

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT**24 CFR Parts 3280 and 3285**

[Docket No. FR-4928-P-01; HUD-2005-0006]

RIN 2502-AI25

Model Manufactured Home Installation Standards

AGENCY: Office of the Assistant Secretary for Housing—Federal Housing Commissioner, HUD.

ACTION: Proposed rule.

SUMMARY: This proposed rule would establish new Model Manufactured Home Installation Standards (Model Installation Standards) for the installation of new manufactured homes and would include standards for the completion of certain aspects necessary to join all sections of multi-section homes. The National Manufactured Housing Construction and Safety Standards Act of 1974 requires the Secretary to develop and establish Model Installation Standards after receiving proposed installation standards from the Manufactured Housing Consensus Committee (MHCC). HUD received and reviewed the MHCC's recommended model installation standards and is in agreement with a significant majority of the recommendations. Following discussion with the MHCC at its August 2004 meeting, HUD provided the MHCC with a draft of this proposed rule establishing the Model Installation Standards. During three ensuing conference calls with the MHCC and its subcommittee on installation, HUD received additional feedback and comment from the MHCC and its members that were considered for inclusion in this proposed rule.

Within this proposed rule, HUD is providing its proposed Model Installation Standards, and a detailed summary of its recommended changes to the MHCC's proposal. The proposed rule also incorporates certain amendments to definitions contained in the Manufactured Home Construction and Safety Standards (MHCSS) that are affected by definitions provided in the Model Installation Standards. HUD is specifically requesting comment on proposed installation standards applicable to completing work and conducting adequate inspections necessary to join all sections of a multi-section manufactured home, as well as many other areas of manufactured home installation that may need consideration before final publication.

DATES: *Comments Due Date:* June 27, 2005.

ADDRESSES: Interested persons are invited to submit comments regarding this rule to the Regulations Division, Office of General Counsel, Room 10276, Department of Housing and Urban Development, 451 Seventh Street, SW., Washington, DC 20410-0500. Interested persons may also submit comments electronically through either:

- The Federal eRulemaking Portal at: <http://www.regulations.gov>; or
- The HUD electronic Web site at: <http://www.epa.gov/feddocket>. Follow the link entitled "View Open HUD Dockets."

Commenters should follow the instructions provided on that site to submit comments electronically. Facsimile (FAX) comments are not acceptable. In all cases, communications must refer to the docket number and title. All comments and communications submitted will be available, without revision, for public inspection and copying between 8 a.m. and 5 p.m. weekdays at the above address. Copies are also available for inspection and downloading at <http://www.epa.gov/feddocket>.

FOR FURTHER INFORMATION CONTACT:

William W. Matchneer III, Administrator, Office of Manufactured Housing Programs, Room 9164, Department of Housing and Urban Development, 451 Seventh Street, SW., Washington, DC 20410; telephone (202) 708-6401 (this is not a toll free number). Persons with hearing or speech impairments may access this number via TTY by calling the toll free Federal Information Relay Service at 1-800-877-8389.

SUPPLEMENTARY INFORMATION:

I. Background

On December 27, 2000, the National Manufactured Housing Construction and Safety Standards Act of 1974 (42 U.S.C. 5401-5426) (the Act) was amended by the Manufactured Housing Improvement Act of 2000, which, among other things, provided for the creation of the Manufactured Housing Consensus Committee (MHCC) and established new requirements pertaining to the installation of new manufactured homes. One of the provisions of the Act requires the Secretary to establish Model Installation Standards for new manufactured homes. The Act also gave the MHCC responsibility to develop and submit proposed model manufactured home installation standards. The MHCC recommendations were to be submitted to HUD not later than 18 months after

the initial appointment of all committee members. The MHCC held its first meeting in August 2002 and began work on its installation standards recommendations by reviewing the already developed consensus standard National Fire Protection Agency (NFPA) 225, with draft updates maintained by the National Fire Protection Association (NFPA) through September 2002. Subsequently, the MHCC approved proposed installation standards and submitted them to HUD on December 18, 2003. HUD reviewed the recommendations and developed a draft proposed rule that was based upon those recommendations. Following its review of the draft proposed rule, the MHCC provided additional recommendations to HUD on September 3, 2004.

The complete MHCC recommendations relating to model manufactured home installation standards, including the transmittal letter to HUD and the MHCC's description of its installation standards development assumptions and principles, can be found on the Web site maintained by the NFPA, the administering organization for the MHCC, at http://www.nfpa.org/PDF/MHCC_FinalChangesInstallStd.pdf?src=nfpa.

At the MHCC's meeting on August 10, 2004, HUD presented orally and in writing an overview of its initial response to the MHCC's recommendations. The most significant change to the MHCC proposal related to the removal of several MHCC-suggested installation standards for on-site completion of multi-section homes, which HUD deemed to be related to construction and assembly of the home rather than installation. Upon evaluating further comments received from the MHCC, and based upon its own review, HUD incorporated a majority of the applicable "close up" standards proposed by the MHCC in this proposed rule. HUD provided the MHCC with a draft of this proposed rule for review and comment on August 19, 2004. During three ensuing conference calls with the MHCC and its subcommittee on installation, HUD received additional feedback and comment from the MHCC and its members that HUD considered in preparing this proposed rule. In addition, HUD has added several questions to the preamble seeking comment on issues where consensus within the MHCC was not reached or regarding other issues on which HUD would like targeted feedback.

As indicated, HUD has carefully reviewed the MHCC's recommended

model installation standards and is in agreement with a significant majority of them. For the reasons set forth below in the Summary of Changes to the MHCC Proposed Installation Standards, modifications were made to some of the recommendations. The summaries of HUD's proposed Model Installation Standards and changes to the MHCC's recommendations include questions on which HUD seeks comment. The following is a section-by-section discussion of the new Model Installation Standards proposed by HUD.

I. Summary of HUD's Model Manufactured Home Installation Standards

HUD proposes to codify the Model Installation Standards in a new part 3285 of title 24 of the Code of Federal Regulations (CFR). HUD has chosen not to codify these installation standards as part of the Construction and Safety Standards (24 CFR part 3280), to avoid confusion between construction and installation and to assist in assigning clear lines of responsibility among the parties involved for construction versus installation issues. Moreover, the Act makes a clear distinction between the Federal Manufactured Home Construction and Safety Standards (MHCSS) and the Model Installation Standards. Section 604 of the Act (42 U.S.C. 5403) sets forth specific provisions, including preemption, which are applicable only to the MHCSS. The Act sets forth provisions applicable only to manufactured home installation and the Model Installation Standards in section 605 (42 U.S.C. 5404).

The proposed rule provides that, at a minimum, manufactured home manufacturers must include installation instructions with each new home. The instructions must be approved by a design approval primary inspection agency (DAPIA) and must provide protection to the residents of manufactured homes that equals or exceeds the protections provided by the Model Installation Standards. In addition, States that desire to operate an installation program must adopt installation standards that provide protection that equals or exceeds the protections provided by the Model Installation Standards.

HUD is soliciting comments on the distinction between standards for the construction and assembly of manufactured homes and the standards for the installation of manufactured homes established by this proposed rule. Generally, HUD has in the past considered those activities that are

completed at the installation site to bring the home into conformance with the MHCSS as being part of construction and covered by the manufacturer's certification label. HUD has also considered as being part of construction those activities that for a multi-wide home are completed at the installation site, but for a singlewide home are performed in the factory prior to labeling the home, as well as activities required to finish the home at the installation site that are presently covered by the Alternative Construction process. On the other hand, HUD has considered installation to include the siting, supporting, stabilizing, and anchoring of the home.

Based on HUD's further review and consideration of the recommendations of the MHCC, HUD has included specified activities necessary for the close up and joining of all sections of a multi-section manufactured home as part of the Model Installation Standards. Installers, not manufacturers, typically perform close up work. Under the proposed rule, home purchasers generally would have to look to installers or retailers, who often employ or contract with installers to perform home installations, to remedy close up problems that are not the result of inadequate or incorrect manufacturer instructions or are manufactured in such a way that the sections do not fit together properly. This is because close up activities would not be covered by the manufacturer's notification and correction responsibilities for construction defects standards under section 615 of the Act (42 U.S.C. 5414). However, including close up provisions in the Model Installation Standards would also mean that, in accordance with the Act, a State that operates an installation program in lieu of the HUD program will have to provide for inspections that include close up work.

Under the current enforcement of the MHCSS, as well as State and local enforcement of installations, inspection for close up activities is generally not conducted by primary inspection agencies, States, local authorities, or HUD. HUD and the MHCC are of the opinion that improper close up is an area of significant concern for manufactured housing, and believe that the Model Installation Standards provide an opportunity to better address both close up and installation.

Therefore, the proposed rule would include close up activities in the Model Installation Standards. Thus, close up work completed on site would be inspected under regulations to establish an installation program that will be published by HUD for public comment

in a separate rulemaking. While HUD recognizes that there may be reasons to include close up activities as part of the MHCSS, the MHCC and HUD believe there is a practical necessity to include these aspects as installation standards, which would be inspected by States or HUD under installation program requirements. HUD believes that the Model Installation Standards as proposed, the additional requirement for inspection of installation and close up work through HUD's future installation program rule, and HUD's forthcoming dispute resolution regulation (which will also be published separately for public comment in a future rulemaking and would involve consumers, manufacturers, retailers, and installers) will provide greater protections to the residents of manufactured homes.

HUD would like to receive comments, in particular from installers, retailers, and manufactured home owners, on the legal and practical effect of these proposals. Since close-up consists of the work and activities for completing the assembly of the home, is it consistent with the rest of the Act to consider such work as construction and therefore the responsibility of the manufacturer? Or is it too difficult for manufacturers to control and monitor the close-up done by installers so that it would be more appropriate to classify close up as part of installation? Will consumers be adequately protected if close-up is classified as part of installation?

HUD would also very much appreciate receiving comments from the States and local governments on this subject. How do the States and municipalities presently treat close up activities? Do their inspectors review close up activities as part of installation inspections? If there were requirements for inspection of close up work as part of HUD's certification of a State installation program, would there be difficulties with the expertise or work load of the State or local inspectors with respect to close ups, such that State installation laws could not be certified as covering inspection of close up work? Finally, HUD is very interested in hearing from States concerning whether the Model Installation Standards proposed in this rule would work well with the present installation programs in the States.

Summary—Part 3285 Model Manufactured Home Installation Standards

Subpart A—General

Subpart A of the new part 3285 would include general provisions relevant to

the overall use and applicability of the Model Installation Standards. These general provisions include statements of the scope (§ 3285.1(a)) and applicability (§ 3285.1(b)). The Model Installation Standards are applicable to the installation of new manufactured homes and would include those specific aspects of a typical installation that would be necessary to join all sections of a multi-section home. As a result, these close-up and crossover aspects would not be considered assembly under the Act's definition of "manufactured home construction." This means that installers, rather than manufacturers, would be responsible for the great majority of problems relating to those aspects of erecting a home.

States that choose to operate an installation program, as will be addressed by HUD under separate provisions set forth in a subsequent proposed rule, must implement installation standards that provide protection that equals or exceeds the protection to the residents of manufactured homes provided by these Model Installation Standards. Qualifying States may choose to establish or permit more stringent installation standards. However, States that do not establish standards that provide a level of protection that meets or exceeds the level of protection of these model provisions will not have qualifying programs.

In States that do not choose to operate an installation program, HUD intends to regulate and enforce the installation of new manufactured homes through a program to be established separately in a subsequent rulemaking, using these Model Installation Standards for minimum design and installation requirements. In these States, the State or municipalities also may establish more stringent requirements, so long as the requirements provide protection that equals or exceeds the protection provided by the Model Installation Standards.

Under the proposed rule, manufacturers would be required to provide installation instructions (§ 3285.2) with each new home that would be approved by the DAPIAs as providing the residents protection that equals or exceeds the protection provided by the Model Installation Standards. The manufacturer's installation instructions must not take the home out of compliance with the MHCSS (24 CFR part 3280), and must provide adequate instructions to complete those limited aspects of the installation that are necessary to join all sections of a multi-section home. HUD intends home manufacturers to be

responsible for adequate and conforming installation instructions. However, through enforcement and dispute resolution regulations yet to be published for comment, installers or retailers would be accountable and responsible for work completed at the installation site in accordance with the manufacturers' instructions.

HUD is also providing, in subpart A, general requirements for alterations completed during the initial installation that affect the installation of the home (§ 3285.3). This section ensures that any alterations will not adversely affect compliance with the Model Installation Standards, and that any such alteration does not take the home out of compliance with the MHCSS. The provision prohibits alterations, as defined by 24 CFR 3282.7, from imposing additional loads to the manufactured home or its foundation without following a design by a registered engineer or registered architect, or express inclusion in the manufacturer's approved installation instructions.

Consistent with other construction-type standards, HUD would incorporate several specifications, standards and codes by reference (§ 3285.4) pursuant to 5 U.S.C. 552(a) and 1 CFR part 51. Reference standards have the same force and effect as the other Model Installation Standards except that whenever reference standards and the Model Installation Standards are inconsistent, the requirements of the Model Installation Standards would prevail to the extent of the inconsistency. Section 3285.5 provides definitions for terms contained in the Model Installation Standards.

Subpart B—Pre-Installation Considerations

The majority of Subpart B would contain provisions for the installation of new manufactured homes in flood hazard areas. Consistent with current practice, the Model Installation Standards would make the installer responsible to evaluate the prospective installation site to determine if the location is in a flood hazard area (§ 3285.101). If so located, the installer must refer to the Federal Emergency Management Agency's National Flood Insurance Program for specific requirements and further guidance relating to installation in flood hazard areas.

Seismic safety has not been addressed in this proposed rule primarily because seismic safety is not a required consideration in the construction of manufactured homes under the preemptive Manufactured Home

Construction and Safety Standards (24 CFR part 3280). However, in areas where seismic activity is a concern, some State and local jurisdictions currently implement and enforce installation provisions that address seismic safety. Because the Model Installation Standards are minimum standards, these jurisdictions will continue to have full authority to implement and enforce seismic safety considerations. Should the Model Installation Standards attempt to set forth minimum installation requirements or pre-installation considerations to address seismic safety? If so, how should HUD establish seismic zones and what minimum requirements would be included in the Model Installation Standards?

The Model Installation Standards would incorporate by reference the design zone maps (§ 3285.102) provided in the MHCSS (24 CFR part 3280) to ensure that the design and construction of the home's foundation and anchorage is compatible with the design and construction of the manufactured home.

In addition, the proposed Model Installation Standards recognize the need to evaluate other practical considerations for the installation site (§ 3285.103) and obtain all permits necessary for installation work, alterations, or other site-built structures (§ 3285.104). While HUD would not regulate these considerations, reference to subpart J of this proposed rule is provided to establish considerations for which a home manufacturer must provide caution to the installer.

Subpart C—Site Preparation

Subpart C is to establish requirements for the preparation of the site where a manufactured home would be installed and requires assessment of the soil at the installation site to ensure proper design and construction of the home's foundation and anchorage.

The Model Installation Standards would also provide for site evaluation of the soil (§ 3285.201) and determination of soil classification and bearing capacity (§ 3285.202) to ensure that a particular foundation and anchorage design would be adequate for the home design and location. The Model Installation Standards provide for three general methods of determining the bearing capacity and classification of the soil at the installation site. Soils may be tested to determine the appropriate soil classification, bearing capacity, and torque probe values, or the records on file with a local authority having jurisdiction (LAHJ) may be used to determine these soil characteristics. Alternately, if the soil can be identified

by type, a table is provided for use in determining appropriate bearing capacity and soil classification including corresponding torque probe values. The Model Installation Standards would require consultation with a registered professional if unusual or suspect soil conditions were present.

The proposed Model Installation Standards also include provisions to ensure that surface water is adequately drained to prevent water build-up under the home (§ 3285.203). The Model Installation Standards would require a minimum one-half inch per foot slope away from the home for the first ten feet, and require the home to be protected from surface runoff. If the slope cannot be obtained for ten feet due to property lines or other physical conditions, the site would need to be provided with drainage that will carry surface runoff away from the foundation. The standard would also require other runoff from gutters and downspouts to be directed away from the home.

If the space under the home is enclosed with skirting or otherwise similarly enclosed, the Model Installation Standards would require a vapor retarder to keep ground moisture from entering the home (§ 3285.204). Arid regions with dry soil conditions, as well as areas under open decks, porches, or recessed entries would be exempt from vapor barrier requirements. The Model Installation Standards would also provide for minimum vapor barrier material requirements and proper installation techniques. The requirements for vapor barrier installation permit minor voids and tears without repair. However, HUD is concerned that the excessive voids and numerous tears can defeat the purpose of the requirement. Therefore, should limitations be placed on the number and size of voids and tears? If so, what specific limitations would be recommended?

Subpart D—Foundations

The Model Installation Standards would require foundations for manufactured home installations to be based on site conditions, home design features, and the loads the home was designed to withstand as evidenced on the home's data plate (§ 3285.301). The Model Installation Standards would provide prescriptive methods for constructing a foundation composed of piers and footings traditionally addressed by the manufacturer's installation instructions. While the Model Installation Standards include tables to size piers and footings, home manufacturers may elect to provide

installation instructions that are compatible with the homes and options designed and constructed in their factories. However, the manufacturer's instructions must provide protection to residents that equals or exceeds the protection provided through the tables as based on assumptions outlined in table footnotes, and the design loads for which the home was constructed. When a home's design configuration differs from the design limitations noted in table footnotes, manufacturers or design professionals must use the design loads for which the home was constructed (based on the MHCSS) to design adequate support and anchorage. Equivalent pier and footing instructions, consistent with the presentation of data in the Model Installation Standards, would require substantiation through engineering design and analysis (§ 3285.301(b) and (c)).

HUD Questions: Is it clear in the proposed rule that the described tables and charts for piers, footings, and anchor spacing are meant to provide example requirements for homes that have characteristics consistent with the respective design assumption footnotes? Is it clear that variations to tables and charts may be achieved through other installation methods or specifications and that the inclusion of variations within the manufacturer's installation instructions is both acceptable and may be required in order to assure continued compliance of the home with the MHCSS? Do the Model Installation Standards provide an adequate basis for preparing manufacturer's instructions that meet the level of protection provided by the Model Installation Standards when other installation methods are used? Do the Model Installation Standards need to include clearer performance equivalents so that alternative installation methods may be developed and subsequently approved or certified by Design Approval Primary Inspection Agencies (DAPIAs) or registered engineers or architects, as applicable? Can manufacturers comply consistently with both the MHCSS and the Model Installation Standards as proposed? Since the Model Installation Standards are intended to provide requirements for manufacturers to develop installation instructions, should the prescriptive provisions found in the tables for pier and footing sizing and anchor spacing be more appropriately placed in an appendix? Should the different specifications included in approved manufacturer installation instructions be required to be formatted to present pier, footer, and anchor spacing consistent with the presentation

of data in the tables and charts of the Model Installation Standards?

The Model Installation Standards would also permit alternative foundation design (§ 3285.301(d)). The alternative foundation design and support requirements would be determined by a registered professional engineer, registered architect, or nationally recognized third party testing agency in accordance with a nationally recognized testing protocol and must safely support the home as required by § 3285.301. However, HUD is not aware of an existing nationally recognized testing protocol or standard established to determine the support capability of proprietary-type foundation systems. While the proposed Model Installation Standards do refer to a national test protocol, HUD is requesting comments on specific requirements that should be considered and contained in such a protocol.

As determined from flood hazard evaluation required in Subpart B, if the home is located wholly or partly in a flood hazard area, the support system would need to be capable of resisting gravity loads as well as design flood and wind loads (§ 3285.302).

Generally, the Model Installation Standards would require piers to be capable of transmitting the vertical live and dead loads to the footings or foundation below (§ 3285.303). Piers may be made of concrete blocks, pressure-treated wood, or adjustable metal or concrete piers. Piers, if manufactured, would be required to be listed (§ 3285.5) according to the intended use.

The load that each pier must carry depends on many variables. Such variables include the dimensions of the home, the design dead and live loads, the spacing of the piers, and the way the piers are used to support the home. Manufacturers' installation instructions would be required to have pier and footing requirements that provide protection to manufactured home residents that equals or exceeds the protection provided by the design support configurations indicated in several tables provided in (§ 3285.303(d)), based on certain design assumptions noted in footnotes.

The tables were prepared based upon worst-case design assumptions for current typical construction. However, the intended applicability of the tables is outlined and limited by the footnotes to the tables. It is HUD's intent that manufacturers or other parties may engineer and develop other pier and footing sizes and spacings for homes with characteristics that are outside of the design assumptions of the tables,

provided that the engineered design provides protection to residents that equals or exceeds the protection provided by the specific design assumptions and specifications of the tables.

Table 3285.303(d)(1)(i) provides the model pier load and footing requirements for manufactured homes that are designed to be supported only at the frame and without additional perimeter support, except for perimeter support required at openings. Table 3285.303(d)(1)(ii) provides the model pier load and footing requirements for manufactured homes that are designed for support both at the frame and at the perimeter with support at specified spacings. Table 3285.303(d)(1)(iii) provides the minimum pier load and footing requirements for ridge beam column supports applicable to the mate-line of multi-section homes. For opening spans between those specifically included in the table, pier loads interpolated for the specific span may be used to design piers and footings.

The Model Installation Standards (§ 3285.304) would also provide for specific materials, dimensions, and illustrations that establish the model design and construction requirements for concrete block piers and pier caps. Pier caps would be designed for structural loads to evenly distribute the loads across hollow block piers.

HUD recognizes that gaps occur between the bottom of the supported beam and the foundation support system during typical installations. The Model Installation Standards would provide material and thickness requirements acceptable to fill these gaps. The Model Installation Standards would also provide requirements (§ 3285.305) for maintaining minimum clearances under homes.

The Model Installation Standards would provide minimum design procedures for typical concrete block piers, single or double stacked, including limitations and requirements for pier heights and block orientation in § 3285.306. The Model Installation Standards would require design by the manufacturer or a registered professional engineer or architect for unusual or special pier conditions, such as high or elevated piers (§§ 3285.306(c) and 3285.309).

The Model Installation Standards would also address requirements for locating piers along the mate-line of multi-section homes. Figures 3285.310(a), 3285.310(b), and 3285.310(c) illustrate typical pier locations including pier and footing table references, applicable to mate-line

locations and the appropriate support configuration.

The Model Installation Standards (§ 3285.311) would require pier supports on both sides of side wall exterior doors and any other side wall openings greater than 48 inches (such as entry and sliding glass doors), and under porch posts, factory installed fireplaces, and wood stoves. Additional or alternate perimeter supports would be required in accordance with the design of the home, but would require use of the appropriate pier load and footing configuration tables as determined by the home manufacturer or a registered professional engineer or architect.

The Model Installation Standards (§ 3285.312) would require footings to support every pier. Footings would have to be placed on undisturbed soil or fill compacted to 90 percent of maximum relative density. Figures 3285.312(a) and 3285.312(b) illustrate typical footing and pier (blocking) diagrams for single and multi-section homes.

Acceptable footing materials (§ 3285.312(a)) and specific listing or labeling requirements would be required and identified, as appropriate for each material. Footings placed in freezing climates (§ 3285.312(b)) would be required to be placed below the frost line depth unless a registered professional engineer or architect properly designs an insulated foundation or slab-type foundation (§ 3285.312(b)) in accordance with a nationally recognized design standard for frost-protected shallow foundations. The Model Installation Standards do not contain provisions for reinforced cast-in-place footings.

HUD Questions: When desired or required, should the Model Installation Standards provide minimum steel reinforcement specifications for cast-in-place footings? What information should the Model Installation Standards include to adequately provide for the design of such footings? Should the Model Installation Standards incorporate nationally recognized consensus standards such as the American Concrete Institute code 530, for masonry structures and specifications?

The size of footings (§ 3285.312(c)) would depend on the load-bearing capacity of both the piers and the soil bearing capacity. Table 3285.312(d) and Figure 3285.312(c) would provide footing configurations and requirements for precast and poured-in-place concrete footings corresponding to specified pier loads.

The Model Installation Standards would require support systems designed

to combine both load-bearing capacity and uplift resistance to be designed and sized for all applicable design loads (§ 3285.313).

These standards would not apply to installations on site-built permanent foundations when the manufacturer certifies the home in accordance with § 3282.12. Otherwise, designs for permanent foundations (§ 3285.314) would also be permitted so long as designs are obtained from the home manufacturer, or designed by a registered professional engineer or registered architect. These designs may also be subject to more stringent or supplementary local code requirements. When permanent foundation designs are required, but not available from the home manufacturer, a registered professional engineer, or registered architect would need to prepare a permanent foundation design that satisfies the home support and anchorage requirements for the site and the loads for which the home was constructed.

Foundations for homes designed for and located in areas with roof live loads greater than 40 psf, would be required to be designed by a registered professional engineer or registered architect for the special snow load conditions (§ 3285.316). The Model Installation Standards would also recognize the use of ramadas in areas with roof live loads greater than 40 pounds per square foot (psf), but would require that any connection to the home be for weatherproofing only.

Subpart E—Anchorage Against Wind

Subpart E (§§ 3285.401 and 3285.402) would provide requirements for anchoring necessary to secure manufactured homes against wind. The Model Installation Standards would require anchorage for manufactured home installations to be based on site conditions, home design features, and the loads the home was designed to withstand as evidenced on the data plate.

Where applicable to the type of installation, the Model Installation Standards would provide requirements for determining the maximum spacing for anchoring assemblies, historically addressed by the manufacturers installation instructions. The Model Installation Standards would also permit alternative anchorage design as long as the design is verified through engineering data and designed and certified by a registered professional engineer or architect (§ 3285.401(b)), based on the same process for pier and footer sizing.

The Model Installation Standards (§ 3285.402(a)) would contain provisions for tie-down straps and anchor assemblies including ground anchors for ground anchor type installations that would be consistent with requirements in the MHCSS (24 CFR part 3280). The resistance capability of anchor assemblies and anchoring equipment would be determined by a registered professional engineer, registered architect, or nationally recognized third party testing agency in accordance with a nationally recognized testing protocol. The anchor assemblies would be required to be installed in accordance with the listing and capacity of the anchor assembly. However, HUD is not aware of an existing nationally recognized testing protocol or standard established to determine the resistance capability of anchor assemblies and anchoring equipment to wind forces. While the proposed Model Installation Standards refer to a national test protocol as recommended by the MHCC, HUD is requesting comments on specific requirements that should be considered and contained in such a protocol. HUD notes that the development of a testing protocol for anchor assemblies is currently under review by HUD and the MHCC's installation subcommittee.

When providing instructions or requirements for ground anchor type installations, the number and location of ground anchors and anchor straps (§ 3285.402(b)) for the installation of single section and multi-section manufactured homes would be required to be consistent with the Tables 3285.402(c)(1) through 3285.402(c)(3), and Figures 3285.402(b)(1) and 3285.402(b)(2). However, the tables were based on worst-case assumptions for current typical manufactured home construction and may provide conservative spacing for different design assumptions. The use of the tables would only be applicable under the limitations provided in the footnotes. It is HUD's intent that manufacturers or other parties may engineer and develop other anchor spacing for homes with characteristics that are outside of the design assumptions of the tables, provided that the engineered design provides protection to residents of manufactured homes that equals or exceeds the design load assumptions and protections provided by the tables when applied to the specific home characteristics and the design loads for which the home was constructed.

Table 3285.402(c)(1) would provide the maximum ground anchor spacing for diagonal straps applicable to homes located in Wind Zone 1. However, the

spacing is dependent upon the size characteristics of the home, the I-beam spacing, and the design capacity of the anchor assembly. The table also contains the maximum height from the ground to the strap attachment for each strap spacing, ensuring that the diagonal strap angle achieves a nominal 45-degree angle. The table would only be applicable under the limitations contained in the 12 footnotes.

Table 3285.402(c)(2) would provide the maximum ground anchor spacing for diagonal straps applicable to homes located in Wind Zone 2. Consistent with the MHCSS (§ 3280.306), the Model Installation Standards would require a vertical strap at each diagonal strap in this high wind area. However, the spacing is dependent upon the size characteristics of the home, the I-beam spacing, and the design capacity of the anchor assembly. The table contains the maximum height from the ground to the strap attachment for each strap spacing, ensuring that the diagonal strap angle achieves a nominal 45-degree angle. The table would only be applicable under the limitations contained in the 13 footnotes.

Table 3285.402(c)(3) would provide the maximum ground anchor spacing for diagonal straps applicable to homes located in Wind Zone 3. Consistent with the MHCSS (§ 3280.306), the Model Installation Standards would require a vertical strap at each diagonal strap in this high wind area. However, the spacing is dependent upon the size characteristics of the home, the I-beam spacing, and the design capacity of the anchor assembly. The table contains the maximum height from the ground to the strap attachment for each strap spacing, ensuring that the diagonal strap angle achieves a nominal 45-degree angle. The table would only be applicable under the limitations contained in the 13 footnotes.

In addition to regular tie down strapping and anchoring required through the tables, HUD recognizes that manufacturers may provide other straps at the factory that must be connected to an anchoring assembly (§ 3285.403) to ensure proper anchorage of the home. Such straps include mate-line straps, shear wall straps, and over-the-roof straps. When provided by the home manufacturer, these straps must be connected to an anchor assembly.

The Model Installation Standards would provide general requirements (§ 3285.404) for the installation of ground anchors in freezing climates and would require that anchorage for homes located within 1,500 feet of a Wind Zone 2 or 3 coastline be specifically included in the home manufacturer's

installation instructions. Where site or other conditions prohibit the use of the manufacturer's design, the anchorage must be designed by a registered professional engineer or registered architect (§ 3282.405) for the special wind and site or other conditions.

Subpart F—Optional Features

Subpart F would provide model requirements applicable to the installation of optional features not otherwise covered by the Model Installation Standards, but which could affect the home's compliance with the Model Installation Standards or the MHCSS. Where applicable and specific to the home and product manufacturer, optional features such as expanding rooms (§ 3285.502) and some appliances (§ 3285.503) would be permitted to be installed at the installation site provided all items are installed in accordance with the home and/or product manufacturer installation instructions as Home Installation Manual Supplements (§ 3285.501).

Optional appliances (§ 3285.503) would be required to be listed (§ 3285.5) or certified for the intended use and must be installed according to the appliance manufacturer installation instructions.

The Model Installation Standards would require heat-producing appliances to exhaust to the exterior of the home, beyond perimeter skirting if installed (§ 3285.503(c)). This Subpart would also provide minimum appliance elevation and anchoring requirements for homes installed in flood hazard areas (§ 3285.503(d)). Specifically, appliances would be required to be anchored, and appliances and air inlets elevated at or above the same elevation as the lowest elevation of the lowest floor of the home.

Clothes dryer exhaust duct systems (§ 3285.503(e)) would be required to conform with and be completed in accordance with the appliance manufacturer instructions and the MHCSS (§ 3280.708).

HUD's Model Installation Standards would contain provisions for the use of optional skirting (§ 3285.504) and corresponding crawlspace ventilation (§ 3285.505) required when a perimeter enclosure is installed. The ventilation requirements are consistent with requirements for crawlspace ventilation of other structures built to model building codes, and would require ventilation of 1 square foot of ventilation for every 150 square feet of floor area. The ventilation may be decreased to 1 square foot of ventilation for every 1,500 square feet of floor area when an acceptable vapor barrier is

installed according to requirements in Subpart C. Other minimum requirements would provide for location of vent openings and covers for vent openings.

Subpart G—Ductwork and Plumbing and Fuel Supply Systems

Subpart G would provide requirements applicable to the completion and installation of ductwork and water, drainage, and fuel supply systems. The provisions of subpart G are necessarily limited in scope and content, but are required to ensure that the manufactured home is not taken out of compliance with the MHCSS after installation is completed. The connections of the systems to utilities are located in subpart J of the proposed rule.

