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2 **DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT**

3
4 **24 CFR Parts 3280 and 3285**

5
6 **Docket No. FR-4928-P-01**
7 **RIN 2502-AI25**

8
9 **Model Manufactured Home Installation Standards**
10

11 **AGENCY:** Office of the Assistant Secretary for Housing-Federal Housing
12 Commissioner, HUD.
13

14 **ACTION:** Proposed rule.
15

16 **SUMMARY:** This proposed rule would establish new Model Manufactured Home Installation
17 Standards (Model Installation Standards) for the installation of new manufactured homes and
18 would incorporate field completion standards for the final construction and assembly of
19 manufactured homes at the site. The National Manufactured Housing Construction and Safety
20 Standards Act of 1974 (the Act) requires the Secretary establish Model Installation Standards
21 within 12 months of receiving proposed installation standards from the Manufactured Housing
22 Consensus Committee (MHCC). HUD has reviewed the MHCC's recommended installation
23 standards and is in agreement with a significant majority of the recommendations. Within this
24 proposed rule, HUD is providing its proposed Model Installation Standards, a detailed summary
25 of its recommended changes to the MHCC's proposal, and recommendations for amending the
26 Construction and Safety Standards because of issues originally proposed as standards for
27 installation by the MHCC but require codification as Construction and Safety Standards. HUD is
28 requesting public comment on these Installation Standards, the amended Construction and Safety

1 Standards, and other areas of manufactured home installation that may need consideration before
2 final publication.

3

4 **DATES:** Comments Due Date:

5

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

- 10 • The Federal eRulemaking Portal at: www.regulations.gov; or
11 □ The HUD electronic website at: www.epa.gov/feddocket. Follow the link entitled “View
12 Open HUD Dockets.” Commenters should follow the instructions provided on that site to
13 submit comments electronically. Facsimile (FAX) comments are not acceptable. In all cases,
14 communications must refer to the docket number and title. All comments and communications
15 submitted will be available, without change, for public inspection and copying between 8:00 a.m.
16 and 5:00 p.m. weekdays at the above address. Copies are also available for inspection and
17 downloading at www.epa.gov/feddocket.

18

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

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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) was amended by, among other things, creating the Manufactured Home Consensus Committee (MHCC) and establishing new requirements pertaining to the installation of new manufactured homes. One of the provisions of the amended Act requires the Secretary to establish Model Installation Standards for new manufactured homes. The Act also gave the MHCC responsibility for the initial development of proposed 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 NCSBCS/ANSI Standard A 225.1, 1994 edition, 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 the Secretary on December 18, 2003.

The complete MHCC recommendations for 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 website maintained by the NFPA, the administering organization for the MHCC: <http://www.nfpa.org/PDF/MHCCFinalChangesInstallStd.pdf?src=nfpa>

1 HUD has carefully reviewed the MHCC's recommended installation standards and is in
2 agreement with a significant majority of them. For the reasons indicated below in the Summary
3 of Changes to the MHCC proposed installation standards, modifications were made to some of
4 the proposals. The following is a section-by-section discussion of the amended Construction and
5 Safety Standards and the new Model Installation Standards being proposed by HUD:

6

7 ***[SECTION I. OF THIS DRAFT PROPOSED RULE HAS NOT BEEN MODIFIED***
8 ***ACCORDING TO THE CHANGES RECENTLY MADE TO THE MODEL***
9 ***INSATALLATION STANDARDS REINCOPORATING ELEMENTS BACK INTO THE***
10 ***MODEL INSTALLATION STANDARDS AS RECOMMENDED BY THE***
11 ***MANUFACTURED HOUSING CONSENSUS COMMITTEE. ADDITIONAL REVISION***
12 ***TO THE PREAMBLE IS REQUIRED PRIOR TO PUBLICATION AS A PROPOSED***
13 ***RULE.]***

14

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

16

17 HUD proposes to codify the Installation Standards in a new Part 3285 of title 24 of the Code of
18 Federal Regulations (CFR). These Installation Standards would be provisions requiring inclusion
19 by manufactured home producers in their installation instructions and would be provisions
20 necessary for State installation programs. However, these Installation Standards are not
21 preemptive, as State and local authorities having jurisdiction may impose more stringent
22 requirements that equal or exceed the protections that would be provided by these Model
23 Installation Standards. HUD is specifically requesting public comment on the proposed

1 demarcation between construction and installation of manufactured homes.

2

3 *Summary - Part 3285 Model Manufactured Home Installation Standards*

4

5 *SUBPART A – GENERAL*

6 Subpart A of the new part 3285 would include general provisions. These general provisions
7 include statements of the scope (§3285.1(a)) and applicability (§3285.1(b)) of the Installation
8 Standards. These Installation Standards would be applicable to the initial installation of new
9 manufactured homes. Manufacturer installation instructions (§3285.2) must meet or exceed the
10 Installation Standards, and must not take the home out of compliance with the MHCSS (24 CFR
11 part 3280).

12

13 HUD is also providing general requirements for alterations during the initial installation
14 (§3285.3) to ensure that alterations do not take the home out of compliance with the MHCSS.

15 The provisions prohibit alterations that impose additional loads to the manufactured home or its
16 foundation without design by a registered engineer or register architect, or without express
17 inclusion in the manufacturer installation instructions.

18

19 Consistent with other construction-type standards, HUD would incorporate several
20 specifications, standards and codes by reference (§3285.4) pursuant to 5 U.S.C. 552(a) and 1
21 CFR part 51. Reference standards have the same force and effect as the Installation Standards
22 except that whenever reference standards and the Installation Standard are inconsistent, the

1 requirements of the Installation Standards would prevail to the extent of the inconsistency.
2 §3285.5 provides definitions for terms contained in the Installation Standards.

3

4 *SUBPART B – PRE-INSTALLATION CONSIDERATIONS*

5 The majority of Subpart B would provide direction regarding the installation of new
6 manufactured homes in flood hazard areas. The Installation Standards would require that the
7 prospective location of the home installation be evaluated to determine if the location is in a
8 flood hazard area (§3285.101) and refer to the Federal Emergency Management Agency's
9 National Flood Insurance Program for specific requirements and further guidance relating to
10 installation in flood hazard areas.

11

12 As a pre-installation consideration, the Installation Standards would also make reference to the
13 final assembly and construction of the manufactured home necessary to complete homes in
14 accordance with requirements of the MHCSS and related regulatory provisions. §3285.102 refers
15 to new Subpart K of the Construction and Safety Standards (24 CFR 3280) for provisions
16 typically completed at the site and historically addressed in manufacturer installation
17 instructions.

18

19 The Installation Standards would incorporate by reference the design zone maps (§3285.103)
20 provided in the MHCSS (24 CFR part 3280) to ensure that the design and construction of the
21 home foundation and anchorage is compatible with the design and construction of the
22 manufactured home.

23

1 *SUBPART C – SITE PREPARATION*

2 Subpart C would establish requirements for the preparation of the site where a manufactured
3 home would be installed. The Installation Standards (§3285.201) recommend minimum fire
4 separation in accordance with an NFPA consensus standard. However, consistent with
5 §3285.1(a), LAHJ's may establish more stringent requirements.

6
7 The Installation Standards would also provide for site evaluation (§3285.202) and determination
8 of soil characteristics (§3285.203) to ensure that a particular foundation and anchorage design
9 would be adequate for the home design and location. The Installation Standards provide for three
10 methods of determining the bearing capacity and classification of the soil at the installation
11 location. Soils may be tested to determine the appropriate soil classification, bearing capacity,
12 and torque probe values, or the records on file with a LAHJ may be used to determine soil
13 characteristics. Alternately, if the soil can be identified by type, a table is provided for use in
14 determining appropriate bearing capacity and corresponding torque probe values. The
15 Installation Standards also require consultation with a registered professional if unusual or
16 suspect soil conditions are present.

17
18 HUD's proposed Installation Standards also address provisions to ensure that ground water is
19 adequately drained so as to prevent water build-up under the home. The Installation Standards
20 would require a minimum slope away from the home for the first ten feet and require the home to
21 be protected from surface runoff. The standard would also require other runoff from gutters and
22 downspouts to be directed away from the home.

23

1 If the space under the home is enclosed with skirting or otherwise similarly enclosed, the
2 Installation Standards would require a vapor retarder to be provided to keep ground moisture
3 from entering the home, except for homes located in arid regions with dry soil conditions
4 (§3285.205). The Installation Standards also provide for minimum vapor barrier material
5 requirements and proper installation techniques (§§3285.205(b) and 3285.205(c)).
6

7 *SUBPART D – FOUNDATIONS*

8 The Installation Standards would require foundations for manufactured home installations to be
9 based on site conditions, home design features, and the loads the home was designed to
10 withstand as evidenced on the home's data plate (§3285.301). The Installation Standards would
11 provide prescriptive methods for designing a foundation composed of piers and footings
12 traditionally addressed by manufacturer installation instructions. However, the Installation
13 Standards would also permit alternative foundation design (§3285.301(d)).
14

15 The alternative foundation design and support requirements would be determined by a registered
16 professional engineer, registered architect, or nationally recognized third party testing agency in
17 accordance with a nationally recognized testing protocol. However, HUD is not aware of an
18 existing nationally recognized testing protocol or standard established to determine the support
19 capability of proprietary-type foundation systems. While the proposed Installation Standards do
20 refer to a national test protocol, HUD is requesting comments on specific requirements that
21 should be contained in such a protocol.
22

23 The Installation Standards would require piers capable of transmitting the vertical live and dead

1 loads to the footings or foundation below (§3285.303). Piers may be made of concrete blocks,
2 pressure-treated wood, or adjustable metal or concrete piers. Piers, if manufactured, would be
3 required to be listed.

4

5 The load that each pier must carry depends on such factors as the dimensions of the home, the
6 design dead and live loads, the spacing of the piers, and the way the piers are used to support the
7 home (§3285.303(c)). Manufacturer installation instructions would be required to have pier and
8 footing requirements that meet or exceed the design support configurations indicated in several
9 tables provided in §3285.303(d)). These tables were prepared for worst case scenarios based on
10 current typical construction, but would only be applicable under the limitations provided in the
11 footnotes. Table 3285.303(d)(1)(i) provides the pier load and footing requirements for
12 manufactured homes that are designed to be supported only at the frame without additional
13 perimeter support. Table 3285.303(d)(1)(ii) provides the minimum pier load and footing
14 requirements for manufactured homes that are designed for support both at the frame and at the
15 perimeter with support at specified spacing. Table 3285.303(d)(1)(iii) provides the minimum pier
16 load and footing requirements for ridge beam column supports applicable to multi-section
17 homes.

18

19 The Installation Standards (§3285.304) would provide for specific materials, dimensions, and
20 illustrations that furnish the minimum design and construction requirements for concrete block
21 piers and pier caps. Pier caps are to be designed for structural loads to evenly distribute the loads
22 across hollow block piers.

23

1 During typical installations, gaps occur between the bottom of the supported beam and the
2 foundation support system (§3285.304(c)). The installation Standards would provide material
3 and thickness requirements acceptable to fill these gaps and would also provide requirements
4 (§3285.305) for maintaining minimum clearances under homes.

5
6 The Installation Standards would provide minimum design procedures for concrete block piers
7 including limitations and requirements for pier heights and block orientation in §3285.306. The
8 Installation Standards would also require design by a registered professional for unusual or
9 special pier conditions, such as high or elevated piers (§3285.306(c) and §3285.309).

10

11 The Installation Standards would also address pier requirements for location along the mating
12 line of multi-section homes. Figures 3285.310(a), 3285.310(b), and 3285.310(c) illustrate pier
13 locations and pier and footing table references applicable to mating line locations including
14 requirements for perimeter and/or frame support.

15

16 The Installation Standards (§3285.311) would require pier supports on both sides of side wall
17 exterior doors and any other side wall openings greater than 48 in. (such as entry and sliding
18 glass doors), and under porch posts, factory installed fireplaces, and wood stoves. Additional
19 perimeter supports would be required in accordance with the design of the home and use of the
20 appropriate pier load and footing configuration tables.

21

22 The Installation Standards (§3285.312) would require footings to support every pier and shall be
23 placed on undisturbed soil or fill compacted to 90 percent of maximum relative density. Figures

1 3285.313(a) and 3285.313(b) illustrate typical footing and pier (blocking) diagrams for single
2 and multi-section homes.

3
4 Acceptable footing materials (§3285.312(a)) would be identified and specific listing or labeling
5 requirements also identified would be required, as appropriate for each material. Footings placed
6 in freezing climates (§3285.312(b)) would be required to be placed below the frost line depth
7 unless a registered professional properly designs an alternate such as an insulated foundation or
8 slab-type foundation (§3285.312(b)).

9
10 The sizing of footings (§3285.312(c)) depends on the load-bearing capacity of both the piers and
11 the soil. Table 3285.312(d) and Figure 3285.312(c) provide footing configurations and
12 requirements for precast and poured-in-place concrete footings corresponding to the
13 requirements of tables §3285.303(d)(1)(i), §3285.303(d)(1)(ii), and §3285.303(d)(1)(iii).

14
15 The Installation Standards would also require support systems designed to combine both load-
16 bearing capacity and uplift resistance to be sized for all applicable design loads (§3285.313).

17 Design for permanent foundations (§3285.314) (such as basements, crawl spaces, or load-bearing
18 perimeter foundations) are also permitted so long as designs are obtained from the home
19 manufacturer, or designed by a registered professional engineer or registered architect, and
20 constructed in accordance with local codes. When permanent foundation designs are not
21 available from the home manufacturer or covered in the local building code, a registered
22 professional engineer or registered architect would need to be consulted in order to obtain a
23 design to satisfy the home support requirements.

1
2 Foundations for homes designed for and located in areas with roof live loads greater than 40 psf
3 would be required to be designed according to the home manufacturer installation instructions or
4 designed by a registered professional engineer or registered architect for the special snow load
5 conditions (3285.316). The Installation Standards also recognize the use of ramadas in areas with
6 roof live loads greater than 40 psf but require any connection to the home to be for
7 weatherproofing only.

8

9 *SUBPART E – ANCHORAGE AGAINST WIND*

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

14

15 The Installation Standards would provide requirements for determining the maximum spacing
16 for ground anchors, historically addressed by manufacturer installation instructions. The
17 Installation Standards would also permit alternative anchorage design as long as the design is
18 verified by engineering data and designed or certified by a registered professional engineer or
19 architect (§3285.401(a)).

20

21 The Installation Standards (§3285.402(a)) would contain provisions for tie-down straps and
22 ground anchors that would be consistent with requirements found in the MHCSS (24 CFR part
23 3280). The resistance capability of ground anchors and anchoring equipment would be

1 determined by a registered professional engineer, registered architect, or nationally recognized
2 third party testing agency in accordance with a nationally recognized testing protocol. The
3 ground anchors would be required to be installed in accordance with the listing and capacity
4 resulting from the testing. However, HUD is not aware of an existing nationally recognized
5 testing protocol or standard established to determine the resistance capability of ground anchors
6 and anchoring equipment to wind forces. While the proposed Installation Standards do refer to a
7 national test protocol as recommended by the MHCC, HUD is requesting comments on specific
8 requirements that should be contained in such a protocol. It should also be noted that the
9 development of a testing protocol for ground anchor assemblies is currently under review by an
10 MHCC installation subcommittee task force.

11
12 The number and location of ground anchors and anchor straps (§3285.402(b)) for the installation
13 of single-section and multi-section manufactured homes would be required to meet or be spaced
14 no greater than the maximum spacing shown in Tables 3285.402(c)(1) through 3285.402(c)(3),
15 and Figures 3285.402(b)(1) and 3285.402(b)(2). The tables were prepared for worst case
16 scenarios based on current typical manufactured home construction, but would only be
17 applicable under the limitations provided in the footnotes.

