

Carsello Engineering Inc.

**Structural Report
100 N. Main
Wauconda, Illinois**



Prepared By:
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Background

Victor Carsello, of Carsello Engineering Inc. (CEI), visited the property on August 29, 2023. He was met by Justin Pathmann, with REthink. The primary purpose of the visit was to provide an overall structural assessment of the one-story addition at the back of the original structure. The original building is not included in this scope.

Structural Description of the Existing Structure

The existing back building is a one-story masonry structure with no basement with approximate dimensions of 25' x 40'. It is estimated that it was constructed in the early 1960s. The exterior wall construction is 8" CMU with a 4" brick veneer. The CMU is most likely unreinforced based on practices from the approximate date of construction.

There is a ceiling which conceals the entire roof structure. The roof framing is most likely open web steel joists (bar joists) running in the long direction supporting a metal roof deck. It is possible that the roof framing is wood. The roof slopes from the front to a back gutter. There are two-wythe brick parapets extending approximately three-feet above the roof on the two side walls.

The original use of the building appears to have been as a storage garage. There is a large, wood-filled masonry opening on the west side of the building that is the size of a two-stall garage door.

The exterior grade drops along the rear and east elevations approximately 30 inches.

It appears that the building electrical service enters the building at the east wall. There is a rooftop unit on the addition that most likely also serves the main structure.

Observations

1. In general, the overall masonry condition is fair. There are several deficiencies, however, that should be addressed in order to prolong the life of the structure.
2. The exterior veneer is due for an overall repointing and general maintenance. Spalled and cracked brick should be replaced. (*Photo 1*)
3. There does not appear to be any flashing or weeps above the lintels. There is evidence that water has entered behind the veneer causing the lintels to rust and subsequently cracking the brick. (*Photo 2*)
4. The rear wall has experienced movement. Based on some of the cracking patterns, the wall has most likely settled. The wall also appears to be bowing outward at the head of the windows. There are also large horizontal cracks in the CMU that are visible from the inside of the space. This movement has also affected the masonry on the west elevation at the mandoor. There are cracks visible on both the brick veneer and CMU. (*Photo 3, 4 5, 6 and 7*)
5. There is evidence of water infiltration along the rear wall. It could be from water entering through the interface of the wall, roofing and gutter. It also appears that water has been running down the face of the brick in some locations. (*Photo 8*)
6. There are cracks in the rear foundation wall. This could be due to settlement. The wall appears to have been skim coated. Some of this has spalled off. (*Photo 9*)
7. Along the rear elevation there are two steel plates through bolted to the wall above the west window. These do not presently appear to be serving any purpose. Consideration should be given to removing these as this can be another point of water infiltration. (*Photo 10*)
8. The west side exterior sidewalk and stair are in poor condition.

Summary

The current state of the back structure will require some level of repair, depending on what the future use of the building will be. The following are scenarios for future uses to indicate the scope of structural repairs that may be required.

Option 1: Structure to remain and be used as an occupiable space:

- Address the rear wall settlement. Assume 6 helical piles bracketed to the foundation wall.
- Rebuild the SW corner brick and CMU. Add reinforcing in CMU wall.
- Reinforce back CMU by providing reinforcing steel at window jambs and at 4'-0" on center, grouted into the existing wall.
- Expose steel lintels and replace if rusted. Provide proper flashing.
- Repoint the brick veneer, replace spalled bricks, and ensure coping is water-tight.
- Repair roof at gutter to ensure water is not entering the wall.
- Replace west sidewalk and patch spalled stair wall.

Option 2: Do minimal work to address structural issues:

- Rebuild the SW corner brick and CMU. Add reinforcing in CMU wall on the west elevation between the mandoor and building corner.
- Repair cracked CMU and joints. Add reinforcing and grout at window jambs.
- Minimal repointing of the brick veneer at cracked joints. Replace cracked bricks. Seal coping to prevent water infiltration.

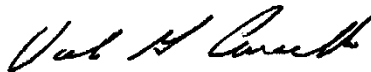
Option 3: Tear down building:

- Relocate electrical service.
- Relocate and replace, if required, the existing rooftop unit if it serves the main building.

This report is limited to structural considerations only.

Please contact me should you have any questions.

Sincerely,



Victor G. Carsello, S.E.

President





Photo 1: Spalled brick on East elevation



Photo 2: Lintels at rear elevation



Photo 3: NW corner cracking



Photo 4: Foundation cracking



Photo 5: Interior view of NW corner



Photo 6: CMU horizontal cracking



Photo 7: Interior view of NW corner



Photo 8: Header with One Cripple



Photo 9: Foundation cracking



Photo 10: Steel plates at rear wall