HC-2201, Kaitlyn Dale, 617 Crabtree Rd., Belhaven, NC

SITE NOTES:

- 1. This 1,638-sf home is a combination of a single-wide steel framed mobile unit surrounded by conventional stick-built framing on the front of the single-wide unit and a narrow 12'x30' later-date bedroom addition on the north side of the main dwelling. The roof is a gable roof with shingles. The house has a full "sealed" crawl space below the heated area.
- The house has a screened front porch, a rear deck at the west inset corner and a pressure treated timber deck on the east end of the main dwelling. Area of Porches/Decks = 223.6 sf (Front Porch) + 257.4 sf (East Deck) + 143 sf (rear deck) = 624 sf
- . The lot is primarily grass lawn with few to no ornamental shrubs around house. Contractor to remove any existing small shrubs found as needed to permit elevation. Do not replace.
- There are no gutters on the house.
- 5. A stone drive serves as access to the house. The drive extends up to the deck located on the east end of the main dwelling and includes a turnaround behind the north rear wing that extends west off the primary driveway. If damaged or rutted due to the elevation construction process, add ABC and grade smooth to a condition equal to or better than the existing. If lawn is rutted, add topsoil, regrade, and place seed and mulching.
- . To avoid/minimize the potential of false claims of damage, the Contractor shall video/photograph the site and other hardscape site features (i.e., walkways, driveways, etc.) prior to moving equipment onto site (and in order to establish a benchmark of the pre-existing conditions).
- . Dependent Structures: a. There is a 600-sf detached shop located to the north of the main residence
- b. There is a timber-framed storage building with covered porch and a sink. The storage building is located SW of the SW corner of the house. According to owner, there is an electrical service extending from the northwest corner of the main residence (at the meter base) that extends both north to the shop and southwest to the shed located on the southwest corner of the main house. Power extends down to a pier located at the front of the house and serves a light, a boat lift, and a jet ski lift).
- c. Neither structure should interfere with elevation of the house.
- 8. With the exception of the soft area/septic tank system located west of the rear later-date addition, there appears to be ample space around structure to permit elevation with the possible of exception of the west side which has a steeper grade that drops to the water's edge. The septic system failing; breaching the surficial soils and creating a very soggy and smelly yard. See comments under Sewer, item 33, below.

GENERAL ASSESSMENT/COMMENTS

- 9. Some apparent interior distress (i.e., ceiling and wall drywall cracks, unevenness in floor) is apparent on the interior likely indicating a foundation subsidence issue exists. Fireplace mantel cracking, uneven floors, ceiling cracks, etc. are present and are typically indicative of foundation differential settlement.
- 10. Excessive infiltration and high humidity causing warpage, paint peeling, and fungal growth between vertical butt joints of thin-wall paneling.
- a. We suspect some of these issues are caused by the marriage of two different types of structures/construction which is allowing unconditioned warm humid air to move up vertically within the marriage wall cavity (and thus into the house). Infiltration/moisture migration could also likely be coming from other sources (e.g., fenestrations, attic, etc.).
- b. Moisture is likely being trapped behind the wall panels and/or low perm paint. Blistering paint is usually indicative of the use of a low perm paint (e.g., oil-based paint).
- c. Comments/Recommendations to homeowner: i. Elevation of the home will not correct the humidity issues and associated problems. The moisture must be stopped from migrating through the walls and into the building envelope; such work is not within the scope of work proposed here.
- ii. Any paint used within this house should be breathable paint such as latex; never an oilbased paint especially on exterior walls and ceiling.
- Owner should consider placement of an air barrier (preferably polyethylene) across marriage wall joint or, if possible, across the entire crawl space floor system.
- iv. Dehumidification of the interior will help as well as would a vapor/drainage barrier (in Hot Humid Climates [such as this coastal area]) on the exterior walls behind the exterior siding. With this type of construction and problem, a vapor transmission analysis would help identify the envelope problems and assist mitigation of the vapor transmission issue.
- v. Although the home currently has a very beneficial "sealed crawl space," flooding can cause problems; and even destroy the system. Furthermore, elevation of the home will not correct the humidity issues and associated problems. Stopping moisture from migrating into the house at the floor level will both protect the floor framing and eliminate the need for a sealed crawl space system; such work not within the scope of work
- proposed here. 11. See also the applicable items/statements 12 through 26, below.