18
19 Table 3285.402(c)(1) would provide the maximum ground anchor spacing for diagonal straps
20 applicable to homes located in Wind Zone 1. These spacings are dependent upon the size of the
21 home and the I-beam spacing. The table also contains the maximum height from the ground to
22 the strap attachment for each strap spacing, ensuring that the diagonal strap angle achieves a
23 nominal 45-degree angle. The table would only be applicable under the limitations outlined

1 through 12 footnotes.

2

3 Table 3285.402(c)(2) would provide the maximum ground anchor spacing for diagonal straps
4 applicable to homes located in Wind Zone 2. Consistent with the Construction and Safety
5 Standards (24 CFR part 3280), the Installation Standards would require a vertical strap at each
6 diagonal strap in this high wind area. These spacings are dependent upon the size of the home
7 and the I-beam spacing. The table contains the maximum height from the ground to the strap
8 attachment for each strap spacing, ensuring that the diagonal strap angle achieves a nominal 45-
9 degree angle. The table would only be applicable under the limitations outlined through 13
10 footnotes.

11

12 Table 3285.402(c)(3) would provide the maximum ground anchor spacing for diagonal straps
13 applicable to homes located in Wind Zone 3. Consistent with the Construction and Safety
14 Standards (24 CFR part 3280), the Installation Standards would require a vertical strap at each
15 diagonal strap in this high wind area. These spacings are dependent upon the size of the home
16 and the I-beam spacing. The table contains the maximum height from the ground to the strap
17 attachment for each strap spacing, ensuring that the diagonal strap angle achieves a nominal 45-
18 degree angle. The table would only be applicable under the limitations outlined through 13
19 footnotes.

20

21 The Installation Standards would also provide general requirements (§3285.404) for ground
22 anchors in freezing climates and would require that anchorage for homes located within 1500
23 feet of a Wind Zone 2 or 3 coastline be specially designed by a registered professional engineer

1 or architect.

2

3 *SUBPART F – OPTIONAL FEATURES*

4 Subpart F would provide requirements applicable to the installation of optional features under
5 HUD’s authority. Where applicable and specific to the home and product manufacturer, optional
6 features such as expanding rooms (§3285.501) and some appliances (§3285.502) would be
7 permitted to be installed provided all items are installed in accordance with the home and/or
8 product manufacturer installation instructions and where applicable, to the new Subpart K of the
9 MHCSS.

10

11 Comfort cooling systems (§3285.502(a)) would be required to be installed according to the
12 appliance manufacturer installation instructions. Air conditioning equipment, heat pumps, and
13 evaporative coolers would require listing for use with manufactured homes and would require
14 installation according to the product manufacturer instructions and applicable Construction and
15 Safety Standards. The provisions for comfort cooling appliances appear in both the Installation
16 Standards and the new Subpart K of 24 CFR 3280 for convenience and clarity.

17

18 The Installation Standards would also require heat-producing appliances to exhaust to the
19 exterior of the home beyond perimeter skirting if installed (§3285.502(c)). This subpart would
20 also provide minimum appliance elevation and anchoring requirements for homes installed in
21 flood hazard areas (§3285.502(d)). Specifically, appliances would be required to be anchored
22 and appliances and air inlets elevated at or above the same elevation as the lowest elevation of
23 the lowest floor of the home.

1

2 Clothes dryer exhaust duct systems (§3285.502(e)) would be required to conform with and be
3 completed in accordance with the appliance manufacturer instructions and Subpart K of the
4 Manufactured Home Construction and Safety Standards. The provisions appear in both the
5 Installation Standards and the new Subpart K of 24 CFR 3280 for convenience and clarity. The
6 installation standards would require vents to exhaust to the exterior of the home and beyond
7 perimeter enclosures.

8

9 The proposed Installation Standards also contains provisions for the use of optional skirting
10 (§3285.503) and crawlspace ventilation (§3285.504) required when a perimeter enclosure is
11 installed. The ventilation requirements are consistent with requirements for crawlspaces of other
12 structures built to model building codes and would require ventilation rates of 1 square foot of
13 ventilation for every 150 square feet of floor area. The ventilation may be decreased to 1 square
14 foot of ventilation for every 1500 square feet of floor area when an acceptable vapor barrier is
15 installed according to requirements in Subpart C. Minimum requirements would also be provided
16 for location of vent openings and covers for vent openings.

17

18 *SUBPART G – PLUMBING AND FUEL SUPPLY SYSTEMS*

19 Subpart G would provide requirements applicable to the installation of water and fuel supply
20 systems. However, most work related to water and fuel supply completion, and all work related
21 to drainage system completion under HUD authority at the site is deemed to be assembly or
22 construction of the manufactured home and therefore would be subject to requirements of the

1 Construction and Safety Standards. These construction standards are identified separately and
2 would be codified in Subpart K of 24 CFR 3280.

3
4 The connections of the systems to utilities are modified and located in Subpart I. The provisions
5 of Subpart G are necessarily limited in scope and content but are required to ensure that the
6 manufactured home is not taken out of compliance with the MHCSS after installation is
7 completed.

8
9 §3285.601 would establish requirements for water supply inlet pressure, consistent with the
10 MHCSS and a requirement for a mandatory shut-off valve. Similarly, §3285.602 would establish
11 gas supply pressure limitations.

12

13 *SUBPART H – ELECTRICAL SYSTEMS AND EQUIPMENT*

14 Subpart H of the Installation Standards would cover the electrical conductors and equipment
15 installed within or on manufactured homes and the conductors that connect manufactured homes
16 to a supply of electricity. The Installation Standards (§3285.701) would contain model and
17 typical electrical requirements and incorporates Article 550 of the National Electrical Code
18 (NFPA No. 70-1996).

19

20 HUD believes there may be information currently addressed by manufacturer installation
21 instructions that has not been evaluated by the MHCC or reviewed for inclusion in the MHCC's
22 proposal. Such issues as multi-section frame bonding and electrical supply requirements
23 required to ensure that the manufactured home is not taken out of compliance with the

1 Construction and Safety Standards. Therefore, HUD specifically invites public comment on this
2 completeness of this Subpart and issues that should or should not be addressed.

3

4 *SUBPART I – RECOMMENDATIONS FOR INSTALLATION INSTRUCTIONS*

5 Generally, moving manufactured homes and completing work at the site with respect to utility
6 connections is governed by LAHJ requirements. Therefore, these Installation Standards do not
7 attempt to comprehensively address permits and utility connection requirements. However,
8 several related provisions are included in Subpart I as recommendations for inclusion in
9 manufacturer installation instructions in order to protect manufactured homes, as constructed in
10 accordance with the MHCSS.

11

12 Specifically, Subpart I would provide recommendations relating to moving the manufactured
13 home to the installation site (§3285.802), construction of on-site structures (§3285.803),
14 provisions for culverts and ditches (§3285.804), and connection of the drainage system to the
15 sewer system (§3285.805) and installation instruction recommendations for orifices and
16 regulators and gas appliance startup.

17

18 This subpart would also address heating oil systems and tank installation (§3285.806) in
19 accordance with the nationally recognized consensus standard NFPA 31. However, the
20 Installation Standard would also recognize the authority of an LAHJ to establish more stringent
21 requirements.

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*Summary - Part 3280 Manufactured Home Construction and Safety Standards Subpart K –
Field Completion of Manufactured Home Construction*

The Installation Standards would not establish requirements for the assembly, construction, and testing of certain features that are typically completed at the site but are required to produce a home that conforms to the MHCSS. Items completed in the field that are required in order to comply with the Construction and Safety Standards (24 CFR part 3280) will continue to be subject to the Construction and Safety Standards and all related provisions. Therefore, HUD has removed items addressed in the MHCC’s proposed installation standards deemed to be Construction and Safety Standards and includes the items in a new Subpart K of 24 CR Part 3280 as set forth in this proposed rule. HUD attempted to maintain consistency with other recommendations for on-site construction separately recommended by the MHCC and therefore is specifically requesting public comment on HUD’s proposed demarcation between construction and installation of manufactured homes.

The construction standards would require manufacturers to provide designs necessary to complete final assembly of plumbing and fuel systems as may be necessary at the site (§3280.1001). The construction standards would also provide requirements for duct crossovers and the materials to be used in completing the crossover connections (§3280.1002) consistent with requirements set forth in Subpart H of 24 CFR 3280, figures illustrate typical drain line support and duct crossover designs consistent with current manufacturer installation instructions.

1 The construction standards would also require all electrical equipment and installations
2 (§3280.1003) to be designed and constructed in accordance with Subpart I of 24 CFR 3280. The
3 construction standards would also provide specific requirements for installation of miscellaneous
4 lights and fixtures, such as interior and exterior lights and ceiling fans, and would contain testing
5 requirements for electrical continuity, operation, and electrical polarity after completion of the
6 electrical system at the site. The construction standards would also require smoke alarms to be
7 functionally tested after completion of the home at the site (§3280.1004).

8

9 The standards also address completion of an air seal gasket around the mate line of multi-section
10 homes (§3285.1005) and would provide requirements relating to the structural interconnection of
11 multi-section homes (§3285.1006). Provisions for interior and exterior finishing of
12 manufactured homes (§§3285.1007 and 3285.1008) are also contained in the new Subpart K.
13 Minimum requirements for repair of tears and cuts in bottom board material (§3285.1009) are
14 also provided.

15

16 The construction standards would also provide for optional construction features (§3280.1010) in
17 current manufacturer installation instructions including hinged roofs and hinged eaves, garden
18 and bay windows, and optional wall panels, siding, or molding. Some optional features may be
19 subject to additional requirements to be outlined in an on-site construction rule to be published
20 separately by HUD.

21 ***[SECTION II. OF THIS DRAFT PROPOSED RULE HAS NOT BEEN MODIFIED***

22 ***ACCORDING TO THE CHANGES RECENTLY MADE TO THE MODEL***

23 ***INSATALLATION STANDARDS REINCOPORATING ELEMENTS BACK INTO THE***

1 ***MODEL INSTALLATION STANDARDS AS RECOMMENDED BY THE***
2 ***MANUFACTURED HOUSING CONSENSUS COMMITTEE. ADDITIONAL REVISION***
3 ***TO THE PREAMBLE IS REQUIRED PRIOR TO PUBLICATION AS A PROPOSED***
4 ***RULE.]***

5
6 **II. Summary of Changes to MHCC Proposed Installation Standards**

7 Generally, the proposed rule incorporates the vast majority of the MHCC's proposed installation
8 standards but amends the MHCC proposal for consistency with format and numbering of
9 regulations published in the Code of Federal Regulations. HUD's Installation Standards delete
10 all references to SI (metric) units because they were not consistently and comprehensively
11 identified within the MHCC recommendations and have not been adopted by HUD in all other
12 standards publications.

13
14 In instances of modification, HUD made a good-faith attempt to retain the intent and text of the
15 installation standards provided by the MHCC. However, editorial changes have been made
16 throughout the text for consistency with formatting of Federal Register documents or for
17 clarification purposes and in most areas where a change is being recommended for editorial or
18 clarification type purposes, it is not described with an associated rationale. In some instances,
19 HUD recommends new or revised Installation Standards to replace the MHCC's proposed
20 installation standards; these are fully described. HUD summarizes its recommended changes by
21 grouping the changes into the following general categories:

- 22 • Consistency – HUD recommends many installation standards proposed by the MHCC
23 be modified to retain consistency with the Act, other sections of the Installation

- 1 Standards, the MHCSS (24 CFR part 3280) and the Manufactured Home Procedural
2 and Enforcement Regulations (24 CFR part 3282). Some changes for consistency
3 require a companion change to part 3280 and are identified appropriately.
- 4 ● Relocate – HUD proposes to relocate many sections or portions of text within the
5 document while attempting to preserve the MHCC’s installation standards and intent.
 - 6 ● Editorial – HUD recommends several editorial changes to the proposed installation
7 standards needed to ensure clarity, convenience, intent and consistency.
 - 8 ● Authority – HUD recommends that several sections of the MHCC’s proposed
9 installation standard be revised or deleted because the proposed installation standard
10 is not with the scope of HUD’s authority or is an aspect of home installation best
11 retained by the States for regulation through an LAHJ. A majority of these instances
12 were identified during the MHCC’s discussion and deliberation process but were not
13 incorporated into the balloted version. In some instances HUD recommends that the
14 provisions be retained in the Installation Standards but removed from the MHCC
15 proposed location and placed in a section containing recommendations for inclusions
16 in manufacturer installation instructions.
 - 17 ● Construction – HUD recommends that several modifications be made to the MHCC
18 proposed installation standards that address completion of the manufactured home at
19 the site. HUD recommends that these issues be removed from the Installation
20 Standards and codified in Subpart K of the Construction and Safety Standards (24
21 CFR 3280).
 - 22 ● Procedural– HUD recommends that some sections of the MHCC proposed standard
23 be revised or otherwise modified because they do not establish standards but rather

1 impose procedural direction and will be considered by HUD in its future development
2 of the Installation Program regulations.

- 3 • Technical – HUD also recommends modifications to other sections of the MHCC’s
4 proposed Installation Standards due to differences that are technical in nature. A
5 majority of these instances were identified during the MHCC’s discussion and
6 deliberation process but were not incorporated in the balloted version.

7
8 *SUBPART A - GENERAL*

9 Subpart A sets forth provisions for administration, referenced publications, and definitions of
10 terms used throughout the document. Subpart A incorporates certain provisions of Chapters 1, 2,
11 3, and 4 of the MHCC proposed installation standards. However, HUD has made certain
12 modifications to the MHCC’s proposal as outlined below.

13
14 *Scope §3285.1(a) (Editorial, Relocate, Technical)*

15 HUD is revising the scope of the document to emphasize that the Installation Standards are not
16 preemptive but rather are model standards. HUD is further modifying the scope of the document
17 to reiterate that the provisions of the Installation Standards are model requirements and that State
18 or local authorities having jurisdiction may establish more stringent requirements. The MHCC
19 language relating to manufacturer installation instructions has been preserved and relocated with
20 modification at §3285.2.

21
22 *Applicability §3285.1(b) (Editorial, Consistency, Technical)*

1 HUD accepts the intent of the MHCC's proposal for applicability. However, HUD is modifying
2 the MHCC's proposed applicability sections to simplify the requirements for convenience and
3 clarity. In summary, the Installation Standards apply to new manufactured homes produced
4 under the Federal Manufactured Housing Program (24 CFR part 3280 and 24 CFR part 3282),
5 and therefore exclusions and other restrictions are not deemed necessary and therefore have been
6 deleted.

7
8 *Installation of Manufactured Homes in Flood Hazard Areas (Relocate – §3285.101)*

9 HUD accepts the MHCC's recommended provisions for flood hazard areas. However, HUD is
10 relocating requirements for flood hazard areas to Subpart B for inclusion as a pre-installation
11 consideration.

12
13 *Manufacturer Installation Instructions §3285.2 (New Section - Technical, Consistency)*

14 HUD accepts the intent of the MHCC provided by its scope and definition of manufacturers
15 instructions. However, the Act contains a section to implement the statutory requirements for the
16 manufacturer to provide installation instructions. Therefore, HUD would establish a new section
17 in the Installation Standards requiring manufacturer installation instructions be provided with
18 each new home. Manufacturer installation instructions, as set forth in section 605(a) of the Act,
19 shall meet or exceed the protection provided under the Installation Standards.

20
21 HUD preserves a majority of the language and intent of the MHCC provided in its scope
22 statement and supplements the language provided by the MHCC in its definition of installation

1 instructions. HUD is also modifying this section to indicate that the installation instructions shall
2 not take the home out of compliance with 24 CFR part 3280.

3
4 HUD is also inviting comment regarding whether manufacturer installation instructions should
5 indicate that when site or soil conditions are not covered by the instructions, a professional
6 engineer or registered architect must be consulted.

7
8 *Term Use (Consistency)*
9 This Department did not accept this MHCC proposal because the Installation Standards are only
10 applicable to manufactured homes as fully described in the Applicability section (§3285.1(b)).

