TRI-TECH

1785 S. METRO PARKWAY
CENTERVILLE, OH 45459

"ESTABLISHED IN 1977"

February 19, 2020

Mr. Phil Keller
Berkshire Hathaway
1009 Lexington Avenue
Fairborn, Ohio 45324

RE: Structural Inspection of Foundation Wall Movement and Floor Deflection

Dear Mr. Keller:

Tri-Tech Engineering was hired to perform a structural inspection of the foundation wall movement and floor deflection at 1009 Lexington Avenue in Fairborn, Ohio. Mr. Mark Kessler performed the site inspection on Friday, February 14, 2020. The front of the house faces east toward Lexington Avenue.

We gained access to the house with the lock box code on the rear entry door. It appears that the rear portion of the house was an addition to the original home. The stairs down into the cellar were installed after the crawl space was dug out under the northwest quadrant of the house. An interior brick wall was built along the inside of the original block foundation walls to help retain the soil under the foundation walls. The brick masonry wall is only four inches thick. We could not determine if the masonry wall is mechanically attached to the original block foundation wall. The south foundation wall of the addition is pushing inward and has cracked the four-inch brick masonry wall. We would recommend that interior concrete block piers be installed at the stair stepped cracks at the ends of the brick wall rotation and one in the middle of the rotated brick wall. These block wall piers should be eight inches by sixteen inches with the sixteen-inch dimension perpendicular to the foundation wall. The block wall should be reinforced with two steel reinforcing bars and fully grouted cells. The reinforcing bars should be drilled into the existing floor slab for lateral shear support. There is a roof gutter downspout missing at the southwest corner of the house addition. This water is discharging to the south face of the block foundation wall and increasing the lateral soil pressures against the foundation. The downspout will need to be connected and drained away from the foundation wall.

The double two by six beam that replaced the original rear foundation wall is deteriorated from termite damage and the two by six floor joists are just nailed into the face of the beam. We recommend that a new double two by ten beam be installed to span the eight feet eight inches that the current beam is spanning. The existing two by six flor joists should be hung off the sides of the new beam with joist hangers. The two by six floor joist under the bathroom is cut off due to interference with the sanitary sewer pipe under the toilet. The east end of the cut off joist will need to be supported with a new beam and support posts. The existing ductwork for the furnace may need to be re-worked to position the new beam and support post on the south end of the cut off joist.

It is our opinion that the interior brick wall along the south foundation of the house addition is being pushed inward by the block foundation wall and lateral soil pressures against the foundation wall. The new interior block piers will reinforce the interior brick wall against the lateral movement. The double two by six beam installed to replace the original rear foundation wall is under-sized and deteriorated due to termite damage. We recommend that the new beam be a double two by ten installed to span from foundation wall to foundation wall. The existing two by six floor joists should be hung off the sides of the new beam with joist hangers. The cut floor joist under the bathroom will need to be supported at the east end with a new beam and support posts. If you have any other questions or concerns, please contact Mr. Mark Kessler at 513-673-1327.

Respectfully submitted,

Mark R. Kessler

Mark R. Kessler P.E.
Structural Engineer