SUPERSTRUCTURE/FLOOR FRAMING

- 12. The house floor framing is a combination conventional stick-built timber framing abutting an older commercial mobile office with steel frame/carriage.
- a. The front two bays are stick built framing (a 6'-6" and 7'-1" wide bay) with a 11-1" wide rear mobile unit.
- b. On the rear of the house, constructed perpendicular to the main structure, there is a 29'-11" long later-date stick-built timber framed addition 12'-1 1/2" wide. The rear wing is not square with the original structure. See Foundation Plan.
- 13. The crawl space has been sealed; consisting of black polyethylene overlaying a bare earth crawl space. A closed cell polyurethane spray insulation has been applied to the perimeter walls and around the bottom of piers. The framing, for the most part, of the newer timber framing in particular, appears to be in excellent to very good condition although at the time, the dehumidifying unit was not working.
- a. After elevation and completion of the new foundation, construct a vented foundation system with a 10-mil vapor barrier, placed over the crawl space grade and stitched to the subgrade. A sealed crawl space system, though preferred, is not practical unless the foundation is "floodproofed" (i.e., no flood waters can enter the crawl space). Flood-proofing a foundation is
- outside the scope of what the program would cover. 14.The 8" deep Chassis I-beam has a 2 1/4" wide bottom/top flange. The steel framing of the mobile unit exhibited significant pitted surface corrosion with some of the thinner component's showing very significant corrosion; all apparently from periodic inundation and exposure. See photos at end of this report.
- a. The integrity of the steel frames and the bar joists outriggers (due both to corrosion and broken elements of the bar joists), is questionable. The plans call for sistering a new 2x8 joist beside each outrigger (spaced at 48" o/c). See details 100 and 101.
- b. Some testing and/or strengthening of the light-gauge steel chassis/webbed cross members may be necessary to both prevent isolated member crushing and to ensure sufficient steel/integrity exists for connection of new pier clamps to the existing steel chassis. Inspector to make call as to need once house is elevated and chassis frame is accessible for closer
- 15.The piers supporting this structure, which is all of them, are substandard dry-stacked piers. Many of the masonry piers supporting the newer double 2x8 drop girder have center to center spacing of around 4 feet. At both ends of the double 2x8 drop girder, the beam is cantilevered. Construction
- a. Most of the piers (both mortared and dry-stacked) are shimmed but a number were observed to have no contact between the framing and the pier.
- b. All the piers will be replaced with a conventional 16"x16" CMU pier. See the foundation plan
- for location and details at mating line. c. Similarly, all existing drop girders are proposed to be replaced.