11
12 *Alterations during Initial Installation §3285.3 (New Section – Technical, Relocated)*
13 HUD’s Installation Standards add a section to address alterations made during the initial
14 installation of a new manufactured home. HUD believes that it has regulatory authority for
15 modifications to the home or its foundation so long as the alterations affect requirements of the
16 Installation Standards or the MHCSS.

17
18 Nonetheless, HUD acknowledges there are questions in defining state or local authority having
19 jurisdiction from federal jurisdiction in instances related to alterations on initial installation, such
20 as for patio roofs, decks, entry stairs, etc. HUD’s invites public comment on how alterations
21 made to the manufactured home or its designed foundation during the initial installation should
22 be enforced and codified.

23

1 *Referenced Publications §3285.4 (Consistency, Technical)*

2 HUD accepts the vast majority of referenced publications provided by the MHCC. However,
3 HUD is modifying the order and sequence of certain standards incorporated by reference and is
4 adding to or did not include some standards included in the MHCC proposal as follows:

5

6 ACCA Manual J; HUD would add this reference standard in Subpart F because it is a nationally
7 recognized standard for sizing air conditioning equipment and is currently utilized and accepted
8 by all parties for this purpose.

9

10 ASTM D2487; HUD would add this nationally recognized consensus standard as a method of
11 determining soil classification consistent with the MHCC's ground anchor task force current
12 work.

13

14 ASTM D2488; HUD would add this nationally recognized consensus standard as a method of
15 determining soil classification consistent with the MHCC's ground anchor task force current
16 work.

17

18 ASTM D1586; HUD would add this nationally recognized consensus standard as a method of
19 determining soil classification consistent with the MHCC's ground anchor task force current
20 work.

21

22 NFPA 31; HUD would include this reference standard because it is a nationally recognized
23 consensus standard that addresses installation of oil burning equipment.

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NFPA 70, HUD would add this nationally recognized reference document to retain consistency with 24 CFR part 3280 and to address wiring practice and materials not specifically identified with the Installation Standards.

NFPA 255; HUD is deleting this reference document because it is not referenced within the Installation Standards.

NFPA 1192; HUD is deleting this referenced standard because it is not referenced within HUD's proposed modifications and is not applicable to structures covered by the Installation Standards.

ANSI A119.5; HUD is deleting this referenced standard because it is not referenced within HUD's proposed modifications and is not applicable to structures covered by the Installation Standards.

SEI/ASCE 32-01, HUD would include this nationally recognized consensus standard as a referenced standard for the design of specific foundations and is recommended for reference in Subpart D.

HUD would also add referenced government publications 44 CFR 59 and 44 CFR 60 as they are referenced in Subpart B.

Definitions §3285.5 (Consistency, Technical, Editorial, Authority)

1 HUD accepts the majority of terms and definitions provided in the MHCC's proposed
2 installation standards. However, HUD is modifying the sequence and text of certain terms and
3 definitions. HUD has eliminated reference to "Official Definition" and "General Definitions"
4 but retains a vast majority of the terms and definitions provided by the MHCC. Some terms and
5 definitions would be added or deleted to clarify the meaning of the term and carry out the intent
6 of the appropriate Installation Standard. Several definitions also require modification to
7 definitions set forth in the MHCSS to ensure consistency with definitions provided in these
8 Installation Standards and need further consideration; these are specifically identified.

9

10 "Approved" – modified for consistency with 24 CFR part 3280.

11

12 "Authority Having Jurisdiction" – HUD is deleting this term and its definition. This term is being
13 replaced with the term "Secretary". HUD believes this change retains the MHCC's intent and
14 remains consistent with the Act, 24 CFR part 3280 and 24 CFR part 3282.

15

16 "Labeled" is being modified for consistency with 24 CFR part 3280.

17

18 "Listed" is being modified for consistency with 24 CFR part 3280.

19

20 "Must," "Shall," and "Should" – Except as specifically identified in subpart J, all provisions of
21 the installation standard are model mandatory requirements. All references to "should" and
22 "shall" have been replaced with "must" throughout the text of the Proposed Rule to retain
23 consistency with Federal Register formatting.

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“Anchor” – HUD did not accept the use of the term “anchor” because the definition is comparable to the definition of “ground anchor” in the Construction and Safety Standards (24 CFR part 3280). HUD would modify the term to “ground anchor” and simplify the definition, requiring a companion change to 24 CFR part 3280.302 to maintain consistency.

“Anchoring equipment” – HUD is modifying the definition to include the term “ground anchor.” A companion change to 24 CFR part 3280.302 is required to maintain consistency.

“Anchoring system” - HUD is revising the definition to include the term “ground anchor.” A companion change to 24 CFR part 3280.302 is required to maintain consistency.

“Arid Region” – While HUD did not modify the definition public comment is specifically invited. Is annual rainfall 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?

“Installation” – HUD is deleting the definition because the term is not defined within the Act. HUD believes any created definition would create confusion and conflict between the Installation Standards, the MHCSS, and the Act.

“Installation Alteration” – HUD is deleting this definition because not all alterations are within HUD’s scope of authority to regulate. However, HUD attempts to retain the MHCC’s intent by the recommended addition of section 3285.1(d) addressing alterations during initial installation.

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“Installation instructions” – HUD is modifying this definition to clarify its application.

“Installation Standards” – – HUD is adding this term because it appears within HUD’s recommended Installation Standards. The proposed definition is consistent with the definition provided in the Act.

“Manufactured Home” – HUD is modifying this definition to be consistent with the Act.

“Manufactured Home Accessory Building or Structure” – HUD is deleting this term and definition as the term does not appear within HUD’s recommended Installation Standards and only applies to buildings and structures that are not within the scope of HUD’s authority.

“Manufactured Home Site” - HUD is deleting this term and definition as the term does not appear within HUD’s recommended Installation Standards.

“Pier” – HUD is modifying this definition to retain consistency with all types of piers referenced in Subpart D.

“Stabilizing Devices” – HUD includes the terms “ground” and “equipment”. A companion change to 24 CFR part 3280.302 is required to maintain consistency.

1 “Stand, Manufactured Home” - HUD is deleting this term and definition as the term does not
2 appear within HUD’s recommended Installation Standards and may be confused with common
3 usage of the term.

4

5 “Structure” – HUD is deleting this term and its definition because common usage of the term
6 shall apply.

7

8 “Tie” – HUD is modifying this definition for consistency with 24 CFR part 3280.

9

10 “Diagonal Tie” – HUD is modifying this definition to combine the MHCC proposed definition
11 with the definition in 24 CFR part 3280. This change also requires a companion change to 24
12 CFR part 3280 to maintain consistency.

13

14 “Secretary” – HUD is adding this term and definition to replace the term “Authority Having
15 Jurisdiction.” HUD believes this change preserves the MHCC’s intent to recognize those items
16 under HUD’s authority and retains consistency with 24 CFR part 3280 and 3282.

17

18 “Design Approval Primary Inspection Agency” – HUD is adding this term because it appears
19 within HUD’s recommended Installation Standards. The definition remains consistent with 24
20 CFR part 3282.

21

22 “Working Load” – HUD is adding this term because it appears within HUD’s recommended
23 Installation Standards.

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SUBPART B – PRE-INSTALLATION CONSIDERATIONS

Subpart B outlines considerations for a home’s installation relative to some site conditions, the design of the manufactured home, and the proposed foundation location. Subpart B incorporates provisions of Chapters 1 and 4 of the MHCC proposed installation standards. 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 accepts the vast majority of the MHCC provisions for flood hazard areas. The sections pertaining to flood hazard areas are relocated from Chapter 1 of the MHCC document to Subpart B. HUD believes the evaluation of a site for flood hazard exposure is a pre-installation consideration that should be accomplished prior to designing a foundation and installing the manufactured home at the site and therefore responsibility is charged to installers.

All references to the issuance of permits are being deleted because this function is not within HUD’s authority. HUD also notes that the Federal Emergency Management Agency is currently in the process of updating its FEMA-85 document. HUD will consider updating to the revised FEMA document provided it is published prior to publication of the Installation Standards Final Rule.

Alterations (Relocate – See §§3285.3 and 3285.803)

1 HUD accepts the intent of the MHCC regarding alterations. However, HUD has relocated
2 provisions for alterations during the initial installation to §3285.3. Provisions for permits have
3 been relocated to §3285.803, as this function is not within HUD's authority.

4

5 *Installation Considerations (Technical, Construction)*

6 HUD has removed provisions for utility schematics from the Installation Standards and is
7 codifying the provisions in new Subpart K of the Construction and Safety Standards. In addition,
8 provisions for floor plans and approval by the Secretary have been deleted due to the
9 establishment of other provisions establishing similar requirements (§3285.2 and §3285.310(d)).

10

11 *Home Installation Manual Supplements (Technical)*

12 HUD is not accepting the MHCC's proposal regarding addition information in manufacturer
13 installation instructions, as it is not necessary with the establishment of §3285.2, which requires
14 manufacturers to provide installation instructions.

15

16 *Field Completion of Manufactured Home Construction §3285.102 (New Section – Construction,*
17 *Technical, Consistency)*

18 HUD has added a section addressing the field assembly and construction of manufactured
19 homes. The work necessary at the site for the home to comply with the Construction and Safety
20 Standards (24 CFR part 3280) is removed from the MHCC's proposed installation standards and
21 instead is incorporated into the new Subpart K to the MHCSS. However, as all or some of these
22 provisions are deemed pre-installation considerations and as such are referenced in this Subpart.

23

1 *SUBPART C – SITE PREPARATION*

2 Subpart C sets forth requirements for preparing the site or property where the foundation is to be
3 constructed. These types of considerations include soil conditions, drainage, and ground moisture
4 control. HUD accepts the vast majority of the MHCC’s proposed installation standards regarding
5 site preparation. Subpart C incorporates certain provisions of Chapter 5 of the MHCC proposed
6 installation standards. However, HUD has made certain modifications to the MHCC’s proposal
7 as outlined below.

8

9 HUD relocated the MHCC’s recommendations for *transporter access, encroachments, and*
10 *permits*, to Subpart I because they are not within the scope of HUD’s authority and may be
11 subject to LAHJ requirements.

12

13 *Fire Separation Distance §3285.201 (Technical)*

14 HUD accepts the MHCC’s intent for fire separation distance, however HUD is modifying the
15 fire separation distance requirement by deleting reference to LAHJ requirements. The
16 Installation Standards, as model standards may be subject to more stringent requirements of an
17 LAHJ.

18

19 *Soil Conditions §§3285.202, 3285.203, and 3285.402 (Technical, Editorial, Consistency)*

20 HUD is in agreement with the intent and majority of installation standards contained in the
21 MHCC’s proposed installation standards for soil conditions. However, HUD is modifying the
22 MHCC’s proposed standards for soil conditions, including the table of Soil Classification but is
23 preserving the MHCC’s intent and as much proposed language as is practicable. HUD’s

1 Installation Standards relocate and combine sections contained in the MHCC's proposal in order
2 to simplify and condense requirements, such as removal of organic material. HUD's
3 modifications also simplify and clarify the standard and incorporate classification of soils
4 required for ground anchor selection consistent with the most current recommendations of the
5 MHCC's ground anchor task force.

6
7 HUD is modifying the MHCC proposal so that soil data needed to determine bearing capacity
8 and anchor selection is obtained through testing, soil records, or through an expanded Table for
9 visual soil classification. HUD has deleted reference to specific soil test methods and equipment
10 contained in the MHCC proposal and instead requires testing to be in accordance with accepted
11 engineering practice. HUD is also proposing to modify the MHCC Table for Soil Bearing
12 Capacities by permitting it to also be used for determining the number classification of soils for
13 anchor selection and by expanding the criteria in the Table to include torque probe and blow
14 count values consistent with the most current recommendations of the MHCC's ground anchor
15 task force.

16
17 *Drainage §3285.204 (Editorial, Consistency, Relocate – see §3285.803)*

18 HUD is in agreement with the majority of the MHCC's proposed installation standards for
19 drainage. However, HUD is clarifying the drainage requirements to incorporate the minimum
20 slope requirements outlined in the figures proposed by the MHCC. HUD is also relocating
21 requirements for drainage structures (ditches and culverts) because the design and construction
22 of such structures is subject to requirements of the LAHJ. HUD is also revising the text and

1 figures in order to eliminate permissive Installation Standards and establish Federal Register
2 formatting language.

3

4 *Ground Moisture Control §3285.204 (Technical, Editorial)*

5 HUD is in agreement with the majority of the intent and language of MHCC's proposed
6 installation standards for ground moisture control. HUD is modifying the MHCC vapor barrier
7 proposal so that the only exception for placement of a vapor barrier is provided in the Installation
8 Standards and does not permit a LAHJ to establish the minimum standard. HUD believes
9 exceptions for vapor barrier placement must be described within the Installation Standards
10 because HUD cannot delegate rulemaking authority without proper notice and comment
11 rulemaking. HUD is also making editorial revisions to the MHCC's proposal on vapor barrier
12 installation, but the modifications do not change the substance or intent of the MHCC's proposal.

13

14 *SUBPART D – FOUNDATIONS*

15 Subpart D sets forth the requirements for the design and construction of the foundation for a
16 manufactured home. This includes piers, footings, and related support system components. HUD
17 accepts the vast majority of the MHCC's proposed installation standards regarding foundations.

18 Subpart D incorporates the provisions of Chapter 6 of the MHCC document with only minor
19 revision to substance or intent. However, HUD has made certain modifications to the MHCC's
20 proposal as outlined below.

21

22 HUD notes that the proposed document provides very prescriptive requirements for foundations
23 composed of the pier and footing type foundations currently found in manufacturer installation

1 instructions. Therefore, HUD specifically invites the public to comment on the established
2 requirements for the design of alternative foundations designs and proprietary-type foundation
3 systems. Does the Standard adequately allow for such designs? Does the document establish
4 sufficient criteria needed to design a foundation not composed of piers and footings? Does the
5 standard provide for the uniform testing of proprietary-type foundation systems? Should the
6 Installation Standards and/or program regulations address review and/or approval of alternative
7 foundation systems? How does the public envision a regulatory program, in States where HUD
8 runs an installation program, to enforce installations and designs that are not addressed in
9 manufacturer installation instructions?

10

11 *General §3285.301 (Technical)*

12 HUD accepts the intent and vast majority of language provided in the MHCC's proposed
13 installation standards. HUD is clarifying the general requirements for foundations, so that
14 designs accommodate the site conditions, home design features, and loads the home was
15 designed to withstand.

16

17 *Piers §3285.303 (Editorial)*

18 HUD accepts the vast majority of the MHCC's proposed installation standards for piers.
19 However, HUD is making a few editorial changes to this section in order to clarify its intent and
20 retain consistency with other sections of HUD's Installation Standards.

21

22 HUD specifically invites public comment on the Installation Standard established for
23 manufactured piers. Should the Installation Standards include other design characteristics or

1 standards for manufactured piers such as protection from the elements, material specifications, a
2 testing protocol, or listing requirement? HUD is not aware of a nationally recognized testing
3 protocol or listing requirements to which manufactured piers are currently tested or listed.

4

5 *Design Requirements §3285.303(c) (Technical)*

6 HUD accepts the MHCC's recommendations for design requirements but is requiring that dead
7 loads be considered in the design of foundations and is modifying the MHCC proposal to include
8 this consideration.

9

10 *Pier Loads §3285.303(d) (Technical, Editorial)*

11 The MHCC proposal indicates that the tables for pier loads shall be used in the event that the
12 manufacturer installation instructions are not available. However, manufacturers are to use the
13 Model Installation Standards as minimums in the design of its installation instructions.

14 Therefore, retaining the MHCC's Installation Standards would create a circular reference. HUD
15 recommends that the Installation Standards reflect that the manufacturer installation instructions
16 meet or exceed the specification of the Installation Standard in Tables 3285.303(d)(1)(i) through
17 (iii). To ensure that the tables are used appropriately, the design limitations used in the
18 development of the tables are reflected as footnotes.