Work related to completion of these systems at the installation site is deemed to be installation work so long as the work is limited only to that necessary to join sections of a multi-section home. However, the home manufacturer consistent with the existing requirements of the MHCSS must design instructions for completion of this work.

Home manufacturers would be required to provide specific written instructions on the proper assembly for ship loose plumbing, duct, and fuel supply systems that are necessary to join all sections of a multi-section home (§ 3285.601). The home manufacturer must design instructions to ensure that the systems, upon completion, will conform to the requirements of the MHCSS and the Model Installation Standards.

The Model Installation Standards would require water line crossovers (§ 3285.603) for multi-section homes to be designed in accordance with provisions of the MHCSS (§ 3280.609). In addition, the Model Installation Standards would establish requirements for water supply inlet pressure consistent with the MHCSS, and establish a requirement for a mandatory shut-off valve. The Model Installation Standards would also require that water lines exposed to freezing temperatures be protected from freezing in accordance with requirements already established by the MHCSS (§ 3280.603). The water system would also need to be tested for leaks after completion at the installation site with testing requirements consistent with the MHCSS (§ 3280.612).

The Model Installation Standards would require drainage crossovers (§ 3285.604) for multi-section homes to be designed in accordance with provisions of the MHCSS (§ 3280.610).

In addition, the Model Installation Standards would establish requirements for proper drainage line support and slope, also consistent with the requirements of the MHCSS (§ 3280.608). The drainage system would also need to be tested for leaks after completion at the installation site with testing requirements consistent with the MHCSS (§ 3280.612).

The Model Installation Standards would require fuel supply crossovers (§ 3285.605) for multi-section homes to be designed in accordance with provisions of the MHCSS (§ 3280.705). In addition, the Model Installation Standards would establish requirements for proper fuel supply pressure, consistent with the MHCSS and a requirement for a mandatory shut-off valve. The fuel supply system would also need to be tested for leaks after completion at the installation site with testing requirements consistent with the MHCSS (§ 3280.705).

Subpart G would also provide requirements for duct crossovers and the materials to be used in completing the crossover connections (§ 3285.606). Typical duct crossover designs are illustrated in figures and are consistent with current manufacturer installation instructions. However, other types of duct crossovers would be permitted so long as the crossover is adequately insulated and properly designed for the application.

Subpart H—Electrical Systems and Equipment

The Model Installation Standards would require instructions for completing electrical crossovers (§ 3285.701) to be designed consistent with subpart I of the MHCSS. The Model Installation Standards would also provide specific requirements for the installation of certain lights and fixtures, including chain-hung interior lights, exterior lights and ceiling suspended paddle fans.

Subpart H would also contain testing requirements for electrical continuity, operation, and electrical polarity after completion of the electrical system at the installation site. Testing requirements would include functionally testing smoke alarms after completion of the home (§ 3285.703).

There may be information currently addressed by manufacturer installation instructions that has not been evaluated by the MHCC or reviewed for inclusion in the Model Installation Standards. Such issues as multi-section frame bonding, panel box grounding, and electrical feeder requirements may need further consideration. Therefore, HUD specifically invites public comment on

the substance of this Subpart H and other related issues that should or should not be addressed.

Subpart I—Exterior and Interior Close Up

Subpart I would establish Model Installation Standards applicable to work related to the joining of all sections of a multi-section home. Section 3285.801 would establish provisions for close up of the exterior of the home and would include exterior siding and roofing. Exterior products would be required to be installed in accordance with the product manufacturer's installation instructions and fastened in accordance with manufacturer designs consistent with the MHCSS (§§ 3280.305 and 3280.307). The Model Installation Standards also address completion of an air seal gasket around the mate-line of multi-section homes to prevent the infiltration of air, water, insects, and vermin. The Model Installation Standards would also contain reference to hinged roofs and eaves. Under this proposed rule, unpenetrated, low-slope hinged roofs would be covered by the requirements for installation instructions and exterior close-up work. Other, more complex hinged roofs would continue to be subject to requirements established under the MHCSS. The Department addressed those requirements in a draft rule on on-site construction that it submitted to the MHCC for its prepublication review. Should the Model Installation Standards retain the proposed distinction (§ 3285.801(f)) for certain hinged roofs that would permit completion of those roofs under the Federal installation program as part of exterior close-up? Or should all hinged roofs, regardless of roof slope, location, or penetration, be uniformly treated as construction of the roof assembly of the home and therefore subject to requirements related to the MHCSS? However, hinged roofs may be subject to Alternative Construction or other requirements to be outlined in an on-site construction rule to be published for comment separately by HUD.

The Model Installation Standards would provide requirements relating to the structural interconnection of multi-section homes (§ 3285.802). These provisions would include requirements to maintain the structural integrity of the home and would establish requirements for gaps that may occur at the mate-line upon installation.

The Model Installation Standards would also provide requirements for the interior finishing of certain aspects of the home that would not be completed at the factory due to transportation

limitations or possible transit damage (§ 3285.803). Section 3285.804 would provide for repair of bottom board material that may be disturbed during the installation process.

Subpart J—Recommendations for Manufacturer's Installation Instructions

Generally, moving manufactured homes and completing work at the site with respect to utility connections are subject to LAHJ requirements. Therefore, the proposed Model Installation Standards do not attempt to comprehensively address transport, permits, and utility connection requirements. However, several related provisions are included in subpart J as recommendations for manufacturers to include in their installation instructions in order to protect manufactured homes as constructed in accordance with the MHCSS (§ 3285.901).

Specifically, Subpart J would provide recommendations for manufacturers to provide instructions related to moving the manufactured home to the installation site (§ 3285.902), fire separation, construction of on-site structures (§ 3285.903), provisions for culverts and ditches (§ 3285.904), connection of the drainage system to the sewer system (§ 3285.905), as well as installation instructions for fuel system orifices and regulators and gas appliance startup procedures.

Subpart J would also address heating oil systems and tank installation (§ 3285.906), recommending that work be completed in accordance with the more stringent requirements of the LAHJ or the nationally recognized consensus standard NFPA 31.

II. Summary of Changes to MHCC Proposed Installation Standards

In general, HUD's Model Installation Standards incorporate the vast majority of the MHCC's proposed installation standards but would amend the MHCC proposal for consistency with format and numbering of regulations published in the Code of Federal Regulations. HUD's Model Installation Standards would also delete all references to SI (metric) units because they were not consistently and comprehensively identified within the MHCC recommendations and have not been adopted by HUD in all other standards publications.

In instances of other modification, HUD made a good-faith attempt to retain the intent and text of the installation standards provided by the MHCC. However, editorial changes have been made in the text for consistency with formatting of **Federal Register** documents, or for clarification purposes.

In most areas where a change is being recommended for editorial or clarification purposes, it is not described with an associated rationale. In some instances, HUD recommends new or revised Model Installation Standards to replace the MHCC's proposed installation standards. These instances are fully described. HUD summarizes its changes to the MHCC proposal by grouping the changes into the following general categories:

- **Consistency**—HUD modified certain installation standards proposed by the MHCC to retain consistency with the Act, other sections of the Model Installation Standards, the MHCSS (24 CFR part 3280) and the Manufactured Home Procedural and Enforcement Regulations (24 CFR part 3282). Some changes for consistency would require a companion change to part 3280 and are identified appropriately.

- **Relocate**—HUD relocated certain sections or portions of text within the document while attempting to preserve the MHCC's installation standards and intent.

- **Authority**—HUD revised or deleted certain sections of the MHCC's proposed installation standards because the proposed installation standard was not within the scope of HUD's authority, or in the opinion of HUD, is an aspect of home installation best retained by the States for regulation through an LAHJ. In some instances, HUD retained such provisions in the Model Installation Standards but moved them from the MHCC proposed location and placed them in a section containing recommendations for inclusion in manufacturer installation instructions.

- **Construction**—HUD also modified certain MHCC-proposed installation standards that address completion of some aspects of the manufactured home at the site. HUD removed certain of these provisions, as they would be regulated under Alternative Construction requirements or other requirements for site completion to be published separately by HUD based upon consultation with the MHCC.

- **Procedural**—HUD revised or otherwise modified certain provisions because they did not establish standards but rather provided procedural direction. HUD will further consider these provisions in its future development of the Federal Installation Program regulations.

- **Technical**—HUD modified other provisions of the MHCC's proposed installation standards due to differences that are technical in nature.

Subpart A—General

Subpart A incorporates portions of chapters 1, 2, 3, and 4 of the MHCC's proposed installation standards. Subpart A sets forth provisions for administration, referenced publications, and definitions of terms used throughout the document. However, HUD has made certain modifications to the MHCC's proposal as outlined below.

Administration § 3285.1

Scope (Relocate, Technical)—HUD revised the scope of the Model Installation Standards from that proposed by the MHCC to emphasize certain parameters relating to the use and requirements of the document within the envisioned Federal installation program. The scope statement submitted by the MHCC provided direction on the use of manufacturer installation instructions but did not provide information relating to the use of the Model Installation Standards in the more general context of HUD's installation program which will be established by separate rulemaking. Therefore, HUD modified the scope of the document to emphasize the following:

- The Model Installation Standards, as enforced under the Federal manufactured home installation program, would be applicable only to the first or initial installation of new manufactured homes. The use of these standards for any other manufactured home installation would be subject to State or local law.

- HUD has proposed a distinction between construction and installation work for the purposes of this proposed rule. Traditionally, work necessary to join the sections of a multi-section home has not been fully enforced by HUD or State or local agencies as part of the construction and assembly process or the installation process. Through this proposed rule, HUD would continue to recognize the current practice that installers accomplish certain work, limited to the joining of sections, as installation work completed at the installation site because of the impracticality of completing the work at the factory. However, home manufacturers would be accountable and responsible to furnish with each new home, adequate instruction on the completion of these joining and crossover aspects. The installer or retailer would be accountable and responsible to complete the work in accordance with the instructions provided and/or instructions developed by registered professional engineers or

architects in instances indicated in the Model Installation Standards.

- HUD has also added language that outlines the use of the Model Installation Standards in both States that choose to operate their own installation programs as well as the intended use of the document in States that do not choose to operate an installation program.

- The MHCC's language relating to manufacturer installation instructions has been preserved and relocated with modification, at § 3285.2.

Applicability (Consistency, Technical)—HUD accepted the intent of the MHCC's proposal for applicability of the Model Installation Standards. However, HUD modified the MHCC's proposed applicability sections to simplify the requirements for convenience and clarity. In summary, the Model Installation Standards would apply only to new manufactured homes produced under the Federal Manufactured Housing Program (24 CFR part 3280 and 24 CFR part 3282). As provided by section 604(f) of the Act (42 U.S.C. 5403(f)), the installation standards do not apply to homes installed on site-built permanent foundations when the manufacturer certifies the home in accordance with § 3282.12. Exclusions and other restrictions proposed by the MHCC were not deemed necessary by HUD, and therefore have been omitted.

Installation of Manufactured Homes in Flood Hazard Areas (Relocate—§ 3285.101)—HUD accepted the MHCC's recommended provisions relating to home installation in flood hazard areas. However, HUD relocated the requirements for flood hazard areas, with minimal revisions, to Subpart B for inclusion as a pre-installation consideration.

Manufacturer Installation Instructions § 3285.2 (New Section—Technical, Consistency)—HUD accepted the intent of the MHCC in its proposed scope language and definition of manufacturers instructions. However, section 605(a) of the Act (42 U.S.C. 5404(a)) contains specific provisions for installation design and instructions. Therefore, HUD established a new section in the Model Installation Standards requiring manufacturer installation instructions be provided with each new home. Manufacturer installation instructions, as set forth in section 605(a) of the Act, must meet or exceed the protection provided under the Model Installation Standards and would need to address, at a minimum, the requirements of the Model Installation Standards.

HUD preserved a majority of the language and intent provided the MHCC in its scope statement, and supplements the language provided by the MHCC in its definition of installation instructions. HUD also modified this section to provide that the manufacturer's installation instructions must not take the home out of compliance with 24 CFR part 3280.

HUD invites comment concerning whether manufacturer installation instructions should provide that when general site conditions are not covered by the installation instructions, a professional engineer or registered architect must be consulted.

Term Use (Consistency)—HUD did not accept this MHCC proposal because the Model Installation Standards are applicable only to manufactured homes as fully described in the Applicability section (§ 3285.1(d)).

Alterations During Initial Installation § 3285.3 (New Section—Technical, Relocate)—HUD's Model Installation Standards include a section to address alterations made during the initial installation of a new manufactured home that affect the installation of the home. The Federal installation program would provide for design and inspection authority for modifications to a home or foundation only when the alteration affects the requirements of the Model Installation Standards or the MHCSS. State or local authority would have design and inspection authority for other alterations.

HUD acknowledges that there are questions in delineating State or local authority from Federal jurisdiction in instances related to alterations during initial installations, such as for patio roofs, decks, entry stairs, etc. HUD specifically invites comment as to how alterations made to manufactured homes that affect the installation or designed foundation during the initial installation should be enforced and codified.

Referenced Publications § 3285.4 (Consistency, Technical)—HUD accepted the vast majority of referenced publications provided by the MHCC. However, HUD modified the order and sequence of certain standards incorporated by reference and is adding to or did not include some standards included in the MHCC proposal as follows:

ACCA Manual J: HUD added this reference standard in Subpart F because it is a nationally recognized standard for sizing air conditioning equipment and is currently utilized and accepted by all parties for this purpose.

ASTM D1586: HUD added this nationally recognized consensus

standard as a method of determining soil characteristics consistent with the current work of the MHCC's ground anchor task force.

ASTM D2487: HUD added this nationally recognized consensus standard as a method of determining soil classification consistent with the current work of the MHCC's ground anchor task force.

ASTM D2488: HUD added this nationally recognized consensus standard as a method of determining soil classification consistent with the current work of the MHCC's ground anchor task force.

NFPA 31: HUD included this reference standard because it is a nationally recognized consensus standard that addresses installation of oil burning equipment.

NFPA 255: HUD deleted this reference document because it is not referenced within the Installation Standards. Is there a specific need to include this standard as a referenced standard with the Model Installation Standards? If so, in which section would the standard be referenced?

NFPA 1192: HUD deleted this reference standard because it is not referenced within HUD's proposed modifications and is not applicable to structures covered by the Model Installation Standards. Is there a need to reference this standard for recreational vehicles? If so, in which section would the standard be referenced?

ANSI A119.5: HUD deleted this reference standard because it is not referenced within HUD's proposed modifications and is not applicable to structures covered by the Model Installation Standards. Is there a need to reference this standard for recreational park trailers? If so, in which section would the standard be referenced?

SEI/ASCE 32-01: HUD included this nationally recognized consensus standard as a reference standard for the design of specific foundations and references it in Subpart D.

UL 181: HUD included this nationally recognized standard as a referenced standard for the use of connectors for factory made air ducts.

HUD added referenced government publications 44 CFR 59 and 44 CFR 60 to § 3285.4 as they are referenced in Subpart B.

Definitions § 3285.5 (Consistency, Technical, Authority)—HUD accepted the majority of terms and definitions provided in the MHCC's proposed installation standards. However, HUD modified the sequence and text of certain terms and definitions. HUD eliminated reference to "Official Definition" and "General Definitions"

but retained the vast majority of the terms and definitions that were provided by the MHCC in each category. Some terms and definitions have been added or deleted to clarify the meaning of a term and carry out the intent of the appropriate Model Installation Standards. Several definitions would also require modification to definitions in the MHCSS to ensure consistency with definitions provided in these Model Installation Standards and need further consideration. These are specifically identified.

“Anchor Assembly”—This definition has been added to clarify its use in the document and to retain the MHCC’s more recent recommendation to replace the term “ground anchor.”

“Approved” is modified for consistency with 24 CFR part 3280.

“Authority Having Jurisdiction”—HUD deleted this term and its definition. This term is being replaced with the term “Secretary.” HUD believes this change retains the MHCC’s intent and remains consistent with the Act, 24 CFR parts 3280 and 3282.

“Labeled” is modified for consistency with 24 CFR part 3280.

“Listed” is modified for consistency with 24 CFR part 3280.

“Must,” “Shall,” and “Should”—Except as specifically identified, all provisions of the Model Installation Standards are mandatory minimum requirements. Generally, references to “should” and “shall” have been replaced with “must” throughout the text of the Proposed Rule to retain consistency with **Federal Register** formatting.

“Anchor”—HUD did not incorporate the use of the term “anchor” because the definition is comparable to the definition of “ground anchor” in the MHCSS (24 CFR part 3280). HUD would also add the term “anchor assembly” to 24 CFR part 3280.302 to maintain consistency.

“Anchoring equipment”—HUD would modify the definition to include the term “anchoring assembly.” A companion change to 24 CFR part 3280.302 is required to maintain consistency.

“Anchoring system”—HUD revised the MHCC’s definition to include the term “anchoring assembly.” A companion change to 24 CFR part 3280.302 is required to maintain consistency.

“Arid Region”—While HUD did not modify the definition of this term, comment is specifically invited. Should annual rainfall be the only definitive factor used to determine an arid region with dry soil conditions? Is there

substantiation for the threshold of 15 inches or less of rainfall?

“Ground Anchor”—HUD modified this definition to indicate that a ground anchor is a type of anchor assembly.

“Installation”—HUD did not include the MHCC’s proposed definition because the term is not defined within the Act. HUD believes that the term as used does not need to be defined separately and that the MHCC definition would create confusion and possible conflict between the Model Installation Standards, the MHCSS, and the Act.

“Installation Alteration”—HUD did not include this definition proposed by the MHCC because not all alterations are within HUD’s scope of authority to regulate. However, HUD attempted to retain the MHCC’s intent by adding § 3285.3 to the proposed rule, which addresses alterations during initial installation. Are the added provisions for alterations consistent with current practice?

“Installation Instructions”—HUD modified this proposed definition to clarify its application.

“Installation Standards”—HUD added this term because it appears in HUD’s proposed Model Installation Standards. The proposed definition is consistent with the definition provided in the Act.

“Manufactured Home”—HUD modified this definition to be consistent with the Act.

“Manufactured Home Accessory Building or Structure”—HUD did not include this MHCC-proposed term and definition because the term does not appear within HUD’s proposed Model Installation Standards and would have only applied to buildings and structures that are not within the scope of HUD’s authority. Is there a specific need to define an accessory building or structure? If so, where would the term be used and how would the definition differ from common use of the term?

“Pier”—HUD modified this definition to retain consistency with all types of piers referenced in Subpart D of the proposed rule.

“Stabilizing Devices”—HUD included the terms “ground” and “equipment” in its proposed definition. A companion change to 24 CFR part 3280.302 is required to maintain consistency.

“Stand, Manufactured Home”—HUD did not include this MHCC-proposed term and definition as the term does not appear within HUD’s proposed Model Installation Standards and may be confused with common usage of the term. Is there a specific need to define this term within the Model Installation Standards?

“Structure”—HUD did not include this term so that the common usage of

the term will apply throughout the Model Installation Standards. Is there use of the term “structure” that would not be covered by the common usage of the term?

“Tie”—HUD modified this definition for consistency with 24 CFR part 3280.

“Diagonal Tie”—HUD modified this definition to combine the MHCC-proposed definition with the definition in 24 CFR part 3280. This change also requires a companion change to 24 CFR part 3280 to maintain consistency.

“Secretary”—HUD added this term and definition to replace the term “Authority Having Jurisdiction” in the MHCC’s proposed model installation standards. HUD believes this change preserves the MHCC’s intent to recognize those items under HUD’s authority and retains consistency with 24 CFR parts 3280 and 3282.

“Design Approval Primary Inspection Agency”—HUD added this term because it appears within HUD’s proposed Model Installation Standards. The definition remains consistent with the Act and 24 CFR part 3282.

“Working Load”—HUD added this term because it appears within HUD’s proposed Model Installation Standards.

Subpart B—Pre-Installation Considerations

Subpart B incorporates provisions of Chapters 1 and 4 of the MHCC’s proposed installation standards. Subpart B sets forth considerations for a home’s installation relative to some site conditions, the design of the manufactured home, and the proposed foundation location. However, HUD has made certain modifications to the MHCC’s proposal as outlined below.

Installation of Manufactured Homes in Flood Areas § 3285.101 (Relocated, Technical, Consistency)—HUD accepted the large majority of the MHCC provisions for flood hazard areas. The sections pertaining to flood hazard areas would be relocated from Chapter 1 of the MHCC document to Subpart B of the Model Installation Standards. The evaluation of a site for flood hazard exposure is a pre-installation consideration that should be taken into account prior to designing a foundation and installing the manufactured home at the site. Therefore, this responsibility is charged to installers.

All references to the issuance of permits in the MHCC proposal were relocated to Subpart J of the proposed rule because this function is not within HUD’s authority. HUD also notes that the Federal Emergency Management Agency (FEMA) is currently in the process of updating its FEMA-85 document. HUD will consider updating

the Model Installation Standards to the revised FEMA document provided it is published prior to publication of the Model Installation Standards Final Rule.

Alterations (Relocate—See §§ 3285.3 and 3285.903)—HUD agrees with the intent of the MHCC regarding home alterations. However, HUD relocated the provisions for alterations during the initial installation to § 3285.3 to better fit the reorganization of the proposed rule. Provisions related to the obtaining of permits have been relocated to § 3285.903, as this function is not within HUD's authority.

Installation Considerations (Technical, Construction)—HUD would not include MHCC-proposed provisions for utility schematics in the Model Installation Standards but would codify a similar requirement in Subpart G providing for specific written instruction on the field assembly of ship loose parts. In addition, provisions for floor plans and approval by the Secretary have not been included in the proposed rule due to the establishment of other provisions requiring adequate installation instructions. While floor plans are not specifically required, the Model Installation Standards (§ 3285.2) do require home manufacturers to provide adequate installation instructions with each new home that will ensure the home can be installed in accordance with all provisions of the Model Installation Standards. However, HUD seeks comment on whether model-specific plans for installation should also be required? If so, what minimum information should be required on the plans (e.g. pier capacities, minimum, support and anchorage locations, other structural design requirements, plan-specific information for completion of utility systems, etc.)? Would the provisions in Subpart G of the proposed rule adequately provide for required utility schematics?

Home Installation Manual Supplements (Relocate—§ 3285.501)—HUD accepted the intent of the MHCC's proposal regarding additional information to be included in the manufacturer's installation instructions. However, this information would be relocated to § 3285.501 to better fit the reorganization of the proposed rule.

Design Zone Maps § 3285.102—HUD agrees with the intent of the MHCC's proposal regarding design zone maps. Specific use of the design zone maps is referenced in Subparts D and E to ensure proper location and design of the foundation and anchorage.

Moving Manufactured Home to Location § 3285.103 (Authority)—HUD agrees with the intent of the MHCC's proposal for moving manufactured

homes to the installation site. However, regulation of this aspect is not within HUD's authority. Therefore, this information would be relocated to Subpart J, § 3285.902.

Permits, Other Alterations, and On-Site Structures § 3285.104 (Authority)—HUD agrees with the intent of the MHCC's proposal for these other considerations. However, regulation of these aspects is not within HUD's authority. Therefore, this information is relocated to § 3285.903.

Subpart C—Site Preparation

Subpart C of the proposed rule incorporates provisions of Chapter 5 of the MHCC proposed installation standards. Subpart C sets forth requirements for preparing the site or property where the foundation is to be constructed. These considerations include soil conditions, drainage, and ground moisture control. HUD agrees with and has incorporated the vast majority of the MHCC's proposed installation standards regarding site preparation. HUD would make certain modifications to the MHCC's proposal in the proposed rule as outlined below.

HUD relocated the MHCC's recommendations for *transporter access, encroachments, fire separation, and permits*, to subpart J of the proposed rule because they are not within the scope of HUD's authority but may be subject to LAHJ requirements.

Soil Conditions §§ 3285.201, 3285.202, and 3285.402 (Technical, Consistency)—HUD agrees with the majority of installation standards contained in the MHCC's proposed installation standards for soil conditions. HUD modified the MHCC's proposed standards for soil conditions, including the Table of Soil Classifications and Bearing Capacities for clarity, but preserved the MHCC's intent and as much MHCC-proposed language as practicable. HUD's proposed modifications also simplify and clarify the standard and incorporate classification of soils required for ground anchor selection consistent with the most current recommendations of the MHCC's ground anchor task force.

HUD's Model Installation Standards relocated and combined sections contained in the MHCC's proposal in order to simplify and condense certain requirements, such as removal of organic material. HUD seeks comment on the issue as to whether the standards should require that a minimum of six inches of soil, including the organic material, be removed under load bearing footings to ensure that footings are placed on undisturbed soil for at-grade footings?

HUD would modify the MHCC proposal so that soil data needed to determine bearing capacity and anchor selection is obtained through testing, soil records, or through an expanded table for soil classification. HUD did not include references to specific soil test methods and equipment contained in the MHCC proposal and instead would require testing to be in accordance with accepted engineering practice. HUD would also modify the MHCC's proposed Table for Soil Bearing Capacities by expanding its application to also be used for determining the numeric classification of soils for anchor selection, and by expanding the criteria in the Table to include torque probe and blow count values. This approach is consistent with the most current recommendations of the MHCC's ground anchor task force.

Drainage § 3285.204 (Consistency, Relocate—see § 3285.803)—HUD agrees with the majority of the MHCC's proposed installation standards related to drainage control. HUD has attempted to clarify the drainage requirements to incorporate the minimum slope requirements outlined in the figures proposed by the MHCC, and to incorporate more recent MHCC recommendations for instances where the slope is prohibited by property lines or other physical conditions. HUD relocated the MHCC's proposed requirements for drainage structures (ditches and culverts) to Subpart J of the proposed rule because the design and construction of such structures is subject to requirements of the LAHJ. HUD also revised the text and figures to eliminate permissive model installation standards and establish **Federal Register** formatting language.

Ground Moisture Control § 3285.204 (Technical)—HUD generally agrees with the majority of the MHCC's proposed installation standards for ground moisture control. HUD would modify the MHCC vapor barrier proposal so that the only exception for placement of a vapor barrier is provided in the Model Installation Standards. The proposed rule would not permit a LAHJ to establish a less stringent standard. It is HUD's position that exceptions for vapor barrier placement must be described within the Model Installation Standards because HUD cannot delegate rulemaking authority without proper notice and comment rulemaking. HUD would also make editorial revisions to the MHCC's proposal on vapor barrier installation, but the modifications would not change the substance or intent of the MHCC's proposal.

Drainage Structures (Authority)—HUD agrees with the intent of the

MHCC's proposal for drainage structures. However, regulation of this aspect of home installation is not within HUD's authority. Therefore, this information has been relocated to § 3285.904.

Subpart D—Foundations

Subpart D would incorporate the provisions of Chapter 6 of the MHCC document with only minimal modification as to substance or intent. Subpart D sets forth the requirements for the design and construction of the foundation for a manufactured home. This includes piers, footings, and other related support system components. HUD is in agreement with the large majority of the MHCC's proposed installation standards regarding foundations. However, HUD would make certain modifications to the MHCC's proposal as outlined below.

HUD notes that pier and footing tables and figures proposed in the Model Installation Standards provide an example with very prescriptive elements for foundations composed of the pier and footing type foundations specific to a home configuration and design assumptions outlined in footnotes. Pier and footing type foundations are common and currently provided for in manufacturer installation instructions. HUD intends that the requirements for pier and footing design and construction be used by States and manufacturers to develop and establish foundation systems appropriate for the homes produced by a manufacturer or installed in a State. The foundation systems developed would be required to equal or exceed the protection to residents provided by the Model Installation Standards. HUD must also consider the use of other foundation types, such as perimeter and permanent foundations, especially in States where HUD will operate the installation program.

HUD Questions: Should manufacturers who design their manufactured homes to be installed on perimeter or permanent foundations, in addition to pier, footing and anchor foundations, be required to provide DAPIA-approved installation instructions for perimeter and/or permanent foundations and the pier, footing, and anchor systems?

Will manufacturers be able to use the proposed Model Installation Standards to develop installation instructions for perimeter and permanent foundation installations? HUD specifically invites comment on the established requirements for the design of pier and footing foundations as well as alternative, perimeter, and permanent

foundation designs and proprietary-type foundation systems.

Do the Model Installation Standards in this proposed rule adequately and clearly allow for alternative foundation designs? Does the document establish sufficient criteria to design a foundation not composed of piers and footings? Do the proposed Model Installation Standards provide adequate design criteria to permit a manufacturer or State to develop pier and footing foundations for homes that have characteristics different from the assumptions on which the tables are based?

Should the Model Installation Standards provide for the uniform testing of proprietary-type foundation systems? Should the Model Installation Standards and/or installation program regulations address review and/or approval of alternative foundation systems? Should designs prepared by registered professional engineers and architects as variations from DAPIA-approved designs, or that are designed for specific site conditions that are not included in a manufacturer's installation instructions, be required to be DAPIA-approved to ensure that the installation system or foundation is properly designed for the specific home and does not take the home out of compliance with the MHCSS? If the specific designs are not DAPIA-approved, what safeguards should be provided to assure that the variations in foundation and anchoring from the DAPIA-approved manufacturer's instructions do not take the home out of compliance with the MHCSS and adequately support and anchor the home? Specifically, if DAPIA approval were not required, how would HUD's installation program provide for the inspection and enforcement of these variations?

General § 3285.301 (Technical)—HUD agrees with the intent of the MHCC's proposed installation standards. HUD proposes to clarify the general requirements for foundations, so that foundation designs accommodate the site conditions, home design features, and loads the home was designed to withstand based on the design loads of the MHCSS.

Flood Hazard Areas § 3285.302—HUD incorporated the MHCC's proposal in the proposed rule.

Piers § 3285.303—HUD accepted the vast majority of the MHCC's proposed installation standards for piers. HUD made a few editorial changes to clarify its intent and retain consistency with other sections of HUD's proposed Model Installation Standards.

HUD Questions: HUD specifically invites comment on the Model Installation Standards established for manufactured piers. Should the Model Installation Standards include other design characteristics or standards for manufactured piers such as protection from the elements, material specifications, a testing protocol, or listing and labeling requirements? HUD is not aware of a nationally recognized testing protocol or listing requirements to which manufactured piers are currently tested or listed.

Design Requirements § 3285.303(c) (Technical)—HUD accepted the MHCC's recommendations for design requirements, but would modify the MHCC proposal to add a requirement that dead loads be considered in the design of foundations.

Pier Loads § 3285.303(d) (Technical)—The MHCC proposal indicated that the tables for pier loads must be used in the event the manufacturer installation instructions are not available. However, manufacturers are to use the Model Installation Standards as a model in the design of their installation instructions. Therefore, retaining the MHCC's proposal would create a circular reference. HUD revised the MHCC's proposed installation standards to require that the manufacturer's installation instructions must provide a level of protection that meets or exceeds the specifications of the Model Installation Standards. Manufacturers would be required to design foundations appropriate to their products that would support the appropriate design loads of the MHCSS and provide protection that equals or exceeds the support provisions found in Tables 3285.303(d)(1)(i) through (iii). To ensure that the designs are consistent with the tables, the design limitations used in the development of the tables are reflected as footnotes.

Configuration § 3285.304—HUD incorporated the MHCC proposals for pier configuration in the proposed rule.

Caps § 3285.304(b)—HUD accepted the proposal for pier caps contained in the MHCC's proposed installation standards. However, HUD specifically invites comment on the specifications for steel caps because the HUD and MHCC proposals include steel as an alternate material, but minimum thickness, corrosion protection, and yield strength have not been specified in the proposed Model Installation Standards.

Gaps § 3285.304(c)—HUD agrees with the MHCC's proposal regarding gaps. HUD modified the MHCC proposal to clarify that this section addresses only

gaps between the frame and pier. HUD specifically invites comment on the clarity of the proposed standards for gaps.

Clearance under homes § 3285.305—HUD has not modified the language or intent of the MHCC's proposal for clearance under homes. However, the section provides minimum clearance requirements only for areas of utility connections. Should the standard include minimum clearance in other areas such as areas required for access or inspection?

