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XXXXX 2, 2021

This letter summarizes the results of the structural assessment of a house located at [REDACTED], [REDACTED], GA XXXXX, inspected on XXXXX 30, 2021. The main purpose of this report is to verify if various types of cracks in the house are structural or cosmetics, etc. Inspected items are as follows:

- Gypsum board and ceiling moulding cracks in 1st floor
- Step cracks in outside brick veneer at garage door above
- Driveway concrete paver cracks
- Basement slab-on-ground (SOG) cracks

In 1st floor, many cracks were observed at wall corner and ceiling-wall edges with similar pattern as shown in Fig. 1. Most crack widths were no larger than 1/16". Thus, they were identified as cosmetic cracks, not structural, due to temperature and moisture expansion & contraction or movement for gypsum board products. The moulding sealants at the edge of the ceiling were also observed to have gaps for similar reasons. They can be fixed by crack sealant or filler as required.

Step cracks were observed following mortar joints of the brick veneer wall as shown in Fig. 2 is wall. It is located at the outside garage door above. Door opening size is approximately 16'-0" wide x 7'-0" high. When measuring the opening height at both ends and midpoint, it was observed that a deflection of about 3/4" occurred in the mid span. From this, this crack may be caused by the deflection of the brick lintel. Also, there is a gap between the lintel and brick mortar. The current crack width is less than 1/16", so it doesn't need to repair right away. However, if the cracks get bigger in the future, it is recommended to discuss with a crack repair agent.

In driveway, many irregular patterns of cracks were observed as shown in Fig. 3. They are common as a driveway ages and weather takes its toll. In the middle of the driveway, a longitudinal crack was observed, which is believed to have occurred because of the absence of control joint in this direction when pouring concrete. These cracks can be fixed by concrete crack fillers or if getting worse, they may have to be replaced.

Basement floor is a concrete slab-on-ground without crawl space surrounded by concrete retaining walls at 3 sides. No cracks were observed at the retaining wall. However, as shown in Figs. 4 to 6, about 1/8"

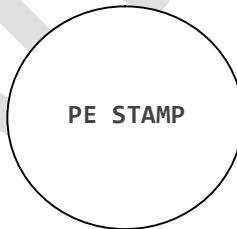


wide cracks were observed at pool room. These cracks started at both the re-entrant corners and propagated to the middle of the wall. Level measurements were conducted to determine the elevation differences. As shown in Fig. 4, this room has a downward slope from the entrance of the room to the opposite wall, and the level of the cracked area was slightly higher than that of the non-cracked area. But the differences are not too much. No cracks were found in the outside brick veneer at the same location of this room (see Fig. 8). Thus, it is believed that these cracks were caused by stress concentration at the wall reentrant corner due to temperature shrinkage & expansion as well as slight wall movement rather than by the settlement of the foundation. In general, rebar is required at the face of a re-entrant corner in concrete slab to prevent them. To prevent the cracks from getting bigger, it is recommended to repair them by concrete repair contractor.

This report is based on a visual and non-destructive assessment (including measurements) of the structure. The information provided is based on the professional engineer's opinion considering the information collected at the time of the inspection. Any conclusions are valid for as long as the structure's conditions have not changed and are limited to the capacity of the methods used. Please contact me with any questions about this letter.

Best regards,

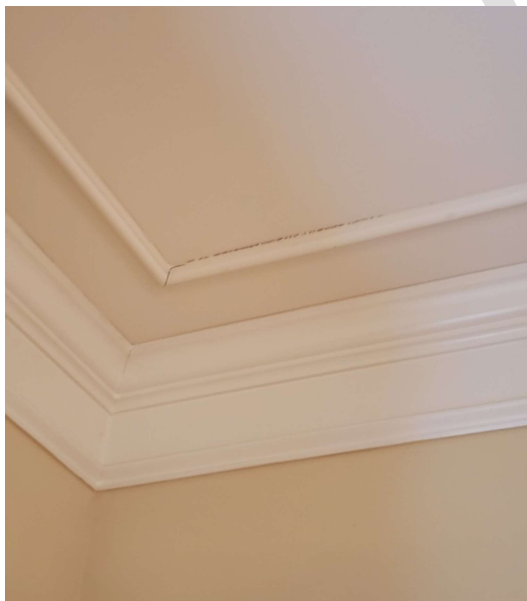
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(a) Ceiling edge

