



GILES FLYTHE
ENGINEERS

Raleigh Office:
7534 Chapel Hill Road
Suite 200
Raleigh, NC 27607
919.465.3801

Charlotte Office:
8819 University East Drive
Suite 200
Charlotte, NC 28213
704.810.1808

August 17, 2022

Erin Dickens

Re: Limited Structural Inspection
2411 Fordcrest Drive
Apex, NC

Dear Ms. Dickens:

At your request, a limited structural inspection of the above property was performed on August 15, 2022. A previous engineering inspection was conducted by Giles Flythe Engineers on June 1, 2021 with an associated report being issued dated June 2, 2021. The report that follows has been prepared based on our August 15, 2022 inspection. The inspection was performed by Sean M. McDonald, PE of Giles Flythe Engineers.

The scope of this project was limited to inspection and evaluation of brick veneer and perimeter foundation cracks; some of which had been previously inspected during our June 1, 2021 inspection. The report is intended to cover only those premises that may be examined visually without excavation, removing surface materials, and disassembling components.

No tests, measurements, or calculations have been made except as described in this report. We have not investigated for toxic materials or wastes, or examined public records regarding this property. The scope of the inspection does not assure that the property conforms to any regulations, restrictions, or building codes that may be in effect at its location.

DESCRIPTION

The two-story, wood-framed home (with a crawlspace) is constructed on concrete masonry unit (CMU) perimeter foundation walls with CMU block piers supporting the floor girders. The house was built in 1996 according to Wake County Real Estate Tax Records. For purposes of this report, all directions (left, right, rear, etc.) are taken from the viewpoint of an observer standing outside and facing the front door of the home.

Upon our arrival, access to the interior of the garage was provided by the homeowner. The items detailed above in the scope were subsequently inspected.

Note that the original builder was not interviewed and no plans for the construction of this home were provided. The information presented in this report is gathered from the conditions visible at the site, as they existed at the time of the inspection. A limited photo log is included with this report.

OBSERVATIONS

Garage:

1. A vertical crack (up to 1/8" wide) was noted in the rear perimeter foundation wall approximately 7'-0" from the right corner. This crack appears to have widened an additional 1/8" since our June 1, 2021 inspection.

Exterior:

2. Cracks in the brick veneer were noted in the following locations:
 - a. A stair-step crack (up to 1/8" wide) was observed in the rear perimeter wall of the garage approximately 13'-0" from the left corner and 7'-0" from the right corner of the garage.
 - b. Vertical cracks (less than 1/16" wide) were noted at the rear-left and rear-right corners of the front porch.
3. Gutters and downspouts (with and without leaders) were noted installed on the home. Grade was noted with relatively neutral slope along the perimeter wall(s) of the home. We understand that drainage repairs had been recently completed on the rear of the home/property following an improperly functioning gutter along the rear perimeter of the garage.

Crawlspace:

4. Cracks were noted in the foundation wall in the following locations:
 - a. A vertical crack (less than 1/16" wide) was observed in the right foundation wall approximately 11'-6" from the front corner. This crack does not appear to have markedly widened since our June 1, 2021 inspection.
 - b. A vertical crack (less than 1/16" wide) was observed in the front foundation wall approximately 8'-0" from the right corner. This crack does not appear to have markedly widened since our June 1, 2021 inspection.
 - c. A stair-step crack (up to 1/8" wide) was observed in the left foundation wall approximately 6'-0" from the rear corner. This crack appears to have widened approximately 1/16" since our June 1, 2021 inspection.
 - d. A vertical crack (less than 1/16" wide) was observed at the rear-left corner of the crawlspace.

