

Last Revised 1/19/23

**1.0 GENERAL**

- 1.1 The perimeter foundation shall be continuous CMU wall on a continuous reinforced concrete footing.
- 1.2 All construction shall conform to the requirements of the 2018 NC State Building Code: Residential Code, latest revision and/or edition as applicable.
- 1.3 Unless shown otherwise, interior foundation/piers shall be as shown on the detail drawing sheets (D sheets). Locate piers/plasters to suit existing or altered farming system. New girders shall be added as shown on foundation plan or as required to satisfy the 2018 NC State Building Code: Residential Code or latest edition, as applicable.
- 1.4 Foundation walls: Bar laps are to be minimum 25 inches. Stagger adjacent laps a minimum of 4 feet (i.e. laps on bars running beside each other are not to be placed side by side).
- 1.5 Unless noted or shown otherwise, place new 3'-0" x 3'-0" x 12" thick footing with #4s EW on subgrade. Provide #4 dowels to match size and length shown on detail for standard 16x16 CMU piers. Where new pier footings are replacing existing pier footings, remove old footing and place new footing at same bearing, shaping to accommodate new pier dimensions.
- 1.6 Contractor shall provide joist hangers/ledgers as required at all joist-to-new girder connections.
- 1.7 Coordinate depth/footing placement with building inspector. Footing excavations shall be approved by the inspector. No concrete shall be placed until after steel reinforcing has been inspected and approved.
- 1.8 All stepped footings shall be field located and shall start or terminate at least 4' from a wall corner or wall intersection. Stepped footing locations may require adjustments due to field conditions. Any adjusted locations shall require approval of the Engineer.
- 1.9 Construction joints in continuous wall footings shall be made at least 4' from the intersection of another wall footing.
- 1.10 Foundations shall be placed only on approved natural undisturbed soil strata or on properly placed engineered controlled compacted fill under the supervision and/or approval of a Geotechnical Engineer or his/her technician.
- 1.11 See the General Specifications sheet for various other material and construction specifications.
- 1.12 The lowest habitable floor surface of this dwelling must be elevated to the target freeboard height shown on Detail S-12 on sheet D-2. Contractor is responsible for identifying the lowest floor elevation of the home and ensuring that the home will be elevated to the target freeboard height depicted in Detail S-12. If a conflict is discovered between this requirement and what is shown in the Scope of Work or depicted on the site-specific drawings, Detail S-12 shall govern. Verify proposed target FFE elevation with Engineer or inspector prior to elevation of house.

**2.0 DESIGN CRITERIA**

- 2.1 140 MPH basic wind speed (Hyde Co = 130/140), exposure C (except D where house is water front or Ocean Hazard (VE zone))
- 2.2 Assumed soil design bearing value = 1,500 psf, where footings depend upon earthen subgrade for support. In that case, foundations shall be placed only on approved natural undisturbed soil strata or on properly placed engineered controlled compacted fill under the supervision of a Geotechnical Engineer. If unusual soil conditions are discovered, notify resident inspector immediately. Structural fill beneath footings and slabs shall be compacted granular material. All fill shall be clean select material free of deleterious materials such as wood, roots, trash, or other extraneous materials. Place fill in 8' lifts, measured loose, and compact each lift to 98% maximum density at optimum moisture content as measured by ASTM D698.

**3.0 MASONRY**

- 3.1 Compressive strength of mortar shall be 2,500 psi at 28 days. Mortar for shall be ASTM C270, type's M or S throughout. Grout for cell fill to be 3,000 psi concrete with pea gravel aggregate. Air entraining admixtures shall not be used in mortar. Maximum height of pour in concrete cells is 48 inches without Engineer's approval. Provide inspection holes at the base of each pour lift of each cell to confirm grout is reaching full height of grouting lift.
- 3.2 Wall Reinforcement Placement Table:  
Unless shown otherwise on plans, the wall reinforcement for vertical bars at centerline of the wall shall be as follows:

CMU Wall Thickness	Exposed Height of wall	Reinforcement Req'd
8-inch	0 to 5'-0"	#4 @ 72" o/c
8-inch	5'-1" to 6'-0"	#4 @ 60" o/c
8-inch	6'-1" to 7'-0"	#4 @ 48" o/c
8-inch	7'-0" to 8'-0"	#4 @ 32" o/c
12-inch	8'-0" to 9'-0"	#5 @ 32" o/c
12-inch	9'-1" to 10'-0"	#5 @ 32" o/c
12-inch	10'-0" to 10'-8"	#5 @ 32" o/c
12-inch	Greater than 10'-8"	Consult Engineer

**Important Note:** Watch tie-down spacing. In almost all cases, tie-down spacing is 32" o/c and required bury in a cell with rebar. If the rebar spacing exceeds 32", contractor will need to still provide rebar with concrete filled cell/tie-down. However, the rebar at these locations does not have to be doweled into the footing but the primary vertical reinforcement shown above must be doweled into the footing.