19

20 *Caps §3285.304(b)*

21 HUD accepts the language and intent for pier caps provided in the MHCC's proposed installation
22 standards. However, HUD specifically invites public comment on the specifications for steel

1 caps. While the HUD and MHCC proposals include steel as an alternate material, minimum
2 thickness, corrosion protection and yield strength have not been specified.

3

4 *Gaps §3285.304(d) (Editorial)*

5 HUD accepts the language and intent for gaps provided in the MHCC's proposed installation
6 standards. HUD is modifying the MHCC proposal to clarify that this section addresses only gaps
7 between the frame and pier. HUD specifically invites public comment on the clarity of the
8 proposed standards for gaps.

9

10 *Clearance under homes §3285.305*

11 HUD has not modified the language or intent of the MHCC's proposal for clearance under
12 homes. However, the MHCC proposal and current HUD provision indicates minimum clearance
13 requirements only for areas of utility connections. Should the standard include minimum
14 clearance in other areas such as area required for access for inspection?

15

16 The standard specifies that no more than 25% of the lowest member of the home shall be less
17 than 12" above grade. As a practical matter, should the standard address requirements for
18 instances where more than 25% of the home is less than 12" above grade? Should there be
19 limitations or requirements on the percentage of a homes footprint that can be less than 12"
20 above grade?

21

22 *Design Procedures for Concrete Pier Blocks §3285.306 (Editorial, Technical, Consistency)*

1 HUD accepts the intent and vast majority of language provided in the MHCC's proposed
2 installation standards for the design of concrete piers. HUD is including several editorial
3 modifications to the MHCC's proposed installation standards to remove permissive Installation
4 Standards, use of appropriate terminology, and revision of proposed figure notes for consistency
5 with the standards requirements.

6
7 HUD specifically invites public comment on the standards requirements for mating line supports.
8 The MHCC proposal permits single stacked blocks to a maximum height of 54". However, this
9 contradicts limitations set for the construction of single stacked block piers (36"). Is there
10 specific substantiation for permitting single stacked mating line piers above 36"? Similarly, the
11 MHCC proposed installation standard requires that when more than 25% of the home's frame is
12 more than 67" above the top of the footing, stabilizing devices shall be specifically designed.
13 However, the requirements of the standards indicates that double stacked piers may be used for
14 up to 80". Is there specific substantiation for requiring special design for stabilization when more
15 than 25% of the home's frame is more than 67" above the top of the footing?

16

17 *Location and Spacing §3285.310 (Technical, Editorial)*

18 HUD accepts the intent and majority of language provided in the MHCC's propose installation
19 standards for location and spacing of piers. However, HUD is requiring that dead load be
20 considered in the design of foundations and is modifying the MHCC proposal as necessary to
21 include this consideration. HUD has also made several editorial modifications to the notes on the
22 figures related to mating line column piers to clarify requirements and ensure consistency.

23

1 HUD also requests public comment on the need for specific figures relating to mating wall piers,
2 as the intent of the Installation Standards is to define provisions for manufacturer installation
3 instructions and State-developed standards. The inclusion of the figures may add unnecessary
4 confusion to the Installation Standards as manufacturers and States may develop specifications
5 and other figures that correspond to the options and models produced in their locale and these
6 may create conflict with the figures and footnotes published in the Installation Standards.
7 Nonetheless, HUD recommends modifications to several notes of the figures that are intended to
8 clarify requirements and maintain consistency with the Installation Standards requirements.

9

10 *Pier Support Locations §3285.310(c) (Technical)*

11 HUD does not agree with the intent of the MHCC's proposed language for pier support
12 locations. The MHCC proposal contains requirements for single and multi-section homes
13 indicating the location and spacing of piers identified in the Installation Standards would only be
14 applicable in the event that manufacturers instructions were not available. However,
15 manufacturers are to use the Installation Standards in the design of its instructions. Therefore,
16 retaining the MHCC's Installation Standards would create a circular reference. HUD is
17 modifying the MHCC proposal to require the manufacturer installation instructions meet or
18 exceed the specifications of the Installation Standards.

19

20 *Required Perimeter Supports §3285.311 (Editorial, Technical)*

21 HUD agrees with the language provided by the MHCC's proposed installation standards and is
22 adding a requirement for perimeter supports when required by the design of the home and the
23 requirements set forth by the manufacturer in its installation instructions. Therefore, HUD's

1 recommended Installation Standards refers back to the applicable load tables and attempts to
2 differentiate when perimeter supports are required for concentrated loads at openings versus
3 perimeter supports required for intermediate support of the home.

4

5 *Footings §3285.312 (Editorial, Technical, Consistency)*

6 HUD agrees with the language and intent of the MHCC's proposed installation standards but
7 recommends that reference to compacted fill be clarified to be consistent with Subpart C. HUD
8 also recommends clarifying several notes to the figures to ensure that the figures are compatible
9 with the load tables and requirements outlined in 24 CFR part 3280.

10

11 *ABS Footing Pads §3285.312(a)(3)*

12 HUD has not modified the intent or vast majority of language for ABS footing pads. However,
13 HUD specifically invites public comment on the Installation Standards requirements for ABS
14 footing pads. Specifically, HUD is not aware of a nationally recognized testing protocol or
15 national consensus standard established for plastic-type footing pads. To what standard should
16 ABS footing pads be listed and what type of criteria should be contained in the Installation
17 Standards to ensure the products can be adequately and uniformly evaluated for review and
18 approval?

19

20 *Placement in Freezing Climates §3285.312(b) (Technical)*

21 HUD agrees with the MHCC's proposed installation standards for placement of footings in
22 freezing climates. However, HUD is modifying the MHCC proposal by requiring footings to be
23 placed below the frost line and retains the MHCC's intent by permitting the LAHJ to establish

1 the particular depth, because the depth varies with location and attempting to specify a depth is
2 not practicable since there is no national source available for local frost line depths.

3

4 In areas where a jurisdiction is not established a registered engineer, architect or geologist must
5 be retained to determine the frost line depth. The proposed modification also permits foundations
6 above the frost line provided the design is prepared by a registered professional engineer or
7 architect. HUD is also proposing that slab and insulated foundations be permitted above the frost
8 line provided they are designed by a professional engineer or architect and conforms to the
9 nationally recognized consensus standard, SEI/ASCE 32-01.

10

11 *Permanent Foundations §3285.314*

12 HUD has not modified the intent or vast majority of language for permanent foundations.

13 However, HUD specifically invites public comment on permanent foundation requirements. The

14 MHCC proposal indicates that permanent foundations are to be designed by a registered

15 professional. However, the proposal does not outline specific requirements or attempt to define a

16 permanent foundation. Should the section be expanded to include a definition and expanded

17 requirements for permanent foundations? What specifics should be considered and included as

18 model standards?

19

20 *Special Snow Load Conditions §3285.316 (Consistency, Relocate)*

21 HUD agrees with the intent and majority of language provided by the MHCC for special snow

22 load conditions. However, HUD recommends several changes the MHCC's proposal to maintain

23 consistency. HUD is making certain changes for consistency and relocating the section on

1 ramadas from the MHCC's Chapter 8 to this section because ramadas are sometimes used in
2 high snow load areas.

3

4 *SUBPART E – ANCHORAGE AGAINST WIND*

5 Subpart E sets forth requirements related to the anchorage of manufactured homes. Subpart E
6 would incorporate only the anchoring provisions from Chapter 7 of the MHCC proposal. HUD
7 accepts the vast majority of the MHCC's proposed installation standards regarding anchoring
8 against wind. However, some portions of the MHCC proposal not related to anchoring have been
9 relocated to Subparts F and I and are only referenced in this section of the preamble to avoid
10 confusion when conducting a review of the MHCC proposal consistent with the MHCC proposal
11 format. HUD has also deleted other portions of the MHCC proposal and has only included the
12 rationale in this section of the preamble to avoid confusion when conducting a review of the
13 MHCC proposal consistent with the MHCC proposal format.

14

15 Several sections contained within Chapter 7 of the MHCC's proposed installation standards do
16 not relate to anchoring against wind. These sections of the MHCC proposal contain assembly
17 provisions necessary for construction of a conforming home and are therefore removed from the
18 Installation Standards and incorporated into a new Subpart K of the Construction and Safety
19 Standards. These sections include: *Interconnection of Multi-section Homes, Crossover*
20 *Connections for Multi-section Homes, Ductwork Crossovers, Installation Close-up Finishing,*
21 *Exterior Siding Close-Up, Interior Close-Up, and Bottom Board Repair.*

22

1 Similarly, other sections contained within Chapter 7 of the MHCC's proposed installation
2 standards do not relate to anchoring against wind but also are not related to construction or
3 assembly of the home. Therefore, the following sections of the MHCC proposal have been
4 relocated as identified:

5
6 *Moving Manufactured Home to Location and Positioning of Home (Relcoated – See §3285.802)*

7 These MHCC-recommended installation standards do not relate to anchoring against wind.
8 Nonetheless, these MHCC recommendations were accepted but relocated to Subpart I because
9 they also do not establish standards for installation of the home but the provisions may be subject
10 to LAHJ requirements.

11
12 *Installation of On-Site Structures (Technical, Authority)*

13 These MHCC-recommended installation standards do not relate to anchoring against wind.
14 However, HUD relocated most of the MHCC recommendations for on-site structures to Subpart
15 I because HUD does not have any authority to regulate the design and construction of the other
16 structures but understands that the LAHJ may establish and enforce applicable requirements.
17 With respect to expanding rooms this information has been relocated to Subpart F where optional
18 features are addressed. HUD also removed references to fire separation, as it is duplicative of
19 information contained in Subpart C.

20
21 *Expanding Rooms (Relocate– see §3285.501)*

22 These MHCC-recommended installation standards do not relate to anchoring against wind.
23 Therefore, this section, relating to an optional feature, is relocated in Subpart F.

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Unfinished Gypsum Wallboard

These MHCC-recommended installation standards do not relate to anchoring against wind. HUD is deleting this MHCC proposal in its entirety because it does not provide nor clarify site assembly or construction requirements otherwise required by the Construction and Safety Standards.

HUD's Installation Standards incorporate the remained of Chapter 7 with little revision to substance or intent. However, the anchoring against wind uplift at the mating line has not been addressed by the MHCC's proposed installation standards. HUD specifically invites public comment on the absence of requirements for anchoring at mating lines of multi-section homes. How should HUD go about establishing anchoring provisions for locations along the mating line, such as column locations, for multi-section homes?

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

Anchoring Instructions §3285.401 (Authority, Technical)

HUD is in agreement with the majority of the intent and language provided by the MHCC in its installation standards proposals for anchorage design. However, HUD is modifying the MHCC proposal to require preparation of designs for alternative anchoring systems by registered professionals. HUD also believes that anchoring systems must be designed at a minimum, for the site conditions, home design features, and loads the home was designed to withstand.

1 Accordingly, HUD has modified the MHCC proposal to include appropriate Installation
2 Standards permitting alternate designs.

3
4 However, HUD invites comments on the review and approval of designs for anchoring systems
5 that are not included in manufacturer installation instructions. Do the Installation Standards
6 adequately allow for such designs? Who should review and approve such designs? Have the
7 standards adequately provided criteria for the review and evaluation of such anchoring systems?

8
9 In general HUD is revising all references in the MHCC proposal to the term “anchors” to the
10 revised term “ground anchor.” This is consistent with the MHCC’s intent and maintains
11 consistency with 24 CFR part 3280. HUD also notes that the nationally recognized protocol for
12 testing ground anchor assemblies is currently under review by an MHCC installation
13 subcommittee task force. Should the standards for ground anchors include provisions for
14 galvanic protection and does the public believe the current requirements for galvanization of
15 strapping (24 CFR part 3280.306(g)) adequate?

16
17 *Number and Location of Ground Anchors §3285.402 (Editorial, Authority, Technical)*

18 HUD accepts the intent and vast majority of language provided by the MHCC. However, HUD
19 has made several changes to this section to ensure consistency. HUD revised the standard for
20 clarity and to ensure that the ground anchor spacing identified in the charts is understood to be a
21 maximum spacing that allows closer spacing as more stringent requirements. The MHCC’s
22 proposal for selection of ground anchors for an installation site refers back to MHCC proposed
23 Chapter 5 (Soil Conditions). However, the information provided by the MHCC for soil

1 conditions did not provide information necessary to select appropriate anchors. Therefore, HUD
2 is modifying the information provided in Subpart C to ensure that soil classification can
3 adequately be used to select ground anchors. HUD is also deleting references to methods and
4 materials approved by the authority having jurisdiction because the additional requirements
5 would be subject to notice and comment rulemaking procedures and inclusion is not necessary
6 given the Installation Standards as modified and the ability of LAHJs to establish more stringent
7 requirements.

8
9 HUD is also modifying the MHCC recommendation to require stabilizer plate installation as
10 required by the ground anchor listing or certification rather than requiring plates in all
11 installations. HUD also made several editorial modifications to the table notes for the ground
12 anchor spacing and anchoring figure notes to maintain consistency with requirements of 24 CFR
13 part 3280, HUD's proposed modifications, and the intent of the MHCC.

14

15 *Severe Climatic Conditions §3285.404 (Technical, Editorial)*

16 HUD modified the MHCC proposal for installing ground anchors in frost-susceptible soil
17 locations by deleting reference to high water table locations. The depth at which the soil freezes
18 is the soil frost depth and its relationship to the water table is not readily available on a national
19 basis.

20

21 *Severe Wind Areas §3285.405 (Technical)*

22 HUD does not agree with the intent of the MHCC's proposed language for severe wind
23 locations. The MHCC proposal would require that anchoring in high wind areas be installed in

1 accordance with manufacturer installation instructions. However, this would result in a circular
2 reference, as the installation instructions must meet or exceed the model requirements of the
3 Installation Standards. Therefore, HUD is modifying this section to delete the reference to
4 manufacturers instructions and would require that anchoring systems in high wind areas be
5 designed by a professional engineer or architect in accordance with acceptable engineering
6 practice.

7

8 *SUBPART F – OPTIONAL FEATURES*

9 This subpart sets forth requirements for the installation and completion of optional features.
10 Subpart F incorporates certain portions of Chapters 7, 8 and 9 of the MHCC proposal applicable
11 to optional features. Where retained, HUD's Installation Standards incorporate the vast majority
12 of substance and intent of the applicable portions of the MHCC proposal. However, some
13 portions of the MHCC proposal have been modified and others relocated to Subpart I and other
14 portions have been deleted as identified. Areas covered in Chapter 8 of the MHCC proposal that
15 are not contained within Subpart F have either been deleted as described below or been removed
16 from the Installation Standards. HUD's specific revisions to the MHCC proposal are explained
17 herein:

18

19 *Expanding Rooms §3285.501 (Relocated, Authority, Technical)*

20 HUD is revising the section of the MHCC proposal to remove any circular reference that would
21 be created by the MHCC's proposed installation standards and to clarify that the section would
22 be applicable to the support and anchoring systems only. HUD's modifications also delete the

1 MHCC proposal addressing when manufacturer installation instructions are not available
2 because the instructions are required with each new home.

3 *Installation of Optional Features (Construction)*

4 This section of the MHCC proposal contains assembly provisions necessary for construction of a
5 conforming home and is therefore removed from the Installation Standards. Sections removed
6 for relocation in the new Subpart K of the MHCSS include: Hinged Roofs and Eaves, Garden
7 and Bay Windows, Miscellaneous Lights and Fixtures, Grounding, Exterior Lights, Ceiling Fans,
8 and Optional Siding Panels and Molding.

9

10 *Awnings and Ramadas (Technical, Relocate – see §3285.316)*

11 HUD did not accept the MHCC proposal for self-supporting awnings. However, the provision
12 for ramadas is being relocated to Subpart D where special snow load conditions are addressed.