- 16. Rear Wing: The rear wing addition is not square with the original main dwelling (see foundation plan). As such, the elevation contractor will need to ensure that the new foundation aligns with the rear wing; not constructed conventionally square with the main house. Drop a plumb bob from 4 corners to grade to ensure the footings and foundation will align with the sills/walls of the house. 17. Chimney Removal/Enclosure of Wall Opening:
- General Scope of work: Due most likley to excessive moisture intrusion, owner would like to eliminate the chimney and replace. Contractor to perform the following:
- a. Have owner to temporarily flatscreen TV and "sit-arounds." b. Prior to performing any interior work, cover both a work area and a travel route to protect the
- existing flooring. Tape down and maintain during construction. Contractor should consider enclosing work area with polyethylene and adding a zip door for access to try to contain dust. c. Remove interior mantel and panel covering fire box.
- d. Enclose the wall opening (studs, wall sheathing, drywall, and provide prime coat on drywall,
- e. Add sufficient roof and ceiling framing (inclusive if soffit/frieze board, and matching trim [matching existing]), sheathing, drywall, etc. to enclose the roof/ceiling opening. Match shingles and vinyl siding as close as reasonably possible.
- f. Add base board and shoe molding to match existing.
- g. The chimney's east side abuts the front screened porch. After removal of the chimney, add a 4x4 post at the NW corner of the screened porch as instructed on the foundation plans and enclose opening with minor framing and mesh screen, matching as close as reasonably
- possible the existing screening mesh/material. Items Excluded from Scope of Work:
- a. Electrical and TV wiring unless damaged due to removal.
- c. Finished interior paint on ceiling and south wall in vicinity of chimney...base coat only.
- d. Minor floor repair/replacement/trim requred due to mantel removal.
- e. No foundation/elevation of the chimney is proposed. 18. The newer timber framing, located to the south of the steel-framed mobile office unit, is in fair to
- good condition. 19. At the eastern end of the crawl space, south of the single-wide MH framing, the floor joists are 2x6's at 16" o/c with what appears to be standard 2x6 PT decking above. West of this area, the joists are 2x8 16" o/c. Construction quality is very poor. A lot of the existing floor joists are butted and toe-nailed into either perimeter sills or in-line girders. Where the existing floor joists will not
- be supported by the new multi-ply drop girders, add HDG joist hangers. 20. There is a 4x4 retrofit drop-girder system placed at midspan of the front 6'-6" wide bay. The drop girder is located 20' west of the drop birder. The drop girder is 7 ft long. This substandard drop girder is to be eliminated
- 21. Since the existing drop girders, for various reasons (poor quality control for one), do not come in contact with the floor framing, the floor is very apt to be unlevel. When sitting the house back down on the level foundation, considerable shimming and/or shaving may be necessary.
- 22. New Floor Insulation: After house has been elevated, remove all remaining insulation so that a thorough inspection of the framing can be made. Replace insulation with R-19 fiberglass batts after all floor framing/plumbing/mechanical/electrical is complete.
- 23. Some depressions adjacent to the east perimeter curtain wall were observed to be wet with some
- 24. The contractor is to plan to place fill in the crawl space sufficient to place the interior grade at a minimum of 6 to 8 inches above the lowest adjacent grade. Grade the crawl space in accordance with Section R408 of the NC Residential Building Code. Contractor to fill along the perimeter of the house to affect a minimum 5% negative grade away from the house for the 1st 10 feet
- 25. Front Porch and East Deck Floor Framing: The floor framing is very poor. The simplest way to address, short of total replacement is to construct a timber-framed carriage system as details on the plans, tying the original floor to the new carriage framing. See Details 105 and 106.
- 26. The rear deck; similarly, is poorly framed. However, the plan shows that this deck is to be elevated with the house and the existing 4x4 PT posts (below the deck) replaced with new 6x6 PT posts in accordance with Detail S-22/D. Coordinate with the Project Inspector.
- 27. Footing Subgrade: The contractor will need to call for an inspection and/or evaluation of the footing subgrade after the footing subgrade has been reached (and before steel has been placed). Coordinate footing inspection with the project inspector. If required, the Engineer will recommend improvements for subgrade improvement.
- 28. Provide conventionally framed pressure treated timber decks or porches (if applicable), stairs, handrails, and pickets per the NC Residential Building Code, HMGP requirements at each of the following locations. Coordinate location, orientation, and configuration with inspector and owner. a. Setbacks:
- i. Before placing/constructing ensure that no access encroaches into the side yard setbacks. Coordinate location of all access with project inspector and owner.
- b. Front Screened Porch Entrance: i. Front screened porch has a lean-to roof spanning from the front of the porch to the ridge of the main dwelling. The porch is framed with buried pressure treated buried posts. The porch will need to be elevated with the house.
- ii. After elevation of the house, construct a new timber-framed carriage system as shown on details 105 & 106 as applicable and as shown on the foundation plan.
- iii. Construct new 16x16 CMU piers and attach porch framing to piers. See foundation plan. iv. With the removal of the chimney, where the east wall of the chimney formed part of the west wall of the Screened Porch, set a new PT 4x4 posts at this corner as noted on the foundation plan. Finish enclosing the opening with minor framing, screen (matching mesh and material), and trim.
- v. Construct a set of new pressure treated stairs (matching the existing stair width) with posts, handrails, and pickets (and with intermediate support and cross bracing as required/shown on plan sheets P-1 and P-2 if applicable). Stairs to extend straight to south. Coordinate stair orientation with owner and Project Inspector.
- vi. At the end of the stairs, provide a 3' long concrete landing the same width as the stairs. vii. Do not add horizontal screening below porch (as currently exists). Owner to add if

viii. See plan sheets P-1 through P-3 for other the applicable details.