DISCUSSION

The cracks in the brick veneer and foundation walls noted above are likely due to differential foundation settlement. The clay soils in this area are considered "expansive" type soils and will typically expand and contract with fluctuations in the moisture content. This expansion and contraction of load-bearing soil materials can lead to soil consolidation and foundation cracking/movement. If conditions around the foundation remain relatively dry, the likelihood of future significant settlement will be reduced, but we cannot predict the extent of future settlement. The additional propagation at the crack locations noted above (Observations #2a, #4c) indicate further foundation settlement since our previous June 1, 2021 inspection. We believe stabilization of the foundation at the rear-right corner of the garage is necessary given the extent of settlement that has occurred since our previous inspection. We have provided recommendations for stabilization of this area of the foundation below.



Positive grade away from the foundation should be maintained/created to help reduce moisture infiltration under the foundation. Additional soil consolidation and settlement can occur due to water infiltration into soils and subsequent drought conditions which dry out the soils below foundations. Maintaining/creating positive drainage away from the perimeter foundation wall(s) is vital to the long-term structural integrity of the foundation.

The recommendations presented in this report are based on our experience and understanding of the concerns to provide a reasonable solution based on the conditions that were visible and/or known to us on the date of inspection. As this report is based on the circumstances at one point in time, conditions may change which may result in additional repair recommendations. Further, the recommendations are the opinion of the Engineer to address significant structural-related concerns and may not rectify cosmetic issues.

RECOMMENDATIONS

If there are any questions or concerns regarding location or method of repair contact the engineer prior to construction.

1. We recommend hiring an experienced foundation contractor to install (3) new helical steel piers under the rear-right corner of the garage foundation (see attached sketch). Helical piers are to be installed up to 6'-0" O.C. and not be installed directly below doors and windows. Provide minimum of 15 kips allowable bearing capacity per helical pier. Installation of bridging (L6x6x3/8 steel angle or equivalent) between piers may be required depending on footing size. The contractor should also provide a lifetime transferable warranty on the stabilized portion of the foundation. Helical piers shall be installed concentrically below the subject bearing walls. This may require chipping/removal of section(s) of the concrete footing as needed such that the bearing bracket for each helical pier is not offset from the foundation wall. All steel angle bridging should be installed tight to the underside of the in-place concrete foundation and properly supported by the helical piers on each side.
2. Monitor the cracks in the brick veneer and foundation walls. If the cracks widen significantly (expand by an additional 1/8") or additional significant cracks (greater than 1/4" wide) propagate, then further evaluation by a structural engineer may be needed at that time.
3. We also recommend ensuring that stormwater drains positively away from the home to minimize the risk of future water infiltration. This can be accomplished by installing leaders on downspouts that do not have them and ensuring gutters, downspouts, and leaders remain clear of debris and properly functioning to direct the drainage away from the home. Also, maintaining/creating a positive grade around the perimeter of the home will aid in stormwater evacuation. Water infiltration can cause further undermining of the soil and foundation settlement.

General Notes:

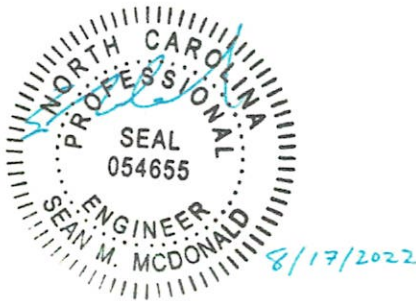
- With any structural changes, finish material cracks and minor movements are typical and expected. These are associated with settlement and allowable deflection generally observed after construction of an addition, significant remodel, or repair.



CONCLUSION

We trust that this report provides the information you require. Please contact us at 919-465-3801 if you have any questions. Thank you for the opportunity to be of assistance to you.

