



July 13, 2013

North Carolina Modernist Houses
c/o Chris Bozzelli
5409 Pelham Road
Durham, NC 27713

Re: Structural Evaluation
West Cobb St, Durham, NC
Project # 13-1126

Mr. Bozzelli:

As authorized, McClancy Engineering, PC performed an evaluation at the above site on July 9, 2013. The site investigation was performed and this report written by Mr. John McClancy, P.E., president of McClancy Engineering.

INTRODUCTION

The purpose of this assignment was to evaluate certain apparent distresses in your home to determine if they are the result of structural problems. This was accomplished by direct physical examination of the subject property.

This report is an assessment of the noted conditions based on visual evidence and our qualified knowledge and experience. It is not a guarantee or warranty of condition or suitability for a particular use. Further, McClancy Engineering, PC is not responsible for conditions that could not be seen or were outside of the scope of services at the time the services were rendered.

This report is the work product of an engineering investigation. This report is not a home inspection as defined by Section 142-151 of the North Carolina General Statutes nor is it a code compliance report. While comments may be offered on any untoward conditions or building code violations observed, they were not the focus of this investigation. Unless otherwise specifically described below, no destructive or invasive testing or procedures were performed during this investigation.

SUMMARY OF FINDINGS

For your convenience, I have prepared the following brief summary of my findings:

- The damage and bulging of the foundation wall at the lower (west) elevation of the home was rotational movement associated with classic failure mode of an unrestrained under-reinforced retaining wall. Structural repairs are recommended.
- The cracks and inward movement of the basement foundation wall on the north elevation at the east end was lateral rotation due to classic failure mode of an unrestrained retaining wall. Structural repairs are recommended.
- The structural repairs performed to the basement wall on the east elevation appear to be performing their intended function. Site drainage improvements are recommended to reduce pressure against this wall and reduce the likelihood of future movement.

OBSERVATIONS AND CONCLUSIONS

The subject of this investigation was a one-story residence with a combination of brick veneer and wood siding on the exterior walls and a composition-shingle roof surface. The basic construction type was a wood-frame superstructure founded upon a masonry foundation system enclosing a basement. The building was reported to be approximately 60 years old.

The building was generally accessible for inspection. However, since the construction of this home was finished long ago, many of the basic structural components are concealed by interior and exterior finish materials. Structural evaluation of those components is necessarily limited to conditions that may be reflected in the condition of the finish surfaces.

The following observations and comments are offered with respect to the specific areas of concern:

1. The bulging of the lower level foundation wall at the west elevation was indicative of rotational movement of an unrestrained retaining wall. The wall is bulging due to lateral pressure exerted by the backfilled soil below the basement slab. There may also be a water component to the pressure due to unfavorable site drainage.

Routine foundation repair methods involving either tie back anchors with building stars or removal of some of the fill behind the wall and replacing it with concrete.

2. The bulging and movement of the basement retaining wall on the north elevation at the northeast corner room was also typical of an unrestrained retaining wall. The arrangement of three consecutive windows across the center of the wall effectively created an unrestrained retaining wall situation. Structural repairs are recommended. This wall is probably best repaired using a tie back anchor system similar to the one employed on the east wall.

3. Existing tie back anchor repairs on the east wall appear to be performing their intended function and additional structural repairs are not recommended at this time.

Generally speaking, the likelihood of significant future movement of the basement retaining walls can be greatly reduced by improving the site grading around the home to better intercept and direct the water away from the foundation.

If you wish, McClancy Engineering will be glad to prepare a design for the repair of this damage. However, structural design is beyond the scope of services authorized thus far and has not been performed. Please let me know if you wish further assistance.

LIMITATIONS

All comments and conclusions are considered accurate to a reasonable degree of engineering certainty based on the evidence available at the time the report was issued. All opinions and conclusions are subject to revision based on receipt of new or additional information.

All services are provided exercising a level of care and diligence equivalent to other professional engineers providing similar services under similar conditions. No other warranty, expressed or implied is offered.

These services are confidential in nature and this report to any other party without your express consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied or distributed for any other purpose without the express written permission of McClancy Engineering.

Please call if you have any questions or I can be of further assistance. Thank you for using McClancy Engineering.

Respectfully Submitted:
McCLANCY ENGINEERING, PC

John McClancy, PE
President

JCM:tzm