- c. East Deck Access: i. There is an existing timber framed deck located at the east end of the house/front porch; connecting to the screened porch. The deck is to be elevated with the house. However, the floor framing is insufficient and poorly framed. As such, in similar fashion to that of the screened porch, construct a new timber-framed carriage system as shown on details 105 & 106 as applicable and as shown on the foundation plan.
- ii. Remove the existing timber steps, handrails and pickets.
- iii. After the house has been elevated, construct a new pressure treated set of stairs at the north end of the deck (to match the original location) with posts, handrails, and pickets (and with intermediate support and cross bracing as required/shown on plan sheets P-1 and P-2 if applicable).
- iv. At the end of each stair, provide a 3' long concrete landing the same width as the stairs.
- v. Minimum post bury to be 5 feet. See foundation plans.
- vi. See plan sheets P-1 through P-3 for other the applicable details. d. Rear Inset Deck Access
- i. There is an existing timber framed deck located at the west inset between the main dwelling and later-date rear addition). Though poorly framed as well, the deck is to be elevated with the house.
- Remove existing steps and stairs. iii. Replace the existing 4x4 PT posts below the deck with new 6x6 PT posts; connecting to
- the existing 4x4 posts per Detail S-22/D. iv. Add 2x6 PT cross bracing at locations noted on the deck and in accordance with Detail