The standard specifies that no more than 25 percent of the lowest member of the home must be less than 12 inches above grade. As a practical matter, should the standard address requirements for instances where more than 25 percent of the home is less than 12 inches above grade? Should there be limitations or requirements on the percentage of a home's footprint that can be less than 12 inches above grade? The proposed requirements may need clarification in order to fully incorporate the MHCC's intent. HUD specifically invites comment on the clarity and practicality of this proposed requirement.

Design Procedures for Concrete Pier Blocks § 3285.306 (Technical, Consistency)—HUD accepted the great majority of the MHCC's proposed installation standards for the design of concrete piers. HUD would make editorial modifications to the MHCC's proposal to remove permissive Model Installation Standards, use appropriate terminology, and revise the proposed figure notes for consistency with the requirements of the proposed Model Installation Standards.

HUD specifically invites comment on the requirements of the proposed Model Installation Standards for mate-line supports. The MHCC proposal incorporated a provision to permit single stacked blocks to a maximum height of 54 inches. However, this contradicts limitations set for the construction of single stacked block piers (36 inches). Is there specific substantiation for permitting single stacked mate-line piers above 36 inches? Similarly, the MHCC-proposed installation standard requires that when more than 25 percent of the home's frame is more than 67 inches above the top of the footing, stabilizing devices must be specifically designed. However, the Model Installation Standards requirements indicate that double stacked piers may be used for up to 80 inches above the top of the footing. Is there specific substantiation for requiring special design for stabilization when more than 25 percent of the

home's frame is more than 67 inches above the top of the footing? Are the requirements of this section clear and enforceable?

Perimeter Support Piers § 3285.307 (Relocate)—HUD accepted the intent and vast majority of language provided in the MHCC's proposed installation standards for perimeter support piers. HUD created a separate section to include these provisions.

Manufactured Piers § 3285.308 (Relocate)—HUD accepted the intent and vast majority of language provided in the MHCC's proposed installation standards for manufactured piers. HUD created a separate section to include these provisions.

Elevated Homes § 3285.309 (Relocate)—HUD accepted the intent and vast majority of language provided in the MHCC's proposed installation standards for elevated homes. HUD created a separate section to include these provisions.

Location and Spacing § 3285.310 (Technical)—HUD accepted the intent and majority of language provided in the MHCC's proposed installation standards for location and spacing of piers. However, HUD would require that dead load be considered in the design of foundations and has modified the MHCC proposal to include this consideration. HUD has made some editorial modifications to the notes on the figures related to mate-line column piers to clarify requirements and ensure consistency.

HUD requests comment on the need to incorporate specific figures in the proposed rule relating to mating wall piers, as the intent of the Model Installation Standards is to define provisions for the manufacturers' installation instructions and State-developed standards. The inclusion of the figures may add unnecessary confusion to the Model Installation Standards as manufacturers and States may develop specifications and other figures that correspond to the options and models produced and installed in their locale, and these may create conflict and confusion with the figures and footnotes published in the Model Installation Standards. Nonetheless, HUD proposes modifications to several notes of the figures that are intended to clarify requirements and maintain consistency with the Model Installation Standards.

Pier Support Locations § 3285.310(c) (Technical)—HUD does not agree with the intent of the MHCC's proposed language for pier support locations. The MHCC proposal contains requirements for single and multi-section homes indicating that the location and spacing

of piers identified in the Model Installation Standards would only be applicable in the event that manufacturers instructions were not available. However, manufacturers are to use the Model Installation Standards in the design of their instructions. Therefore, retaining the MHCC's proposal would create a circular reference. HUD modified the MHCC proposal to require that the manufacturer's installation instructions equal or exceed the protections provided by the Model Installation Standards.

Required Perimeter Supports § 3285.311 (Technical)—HUD incorporated the language provided by the MHCC's proposed installation standards and would add a requirement for perimeter supports when required by the design of the home and the requirements set forth by the manufacturer's installation instructions. Therefore, HUD's proposed Model Installation Standards refer back to the applicable load tables and attempt to differentiate when perimeter supports are required for concentrated loads at openings versus when perimeter supports would be required for intermediate support of the home.

Footings § 3285.312 (Technical, Consistency)—HUD agrees with the language and intent of the MHCC's proposed installation standards but proposes that the reference to compacted fill be clarified to be consistent with Subpart C of the proposed rule. HUD also clarified several notes to the figures to ensure that they are compatible with the load tables and requirements outlined in the Model Installation Standards.

ABS Footing Pads § 3285.312(a)(3)—HUD has not modified the intent or a significant majority of the MHCC's proposed language for ABS footing pads. However, HUD specifically invites comment on the requirements of the Model Installation Standards for ABS footing pads. Specifically, HUD is not aware of a nationally recognized testing protocol or national consensus standard established for plastic-type footing pads. To what standard should ABS footing pads be listed and what type of criteria should be contained in the Model Installation Standards to ensure the products are durable and can be adequately and uniformly evaluated for review and approval?

Placement in Freezing Climates § 3285.312(b) (Technical)—HUD agrees with the MHCC's proposed installation standards for placement of footings in freezing climates. HUD modified the MHCC proposal by requiring footings to be placed below the frost line, unless

specifically designed otherwise as permitted by the Model Installation Standards. HUD would retain the MHCC's intent by permitting the LAHJ to establish the particular depth, because the depth varies with location. Attempting to specify a depth in the Model Installation Standards is not practicable since there is no national source available for local frost line depths. In areas where a jurisdiction is not established, a registered engineer, architect, or geologist must be retained to determine the frost line depth.

HUD's modification would also permit foundations above the frost line provided the design is prepared by a registered professional engineer or architect. HUD's Model Installation Standards would permit monolithic slab and insulated foundations above the frost line provided they are designed by a professional engineer or architect and conforms to the nationally recognized consensus standard, SEI/ASCE 32-01 and acceptable engineering practice.

Combination Systems § 3285.313—HUD incorporated the MHCC's proposal in the Model Installation Standards.

§ 3285. Permanent Foundations 314—HUD has not modified the intent or vast majority of language for permanent foundations. However, HUD specifically invites comment on permanent foundation requirements. The MHCC proposal indicated that permanent foundations are to be designed by a registered professional. However, the Model Installation Standards do not outline specific requirements or attempt to define a permanent foundation. Should the section be expanded to include a definition and expanded requirements for permanent foundations? If so, what specifics should be considered and included in the Model Installation Standards?

Special Snow Load Conditions § 3285.315 (Consistency, Relocate)—HUD agreed with the intent and majority of language provided by the MHCC for special snow load conditions. However, HUD made some changes to the MHCC's proposal to maintain consistency with other portions of the proposed rule. HUD made certain changes for consistency and moved the section on ramadas from the MHCC's Chapter 8 to this section because ramadas are sometimes used in high snow load areas.

Subpart E—Anchorage Against Wind

Subpart E would incorporate only the anchoring provisions from Chapter 7 of the MHCC proposal. Subpart E sets forth requirements related to the anchorage of manufactured homes against wind. HUD accepted the great majority of the

MHCC's proposed installation standards regarding anchoring against wind. However, some portions of Chapter 7 of the MHCC proposal not related to anchoring have not been included or have been relocated to Subparts G, H, and I and changes to these portions are summarized here to align with the order and organization of the MHCC's installation standards.

Several sections contained within Chapter 7 of the MHCC's proposed installation standards do not relate to anchoring against wind. These sections include provisions necessary for joining sections of multi-section homes, which have been relocated to the appropriate Subpart for the specific type of work. These sections include: *Interconnection of Multi-section Homes, Crossover Connections for Multi-section Homes, Ductwork Crossovers, Installation Close-up Finishing, Exterior Siding Close-Up, Interior Close-Up, and Bottom Board Repair*.

Similarly, other sections contained within Chapter 7 of the MHCC's proposed installation standards do not relate to anchoring against wind and are not related to joining of close up of the home. Therefore, the following sections of the MHCC proposal have been relocated as follows:

Moving Manufactured Home to Location and Positioning of Home (Relocate—See § 3285.902)—These MHCC recommendations were accepted by HUD but relocated to Subpart J because they also do not establish standards for installation of the home but the provisions may be subject to LAHJ requirements.

Installation of On-Site Structures (Relocate, Technical, Authority)—HUD relocated most of the MHCC recommendations for on-site structures to Subpart J of this proposed rule because HUD does not have any authority to regulate the design and construction of the other structures but recognizes that the LAHJ may establish and enforce applicable requirements that an installer should consider. HUD moved the information with respect to expanding rooms to Subpart F where optional features are addressed. HUD also removed references to fire separation, as it is duplicative of information contained in Subpart J of the proposed rule.

Expanding Rooms (Relocate—See § 3285.502)—This section, relating to an optional feature, has been relocated in Subpart F of the proposed rule.

Unfinished Gypsum Wallboard (Construction)—HUD would not incorporate this MHCC proposal in the Model Installation Standards because the proposal does not provide or clarify

requirements otherwise required by the MHCSS. Is there a specific need to incorporate flame spread rating requirements for interior finishes? HUD is of the opinion that such requirements relate to construction of the home and may be subject to Alternative Construction or other requirements for on-site construction to be published for comment separately.

HUD's Model Installation Standards would incorporate the remainder of chapter 7 of the MHCC's proposal with little revision as to substance or intent. However, HUD notes that anchoring against wind uplift at the mate-line has not been addressed by the MHCC's proposal. HUD specifically invites comment on the absence of requirements for anchoring at mate-lines of multi-section homes. Should HUD establish anchoring provisions for locations along the mate-line, such as column locations, for multi-section homes? If so, how? Is the current requirement for mate-line strapping, found in section § 3285.403, adequate to address such instances?

HUD proposes the following modifications to the MHCC proposals relating to anchoring provisions:

Anchoring Instructions § 3285.401 (Authority, Technical)—HUD would modify the MHCC proposal to require preparation of designs for alternative anchoring systems by registered engineers or registered architects. HUD would require that anchoring systems be designed, at a minimum, for the site conditions, home design features, and loads that the home was designed to withstand. Accordingly, HUD has modified the MHCC proposal to include appropriate Model Installation Standards permitting alternate designs.

HUD Questions: HUD invites comments on the review and approval of designs for anchoring systems that are not included in manufacturer's installation instructions. Do the Model Installation Standards adequately allow for such designs? Who should review and approve such designs? Have the Model Installation Standards adequately provided criteria for the review and evaluation of such anchoring systems and assemblies?

In general, HUD revised all references in the MHCC proposal to the term "anchors," to the revised term "ground anchor." HUD believes this is consistent with the MHCC's intent and maintains consistency with 24 CFR part 3280. HUD also notes that the nationally recognized protocol for testing ground anchor assemblies is currently under review by an MHCC installation subcommittee task force. HUD has modified the MHCC proposal to

incorporate provisions for galvanization of anchors and metal stabilizer plates in the Model Installation Standards. Are the galvanization provisions for ground anchor stabilizer plates and current requirements for galvanization of strapping (24 CFR part 3280.306(g)) adequate to resist corrosion under actual use and typical conditions?

Ground Anchor Installations § 3285.402 (Authority, Technical)—HUD accepted the intent and vast majority of language provided by the MHCC. However, HUD made some changes for clarity and to ensure that the ground anchor spacing identified in the tables is understood to be a maximum spacing that allows closer spacing as more stringent requirements. The MHCC's proposal for selection of ground anchors for an installation site refers back to MHCC proposed chapter 5 (Soil Conditions). However, the information provided by the MHCC for soil conditions did not provide information necessary to select appropriate anchors. Therefore, HUD modified the information provided in subpart C to ensure that soil classification can adequately be used to select ground anchors. HUD would also require all homes to be stabilized against wind in the longitudinal direction in all wind zones. Manufactured homes located in Wind Zones 2 and 3 would require longitudinal ground anchors at the ends of each transportable section.

HUD has not incorporated references in the MHCC proposal to methods and materials approved by the authority having jurisdiction because the additional requirements would be subject to notice and comment rulemaking procedures, and inclusion is not necessary given the Model Installation Standards as proposed by HUD, and the ability of LAHJs to establish more stringent requirements.

HUD modified the MHCC recommendation to require stabilizer plate installation as required by the ground anchor listing or certification rather than requiring stabilizer plates in all installations. HUD would require that metal stabilizer plates be galvanized consistent with coatings required for anchors and strapping and that anchoring assemblies be required to be installed in accordance with their listing or certification. The listing or certification may or may not require use of a stabilizer plate. HUD also made several editorial modifications to the notes for the ground anchor spacing tables and anchoring figure notes, to maintain consistency with requirements of the MHCCS, HUD's proposed modifications, and the intent of the MHCC.

Sidewall, Over-the-Roof, Mate-Line, and Shear wall straps § 3285.403 (Technical)—HUD agrees with the majority of the intent and language provided by the MHCC. However, HUD has added mate-line and shear wall straps to this section to ensure that such straps are anchored when provided.

Severe Climatic Conditions § 3285.404 (Technical)—HUD modified the MHCC proposal for installing ground anchors in frost-susceptible soil locations by modifying reference to high water table locations. The depth at which the soil freezes is the soil frost depth and its relationship to the water table is not readily available on a national basis.

Severe Wind Areas § 3285.405 (Technical)—HUD does not agree with the intent of the MHCC's proposed language for severe wind locations. The MHCC proposal indicated that anchoring in high wind areas be completed in accordance with the home manufacturer's installation instructions. However, the MHCC proposal did not contain a minimum design requirement for the installation instructions. HUD's acceptance of the MHCC proposal would have resulted in a circular reference, because the manufacturer's installation instructions must equal or exceed the requirements of the Model Installation Standards. Therefore, HUD proposes to modify this section by requiring that anchoring systems in high wind areas be designed by the home manufacturer for the special wind conditions or the anchorage must be designed by a professional engineer or registered architect in accordance with acceptable engineering practice for the increased wind design loads when site or other conditions prohibit the use of the manufacturers instructions. This modification clearly requires home manufacturers to provide instructions specific for the special wind conditions, or in the event that site or other conditions prevent the use of a manufacturer's instructions, a professional engineer or registered architect must design for the site conditions and special wind conditions. Does the proposed modification clarify the design requirements for high wind areas?

Flood Hazard Areas § 3285.406—HUD accepted the intent and language provided in the MHCC's proposed installation standards.

Subpart F—Optional Features

Subpart F incorporates certain portions of chapters 7, 8, and 9 of the MHCC proposal applicable to optional features. This subpart sets forth requirements for the installation and completion of optional features. Where

retained, HUD's Model Installation Standards incorporate the majority of substance and intent of the applicable portions of the MHCC proposal. However, some portions of the MHCC proposal have been modified and others relocated to subpart J of the proposed rule. Areas covered in chapter 8 of the MHCC proposal that are not contained in subpart F of the proposed rule have not been incorporated in the proposed Model Installation Standards as described below. HUD's specific revisions to the MHCC proposal provided below.

Home Installation Manual Supplements § 3285.501 (Relocated, Technical)—HUD relocated the MHCC proposal regarding installation manual supplements to subpart F of the proposed rule because it largely relates to special or optional features of a home.

Expanding Rooms § 3285.502 (Relocated, Authority, Technical)—HUD revised the section of the MHCC proposal to remove any circular reference and clarify that the section would be applicable to the support and anchoring systems only. HUD's modifications would also omit the MHCC proposal that addressed when manufacturer installation instructions are not available because the manufacturer would be required to provide the instructions with each new home.

Installation of Optional Features (Construction)—HUD modified the MHCC proposal described below.

Hinged Roofs and Eaves (Technical, Relocate "See § 3285.801(f))—HUD would modify the MHCC proposal because hinged roof homes, depending on certain design characteristics, may be subject to special requirements such as Alternative Construction or other requirements to be developed in a separate proposed rule for on-site completion. Generally, hinged roof homes are not subject to Alternative Construction or requirements as long as the homes are designed to be located in Wind Zone 1, the completed hinged roof pitch is less than 7 on 12, and fuel burning appliance flue penetrations are not above the hinge.

Garden and Bay Windows (Construction)—HUD determined that the MHCC proposal provisions for garden or bay windows relate to construction of the home. Therefore, these optional features would be subject to Alternative Construction requirements or other requirements published by HUD for site completion of manufactured home construction and have not been included in the proposed Model Installation Standards.

Awnings and Ramadas (Relocate, Technical)—HUD did not accept the MHCC proposal relating to self-supporting awnings because awnings by design are not self-supporting and are not required to safely support the home. HUD relocated the MHCC's proposed provisions regarding ramadas to subpart D of the proposed rule where special snow load conditions are addressed. Is there a need to include a definition and provisions for awnings in the Model Installation Standards? Are there self-supporting awnings available and currently being installed to ensure continued safety of manufactured home residents?

Miscellaneous Lights and Fixtures (Relocate—§ 3285.702)—HUD relocated the MHCC proposal to Subpart H of the proposed rule relating to electrical systems and equipment.

Ventilation Options—HUD did not incorporate this MHCC proposal because it is not clear what type of ventilation would be subject to the proposed requirements (whole house, attic, crawlspace, etc.). Further, HUD believes crawlspace ventilation is adequately covered elsewhere in the document (§ 3285.504) and whole house and attic ventilation are subject to the requirements of the MHCSS. Would there be ventilation provisions in addition to whole house, attic, or crawlspaces that require provisions in the Model Installation Standards?

Optional Appliances § 3285.503 (Technical)—Provisions for the installation of the optional appliances addressed in Subpart F are incorporated, with minor changes, from Chapter 9 of the MHCC proposal. HUD would modify the appliance provisions to require that appliances be listed or labeled for their intended use.

Comfort Cooling Systems—HUD accepted the intent and most of the language in the MHCC's proposal for comfort cooling systems. However, HUD would revise the MHCC proposal to require appliance installation in accordance with the appliance manufacturer's instructions.

Air Conditioners—HUD would incorporate by reference, ACCA Manual J, Residential Load Calculation, as one method for calculating sensible heat gain. ACCA Manual J is based on the ASHRAE Handbook of Fundamentals and is accepted for use in State and local building codes. In addition, HUD would modify the MHCC proposal to incorporate provisions for air conditioning or combination heating and air conditioning systems as required by the MHCSS (§ 3280.714). While the MHCSS require that a heating system be installed in each manufactured home,

they do not require an air conditioning system in each home. HUD has made modifications to the MHCC's proposed installation standards to help these issues and maintain consistency with the MHCSS.

Heat Pumps—HUD included provisions in the proposed rule to require that heat pumps be listed and installed in accordance with the appliance manufacturers instructions.

Evaporative Coolers—HUD modified the MHCC proposal to require that evaporative cooling equipment be listed and installed in accordance with the appliance manufacturer's instructions.

Fireplace and Wood-Stove Chimneys and Air Inlets—HUD accepted the MHCC's intent and most of the language proposed by the MHCC. HUD would modify the MHCC proposal to require that equipment be listed (§ 3285.5) for use in manufactured homes and installed in accordance with the appliance manufacturer's instructions.

Range, Cooktop, and Oven Venting—HUD accepted the MHCC's proposal but would make the Model Installation Standards applicable to all heat producing appliances that require completion of venting and change the title of the section to "Venting."

Clothes Dryer Exhaust Duct System—HUD agrees with the intent of the MHCC proposal but would revise the MHCC proposal to require the exhaust duct system to conform to the appliance manufacturer's requirements of the MHCSS (§ 3280.708).

Crawlspace Ventilation § 3285.505 (Technical)—HUD agrees with the MHCC that crawlspaces with a perimeter enclosure need ventilation. HUD would modify the MHCC proposal to remove duplication of the exceptions for ground vapor barriers, and modify the ventilation requirements to be consistent with model building code requirements.

Subpart G—Ductwork and Plumbing and Fuel Supply Systems

Subpart G includes provisions from chapters 7 and 10 of the MHCC's proposed installation standards. This subpart provides for installation work necessary to join sections of a multi-section home and make the home ready to connect the plumbing and fuel supply systems to utilities. Where retained in this subpart, HUD's Model Installation Standards incorporate the vast majority of the substance and intent of the applicable portions of the MHCC proposal. However, HUD would modify slightly some portions of the MHCC proposal and relocate them to subpart J, while a small number of MHCC proposals would be omitted from the

proposed rule. These actions are described below.

Field Assembly § 3285.601 (New Section)—HUD would add a section that clearly requires home manufacturers to provide specific written instructions for installers on the proper field assembly of any ship loose parts necessary to join all sections of the home. HUD would further require that the instructions be designed in accordance with the applicable requirements of the MHCSS.

Proper Procedures (Relocate—See § 3285.905)—In general, HUD has concluded that utility connections are subject to State or LAHJ requirements. Since HUD does not have authority to regulate utility connections or determine that any particular requirements of an LAHJ are met, HUD relocated these MHCC-proposed installation standards to Subpart J.

Water Supply § 3285.603 (Relocate, Technical, Consistency)—In general, HUD accepted the intent and language of the MHCC's proposals related to water supply. HUD would revise certain provisions of this section as follows:

Crossovers—The Model Installation Standards would require water line crossovers to be installed as designed by the home manufacturer. However, the manufacturer would be required to design the crossover consistent with the current requirements of the MHCSS (§ 3280.609).

Maximum Supply Pressure and Reduction—HUD would modify the MHCC-proposed requirement for a pressure-reducing valve by omitting the prescriptive requirement for a bypass-type valve. While HUD would not prohibit a bypass valve, specific requirements would be subject to the LAHJ.

Mandatory Shutoff Valve—HUD revised the MHCC proposal editorially, but maintained the intent of the MHCC's proposal.

Freezing Protection—HUD revised the MHCC proposal to maintain consistency with the requirements of the MHCSS and require that the manufacturer's installation instructions be designed consistent with the MHCSS (§ 3280.603).

Testing Procedures—HUD revised the MHCC proposal to ensure that testing requirements at the site are consistent with the requirements of the MHCSS.

HUD did not incorporate the figure in the MHCC proposal depicting a typical water line connection. In HUD's opinion, the figure shows an ill-advised location of the supply connection that subjects the water line and connections to physical damage. In addition, the figure would not clarify the

requirements of the Model Installation Standards.

Drainage System § 3285.604 (Relocate, Technical, Consistency)—HUD relocated the MHCC's provisions for connection of the system to the sewer system to Subpart J. In general, HUD accepted the intent and language of the MHCC. However, HUD revised certain provisions of this section as follows:

Crossovers—The Model Installation Standards would require water line crossovers to be installed as designed by the home manufacturer. However, the manufacturer would be required to design the crossover consistent with the current requirements set forth in the MHCSS (§ 3280.610).

Assembly and Support—HUD would necessarily limit the MHCC's assembly and support provisions to only the piping that is necessary to join all sections of the home. Proper assembly and pipe support requirements would be revised to maintain consistency with requirements of the MHCSS (§ 3280.608).

Proper Slopes—Proper slope for the pipe would be revised to maintain consistency with requirements of the MHCSS (§ 3280.610).

Testing Procedures—HUD revised the MHCC proposal to ensure that testing requirements at the site are consistent with the requirements of the MHCSS.

Gas System § 3285.605 (Relocate, Technical, Consistency)—Certain MHCC proposals for conversion of appliances and startup procedures have been modified and relocated in Subpart J of the proposed rule. In addition, HUD did not accept the MHCC's recommendation requiring inspection of roof jacks as the proposed provision outlines a process that is procedural in nature and would be subject to HUD's Alternate Construction requirements. However, HUD will consider the proposal further in the development of installation program regulations to be issued separately.

However, in general, HUD agrees with the intent and language of the MHCC's proposals. HUD would revise certain provisions of this section as follows:

Crossovers—The Model Installation Standards would require gas line crossovers to be installed as designed by the home manufacturer. However, the manufacturer would be required to design the crossover consistent with the current requirements set forth in the MHCSS (§ 3280.705).

Testing Procedures—HUD revised the MHCC proposal to ensure that testing requirements at the site are consistent with the requirements of the MHCSS.

Heating Oil Supply Tanks and Systems (Relocate—see § 3285.906)—Provisions for heating oil supply tanks and systems installed at the site are not within the scope of HUD's authority. However, HUD attempted to preserve the MHCC's intent by making the MHCC provisions recommendations in subpart J for inclusion in manufacturer installation instructions.

Ductwork Connections § 3285.606 (Technical, Consistency)—HUD accepted the great majority of the MHCC's proposed installation standards for ductwork connections. However, HUD added a specific requirement for crossover connection and design, and would modify the associated figures to remove the specificity of particular components or requirements to make the figures more universally applicable, and ensure that manufacturers can design crossovers that are compatible with the models and options produced. HUD would also require that the level of insulation for exposed ducts conform to the provisions of the MHCSS.

Subpart H—Electrical Systems and Equipment

Subpart H includes certain provisions of Chapter 8 of the MHCC's proposed installation standards. Subpart H provides for the installation work necessary to join sections of a multi-section home and make the home ready to connect the electrical service. There may be information currently addressed by manufacturer's installation instructions that has not been evaluated by the MHCC or reviewed for inclusion in the MHCC's proposal. Therefore, HUD specifically invites comment on the substance of this subpart and related issues that should or should not be addressed herein.

Electrical Crossovers § 3285.701 (New Section)—HUD added provisions for completion of electrical crossovers as designed by the home manufacturer. This section requires manufacturers to design the crossovers consistent with requirements of subpart I of the MHCSS.

Miscellaneous Lights and Fixtures § 3285.702 (Technical)—HUD accepted the vast majority of the MHCC's provisions for miscellaneous lights and fixtures with only minimal or editorial changes.

Subpart I—Exterior and Interior Close Up

Subpart I includes certain provisions of chapters 7 and 8 of the MHCC's proposed installation standards. Subpart I provides for the installation close up work necessary to join sections of a multi-section home and complete final bottom board repairs.

Exterior Close Up § 3285.801 (Relocate, Technical, Consistency)—HUD accepted the vast majority of the MHCC's proposed installation standards for exterior close up. However, HUD would limit the exterior close up work to only the aspects necessary to join the sections of multi-section homes resulting in a weatherproof and structurally integrated home. HUD also included roofing materials as elements that require completion at the installation site.

Structural Interconnection of Multi-section Homes § 3285.802 (Relocate, Technical, Consistency)—HUD accepted the intent and majority of language provided in the MHCC's proposal. HUD added the requirement that the manufacturer design interconnection be consistent with the structural requirements of the MHCSS. HUD also added provisions to require repair of gaps that may occur along the mate-line where structural interconnections are made.

Interior Close Up § 3285.803 (Relocate, Technical, Construction)—HUD accepted the majority of MHCC-recommended provisions for interior close up. However, HUD removed the MHCC's reference to unfinished gypsum wallboard, as HUD deems this to be construction and assembly of the manufactured home.

Bottom Board Repair § 3285.804 (Relocate, Technical)—HUD accepted the vast majority of the MHCC provisions for bottom board repair with minimal change. The MHCC proposal requiring an approved tape to be used to repair bottom board splits or tears, would be revised in the proposed rule to “* * * tape or patches specifically designed for repairs of the bottom covering.”

Subpart J—Recommendations for Manufacturer's Installation Instructions

The provisions of subpart J incorporate recommendations from the MHCC contained in several chapters. This subpart sets forth provisions regarding moving the manufactured home, permits, on-site structures, and site connection of utilities upon completion of home installation. The vast majority of recommendations from the MHCC concerning utility connections would establish requirements that may be governed by LAHJs and are not within the scope of HUD's authority. HUD has included most of the recommendations in the Model Installation Standards to provide helpful information to installers. HUD specifically invites comment on the inclusion of these provisions within the Model Installation Standards.

Recommendations for Manufacturer Installation Instructions § 3285.901 (New section)—Generally, work completed at the site with respect to utility connections is governed by LAHJ requirements. Therefore, the Model Installation Standards do not attempt to address comprehensive utility connection requirements. However, HUD recommends in subpart J that manufacturers incorporate the following provisions in their installation instructions, in order to protect the manufactured home as constructed in accordance with the MHCSS and provide other general cautions to the installer.

Moving the Manufactured Home to Location § 3285.902 (Relocated, Authority)—HUD relocated the MHCC's proposals to address transporter access, positioning of the home, and encroachment and setback distances that may be enforced by LAHJs to Subpart J. HUD modified the proposal editorially and organized the MHCC proposed requirements related to moving the manufactured home to the installation site in this section.

Permits, Alterations, and On-Site Structures § 3285.903 (Relocated, Authority)—HUD relocated MHCC recommended provisions for permits, alterations, and construction of on-site structures such as garages, carports, and decks to subpart I. While HUD does not have authority to regulate the permit process or the review and approval of alterations, and on-site structures, HUD included provisions for these aspects to be mentioned in home manufacturer installation instructions.

Drainage Structures § 3285.904 (Relocated, Authority)—HUD relocated MHCC recommended provisions for drainage structures to subpart J. While HUD does not have authority to regulate the design and construction of ditches and culverts, HUD included appropriate provisions for manufacturers to provide recommendations in their home installation instructions.

Utility System Connection § 3285.905 (Relocated, Authority)—HUD relocated the MHCC proposal to address the drainage connector size. In addition, HUD modified the proposal to remove

reference to the requirements of an LAHJ, as such requirements are not under HUD's authority. HUD also relocated the MHCC proposal to address gas system orifices and regulators and modified the gas appliance startup procedures.

HUD modified language regarding personnel requirements associated with gas appliance startup to make personnel subject to the requirements of the LAHJ. In addition, HUD would revise the testing procedure to recognize that not all appliances contain pilot lights and newer technologies can be verified to meet the MHCC's intent. HUD did not accept the MHCC proposal to set thermostats to desired temperature because subjective requirements cannot be enforced.

Heating Oil Systems § 3285.906 (Relocated, Authority)—HUD relocated the MHCC proposal to address the installation of heating oil systems and tanks to Subpart J, as such installations are not within HUD's authority. HUD modified the MHCC proposal to include a recommended reference standard (NFPA 31) that may be used in areas without an LAHJ or in areas without applicable requirements. HUD revised the MHCC's heating oil system installation recommendations and would make such recommendations subject to specific requirements of an LAHJ. However, the model provisions would become more of a necessity in areas without jurisdictions or applicable requirements. HUD would incorporate the NFPA 31 standard for reference in such instances.

HUD did not incorporate the MHCC proposal relating to a centralized oil distribution system because the Model Installation Standards would not establish standards for manufactured home communities that may have a storage tank for centralized distribution of oil within the community. Other MHCC-recommended provisions for oil storage tanks have been incorporated into the Model Installation Standards. HUD would revise the MHCC proposal related to storage tank leak test procedures by recognizing that model provisions are necessary for areas without jurisdictions or without

requirements, and would incorporate the consensus standard, NFPA 31 for such instances.

VI. Findings and Certifications

Regulatory Planning and Review

The Office of Management and Budget (OMB) reviewed this rule under Executive Order 12866 (entitled "Regulatory Planning and Review"). OMB determined that this rule is a "significant regulatory action" as defined in section 3(f) of the order (although not an economically significant regulatory action, as provided under section 3(f)(1) of the order). Any changes made to the rule subsequent to its submission to OMB are identified in the docket file, which is available for public inspection in the Regulations Division, Room 10276, Office of General Counsel, Department of Housing and Urban Development, 451 Seventh Street, SW, Washington, DC 20410-0500.

Paperwork Reduction Act

The proposed information collection requirement contained in § 3285.2 has been submitted to the Office of Management and Budget (OMB) for review under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501-3520). Under this Act, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection displays a valid control number. OMB has issued HUD the control number 2502-0253 for the information collection requirements under the current Manufactured Housing Construction and Safety Standards Program, which already require manufacturer installation instructions in 24 CFR part 3280.306.

