



June 14, 2023

1040 Bethel Baptist Road  
Spring Lake, NC 28390

Attn: Mrs. Marguerite Strand

Re: Visual Structural Inspection and Evaluation  
1040 Bethel Baptist Road  
Spring Lake, NC 28390  
Our Job #23-46

Dear Mrs. Strand,

A visual structural inspection was performed on June 13, 2023 at the above referenced location. It was requested that we inspect suspected structural deterioration in the first floor framing due to long term exposure to elevated moisture and provide a structural report with general recommendations for repair as required. Items visible to view that were inspected are noted in the report but a comprehensive structural inspection of the entire home is beyond the scope of this report. Details of specific repairs are beyond the scope of this report. A geotechnical report and/or structural plans for the home were not available to assist in our investigation. Please refer to our Agreement with you dated May 19, 2023 for a full description of our Summary of Services.

The house is a one-story residence that was constructed in 1986, according to Harnett County's GIS records (photo 1). The exterior cladding is primarily brick masonry. The first floor is framed with 2x10 dimensional lumber joists and multi-ply wood girders and the foundation is of crawlspace construction. The first-floor framing is supported at the perimeter of the home on a masonry foundation wall and the interior framing bears on intermittently spaced masonry piers. The footings were not exposed to view but are assumed to be shallow cast-in-place concrete footings, based on the type of construction. A vapor retarder exists throughout the crawlspace (photo 2), with the exception of the area under the front porch. The lot slopes downward from the front to the backyard.

Deterioration from what appears to be long term exposure to elevated moisture was observed at some of the floor joists and girders in the crawlspace (photos 3-4, typical). The deterioration of wood elements was observed in several areas throughout the crawlspace, but primarily in the front center of the home. This location also coincided with what appears to be the least amount of ventilation in the crawlspace (behind the front porch). Some of the insulation in this area was draped, which is indicative of high humidity levels. We are not air quality or biological growth experts, but we observed growth on framing elements in several areas of the crawlspace. Long term exposure to excessive moisture can cause degradation to wood framing from mold/fungi growth and wood-destroying insects.

We recommend that a contractor be hired to supplement the deteriorated portions of framing in the crawlspace by sistering the deteriorated joists. When on site, we marked approximately (14) joists that are visually deteriorated to the extent that we recommend sistering with a new No.2 Southern Yellow Pine full length sistered joist. We recommend that the new joists be fastened to the existing joists with (3) rows of 10d nails at 12" on-center. New joists should be full length, and replicate the bearing conditions of the existing joists. Prior to sistering the joists, the existing joists should be cleaned of biological growth, particularly at faying surfaces between the sistered and existing joists.

Based on our experience, it appears that clearances are sufficient to permit repair from the crawlspace side of the floor. However, it should be noted that strengthening of deflected and deteriorated floor framing can be difficult and can require temporary removal of ductwork or other utilities to allow access to the areas from the crawlspace side of the floor system. We do not recommend installing a steel jacking system or underslung steel beams as a permanent repair.

While on site, you also expressed concern in the home pertaining to squeaks in the kitchen subfloor, and diagonal cracks in the door jambs of the two walls adjoining the kitchen. The walls of concern with cracks are oriented parallel to the floor joists. The cracks and squeaks are indicative of movement and stress in the floor framing under the kitchen. Typically, due to cabinetry and appliances, kitchens have some of the highest loading imposed on residential floor systems. Higher loading coupled with some observed deterioration of the framing under the kitchen has likely resulted in increased stress and deflection of the framing. We recommend that, long term, at such time the floor finishes and cabinetry are replaced, that consideration be given to re-fastening the subfloor to the framing and installing a plywood underlayment. Additionally, a supplemental masonry pier and footing may be added in the middle third of the joist spans below the walls that are currently exhibiting cracks.

In regards to the observed biological growth, we recommend that permanent elements to divert surface and subterranean water, proper ventilation, and dehumidification be provided in the crawlspace. It is possible that a full or partial encapsulation system will be required. I am not a qualified professional in these fields and recommend that these items be evaluated and remedial repairs be designed by qualified water and biological growth mitigation professionals.

### Report limitations

Please be aware that much of the structure was limited to view. Limitations include:

1. Insulation at the underside of the first-floor framing.
2. Floor finishes throughout the home.

Upon removal of these elements, additional damage (such as subfloor or framing deterioration) may be encountered that requires repair.

This report is limited to structural items only and although general recommendations have been provided in this report, they do not constitute construction documents. Detailed drawings, where required, should be provided by a Professional Engineer registered in the state of North Carolina.

Thank you for the opportunity to provide engineering services to you.

If we can be of further assistance, please let me know.

Sincerely,

Fleming & Associates, PA  
John L. Kells, PE, SE  
NC Firm License No. C-2828





**Photo 1**  
*Front elevation.*



**Photo 2**  
*Existing vapor retarder and overall crawlspace.*



**Photo 3**  
*Deteriorated floor joist.*



**Photo 4**  
*Deteriorated floor joist and biological growth.*