Sincerely,



Sean M. McDonald, PE
Project Manager
Giles Flythe Engineers Inc.
NC Lic. No. C-2871

Enclosed: Foundation Stabilization Sketch
 Limited Photo Log





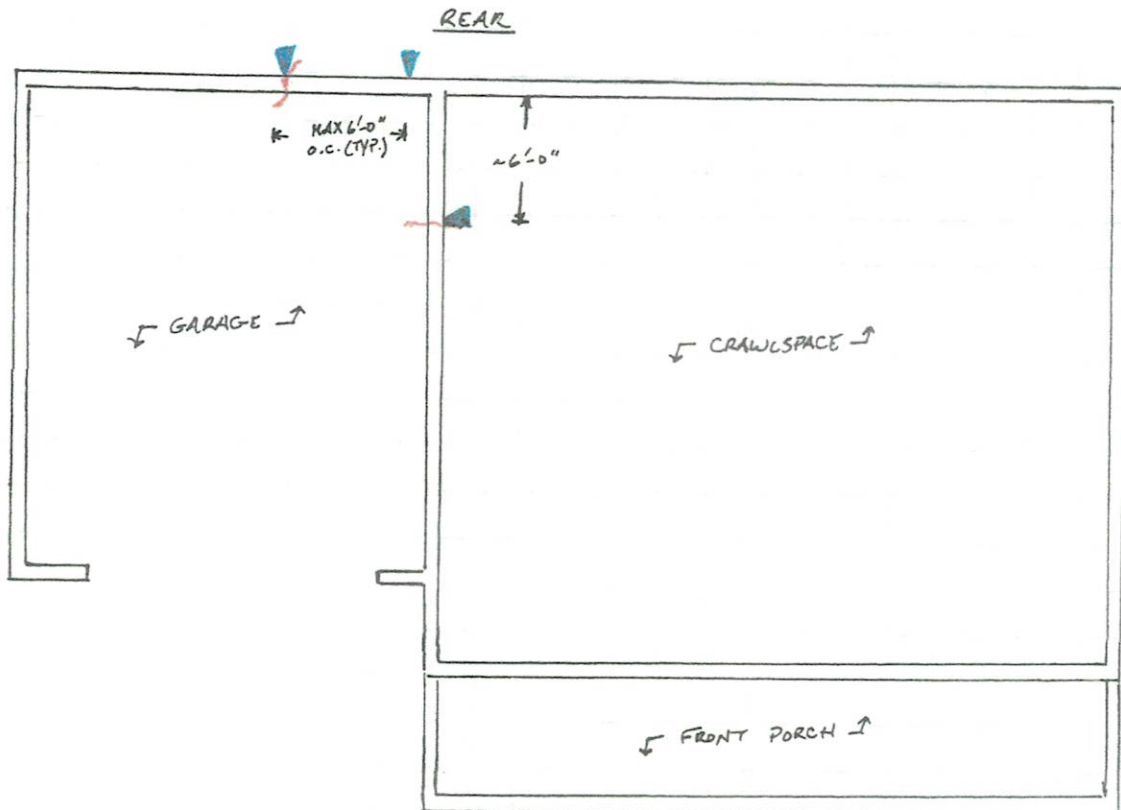
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(704) 581-1875

Mobile Office:
www.giles-flythe.com

- ▼ = NEW HELICAL STEEL PIER
~ = FOUNDATION CRACK (TYP.)



NOTE: SKETCH TO SUPPLEMENT
FULL INSPECTION REPORT



8/17/2022

2411 FORDCREST DRIVE, APEX, NC (FOUNDATION STABILIZATION SKETCH)
SCALE: NTS

Description

A general view of the front of the home (for reference).

