

# **Farm Bureau** **Building Structural Assessment**

**201 West Fourth Street  
Walnut Cove, North Carolina**



Ms. Dana Marshall  
Farm Bureau Insurance  
201 West Fourth Street  
Walnut Cove, NC

July 31, 2024

Re: Building Structural Assessment  
Farm Bureau Insurance  
Walnut Cove, NC  
MEPC No: 105-24

Dear Ms. Marshall,

Moorefield Engineering, P.C. has completed our structural assessment for the above referenced project. Our review was based on information obtained during a site visit on July 19, 2024 for an exterior walk around of the building along with an additional site visit on July 25<sup>th</sup> for a walk thorough of the roof and attic area. Our review, to this point in the project, has been visual in nature and no material sampling or testing has been conducted on any structural framing members. There were no existing project plans available for the building.

### **Building Summary:**

#### **General**

Based on our review of the property card information, it is our understanding the original construction was built in approximately 1965. A sloped wood framed roof condition was added over the flat roof in approximately 2008 to 2010.

#### **Type of Construction**

Based on our visual observations the original building construction consisted of load bearing masonry perimeter walls with brick veneer finish and a steel bar joist roof and metal deck condition. It appears that at some point the flat roof condition may have been causing issues with water entry and an over framed wood roof condition with a slope was installed. The over frame roof construction consists of 2x10 roof rafters at 16" o.c. spacing with a high collar tie condition installed. There were no ceiling joists installed from rafter bearing point on the east wall to rafter bearing point on the west wall. The north and south gables were framed with 2x4 framing and covered with OAS sheathing and vinyl siding.

## **Building Documentation:**

The building is located to the south of west fourth street. The aerial view will be used for directional reference. The north face of the building faces west fourth street.

North



## **Building Structural Assessment:**

Our assessment of the building consisted of a walk-through of the interior of the space, the exterior perimeter of the building, and the attic space. The attic condition was created with the wood framed roof over the original flat roof condition. Based on observations made it does appear the building has experienced some minor settlement. The interior slab along the west wall where there is approximately a 36" in grade change, due to a backfill condition against the foundation wall, has likely led to the slab settlement observed. The only other item observed from the interior of the building was the stepped crack condition on the north wall adjacent to the window opening. This stepped crack condition is most likely due to isolated settlement of the west wall condition.

In regard to the exterior walk around, we noted numerous items in regard to downspout gutter discharge conditions. The gutter downspouts are dumping water adjacent to the foundation and should be modified to divert water from the foundation walls. We also observed the water meter has settled within the sidewalk condition on the east wall and has created a trip hazard.

The east wall showed signs of mortar joint deterioration and mortar joint spauling in multiple locations. In regard to the primary issue to be addressed in the assessment, we observed cracking along the top of the east wall approximately 12"- 16" below the soffit. On the west wall, vegetation growth prevented good visual observation of this wall, but we did observe some similar conditions that are outlined above on the east wall.

Based on our review of the attic access condition, it appears the framed roof condition, with no ceiling joist, has allowed the roof to flex and push outward on the brick parapet walls. It appeared the original parapet coping was removed and a 2x4 nailer added to the existing nailer to create a bearing point for the new rafter framing. Collar ties were added along the ridge, but the building roof has flexed enough that several of those were observed to be broken free from the rafters. Without ceiling joists to hold the bearing conditions together, the flexing has led to the rotation of the top of the parapet condition and led to the brick cracking observed at the top of the east and west walls. This parapet condition will require modification.

## **Closing and Repair Options:**

In closing, the primary portion of the structure which was the original masonry and brick construction with steel roof joists and metal deck appear to be in relatively good condition. With the exception of some isolated settlement items regarding the slab along the west wall and the settlement crack on the north wall, the basic building structure appears to be intact. The primary concern is in regard to the roof framed condition and the push out that has occurred on the brick parapet wall condition. The current condition is not stable and will require modification and/or repair. In addition to these repairs, there will also need to be some mortar joint grinding and pointing where the joint failures are occurring. In regard to the repair options for the pushed-out parapet wall condition, we are outlining those below:

- Remove existing wood framed roof and the existing roofing and insulation material down to the metal deck for new roof installation. A new roof installation would utilize tapered insulation to enhance the slope and require rework of the damaged brick parapet and new coping with the addition of a TPO or EPDM type roof with a new rear gutter system to be incorporated.
- Provide temporary bearing walls that will remain permanent approximately 12” away from the parapet condition supported by a 4x8 runner and a 2x4 framed wall to the rafter for support. This condition would occur continuously along the rafter bearing conditions at the east and west walls. This would transfer the rafter loads to the steel bar joist roof structure and allow for modification of the existing brick and bearing condition where the damage has occurred. In addition to the new support conditions and new rework of the existing bearing conditions with the brick work, there would also be the requirement to add 2x8 cross ceiling joists at every 3<sup>rd</sup> rafter location to create a tension tie between the plates to prevent push-out after repairs are made.
- The same approach as outlined above could be considered with a new support approximately 12” in from each rafter bearing condition to transfer the vertical load with the addition of the ceiling tie joist at every 3<sup>rd</sup> rafter location. Once the bearing condition was established with the new runner walls and the ceiling joist installed to prevent the kick-out, we could frame a boxed-out soffit condition approximately 16” deep to cover the damaged brick condition which would no longer provide support for the rafters with the new runner system in place.

Based on the options above we would expect the first bullet point option would be the most expensive option due to the amount of demolition that would be required to remove the existing roof. The second bullet point option would be the mid-range cost and would provide the same look as currently exists with the building with the rework of the brick condition once the runner support system is installed and the tension tie ceiling joist added. The third bullet point would be the least cost since we would leave the existing damaged brick intact and provide a soffit cover to allow for a more finished condition. We would suggest you have a contractor look at these three options and provide pricing feedback before we move forward with the formal repair documents. Once the contractor has cost feedback, we can provide a proposal to develop the repair plans.

If Moorefield Engineering, P.C. can be of further assistance on this project or you have any questions regarding this information feel free to contact us. We appreciate the opportunity to assist you with this project.

Sincerely,  
Moorefield Engineering, P.C. (C-1323)



Jerry W. Moorefield, P.E.



7-31-2024

# Photographic Documentation







Parapet shift on east wall



Parapet shift on east wall





Joint spauling on east wall



Parapet shift on east wall



Vegetation growth on west wall



Downspout discharge issue on west wall





Downspout discharge issue on east wall



Downspout discharge issue on east wall – trip hazard



Water meter settlement on east wall



Wall settlement crack on north wall





View of over framed wood roof



Collar ties with nail failure



Pushed out rafter bearing plate on east wall



Pushed out rafter bearing plate on east wall