

**Michael Haapaniemi**  
**100 Detering Street 4147**  
**Houston, TX 77007**

**RE: Structural Evaluation - 10252 Rockcrest Road, Houston, TX 77041**

## **BACKGROUND**

On Friday, April 17th 2020, Coastal Engineering Solutions, Inc. (CES) was requested to do a structural evaluation on the subject property. On aforementioned date, CES arrived on site and performed a visual only inspection on the exposed framing. Partial areas of the structure were still enclosed with drywall. No invasive evaluation nor destructive testing was requested nor conducted at the site. The response by the client for the structural evaluation was due to a recent blast effect from a nearby industrial explosion.

The subject property is a timber frame two story residential structure built in the year 1979. Exterior veneer of the subject property is comprised of stucco on the lower floor and lap siding on the upper floor. The roofing on the subject property is wholly comprised of asphalt shingles. This home is not located within a Designated Catastrophe Area.

CES met onsite with the client and job foreman. Through discussion with job foreman and client, several repairs have already been deducted prior to CES arrival on the job site. No evaluation was requested nor conducted at such time of this inspection on the foundation with regards to soil subsidence concerns. No visible damage was observed to the concrete foundation with regards to the lateral force applied to the structure. A foundation elevation survey was not conducted at the time of this inspection nor included in the scope of work.

## **DISCUSSION**

It is apparent through visual observation that the subject property sustained a lateral force due to the blast effect of the nearby occurrence to the east and north east sides of the property. In general the damage that the subject property sustained includes the following: broken window glass; exterior door damage; drywall damage throughout; exterior wall sill plate displacement; and exterior veneer damage.

Through discussion with the client and job site foreman the following items have been were already remedied prior to CES arrival to job site: broken window glass removal; damaged exterior doors removed/replaced; sill plate displacement remedied and new expansion anchors installed through sill plate into foundation; and approximately 25% of ceiling drywall and wall drywall removed.

Upon visual walk around exterior inspection, all exterior walls appear to be true and plumb as originally constructed. The structural framing of the structure did not appear to remain in a racked condition. All exposed framing appears to be in sound condition, no loose framing was observed, all framing connections appeared to be as originally constructed. The areas where drywall remains, framing should be evaluated for soundness of the members and proper framing connections. Throughout the interior of the structure most of the ceiling drywall exhibited numerous locations of damage which includes the following: nail pops; drywall cracks; and sagged panels.

## RECOMMENDED REPAIRS

- Due to the lateral forces that the subject property sustained, the integrity of all ceiling drywall is questionable, and it is recommended that all ceiling drywall be removed and replaced. Upon removal of all ceiling drywall, further evaluation of all ceiling and roof framing shall be conducted. Any framing connections found to not be as originally constructed shall be remedied. Remedy may include the following: removal and replacement of the framing member to the appropriate length necessary to have a tight connection; additional fasteners of equal or greater specification installed through the connecting members; Simpson wood connectors/hangars installed of appropriate size and specification for the designed loads.
- All wall drywall throughout the structure shall be evaluated by a drywall installer and removed/replaced and additional fasteners installed according to the findings of the evaluation. Basis of the evaluation shall include, but not be limited to: existing fastener inspection; cracked drywall and drywall that is not secured tight to wall framing. All new drywall shall be minimum half inch thickness and shall be installed with fasteners meeting the size and specification in accordance with the latest adopted IRC. All framing members that were concealed upon time of CES inspection, once exposed, shall be evaluated for structural damage which may include the following: cracks; splits; fractures; mold; rot; pest infestation. Any framing members found to be deficient with any of the aforementioned items shall be either removed/replaced or a new member of equal size and specification installed next to the deficient member, excluding pest infestation and mold. Any framing evidencing pest infestation or mold shall be removed and replaced. Exterior siding on the second floor shall be inspected and all deficiencies found remedied by removal and replacement of like-kind siding material installed per manufacturer specifications.
- All first floor stucco shall be evaluated by a stucco installer for soundness. All deficiencies found shall be remedied by removal of the stucco material, proper fastening of the wire mesh to wall framing, and new stucco applied.
- The middle post at the garage between the two garage doors shall be removed and replaced with new framing and properly anchored to the concrete foundation.
- All anchor bolts installed by client appear to be of adequate size and spacing. Additional anchors are required to be installed at four locations. These anchors shall be Simpson HTT5 hold downs with galvanized 5/8x12" all-thread drilled and epoxied a minimum of nine inches into the existing concrete foundation. The location of these hold downs shall be such that they are as close to the corner of the wall as possible and situated against the side of a wall stud and placed on top of the wall sill plate. All holes shall be filled with manufacturer approved fasteners and the hold downs shall be installed per manufacturer specifications. The four locations are as follows: southeast corner of the garage; northeast corner of the living room; southeast corner of the dining room; and northeast corner of the dining room.
- The wall in the living room on the east side was framed such that there is a wall splice across the entire wall from corner to corner located at approximately eight feet above slab. The exterior wall sheathing is comprised of approximately one-quarter inch non-structural sheathing which does not provide proper reinforcement for wall shear. 7/16" OSB sheathing shall be installed on this entire wall from floor to ceiling and corner to corner. OSB sheathing shall be installed in the following manner: panel orientation