(b) Door jam



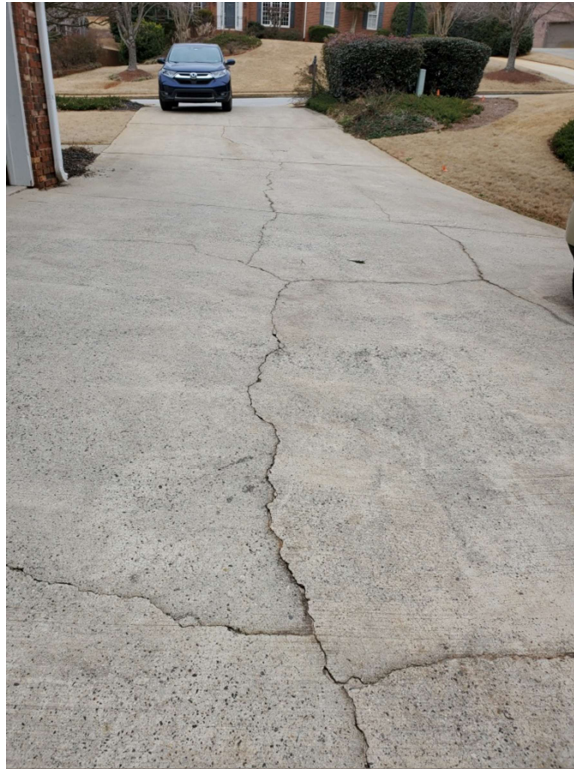
(c) Moulding

(d) Wall corner

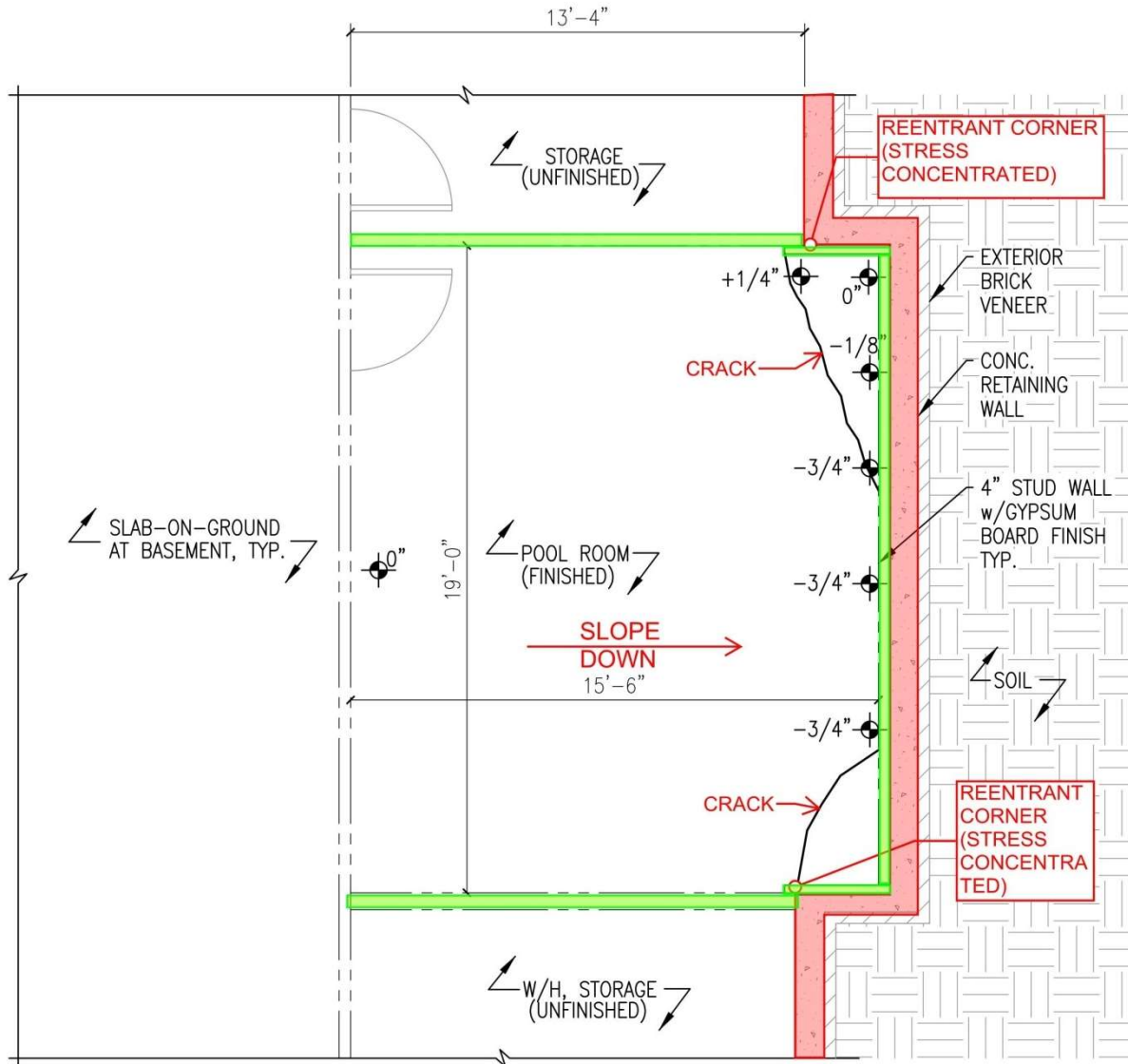
<Fig. 1 – Common cracks in 1st floor >



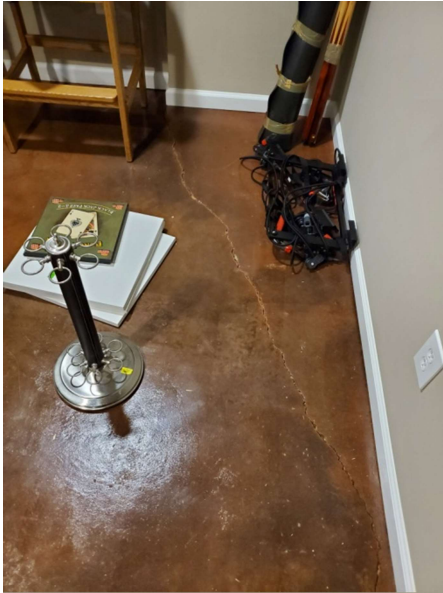
< Fig. 2 – Step cracks at brick veneer >



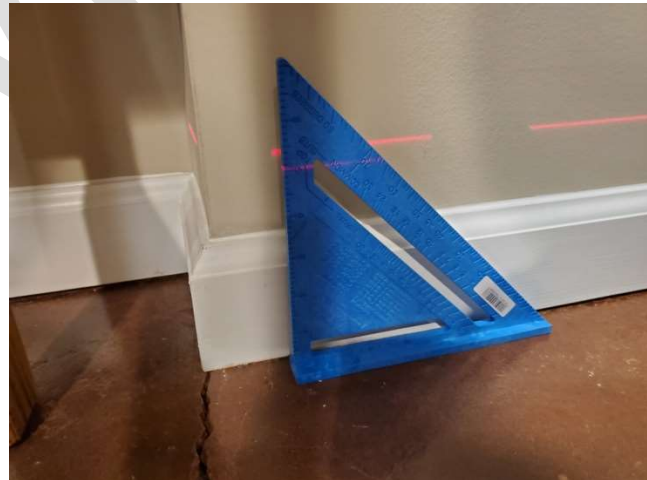
< Fig. 3 – Cracks at driveway >



< Fig. 4 – Partial plan at basement pool room >



< Fig. 5 – Cracks on basement slab-on-ground >



< Fig. 6 – Crack measure and slab settlement check >



< Fig. 7 – Overall view of pool room >



< Fig. 8 – Outside brick veneer at basement above >

<End of report>