CHAMPIONS ENGINEERING
Engineering Designs & Inspections
281.537.5522
9595 Six Pines Dr, Suite 8210
The Woodlands, Tx 77380

May 19, 2023

Wedgewood Inc / Alex Cowles
4207 Butternut Ct
Houston, Texas 77088

RE: Foundation Inspection
Job #21615

Dear Alex Cowles:

Enclosed is the report of the foundation inspection performed at 4207 Butternut Ct in Houston, Texas. This inspection was conducted for you on May 18, 2023, at the agreed-upon fee.

We appreciate the opportunity to assist you in performing the inspection on your potential purchase. If we can be of any further service, please let us know.

Respectively Submitted,

Jeff Burkman, P.E. 63505
Champions Engineering & Inspections
Registered Engineering Firm - 5832

INTRODUCTION

The purpose of this report is to document the results of a visual inspection that was conducted on the residential building described below and to document our agreement regarding the services provided to you. The information contained in this report takes precedence over any information or understandings that may have occurred during verbal communications.

This inspection was conducted for you, as our Client, to provide you with opinions regarding the performance of the primary load-bearing structural components of the foundation and to assess if these components are performing the function for which they were intended or require immediate repair. No assessments were made for driveways, patios, sidewalks, fences, gutters, insulation, carpeting, toxic materials, paint, outbuildings, cosmetic damage, etc. An investigation was not conducted to determine the existence of geological faults relative to the structure inspected.

This inspection was limited, in accordance with our agreements, to a visual examination of those portions of the structure that were accessible. Thus, hidden items such as damaged wood inside of walls, leak paths through ceilings and walls, interior slab cracks, etc., that are not amenable to visual inspection cannot be reported. Champions Engineering assumes no responsibility should such defects be discovered in the future.

Compliance with any government or industry code or standard or with any legal requirements is not within the scope of this inspection. By law, inspections to determine the presence of and the extent of the damage created by wood infesting organisms, which includes all rotted wood, can only be performed by individuals who are so licensed by the state for that purpose and will not, therefore, be considered to be part of this inspection.

In the conduct of this work, Champions Engineering has acted as an engineering consultant to provide visual observations and opinions with regard to the visible condition of the load-bearing structure of this building. Recognizing that latent defects could exist which inherently may not be detected during an inspection of this type, Champions Engineering does not represent that the observations described herein, and their analysis thereof, represent every structural condition that may exist. You, as the Client, should not conclude that all of the repairs that may be needed are described herein. Any recommendations for repair that may be contained in this report should be completed, since such repairs may result in the discovery of additional defects that may not have been discovered during the original inspection.

To protect the foundation, it is advised to maintain a consistent moisture level at all points around the perimeter of the foundation, especially during dry weather periods.

Champions Engineering does not assume responsibility whatsoever for any action that may or may not be done as the result of the information provided during this inspection. The involvement of Champions Engineering in any activities associated with this inspection will terminate at the time this report has been submitted. Finally, this report was written to satisfy the specific objectives of you, as the Client. Neither the author of this report nor Champions Engineering authorizes or assumes any responsibility whatsoever for the use of this report by any third person, except the Veterans Administration (V.A.) and/or the Federal Housing Administration (F.H.A.) and/or mortgage company.

DESCRIPTION:

The residence inspected was located at 4207 Butternut Ct in Houston, Texas.

This was a foundation inspection, based on physical observation. The following are the results obtained from the visual structural evaluation. This residence is a 1971-year built, two-story with attached garage, single-family wood frame dwelling with a brick veneer. The structure has what appears to be a rebar reinforced slab foundation.

FOUNDATION INSPECTION:

The foundation inspection includes a physical non-destructive observation of the existing foundation condition and functionality.

This report intends to inform you of the foundation's current status, i.e., whether it is performing as intended or in need of repair. The scope of this evaluation is limited to structural components that are readily observable and does not include damage in inaccessible areas, such as between walls. It also does not predict potential performance after the inspection or damage detected after inaccessible areas are uncovered.

The Greater Houston and surrounding areas, soils are active (expansive and/or compressible) type clay soils and structures with slabs on grade have experienced significant differential movement or settlement. More often than not, this movement has resulted in little if any serious structural damage. However, some unsightly sheetrock and veneer cracks do appear along with annoying sticky doors and cabinets. It should be noted that more than 70% of the houses in Houston have some differential movement including minor cracks in the slab.

