



COUNTY OF ORANGEBURG

Manufactured Home Installation Regulations

SC Manufactured Housing Regulations

79-42. Manufactured Home Installation Requirements.

(A) Scope and Applicability. New manufactured homes in the State of South Carolina must be installed per the Manufacturers Installation Instructions. Used homes, without manufacturers installation instructions, are to be installed per Manufactured Housing Board Installation Regulations. The Manufacturers Installation Instructions and the Manufactured Housing Board Installation Regulations shall preempt any existing local standard. (See paragraph G).

(B) Manufactured Home Installation. The Federal Manufactured Home Construction and Safety Standards Program (24CFR 3280, 3282 and 3283) requires that all manufactured homes be provided with installation instructions covering foundation, anchoring, utility connections, and other items. Where such installation instructions are provided, they shall be followed and supplemented by this regulation.

(1) Foundation Systems for Manufactured Homes. A Manufactured Home Foundation System is one constructed in accordance with the foundation system included in the manufacturer's installation instructions, supplemented by the requirements of these regulations. The manufacturer or homeowner shall be permitted to design for unusual installation not provided for in the manufacturer's standard installation instructions, provided a licensed professional engineer or architect approves the design in writing. When the manufacturer's instructions are not available Table 1 in Appendix A indexes information for the design of manufactured home foundation systems which meet the minimum criteria established in this regulation.

(2) Manufactured Homes with Manufacturer's Instructions. The manufacturer's instructions include a typical foundation system designed by a registered professional engineer or architect to support the anticipated loads specified in the manufacturer's installation instructions for the design zone (including climate) of installation, and shall meet the requirements of these regulations. These instructions shall be provided with the home following installation as required by 24 C.F.R., Parts 3280, 3282, and 3283 (42 U.S.C. 5401 et seq.).

(3) Manufactured Home Stabilizing Devices and Design. Each manufactured home, upon being installed on a manufactured home stand, shall have stabilizing devices, or shall be installed on a foundation constructed in accordance with the Standard Building Code. Stabilizing devices not provided with the manufactured home shall be listed or labeled to meet or exceed the design and capacity requirements of the manufactured home manufacturer's installation instructions and these regulations.

(a) Anchoring.

(1) Each manufactured ground anchor shall be listed and installed in accordance with the terms of its listing and the anchor manufacturer's instructions and shall include means of attachment of ties meeting the requirements of paragraph (B) (3) (b) (v). Ground anchor manufacturer's installation instructions shall include tensioning adjustments which may be needed to prevent damage to the manufactured home, particularly damage that can be caused by frost heave.

(2) Each ground anchor shall have the manufacturer's identification and listed model identification number marked thereon so that the number is visible after installation.



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Instructions shall accompany each listed ground anchor specifying the types of soil for which the anchor is suitable under the requirements of paragraph (B) (3) (b) (4) (a).

(3) Ground anchors, including means for attaching ties, shall be located to effectively match the anchoring system instructions provided by the manufactured home manufacturer, or, if there are no instructions, in accordance with the requirements of this section.

(4) If concrete slabs or continuous footings are used to transfer the anchoring loads to the ground, the following shall be required:

(a) Steel rods cast in concrete shall be capable of resisting loads as specified in paragraph (B) (3) (b) (4)(a).

(b) Deadman concrete anchors may be used in place of listed anchors if they meet the requirements of paragraph (B) (3) (b) (4) (a).

(c) Concrete slabs may be used in place of ground anchors, provided the slab is constructed so that it provides holding strength equal to the requirements of paragraph (B) (3) (b) (4)(a).

(b) Foundation Standards.

(1) Support System Spacing. Unless a professional engineer or architect designs the entire support system, the support system shall be designed in accordance with this standard.

(2) Footings. Footings shall be sized to support the loads shown in the manufacturer's instructions and as specified below. Where no manufacturer's instructions are available, the footings shall be adequate in size to withstand the uniform live and dead loads of the manufactured home and any concentrated loads.

(a) The supports shall begin not more than two feet from the exterior of each end wall. Supports shall be installed directly under the main frame (chassis) of the manufactured home. The South Carolina Manufactured Housing Board may approve methods other than those specified herein.

(b) Table 2 in Appendix A shall be applicable unless the entire support system is designed and calculated by a registered professional engineer or architect.

(c) Footings shall be at least 144 square inches of solid concrete, block, or other materials approved for the intended use by the South Carolina Manufactured Housing Board. (Check Appendix B for minimum thickness.)