The public reporting burden for this collection of information is estimated to include the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The following table provides information on the estimated public reporting burden:

Information collection	Number of respondents	Responses per respondent	Total annual responses	Hours per response	Total hours
Manufacturers Installation Instructions*	78	1	78	250	19,500

*Manufacturer installation instructions are already required. This public burden estimate is for a one-time revision of its instructions to ensure the Model Installation Standards requirements would be met.

In accordance with 5 CFR 1320.8(d)(1), HUD is soliciting comments from

members of the public and affected

agencies concerning the proposed collection of information to:

(1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;

(2) Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated collection techniques or other forms of information technology (e.g., permitting electronic submission of responses).

Interested persons are invited to submit comments regarding the information collection requirements in this proposal. Under the provisions of 5 CFR part 1320, OMB is required to make a decision concerning this collection of information between 30 and 60 days after today's publication date. Therefore, any comment on the information collection requirements is best assured of having its full effect if OMB receives the comment within 30 days of today's publication. However, this time frame does not affect the deadline for comments to the agency on the proposed rule, however. Comments must refer to the proposal by name and docket number (FR-4928-P-01) and must be sent to:

Mark D. Menchik, HUD Desk Officer,
Office of Management and Budget,
New Executive Office Building,
Washington, DC 20503,
Mark_D_Menchik@omb.eop.gov;
and

Kathleen O. McDermott, Reports Liaison
Officer, Office of the Assistant
Secretary for Housing—Federal
Housing Commissioner, Department
of Housing and Urban Development,
451 Seventh Street, SW., Room 9116,
Washington, DC 20410-8000.

Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531–1538) (UMRA) establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments, and on the private sector. This proposed rule does not impose any Federal mandate on any State, local, or tribal government, or on the private sector, within the meaning of UMRA.

Environmental Review

A Finding of No Significant Impact with respect to the environment has

been made in accordance with HUD regulations at 24 CFR part 50, which implement section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)). The Finding of No Significant Impact is available for public inspection between the hours of 8 a.m. and 5 p.m. weekdays in the Regulations Division, Office of General Counsel, Room 10276, Department of Housing and Urban Development, 451 Seventh Street, SW, Washington, DC 20410-0500.

Executive Order 13132, Federalism

Executive Order 13132 (entitled “Federalism”) prohibits, to the extent practicable and permitted by law, an agency from promulgating a regulation that has Federalism implications and either imposes substantial direct compliance costs on State and local governments and is not required by statute, or preempts State law, unless the relevant requirements of section 6 of the Executive Order are met. This rule does not have Federalism implications and does not impose substantial direct compliance costs on State and local governments or preempt State law within the meaning of the Executive Order.

HUD is required by statute to establish Model Manufactured Home Installation Standards through the National Manufactured Housing Construction and Safety Standards Act of 1974 (42 U.S.C. 5401–5426). However, in accordance with the language of the Act and as set forth in § 3285.1 of this proposed rule, these Model Installation Standards are not preemptive but rather establish minimum levels of protection to residents of manufactured homes.

The Model Installation Standards, without the implementing regulations to be developed for the Federal installation program, establish requirements for installation instructions but do not have an impact on State-based installation programs and standards. These minimum requirements do not affect governmental relationships or distribution of power. This proposed rule does not establish any responsibilities for States and localities but rather establishes minimum requirements to be used by home manufacturers in the design of manufactured home installation instructions. Therefore, HUD has determined that the Model Installation Standards, if adopted, have no Federalism implications that warrant the preparation of a Federalism Assessment in accordance with Executive Order 13132.

Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires that a regulation that has a significant economic impact on a substantial number of small entities, small businesses, or small organizations include an initial regulatory flexibility analysis describing the regulation's impact on small entities. Such an analysis need not be undertaken if the agency has certified that the regulation will not have a significant economic impact on a substantial number of small entities. 5 U.S.C. 605(b).

HUD has conducted a material and labor cost impact analysis for this rule. The completed cost analysis determines the cost difference between a typical installation conforming to the Model Installation Standards from an installation completed in accordance with current manufacturer installation instructions. A typical installation is defined by the traditional installation method consisting of concrete footings, masonry piers, and ground anchors. The cost difference was found to vary slightly depending upon whether the home is a single-section or multi-section home.

The cost impact for a single-section home is determined to be about \$133 per home and the cost impact for a multi-section home is determined to be about \$151 per home. Current manufactured home production is about 135,000 homes, consisting of about 40,500 single-section homes and 94,500 multi-section homes. The combined average cost impact is determined to be approximately \$145.60 per home multiplied by a total of 135,000 homes produced in a year; this totals about \$19.5 million annually.

Based on a current installation cost of about \$5000 for a single-wide home, the \$133 increase represents an increase of about 2.7% from the current cost of installing a single section home. Similarly, the current cost of installing a multi-section home is about \$8,000. Therefore, the cost impact of \$151 per multi-section home represents an increase of about 1.9% from the current cost. These estimated costs and cost impacts do not represent a significant economic effect on either an industry-wide or per-home basis.

This small increase in total cost associated with this proposed rule would not impose a significant burden for a small business. The rule would regulate establishments primarily engaged in making manufactured homes (NAICS 32991) and the mobile home setup and tie-down establishments (installers) included within the

definition of all other special trade contractors (NAICS 23599). Of the 222 firms included under the NAICS 32991 definition, 198 are small manufacturers that fall below the small business threshold of 500 employees. Of the 31,320 firms included under NAICS 23599 definition, only 53 firms exceed the small business threshold of 500 employees and none of these are primarily mobile home setup and tie-down establishments. The rule, thus, would affect a substantial number of small entities. However, the home manufacturers would only be subject to an associated labor cost necessary to revise its instructions and the home installer would be subject to increased labor and material costs that would be passed through to the end user (manufactured home purchaser). Moreover, because the great majority of manufacturers and all installers are considered small entities, there would not be any disproportional impact to small entities. Therefore, although this rule would affect a substantial number of small entities, it would not have a significant economic impact on them.

The Secretary, in accordance with the Regulatory Flexibility Act (5 U.S.C. 605(b)), has reviewed and approved this proposed rule and in so doing certifies that the rule would not have a significant economic impact on a substantial number of small entities. The proposed rule does not provide an exemption for small entities. This proposed rule does not establish any responsibilities for installers but rather establishes model requirements used by manufacturers in the design of manufactured home installation instructions. However the upcoming installation program, establishing procedural and enforcement regulations for the Installation Standards will need further review under the requirements of the Regulatory Flexibility Act.

Notwithstanding HUD's determination that this rule would not have a significant economic effect on a substantial number of small entities, HUD specifically invites comments regarding any less burdensome alternatives to this rule that will meet HUD's and Federal statutory objectives.

Catalogue of Federal Domestic Assistance

The Catalogue of Federal Domestic Assistance number is 14.171.

List of Subjects

24 CFR Part 3280

Housing standards, Manufactured homes, Construction, Safety.

24 CFR Part 3285

Housing standards, Manufactured homes, Installation.

Accordingly, for the reasons discussed in this preamble, HUD proposes to amend 24 CFR part 3280 and to add 24 CFR part 3285, as follows:

PART 3280—MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARDS

1. The authority citation for 24 CFR part 3280 continues to read as follows:

Authority: 42 U.S.C. 3535(d), 5403, 5404, and 5424.

2. In § 3280.302, add the definition of *anchor assembly* in alphabetical order and revise the definitions of *anchoring equipment*, *anchoring system*, *diagonal tie*, *ground anchor* and *stabilizing devices* to read as follows:

§ 3280.302 Definitions.

* * * * *

Anchor assembly means any device or other means designed to transfer home anchoring loads to the ground.

Anchoring equipment means ties, straps, cables, turnbuckles, chains, and other approved components, including tensioning devices that are used to secure a manufactured home to anchor assemblies.

Anchoring system means a combination of anchoring equipment and anchor assemblies that will, when properly designed and installed, resist the uplift, overturning, and lateral forces on the manufactured home.

Diagonal tie means a tie intended to resist horizontal or shear forces, but which may resist vertical, uplift, and overturning forces.

* * * * *

Ground anchor means a specific anchoring assembly device designed to transfer home anchoring loads to the ground.

* * * * *

Stabilizing devices means all components of the anchoring and support systems, such as piers, footings, ties, anchoring equipment, anchoring assemblies, or any other equipment, materials, and methods of construction that support and secure the manufactured home to the ground.

* * * * *

3. In § 3280.306, revise paragraph (b)(2)(iv) to read as follows:

§ 3280.306 Windstorm protection.

* * * * *

(b) * * *

(2) * * *

(iv) That ground anchors should be installed to their full depth, and

stabilizer plates must be installed in accordance with the ground anchor listing or certification to provide required resistance to overturning and sliding.

* * * * *

4. In chapter XX, add part 3285 to read as follows:

PART 3285—MODEL MANUFACTURED HOME INSTALLATION STANDARDS

Subpart A—General

Sec.

3285.1 Administration.

3285.2 Manufacturer installation instructions.

3285.3 Alterations during initial installation.

3285.4 Referenced publications.

3285.5 Definitions.

Subpart B—Pre-Installation Considerations

3285.101 Installation of manufactured homes in flood hazard areas.

3285.102 Design zone maps.

3285.103 Moving manufactured home to location.

3285.104 Permits, other alterations, and on site structures.

Subpart C—Site Preparation

3285.201 Soil conditions.

3285.202 Soil classifications and bearing capacity.

3285.203 Drainage.

3285.204 Ground moisture control.

Subpart D—Foundations

3285.301 General.

3285.302 Flood hazard areas.

3285.303 Piers.

3285.304 Configuration.

3285.305 Clearance under homes.

3285.306 Design procedures for concrete block piers.

3285.307 Perimeter support piers.

3285.308 Manufactured piers.

3285.309 Elevated homes.

3285.310 Pier locations and spacing.

3285.311 Required perimeter supports.

3285.312 Footings.

3285.313 Combination systems.

3285.314 Permanent foundations.

3285.315 Special snow load conditions.

Subpart E—Anchorage Against Wind

3285.401 Anchoring instructions.

3285.402 Ground anchor installations.

3285.403 Sidewall, over-the-roof, mate-line, and shear wall straps.

3285.404 Severe climatic conditions.

3285.405 Severe wind zones.

3285.406 Flood hazard areas.

Subpart F—Optional Features

3285.501 Home installation manual supplements.

3285.502 Expanding rooms.

3285.503 Optional appliances.

3285.504 Skirting.

3285.505 Crawlspace ventilation.

Subpart G—Ductwork and Plumbing and Fuel Supply Systems

3285.601 Field assembly.

- 3285.602 Utility connections.
- 3285.603 Water supply.
- 3285.604 Drainage system.
- 3285.605 Fuel supply system.
- 3285.606 Ductwork connections.

Subpart H—Electrical Systems and Equipment

- 3285.701 Electrical systems.
- 3285.702 Miscellaneous lights and fixtures.
- 3285.703 Smoke alarms.
- 3285.704 Telephone and cable TV.

Subpart I—Exterior and Interior Close-Up

- 3285.801 Exterior close-up.
- 3285.802 Structural interconnection of multi-section homes.
- 3285.803 Interior close-up.
- 3285.804 Bottom board repair.

Subpart J—Recommendations for Manufacturer Installation Instructions

- 3285.901 Recommendations for manufacturer installation instructions.
- 3285.902 Moving manufactured home to location.
- 3285.903 Permits, alterations, and on-site structures.
- 3285.904 Drainage structures.
- 3285.905 Utility systems connection.
- 3285.906 Heating oil systems.
- 3285.907 Telephone and cable TV.

Authority: 42 U.S.C. 3535(d), 5403, 5404, and 5424.

Subpart A—General

§ 3285.1 Administration.

(a) *Scope.* These Model Installation Standards provide requirements for the initial installation of new manufactured homes in applicable States. Work necessary to join all sections of a multi-section home, such as work identified in subparts G, H, and I, is not considered assembly or construction of the home, although the design of those elements of a manufactured home must comply with the MHCHSS.

(1) States that choose to operate an installation program for manufactured homes in lieu of the Federal program must implement installation standards that provide protection to its residents that equals or exceeds the protection provided by these Model Installation Standards.

(2) In States that do not choose to operate their own installation program for manufactured homes, these Model Installation Standards serve as the minimum standards for manufactured home installations.

(3) Manufacturer installation instructions, as set forth in § 3285.2, must provide protection to residents of manufactured homes that equals or exceeds the protection provided by these Model Installation Standards.

(b) The standards set forth herein have been established to accomplish certain basic objectives and are not to be

construed as relieving manufacturers, retailers, installers, or other parties of responsibility for compliance with applicable ordinances, codes, and regulations.

(c) *State installation standards.* (1) In States with an approved installation program, the State may establish or permit more stringent installation standards that provide a level of protection that equals or exceeds these Model Installation Standards.

(2) In States without an approved installation program, the Secretary will implement and enforce these Model Installation Standards as minimums. The Secretary will permit more stringent installation standards as long as the level of protection provided by those standards equals or exceeds these Model Installation Standards.

(d) *Applicability.* The manufactured homes covered by this standard must comply with requirements of the U.S. Department of Housing and Urban Development's (HUD's) Federal Manufactured Home Construction and Safety Standards (MHCSS) Program, as set forth in 24 CFR part 3280, *Manufactured Home Construction and Safety Standards*, and 24 CFR part 3282, *Manufactured Home Procedural and Enforcement Regulations*. The requirements of this part do not apply to homes installed on site-built permanent foundations when the manufacturer certifies the home in accordance with § 3282.12 of this chapter.

§ 3285.2 Manufacturer installation instructions.

A manufacturer must provide with each new manufactured home, DAPIA-approved designs and instructions required by these Model Installation Standards for the installation of manufactured homes. The manufacturer installation instructions must provide protection to residents of the manufactured homes that equals or exceeds the protection provided by these Model Installation Standards and must not take the manufactured home out of compliance with the Federal Manufactured Home Construction and Safety Standards. Installers must follow the DAPIA-approved manufacturer's installation instructions for those aspects covered by these Model Installation Standards.

§ 3285.3 Alterations during initial installation.

Additions, modifications, or replacement or removal of any equipment that affects the installation of the home, made by the manufacturer, retailer or installer prior to completion

of the installation by an installer must equal or exceed the protections and requirements of these Model Installation Standards, the MHCSS (24 CFR part 3280) and the Manufactured Home Procedural and Enforcement Regulations (24 CFR part 3282). Alterations, as defined in § 3282.7 of this chapter, must not affect the ability of the basic manufactured home to comply with the MHCSS and must not impose additional loads to the manufactured home or its foundation without design by a registered professional engineer or registered architect, or being expressly included in the manufactured home manufacturer DAPIA-approved designs or installation instructions.

§ 3285.4 Referenced publications.

Incorporation by reference: (a) The specifications, standards and codes of the following organizations are incorporated by reference pursuant to 5 U.S.C. 552(a) and 1 CFR part 51 as though set forth in full. The incorporation by reference of these standards has been approved by the Director of the Federal Register. Reference standards have the same force and effect as these Model Installation Standards except that whenever reference standards and these Standards are inconsistent, the requirements of these Standards prevail to the extent of the inconsistency.

(b) The abbreviations and addresses of organizations issuing the referenced standards appear below. Reference standards that are not available from their producer organizations may be obtained from the Office of Manufactured Housing Programs, Room 9164, U.S. Department of Housing and Urban Development, 451 Seventh Street, SW., Washington, DC 20410.

ACCA Publication. Air Conditioning Contractors of America, 2800 Shirlington Road, Suite 300, Arlington, VA 22206.

ACCA Manual J, Residential Load Calculation, 8th Edition.

ASHRAE Publication. American Society of Heating, Refrigeration and Air Conditioning Engineers, 1791 Tullie Circle, NE., Atlanta, GA 30329–2305.

ASHRAE Handbook of Fundamentals, 1997.

ASTM Publications. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

ASTM C 90, Standard Specification for Loadbearing Concrete Masonry Units, 2002.

ASTM D 1586, Test Method for

Penetration Test and Split-Barrel Sampling of Soils, 1999.

ASTM D 2487, Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), 2000.

ASTM D 2488, Practice for Description and Identification of Soils (Visual-Manual Procedure), 2000.

ASTM D 3953, Standard Specification for Strapping, Flat Steel and Seals, 1997.

AWPA Publications. American Wood-Preservers' Association, P.O. Box 5690, Granbury, TX 76049.

AWPA C2, Standard for the Preservative Treatment of Lumber, Timber, Bridge Ties and Mine Ties, by Pressure Processes, 2001.

AWPA C9, Plywood—Preservative Treatment by Pressure Processes, 2000.

NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 31, Standard for the Installation of Oil Burning Equipment, 2001.

NFPA 501A, Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities, 2003.

SEI/ASCE Publication. Structural Engineering Institute/American Society of Civil Engineers, 1801 Alexander Bell Dr., Reston, VA 20191.

SEI/ASCE 32-01, Design and Construction of Frost Protected Shallow Foundations, 2001.

U.L. Publication. Underwriters Laboratories, 333 Pfingsten Road, Northbrook, Illinois 60062.

UL 181, Factory Made Air Ducts and Connectors, 1998.

U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

FEMA 85, Manufactured Home Installation in Flood Hazard Areas, 1985.

Title 24, Code of Federal Regulations, Part 3280, Manufactured Home Construction and Safety Standards.

Title 24, Code of Federal Regulations, Part 3282, Manufactured Home Procedural and Enforcement Regulations.

Title 44, Code of Federal Regulations, Part 59, General Provisions.

Title 44, Code of Federal Regulations, Part 60, Criteria for Land Management and Use.

§ 3285.5 Definitions.

The definitions contained in this section apply to the terms used in these

Model Installation Standards. Where terms are not included, common usage of the terms apply. The Definitions are as follows:

Anchor assembly. Any device or other means designed to transfer home anchoring loads to the ground.

Anchoring equipment. Ties, straps, cables, turnbuckles, chains, and other approved components, including tensioning devices that are used to secure a manufactured home to anchor assemblies.

Anchoring system. A combination of anchoring equipment and anchor assemblies that will, when properly designed and installed, resist the uplift, overturning, and lateral forces on the manufactured home.

Approved. When used in connection with any material, appliance or construction, means complying with the requirements of the Department of Housing and Urban Development.

Arid region. An area subject to 15 inches or less of annual rainfall.

Base flood. The flood having a one percent chance of being equaled or exceeded in any given year.

Base flood elevation (BFE). The elevation of the base flood, including wave height, relative to the datum specified on a LAHJ's flood hazard map.

Comfort cooling certificate. A certificate permanently affixed to an interior surface of the home specifying the factory design and preparations for air conditioning the manufactured home.

Crossovers. Utility interconnections in multi-section homes that are located where the sections are joined. Crossover connections include heat ducting, electrical circuits, and water pipes, drain plumbing, and gas lines.

Design Approval Primary Inspection Agency (DAPIA). A State or private organization that has been accepted by the Secretary in accordance with the requirements of part 3282, subpart H of this chapter, which evaluates and approves or disapproves manufactured home designs and quality control procedures.

Diagonal tie. A tie intended to resist horizontal or shear forces, but which may resist vertical, uplift, and overturning forces.

Flood hazard area. The greater of either:

- (1) The special flood hazard area shown on the flood insurance rate map; or
- (2) The area subject to flooding during the design flood and shown on a LAHJ's flood hazard map, or otherwise legally designated.

Flood hazard map. A map delineating the flood hazard area and adopted by a LAHJ.

Footing. That portion of the support system that transmits loads directly to the soil.

Ground anchor. A specific anchoring assembly device designed to transfer home anchoring loads to the ground.

Installation instructions. DAPIA-approved instructions provided by the home manufacturer that accompany each new manufactured home and detail the home manufacturer requirements for support and anchoring systems, and other work completed at the installation site to comply with these Model Installation Standards and the Manufactured Home Construction and Safety Standards in 24 CFR part 3280.

Installation standards. Reasonable specifications for the installation of a new manufactured home, at the place of occupancy, to ensure proper siting, the joining of all sections of the home, and the installation of stabilization, support, or anchoring systems.

Labeled. A label, symbol, or other identifying mark of a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling is indicated compliance with nationally recognized standards or tests to determine suitable usage in a specified manner.

Listed or certified. Included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

Local authority having jurisdiction (LAHJ). The State, city, county, city and county, municipality, utility, or organization that has local responsibilities that must be complied with during the installation of a manufactured home and those local responsibilities are outside the coverage of the MHCSS or these Model Installation Standards.

Lowest floor. The floor of the lowest enclosed area of a manufactured home. An unfinished or flood resistant enclosure, used solely for vehicle parking, home access or limited storage, must not be considered the lowest floor, provided the enclosed area is not constructed so as to render the home in

violation of the flood-related provisions of this standard.

Manufactured home. A structure, transportable in one or more sections, which, in the traveling mode, is eight body feet or more in width or forty body feet or more in length, or, when erected on site, is three hundred twenty or more square feet, and which is built on a permanent chassis and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities, and includes the plumbing, heating, air-conditioning, and electrical systems contained therein. The term also includes any structure which meets all the requirements of this paragraph except the size requirements and with respect to which the manufacturer voluntarily files a certification pursuant to § 3282.13 of this chapter and complies with the installation standards established under this part and the construction and safety standards in part 3280 of this chapter; but such term does not include any self-propelled recreational vehicle.

Manufactured home gas supply connector. A listed connector designed for connecting the manufactured home to the gas supply source.

Manufactured home site. A designated parcel of land designed for the installation of one manufactured home for the exclusive use of the occupants of the home.

Pier. That portion of the support system between the footing and the manufactured home, exclusive of shims. Types of piers include, but are not limited to:

- (1) Manufactured steel stands;
- (2) Pressure-treated wood;
- (3) Manufactured concrete stands;
- (4) Concrete blocks; and
- (5) Portions of foundation walls.

Ramada. Any freestanding roof or shade structure, installed or erected above a manufactured home or any portion thereof.

Secretary. The Secretary of Housing and Urban Development, or an official of HUD delegated the authority of the Secretary with respect to title VI of Pub. L. 93–383.

Skirting. A weather-resistant material used to enclose the perimeter, under the living area of the home, from the bottom of the manufactured home to grade.

Stabilizing devices. All components of the anchoring and support systems, such as piers, footings, ties, anchoring equipment, anchoring assemblies, or any other equipment, materials and methods of construction, that support and secure the manufactured home to the ground.

State. Each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, the Canal Zone, and American Samoa.

Support system. Pilings, columns, footings, piers, foundation walls, shims, and any combination thereof that, when properly installed, support the manufactured home.

Tie. Straps, cable, or securing devices used to connect the manufactured home to anchoring assemblies.

Ultimate load. The absolute maximum magnitude of load that a component or system can sustain, limited only by failure.

Utility connection. The connection of the manufactured home to utilities that include, but are not limited to, electricity, water, sewer, gas, or fuel oil.

Vertical tie. A tie intended to resist uplifting and overturning forces.

Working load. The maximum recommended load that may be exerted on a component or system. The ultimate load of a component or system divided by an appropriate factor of safety.

Subpart B—Pre-Installation Considerations

§ 3285.101 Installation of manufactured homes in flood hazard areas.

(a) **Definitions.** Except to the extent otherwise defined in subpart A, the terms used in this subpart are as defined in 44 CFR 59.1 of the National Flood Insurance Program (NFIP) regulations.

(b) **Applicability.** The provisions of this section apply to the initial installation of new manufactured homes located wholly or partly within the flood hazard area.

(c) **Pre-installation considerations.** Prior to the initial installation of a new manufactured home, the installer is responsible to determine whether the manufactured home site lies wholly or partly within a special flood hazard area as shown on the LAHJ's Flood Insurance Rate Map, Flood Boundary and Floodway Map, or Flood Hazard Boundary Map. If so located, the map and supporting studies adopted by the LAHJ should be used to determine the flood hazard zone and base flood elevation at the site.

(d) **General elevation and foundation requirements.** (1) **Methods and practices.** Manufactured homes located wholly or partly within special flood hazard areas must be installed using methods and practices that minimize flood damage during the base flood, in accordance with the LAHJ, 44 CFR 60.3(a) through (e), as applicable, and other provisions of 44 CFR referenced by those paragraphs.

(2) **Related guidance.** Refer to FEMA 85–85, Manufactured Home Installation in Flood Hazard Areas.

§ 3285.102 Design zone maps.

The design zone maps are those identified in part 3280 of this chapter.

(a) **Wind zone.** Manufactured homes must not be installed in a wind zone that exceeds the design wind loads for which the home has been designed as evidenced by the wind zone indicated on the home's data plate.

(b) **Roof load zone.** Manufactured homes must not be located in a roof load zone that exceeds the design roof load for which the home has been designed as evidenced by the roof load zone indicated on the home's data plate. Refer to § 3285.315 for Special Snow Load Conditions.

(c) **Thermal zone.** Manufactured homes must not be installed in a thermal zone that exceeds the thermal zone for which the home has been designed as evidenced by the thermal zone indicated on the heating/cooling certificate and insulation zone map. The manufacturer may provide the heating/cooling information and insulation zone map on the home's data plate.

§ 3285.103 Moving manufactured home to location.

Refer to § 3285.902 for considerations related to moving the manufactured home to the site of installation.

§ 3285.104 Permits, other alterations, and on-site structures.

Refer to § 3285.903 for considerations related to permitting, other alterations and on-site structures.

Subpart C—Site Preparation

§ 3285.201 Soil conditions.

To help prevent settling or sagging, the foundation must be constructed on firm, undisturbed soil or fill compacted to at least 90 percent of its maximum relative density. All organic material subject to decay, such as grass, roots, twigs, and wood scraps must be removed in areas where footings are to be placed.

§ 3285.202 Soil classifications and bearing capacity.

(a) The soil classification and bearing capacity of the soil must be determined before the foundation is constructed and anchored against the wind. The soil classification and bearing capacity must be determined by:

(1) **Soil tests.** Soil tests that are in accordance with generally accepted engineering practice; or

(2) **Soil records.** Soil records on file with the applicable LAHJ; or

(3) *Soil classifications and bearing capacities.* If the soil class or bearing capacity cannot be determined by test or

soil records, but its type can be identified, the soil classification,

allowable pressures, and torque values in the following table must be used.

Soil classification		Soil description	Allowable pressure (psf) ¹	Blow count ASTM D1586	Torque probe ³ value ⁴ (inch-pounds)
Classification No.	ASTM D2487 or D2488				
1		Rock or hard pan	4000+		
2	GW, GP, SW, SP, GM, SM.	Sandy gravel and gravel; very dense and/or cemented sands; coarse gravel/cobbles; preloaded silts, clays and coral.	2000	40+	(⁶)
3	GC, SC, ML, CL	Sand; silty sand; clayey sand; silty gravel; medium dense coarse sands; sandy gravel; and very stiff silt, sand clays.	1500	24–39	351–550
4A	CG, MH ²	Loose to medium dense sands; firm to stiff clays and silts; alluvial fills.	1000	18–23	276–350
4B	CH, MH ²	Loose sands; firm clays; alluvial fills	1000	12–17	175–275
5	OL, OH, PT	Uncompacted fill; peat; organic clays	(⁷)	0–11	(⁵)

Notes:

¹ The values provided in this table have not been adjusted for overburden pressure, embedment depth, water table height, or settlement problems.

² For soils classified as CH or MH, without either torque probe values or blow count test results, selected anchors must be rated for a 4B soil.

³ The torque test probe is a device for measuring the torque value of soils to assist in evaluating the holding capacity of the soil in which the ground anchor is placed. The shaft must be of suitable length for the full depth of the ground anchor.

⁴ The torque value is a measure of the load resistance provided by the soil when subject to the turning or twisting force of the probe.

⁵ Less than 175.

⁶ More than 550.

⁷ Refer to 3285.202(b).

(b) If the soil appears to be composed of peat, organic clays, or uncompacted fill or appears to have unusual conditions, a registered professional geologist, registered professional engineer, or registered architect must be consulted and a report provided to determine the soil classification and maximum allowable soil bearing capacity.

§ 3285.203 Drainage.

(a) *Purpose.* Drainage must be provided that prevents water build-up

under the home, shifting or settling of the foundation, dampness in the home, damage to siding and bottom board, buckling of walls and floors, and problems with the operation of doors and windows.

(b) The home site must be graded to permit water to drain from under the home. Refer to Figure 3285.203.

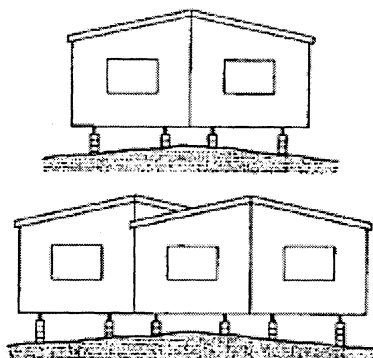
(c) All drainage must be diverted away from the home and must slope a minimum of one-half inch per foot away from the foundation for the first 10 feet.

Where property lines, walls, slopes, or other physical conditions prohibit this slope, the site must be provided with drains or swales or otherwise graded to drain water away from the structure.

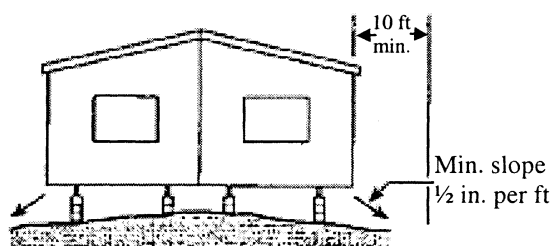
(d) *Sloped site considerations.* The home, where sited, must be protected from surface runoff from the surrounding area.

(e) Refer to § 3285.904 for drainage structures that may be used to drain surface runoff.

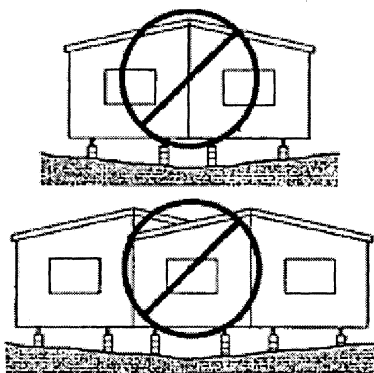
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Figure to § 3285.203 - Grading and drainage.

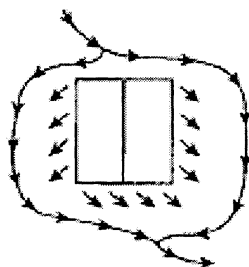
Crown and grade site to slope away from the home



Home sites must be prepared so that there will be no depressions in which surface water may accumulate beneath the home. The area of the site covered by the manufactured home must be graded, sloped or designed to provide drainage from beneath the home or to the property line.



Do not grade site or set the home so that water collects beneath the home.



Natural drainage must be diverted around and away from the home.

§ 3285.204 Ground moisture control.

(a) *Vapor retarder.* If the space under the home is to be enclosed with skirting or other material, a vapor retarder that keeps ground moisture out of the home must be installed except in arid regions with dry soil conditions (refer to § 3285.505).

(b) *Acceptable types of ground cover.* A minimum of six millimeter polyethylene sheeting or its equivalent must be used.

(c) *Proper installation.* (1) The entire area under the home, except for areas under open decks, porches, or recessed entries, must be covered with the vapor retarder as noted in § 3285.204(a) and must be overlapped at least 12 inches at all joints.

(2) The ground cover may be placed directly beneath footings, or otherwise installed around footers, anchors, and other obstructions where footings are permitted at-grade.

(3) Minor voids or tears in the vapor retarder do not require repair.

Subpart D—Foundations**§ 3285.301 General.**

(a) Foundations for manufactured home installations must be designed and constructed in accordance with this subpart and must be based on site conditions, home design features, and the loads the home was designed to withstand as shown on the home's data plate.