13

14 *Ventilation Options*

15 HUD did not accept this MHCC proposal because it is not clear as to what type of ventilation
16 would be subject to these requirements (whole house, attic, crawlspace, etc.). Further, crawlspace
17 ventilation is adequately covered elsewhere in the document (3285.504) and whole house and
18 attic ventilation is subject to requirements of the Construction and Safety Standards.

19

20 *3285.502 § Optional Appliances (Technical)*

21 Provisions for the installation of the optional appliances addressed in this Subpart are
22 incorporated from Chapter 9 of the MHCC proposal. As comfort-cooling systems are not
23 required by the construction standards but are addressed therein, the installation of such optional

1 appliances is addressed in this Subpart and in new Subpart K of the Construction and Safety
2 Standards.

3
4 *Comfort Cooling Systems §3285.502(a) (Technical)*

5 HUD accepts the intent and most language provided in the MHCC's proposal for comfort
6 cooling systems. However, HUD is revising the MHCC proposal to require appliance installation
7 in accordance with the appliance manufacturers instructions because the Installation Standards
8 are models permitting establishment of more stringent requirements by an LAHJ. These
9 provisions, duplicated in Subpart K of the Construction and Safety Standards, are incorporated in
10 this section to ensure clarity and consistency.

11
12 *Air Conditioners §3285.502(a)(1) (Technical)*

13 HUD is adding general requirements to clarify that air conditioning equipment be listed for use
14 in manufactured homes and installed in accordance with the appliance manufacturers
15 instructions. HUD is adding reference to ACCA Manual J, Residential Load Calculation, for
16 incorporated by reference, as one method for calculating sensible heat gain. ACCA Manual J is
17 based on the ASHRAE Handbook of Fundamentals and is accepted for use in state and local
18 building codes. The Construction and Safety Standards incorporate provisions for air
19 conditioning or combination heating and air conditioning systems (§3280.714). While the
20 Standards require a heating system be installed in each manufactured home, they do not require
21 an air conditioning system in each home. Therefore, modifications have been made to the
22 MHCC's proposed installation standards to help clarify related issues and maintain consistency
23 with the Construction and Safety Standards and its new Subpart K also proposed in this rule.

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Heat Pumps §3285.502(a)(2) (Technical)

HUD is including provisions in the proposed rule to require that heat pumps be listed for use in manufactured homes and installed in accordance with the appliance manufacturers instructions. However, the provisions are also duplicated in the new Subpart K of the Construction and Safety Standards relating to final assembly and completion of manufactured home construction to ensure clarity and consistency.

Evaporative Coolers §3285.502(a)(3) (Technical)

HUD is modifying the MHCC proposal by requiring that evaporative cooling equipment be listed for use in manufactured homes and installed in accordance with the appliance manufacturers instructions. However, the provisions are also duplicated in the new Subpart K of the Construction and Safety Standards relating to final assembly and completion of manufactured home construction to ensure clarity and consistency.

Fireplace and Wood-Stove Chimneys and Air Inlets §3285.502(b) (Technical)

HUD accepts the MHCC's intent and majority of language provided in its proposed installation standards. However, the MHCC proposal is being modified to require that equipment to be listed for use in manufactured homes and installed in accordance with the appliance manufacturers instructions. However, the provisions are also duplicated in the new Subpart K of the Construction and Safety Standards relating to final assembly and completion of manufactured home construction to ensure clarity and consistency.

1 *Range, Cooktop, and Oven Venting §3285.502(c) (Technical, Editorial)*

2 HUD accepts the MHCC’s proposal but is revising the proposal by changing the title of the
3 section to “Venting” and is modifying the standards to make it applicable to all heat producing
4 appliances that require completion of venting.

5
6 *Clothes Dryer Exhaust Duct System §3285.502(e) (Technical)*

7 HUD agrees with the intent of the MHCC proposal but is revising the MHCC proposal by
8 requiring the exhaust duct system to conform to the appliance manufacturer’s requirements and
9 24 CFR part 3280.708 of the MHCSS. However, the provisions are also duplicated in the new
10 Subpart K of the Construction and Safety Standards relating to final assembly and completion of
11 manufactured home construction to ensure clarity and consistency.

12
13 *Crawlspace Ventilation §3285.504 (Technical, Editorial)*

14 HUD agrees that crawlspaces with a perimeter enclosure need ventilation. However, HUD is
15 modifying the MHCC proposal to remove duplication of the exceptions for ground vapor barriers
16 and modifications of ventilation requirements to be consistent with model building code
17 requirements.

18
19 *SUBPART G – PLUMBING AND FUEL SUPPLY SYSTEMS*

20 Subpart G provides for installation work completed to connect the plumbing and fuel supply
21 systems to utilities. Subpart G includes certain provisions of Chapter 10 of the MHCC’s
22 proposed installation standards. Where retained in this Subpart, HUD’s Installation Standards
23 incorporate the vast majority of substance and intent of the applicable portions of the MHCC

1 proposal. However, some portions of the MHCC proposal have been modified and relocated to
2 Subpart I while other portions have been deleted as explained below. HUD's specific revisions to
3 the MHCC proposal are explained herein:

4

5 *Proper Procedures (Relocate – See §3285.805)*

6 In general, HUD has concluded that utility connections are subject to State or LAHJ
7 requirements. HUD does not have authority to regulate utility connections or determine that any
8 particular requirements of an LAHJ are met. Therefore, HUD relocated these MHCC-proposed
9 installation standards to Subpart I.

10

11 *Water Supply §3285.601 (Technical)*

12 HUD did not accept the figure in the MHCC proposal depicting a typical water line connection.
13 The figure shows an ill-advised location of the supply connection that subjects the water line and
14 connections to physical damage. In addition, the figure does not add clarification to any of the
15 requirements outlined by the Installation Standards.

16

17 *Water Supply Crossover, Freezing Protection, Testing Procedures (Construction)*

18 These sections of the MHCC proposal contain assembly provisions necessary for construction of
19 a conforming home and are therefore removed from the Installation Standards and incorporated
20 into new Subpart K of the Construction and Safety Standards set forth in this rule.

21

22 *Drainage System (Relocate – see §3285.805 ,Construction)*

1 This section of the MHCC proposal contains assembly provisions necessary for construction of a
2 conforming home and therefore sections addressing assembly, support, slope, crossovers, and
3 testing are removed from the Installation Standards and incorporated into new Subpart K of the
4 Construction and Safety Standards set forth in this rule. Provisions for connection of the system
5 to the sewer system are relocated to Subpart I.

6

7 *Gas System (Construction, Relocate – see §3285.805)*

8 The MHCC's provisions for maximum gas supply pressure remain in this Subpart. However, the
9 MHCC proposal contains some provisions necessary for construction of a conforming home and
10 therefore sections addressing crossovers and testing that are removed from the Installation
11 Standards and incorporated into new Subpart K of the Construction and Safety Standards set
12 forth in this rule. Provisions for conversion of appliances and startup procedures have been
13 modified and relocated in Subpart I.

14

15 *Heating Oil Supply Tanks and Systems (Relocate – see §3285.806)*

16 Provisions for heating oil supply tanks and systems installed at the site are not within the scope
17 of HUD's authority. However, HUD attempts to preserve the MHCC's intent through the
18 modifications made in making these provisions recommendations for inclusion in manufacturer
19 installation instructions in Subpart I.

20

21 *Electrical Equipment/Installations (see new Subpart K of 24 CFR part 3280 and Subpart H)*

22

1 *SUBPART H – ELECTRICAL SYSTEMS AND EQUIPMENT*

2 Subpart H would establish requirements for electrical systems and equipment required to
3 complete the installation of a manufactured home. HUD understands there may be information
4 currently addressed by manufacturers installation instructions that has not been evaluated by the
5 MHCC or reviewed for inclusion in the MHCC’s proposal. Therefore, HUD specifically invites
6 public comment on this completeness of this Subpart and issues that should or should not be
7 addressed herein.

8
9 Subpart H includes general provisions requiring that wiring methods and materials be completed
10 in accordance with Article 550 of the National Electric Code, consistent with the wiring and
11 materials requirements of 24 CFR part 3280.

12
13 *SUBPART I – RECOMMENDATIONS FOR INSTALLATION INSTRUCTIONS*

14 The provisions of Subpart I incorporate recommendations from the MHCC contained in Chapter
15 10. This Subpart sets forth provisions regarding moving the manufactured home, permits, onsite
16 structures, and site connection of utilities upon completion of home installation. The vast
17 majority of recommendations from the MHCC concerning utility connections would establish
18 requirements that may be governed by LAHJs and are not within the scope of HUD’s authority.
19 HUD specifically invites public comment on the inclusion of these provisions within the
20 Installation Standards.

21
22 HUD has modified the MHCC proposal to suggest that manufacturers include provisions within
23 installation instructions that address the requirements intended by the MHCC. However, these

1 provisions are not regulated by HUD and remain suggestions for manufacturers to address within
2 installation instructions. HUD's specific recommendations for modification of the MHCC
3 proposal are explained herein:

4

5 *Recommendations for Manufacturer Installation Instructions §3285.801 (New section)*

6 Generally, work completed at the site with respect to utility connections is governed by LAHJ
7 requirements. Therefore, these Installation Standards do not attempt to address comprehensive
8 utility connection requirements. However, manufacturers are recommended to incorporate the
9 following provisions in their installation instructions, in order to protect the manufacture home as
10 constructed in accordance with the MHCSS.

11

12 *Moving the Manufactured Home to Location §3285.802 (Relocated, Editorial)*

13 This Department is relocating the MHCC proposals to address the transporter access,
14 positioning of the home, and encroachment and setback distances that may be enforced by
15 LAHJs. HUD is modifying the proposal editorially and is organizing the MHCC proposed
16 requirements related to moving the manufactured home to the installation site.

17

18 *Permits, Alterations, and On-Site Structures §3285.803 (Relocated, Editorial)*

19 This Department is relocating MHCC recommended provisions for permits, alterations, and
20 construction of on-site structures such as gaages, carports, and decks to Subpart I. While HUD
21 does not have authority to regulate the permit process or the review and approval of alterations,
22 and on-site structures, HUD recommends the inclusion of such provisions in home manufacturer
23 installation instructions.

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Drainage Structures §3285.804 (Relocated)

This Department is relocating MHCC recommended provisions for drainage structures to Subpart I. While HUD does not have authority to regulate the design and construction of ditches and culverts, HUD recommends the inclusion of appropriate recommendations in home manufacturer installation instructions.

Utility System Connection §3285.805 (Relocated, Authority)

This Department is relocating the MHCC proposal to address the drainage connector size. In addition, HUD is modifying the proposal to remove reference to requirements of an LAHJ, as such requirements are not under HUD's authority.

This Department is relocating the MHCC proposal to address gas system orifices and regulators and modified the gas appliance startup procedures. Provisions for conversion of appliances are subject to requirements of the Construction and Safety Standards and therefore remain addressed in Subpart H and new Subpart K of the Construction and Safety Standards.

HUD is modifying language regarding personnel requirements associated with gas appliance startup to make personnel subject to requirements of the LAHJ. In addition, HUD is revising 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.

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Heating Oil Systems §3285.806 (Relocated, Authority)

This Department is relocating the MHCC proposal to address the installation of heating oil systems and tank installation to this Subpart, as it is not under HUD’s authority. However, HUD has modified the MHCC proposal to include a recommended reference standard (NFPA 31). HUD is revising heating oil system requirements and is making such requirements subject to the LAHJ. However, HUD also recognizes that in jurisdictions without requirements, model provisions are necessary. For such instances HUD is proposing to incorporate by reference, the NFPA 31 standard.

The MHCC proposal for a centralized oil distribution system was not accepted, as the Installation Standards are not applicable to manufactured home community requirements. HUD is revising the MHCC proposal to require testing procedures subject to requirements of the LAHJ. However, HUD also recognizes that in jurisdictions without requirements, recommended provisions are necessary. For such instances, HUD would propose to incorporate the consensus standard, NFPA 31.

3280 Subpart K - FIELD COMPLETION OF MANUFACTURED HOME CONSTRUCTION

These Construction and Safety Standards incorporate certain provisions of Chapters 4, 7, 8, 10, and 11 of the MHCC’s proposed installation standards. HUD deems these provisions relevant and necessary to complete the assembly and construction of manufactured homes at the site to ensure compliance with the MHCSS. HUD recommends that these issues be codified in a new

1 Subpart K of the Construction and Safety Standards. HUD is specifically requesting public
2 comment on the proposed demarcation between construction and installation.

3

4 *Completion of Plumbing and Fuel Supply Systems §3280.1001 (Construction)*

5 HUD is removing provisions for utility schematics from the Installation Standards, as referenced
6 in Chapter 4 of the MHCC proposed installation standards, and is codifying the provisions in
7 Subpart K of 24 CFR part 3280 without substantive change.

8

9 *Water Supply System §3280.1001(c) (Construction, Technical)*

10 HUD is removing provisions for completion of the water supply system crossovers from the
11 Installation Standards as proposed in Chapter 10 of the MHCC and is codifying the provisions in
12 Subpart K of 24 CFR part 3280 without substantive change.

13

14 *Freezing Protection §3280.1001(c)(4) (Construction, Consistency)*

15 HUD is removing provisions for freezing protection from the Installation Standards proposed in
16 Chapter 10 of the MHCC document and is codifying the provisions in Subpart K of 24 CFR part
17 3280 with minor changes to retain consistency with freezing protection requirements already
18 contained in the MHCSS.

19

20 *Testing Procedures §3280.1001(c)(5) (Construction, Technical)*

21 The MHCC proposal, in Chapter 10 suggests that field completed piping is to be isolated for
22 testing purposes. However, HUD does not consider it practical to isolate the site completed
23 piping. Therefore, the proposed rule removes the provisions from the MHCC's proposed

1 installation standards and modifies the provision for incorporation into Subpart K of 24 CFR part
2 3280. These revised provisions require the entire system be tested upon completion, so as to verify
3 the site completed work and also serves to verify that damage did not occur between shipment of
4 the home to set-up. HUD is also including a provision that the water heater be disconnected
5 before attempting the water line test with air to ensure that damage is not done to the appliance.

6

7 *Drainage System §3280.1001(d) (Construction)*

8 HUD is removing provisions for completion of the drainage system crossovers, assembly,
9 support, slope, and testing from the Installation Standards as proposed in Chapter 10 of the
10 MHCC document and is codifying the provisions in Subpart K of 24 CFR part 3280 without
11 substantive change.

12

13 *Fuel Supply §3280.1001(e) (Construction, Technical, Regulation)*

14 HUD's Installation Standards remove the MHCC proposal to require that the gas system be
15 tested at the site. In addition, HUD did not accept the MHCC recommendation requiring
16 inspection of roof jacks as the proposed provision outlines a process that is more procedural in
17 nature. However, HUD intends to consider the issue in the development of its Installation
18 Program regulations to be issued separately.

19

20 *Duct Systems §3280.1002 (Construction, Editorial)*

21 HUD is removing provisions for completion of duct systems from the Installation Standards as
22 proposed in Chapter 7 of the MHCC and is codifying the provisions in Subpart K of 24 CFR part
23 3280 with minor changes. HUD is modifying the associated figures to remove specificity of

1 particular components or requirements in order to make the figures more universally applicable
2 and to ensure that manufacturers can design crossovers that are compatible with the models and
3 options produced. HUD is also revising the MHCC proposal by requiring that the level of
4 insulation for exposed ducts conform to the provisions of the MHCSS.

5

6 *Electrical Systems and Equipment §3280.1003 (Construction, Editorial)*

7 The majority of information from the MHCC's proposed installation standards related to
8 electrical systems and equipment has been removed from Chapter 8. HUD understands there may
9 be information currently addressed by manufacturers installation instructions (i.e. crossovers,
10 grounding, etc.) that has not been evaluated by the MHCC or reviewed for inclusion in the
11 MHCC's proposal. Therefore, HUD specifically invites public comment on this completeness of
12 the electrical provisions and issues that should or should not be addressed in either the
13 Installation Standards or the Construction and Safety Standards.