- Construct a set of new pressure treated stairs (matching the original stair location and width) with posts, handrails, and pickets (and with intermediate support and cross bracing as required/shown on plan sheets P-1 and P-2 if applicable). Stairs to extend straight to north as originally oriented. Coordinate stair placement with owner. Contractor's HVAC contractor, and the Project Inspector as the mini-split condensing unit, at its present location, will interfere with stairs. Alternatively, the stairs can be relocated from its original
- vi. At the end of the stairs, provide a 3' long concrete landing the same width as the stairs. vii. See plan sheets P-1 through P-3 for other the applicable details.
- e. All new access construction is to meet the applicable provisions of chapter 46 "Coastal and Flood Plain Construction Standards" and Appendix M "Wood Decks."
- 29. Termite Inspection: a. No termite inspection was performed by a third party as of this writing. At the time of the inspection, no apparent evidence of termite activity was observed; however, significant decay and distress has occurred to the floor framing due both to water and fungal decay. Joists and floor sheathing exhibit dark fungal stains.
- b. After house has been elevated, remove all remaining insulations so that a thorough inspection of the framing can be made. Make improvements noted by either the Engineer or Project
- c. Advise Inspector/Engineer if any termite damaged timber is found after house has been
- d. Contractor to ensure that the soil is treated during foundation construction. 30. Asbestos:
- a. As of this writing, no asbestos survey has been performed. For bidding purposes, assume no asbestos containing materials (ACM) were observed in this house.
- b. Contractor to advise if other areas of asbestos is found or known to exist. Bring the discovery of any additional asbestos to the attention of the project inspector and/or engineer.
- 31. Electrical Service: a. An underground electrical service drop connects to free-standing post mounted electrical meter base located to the west of the main dwelling adjacent to the crawl space access door. Once the house has been elevated, the Contractor's Electrician is to set a new service pole with service drop/meter base/disconnect and elevate the bottom of all equipment to BFE + 2 feet of Freeboard minimum (but no less than as directed by service provider). Coordinate with Project Inspector.
- i. Provide access for the free-standing electric meter reading by constructing a pressure treated timber elevated platform handrails, pickets and stairs with handrails and pickets.
- ii. To simply, the contactor may combine the elevated platform for the service with the elevated platform that will need to be constructed for the gas-fired HVAC package unit located just to the north of the service. Coordinate with Project Inspector.
- b. According to owner, there is an electrical service extending from the northwest corner of the main residence (at the meter base that extends north both the shop and southwest to the shed located on the southwest corner of the main house. Power extends down to a pier located at the front of the house [serving a top-of-pile boat and jet ski lift and a light]). Locate all dependent underground service drops to the shed and rear shop. Protect from damage and
- repair if damaged or cut. c. Since the rear shop and shed is at grade, in order to be reconnected to power, the electrical outlets/switches/panel box (if present) in the shop and shed will need to meet the NC State Plumbing Code/local Flood Ordinance with regard to protection from flooding (i.e., such elements to be raised (by the owner) above the BFE + 2 feet of freeboard. Otherwise,
- contractor will not re-connect electrical service to Shop/storage building (if such exists). d. Have the service temporarily disconnected and, after the house has been elevated, have service reconnected. Service to meet the NC State Electrical Code
- e. There is a utility service box located on the east wall of the rear wing. Verify type of service (i.e., cable TV, telephone, etc.). Owner to coordinate service disconnection/reconnection with service provider. If lines are active and damaged during the elevation process, repair as needed to enable service restoration. Coordinate service termination/re-establishment with
- f. A cable TV line (as no satellite dish was apparent) rises out of the ground at both the west side of the existing chimney and, just west of here, at the SW corner of the house. Verify if active with owner. Locate lines at house, disconnect and once house is complete, have line/service repaired/restored. Coordinate disconnection of service with owner prior to elevation. After elevation, have service reconnected, coordinating reconnection of service with owner. Owner to request disconnection and reconnection of service.
- g. Once house has been elevated, re-attach sagging/loose wiring to floor framing in accordance with the NEC. Splices are to be placed in an NEC approved box.
- 32. Water: a. The house is on public water. Owner advises the water meter/well is located at driveway entrance. We could not readily locate the water meter at the time of our visit. Contractor is to verify the location of service line and protect line from damage during construction. Coordinate with water authority if necessary to avid the likelihood of damage from trucks enter the property. If within an area that could be damaged from truck traffic, flag and cordon off water meter to prevent damage.
- b. Disconnect main water service and reconnect service once house has been elevated. c. According to owner, there is a water service extending from the northwest corner of the main residence north to the shop as well as to the shed located on the southwest corner of the main
- house and, also according to owner, to the pier located at the front of the house. i. A ball valve located in a PVC riser and/or a white PVC water line, partially exposed on the surface, is located just SW of the meter pole (and west of the access door to the original structure). Verify origin, if it is active, to what it is connected. If it is to remain active,
- replace/re-pipe as required by code (with the required pipe material, bury, and valve box). Coordinate with both owner and Project Inspector. ii. Prior to elevation and disconnection from house, Contractor to locate the 3 dependent service(s) and then verify lines are functional/operational. Contractor to mark/flag
- iii. After elevation, reconnect all dependent potable supply lines/pipe and wiring (as applicable) as well as the main house service in accordance with the NEC and the NC Plumbing Code reconnect the noted water services and verify lines are leak-free.

location(s) in order to protect service/minimize damage during elevation.

- d. The electric water heater is located on the interior of the home. e. Strap/staple piping to floor as required by both the NC Residential Building Code and the NC
- Plumbing code. f. Note special requirements for sealing floor penetrations in the 2018 NC State Building Code.
- 33. Sewer: a. The house is on a septic tank. The septic tank is located at on the west end of the main dwelling. The system is failing as wastewater is breaching the surface and running down to the adjacent tidal/wetland waters (see photo at right). Drain fields and d-box location was
- b. Owner will need to apply for existing systems permit which will include an inspection/review adequacy of the existing system. Homeowner will need to make such improvements to system as required by the Hyde County Health Department.
- c. Locate service line, tank, d-box, and field before beginning construction. Cordon off to protect
- d. Once house has been set back on the new foundation, reconnect all waste pipe in accordance with the NC Plumbing Code e. Strap piping to floor as required by both the NC Residential Building Code and the NC
- Plumbing code. f. All new plumbing to meet the NC Plumbing Code, latest revision.
- g. Note special requirements for sealing floor penetrations in the 2018 NC State Building Code. This applies to wiring, mechanical, water pipe, and wastewater pipe penetrations.

