

# Wood Works Engineering, P.A.

**Project:** 131 W. Charles Street  
Matthews, NC 28105

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This report provides an account of observations I made on May 4, 2016, of the home and detached barn at 131 West Charles Street, Matthews, NC. A photo appendix is included as part of this report.

## **Buildings and Site**

The front of the home faces Northwest on West Charles Street at the intersection with North Freemont Street. A barn on the property, also observed as a part of this report, is sited to the rear of the home facing North Freemont Street.

The home is a two-story single-family dwelling equipped with modern heating and cooling equipment. An addition that includes a kitchen and living room was added to the rear of the home at some time in the past.

## **Home Interior**

Hardwood floors within the older sections of the home are in good condition. Plaster and gypsum-board wall and ceiling surfaces were observed to be in good condition as well, with no cracking or other evidence of settling.

Two fireplaces located within the home do not appear to be operational. Discoloration was observed on the wall above an air-supply vent in the right-front room of the home, indicating a possible malfunction in the heating equipment.

The addition on the rear of the home contains this living-room and an adjacent kitchen. The floor within the addition is covered in sheet-vinyl and the walls are paneled with pine boards.

An upstairs bathroom that contains a toilet, sink, and tub. The floor of the upstairs bathroom is covered in vinyl-tile and the ceiling is low, measuring only 74-inches above the finished-floor.

### **Porch and Patio**

The front porch is open on three sides and is constructed atop a crawl-space that is contiguous with the crawl-space below the living space. Boards on the left-side of the front-porch floor have a few wide gaps between boards and a few of the floor boards are loose at the left-most edge of the porch floor. Decay was observed sporadically within the last eight to ten porch floor boards on the right-side of the porch floor. Wood rot was also observed at the front edge of the porch flooring on the left-side of the home.

A concrete patio is also located on the front of the home, adjacent to the front porch near the left-front corner of the home.

### **Foundation Walls and Rear Brick Steps**

The brick foundation-walls are in good condition overall despite some cracks that were observed on the left side of the home. No signs of settlement are apparent within the perimeter foundation of the home, however.

Brick steps on the rear of the home have settled approximately 1-inch relative to the adjacent foundation-walls and the landing at the top of the steps. No settlement of the landing is apparent.

### **Exterior Walls**

Mildew was observed on painted exterior wood surfaces, especially on the north-facing sides of the home below soffit areas. Most of the horizontal wood lap-siding covering the exterior walls of the home has good integrity, with the exception of some peeling paint and advanced weathering of wood in some locations. A small amount of wood rot was observed at the bottom of the wall at the left-front corner of the home. Wood rot was also observed at the bottom of the wall immediately above the concrete patio attached to the left-front corner of the home where the siding is in contact with the concrete patio surface

Also on the left-side of the home above the concrete patio, an area of wood-rot was observed below the low-roof overhang where it meets the gable-end wall of the two-story portion of the home. Water appears to have been running down the exterior surface of the wall at the bottom of the low roof. Kick-out flashing should be added to locations such as this to prevent water from draining of the roof and onto the surface of the siding.

### **Basement and Crawl-Space Foundation**

Most of the home is constructed atop a crawl-space with masonry piers supporting the structure. A small basement mechanical-room within the foundation on the left-side of the home contains mechanical equipment and a sump-pump. At the time of my observations, recent rains had partially filled the sump area. I verified that the pump is

operable at the time of my visit by repositioning the float-switch. This activated the pump which mostly emptied the sump area of water before automatically shutting off.

The floors of the home are framed with 2x8 joists spaced 22-inches on center in the older section of the home, and 2x8 joists spaced 16-inches on center within the newer rear addition. Concrete-block piers have been added within the original crawl-space, either to improve stiffness in the floors, or to reconfigure support for the floors after the addition of forced-air mechanical equipment.

The crawl-space and basement areas are passively ventilated to the exterior. There is no vapor-barrier covering the exposed soil within the home's foundation. The addition of a vapor-barrier over exposed soil in the crawl-space is recommended to reduce moisture-levels within the home.

### **Roof System**

Two-layers of asphalt shingles cover the roof in most areas. The top layer is in fair condition, showing some signs of advanced weathering. Gutters were observed to contain perforated covers to block the accumulation of debris. In some locations, especially at the rear, debris from nearby trees was observed to be covering the perforated covers.

At the gable-end overhangs on the left and right sides of the home, the surface of the roof was observed to change slope where the rake-end roof sheathing boards project beyond the gable-end walls. Deflection of the roof sheathing in these areas appears to be resulting from wood-rot in the wood brackets supporting the barge-rafters in these locations. Wood blocks appear to have been added to some of these locations in an effort to reposition the barge-rafters. The wood blocks are also decayed in some of these locations.

### **Detached Barn**

The front of the barn is facing Fremont Street with a driveway to the left of the barn running past the rear of the home to a detached carport. The barn measures approximately 33-feet in width by 24-feet in depth. Cedar poles buried around the perimeter of the barn provide support for the structure. Walls are infilled between the poles with lumber to which the siding is attached.

The siding on the barn is mostly composed of horizontal pine-boards. Along the bottom of the walls on the rear and left sides, galvanized metal has been installed within approximately 12-inches of the grade. Rot was observed within a small amount of siding located in close proximity to the grade along the front of the barn. A small amount of rot was also observed in the siding where it comes into contact with the soil at the right-front corner as referenced from North Fremont Street.

The roof of the barn is framed using 2x4 rafters spaced 32-inches on center. The rafters are supported near mid-span with a double 2x4 plate oriented horizontally. The double

2x4 plate is supported by posts spaced approximately 5-feet on center that extend to the foundation.

The upper loft in the center of the barn is approximately 14-feet wide. Lower lofts on each side of the barn are approximately 10-feet wide. The 14-foot wide central section of the barn has a wood floor. Areas below the lower loft areas on the right and left sides of the barn have dirt floors.

The floor of the upper loft is framed with cedar logs spaced approximately 28-inches on center and spanning approximately 14-feet. The average diameter of these members is approximately 5-inches and varies between 4 and 6-inches in diameter. Similar framing was observed within the floors of the lower lofts. The loft floors are in good condition with the exception of badly decayed floor boards in the upper loft located within an area extending approximately 4-feet from the rear of the barn. Decay in this location may have been the result of roof leaks. Newer metal roofing was observed above this area, possibly installed in response to leaks above this area.

Please let me know if there are any questions concerning the observations described in this report.

Respectfully submitted by,



Bryan T. Readling, P.E.  
Wood Works Engineering, P.A.

Friday, May 13, 2016

**Disclaimer:**

The issues discussed within this report are the results by Wood Works Engineering, P.A., to discover potential problems within the areas of concern. This does not imply that there are no additional issues, hidden or otherwise, that may compromise, structurally or cosmetically, the buildings at issue. In any building it should be expected that hidden problems will be uncovered in the future, that will require additional repair.