- 3.3 Horizontal joint reinforcement for all masonry walls shall be minimum #3 galvanized truss-type or ladur-type joint reinforcement spaced at 8' o/c for below grade masonry and 16' o/c vertically for above grade portion of the walls. Joint reinforcement to be provided with prefabricated tees and corners. Lap all joints a minimum of 12 inches.
- 3.4 Provide minimum 3/16" diameter weep holes (or open head joints) at base of brick veneer immediately above existing flashing or new CMU foundation. Space weep holes at no more than 32 inches o/c. Where existing flashing and/or weep holes exist protect and maintain existing flashing and/or weep holes as much as is practical. Clean weep holes to ensure they are not stopped up. Where no weep holes existing, drill or chip out openings in accordance with the standard details. Remove debris or otherwise open where necessary.
- 3.5 **Detail S-19:** Detail S-19 shows a method of tying down new floor framing to a new perimeter CMU foundation wall where the new floor framing replaces the original slab-on-grade.

**4.0 ACCESS**

- 4.1 One minimum 3-foot wide (clear opening) access shall be provided to the under-house crawl space area. The bottom of the access opening shall be a minimum of 2 inches above the finished grade. The height shall extend to the bottom of the masonry lintel. If sufficient height exists to permit placement of a personnel door, the crawl space access height shall be 7'-0" where possible to permit placement of a standard personnel door with steel load bearing lintel frame. Otherwise, a conventional FEMA compliant flood vent/crawl space access opening shall be provided. See 5.0 Flood Release Vents, below. Coordinate with project inspector.
- 4.2 Window and door lintels in masonry foundation walls shall be either precast reinforced concrete lintels or reinforced lintel block (reinforcing as directed by Engineer for applicable load condition). Lintel width to match block width. Lintel shall bear a minimum of 8 inches on either side of opening. A minimum of one #4 vertical bar shall be placed within 12 inches of each side of the vertical opening and extend from foundation to board beam. Footing shall have (1) #4 dowels extending 24" into each cell.
- 4.3 Garage Doorways: Remove and temporarily store garage doors. Protect from damage while stored. Install drop header, framing, sheathing, vinyl siding and trim to match existing. Install sheetrock on interior surfaces above doors and finish to match existing finish. Reinstall garage doors to original working order.
- 4.4 Doorways off Garages: Remove and store hinged door(s) on garage. Install drop header, framing, sheathing, vinyl siding, and trim to match existing. Install sheetrock to interior surfaces above doors and finish to match. Reinstall door(s) to original working order.

**5.0 FLOOD RELEASE VENTS**

- 5.1 Vents in the exterior foundation wall for the release of water during and after a flood are to be installed as follows:
  - a. To equalize pressure, vents shall have a net free area of not less than 1 square inch for every square foot of crawl space area subject to flooding. There shall be a minimum of two openings, each one on opposite and/or different walls.
  - b. The bottom of the flood vent openings shall be no higher than 12 inches above grade. (ref: R322.2.2 of the NC Residential Building Code).
  - c. Openings may be provided with screens, louvers, valves, or other devices provided they permit automatic entry and exit of floodwaters. Slide, lever, or temperature operated closures that do not automatically open under water pressure are not acceptable.
  - d. Acceptable flood vents:
    - i. Provide foundation floor release vents as manufactured by Crawl Space Door Systems, Inc., Virginia Beach, VA, Ph: 757-274-9989. The model 816CS vent accommodates 205 SF of crawl space. The model 1616CS vent accommodates 395 SF of crawl space.
    - ii. An acceptable alternative is to use a FEMA compliant flood vent large enough to meet the minimum crawl space access opening requirements (i.e., 16"x24" net opening (ref NC State Building Code: Residential Code, paragraph R408.8).
- 5.2 Interior grade must be at or above the highest exterior grade along the entire length of the lowest side to avoid creating a "basement-like" condition in the crawl space. See site specific grading notes for amount of crawl space fill and exterior grading requirements.

- 5.3 All attached separated enclosed areas (such as garages, storage rooms, etc.) shall be flood vented in accordance with the requirements stated herein as well as the requirements of Section R322 Flood-Resistant Construction of the 2018 NC State Building Code: Residential Code.
- 5.4 **Separated Crawl Space:** Each separate crawl space for adjoining and garages, basements or porches shall be flood vented independent of the crawl space. No cross-communication is permitted between the vented crawl space and adjoining basement, porches and garages per the 2018 NC State Building Code: Residential Code R408.1.5 (Wall-Vented Crawl Spaces). Latched weather-stripped doors or access panels only shall provide access between the crawl space and such adjoining spaces.