All doorjambs, counters, sills, and floors were measured with a bubble level and the floor elevations were measured using an electronic manometer level measuring the surface of the floor coverings (compensating for covering as necessary). The locations of the measurements are noted on the floor plan attached.

FYI: A 1/8" grade beam crack was observed on the left side grade beam and a 3/16" grade beam crack observed at the front middle grade beam. Typically, during construction cracks in the slab floor and grade beam do occur due to the normal concrete curing process and these cracks create a very minor weakness in the slab and when foundation movement occurs the stresses target these cracked areas.

FYI: The observable roof framing rafters in the attic were construction tight at the ridge beam.

Foundation movement was observed along the front section of the house, as evidenced by floor elevations, window frame separation, uneven door clearances, doors not latching properly, sheetrock cracks, bubble levels, grade beam cracks, and brick veneer cracks. Spreadsheet calculations were performed utilizing the FPA (Foundation Performance Association's SC-13-1 Calculation Spreadsheet) resulting in a deflection ratio of L/350 which is excessive and will require foundation repair with piers. The tilt ratio 0.78% is still within the 1% allowable tolerance. This spreadsheet and report were reviewed and this engineer has taken into consideration the recommendations and guidelines of the ASCE (American Society of Civil Engineers), ACI (American Concrete Institute), and TRCC (Texas Residential Construction Commission).

RECOMMENDATION FOR PIERS:

Approximately 18 piers will need to be installed along the *Front section* of the house, as depicted on the attached diagram the reasonable placement is based on the opinions and engineering judgment of this engineer. The piers should be of either *driven piles* or a *bell bottom design* and described as follows:

- **set on approximately 5-7-foot centers – Average Lift 2.5"**
- **drilled to load-bearing soils between 16 and 22 feet**
- **shaft diameters 8 to 10 inches, using 3 #3 steel rebar tied in a triangle**
- **bell diameter 20 to 24 inches, 8" shaft diameter minimum**
- **pier top reinforced with 6 #3 rebar, minimum dimensions are 20" x 24" and 12" deep**
- **minimum 5 sx mix or at least 3000 psi compressive strength**
- **shim with 3000 psi compressive strength precast blocks and steel.**

This report is to assist our client with soliciting bids for repairs from a qualified foundation contractor. Qualified contractors' arrangement of piers may vary due to their specific experience and the fact that they provide the warranty for their work. *This house may not be able to be completely restored to original elevation, however, significant elevation differentials can be reduced and the slab stabilized.*

Note: Most of the Greater Houston and surrounding area soils are active type clay soils. To protect the integrity of the structure it is essential to maintain a consistent moisture level (not too wet or too dry in any areas) at all points around the perimeter of the foundation. Even after piers are installed maintain proper drainage and grading around the perimeter of the structure, and during dry weather periods, consistent watering of perimeter soils is essential. Foundation movement/damage can occur when soils are too wet or too dry in areas on the perimeter.

CERTIFICATION:

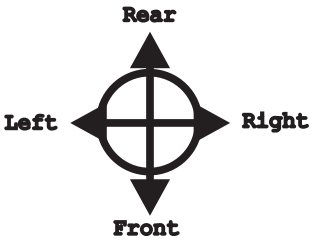
I hereby certify that I performed the inspection of the residence located at 4207 Butternut Ct in Houston, Texas and that I have reported my opinions and findings based upon my observations. I further certify that the information contained in this report is based upon visible evidence and is a level "B" engineering inspection, as per the Texas Board of Professional Engineers, and that no attempt was made to investigate those latent defects not readily detectable from visual observations. No responsibility is assumed for events that occur subsequent to this inspection and no warranty, either expressed or implied, is hereby made. The inspector and inspection company's liability is limited. A second opinion is always a prudent and a recommended course of action. May 18, 2023.