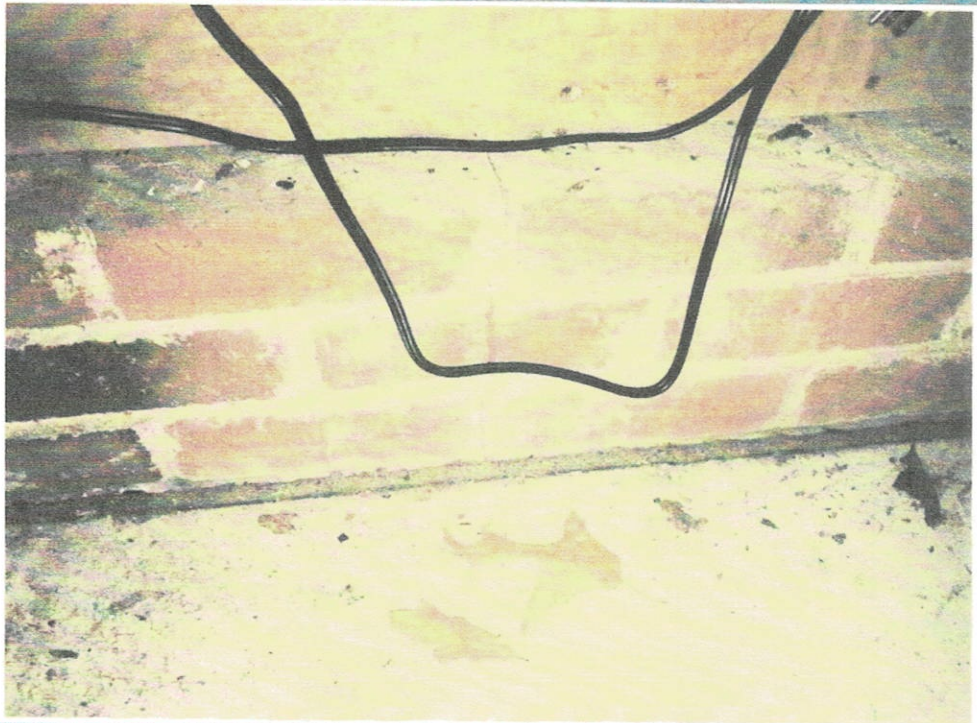
Photo No.
1



Description

Crack observed in the rear foundation wall of the garage.

Photo No.
2



Description

Crack observed in the rear perimeter wall of the garage.

Photo No.
3



Description

Crack observed in the rear perimeter wall of the garage.

Photo No.
4



Description

Crack observed in the
left foundation wall
(adjoining garage).

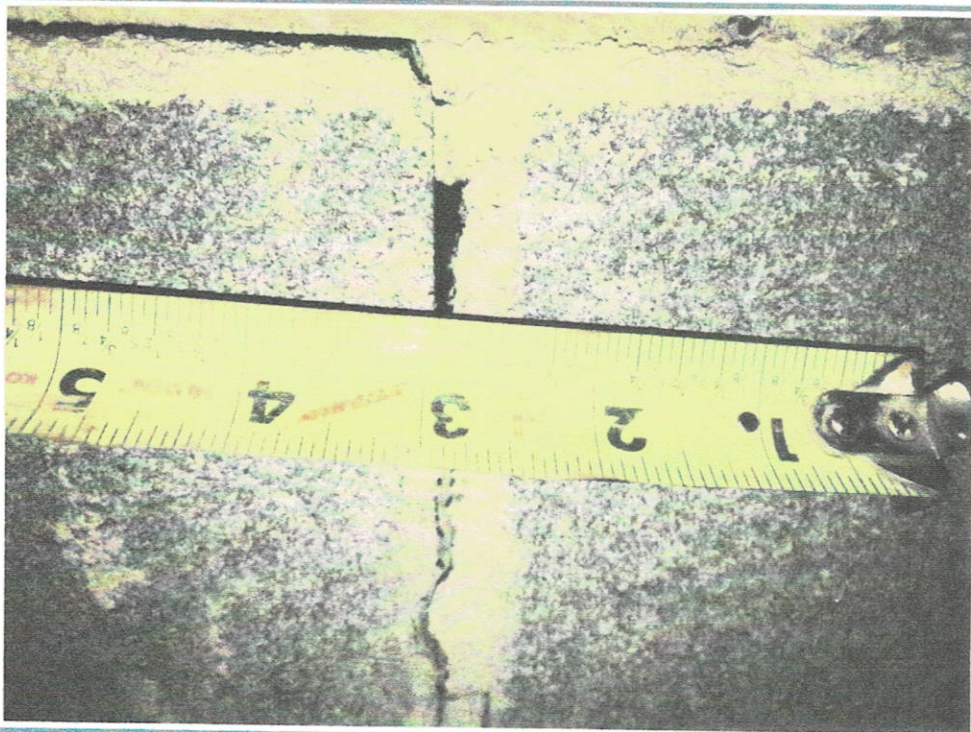
Photo No.
5



Description

Crack observed in the
left foundation wall
(adjoining garage).