**6.0 CONCRETE**

- 6.1 Concrete construction shall be in accordance with the guidelines of the latest editions of ACI 301, 304, and 318.
- 6.2 Unless called for otherwise on plans, materials shall be as follows:
  - a. Concrete: 3,000 psi in 28 days
  - b. Deformed bars: ASTM A615, grade 60
  - c. Welded Wire Fabric: ASTM A185
- 6.3 Minimum concrete cover:
  - a. Cast against & permanently exposed to earth: 3 inches
  - b. Formed surfaces exposed to earth or weather: 2 inches
  - c. Formed surfaces not exposed to earth or weather: 1 1/2 inches
- 6.4 Garage Floors: Cut floors as needed to permit placement of footings. Once the footing and foundation are in and the elevation complete, patch the garage floor and, where applicable, reconnect to the existing concrete or asphalt drive approach.

**7.0 WOOD**

- 7.1 All new pressure treated wood is to be No. 2 SYP, Pressure Treated (AWPA Use Category 4B [ground contact]). Pressure treated pilings shall comply with AWPA Use Category 5B.
- 7.2 Field treat cut ends or drilled pressure timber with a brush applied treatment of Copper Naphthenate (minimum concentrate of 2% copper metal) in accordance with Section R402.1.2 of the 2018 NC State Building Code: Residential Code.
- 7.3 Fastening of timber members shall conform to the requirements of Tables R602.3(1) through R602.3(3) of the 2018 NC State Building Code: Residential Code.
- 7.4 Unless otherwise noted on drawings or in span tables for joists and girders (sections 5 & 8 of the 2018 NC State Building Code: Residential Code), all timber to be minimum #2 SYP. All timber in contact with masonry or concrete is to be pressure treated.
- 7.5 All metal plates (e.g., joist hangers) in contact with Pressure Treated timber shall be stainless steel, grade 316 unless specifically waived by Engineer of Record.
- 7.6 Fasteners (e.g., bolts, washers, nuts, screws, and nails) in contact with Pressure Treated timber shall be stainless steel, grade 316 unless specifically waived by Engineer of Record. If waived, no less than ASTM G193, Class C, HDG coatings shall be used. G90 is not allowed.

**8.0 FOUNDATION VENTING:**

- 8.1 **Foundation Venting:** Because moist (humid) air is less dense (and thus lighter) than dry air, humid air rises; it does not fall! Therefore, to provide a means of venting humid air from a crawl space, foundation vents should always be located at the top of foundation wall regardless of whether or not there are flood vents located near grade. Flood vents, regardless of type (permanently open or closed with float actuation) are no substitute for foundation vents. Foundation vents shall be located at or near the top of the foundation wall, preferably within 0 to 8 inches of the bottom of the floor framing.
- 8.2 Foundation vents shall be corrosion resistant. See Detail S-21.
- 8.3 Vents shall be provided with a minimum of 1 square foot for every 150-square foot of crawl space floor area. One such vent shall be placed within 3 feet of each corner.
- 8.4 See Section R408 of the 2018 NC State Building Code: Residential Code for other crawl space venting requirements.
- 8.5 Openings should be reasonably distributed around the perimeter of the enclosed area unless there is clear justification (approved by the project Engineer) for putting all openings on just one or two sides (such as townhouses or buildings set into sloping sites).
- 8.6 For spaces such as porches enclosed on 3 sides by a crawl space (because porch crawl spaces are not permitted by code to communicate with the crawl space below heated spaces), each of the two required vents must be individually sized for the total enclosed area (ref. Openings in Foundation Walls and Walls of Enclosures, FEMA Technical Bulletin 1/2008, or latest revision).

**9.0 GRADING CRAWL SPACE AND EXTERIOR**

- 9.1 Grade exterior surface on perimeter of home to drain away from the house in accordance with section 401.3 of the 2018 NC State Building Code: Residential Code; 6" in first 10 feet. Slope ground surface in accordance with section 408.2 of the 2018 NC State Building Code: Residential Code.
- 9.2 Non-structural fill for landscaping shall be friable loam, topsoil backfill mix.
- 9.3 Grade crawl space interior and ensure compliance with R408.10. Provide a drain that drains to daylight or provide a sump pump as required by R408.10.
- 9.4 See also the site-specific notes pertaining to filling and grading crawl space as well as for exterior grading in accordance with applicable provisions of the code cited in 9.1, above.

**10.0 POTABLE WELL CLOSURE**

- 10.1 Where there is an existing potable well on site that is designated to be closed or abandoned, the well shall be abandoned in accordance with 15A NCAC Subchapter 2C - Well Construction Standards 0113 Abandonment of Wells as well as any additional applicable requirements mandated by the Local Health Department.

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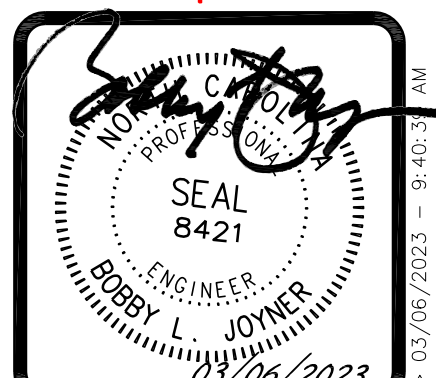


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**GENERAL NOTES For  
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5161-004**

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