(d) Footings or pier foundations (unless approved by a registered professional engineer), when required, shall be placed level on firm undisturbed soil or on controlled fill which is free of grass and organic materials to minimum load-bearing capacity of 1000 pounds per square foot. Where unusual conditions



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exist, the spacing of piers and the load-bearing capacity of the soil shall be determined specifically for such conditions (see paragraph (B) (6) (b)).

(3) Piers. Piers or load-bearing supports or devices shall be designed and constructed to evenly distribute the loads. Load-bearing supports or devices shall be listed and labeled, shall be designed by a registered professional engineer or architect, shall be approved for the use intended, or piers shall be constructed as follows:

(a) Piers less than 36 inches in height shall be constructed of open or closed cell, eight inches by 16 inches, concrete blocks (with open cells vertically placed upon the footing). Single-stacked block piers shall be installed with the 16 inches perpendicular to the main (I-beam) frame. The piers shall be covered with a two inches by eight inches by 16 inches wood or concrete cap (See Figure B-10, Appendix B).

(b) Subject to the limitations of paragraph (B) (4) (b), piers between 36 inches and 80 inches in height and all corner piers over three blocks high shall be double blocked with blocks interlocked and capped with a four inches by 16 inches by 16 inches solid concrete block, or equivalent (See Figure B-11, Appendix B).

(c) Subject to the limitations of paragraph (B) (4) (b), piers over 80 inches in height shall be constructed as per paragraph (B) (3) (b) (3) and they shall be laid in concrete mortar and steel reinforcing bars inserted in block cells with the block cells filled with concrete (See Figures B-12 (a) and B-12 (b) in Appendix B).

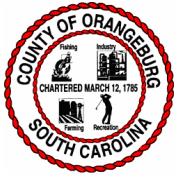
(d) Steel Piers. Steel piers, when used, shall be in compliance with paragraph (B) (3) (b) (5)(I), after fabrication to provide corrosion protection (See B-8 in Appendix B).

(e) Walls. Load bearing and nonload-bearing walls constructed on site shall be constructed of concrete, masonry, or any other material or system that is recognized by the authority having jurisdiction. Minimum thickness shall be that required to resist lateral pressure from adjacent earth and support design loads as determined by acceptable engineering practice.

(4) Anchors.

(a) Capacity of Anchors. Each approved ground anchor, when installed, shall be capable of resisting an allowable working load at least equal to 3,150 pounds in the direction of the tie plus a 50 percent overload (4,725 pounds) without failure.

(b) Anchoring Equipment. Anchoring equipment, shall be capable of resisting an allowable working load equal to or exceeding 3,150 pounds and shall be capable of withstanding a 50 percent overload (4,725 pounds) without failure of either the anchoring equipment or the attachment point on the manufactured home.



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When the stabilizing system is designed by a qualified registered professional engineer or architect, alternative working loads may be used provided the anchoring equipment is capable of withstanding a 50 percent overload. All anchoring equipment shall be listed or labeled as being capable of meeting all the requirements of this section.

(c) Anchor Installation Specifications. Each type anchor suitable for this purpose shall have specification data showing the soil classification(s) for which it qualifies.

(d) Anchors designed for connection of multiple ties shall be capable of resisting the combined working load and overload consistent with the intent expressed herein, and shall be installed to resist resultant forces.

(e) Selection of Anchors. Anchor selection shall be based on a determination of the soil class at the depth the anchor helical plate will be installed.

(f) Other Anchoring Devices. Other anchoring devices meeting the requirements of this section shall be permitted if acceptable to the authority having jurisdiction.

(g) Depth of Anchors. All anchors shall be installed to the full depth shown in the anchor manufacturer's installation instructions. The load-carrying portion of the ground anchors shall extend below the frost line.

(5) Ties. Strappings or other approved methods or material shall be used for ties. All ties shall be fastened to ground anchors and drawn tight with turnbuckles or other adjustable tensioning devices or devices supplied with the ground anchor.

(a) Tie materials shall be capable of resisting an allowable working load of 3,150 pounds with no more than two percent elongation and shall withstand a 50 percent overload (4,725 pounds total). Ties shall comply with the weathering requirements of paragraph (B) (3) (b) (v) I).

(b) Ties shall connect the ground anchor and the main structural steel frame (I-beam or other shape) which runs lengthwise under the manufactured home. Ties shall not connect to steel outrigger beams which fasten to and intersect the main structural frame unless specifically stated in the manufacturer's installation instructions.