(b) Foundation systems that are not pier and footing type configurations are permissible provided they are verified by engineering data and designed in

accordance with § 3285.301(d) consistent with the design loads of the Manufactured Home Construction and Safety Standards. Pier and footing installations proposing different detailed specifications other than the pier and footing requirements provided in subpart D (such as block size, section width, loads, and spacing) are also permissible provided they are verified by engineering data and comply with § 3285.301(d) consistent with the design loads of the Manufactured Home Construction and Safety Standards. Several Tables and specifications in this subpart apply only to pier and footing configurations and may not apply to other types of foundation systems.

(c) Details, plans, and test data must be designed and certified by a registered professional engineer or registered architect, and must not take the home out of compliance with the MHCSS.

(d) *Alternative foundation systems.* Alternative foundation systems or designs are permitted by § 3285.301(d)(1) or § 3285.301(d)(2).

(1) Systems or designs must be manufactured and installed in accordance with their listings by a nationally recognized testing agency based on a nationally recognized testing protocol; or

(2) System designs must be prepared by a registered professional engineer or a registered architect in accordance with acceptable engineering practice.

§ 3285.302 Flood hazard areas.

In flood hazard areas, the piers and support systems must be capable of resisting loads associated with design

flood and wind events (refer to § 3285.101).

§ 3285.303 Piers.

(a) *General.* The piers used must be capable of transmitting the vertical live and dead loads to the footings or foundation below.

(b) *Acceptable piers—materials specification.* (1) Piers are permitted to be concrete blocks, pressure-treated wood having 0.60 pounds per cubic foot (pcf) retention in accordance with § 3285.312(b)(2), or adjustable metal or concrete piers.

(2) Manufactured piers must be listed or labeled for the required vertical load capacity, and where required by design, for the appropriate horizontal load capacity.

(c) *Design requirements.* (1) *Load-bearing capacity.* The load that each pier must carry depends on such factors as the dimensions of the home, the design dead and live loads, the spacing of the piers, and the way the piers are used to support the home.

(2) Center beam/mating wall support must be required for multi-section homes and designs must be consistent with Tables 2 and 3 of this section and Figures A, B, and C to § 3285.310.

(d) *Pier loads.* (1) Design support layout configurations, poured footing sizes for the pier loads, pier spacing, and soil bearing capacities and support conditions must be consistent with Tables 1, 2, and 3 of this section, and Figure C to § 3285.312.

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Table 1 to § 3285.303 – Frame Blocking Only/Perimeter Support Not Required**Except At Openings.**

16 in. × 16 in. Concrete Footing Layouts									
(Refer to Figure C of § 3285.312)									
Pier Spacing	Roof Live Load (psf)	Location	Load (lb)	Allowable Soil Pressure					
				1000 psf	1500 psf	2000 psf	2500 psf	3000 psf	4000 psf
4 ft 0 in.	20	Frame	2900	2	2	1	1	1	1
	30	Frame	3300	2	2	1	1	1	1
	40	Frame	3600	3	2	2	1	1	1
6 ft 0 in.	20	Frame	4200	3	2	2	1	1	1
	30	Frame	4700	3	2	2	2	1	1
	40	Frame	5200	3	3	2	2	1	1
8 ft 0 in.	20	Frame	5500	4	3	2	2	2	1
	30	Frame	6200	4	3	2	2	2	1
	40	Frame	6900	4	3	2	2	2	1
10 ft 0 in.	20	Frame	6800	4	3	2	2	2	1
	30	Frame	7600	6	3	3	2	2	2
	40	Frame	8500	6	4	3	3	2	2

Notes:

1. Refer to § 3285.312(d) for poured footing design by using the noted loads.
2. Refer to Figure C of § 3285.312 for 16 in. × 16 in. footing pyramids layout designs. Refer to 3285.312(b) for minimum footing thickness; **shaded areas indicate minimum 8 in. thickness.**
3. Table based on the following design assumptions: maximum 16 ft. nominal section width (15 ft actual width), 12" eave, 10" I-beam size, 300 lb. pier dead load, 10 psf roof dead load, 6 psf floor dead load, 35 plf wall dead load, and 10 plf chassis dead load.
4. Interpolation for other pier spacing is permitted.

Table 2 to § 3285.303 – Frame Plus Perimeter Blocking/Perimeter Blocking**Required.**

16 in. × 16 in. Concrete Footing Layouts									
(Refer to Figure C of § 3285.312)									
Maximum Pier Spacing	Roof Live Load (psf)	Location	Load (lb)	Allowable Soil Pressure					
				1000 psf	1500 psf	2000 psf	2500 psf	3000 psf	4000 psf
4 ft 0 in.	20	Frame	1,400	1	1	1	1	1	1
		Perimeter	1,900	2	1	1	1	1	1
		Mating	3,200	2	2	1	1	1	1
	30	Frame	1,400	1	1	1	1	1	1
		Perimeter	2,300	2	1	1	1	1	1
		Mating	3,800	3	2	2	1	1	1
	40	Frame	1,400	1	1	1	1	1	1
		Perimeter	2,600	2	1	1	1	1	1
		Mating	4,400	3	2	2	1	1	1
6 ft 0 in.	20	Frame	1,900	2	1	1	1	1	1
		Perimeter	2,700	2	2	1	1	1	1
		Mating	4,700	3	2	2	2	1	1
	30	Frame	1,900	2	1	1	1	1	1
		Perimeter	3,200	3	2	1	1	1	1
		Mating	5,600	4	3	2	2	2	1
	40	Frame	1,900	2	1	1	1	1	1
		Perimeter	3,700	3	2	2	1	1	1
		Mating	6,500	4	3	2	2	2	1

8 ft 0 in.	20	Frame	2,400	2	1	1	1	1	1
		Perimeter	3,500	2	2	1	1	1	1
		Mating	6,100	4	3	2	2	2	1
	30	Frame	2,400	2	1	1	1	1	1
		Perimeter	4,200	3	2	2	1	1	1
		Mating	7,300	6	3	3	2	2	2
	40	Frame	2,400	2	1	1	1	1	1
		Perimeter	4,800	3	2	2	2	1	1
		Mating	8,500	6	4	3	3	2	2
10 ft 0 in.	20	Frame	2,900	2	2	1	1	1	1
		Perimeter	4,300	3	2	2	1	1	1
		Mating	7,600	6	3	3	2	2	2
	30	Frame	2,900	2	2	1	1	1	1
		Perimeter	5,100	4	3	2	2	1	1
		Mating	9,100	6	4	3	3	2	2
	40	Frame	2,900	2	2	1	1	1	1
		Perimeter	6,000	4	3	2	2	2	1
		Mating	10,600	8	6	4	3	3	2

Notes:

1. Refer to § 3285.312(d) for poured footing design by using the noted loads.
2. Refer to Figure C of § 3285.312 for 16 in. × 16 in. footing pyramids layout designs. Refer to 3285.312(b) for minimum footing thickness; **shaded areas indicate minimum 8 in. thickness.**
3. Mating wall perimeter piers and footings only required under full height mating walls supporting roof loads. Refer to Figures A and B of § 3285.310.
4. Table based on the following design assumptions: maximum 16 ft. nominal section width (15 ft actual width), 12" eave, 10" I-beam size, 300 lb. pier dead load, 10 psf roof dead load, 6 psf floor dead load, 35 plf wall dead load, and 10 plf chassis dead load.
5. Interpolation for other pier spacing is permitted.

Table 3 to § 3285.303 – Ridge Beam Span Footing Capacity.

16 in. × 16 in. Concrete Footing Layouts								
(Refer to Figure C of § 3285.312)								
Mating Wall Opening (ft)	Roof Live Load (psf)	Pier and Footing Load (lb)	Allowable Soil Pressure					
			1000 psf	1500 psf	2000 psf	2500 psf	3000 psf	4000 psf
5	20	1,200	1	1	1	1	1	1
	30	1,600	1	1	1	1	1	1
	40	1,900	2	1	1	1	1	1
10	20	2,300	2	1	1	1	1	1
	30	3,100	2	2	1	1	1	1
	40	3,800	3	2	2	1	1	1
15	20	3,500	2	2	1	1	1	1
	30	4,700	3	2	2	2	1	1
	40	5,800	4	3	2	2	1	1
20	20	4,700	3	2	2	2	1	1
	30	6,200	4	3	2	2	2	1
	40	7,500	6	3	3	2	2	2
25	20	5,800	4	3	2	2	2	1
	30	7,800	6	3	3	2	2	2
	40	9,700	6	4	3	3	2	2
30	20	7,000	4	3	2	2	2	1
	30	9,300	6	4	3	3	2	2
	40	11,600	8	6	4	3	3	2
35	20	8,100	6	4	3	2	2	2
	30	10,900	8	6	4	3	3	2
	40	13,600	8	6	4	4	3	2

Notes:

1. Refer to § 3285.312(d) for poured footing design by using the noted loads.
2. Refer to Figure C of § 3285.312 for 16 in.×16 in. footing pyramids layout designs. Refer to § 3285.312(b) for minimum footing thickness; shaded areas indicate minimum 8 in. thickness.
3. Table based on the following design assumptions: maximum 16 ft. nominal section width (15 ft actual width), 10" I-beam size, 300 lb. pier dead load, 10 psf roof dead load, 6 psf floor dead load, 35 plf wall dead load, and 10 plf chassis dead load.
4. Loads listed are maximum column loads for both sections.
5. Interpolation for pier and column loads is permitted for mate-line openings between those listed.

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(2) Manufactured piers must be rated at least to the loads required to safely support the dead and live loads as required by § 3285.301 and installation instructions must be formatted consistent with Tables 1, 2, and 3 of this section. Locally constructed piers must also be designed to transmit these loads safely as required by § 3285.301.

§ 3285.304 Configuration.

(a) *Concrete blocks.* (1) Concrete block piers must be installed in accordance with Figures A and B of § 3285.306.

(2) Load-bearing (not decorative) concrete blocks must have nominal dimensions of at least 8 inches × 8 inches × 16 inches.

(3) The concrete blocks must be stacked with their hollow cells aligned vertically.

(4) When piers are constructed of blocks stacked side by side, each layer must be at right angles to the preceding one, as shown in Figure B of § 3285.306.

(b) *Caps.* (1) Structural loads must be evenly distributed across capped hollow block piers, as shown in Figures A and B of § 3285.306.

(2) Caps must be of solid masonry of at least 4 inches nominal thickness, of dimensional lumber at least 2 inches nominal thickness, or be of steel or other listed materials.

(3) All caps must be of the same length and width as the piers on which they rest.

(4) When split caps are used on double stacked blocks, the caps must be installed with the long dimension across the joint in the blocks below.

(c) *Gaps.* When gaps between the bottom of the supported beam and the foundation support system occur during installation, any combination of the following applies.

(1) Nominal 4 inches × 6 inches shims are permitted to be used to level the home and fill any gaps between the base of the I-beam and the top of the pier cap;

(2) Shims must be used in pairs as shown in Figures A and B of § 3285.306, and shims must be driven in tightly so that they do not occupy more than one inch of vertical height; and

(3) Wood plates no thicker than 2 inches must be used to fill in remaining vertical gaps.

(d) *Manufactured pier heights.* Manufactured pier heights must be selected so that the adjustable risers do not extend more than 2 inches when finally positioned.

§ 3285.305 Clearance under homes.

(a) A minimum clearance of 12 inches must be maintained beneath the lowest member of the main frame (I-beam or channel beam) in the area of utility connections.

(b) No more than 25 percent of the lowest member of the main frame of the home may be less than 12 inches above grade.

§ 3285.306 Design procedures for concrete block piers.

(a) *Frame piers less than 36 inches high.* (1) Frame piers less than 36 inches high are permitted to be constructed of single, open, or closed-cell concrete blocks, 8 inches × 8 inches × 16 inches, when the design capacity of the block is not exceeded.

(2) The frame piers must be installed so that the long sides are at right angles to the supported I-beam, as shown in Figure A of this section.

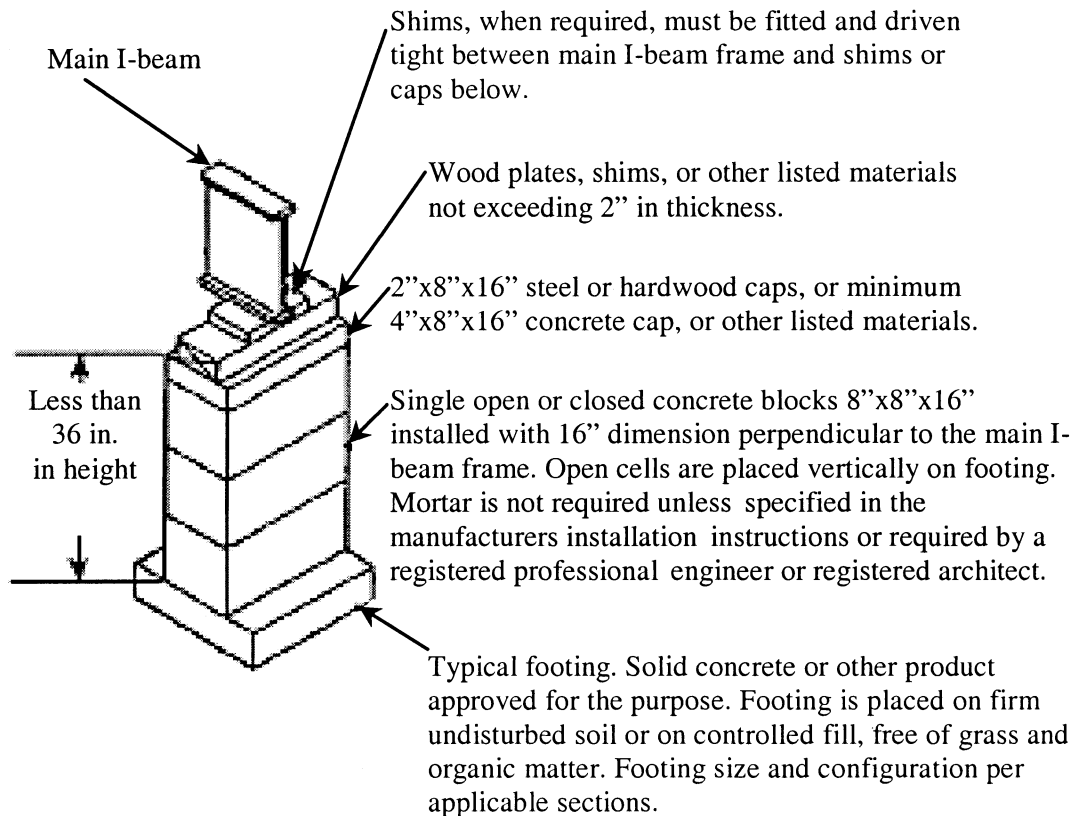
(3) Open cells must be positioned at right angles to the footings.

(4) Horizontal offsets must not exceed one-half inch, top to bottom.

(5) Mortar is not required unless specified in the manufacturers installation instructions or required by a registered professional engineer or registered architect.

(b) *Frame piers 36 inches to 80 inches high and corner piers.* All frame piers between 36 inches and 80 inches high and all corner piers over three blocks high must be constructed out of double, interlocked concrete blocks as shown in Figure B of this section, when the design capacity of the block is not exceeded. Mortar is required for concrete block piers unless otherwise specified in the manufacturer installation instructions.

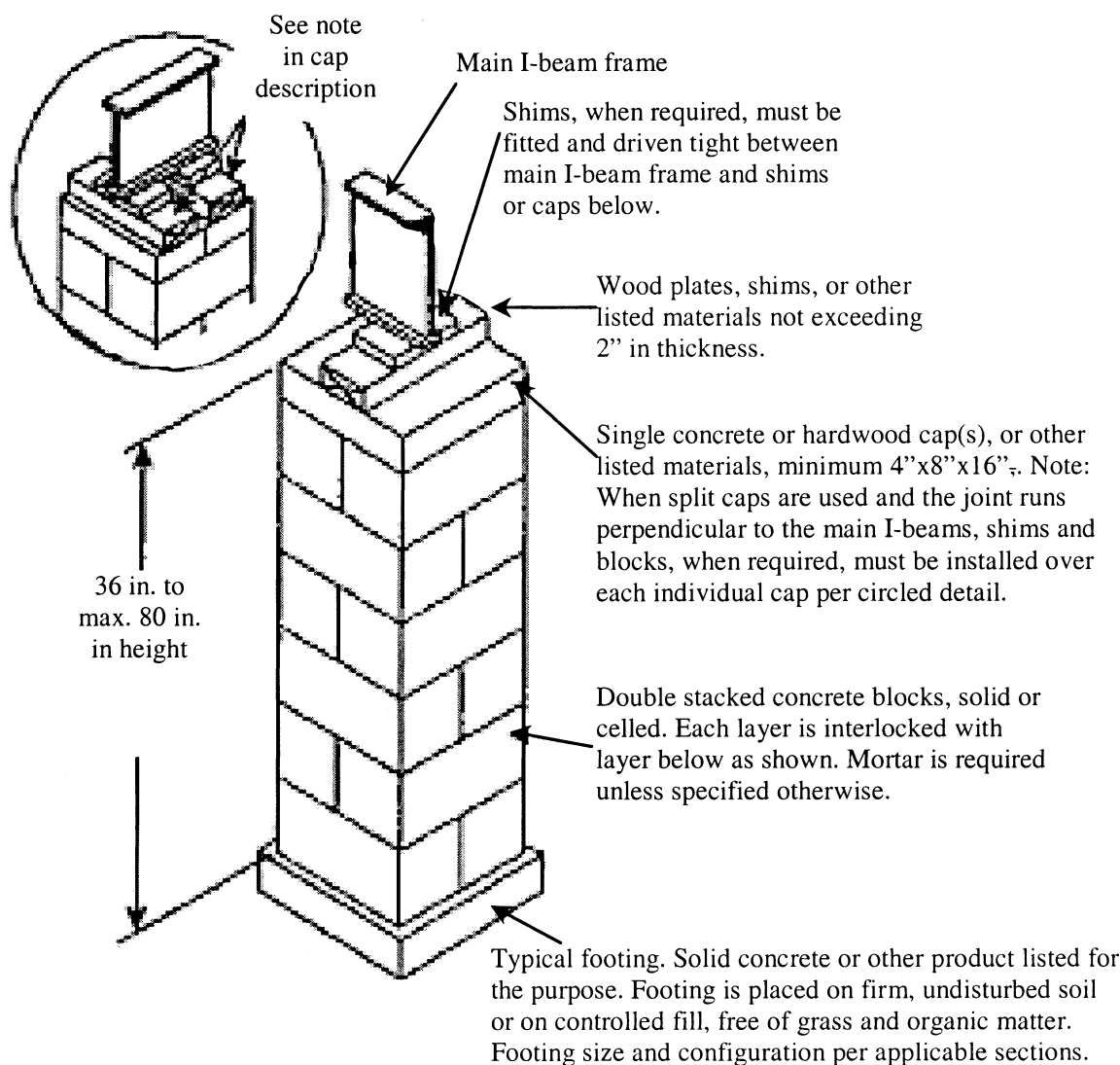
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Figure A to § 3285.306 - Typical Footing and Pier Installation, Single Concrete Block.**BILLING CODE 4210-27-C**

(c) *All piers over 80 inches high.* Piers over 80 inches high must be designed by

a registered professional engineer or registered architect in accordance with acceptable engineering practice. Mortar

is required for concrete block piers unless otherwise specified in the manufacturer installation instructions.

Figure B to § 3285.306 - Typical Footing and Pier Installation, Double Concrete Block.**§ 3285.307 Perimeter support piers.**

(a) Piers required at mate-line supports, perimeter piers, and piers at exterior wall openings are permitted to be constructed of single open-or closed-cell concrete blocks, 8 inches × 8 inches × 16 inches, to a maximum height of 54 inches as shown in Figure A to § 3285.306, when the design capacity of the block is not exceeded.

(b) Piers used for perimeter support must be installed with the long dimension parallel to the perimeter rail.

§ 3285.308 Manufactured piers.

Manufactured piers must be listed and labeled and installed to the pier manufacturer installation instructions. Refer to § 3285.303(d)(2).

§ 3285.309 Elevated homes.

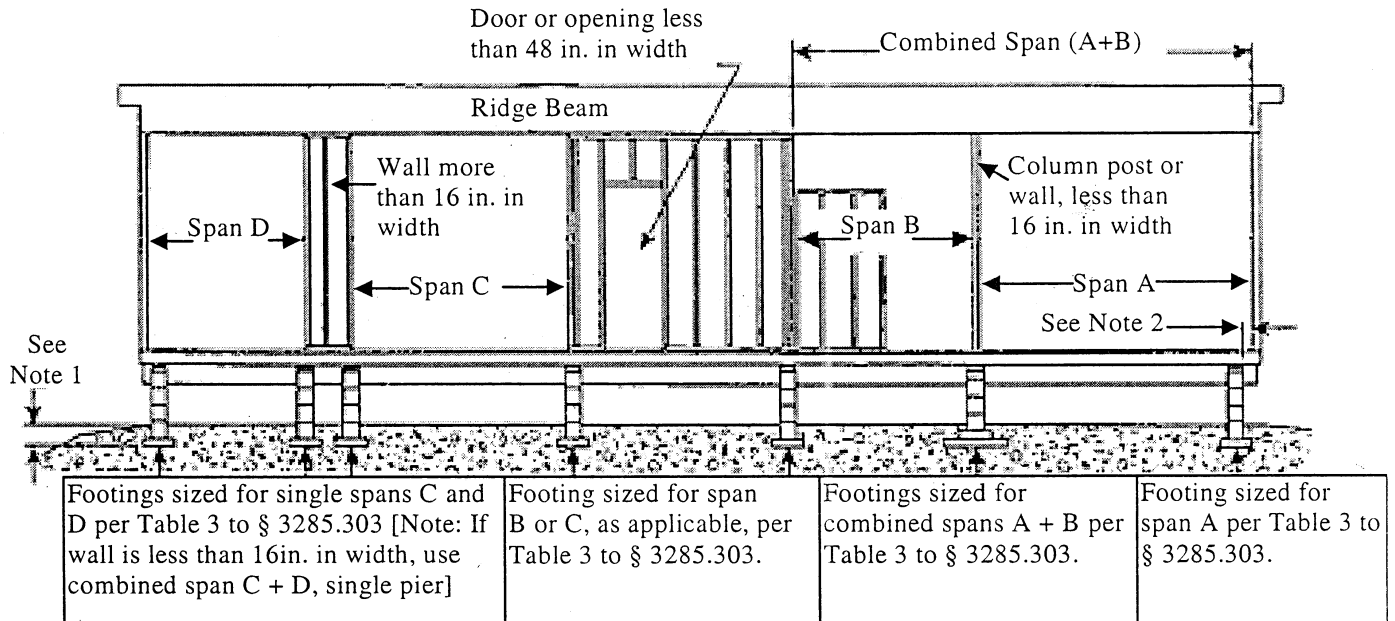
When more than one-fourth of the area of a home is installed so that the bottoms of the main frame members are more than 67 inches above the top of the footing, the home stabilizing devices must be designed by a registered professional engineer or registered

architect in accordance with acceptable engineering practice.

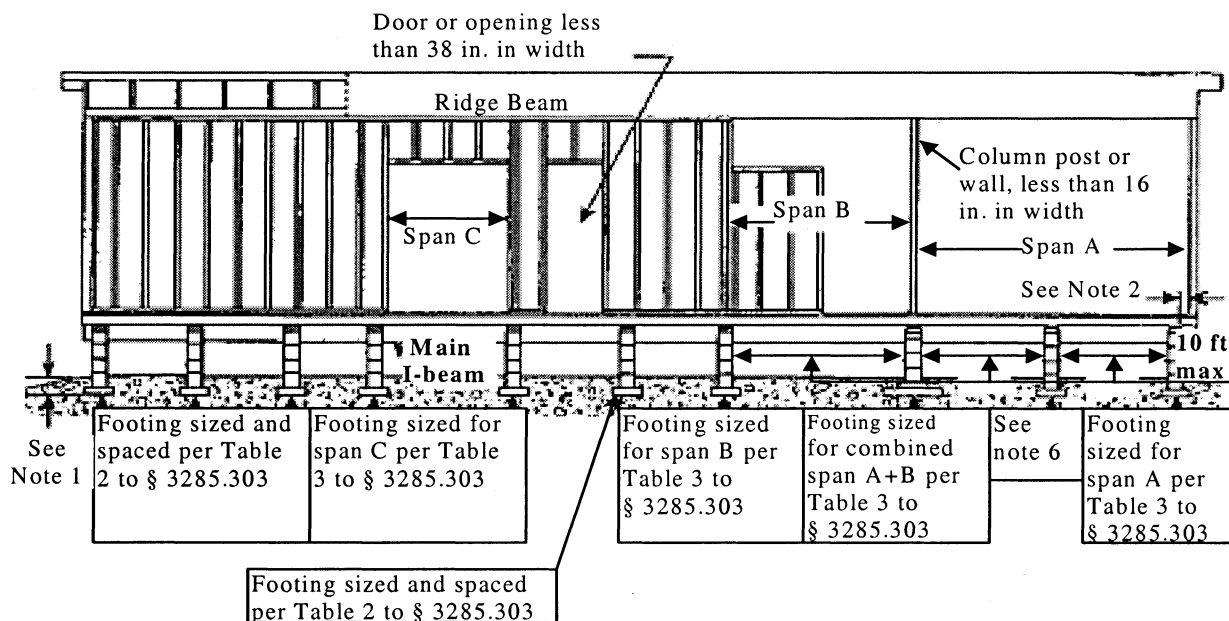
§ 3285.310 Pier location and spacing.

(a) The location and spacing of piers depends upon the dimensions of the home, the live and dead loads, the type of construction (single-or multi-section), I-beam size, soil bearing capacity, footing size, and such other factors as the location of doors or other openings.

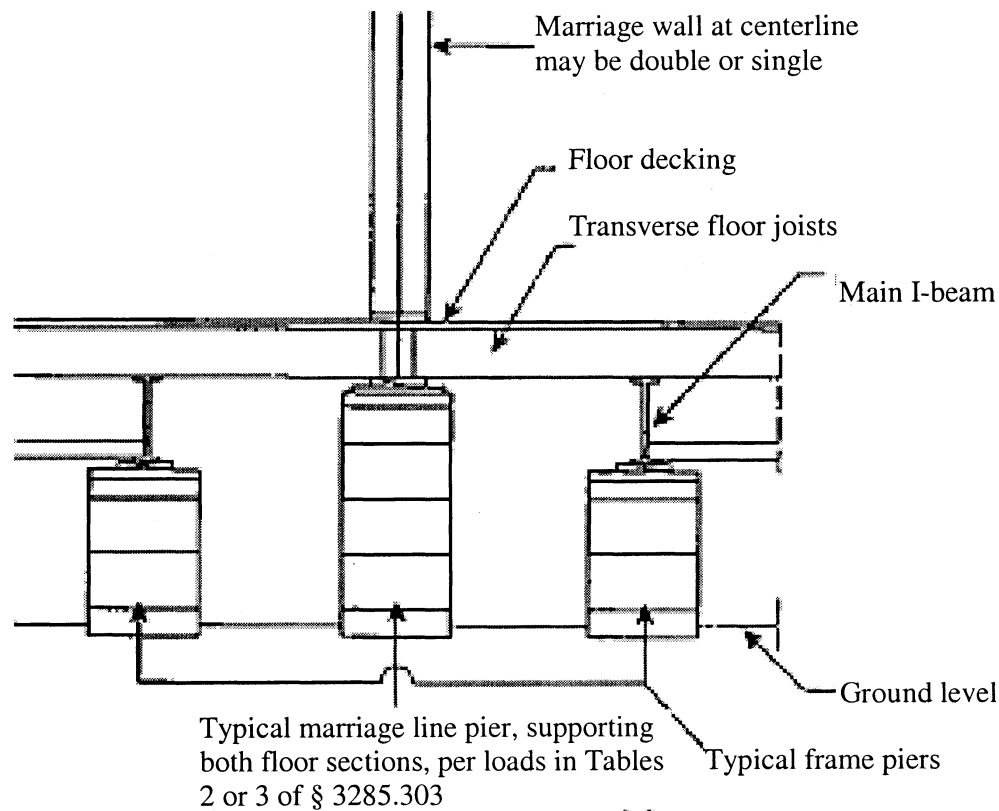
(b) Mate-line and column pier supports must be in accordance with this subpart and consistent with Figures A through C of this section.

Figure A to § 3285.310 - Typical Mate-Line Column Pier and Mating Wall Support**When Frame Only Blocking is Required.****Notes:**

1. Bottom of footings must extend below frost depth.
2. Piers may be offset up to 6 in. in either direction along the supported members to allow for plumbing, electrical, mechanical, equipment, crawlspaces, or other devices.
3. Single stack concrete block pier loads must not exceed 10,000 lbs.
4. Prefabricated piers must not exceed their approved or listed maximum vertical or horizontal design loads.
5. When a full-height mating wall does not support the ridge beam, this area is considered an open span – Span B.

Figure B to § 3285.310 - Typical Mate-Line Column Pier and Mating Wall Support**When Perimeter Blocking is Required.****Notes:**

1. Bottom of footings must be below frost depth.
2. Piers may be offset 6 in. in either direction along supported members to allow for plumbing electrical, mechanical equipment, crawlspaces, or other devices.
3. Single stack concrete block pier loads must not exceed 10,000 lbs.
4. Piers are not required at openings in mating wall less than 38 in.
5. When a full-height mating wall does not support the ridge beam, this area is considered an open span – Span B.
6. In areas where the open span is greater than 10 ft., intermediate piers and footings must be placed at maximum 10 ft. on center.
7. Prefabricated piers must not exceed their approved or listed maximum horizontal or vertical design loads.
8. Column piers are in addition to piers required under full-height mating walls.

Figure C to § 3285.310 - Typical Mate-Line Column and Piers.**Notes:**

1. Mate-line column support piers are installed with the long dimension of the concrete block perpendicular to the rim joists.
2. Pier and footing designed to support both floor sections. Loads as listed in Table 3 of § 3285.303 are total column loads for both sections.

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(c) Piers supporting the frame must be no more than 24 inches from both ends and not more than 120 inches center to center under the main rails.

(d) Pier support locations. Pier support locations and spacing must be presented to be consistent with Figures A and B of § 3285.312, as applicable, unless alternative designs are provided by a professional engineer or registered architect in accordance with acceptable engineering practice.

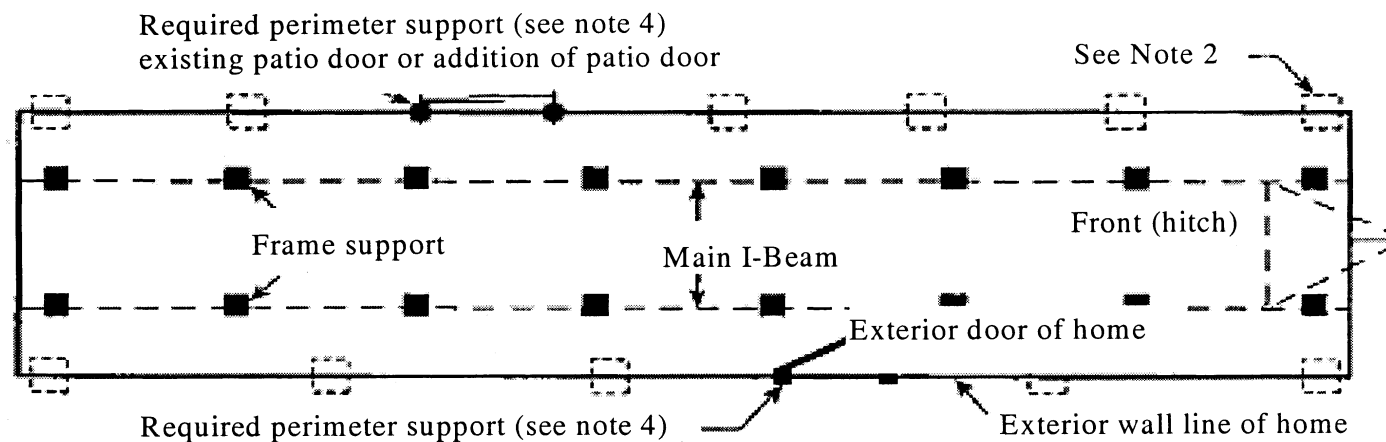
§ 3285.311 Required perimeter supports.