14

15 HUD is modifying the MHCC proposal for grounding of exterior or ceiling hung lighting
16 fixtures to be consistent with other requirements of 24 CFR part 3280. Specifically, the proposed
17 rule is being revised to use the term "grounding device" and by requiring identification of the
18 neutral conductor.

19

20 *Smoke Alarms §3280.1004 (Construction)*

21 HUD is removing provisions for testing of smoke alarms from the Installation Standards as
22 proposed in Chapter 11 of the MHCC document and is codifying the provisions in Subpart K of
23 24 CFR part 3280 without substantive change.

1
2 *Mating Line Gasket §3280.1005 (Construction, Technical)*
3 HUD is removing provisions for completion of a mating line gasket from the Installation
4 Standards as proposed in Chapter 7 of the MHCC and is codifying the provisions in Subpart K of
5 24 CFR 3280 with some changes. The MHCC proposal permits the gasket to be designed and
6 installed according to manufacturers instructions but does not provide a standard or performance-
7 based requirement. HUD is revising this section to provide a performance-based requirement to
8 which a manufacturer can develop a design. HUD is requesting comments on specific
9 performance criteria for mating line gaskets.

10
11 *Structural Interconnection of Multi-section Homes §3280.1006 (Construction, Technical)*
12 HUD is removing provisions for completion of structural interconnections from the Installation
13 Standards as proposed in Chapter 7 of the MHCC and is codifying the provisions in Subpart K of
14 24 CFR part 3280 with some changes. The MHCC proposal does not contain performance-based
15 nor prescriptive requirements or standards for interconnection but rather indicates that
16 interconnection be completed in accordance with the manufacturers instructions and when not
17 available in accordance with LAHJ requirements.

18
19 Since manufacturers are to use the Installation Standards in the design of their instructions,
20 retaining the MHCC's Installation Standards would create a circular reference. Therefore, HUD
21 is revising the MHCC proposal so that the interconnection conforms to all requirements of the
22 Federal Manufactured Home Construction and Safety Standards including the capability of
23 resisting the design loads for which the home was designed to withstand.

1

2 *Exterior Siding §3280.1007 (Construction)*

3 HUD is removing provisions for exterior siding finish from the Installation Standards as
4 proposed in Chapter 7 of the MHCC document and is codifying the provisions in Subpart K of
5 24 CFR part 3280 without substantive change. HUD is incorporating requirements for joints and
6 seams from Chapter 8 of the MHCC document to this section where HUD believes it to be more
7 directly applicable and also without substantive change.

8

9 *Interior Finishing §3280.1008 (Construction)*

10 HUD is removing provisions for interior finishing from the Installation Standards as proposed in
11 Chapter 7 of the MHCC document and is codifying the provisions in Subpart K of 24 CFR part
12 3280 without substantive change.

13

14 *Bottom Board Repair §3280.1009 (Construction, Editorial)*

15 HUD is removing provisions for bottom board repair from the Installation Standards as proposed
16 in Chapter 7 of the MHCC document and is codifying the provisions in Subpart K of 24 CFR
17 part 3280 with minor change. The MHCC proposal requiring an approved tape to be used to
18 repair bottom board splits or tears is being revised in the proposed rule to "...tape or patches
19 specifically designed for repairs of the bottom covering."

20

21 *Other Optional Features §3280.1010 (Construction)*

22 HUD is removing provisions for the completion of other optional features from the Installation
23 Standards as proposed in Chapter 8 of the MHCC and is codifying the provisions in Subpart K of

1 24 CFR part 3280 without substantive changes. Sections include: Hinged Roofs and Eaves,
2 Garden and Bay Windows, and Optional Siding Panels and Molding.

3

4 HUD is making a minor modification to the MHCC proposal to indicate a model standard and
5 provide for review and approval of specific designs. Specific information is being deleted
6 because the installation of such panels is subject to the design and construction requirements
7 outlined elsewhere in 24 CFR 2380.

8

9 *Comfort Cooling Equipment §3280.1011 (Construction)*

10 HUD is modifying the MHCC proposal by requiring that evaporative cooling equipment be
11 listed for use in manufactured homes and installed in accordance with the appliance
12 manufacturers instructions. However, these provisions, duplicated in Subpart F, are incorporated
13 in the section relating to final assembly and completion of manufactured home construction to
14 ensure clarity and consistency.

15

16 *Clothes Dryer Exhaust System §3280.1012 (Construction)*

17 HUD is modifying the MHCC proposal by requiring that clothes dryer exhaust duct systems be
18 installed in accordance with the appliance manufacturers instructions. However, these
19 provisions, duplicated in Subpart F of the Installation Standards, are being codified in the new
20 Subpart K of 24 CFR part 3280 without substantive changes to ensure clarity and consistency.

21

22 **VI. Findings and Certifications**

23 *Regulatory Planning and Review*

1 The proposed establishment of the Model Installation Standards are not classified as an
2 economically significant rule under Executive Order 12866 because they would not result in an
3 annual effect on the economy of \$100 million or more or a major increase in costs or prices for
4 consumers, individual industries, Federal, state, or local government agencies, or geographic
5 regions; or have significant adverse effects on competition, employment, investment,
6 productivity, innovation, or on the ability of United States-based enterprises to compete with
7 foreign-based enterprises in domestic or foreign markets. Accordingly, no regulatory impact
8 assessment is required.

9
10 The establishment of the Installation Standards impose model requirements for installation
11 instructions and the instructions are already required under 24CFR 3280.306 and contain a
12 substantial amount of the model requirements in this Proposed Rule. This proposed regulation,
13 however, has been submitted to the Office of Management and Budget for review under other
14 provisions of Executive Order 12866 as a significant regulatory action, as defined in section 3(f)
15 of the Order (although not an economically significant regulatory action under the Order). Any
16 changes made to this rule as a result of that review are identified in the docket file, which is
17 available for public inspection in the Office of the Regulations Division, Office of General
18 Counsel, Room 10276, 451 Seventh Street, SW., Washington, DC 20410-0500.

19
20 *Paperwork Reduction Act*

21 The proposed information collection requirement contained in §3285.2 has been submitted to the
22 Office of Management and Budget (OMB) for review under the Paperwork Reduction Act of
23 1995 (44 U.S.C. 3501-3520). Under this Act, an agency may not conduct or sponsor, and a

1 person is not required to respond to, a collection of information unless the collection displays a
2 valid control number. OMB has issued HUD the control number 2502-0253 for the information
3 collection requirements under the current Manufactured Housing Construction and Safety
4 Standards Program, already requiring manufacturer installation instructions in 24 CFR part
5 3280.306.

6
7 The public reporting burden for this collection of information is estimated to include the time for
8 reviewing the instructions, searching existing data sources, gathering and maintaining the data
9 needed, and completing and reviewing the collection of information.

10

11 The following table provides Information on the estimated public reporting burden:

12

Information Collection	Number of Respondents	Responses per Respondent	Total Annual Responses	Hours per Response	Total Hours
Manufacturers Installation Instructions*	78	1	78	200	15,600

13

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

16

1 In accordance with 5 CFR 1320.8(d)(1), HUD is soliciting comments from members of the
2 public and affected agencies concerning the proposed collection of information to:

- 3 (1) Evaluate whether the proposed collection of information is necessary for the proper
4 performance of the functions of the agency, including whether the information will
5 have practical utility;
- 6 (2) Evaluate the accuracy of the agency's estimate of the burden of the proposed
7 collection of information;
- 8 (3) Enhance the quality, utility, and clarity of the information to be collected; and
- 9 (4) Minimize the burden of the collection of information on those who are to respond,
10 including through the use of appropriate automated collection techniques or other
11 forms of information technology, e.g., permitting electronic submission of
12 responses.

13

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

22

23 Mark D. Menchik
24 HUD Desk Officer,

1 Office of Management and Budget
2 New Executive Office Building,
3 Washington, DC 20503
4 Mark_D._Menchik@omb.eop.gov

5 and

6 Kathleen O. McDermott
7 Reports Liaison Officer
8 Office of the Assistant Secretary for
9 Housing-Federal Housing Commissioner,
10 Department of Housing and Urban Development,
11 451 Seventh Street, SW. Room 9116,
12 Washington, DC 20410-8000
13

14 *Unfunded Mandates Reform Act*

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

20

21 *Environmental Review*

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

28

29 *Executive Order 13132, Federalism*

1 Executive Order 13132 (entitled ``Federalism'') prohibits, to the extent practicable and permitted
2 by law, an agency from promulgating a regulation that has federalism implications and either
3 imposes substantial direct compliance costs on state and local governments and is not required
4 by statute, or preempts state law, unless the relevant requirements of section 6 of the Executive
5 Order are met. This rule does not have federalism implications and does not impose substantial
6 direct compliance costs on state and local governments or preempt state law within the meaning
7 of the Executive Order. The installation standard by itself does not affect governmental
8 relationships or distribution of power. Therefore, HUD has determined that the Model
9 Installation Standards, if adopted, have no federalism implications that warrant the preparation of
10 a Federalism Assessment in accordance with Executive Order 13132.

11

12 *Regulatory Flexibility Act*

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

18 5 U.S.C. 605(b).

19

20 The Secretary, in accordance with the Regulatory Flexibility Act (5 U.S.C. 605(b)), has reviewed
21 and approved this proposed rule and in so doing certifies that the rule would not have a
22 significant economic impact on a substantial number of small entities. The Proposed Rule does
23 not provide an exemption for small entities. This proposed rule does not establish any

1 responsibilities for installers but rather establishes model requirements used by manufacturers in
2 the design of manufactured home installation instructions. However the upcoming installation
3 program, establishing procedural and enforcement regulations for the Installation Standards will
4 need further review under the requirements of the Regulatory Flexibility Act.

5
6 HUD has conducted a material and labor cost impact analysis for this rule. The potential cost
7 impact, based on a per-home cost is determined to be approximately \$118.77 multiplied by
8 135,000 homes produced in a year, is about \$16 million annually. This does not represent a
9 significant economic effect on either an industry-wide or per-unit basis. This small increase in
10 cost associated with this proposed rule would not impose a significant burden for a small
11 business.

12
13 Notwithstanding HUD's determination that this rule would not have a significant economic effect
14 on a substantial number of small entities, HUD specifically invites comments regarding any less
15 burdensome alternatives to this rule that will meet HUD's objectives..

16
17 *Catalogue of Federal and Domestic Assistance*

18 The Catalogue of Federal and Domestic Assistance number is 14.171

19

20 **List of Subjects**

21 24 CFR Part 3280

22 Housing standards, Manufactured homes, Construction, Safety.

23

1 24 CFR Part 3285

2 Housing standards, Manufactured homes, Installation.

3

4 Accordingly, for the reasons discussed in this preamble, HUD proposes to add 24 CFR part
5 3285, as follows:

6

7 **PART 3285 – MODEL MANUFACTURED HOME INSTALLATION STANDARDS**

8 1. The Authority citation for 24 CFR part 3285 reads as follows:

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

10

11 2. Add new part 3285 to 24 CFR to read as follows:

12

13 **SUBPART A – GENERAL**

14 **Sec.**

15 **3285.1 Administration.**

16 **3285.2 Manufacturer Installation Instructions.**

17 **3285.3 Alterations during Initial Installation.**

18 **3285.4 Referenced Publications.**

19 **3285.5 Definitions.**

20 **SUBPART B – PRE-INSTALLATION CONSIDERATIONS**

21 **3285.101 Installation of Manufactured Homes in Flood Hazard Areas.**

22 **3285.102 Design Zone Maps.**

23 **3285.103 Moving Manufactured Home to Location.**

- 1 **3285.104 Permits, Other Alterations, and On Site Structures.**
- 2 **SUBPART C – SITE PREPARATION**
- 3 **3285.201 Fire Separation Distance.**
- 4 **3285.202 Soil Conditions.**
- 5 **3285.203 Soil Classification and Bearing Capacity.**
- 6 **3285.204 Drainage.**
- 7 **3285.205 Ground Moisture Control.**
- 8 **SUBPART D – FOUNDATIONS**
- 9 **3285.301 General.**
- 10 **3285.302 Flood Hazard Areas.**
- 11 **3285.303 Piers.**
- 12 **3285.304 Configuration.**
- 13 **3285.305 Clearance under Homes.**
- 14 **3285.306 Design Procedures for Concrete Block Piers.**
- 15 **3285.307 Perimeter support piers.**
- 16 **3285.308 Manufactured Piers.**
- 17 **3285.309 Elevated Homes.**
- 18 **3285.310 Pier Location and Spacing.**
- 19 **3285.311 Required Perimeter Supports.**
- 20 **3285.312 Footings.**
- 21 **3285.313 Combination Systems.**
- 22 **3285.314 Permanent Foundations.**
- 23 **3285.315 Foundations for Flood Hazard Areas.**

- 1 **3285.316 Special Snow Load Conditions.**
- 2 **SUBPART E – ANCHORAGE AGAINST WIND**
- 3 **3285.401 Anchoring Instructions.**
- 4 **3285.402 Ground Anchor Installations.**
- 5 **3285.403 Sidewall or Over-the-Roof Straps.**
- 6 **3285.404 Severe Climatic Conditions.**
- 7 **3285.405 Severe Wind Zones.**
- 8 **3285.406 Flood Hazard Areas.**
- 9 **SUBPART F – OPTIONAL FEATURES**
- 10 **3285.501 Home Installation Manual Supplements.**
- 11 **3285.502 Expanding Rooms.**
- 12 **3285.503 Optional Appliances.**
- 13 **3285.504 Skirting.**
- 14 **3285.505 Crawlspace Ventilation.**
- 15 **SUBPART G – DUCTWORK AND PLUMBING AND FUEL SUPPLY SYSTEMS**
- 16 **3285.601 Field Assembly.**
- 17 **3285.602 Utility Connections.**
- 18 **3285.603 Water Supply.**
- 19 **3285.604 Drainage System.**
- 20 **3285.605 Fuel Supply System.**
- 21 **3285.606 Ductwork Connections.**
- 22 **SUBPART H – ELECTRICAL SYSTEMS AND EQUIPMENT**
- 23 **3285.701 Electrical Systems.**

1 **3285.702 Miscellaneous Lights and Fixtures.**

2 **3285.703 Smoke Alarms.**

3 **3285.704 Telephone and Cable TV.**

4 **SUBPART I – EXTERIOR AND INTERIOR CLOSE-UP**

5 **3285.801 Exterior Close-Up.**

6 **3285.802 Structural Interconnections.**

7 **3285.803 Interior Close-Up.**

8 **3285.804 Bottom Board Repair.**

9 **SUBPART J – RECOMMENDATIONS FOR MANUFACTURER INSTALLATION**

10 **INSTRUCTIONS**

11 **3285.901 Recommendations for Manufacturer Installation Instructions.**

12 **3285.902 Moving Manufactured Homes to Location.**

13 **3285.903 Permits, Alterations, and On-Site Structures.**

14 **3285.904 Drainage Structures.**

15 **3285.905 Utility Systems Connection.**

16 **3285.906 Heating Oil Systems.**

17 **3285.907 Telephone and Cable TV.**

18

19 **SUBPART A – GENERAL**

20 **§3285.1 Administration.**

21 (a) **Scope.** These Model Installation Standards provide requirements for the initial
22 installation of new manufactured homes in applicable States. The model standards set forth
23 herein have been established to accomplish certain basic objectives and are not to be construed

1 as relieving manufacturers or installers of responsibility for compliance with local ordinances,
2 codes and regulations. To the extent that local or State requirements exist which are more
3 stringent than these Model Installation Standards, the more stringent requirement applies.