shall be horizontal (4' Vert. x 8' Horiz.); 4x6 nailed with 10d (.131.) nails. Panel installation shall be such that one full panel overlaps the wall splice located at eight foot above slab ensuring two foot overlap of the panel on each side of the wall splice.

- Additional roof framing and roof sheathing of equal specification to existing roof framing shall be installed upon removal of existing fire place and flue pipe.
- All new windows and doors shall be installed per manufacturer specifications.
- The client did not specify any plumbing changes, therefore no concern regarding revised or notched framing was considered in this evaluation. Any discrepancies through the findings of this report through continued exposure of framing shall be brought to the attention of CES immediately.

Regards,



Kyle D. Hockersmith, P.E.  
Firm Reg. No. F-21062



**LIMITATIONS OF LIABILITY**

Opinions expressed herein are based on an evaluation of conditions observed at this time and the other information provided to this engineer. Other problems may become evident as the seasons and climatic conditions change. Coastal Engineering Solutions, Inc. (CES) is not responsible for knowledge of concealed cracks or other distress of any type in any other structural elements, such as joists, beams, or slabs. Destructive exploration for such conditions was also not included in this survey. A termite inspection was not performed. Roof or crawl space framing was not inspected unless specifically requested and then only in the area of and adjacent to the access hole and/or exposed framing. Such problems or the advent of additional information may be reason to revise the opinions expressed herein. This report supersedes any prior oral statements. Not all defects are noted herein this report. The decision whether or not to recommend any specific repair is based on the judgment of this engineer as to the relative costs and probable benefits of that repair. The repairs recommended above are not intended to return the foundation or super structure to its original condition. These general comments do not override specific statements above. CES does not perform the repair work recommended and is not affiliated with any of the manufacturers specified herein. This report stands on its own and the exact timing of the repairs, the contractor and the person paying for the repairs are not specified herein. The use of any specific repair contractor is not required by this report. In case of conflicting recommendations in this report, the more stringent recommendation will govern. CES recommends consultation with other professionals about any potential impacts of these recommendations, including realtors and appraisers. If there are concerns about these recommendations, a second engineering opinion is recommended.

**REPAIRS**

Spot-inspection of all repairs conducted encourages a higher quality of construction by the contractor and provides opportunity to make adjustments to the proposed repair plan if differing conditions are encountered. Full-time inspection is also available at additional cost. The primary responsibility for the proper execution of the work lies with the contractor. Construction

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inspections require additional engineering fees which may be discussed prior to schedule of inspection. No original structural construction documents were available for review by CES. The opinions expressed and repairs recommended are based on the assumption, except as noted, of acceptable original development and building specifications and construction practices, including proper foundation design, soil compaction, nailing and reinforcement of concrete. Examination for compliance with current Building Codes or other construction specifications was not within the scope of this survey. Any recommended repairs are remedial in nature and intended only to bring the structure up to conditions average for other structures of similar size, age, and location. The repairs are not intended to bring the structure into compliance with current building codes. Some defects will continue to exist after the repairs. This report is provided solely for your use.

**This report does not predict or warrant the future performance of the subject property or of any of the repairs or remedial steps recommended herein.**