(a) Pier supports must be placed on both sides of side wall exterior doors and any other side wall openings greater than 48 inches (such as entry and sliding glass doors), and under porch posts, factory installed fireplaces, and wood stoves).

(b) Other perimeter supports must be required in accordance with Table 1, 2, or 3 of § 3285.303, as applicable.

§ 3285.312 Footings.

(a) Footing materials must conform to § 3285.312 and other materials approved for footings may be permitted if they provide equal load-bearing capacity and resistance to decay. Footings must be placed on undisturbed soil or fill compacted to 90 percent of maximum relative density. A footing must support every pier.

Figure A to § 3285.312 - Typical Blocking Diagram for Single Section Homes**Notes:**

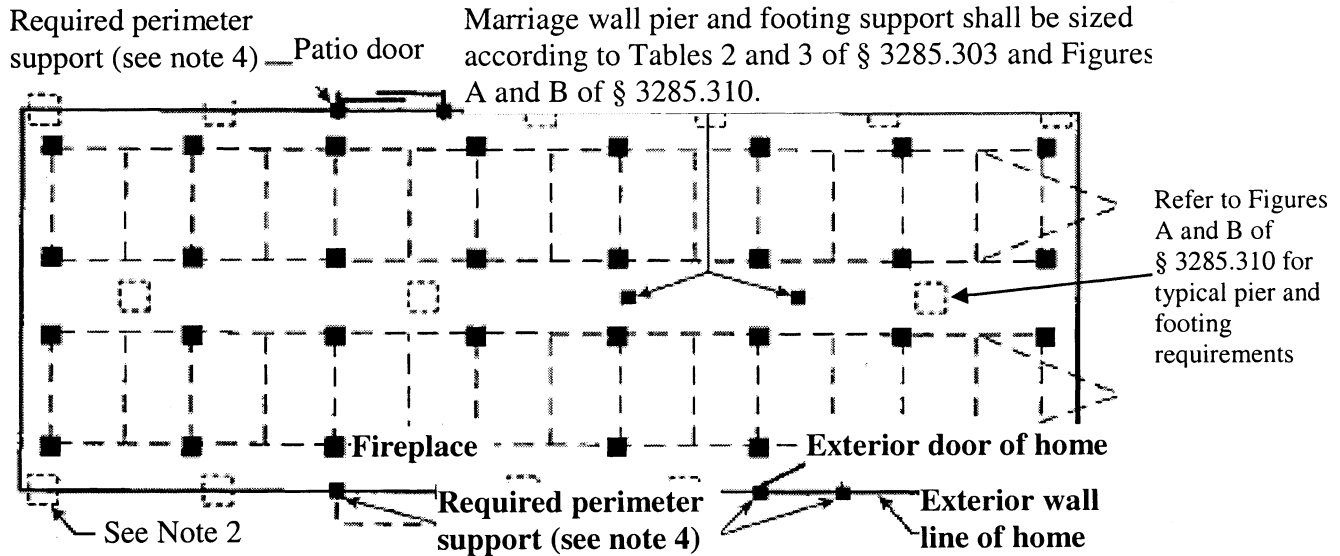
1. Refer to Table 1 of § 3285.303 for pier and footing requirements when frame blocking only is used.
2. In addition to blocking required by § 3285.311, refer to Table 2 of § 3285.303.
3. End piers under main I-beams may be set back a maximum of 24 in. as measured from the outside edge of the floor to the center of the pier.
4. Place piers on both sides of entry doors; at any other openings greater than 48 in. width, such as patio or atrium doors; and under porch posts, factory installed fireplaces, and wood stoves.

(b) *Acceptable types of footings.* (1) *Concrete.* Footings must be permitted to consist of either of the following:

(i) 4-inch nominal precast concrete pads meeting or exceeding ASTM C 90—

02, Standard Specification for Load Bearing Concrete Masonry Units, without reinforcement, with at least a 28-day compressive strength of 4,000 pounds per square inch (psi); and

(ii) 6-inch nominal poured-in-place concrete pads, slabs, or ribbons with at least a 28-day compressive strength of 3,000 pounds per square inch (psi).

Figure B to § 3285.312 - Typical Blocking Diagram for Single Multi-section Home.**Notes:**

1. Refer to Table 1 of § 3285.303 for pier and footing requirements when frame blocking only is used.
2. In addition to blocking required by § 3285.311, refer to Tables 2 and 3 of § 3285.303.
3. End piers under main I-beams may be set back a maximum of 24 in. as measured from the outside edge of the floor to the center of the pier.
5. When an end pier under the mate-line also serves as a column pier, it may be set back a maximum of 6 in. as measured from the inside edge of the exterior wall to the center of the pier.
4. Place piers on both sides of entry doors; at any other openings greater than 48 in. width, such as patio or atrium doors; and under porch posts, factory installed fireplaces, and wood stoves.

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(2) *Pressure-treated permanent wood.*
 (i) A minimum of two layers of nominal 2-inch thick pressure-treated wood having 0.60-pcf (9.6 kg/m³) retention in accordance with AWPAC2-02, Standard for the Preservative Treatment of Lumber, Timber, Bridge Ties and Mine Ties, by Pressure Processes, or AWPAC9-00, Plywood—Preservative Treatment by Pressure Processes, with

the long dimensions of the second layer placed under the pier and perpendicular to that of the first layer, must be used.

(ii) Pressure-treated wood footings must be pressure treated on all six sides and is permitted to consist of nominal 2 inch thick pressure-treated wood in accordance with AWPAC2-02, or a single layer of a minimum thickness of three quarter inch and a maximum size of 16 inches × 16 inches, or, for larger

sizes, two pieces of nominal three-quarter inch thick plywood (APA-rated sheathing, exposure 1, PS1) pressure-treated for soil contact in accordance with AWPAC9-00.

(3) *ABS footing pads.* (i) ABS footing pads are permitted as long as pad installation is in accordance with the pad manufacturer installation instructions.

(ii) ABS footing pads must be listed or labeled for the required load capacity.

(c) *Placement in freezing climates.* (1) *Conventional footings.* Footings placed in freezing climates must be placed below the frost line depth for the site unless an insulated foundation or monolithic slab is used (refer to §§ 3285.312(c)(2) and 3285.312(c)(3)). When the frost line depth is not available from the LAHJ, a registered professional engineer, registered architect, or registered geologist must be

consulted to determine the required frost line depth for the manufactured home site.

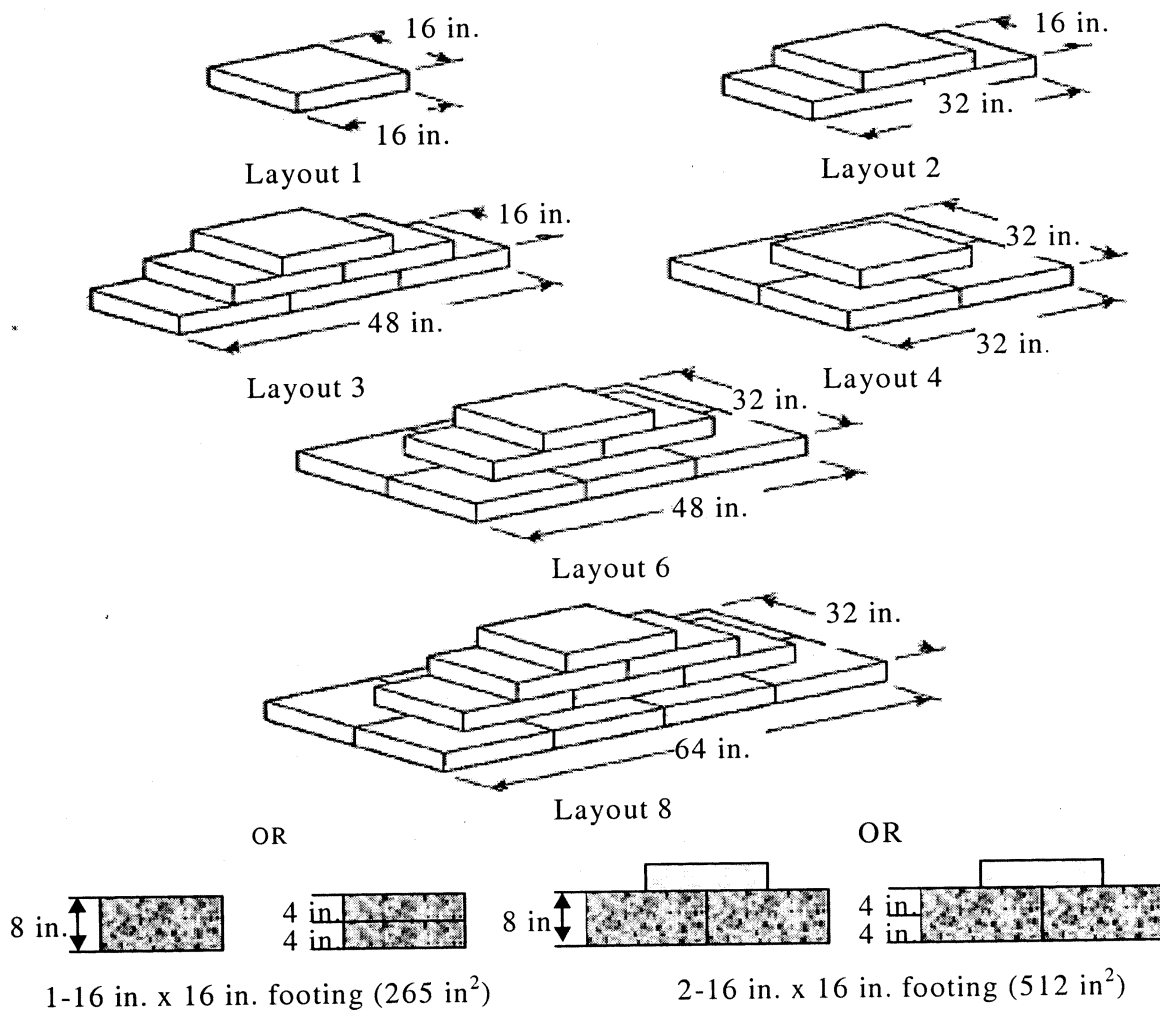
(2) *Monolithic slab systems.* (i) When properly designed by a registered professional engineer or registered architect in accordance with acceptable engineering practice and ASCE/SEI 32-01, a monolithic slab is permitted above the frost line.

(ii) The design must accommodate anchorage requirements in § 3285.401.

(3) *Insulated foundations.* When properly designed by a registered professional engineer or registered architect in accordance with acceptable engineering practice and ASCE/SEI 32-01, an insulated foundation is permitted above the frost line.

(d) *Sizing of footings.* The sizing of footings depends on the load-bearing capacity of both the piers and the soil. Refer to § 3285.303 and Figures C and E of this section for footing sizes.

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Figure C to § 3285.312 - Footing Configuration Layout Designs.**Notes:**

1. Typical pier pad: 16"x16"x4" thick precast concrete.
2. The pad thickness for table entries with shade is minimum 8", or two 4" pads one on top of the other.
3. $F_c' = 4000$ psi min.
4. The layout numbers identified in this figure correspond to the number of pads at the base of the footing.

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(e) The size and capacity for unreinforced cast-in-place footings are as follows:

Soil capacity (psf)	Minimum footing size (in.)	8 in. x 16 in. pier		16 in. x 16 in. pier	
		Maximum footing capacity (lb)	Unreinforced cast-in-place minimum thickness (in.)	Maximum footing capacity (lb)	Unreinforced case-in-place minimum thickness (in.)
1,000	16 x 16	1,600	6	1,600	6
	20 x 20	2,600	6	2,600	6
	24 x 24	3,700	6	3,700	6
	30 x 30	5,600	8	5,800	6
	36 x 36	7,900	10	8,100	8
	42 x 42	⁴ 10,100	12	10,700	10
	48 x 48	⁴ 13,000	15	13,600	12
1,500	16 x 16	2,500	6	2,500	6
	20 x 20	4,000	6	4,000	6
	24 x 24	5,600	8	5,700	6
	30 x 30	8,600	10	8,900	6
	36 x 36	⁴ 12,200	12	12,600	8
	42 x 42	⁴ 16,100	15	16,500	12
	48 x 48	⁴ 20,400	18	⁴ 21,000	15
2,000	16 x 16	3,400	6	3,400	6
	20 x 20	5,300	6	5,300	6
	24 x 24	7,600	8	7,700	6
	30 x 30	¹ 11,600	10	11,900	8
	36 x 36	⁴ 16,300	15	16,900	10
	42 x 42	⁴ 21,700	18	⁴ 22,700	12
2,500	16 x 16	4,300	6	4,300	6
	20 x 20	6,700	6	6,700	6
	24 x 24	9,600	8	9,700	6
	30 x 30	⁴ 14,700	12	15,000	8
	36 x 36	⁴ 20,800	15	⁴ 21,400	10
	42 x 42				
3,000	16 x 16	5,200	6	5,200	6
	20 x 20	8,100	8	8,100	6
	24 x 24	⁴ 11,500	10	11,700	6
	30 x 30	⁴ 17,800	12	18,100	8
	36 x 36	⁴ 25,000	18	⁴ 25,700	12
	42 x 42				
4,000	16 x 16	7,000	6	7,000	6
	20 x 20	10,800	8	10,900	6
	24 x 24	⁴ 15,500	10	15,600	8
	30 x 30	⁴ 23,800	15	⁴ 24,200	10

Notes:

¹ The footing sizes shown are for square pads and are based on the area (in.²), shear, and bending required for the loads shown. Other configurations, such as rectangular or circular configurations, can be used, provided the area and depth is equal to or greater than the area and depth of the square footing shown in the table and the distance from the edge of the pier to the edge of the footing is not less than the thickness of the footing.

² The 6 in. cast-in-place values can be used for 4 in. unreinforced precast concrete footings.

³ The capacity values listed have been reduced by the dead load of the concrete footing.

⁴ Concrete block piers must not exceed their design capacity.

§ 3285.313 Combination systems.

Support systems that combine both load-bearing capacity and uplift resistance must also be sized and designed for all applicable design loads.

§ 3285.314 Permanent foundations.

(a) Nothing in these Model Installation Standards shall limit the authority of State and local governments to impose requirements for the placement of a manufactured home on a permanent foundation in accordance with State or local building codes provided the permanent foundation provides protection to the residents of manufactured homes that equals or exceeds the protection provided by

these Model Installation Standards. In addition, nothing in these Model Installation Standards is intended to limit the ability of mortgage lenders or others to establish financing eligibility requirements or technical underwriting standards or requirements for permanent foundations that provide protection to the residents of manufactured homes that equals or exceeds the protection provided by these Model Installation Standards.

(b) When a permanent foundation design is required and is not available from the home manufacturer or covered in the local building code, a registered professional engineer or registered

architect must design the anchorage and foundation support requirements.

§ 3285.315 Special snow load conditions.

(a) In general, foundations for homes designed for and located in areas with roof live loads greater than 40 psf must be designed by the manufacturer for the special snow load conditions in accordance with acceptable engineering practice. Where site or other conditions prohibit the use of the manufacturer's instructions, a registered professional engineer or registered architect must design the foundation for the special snow load conditions.

(b) *Ramadas*. Ramadas may be used in areas with roof live loads greater than 40

psf. Any connection to the home must be for weatherproofing only.

Subpart E—Anchorage Against Wind

§ 3285.401 Anchoring instructions.

(a) After blocking and leveling, the installer must secure the manufactured home against the wind by use of anchor assembly type installations or by connections to alternative foundation systems (§ 3285.301) or permanent foundations (§ 3285.314).

(b) For anchor assembly type installations, the manufactured home must be secured against the wind as described in § 3285.401. So as not to preclude other design configurations or alternative foundation systems, when using another type of installation, the design must be prepared by a registered professional engineer or registered architect in accordance with acceptable engineering practice, the design loads of the Federal Manufactured Home

Construction and Safety Standards (24 CFR part 3280), and § 3285.301(d).

(c) All anchoring and foundation systems must be capable of meeting the loads required by part 3280, subpart D of this chapter, that the home was designed to withstand as shown on the home's data plate.

§ 3285.402 Ground anchor installations.

(a) *Specifications for tie-down straps and ground anchors.* (1) *Ground anchors.*

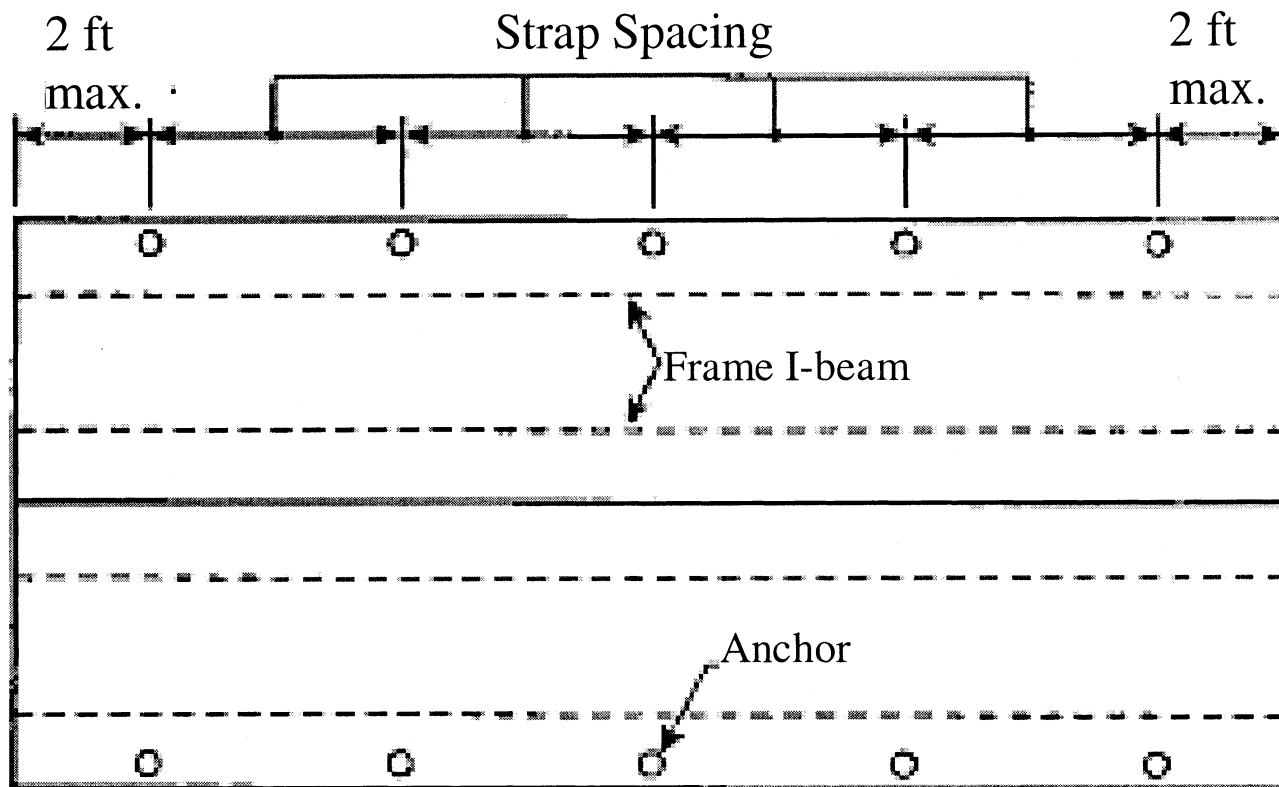
Ground anchors must be listed, zinc-coated (0.30 oz/ft² of surface area), and be capable of resisting a minimum total load capacity of 4725 lb and a working load capacity of 3150 lb, unless reduced capacities are noted in accordance with note 11 of Table 1 of this section or note 12 of Tables 2 and 3 of this section. The resistance capability of ground anchors and anchoring equipment must be determined by a registered professional

engineer, registered architect, or tested by a nationally recognized third party testing agency in accordance with a nationally recognized testing protocol.

(2) *Tie-down straps.* A 1¼ inch × 0.035 in or larger zinc-coated (0.30 oz/ft² of surface area) steel strapping conforming to ASTM D 3953–97, Standard Specification for Strapping, Flat Steel and Seals, Type 1, Grade 1, Finish B with a minimum total capacity of 4,725 pounds (lbs) and a working capacity of 3,150 pounds (lbs) must be used. Slit or cut edges of coated strapping need not be zinc coated.

(b) *Number and location of ground anchors.* (1) Ground anchor and anchor strap spacing for installation of single-section and multi-section manufactured homes must be consistent with the appropriate spacing shown in Tables 1 through 3 of this section, and Figures A and B of this section.

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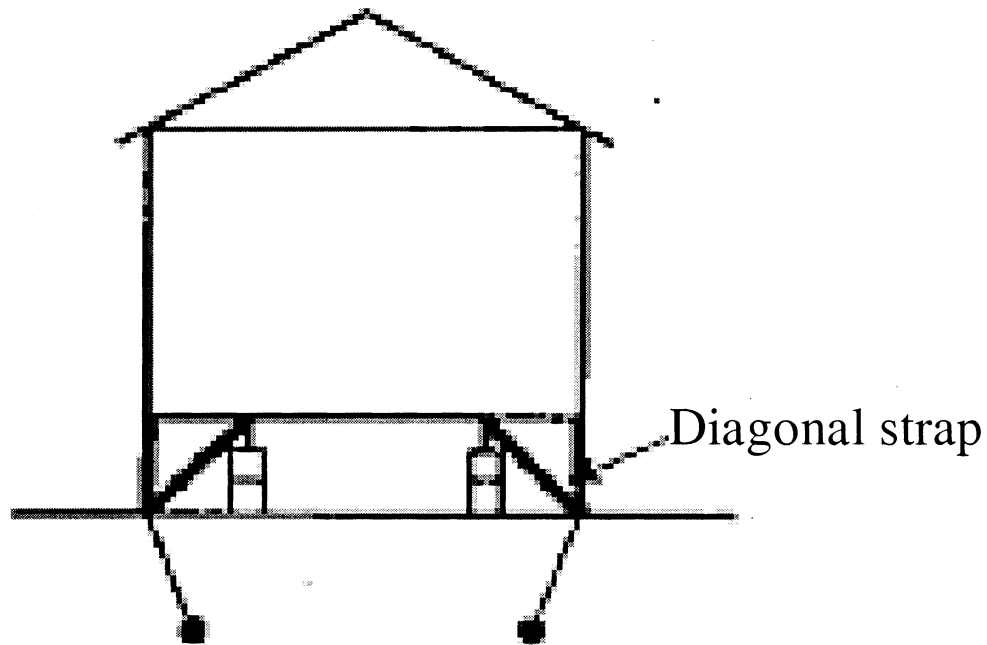
Figure A to § 3285.402 - Ground Anchor Locations and Spacing – Plan View.**Notes:**

1. Refer to Tables 1, 2, and 3 of this section for maximum ground anchor spacing.
2. Longitudinal anchors not shown for clarity, refer to § 3285.402(b)(2) for longitudinal anchoring requirements.

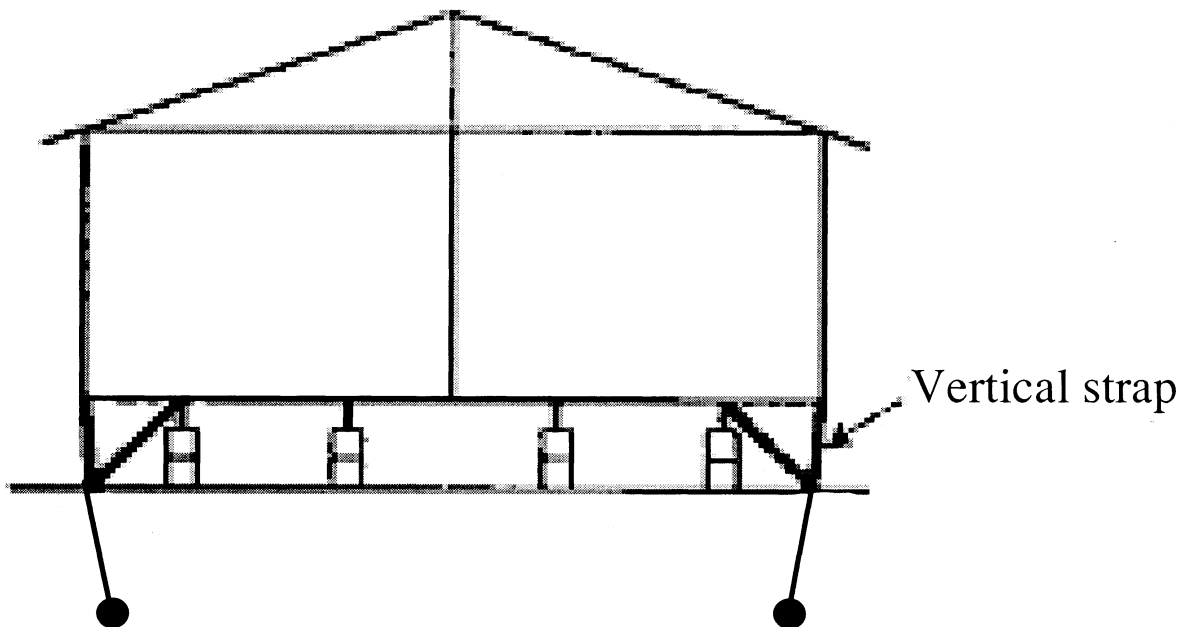
(2) Longitudinal anchoring. Manufactured homes must be stabilized against wind in the longitudinal direction in all Wind Zones. Manufactured homes located in Wind

Zones 2 and 3 must have longitudinal ground anchors installed on the ends of the manufactured home transportable section(s). A registered professional engineer or registered architect must

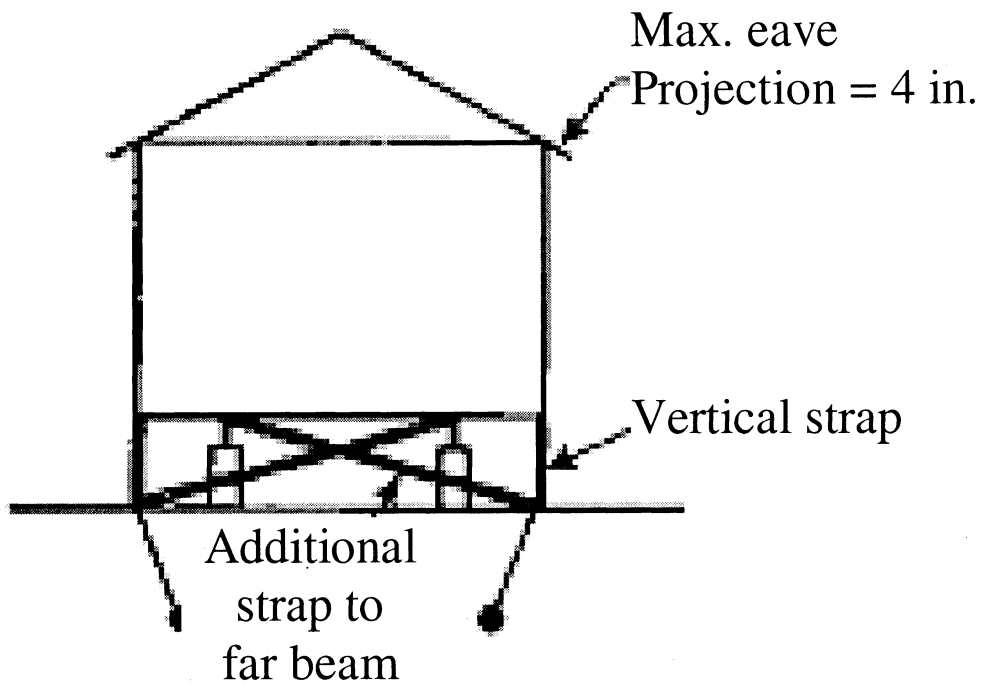
design alternative longitudinal anchoring methods in accordance with acceptable engineering practice.

Figure B to § 3285,402 - Anchor Strap and Pier Relationship.

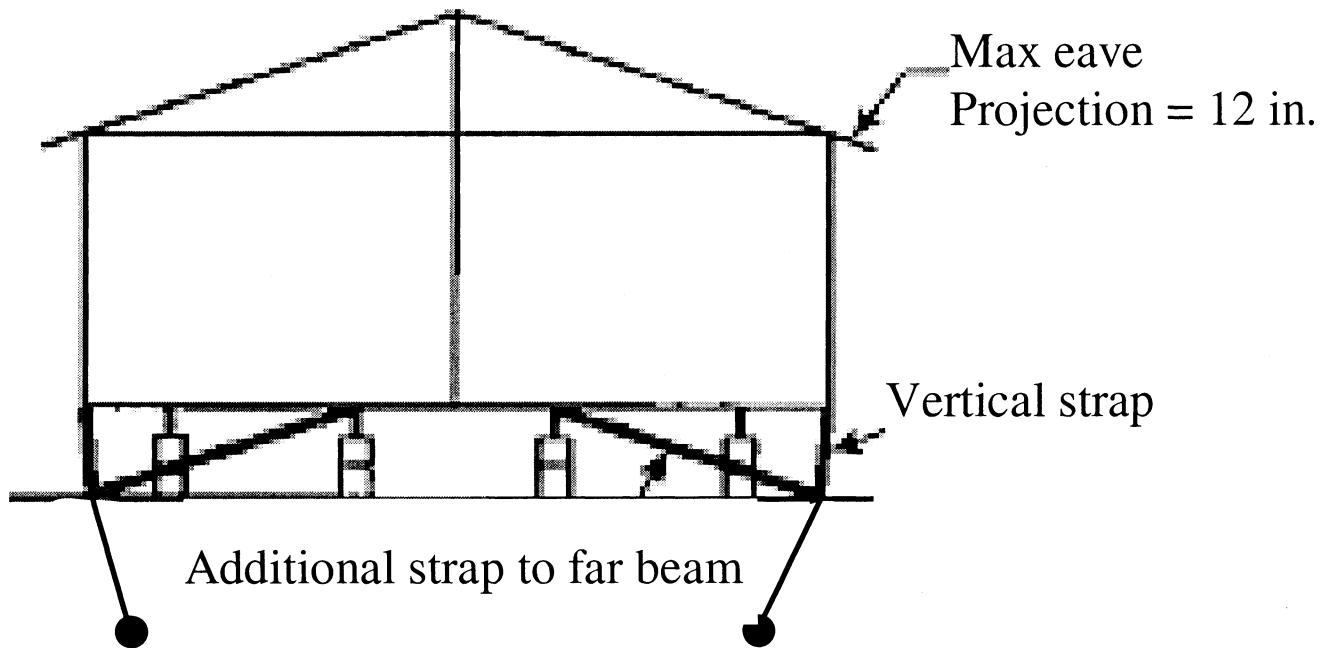
Near Beam Method



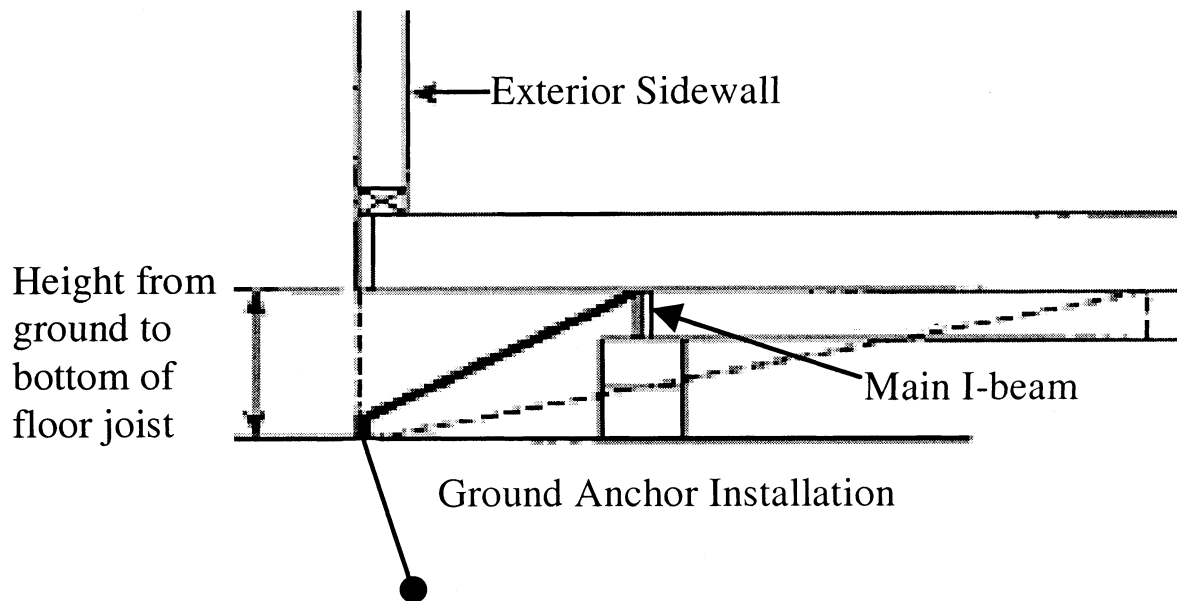
Near Beam Method
(Mate-line piers and anchors omitted for clarity)



Second Beam Method
(Vertical tiedown straps required)



Second Beam Method
(Mate-line piers and anchors omitted for clarity)



Notes:

1. Vertical Straps not required in Wind Zone 1
2. Diagonal ties must be attached to the top flange of the chassis beam to prevent rotation of the beam.