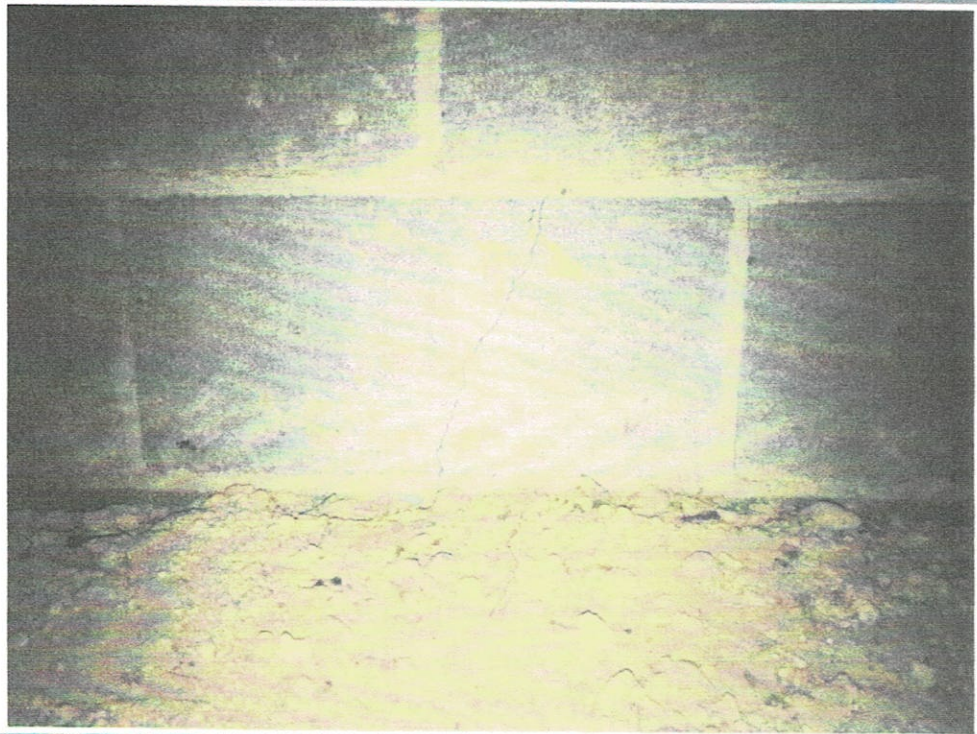
Photo No.
6



Description

Crack observed in the
front foundation wall.

Photo No.
7



Description

Crack observed in the
right foundation wall.

Photo No.
8





Carolina Foundation Solutions, LLC

PO Box 2228
Burlington, NC 27216

NC General Contractor License #54441
SC General Contractor License #G116311

Invoice

Date	Invoice #
4/30/2023	11634

Bill To
Burke & Erin Dickens 2411 Fordcrest Dr Apex, NC 27502

Project Address
2411 Fordcrest Dr Apex, NC 27502

Terms	Rep	Crew	BID#
Due upon Compl...	BPM	LaFever	7048

Service Date	Quantity	Description	U/M	Amount
4/24/2023	3	Furnish all labor, equipment, tools, insurance, services, and supervision necessary to install Helical Pile(s) into load bearing soil to stabilize the foundation as defined in the signed proposal		5,728.76
	2	Additional hour(s) of excavation time		350.00
	3	Lead - RS2875.203 - 7' - 12" Helix	ea	
	1	Extension - RS2875.203 - 7'	ea	
	3	T-Pipe - RS2875.203 - 40 kip	ea	
	3	Bracket - Standard - SS5/SS150/RS2875 - 30kip	ea	

Phone #	Fax #	E-mail
336-395-7050	336-395-7051	ar@carolinafoundation.com
Web Site		www.carolinafoundation.com

Total	\$6,078.76
Payments/Credits	-\$2,864.38
Balance Due	\$3,214.38
A+ Rating with the Better Business Bureau!	