4 **(b) Applicability.** The manufactured homes covered by this standard must comply with
5 requirements of the U.S. Department of Housing and Urban Development's (HUD's) Federal
6 Manufactured Home Construction and Safety Standards (MHCSS) Program, as set forth in 24
7 CFR part 3280, *Manufactured Home Construction and Safety Standards*, and 24 CFR part 3282,
8 *Manufactured Home Procedural and Enforcement Regulations*.

9
10 **§ 3285.2 Manufacturer Installation Instructions.**

11 A manufacturer must provide with each new manufactured home, DAPIA-approved
12 designs and instructions set forth by these Model Installation Standards for the installation of the
13 manufactured home. The manufacturer installation instructions must provide protection to
14 residents of the manufactured homes that equals or exceeds the protection provided by these
15 Model Installation Standards and must not take the manufactured home out of compliance with
16 the Federal Manufactured Home Construction and Safety Standards (MHCSS). The
17 manufacturer installation instructions are to apply under all of the following conditions:

- 18 (a) To items not covered by these Installation Standards;
- 19 (b) Where the manufacturer installation instructions provide a specific method of
20 performing a specific operation or assembly; and
- 21 (c) Where the manufacturer installation instructions exceed this standard.
- 22

23 **§ 3285.3 Alterations during Initial Installation.**

1 Additions, modifications, replacement or removal of any equipment or installation,
2 after sale by a dealer or distributor but prior to completion of assembly or installation by an
3 installer which may affect the construction, fire safety, occupancy, plumbing, heat-producing or
4 electrical system during the course of the installation of a new manufactured home must equal or
5 exceed the protections and requirements of this Installation Standard, the MHCSS (24 CFR part
6 3280) and the Manufactured Home Procedural and Enforcement Regulations (24 CFR part
7 3282). Alterations must not affect the ability of the basic manufactured home to comply with the
8 MHCSS and must not impose additional loads to the manufactured home or its foundation
9 without design by a registered engineer or register architect, or expressly included in the
10 manufactured home manufacturer installation instructions.

11

12 **§ 3285.4 Referenced Publications.**

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

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

23 **ACCA Publication.** Air Conditioning Contractors of America, 2800 Shirlington Road, Suite
24 300, Arlington, VA 22206.

- 1 ACCA Manual J, *Residential Load Calculation*, 8th Edition.
- 2 **ASHRAE Publication.** Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791
- 3 Tullie Circle, NE, Atlanta, GA 30329–2305.
- 4 *ASHRAE Handbook of Fundamentals*, 2001.
- 5 **ASTM Publications.** American Society for Testing and Materials, 100 Barr Harbor Drive, West
- 6 Conshohocken, PA 19428-2959.
- 7 ASTM C 90, *Standard Specification for Loadbearing Concrete Masonry Units*, 2002.
- 8 ASTM D1586, *Test Method for Penetration Test and Split-Barrel Sampling of Soils*, 1999.
- 9 ASTM D 2487, *Practice for Classification of Soils for Engineering Purposes (Unified Soil*
- 10 *Classification System)*, 2000.
- 11 ASTM D 2488, *Practice for Description and Identification of Soils (Visual-Manual Procedure)*,
- 12 2000.
- 13 ASTM D 3953, *Standard Specification for Strapping, Flat Steel and Seals*, 1997.
- 14 **AWPA Publications.** American Wood-Preservers' Association, P.O. Box 5690, Granbury, TX
- 15 76049.
- 16 AWPA C2, *Standard for the Preservative Treatment of Lumber, Timber, Bridge Ties and Mine*
- 17 *Ties, by Pressure Processes*, 2001.
- 18 AWPA C9, *Plywood — Preservative Treatment by Pressure Processes*, 2000.
- 19 **NFPA Publications.** National Fire Protection Association, 1 Batterymarch Park, Quincy, MA
- 20 02169-7471.
- 21 NFPA 31, *Standard for the Installation of Oil Burning Equipment*, 2001.
- 22 NFPA 70, *National Electric Code*, 1996.

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

3 **SEI/ASCE Publication.** Structural Engineering Institute/American Society of Civil Engineers,
4 1801 Alexander Bell Dr., Reston, VA 20191

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

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

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

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

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

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

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

14

15 **§ 3285.5 Definitions.**

16 The definitions contained in this section apply to the terms used in this Installation
17 Standard. Where terms are not included, common usage of the terms apply. The Definitions are
18 as follows:

19 **Anchoring Equipment.** Ties, straps, cables, turnbuckles, chains, and other approved
20 components, including tensioning devices, that are used to secure a manufactured home to
21 ground anchors.

22

1 **Anchoring System.** A combination of anchoring equipment and ground anchors that
2 will, when properly designed and installed, resist the uplift, overturning, and lateral forces on the
3 manufactured home.

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

6 **Arid Region.** An area subject to 15 in. or less of annual rainfall.

7 **Base Flood.** The flood having a 1 percent chance of being equaled or exceeded in any
8 given year.

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

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

14 **Design Approval Primary Inspection Agency (DAPIA).** A state or private
15 organization that has been accepted by the Secretary in accordance with the requirements of 24
16 CFR part 3282, Subpart H, which evaluates and approves or disapproves manufactured home
17 designs and quality control procedures.

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

20 **Flood Hazard Area.** The greater of either (1) the special flood hazard area shown on
21 the flood insurance rate map or (2) the area subject to flooding during the design flood and
22 shown on a LAHJ's flood hazard map, or otherwise legally designated.

23 **Flood Hazard Map.** A map delineating the flood hazard area and adopted by a LAHJ.

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

2 **Ground Anchor.** Any device or other means designed to transfer home anchoring
3 loads to the ground.

4 **Installation Instructions.** Instructions provided by the home manufacturer that
5 accompany each new manufactured home and detail the home manufacturer requirements for
6 support and anchoring systems, and other work completed at the installation site to comply with
7 these Installation Standards and the Construction and Safety Standards in 24 CFR part 3280.

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

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

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

21 **Local Authority Having Jurisdiction (LAHJ).** The state, city, county, city and
22 county, municipality, utility, or organization that has local responsibilities that must be complied

1 with during the installation of a manufactured home and those local responsibilities are outside
2 the coverage of the MHCSS or these Installation Standards.

3 **Lowest Floor.** The floor of the lowest enclosed area of a manufactured home. An
4 unfinished or flood resistant enclosure, used solely for vehicle parking, home access or limited
5 storage, must not be considered the lowest floor, provided the enclosed area is not constructed so
6 as to render the home in violation of the flood-related provisions of this standard.

7 **Manufactured Home.** A structure, transportable in one or more sections, which, in the
8 traveling mode, is eight body feet or more in width or forty body feet or more in length, or, when
9 erected on site, is three hundred twenty or more square feet, and which is built on a permanent
10 chassis and designed to be used as a dwelling with or without a permanent foundation when
11 connected to the required utilities, and includes the plumbing, heating, air-conditioning, and
12 electrical systems contained therein; except that such term shall include any structure which
13 meets all the requirements of this paragraph except the size requirements and with respect to
14 which the manufacturer voluntarily files a certification required by the Secretary and complies
15 with the standards established under this chapter; and except that such term shall not include any
16 self-propelled recreational vehicle;

17 **Manufactured Home Gas Supply Connector.** A listed connector designed for
18 connecting the manufactured home to the gas supply source.

19 **Pier.** That portion of the support system between the footing and the manufactured
20 home, exclusive of shims. Types of piers include, but are not limited to, the following: (1)
21 manufactured steel stands; (2) pressure-treated wood; (3) manufactured concrete stands; (4)
22 concrete blocks; (5) and foundation walls.

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

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

5 **Skirting.** A weather-resistant material used to enclose the perimeter of the home from
6 the bottom of the manufactured home to grade.

7 **Stabilizing Devices.** All components of the anchoring and support systems, such as
8 piers, footings, ties, anchoring equipment, ground anchors, or any other equipment, materials and
9 methods of construction, that support and secure the manufactured home to the ground.

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

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

14 **Tie.** Straps, cable, or securing devices used to connect the manufactured home to
15 ground anchors.

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

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

20 **Vertical Tie.** A tie intended to resist uplifting and overturning forces.

21 **Working Load.** The maximum recommended load that shall be exerted on a
22 component or system. The ultimate load of a component or system divided by an appropriate
23 factor of safety.

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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 requirements 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 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 may 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 NFIP Guidance. Refer to FEMA 85–85, *Manufactured Home Installation in Flood Hazard Areas*.

1 **§ 3285.102 Design Zone Maps.**

2 The design zone maps are to be those identified in 24 CFR part 3280.

3

4 **§3285.103 Moving Manufactured Home to Location.**

5 Refer to §3285.902 for considerations pertinent to moving the manufactured home to
6 the site of installation.

7

8 **§3285.104 Permits, Other Alterations, and On-Site Structures.**

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

11

12 **SUBPART C – SITE PREPARATION**

13

14 **§ 3285.201 Fire Separation Distance.**

15 Fire separation distances must be in accordance with requirements of Chapter 6 of NFPA
16 501A-03.

17

18 **§ 3285.202 Soil Conditions.**

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

23

1 **§ 3285.203 Soil Classification and Bearing Capacity.**

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

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

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

8

1 **(3) Table – Soil Classification and Bearing Capacities.** If the soil class or bearing
2 capacity cannot be determined by test or soil records, but its type can be identified, the soil
3 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 Value (inch-pounds)-
Classification Number	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+	More than 550
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 still clays; alluvial fills	1000	18 – 23	276 – 350
4B	CH, MH ²	Loose to medium dense sands; firm to still clays; alluvial fills	1000	12 – 17	175 – 275
5	OL, OH, PT	Uncompacted fill; peat; organic clays	Refer to 3285.203(b)	0 – 11	Less than 175

4 Notes:

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

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

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

5

6 **§ 3285.204 Drainage.**

7 **(a) Purpose.** Drainage must be provided that prevents water build-up under the home,
8 shifting or settling of the foundation, dampness in the home, damage to siding and bottom board,
9 buckling of walls and floors, and problems with the operation of doors and windows.

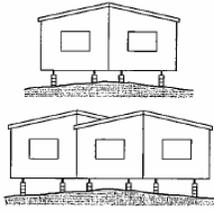
10 **(b)** The home site must be graded to permit water to drain from under the home. Refer to
11 Figure 3285.204.

12 **(c)** All drainage must be diverted away from the home and must slope a minimum of ½”
13 per foot away from the foundation for the first 10 feet.

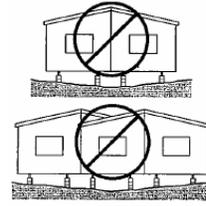
14 **(d) Sloped Site Considerations.** The home, where sited must be protected from surface
15 runoff from the surrounding area.

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

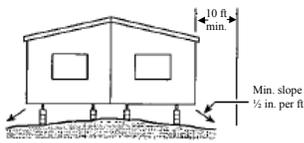
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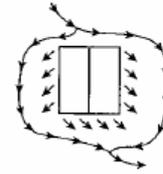
Crown and grade site to slope away from the home



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



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

2 **FIGURE 3285.204 Grading and Drainage.**

3 **(f) Gutters and Downspouts.** When gutters and downspouts are installed, the runoff
4 must be directed away from the home.

5

6 **§ 3285.205 Ground Moisture Control.**

7 **(a) Vapor Retarder.** If the space under the home is to be enclosed with skirting or other
8 material, a vapor retarder that keeps ground moisture out of the home must be installed except in
9 arid regions with dry soil conditions (Refer to 3285.504).

10 **(b) Acceptable Types of Ground Cover.** A minimum of 6-mil polyethylene sheeting or
11 its equivalent must be used.

12 **(c) Proper Installation. (1)** The entire area under the home must be covered with the

1 vapor retarder as noted in 3285.205(a) and must be overlapped at least 12 in. at all joints.

2 (2) The ground cover must be placed directly beneath footings, where footings are
3 permitted at-grade.

4

5 **SUBPART D – FOUNDATIONS**

6

7 **§ 3285.301 General.**

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

11 (b) Installations proposing different detailed specifications other than provided in Subpart
12 D (such as block size or loads) must be verified by engineering data and must comply with
13 3285.301(d).

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

16 (d) **Alternative Foundation Systems.** Alternative foundation systems or designs, when
17 approved by a DAPIA, are permitted by 3285.301(d)(1) or 3285.301(d)(2).

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

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

22

23 **§ 3285.302 Flood Hazard Areas.**

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

3

4 **§ 3285.303 Piers.**

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

7 (b) **Acceptable Piers — Materials Specification.** (1) Piers are permitted to be concrete
8 blocks, pressure-treated wood having 0.60-pcf retention in accordance with 3285.312(a)(2), or
9 adjustable metal or concrete piers

10 (2) Manufactured piers must be listed or labeled for the required horizontal and/or
11 vertical load capacity.

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

15 (2) Center beam/mating wall blocking must be required for multi-section homes in
16 accordance with 3285.303(d)(1)(ii) and 3285.303(d)(1)(iii) and Figures 3285.310(a),
17 3285.310(b), and 3285.310(c).

18 (d) **Pier Loads.** (1) Home manufacturer installation instructions must require not less
19 than the design support layout configurations or poured footing sizes for the pier loads, pier
20 spacing and soil bearing capacities and support conditions indicated in 3285.303(d)(1)(i),
21 3285.303(d)(1)(ii), 3285.303(d)(1)(iii), and Figure 3285.312(c).

1 (i) Table – Frame Blocking Only/Perimeter Support Not Required Except at
2 Openings.

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

3 Notes:

- 4 1. Refer to 3285.312(d) for poured footing design by using the noted loads.
- 5 2. Refer to Figure 3285.312 for 16 in. × 16 in. footing pyramids layout designs. Shaded areas indicate 8 in.
- 6 thickness.
- 7 3. Maximum nominal unit width = 16 ft.

1

(ii) Table – Frame Plus Perimeter Blocking/Perimeter Blocking Required.

16 in. × 16 in. Concrete Footing Layouts									
Maximu m Pier Spacing	Roof Live Load (psf)	Location	Load (lb)	1000 psf	1500 psf	2000 psf	2500 psf	3000 psf	4000 psf
		Frame	1,400	1	1	1	1	1	1
	20	Perimeter	1,900	2	1	1	1	1	1
		Mating	3,200	2	2	1	1	1	1
		Frame	1,400	1	1	1	1	1	1
4 ft 0 in.	30	Perimeter	2,300	2	1	1	1	1	1
		Mating	3,800	3	2	2	1	1	1
		Frame	1,400	1	1	1	1	1	1
	40	Perimeter	2,600	2	1	1	1	1	1
		Mating	4,400	3	2	2	1	1	1
		Frame	1,900	2	1	1	1	1	1
	20	Perimeter	2,700	2	2	1	1	1	1
		Mating	4,700	3	2	2	2	1	1
		Frame	1,900	2	1	1	1	1	1
6 ft 0 in.	30	Perimeter	3,200	3	2	1	1	1	1
		Mating	5,600	4	3	2	2	2	1
		Frame	1,900	2	1	1	1	1	1
	40	Perimeter	3,700	3	2	2	1	1	1
		Mating	6,500	4	3	2	2	2	1
		Frame	2,400	2	1	1	1	1	1
	20	Perimeter	3,500	2	2	1	1	1	1
		Mating	6,100	4	3	2	2	2	1
		Frame	2,400	2	1	1	1	1	1

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

1 Notes:

2 1. Refer to 3285.312(d) for poured footing design by using the noted loads.

3 2. Refer to Figure 3285.312 for 16 in. × 16 in. footing pyramids layout designs. Shaded areas indicate 8 in.

4 thickness.

5 3. Mating wall perimeter piers and footings only required under full height mating walls supporting roof loads.

6 4. Maximum nominal unit width = 16 ft.

1 (iii) Table – Ridge Beam Span Footing Capacity.

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

2 Notes:

3 1. Refer to 3285.312(d) for poured footing design by using the noted loads.