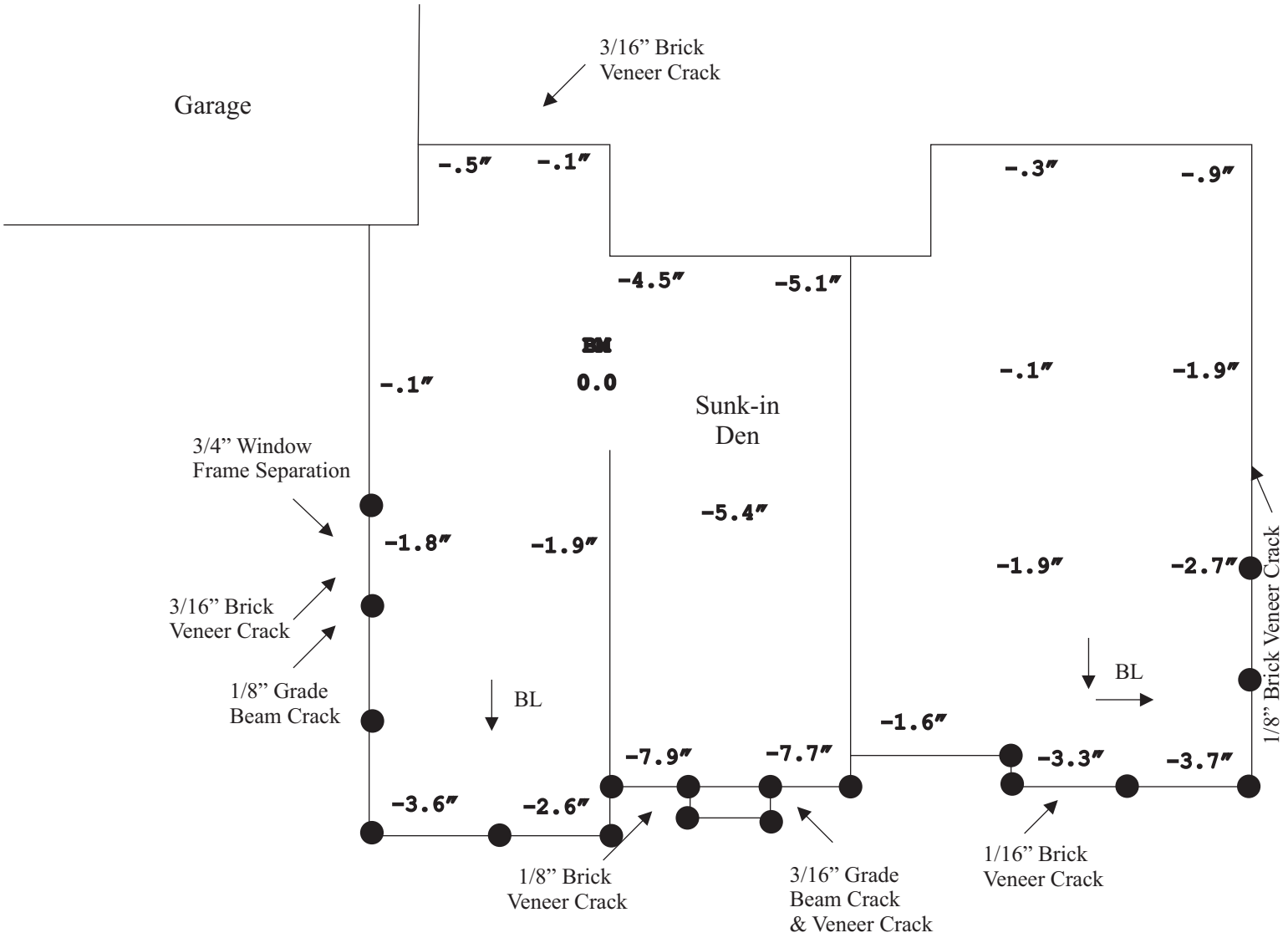
Jeffrey C. Burkman P.E. - Registered Professional Engineer – 63505
Champions Engineering & Inspections - Registered Engineering Firm – F-5832

4207 Butternut Ct

Champions Engineering
Engineering Designs & Inspections
281.537.5522
9595 Six Pines Dr, Suite 8210
The Woodlands, Tx 77380

Elevation Differential 3.7”
Instrument Repeatability Error 0.2”





● Pier

Average Lift = Approximately 2.5”

BL-Bubble Levels

BM-Benchmark

THIS SKETCH IS TO BE USED ONLY AS A REFERENCE OF THE FLOOR PLAN REPRESENTING AREAS THAT WERE MEASURED. APPROXIMATE SCALE 1” = 10’

Champions Engineering
Firm #5832