34. Other Utility Requirements:

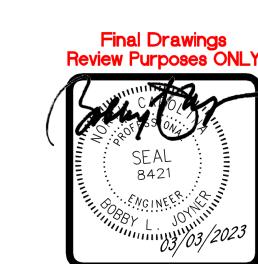
left the site.

- a. House is heated by propane gas as well as by an electrical mini-split system at the rear later-
- b. An above ground propane storage tank is located due west of the rear wing/deck. The
- propane tank does not appear to be anchored. i. A gas regulator is located on the rear of the original main dwelling just east of the
- northeast corner of the main residence. ii. The tank has a gas line that leads in the direction of the gas regulator located north of the package HVAC unit on the rear wall of the main dwelling. The HVAC package unit, in turn, rests on an existing timber platform at the west end of the main dwelling.
- c. Owner to apply to have his service supplier disconnect gas. After elevation, have homeowner to contact gas service provider so that they can re-connect service d. After elevation is complete, Owner to contact his/her propane provider and verify that the gas
- provider has properly anchored the propane tank against flotation. Coordinate with project Inspector and Elevation Contractor. e. Contractor to coordinate with both inspector and homeowner in the disconnection/reconnection
- of the gas services.
- f. Contractor is not to perform any gas related work. g. The owner has a portable generator located on the west end of the main residence just south of the HVAC package unit. The generator reses on a short timber platform. Elevation of this unit is not within the scope of work due to the apparent temporary nature of the unit. Have homeowner remove unit and store until after the elevation is complete and the contractor has
- a. A mini-split condensing unit rests on a pressure treated platform near the north end of the
- b. An HVAC package unit rests on a timber platform at west end of the house. c. Temporarily remove and store both the mini-split condensing unit and the package unit. After the house has been elevated, construct two new pressure treated timber platforms independent of the house to support each unit at a location determined by both owner and project inspector. Platform and any controls/disconnect to be elevated at a minimum to BFE + 3 feet of freeboard (allowing 12" for framing and 2 feet below bottom of platform framing.
- Adjust electrical disconnects, etc. accordingly. Coordinate with project inspector. d. Prior to disconnecting and removing the unit, contractor to have his HVAC contractor verify the operation and condition of both unit (i.e., operable, age, damaged from flooding, etc.) and make notes in writing for future reference. Have owner witness condition in presence of HVAC contractor. Upon completion of the elevation and re-setting the unit, reconnect and, in the presence of the owner and HVAC contractor, verify operation of unit is satisfactory at time of
- e. After house has been elevated, contractor to have new ducts installed in compliance with the Mechanical Code. Insulate and seal ducts per code and properly suspend from the floor
- f. All HVAC related work to conform to the latest edition of both the NC Residential Building Code and the NC Mechanical Code.
- 36. <u>Dryer Vent</u>: Dryer vent pipe is improperly installed. Once house is elevated, hard pipe with a
- slight negative slope to exterior and terminate with a grilled flap valve. 37. Contractor shall be responsible for verifying all dimensions prior to footing placement. Dimensions and floor plan shown was developed from field made by measurements by Appian Consulting Engineers. These dimensions must be verified and altered as necessary for the proper placement of proposed framing elements beneath the existing structure. Some adjustments to fit the actual
- structure footprint will be required. 38. Provide crawlspace access (See General Note 4.0). Coordinate actual location of door with owner. Do not locate access door below band sill butt joints.
- 39. Provide venting/flood vents on new foundation wall per General Notes Sections 5.0 and 8.0. Ensure ventilation requirements of the Residential Building Code are met. See Detail S-21. 40. All 4-inch deep CMU pilasters are to be bonded to the perimeter wall according to the Residential Building Code. See Detail S-20.

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