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(3) The requirements in § 3285.402(b)(1) must be used to determine the maximum spacing of ground anchors and their accompanying anchor straps based on the soil classification determined in accordance with § 3285.202.

(i) The installed ground anchor size (length) must be for the listed soil class.

(ii) All ground anchors must be installed in accordance with their listing or certification and the ground anchor manufacturer installation instructions; stabilizer plates must zinc-coated (0.30 oz/ft² of surface area) and installed as required by the ground anchor listing or certification.

(c) Each ground anchor must be manufactured and provided with

installation instructions in accordance with its listing or certification. A nationally recognized testing agency must list, or a registered professional engineer or registered architect must certify the ground anchor for use in a classified soil (refer to § 3285.202) based on a nationally recognized testing protocol.

TABLE 1.—MAXIMUM DIAGONAL TIEDOWN STRAP SPACING, WIND ZONE I

Nominal floor width, single section/multi-section	Max. height from ground to diagonal strap attachment	I-beam spacing (82.5 in. max.)	I-beam spacing (99.5 in. max.)
12/24 ft, 132 in. to 155 in. section(s)	25 in.	14 ft 2 in.	9 ft 9 in.
	33 in.	11 ft 9 in.	7 ft 8 in.
	46 in.	9 ft 1 in.	5 ft 8 in.
	67 in.	6 ft 6 in.	4 ft 0 in.
14/28 ft, 156 in. to 179 in. section(s)	25 in.	18 ft 2 in.	15 ft 11 in.
	33 in.	16 ft 1 in.	13 ft 6 in.
	46 in.	13 ft 3 in.	10 ft 8 in.
	67 in.	10 ft 0 in.	7 ft 9 in.
16/32 ft, 180 in. to 204 in. section(s)	25 in.	20 ft 7 in.	19 ft 5 in.
	33 in.	19 ft 0 in.	17 ft 5 in.
	46 in.	16 ft 5 in.	14 ft 7 in.
	67 in.	13 ft 1 in.	11 ft 3 in.

TABLE 1.—MAXIMUM DIAGONAL TIEDOWN STRAP SPACING, WIND ZONE I—Continued

Nominal floor width, single section/multi-section	Max. height from ground to diagonal strap attachment	I-beam spacing (82.5 in. max.)	I-beam spacing (99.5 in. max.)
18 ft, 204 in. to 216 in. section(s)	25 in. 33 in. 46 in. 67 in.	22 ft 4 in. 21 ft 1 in. 19 ft 0 in. 15 ft 9 in.	21 ft 8 in. 20 ft 2 in. 17 ft 8 in. 14 ft 3 in.

Notes:

1. Table based on maximum 90 in. sidewall height.
2. Table based on maximum 4 in. inset for ground anchor head from edge of floor or wall.
3. Table based on main rail (I-beam) spacing per given column.
4. Table based on maximum 4 in. eave width for single-section homes and maximum 12 in. for multi-section homes.
5. Table based on maximum 20-degree roof pitch (4.3/12).
6. Interpolation may be required for other heights from ground to strap attachment. The minimum height from the ground to the bottom of the floor joist must be 18 in.
7. Additional tiedowns may be required per the home manufacturer instructions.
8. Ground anchors must be certified for these conditions by a professional engineer, architect, or listed by a nationally recognized testing laboratory.
9. Ground anchors must be installed to their full depth, and stabilizer plates must be installed per the ground anchor and home manufacturer instructions.
10. Strapping and anchoring equipment must be certified by a registered professional engineer or registered architect, or listed by a nationally recognized testing agency to resist these specified forces in accordance with testing procedures in ASTM D 3953–97, Standard Specification for Strapping, Flat Steel and Seals.
11. A reduced ground anchor or strap working load capacity will require reduced tiedown strap and anchor spacing. Ground anchors must not be spaced closer than the minimum spacing permitted by the listing or certification.
12. Table is based on a 3150 lb working load capacity, and straps must be placed within 2 ft of the ends of the home.

TABLE 2.—MAXIMUM DIAGONAL TIEDOWN STRAP SPACING, WIND ZONE II

Nominal floor width, single section/multi-section	Max. height from ground to diagonal strap attachment	Near beam method I-beam spacing		Second beam method I-beam spacing	
		82.5 in.	99.5 in.	82.5 in.	99.5 in.
12 ft/24 ft, 132 in. to 155 in. section(s)	25 in. 33 in. 46 in. 67 in.	6 ft 2 in. 5 ft 2 in. 4 ft 0 in. N/A	4 ft 3 in. N/A N/A N/A	7 ft 6 in. 7 ft 2 in. 6 ft 9 in. 6 ft 1 in.	7 ft 7 in. 7 ft 4 in. 6 ft 11 in. 6 ft 3 in.
14 ft/28 ft, 156 in. to 179 in. section(s)	25 in. 33 in. 46 in. 67 in.	7 ft 7 in. 6 ft 10 in. 5 ft 7 in. 4 ft 3 in.	6 ft 9 in. 5 ft 9 in. 4 ft 6 in. NA	7 ft 8 in. 7 ft 5 in. 7 ft 0 in. 6 ft 5 in.	7 ft 9 in. 7 ft 6 in. 7 ft 2 in. 6 ft 7 in.
16 ft/32 ft, 180 in. to 204 in. section(s)	25 in. 33 in. 46 in. 67 in.	7 ft 9 in. 7 ft 6 in. 6 ft 9 in. 5 ft 4 in.	7 ft 10 in. 7 ft 2 in. 6 ft 0 in. 4 ft 7 in.	7 ft 10 in. 7 ft 7 in. 7 ft 2 in. 6 ft 8 in.	7 ft 10 in. 7 ft 8 in. 7 ft 3 in. 6 ft 9 in.
18 ft, 204 in. to 216 in. section(s)	25 in. 33 in. 46 in. 67 in.	7 ft 10 in. 7 ft 8 in. 7 ft 4 in. 6 ft 3 in.	7 ft 9 in. 7 ft 8 in. 7 ft 0 in. 5 ft 8 in.	7 ft 11 in. 7 ft 9 in. 7 ft 4 in. 6 ft 10 in.	8 ft 0 in. 7 ft 9 in. 7 ft 5 in. 6 ft 11 in.

Notes:

1. Table based on maximum 90 in. sidewall height.
2. Table based on maximum 4 in. inset for ground anchor head from edge of floor or wall.
3. Tables based on main rail (I-beam) spacing per given column.
4. Table based on maximum 4 in. eave width for single-section homes and maximum 12 in. for multi-section homes.
5. Table based on maximum 20-degree roof pitch (4.3/12).
6. All manufactured homes designed to be located in Wind Zone II must have a vertical tie installed at each diagonal tie location.
7. Interpolation may be required for other heights from ground to strap attachment. The minimum height from the ground to the bottom of the floor joist must be 18 in.
8. Additional tiedowns may be required per the home manufacturer instructions.
9. Ground anchors must be certified by a professional engineer, or registered architect, or listed by a nationally recognized testing laboratory.
10. Ground anchors must be installed to their full depth, and stabilizer plates must be installed per the ground anchor and home manufacturer instructions.
11. Strapping and anchoring equipment must be certified by a registered professional engineer or registered architect or must be listed by a nationally recognized testing agency to resist these specified forces in accordance with testing procedures in ASTM D 3953–97, Standard Specification for Strapping, Flat Steel and Seals.
12. A reduced ground anchor or strap working load capacity will require reduced tiedown strap and anchor spacing. Ground anchors must not be spaced closer than the minimum spacing permitted by the listing or certification.
13. Table is based on a 3150 lb working load capacity, and straps must be placed within 2 ft of the ends of the home.

TABLE 3.—MAXIMUM DIAGONAL TIEDOWN STRAP SPACING, WIND ZONE III

Nominal floor width single section/multi-section	Max. height from ground to diagonal strap attachment	Near beam method I-beam spacing		Second beam method I-beam spacing	
		82.5 in.	99.5 in.	82.5 in.	99.5 in.
12 ft/24 ft 132 in. to 155 in. section(s)	25 in.	5 ft 1 in.	N/A	6 ft 1 in.	6 ft 2 in.
	33 in.	4 ft 3 in.	N/A	5 ft 10 in.	6 ft 0 in.
	46 in.	N/A	N/A	5 ft 6 in.	5 ft 8 in.
	67 in.	N/A	N/A	5 ft 0 in.	5 ft 1 in.
14 ft/28 ft 156 in. to 179 in. section(s)	25 in.	6 ft 2 in.	5 ft 7 in.	6 ft 3 in.	6 ft 4 in.
	33 in.	5 ft 8 in.	4 ft 9 in.	6 ft 0 in.	6 ft 1 in.
	46 in.	4 ft 8 in.	N/A	5 ft 8 in.	5 ft 9 in.
	67 in.	N/A	N/A	5 ft 2 in.	5 ft 4 in.
16 ft/32 ft 180 in. to 204 in. section(s)	25 in.	6 ft 4 in.	6 ft 3 in.	6 ft 4 in.	6 ft 3 in.
	33 in.	6 ft 1 in.	5 ft 11 in.	6 ft 2 in.	6 ft 2 in.
	46 in.	5 ft 7 in.	5 ft 0 in.	5 ft 10 in.	5 ft 11 in.
	67 in.	4 ft 5 in.	N/A	5 ft 5 in.	5 ft 6 in.
18 ft 204 in. to 216 in. section(s)	25 in.	6 ft 2 in.	6 ft 1 in.	6 ft 2 in.	6 ft 1 in.
	33 in.	6 ft 1 in.	6 ft 0 in.	6 ft 1 in.	6 ft 0 in.
	46 in.	5 ft 11 in.	5 ft 10 in.	6 ft 0 in.	5 ft 11 in.
	67 in.	5 ft 2 in.	4 ft 8 in.	5 ft 7 in.	5 ft 7 in.

Notes:

1. Table is based on maximum 90 in. sidewall height.
2. Table based on maximum 4 in. inset for ground anchor head from edge of floor or wall.
3. Table is based on main rail (I-beam) spacing per given column.
4. Table based on maximum 4 in. eave width for single-section homes and maximum 12 in. for multi-section homes.
5. Table based on maximum 20-degree roof pitch (4.3/12).
6. All manufactured homes designed to be located in Wind Zone III must have a vertical tie installed at each diagonal tie location.
7. Interpolation may be required for other heights from ground to strap attachment. The minimum height from the ground to the bottom of the floor joist must be 18 in.
8. Additional tiedowns may be required per the home manufacturer instructions.
9. Ground anchors must be certified by a professional engineer, or registered architect, or listed by a nationally recognized testing laboratory.
10. Ground anchors must be installed to their full depth, and stabilizer plates must be installed per the ground anchor and home manufacturer instructions.
11. Strapping and anchoring equipment must be certified by a registered professional engineer or registered architect or must be listed by a nationally recognized testing agency to resist these specified forces in accordance with testing procedures in ASTM D 3953–97, Standard Specification for Strapping, Flat Steel and Seals.
12. A reduced ground anchor or strap working load capacity will require reduced tiedown strap and anchor spacing. Ground anchors must not be spaced closer than the minimum spacing permitted by the listing or certification.
13. Table is based on a 3150 lb working load capacity, and straps must be placed within 2 ft of the ends of the home.

§ 3285.403 Sidewall, over-the-roof, mate-line, and shear wall straps.

If sidewall, over-the roof, mate-line, or shear wall straps are installed on the home, they must be connected to an anchoring assembly.

§ 3285.404 Severe climatic conditions.

In frost-susceptible soil locations, ground anchor augers must be installed below the frost line, or frost protected as designed by a registered professional engineer or registered architect in accordance with acceptable engineering practice and § 3280.306 of this chapter.

§ 3285.405 Severe wind zones.

When any part of a home is installed within 1,500 feet of a coastline in Wind Zones II or III, the manufactured home must be designed for the increased requirements as specified on the home's data plate (refer to § 3280.5(f) of this chapter) in accordance with acceptable engineering practice. Where site or other conditions prohibit the use of the manufacture's instructions, a registered professional engineer or registered architect in accordance with acceptable

engineering practice must design anchorage for the special wind conditions.

§ 3285.406 Flood hazard areas.

In flood hazard areas, the piers, anchoring, and support systems must be capable of resisting loads associated with design flood and wind events (Refer to § 3285.101).

Subpart F—Optional Features**§ 3285.501 Home installation manual supplements.**

Supplemental instructions for optional equipment or features must be approved by the DAPIA as not taking the home out of conformance with the requirements of this part or part 3280 of this chapter and included with the manufacturer installation instructions.

§ 3285.502 Expanding rooms.

The support and anchoring systems for expanding rooms must be installed in accordance with designs prepared by a registered professional engineer or

registered architect in accordance with acceptable engineering practice.

§ 3285.503 Optional appliances.

(a) *Comfort cooling systems.* When not provided and installed by the home manufacturer, comfort cooling systems must be installed according to the appliance manufacturer installation instructions.

(1) *Air conditioners.* Air conditioning equipment must be listed or certified by a nationally recognized testing agency for the application for which the unit is intended and installed in accordance with the terms of its listing or certification (Refer to § 3280.714 of this chapter).

(i) *Energy efficiency.* (A) For proper operation and energy efficiency, site-installed central air conditioning equipment must be sized to closely match the home's heat gain, following Chapter 28 of the 1997 ASHRAE Handbook of Fundamentals or ACCA Manual J, Residential Cooling Load, 8th edition. Information necessary to calculate the home's sensible heat gain

can be found on the home's comfort cooling certificate.

(B) The BTU/hr rated capacity of the site-installed air conditioning equipment must not exceed the air distribution system's rated BTU/hr capacity as shown on the home's compliance certificate.

(ii) *Circuit rating.* If a manufactured home is factory provided with an exterior outlet to energize heating and/or air conditioning equipment, the branch circuit rating on the tag adjacent to this outlet must be equal to or greater than the minimum circuit amperage identified on the equipment rating plate.

(iii) *A-coil units.* (A) A-coil air conditioning units must be compatible and listed for use with the furnace in the home.

(B) The air conditioner manufacturer instructions must be followed.

(C) All condensation must be directed beyond the perimeter of the home by means specified by the equipment manufacturer.

(2) *Heat pumps.* Heat pumps must be listed or certified by a nationally recognized testing agency for the application for which the unit is intended and installed in accordance

with the terms of its listing or certification. Refer to § 3280.714 of this chapter.

(3) *Evaporative coolers.* A roof-mounted cooler must be listed or certified by a nationally recognized testing agency for the application for which the unit is intended and installed in accordance with the terms of its listing (Refer to § 3280.714 of this chapter).

(i) Any discharge grill must not be closer than three feet from a smoke alarm.

(ii) Before field installing a roof mounted evaporative cooler, the installer must ensure that the roof will support the weight of the cooler.

(iii) A rigid base must be provided to distribute the cooler weight over multiple roof trusses to adequately support the weight of the evaporative cooler.

(b) *Fireplace and wood-stove chimneys and air inlets.* Fireplace and wood-stove chimneys and air inlets must be listed for use with manufactured homes and must be installed in accordance with their listings.

(c) *Appliance venting.* (1) Heat producing appliances must exhaust to the exterior of the home.

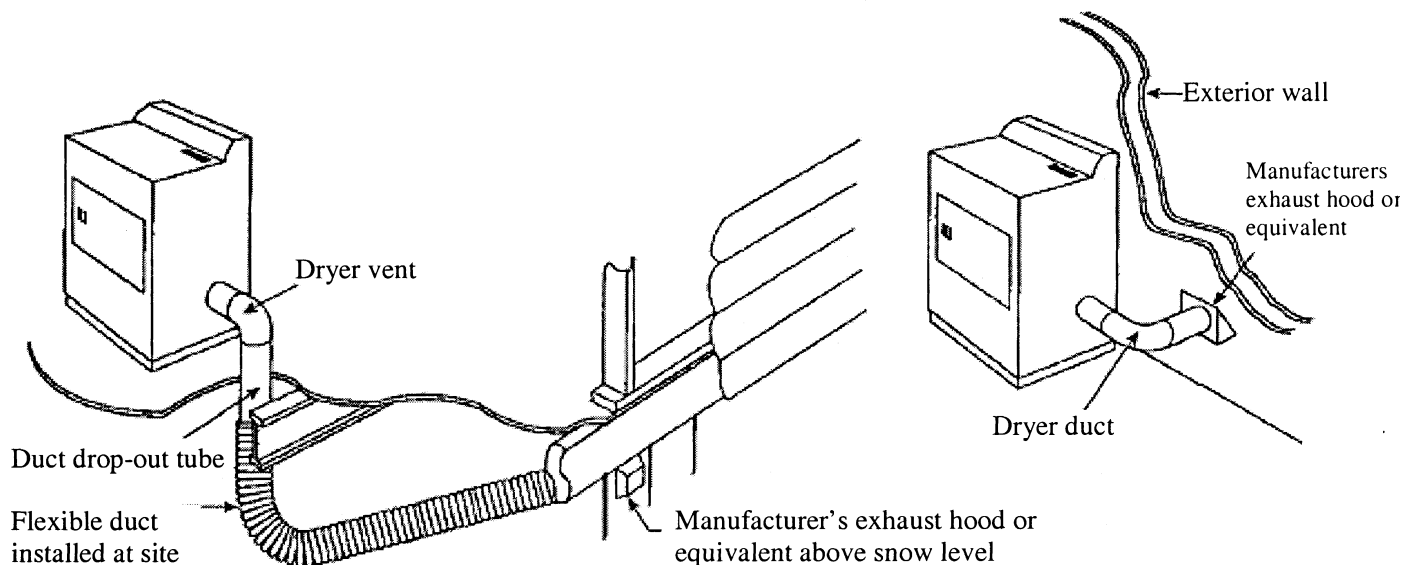
(2) When the vent exhausts through the floor, the vent must not terminate under the home and must extend to the home's exterior and through any skirting that may be installed.

(d) *Flood hazard areas.* (1) *Outside appliances.* Appliances installed on the manufactured home site must be anchored and elevated to or above the same elevation as the lowest elevation of the lowest floor of the home.

(2) *Air inlets.* Appliance air inlets must be located at or above the same elevation as the lowest elevation of the lowest floor of the home.

(e) *Clothes dryer exhaust duct system.* A clothes dryer exhaust duct system must conform with and be completed in accordance with the appliance manufacturer instructions and § 3280.708 of this chapter. The vents must exhaust to the exterior of the home, beyond any perimeter skirting installed around it, as shown in the figure to this section.

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Figure to § 3285.503 - Dryer Exhaust System.**Notes:**

1. Installation of the exhaust system must be in accordance with the dryer manufacturer instructions.
2. Dryer exhaust system must not contain reverse slope or terminate under the home.

§ 3285.504 Skirting.

(a) Skirting, if used, must be of weather-resistant materials.

(b) Skirting must not be attached in a manner that can cause water to be trapped between the siding and trim or forced up into the wall cavities trim to which it is attached.

(c) All wood skirting within 6 inches of the ground must be pressure treated or naturally resistant to decay and termite infestations.

(d) Skirting must not be attached in a manner that impedes the contraction and expansion characteristics of the home's exterior covering.

§ 3285.505 Crawlspace ventilation.

(a) A crawlspace with skirting must be provided with ventilation openings. The minimum net area of ventilation openings must not be less than one square foot (ft²) for every 150 square feet (ft²) of the home's floor area. The total area of ventilation openings may be reduced to one square foot (ft²) for every 1,500 square feet (ft²) of the home's floor area where a uniform 6-mil polyethylene sheet material or other acceptable vapor retarder is installed

according to § 3285.204, on the ground surface beneath the entire floor area of the home.

(b) Ventilation openings must be placed as high as practicable.

(c) Openings must be located on at least two opposite sides to provide cross-ventilation.

(d) Ventilation openings must be covered for their full height and width with a perforated metal covering.

(e) Access opening(s) not less than 18 inches in any dimension and not less than three square feet (ft²) in area must be provided and must be located so that any utility connections located under the home are accessible.

(f) Dryer vents, air conditioning condensation drains, and combustion air inlets must pass through the skirting to the outside.

Subpart G—Ductwork and Plumbing and Fuel Supply Systems**§ 3285.601 Field assembly.**

Home manufacturers must provide specific written instructions for installers on the proper field assembly for any shipped loose duct, plumbing, and fuel supply system parts, necessary

to join all sections of the home and designed to be located underneath the home. The home manufacturer installation instructions must be designed in accordance with applicable requirements of part 3280, subparts G and H of this chapter, as specified hereafter.

§ 3285.602 Utility connections.

Refer to § 3285.905 for considerations for utility system connections.

§ 3285.603 Water supply.

(a) *Crossover.* Multi-section homes with plumbing in both sections require water-line crossover connections to join all sections of the home. The crossover must be designed in accordance with § 3280.609 of this chapter.

(b) *Maximum supply pressure and reduction.* When the local water supply pressure exceeds 80 psi to the manufactured home, a pressure-reducing valve must be installed.

(c) *Mandatory shutoff valve.* (1) An accessible shutoff valve must be installed between the water supply and the inlet.

(2) The water riser for the shutoff valve connection must be located underneath or adjacent to the home.

(3) The shutoff valve must be a full-flow gate or ball valve, or equivalent valve.

(d) *Freezing protection.* Water line crossovers completed during installation must be protected from freezing. The freeze protection must be designed accordance with the requirements of § 3280.603 of this chapter.

(1) If subject to freezing temperatures, the water connection must be wrapped with insulation or otherwise protected to prevent freezing, under normal occupancy.

(2) In areas subject to freezing or subfreezing temperatures, exposed sections of water supply piping, shutoff

valves, pressure reducers, and pipes in water heater compartments must be insulated or otherwise protected from freezing, under normal occupancy.

(3) *Use of pipe heating cable.* Only pipe heating cable listed for manufactured home use is permitted to be used and must be installed in accordance with the cable manufacturer installation instructions.

(e) *Testing procedures.* (1) The water system must be inspected and tested for leaks after completion at the site. Testing requirements must be consistent with § 3280.612 of this chapter.

(2) The water heater must be disconnected when using an air-only test.

§ 3285.604 Drainage system.

(a) *Crossovers.* Multi-section homes with plumbing in both sections require

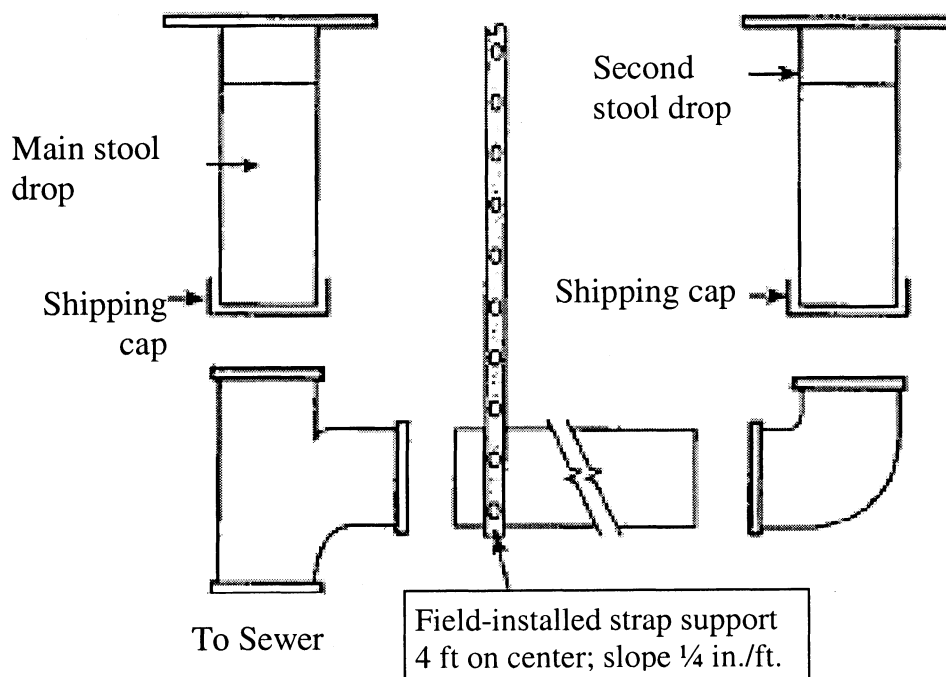
drainage system crossover connections to join all sections of the home. The crossover must be designed in accordance with § 3280.610 of this chapter.

(b) *Assembly and support.* If portions of the drainage system were shipped loose because they were necessary to join all sections of the home and designed to be located underneath the home, they must be installed and supported in accordance with § 3280.608 of this chapter.

(c) *Proper slopes.* Drains must be completed in accordance with § 3280.610 of this chapter.

(1) Drain lines must not slope less than one-quarter inch per foot unless otherwise noted on the schematic diagram, as shown in the figure to this section.

Figure to § 3285.604 - Drain Pipe Slope and Connections.



(2) A slope of one-eighth inch per foot may be permitted when a clean out is installed at the upper end of the run.

(d) *Testing procedures.* The drainage system must be inspected and tested for leaks after completion at the site. Testing requirements must be consistent with § 3280.612 of this chapter.

§ 3285.605 Fuel supply system.

(a) *Proper supply pressure.* The gas piping system in the home is designed for a pressure that is at least 10 inches of water column [5.8 oz./in² or 0.36 psi] and not more than 14 inches of water column [8 oz./in² or 0.5 psi]. If gas from any supply source exceeds, or could

exceed this pressure, a regulator may be installed as required by an LAHJ.

(b) *Crossovers.* (1) Multi-section homes with fuel supply piping in both sections require crossover connections to join all sections of the home. The crossover must be designed in accordance with § 3280.705 of this chapter.

(2) Tools must not be required to connect or remove the flexible connector quick-disconnect.

(c) *Testing procedures.* The gas system must be inspected and tested for leaks after completion at the site. Testing requirements must be consistent with § 3280.705 of this chapter.

§ 3285.606 Ductwork connections.

(a) *Crossovers.* Multi-section homes with ductwork in both sections require crossover connections to join all

sections of the home. As necessary for the joining of all sections of the home, metal plumber's tape, galvanized metal straps, or tape and mastics listed to UL 181 must be used around the duct collar and secured tightly.

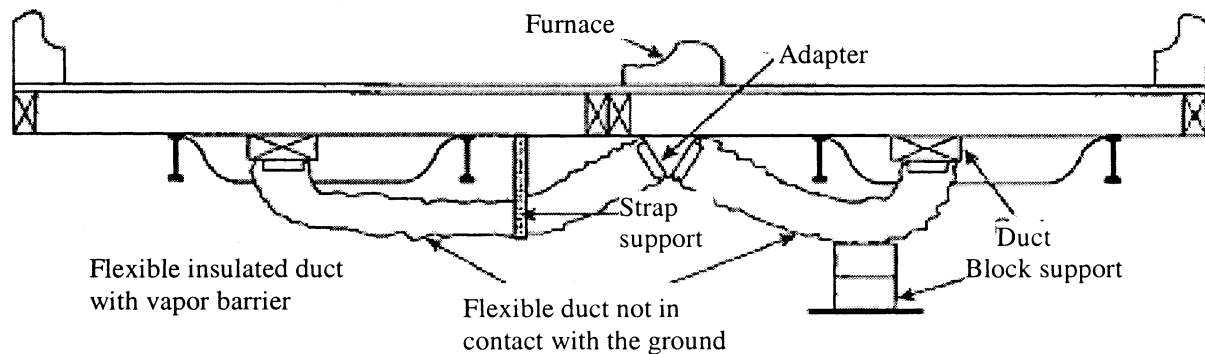
(b) If metal straps are used, they must be secured with galvanized sheet metal screws.

(c) Metal ducts must be fastened to the collar with a minimum of three galvanized sheet metal screws equally spaced around the collar.

(d) Air conditioning or heating ducts must be installed in accordance with applicable requirements of the duct manufacturer installation instructions.

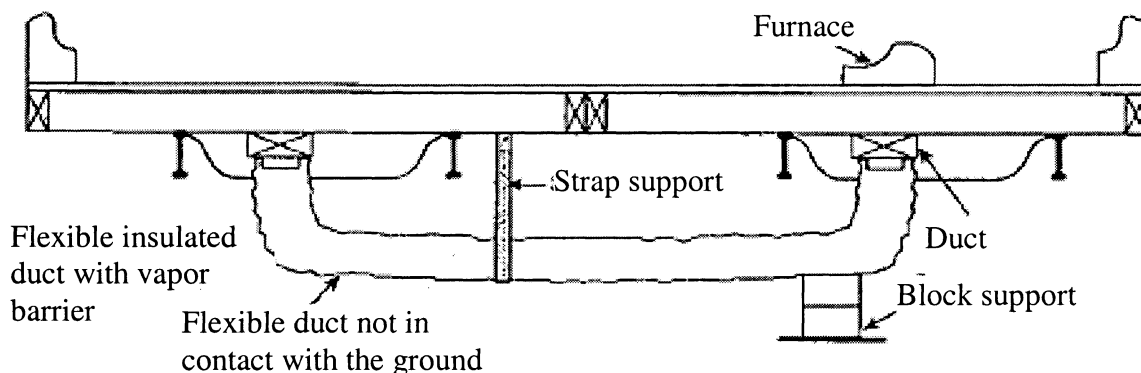
(e) The duct must be suspended or supported above the ground and arranged under the floor to prevent compression or kinking in any location, as shown in Figures A and B of this section. In-floor crossover ducts are permitted in accordance with § 3285.606(g).

Figure A to § 3285.606 - Crossover Duct Installation with Two Connecting Ducts.



Note:

This system is typically used when a crossover duct has not been built into the floor and the furnace is outside the I-Beam. With this type of installation, it is necessary for two flexible ducts to be installed.

Figure B to § 3285.606 - Crossover Duct Installation with One Connecting Duct.**Note:**

This system is typically used when a crossover duct has not been built into the floor and the furnace is situated directly over the main duct in one section of the home. A single flexible duct is then used to connect the two sections to each other.

(f) Crossover ducts outside the thermal envelope must be insulated with materials that conform to designs consistent with part 3280, subpart F of this chapter.