(c) Connection of the cable frame tie to the manufactured home I-beam or equivalent main structural frame member shall be by a five-eighths inch drop-forged closed-eye bolt through a hole drilled in the center of the I-beam web or other approved methods. The web shall be reinforced if necessary to maintain the designed I-beam strength.



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(d) Cable ends shall be secured with at least three U bolt-type cable clamps with the U portion of the clamp installed on the short (dead) end of the cable to assure strength equal to that required by paragraph (B) (3) (b) (v) a).

(e) Number of Ties. The minimum number of ties per side for various lengths of manufactured homes in hurricane zone shall be in accordance with Table 3 in Appendix A.

(f) Location of Ties. When continuous straps are provided as vertical ties, such ties shall be positioned at rafters and studs. Where a vertical tie and diagonal tie are located at the same place, both ties shall be permitted to be connected to a single ground anchor, provided that either the anchor used is capable of carrying both loadings, or that the load capacity of the total number of anchors used is equal to 3150 pounds. Working load plus 50 percent overload (4725 pounds.) times the number of ties specified in Table 3 in Appendix A.

(g) Spacing of Vertical Ties. Vertical ties shall be as evenly spaced as practicable over rafters or over studs along the length of the manufactured home with not more than eight feet open-end spacing on each end.

(h) Special Ties. Clerestory roofs and add-on sections of expandable manufactured homes shall have provisions for vertical ties at the exposed ends.

(i) Alternate Method Using Strapping. If the alternate method incorporating straps specified in Table 3 in Appendix A is used, the baling straps shall be wrapped completely around the manufactured home passing under the main steel frame, with both ends of each strap fastened together under tension. The straps shall be in accordance with paragraph (B) (3) (b) (v). The method used to connect the ends of the strap shall not reduce the allowable working load and overload. S traps shall be installed in accordance with the requirements for ties in paragraph (B) (3) (b) (v) a) through l).

(j) Tensioning Device Design. Tensioning devices such as turnbuckles or yoke-type fasteners shall be ended with a clevis or forged or welded eyes.

(k) Permanency of Connections. Anchoring equipment shall be designed to prevent self-disconnection when ties are slack. Open hook ends shall not be used in any part of the anchoring system.

(l) Resistance to Weather Deterioration. All anchoring equipment exposed to weathering shall have a resistance to weather deterioration at least equivalent to that provided by a coating of zinc on steel of not less than 0.30 ounces per square foot on each side of the surface coated, as determined by ASTM Standard Methods of Test for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles (ASTM A90-B1).

(4) Placement of Manufactured Homes.



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(a) Clearance Under Homes. A minimum clearance of 12 inches shall be maintained beneath the lowest member of the main frame (I-beam or channel beam) in the area of utility connections. No more than 25 percent of the underside of the main frame of the home shall be less than 12 inches above grade.

(b) Plates and Shims. A wood plate not exceeding two inches in thickness and shims that transfer loads uniformly not exceeding one inch in thickness shall be permitted to be used to fill any gap between the top of the pier and the main frame. Two, two inches or four inches solid concrete blocks shall be permitted to be used to fill the remainder of any gap. Shims shall be at least nominal four inches wide and six inches long and shall be fitted and driven tight between the wood plate or pier and main frame.

(c) Elevated Manufactured Homes. When the manufactured home is installed on a basement or split entry type foundation over a habitable lower-level area, or when more than one-fourth of the area of a manufactured home is installed so that the bottom of the main frame members are more than three feet above ground level, the foundation system shall be designed by a registered professional engineer or architect and the installation shall be approved by the local authority having jurisdiction.

(d) Removal of Manufactured Home Transportation Components at Time of Installation. No portion of a manufactured home shall be removed when located on its home site unless it is designated to be removable and removed in accordance with the manufacturer's instructions.

(5) Ventilation of Manufactured Homes.

(a) Access to and Ventilation of Underfloor Areas.

(1) Provisions shall be made to minimize condensation in underfloor areas through ventilation openings or other suitable means.

(2) If combustion air for heat-producing appliance(s) is taken from within the underfloor areas, ventilation shall be adequate to assure proper operation of the appliance(s). This requirement shall take precedence over the provisions of paragraph (B) (5) (a) (i).

(3) Ventilation openings shall be provided for low profiled manufactured homes that are installed by depressing the supporting foundation in accordance with paragraph (B) (5) (a) (iv).

(4) A minimum of four ventilation openings shall be provided from the underfloor space to the exterior. One shall be placed at or near each corner as high as practicable. Their total net area shall be calculated by: $a = A/150$ where:

A = the area of the crawl space, square feet

a = the total net free vent area.

