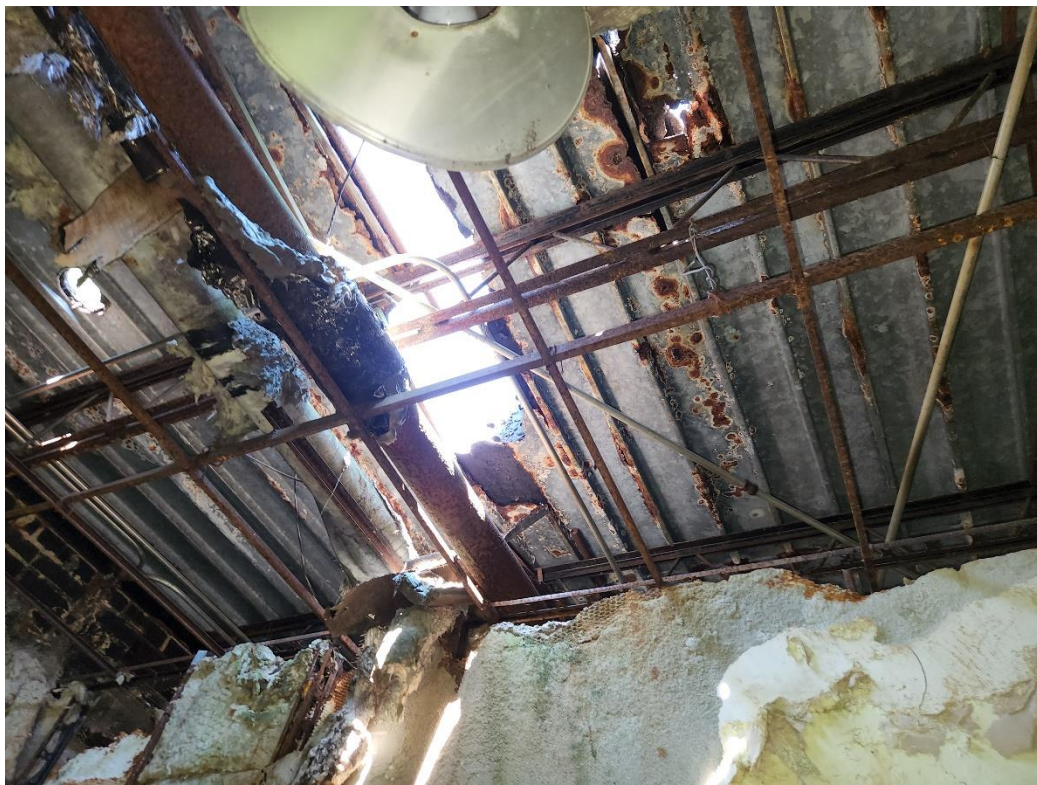
Picture 3: Steel at the exterior walkway is severely deteriorated to the point that it has delaminated.



Picture 4: The steel stair structure is severely deteriorated and shall be replaced.



Picture 5: Exterior steel lintels are severely deteriorated and shall be replaced.



Picture 6: The steel bar joists on the 3<sup>rd</sup> floor addition's roof are slightly deteriorated and the roof deck is severely deteriorated.



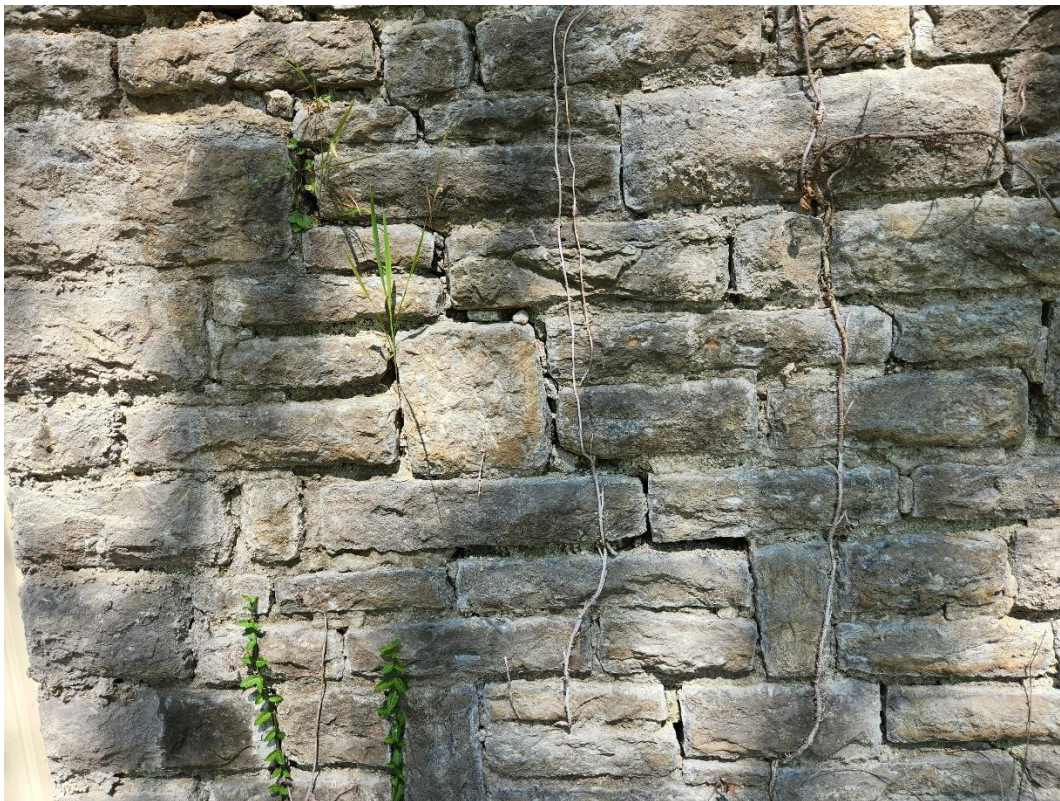
Picture 7: Crack in the concrete slab at the South Annex has allowed calcification to form.



Picture 8: Cracks in the exterior concrete masonry walls at the penthouse shall be tuck pointed.



Picture 9: Cracks in the exterior brick veneer shall be tuck pointed.



Picture 10: Deteriorated mortar in the stone foundation walls shall be tuck pointed.