(g) In-floor or ceiling crossover duct connections must be installed and sealed to prevent air leakage.

Subpart H—Electrical Systems and Equipment

§ 3285.701 Electrical crossovers.

Multi-section homes with electric in both sections require crossover

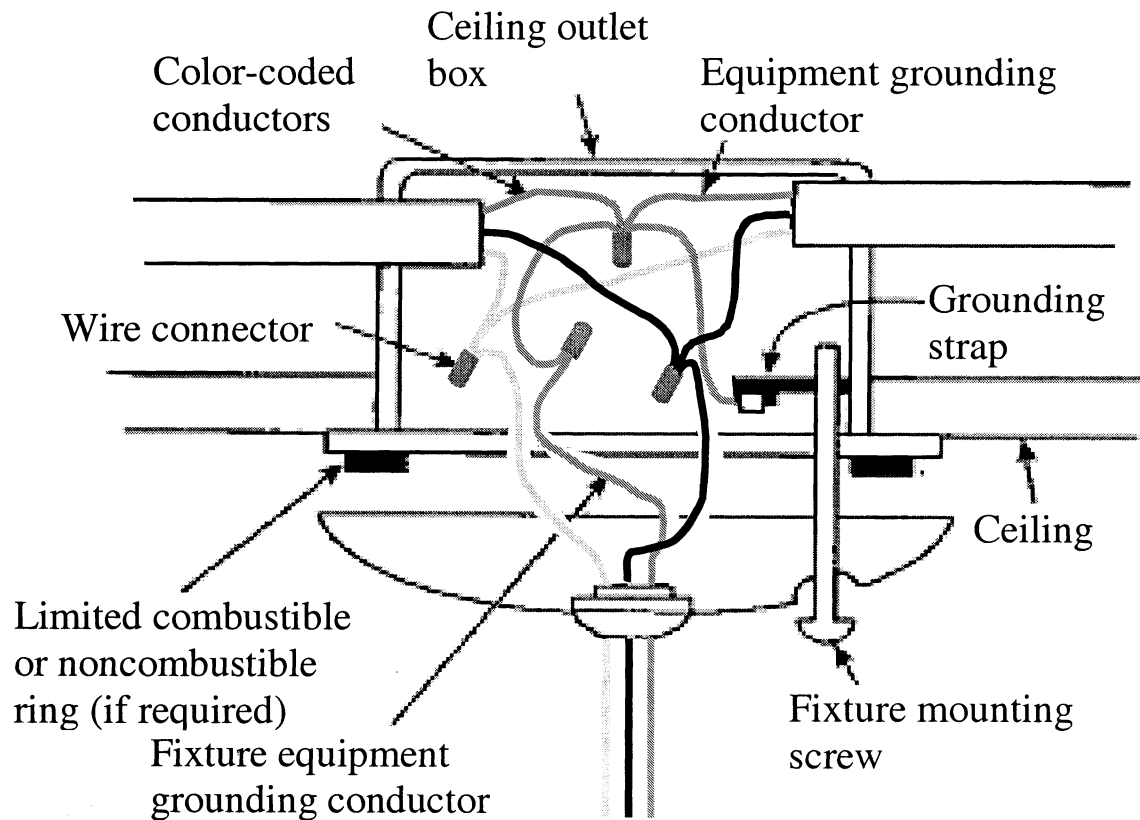
connections to join all sections of the home. The crossover must be designed in accordance with part 3280, subpart I of this chapter.

§ 3285.702 Miscellaneous lights and fixtures.

(a) When the home is installed, exterior lighting fixtures, ceiling-suspended (paddle) fans, and chain-hung lighting fixtures are permitted to be installed in accordance with their listings and part 3280, subpart I of this chapter.

(b) *Grounding.* (1) All the exterior lighting fixtures and ceiling fans installed per § 3285.702(a) must be grounded by a fixture-grounding device or by a fixture-grounding wire.

(2) For chain-hung lighting fixtures, as shown in Figure A of this section, both a fixture-grounding device and a fixture-grounding wire must be used. The identified conductor must be the neutral conductor.

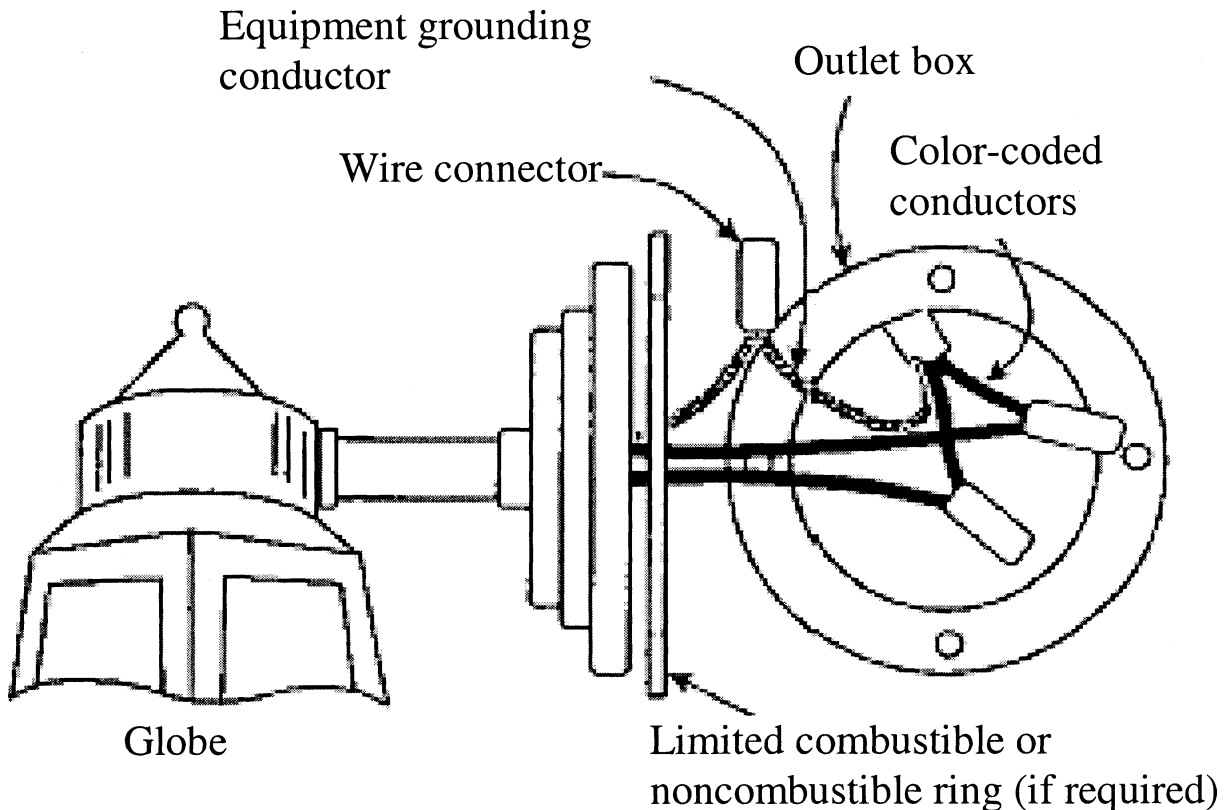
Figure A to § 3285.702 - Typical Installation of Chain-Hung Lighting Fixture.

(b) Where lighting fixtures are mounted on combustible surfaces such as hardboard, a limited combustible or

noncombustible ring, as shown in Figures A and B of this section, must be installed to completely cover the

combustible surface exposed between the fixture canopy and the wiring outlet box.

**Figure B to § 3285.702 - Typical Installation of Surface-Mounted
Exterior Lighting Fixture.**



(c) *Exterior lights.* (1) The junction box covers must be removed and wire-to-wire connections must be made using listed wire connectors.

(2) Connect wires black-to-black, white-to-white, and equipment ground-to-equipment ground.

(3) The wires must be pushed into the box, and the lighting fixture must be secured to the junction box.

(4) The lighting fixture must be caulked around its base to ensure a watertight seal to the sidewall.

(5) The light bulb must be installed and the globe must be attached.

(d) *Ceiling fans.* (1) Ceiling-suspended (paddle) fans must be installed with the trailing edges of the blades at least 6 feet 4 inches above the finished floor.

(2) The wiring must be connected in accordance with the product manufacturer installation instructions.

(e) *Testing.* (1) The electrical system must be inspected and tested after completion at the site. Testing

requirements must be consistent with § 3280.810 of this chapter.

(2) After completion, each manufactured home must be subjected to the following tests:

(i) An electrical continuity test to ensure that metallic parts are effectively bonded;

(ii) Operational tests of all devices and utilization equipment except water heaters, electric ranges, electric furnaces, dishwashers, clothes washers/dryers, and portable appliances to demonstrate that they are connected and in working order; and

(iii) For electrical equipment installed or completed during installation, electrical polarity checks must be completed to determine that connections have been made properly. Visual verification is an acceptable electrical polarity check.

§ 3285.703 Smoke alarms.

Smoke alarms must be functionally tested in accordance with applicable

requirements of the smoke alarm manufacturer instructions and must be consistent with § 3280.208 of this chapter.

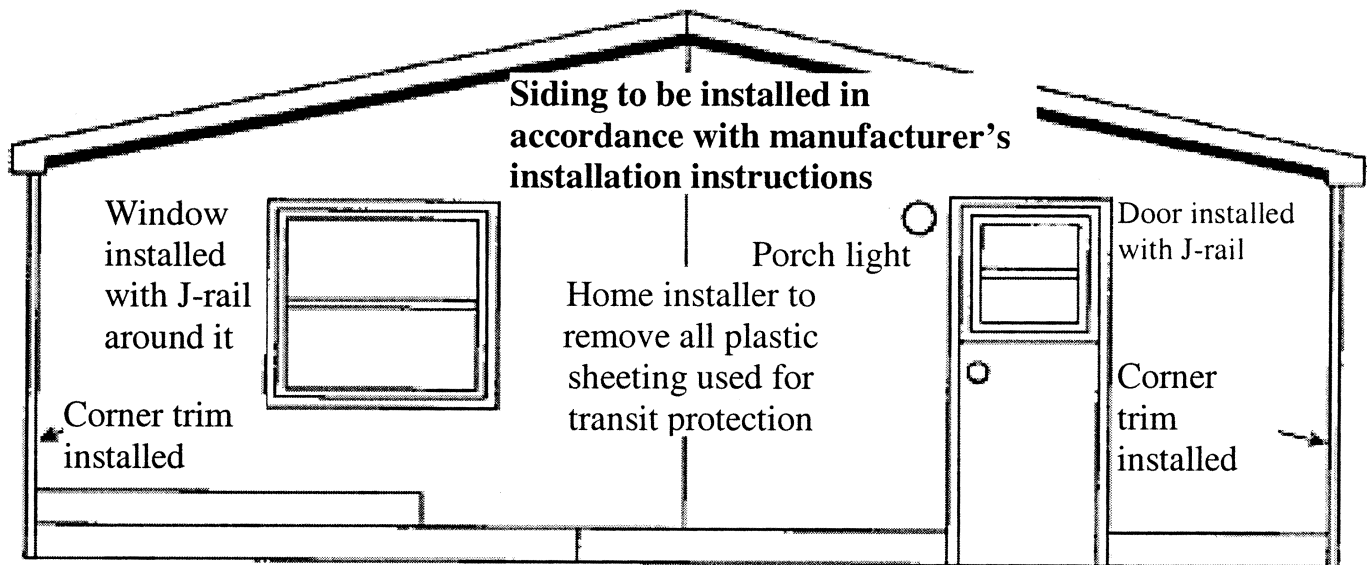
§ 3285.704 Telephone and cable TV.

Refer to § 3285.907 for considerations pertinent to installation of telephone and cable TV.

Subpart I—Exterior and Interior Close Up

§ 3285.801 Exterior close-up.

(a) Exterior siding and roofing necessary to join all sections of the home must be installed according to the product manufacturer installation instructions and must be fastened in accordance with designs and manufacturer instructions consistent with §§ 3280.305 and 3280.307 of this chapter. Exterior close-up strips/trim must be fastened securely and sealed with exterior sealant (Refer to figure A of this section).

Figure A to § 3285.801 - Installation of Field-Applied Horizontal Lap Siding**Notes:**

1. Double section homes with horizontal-lap siding can be shipped with no siding on the front and rear end walls.
2. The manufacturer must install doors/windows trimmed with J-rail and will cover with plastic sheeting for transport. All siding, starter trim, fasteners, and vents will be shipped loose in the home for installation on set up.
3. All home installers must ensure that all field installed trim, windows, doors, and other openings are properly sealed according to the siding manufacturer installation instructions.

(b) *Joints and seams.* Where appropriate, all joints and seams in exterior wall coverings that were disturbed during location of the home must be made weatherproof.

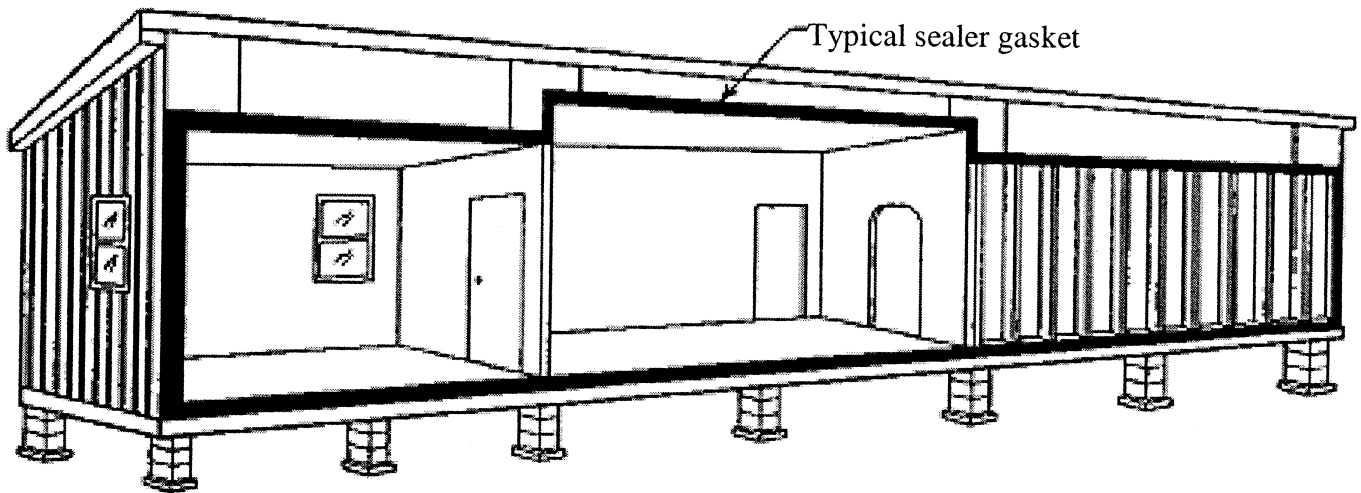
(c) Prior to installing the siding, the polyethylene sheeting covering exterior

walls for transit must be completely removed.

(d) Holes in the roof made in transit or setup must be sealed with exterior sealant.

(e) *Mate-line gasket.* The home manufacturer must provide materials

and designs for mate-line gaskets other methods designed to resist the entry of air, water, insects, and rodents at all mate-line locations, exposed to the exterior (Refer to Figure B of this section).

Figure B to § 3285.801 - Mate-Line Gasket.

Note: On multi-section manufactured dwellings, install sealer gasket on the ceiling, end walls, and floor mate-line prior to joining the sections together.

(f) *Hinged roofs and eaves.* Hinged roofs and eaves must be completed during installation so as to comply with §§ 3280.305 and 3280.307 of this chapter. However, some hinged roofs may be subject to specific On-Site and/or Alternative Construction requirements issued separately by the Secretary. Generally, hinged roof homes are not subject to such special requirements as long as:

- (1) The homes are designed to be located in Wind Zone 1, and
- (2) The completed hinged roof pitch is less than 7 on 12, and
- (3) Fuel burning appliance flue penetrations are not above the hinge.

§ 3285.802 Structural interconnection of multi-section homes.

(a) For multi-section homes, structural interconnections along the interior and exterior at the mate-line are necessary to join all sections of the home.

(b) The interconnections must be designed in accordance with § 3280.305 of this chapter to ensure a completely integrated structure.

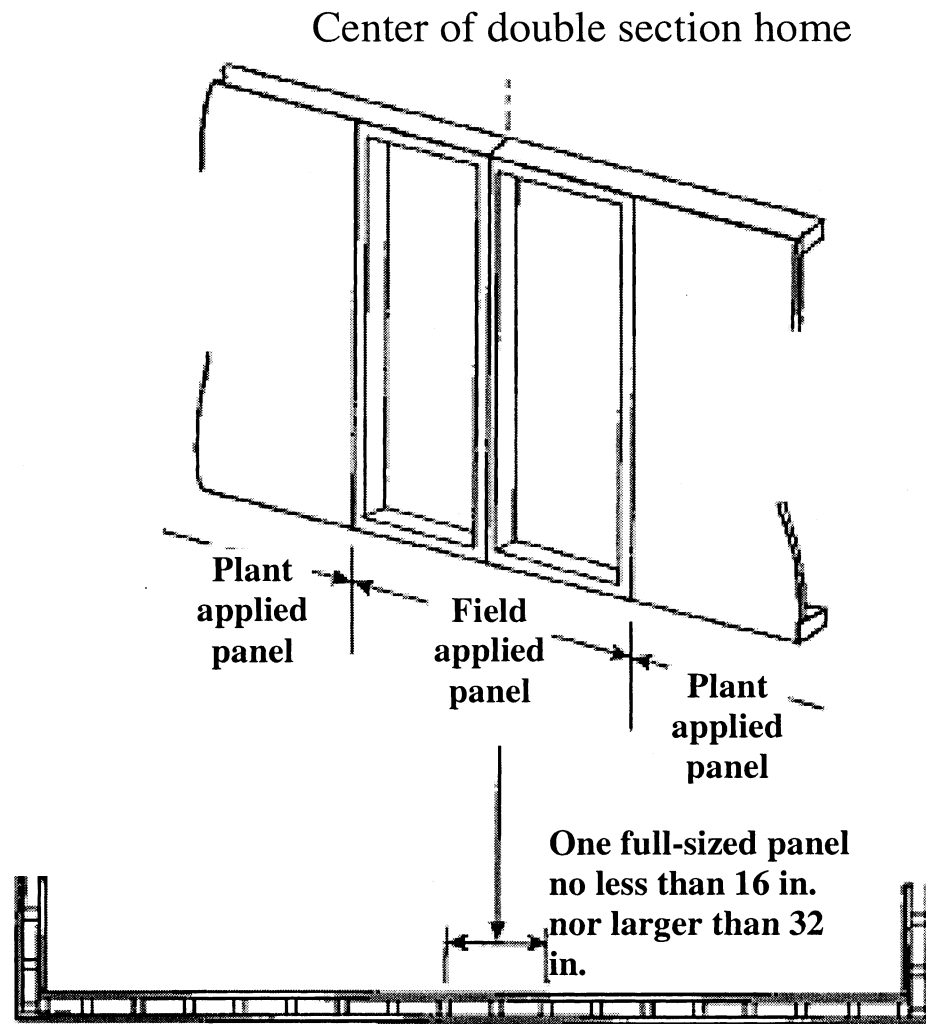
(c) Gaps between the structural elements being interconnected along the mate-line of multi-section homes must not exceed 1½ inches and must be shimmed with dimensional lumber. Where gaps exist and shims are required, fastener lengths must be increased to require adequate penetration of the interconnection fastener into the receiving member.

§ 3285.803 Interior close-up.

(a) All shipping blocking, strapping, or bracing must be removed from appliances, windows, and doors.

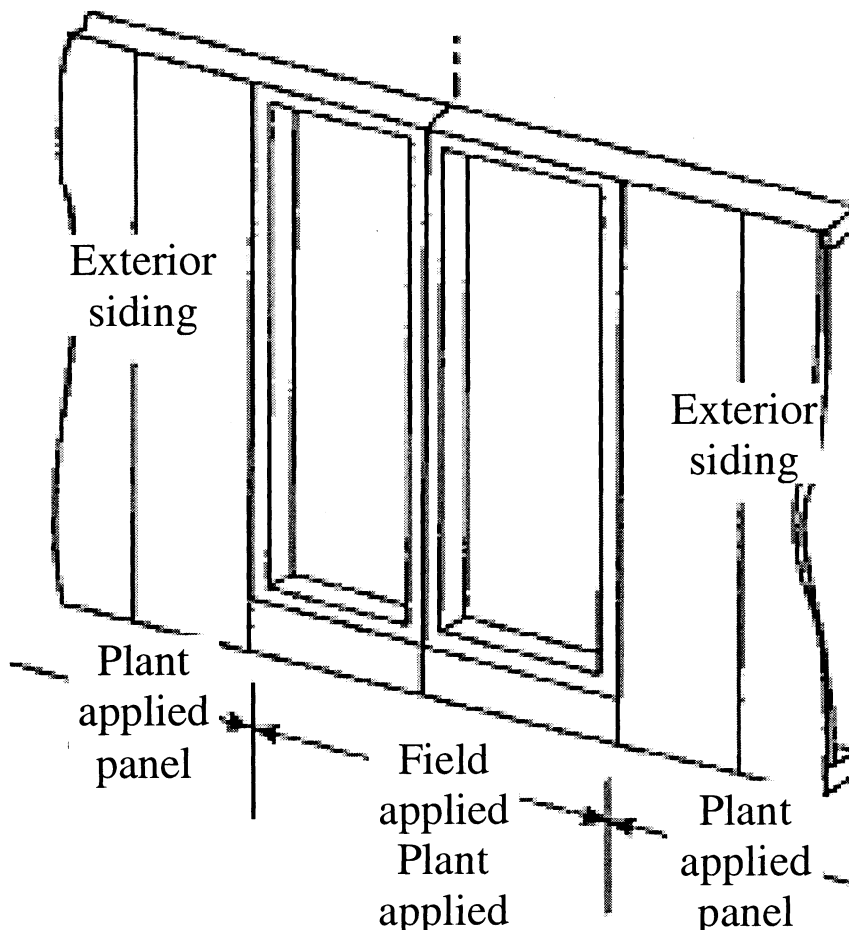
(b) Only interior close up items necessary to join all sections of the home or items subject to transportation damage may be packaged or shipped with the home for site installation.

(c) At a minimum, all shipped-loose wall paneling, necessary for the joining of all sections of the home, must be installed by using polyvinyl acetate (PVA) adhesive on all framing members and fastened with minimum one-inch long staples or nails at 6 inches on center panel edges and 12 inches on center in the field (Refer to Figure to § 3285.803).

Figure to § 3285.803 - Installation of Field-Applied Panels.**Note:**

Specific designs must be approved by a DAPIA and included in the home manufacturer installation instructions.

Center of double-section home



Notes:

1. Specific designs must be approved by a DAPIA and included in the home manufacturer installation instructions.
2. Fasten exterior panel to the studs in accordance with the home and siding manufacturer installation instructions.

§ 3285.804 Bottom board repair.

(a) The bottom board covering must be inspected for any loosening or areas that might have been damaged or torn during installation or transportation.

(b) Any splits or tears must be resealed with tape or patches specifically designed for repairs of the bottom board.

(c) Plumbing P-traps must be checked to be sure they are well insulated and covered.

(d) All edges of patches must be taped.

Subpart J—Recommendations for Manufacturer Installation Instructions**§ 3285.901 Recommendations for manufacturer installation instructions.**

(a) The planning and permitting processes as well as utility connection requirements are outside of HUD's authority and may be governed by LAHJs. Therefore, these Model Installation Standards do not attempt to comprehensively address such requirements.

(b) *Variations to manufacturer installation instructions.* When an installer does not provide support and anchorage in accordance with the approved manufacturer installation instructions or encounters site or other conditions that prevent the use of the

instructions, the installer must obtain and use a design by a registered professional engineer or registered architect for the support and anchorage of the manufactured home that uses the design loads of the Manufactured Home Construction and Safety Standards and provisions for the specific site or other conditions.

(c) Certain provisions must be addressed by manufacturer installation instructions in order to protect the manufactured home as constructed in accordance with the MHCSS. Manufacturer installation instructions must strongly recommend the following cautions to installers that address the provisions of this subpart.

§ 3285.902 Moving manufactured home to location.

The manufactured home is to be moved to the site and placed on the site when the site is prepared in accordance with subpart C of this part and when the utilities are available as required by the LAHJ.

(a) *Access for the transporter.* Before attempting to move a home, it must be ensured that the transportation equipment and home can be routed to the installation site and that all special transportation permits required by the LAHJ have been obtained.

(b) *Positioning the home.* The home must be installed and leveled by a certified installer.

(c) *Encroachments and setback distances.* LAHJ requirements regarding encroachments in streets, yards, and courts must be obeyed, and permissible setback distances from property lines and public roads must be met.

(d) Fire separation distances must be in accordance with the more stringent

requirements of the LAHJ or Chapter 6 of NFPA 501A.

§ 3285.903 Permits, alterations, and on-site structures.

(a) *Issuance of permits.* All necessary LAHJ permits must be obtained and all fees must be paid.

(b) *Alterations.* Prior to alteration of a home installation, the LAHJ must be contacted to determine if plan approval and permits are required.

(c) *Installation of on-site structures.* (1) All buildings, structures, and accessory structures must be designed to support all of their own live and dead loads.

(2) Fire separation distances must be in accordance with the more stringent requirements of the LAHJ or NFPA 501A.

(3) Any attached garage, carport, deck, or porch must be installed according to the home manufacturer installation instructions or be designed by a registered professional engineer or

registered architect as approved and required by the LAHJ.

§ 3285.904 Drainage structures.

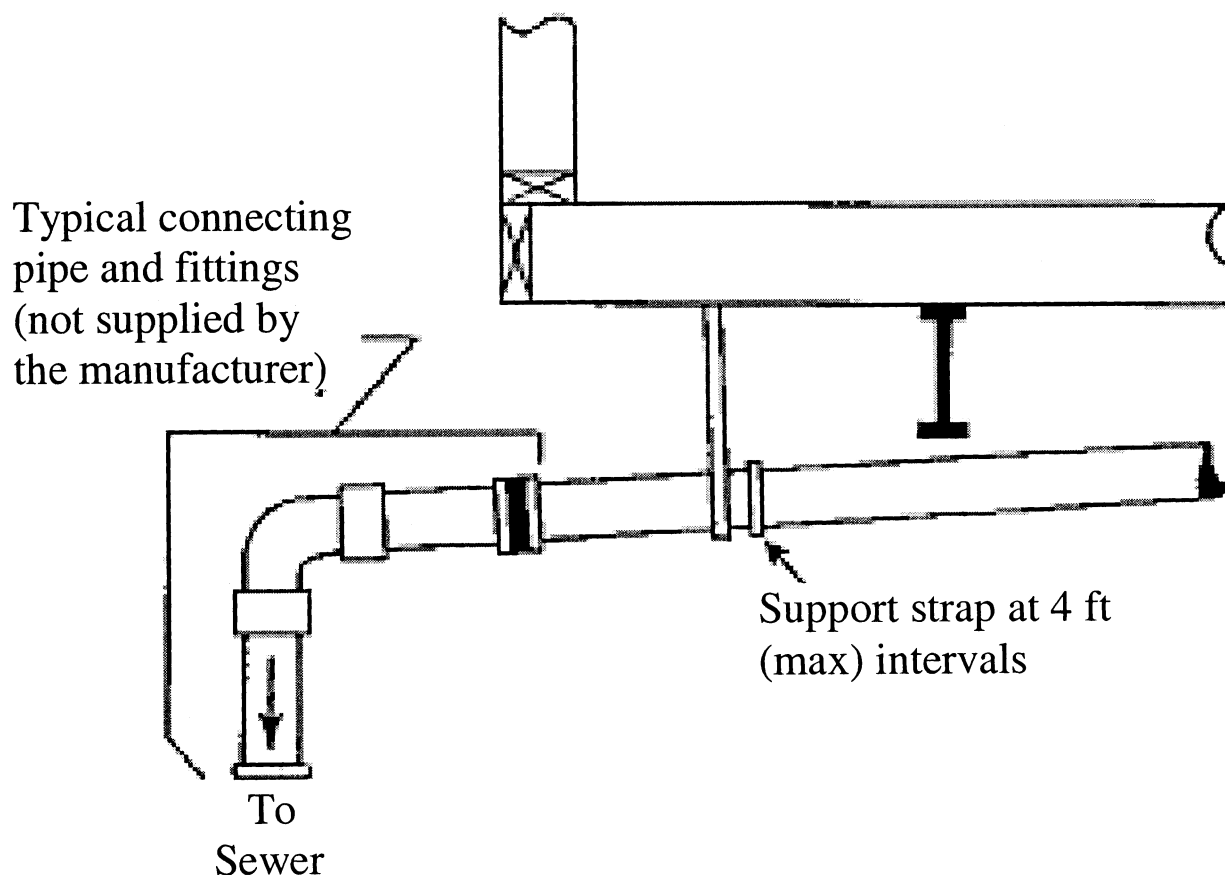
If acceptable to an LAHJ, ditches and culverts may be used to drain surface runoff. Such provisions are subject to all requirements of an LAHJ and must be included and considered in the overall site preparation.

§ 3285.905 Utility system connections.

(a) *Proper procedures.* The LAHJ must be consulted before connecting the manufactured home to any utilities.

(b) Where required, only qualified personnel familiar with local requirements must be permitted to make utility site connections and conduct tests.

(c) *Drainage system.* The main drain line must be connected to the site's sewer hookup, using an elastomer coupler acceptable to the LAHJ, as shown in Figure to § 3285.905.

Figure to § 3285.905 - Connection to Site Sewer.**Note:**

Fittings in the drainage system that are subject to freezing, such as P-traps in the floor, are protected with insulation by the manufacturer. Insulation must be replaced if it is removed for access to the P-trap.

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(d) *Fuel supply system.* (1) *Conversion of gas appliances.* A service person acceptable to the LAHJ must convert the appliance from one type of gas to another, following instructions by the manufacturer of each appliance.

(2) *Orifices and regulators.* Before making any connections to the site supply, the inlet orifices of all gas-burning appliances must be checked to ensure they are correctly set up for the type of gas to be supplied.

(3) *Connection procedures.* Gas-burning appliance vents must be inspected to ensure that they are connected to the appliance and that roof jacks are properly installed and have not come loose during transit.

(4) *Gas appliance startup procedures.* When required by an LAHJ, the installer must perform the following procedures:

(i) One at a time, equipment shutoff valves must be opened, pilot lights when provided must be lit, and burners and spark igniters for automatic ignition

systems must be adjusted in accordance with each appliance manufacturer instructions.

(ii) The operation of the furnace and water heater thermostats must be checked.

§ 3285.906 Heating oil systems.

(a) Homes equipped with oil burning furnaces must have their oil supply tank and piping installed and tested on site in accordance with in accordance with

NFPA 31 or the more stringent requirements of an LAHJ.

(b) The oil burning furnace manufacturer instructions must be consulted for pipe size and installation procedures.

(c) All oil storage tanks and pipe installations must meet all applicable local regulations.

(d) *Tank installation requirements.* (1) The tank must be located where it is accessible to service and supply and safe from fire and other hazards.

(2) In flood hazard areas, the oil storage tank must be anchored and elevated to or above the design flood elevation, or anchored and designed to prevent flotation, collapse, or permanent lateral movement during the design flood.

(3) *Leak test procedure.* Before the system is operated, it must be checked for leaks in the tank and supply piping in accordance with NFPA 31 or more stringent requirements of an LAHJ.

§ 3285.907 Telephone and cable TV.

Telephone and cable TV wiring are not covered by these Installation Standards and must be installed in accordance with requirements of the LAHJ.

Dated: March 18, 2005.

John C. Weicher,

Assistant Secretary for Housing—Federal Housing Commissioner.

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