May 15, 2023

Burke and Erin Dickens
2411 Fordcrest Dr
Apex, NC 27502

THANK YOU!

WOULD YOU BE KIND ENOUGH TO LEAVE US A REVIEW?

**WE VALUE YOUR OPINION AND ALWAYS TRY TO BRING OUR CUSTOMERS
THE BEST EXPERIENCE POSSIBLE.**

[CLICK HERE TO LEAVE A REVIEW](#)

LIFE OF STRUCTURE WARRANTY – HELICAL PIERS

CAROLINA FOUNDATION SOLUTIONS, LLC

Upon total payment for services rendered, Carolina Foundation Solutions, LLC warrants all material and workmanship used in its helical pier stabilization process for the life of the structure from the date of completion of the helical pier stabilization work as listed on the invoice provided. The warranty is valid ONLY when payment for services is made within terms of the original proposal. If payment is not received in full or if payment is not received and made within the specified payment terms, then the warranty is null and void. This Life of Structure Warranty is transferable and assignable throughout its term among owners of the real property upon which the repaired structure is located. The person or persons listed as "Owner's Name" will henceforth be referred to as "the Property Owner". The area in which the pier stabilization repair work was completed starts from the first pier installed and extends to the last pier installed in a given group of piers. This area will henceforth be referred to as "the Repair Area" throughout this document. The scope of this warranty shall be limited in accordance with the terms and conditions set forth below.

Carolina Foundation Solutions, LLC represents and warrants that if at any time during the Life of Structure Warranty the helical piers fail to perform as intended, Carolina Foundation Solutions, LLC will then provide free adjustments and/or repairs or replacement of the helical piers. Failure to perform as intended occurs when the foundation within the Repair Area experiences vertical settlement after the completion of the work provided that the settlement was caused by events other than those excluded below. This obligation to repair shall be limited to the cost of materials and workmanship. Only the Repair Area is covered by the Life of Structure Warranty. The areas spanning between the groups of piers and all other areas outside the Repair Area are excluded from this warranty. Carolina Foundation Solutions, LLC may, at its own discretion, place crack monitoring devices, equipment, and/or benchmarks on any questioned area to determine the direction or area of movement before adjusting or repairing.

This Life of Structure Warranty does not cover and Carolina Foundation Solutions, LLC will not take liability for:

1. Changes, movement, or settlement of the interior floor system, the wood framing system, the concrete slab, or any portions of the foundation beyond the Repair Area.
2. Damages to any unmarked underground utilities or other unmarked items located below the surface.
3. Damages or issues caused by acts of God (flood, fire, storm, earthquake, or any other unusual occurrences).
4. Damages or issues related to lateral movement, particularly events caused by forces of hillside creep, land sliding, slumping of fill soils, or shifting of embankments.
5. Damages or issues related to upward movement, particularly events caused by heaving, swelling, or expansion of the soils by tree roots, etc.
6. Damages or issues caused by an attempted lifting procedure.
7. Damages or issues related to drainage, moisture, condensation, humidity, or water intrusion.
8. The development, creation, and/or growth of mold, mildew, and/or bacteria.
9. Any repairs, adjustments, corrections, or improvements that may be deemed necessary following the completion of the original work or following any warranty checks to wall covering materials, floor covering materials, doors, windows, brick, brick mortar joints, concrete, stone veneer, furnishings, or personal property. The Property Owner is responsible for handling any cosmetic repairs and properly sealing, repointing, and/or filling all cracks, joints, and gaps following the completion of the proposed scope of work.
10. Damages or issues caused by the Property Owner's failure to maintain proper slope within the grade surrounding the structure and/or failure to address any drainage issues. The Property Owner is responsible for maintaining proper slope of the grade and managing the drainage around the structure particularly surrounding the areas in which the repairs are completed. This includes making all necessary repairs or improvements required to waterproofing systems, foundation drains, gutters, gutter downspouts, etc. Carolina Foundation Solutions, LLC will backfill and compact soils to the best of our ability following the completion of the helical pier installation, however, it may be determined that additional grading work is required, or at a minimum, that topsoil is required if the soils within the excavated areas settle at a later date. The Property Owner is responsible for adding any topsoil if and as deemed necessary. The Property Owner is also responsible for any landscaping, reseeded, and/or resodding that may be deemed necessary after Carolina Foundation Solutions, LLC has completed the work.
11. Damages or issues caused by negligence, vandalism, misuse, abuse, or alteration.
12. Damages or loss due to the Property Owner not taking timely action to minimize.
13. Costs associated with any repairs or replacements to any items or materials other than the helical pier materials originally installed by Carolina Foundation Solutions, LLC caused by ongoing movement.
14. Costs associated with removal and replacement of any items or materials which prevent ability to check and adjust helical piers as part of our warranty coverage.