(a) Openings shall provide cross ventilation on at least two opposite sides. The openings shall be covered with corrosion resistant wire mesh not less than one-



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eighth inch and not more than one-half inch in any dimension or with screened louvered openings to retard entry of dry vegetation, waste materials, or rodents.

(b) Intake air for ventilation purposes shall not be drawn from underfloor spaces of the home.

(c) Moisture producing devices, such as dryers, shall be vented to the atmosphere in such a manner to insure that moisture laden air is carried beyond the perimeter of the home.

(d) Curtain Walls. Curtain walls, if used, although not necessary for stabilizing the home, shall be installed in accordance with the manufacturer's installation instructions. It shall be secured, as necessary, to assure stability, to minimize vibrations, to minimize susceptibility to wind damage, and to compensate for possible frost heave. Access opening(s) not less than 18 inches in any dimension and not less than three square feet in area shall be provided and shall be located so that any water supply and sewer drain connections located under the manufactured home are accessible for inspection. Such access panel(s) or door(s) shall not be fastened in a manner requiring the use of a special tool to remove or open same. On-site fabrication of curtain wall shall meet the objectives cited herein. Materials designed for curtain walls may be used, including, but not limited to vinyl, treated wood, corrosion resistant metal or masonry products. Curtain walls constructed or installed in accordance with this provision satisfy the requirements of the Act.

(6) Maintenance.

(a) Protection of Ties and Manufactured Home Roofing and Siding. Protection shall be provided at sharp corners where the anchoring system requires the use of external cables or straps. Protection shall also be provided to minimize damage to roofing or siding by the cable or strap.

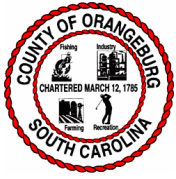
(b) Maintenance of Anchoring Systems. The homeowner shall be advised that tie tension should be checked and adjusted when necessary to prevent damage to the manufactured home from settling or other unforeseen movements (such as frost heave).

(C) Plumbing. Each manufactured home stand shall be provided with a water supply and sewer located and arranged to permit attachment to the manufactured home in a workmanlike manner.

(D) Mechanical Equipment (Heating and Cooling)

(1) Exterior Mechanical Equipment.

(a) Mechanical equipment installed outside of and not attached to a manufactured home shall be mounted on a level concrete slab not less than three and one-half inches



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thick, a precast reinforced concrete slab, treated wood of equivalent strength, or be mounted in accordance with the equipment manufacturer's installation instructions.

(b) Mechanical equipment installed outside shall be listed and labeled for outside installation and installed in accordance with the manufacturer's installation instructions.

(c) Mechanical equipment shall not be installed in a manner that would obstruct any means of required egress. Mechanical equipment shall not be installed in window openings which are part of an existing system and shall not obstruct sidewalks or other means of egress from the manufactured home.

(E) Manufactured Home Electrical Connections.

(1) When a manufactured home consists of two or more sections, all utility connections from one section to another shall be installed in accordance with the manufacturer's installation requirements. In the absence of manufacturer's instructions utility connections shall be made in accordance with the National Electrical Code.

(2) No rigid utility connections shall be made unless the home is installed on a foundation constructed in accordance with the Standard Building Code.

(3) All manufactured home utility services shall be connected to the supply sources only with approved materials.

(4) When a manufactured home is equipped with a meter base from the manufacturer, a municipality or county cannot require that the home be hooked up in any other fashion.

(F) Dealer Lot Installation.

(1) All manufactured homes stored on dealership lots shall be installed to such a degree as to not allow damage to occur while the home is on display.

(a) Piers. Pier requirements for dealer lot installations shall equal one-third the required piers for field installation in accordance with the manufacturer's installation instructions. In areas where special pier installations are required, the dealer shall incorporate these piers in the lot installation

(b) Used Manufactured Homes. Used manufactured homes offered for sale on dealership lots shall be installed to assure that load-bearing supports maintain the integrity of the home. Dealer lot COPY OF owners will have the discretion as to what extent installation is necessary. However, in no situation shall any unit be installed on a dealer lot without pier support.

(G) National Flood Insurance Program. In areas where a community meets the eligibility requirements for the National Flood Insurance Program, the local jurisdiction having authority shall have the authority to change, delete or modify these regulations in order to comply with the National Flood Insurance Program created by the National Flood Insurance Act of 1968, as amended. A copy of any different



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standard adopted under this paragraph shall be filed with the South Carolina Manufactured Housing Board. HISTORY: Added by State Register Volume 29, Issue No. 2, eff February 25, 2005.