THE WRITTEN TERMS OF THIS LIFE OF STRUCTURE WARRANTY AS EXPRESSED ABOVE REPRESENT THE ENTIRE WARRANTY OBLIGATION OF CAROLINA FOUNDATION SOLUTIONS, LLC. NO OTHER AGREEMENTS, UNDERSTANDINGS, REPRESENTATIONS, OR WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE HAVE BEEN MADE OR ARE MADE BY CAROLINA FOUNDATION SOLUTIONS, LLC. THE WARRANTY STATED ABOVE IS TENDERED IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED OF EVERY NATURE WHATSOEVER.

Warranty Claim – Warranty Claims may be submitted by sending a copy of the fully executed Life of Structure Warranty along with an explanation of the reason for the warranty claim. These documents can be mailed to PO Box 2228, Burlington, NC 27216 or emailed to info@carolinafoundation.com. Once the claim has been received by the main office, a time will be scheduled for a company representative to visit the property to evaluate the failure in question and determine the eligibility and appropriate warranty repairs.

Transferable Warranty – This warranty may be transferred from the Property Owner to a new individual or individuals (henceforth referred to as "the Transferee") by submitting the transfer request to Carolina Foundation Solutions, LLC within 30 days of the property's transfer date. The transfer request must include the Property Owner's name and contact information, the original warranty, the original invoice, the Transferee's name and contact information, and a \$100 transfer fee. The transfer fee can be made by mailing a check or by a credit card. All submissions must be mailed to our main office at PO Box 2228, Burlington, NC 27216. All records will then be updated, and the Transferee will receive an updated warranty and receipt of transfer.

Burke and Erin Dickens

2411 Fordcrest Dr, Apex, NC 27502

Property Address

May 15, 2023

Date Warranty Issued

Carolina Foundation Solutions, LLC

P.O. Box 2228, Burlington, NC 27216

Chris Miller

Authorized Signature

Invoice#11634

Bid Reference

11/20/2019 11:18 AM

CEILING STRUCTURE CONCEALED BY FINISHES

The ceiling structure was not able to be determined due to the installation of finishes.

Deficiencies

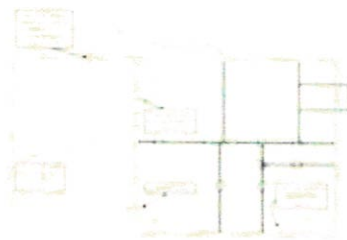
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FOUNDATION CRACKS - MINOR

Minor cracking was observed at the foundation. This is a common occurrence and may result from the natural expansion and contraction of bearing soils, cementitious materials, or a combination of both. Recommend monitoring the cracks over time. If further movement or widening occurs, consult a structural engineer to assess the foundation's integrity and determine appropriate corrective measures.

11/20/2019 11:18 AM

Contact a qualified professional



Paid 6/4/26 Jun