- 1 2. Refer to Figure 3285.312 for 16 in.×16 in. footing pyramids layout designs. Shaded areas indicate 8 in. thickness.
2 3. Maximum nominal unit width = 16 ft.
3 4. Loads listed are maximum column loads for both sections.

4

5 (2) Manufactured piers must be rated at least to the loads given in, 3285.303(d)(1)(i),
6 3285.303(d)(1)(ii), and 3285.303(d)(1)(iii), and locally constructed piers must be designed to
7 transmit these loads safely as required by 3285.301.

8

9 **§ 3285.304 Configuration.**

10 (a) **Concrete Blocks.** (1) Concrete block piers must be installed in accordance with
11 Figures 3285.306(a) and 3285.306(b).

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

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

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

17 (b) **Caps.** (1) Structural loads must be evenly distributed across capped hollow block
18 piers, as shown in Figures 3285.306(a) and 3285.306(b).

19 (2) Caps must be of solid masonry of at least 4 in. nominal thickness, or of dimensional
20 lumber at least 2 in. nominal thickness, or of steel.

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

22 (c) **Gaps.** (1) When gaps between the bottom of the supported beam and the foundation
23 support system occur during installation, any combination of the following applies.

24 (2) Nominal 4 in. × 6 in shims are permitted to be used to level the home and fill any

1 gaps between the base of the I-beam and the top of the pier cap; or

2 **(3)** Shims must be used in pairs as shown in Figure 3285.306(a) and 3285.306(b), and
3 shims must be driven in tightly so that they do not occupy more than 1 in. of vertical space; or

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

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

7

8 **§ 3285.305 Clearance under Homes.**

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

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

13

14 **§ 3285.306 Design Procedures for Concrete Block Piers.**

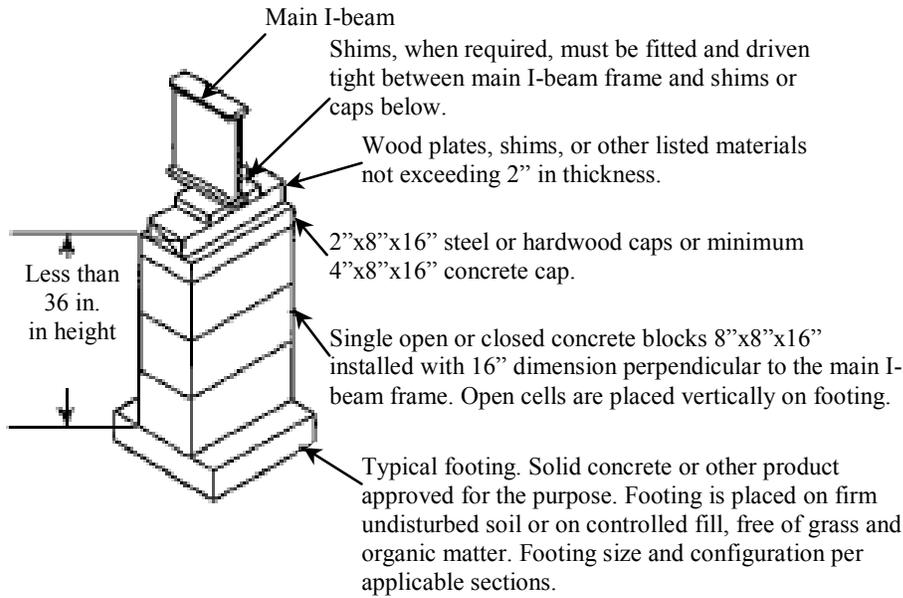
15 **(a) Frame Piers Less Than 36 in. High. (1)** Frame piers less than 36 in. high must be
16 permitted to be constructed of single, open, or closed-cell concrete blocks, 8 in. × 8 in. × 16 in.

17 **(2)** The frame piers must be installed so that the long sides are at right angles to the
18 supported I-beam, as shown in Figure 3285.307(a).

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

20 **(4)** Horizontal offsets must not exceed 1/2 in. top to bottom.

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



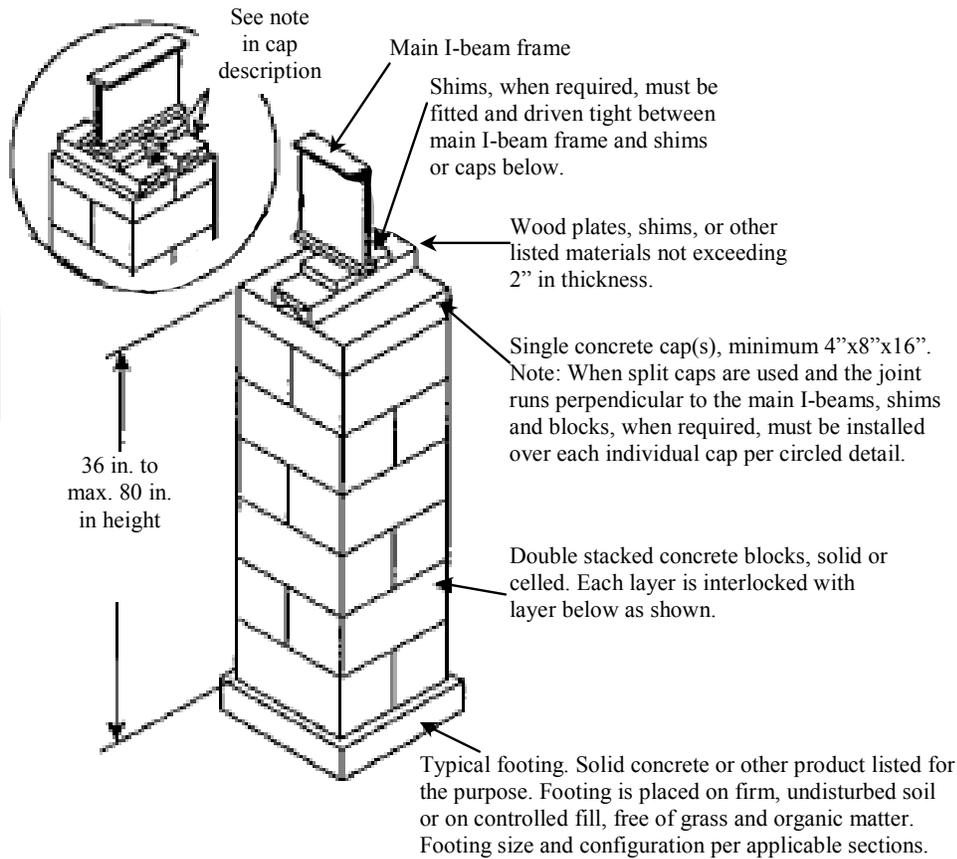
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2 **Figure 3285.306(a) Typical Footing and Pier Installation, Single Concrete Block.**

3

4 **(b) Frame Piers 36 in. to 80 in. High and Corner Piers.** All frame piers between 36 in.
5 and 80 in. high and all corner piers over three blocks high must be constructed out of double,
6 interlocked concrete blocks as shown in Figure 3285.306(b).

7



1

2 **Figure 3285.306(b) Typical Footing and Pier Installation, Double Concrete Block.**

3

4 (c) **All Piers over 80 in. High.** Piers over 80 in. high must be designed by a registered
5 professional engineer or register architect in accordance with acceptable engineering practice.

6

7 **§ 3285.307 Perimeter support piers.**

8 (a) Piers required at mating line supports, perimeter piers, and piers at exterior wall
9 openings must be permitted to be constructed of single open- or closed-cell concrete blocks, 8 in.

10 × 8 in. × 16 in. to a maximum height of 54 inches as shown in Figure 3285.306(a).

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

3

4 **§ 3285.308 Manufactured Piers.**

5 Manufactured piers must be listed and labeled and installed to the pier manufacturer
6 installation instructions.

7

8 **§ 3285.309 Elevated Homes.**

9 When more than one-fourth of the area of a home is installed so that the bottoms of the
10 main frame members are more than 67 in. above the top of the footing, the home stabilizing
11 devices must be designed by a registered professional engineer or registered architect in
12 accordance with acceptable engineering practice.

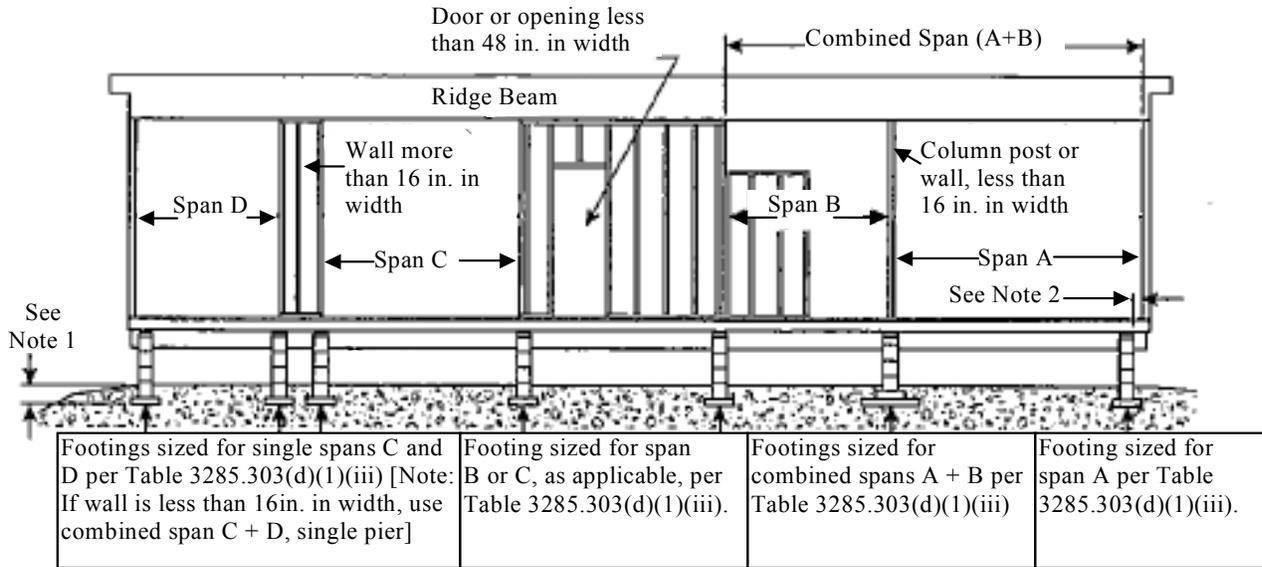
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14 **§ 3285.310 Pier Location and Spacing.**

15 **(a)** The location and spacing of piers must depend upon the dimensions of the home, the
16 live and dead loads, the type of construction (single- or multi-section), and such other factors as
17 the location of doors or other openings.

18 **(b)** Mating line and column pier supports must be in accordance with this subpart and
19 Figures 3285.310(a) through 3285.310(c).

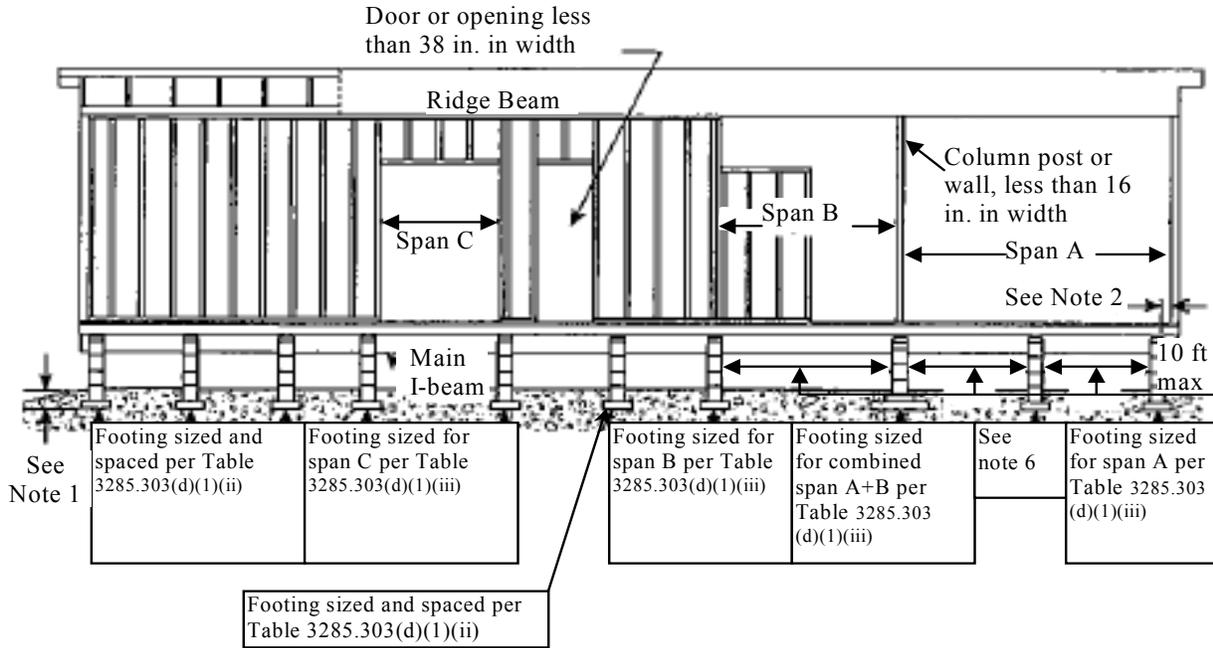
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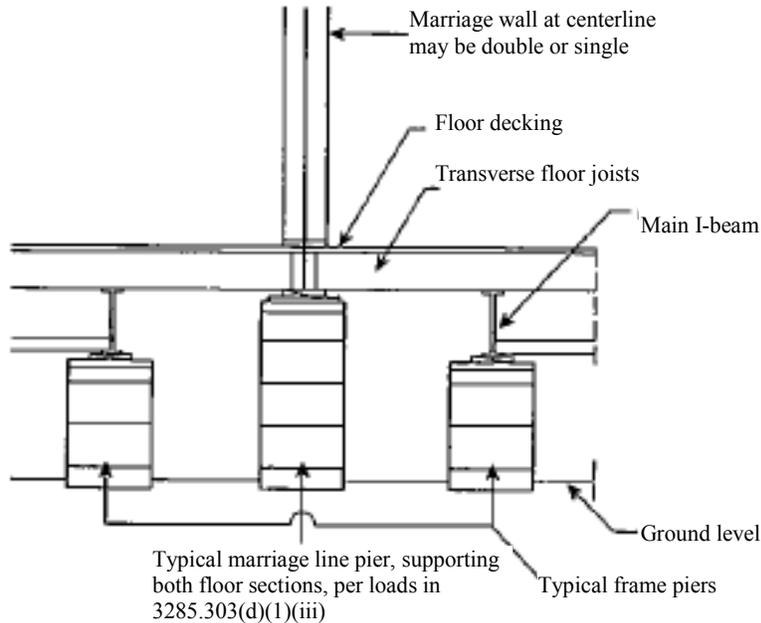
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2 Notes:

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

9 **Figure 3285.310(a) Typical Mating Line Column Pier and Mating Wall Support when**
10 **Frame Only Blocking is Required.**



- 1
- 2 Notes:
- 3 1. Bottom of footings shall be below frost depth.
- 4 2. Piers may be offset 6 in. in either direction along supported members to allow for plumbing electrical, mechanical
- 5 equipment, crawlspaces, or other devices.
- 6 3. Single stack concrete block pier loads shall not exceed 10,000 lb
- 7 4. Piers are not required at openings in mating wall less than 38 in.
- 8 5. When a full-height mating wall does not support the ridge beam, this area is considered an open span – Span B.
- 9 6. In areas where the open span is greater than 10 ft., intermediate piers and footings must be placed at maximum 10
- 10 ft. on center.
- 11 7. Prefabricated piers must not exceed their approved or listed maximum horizontal or vertical design loads.
- 12 8. Column piers are in addition to piers required under full-height mating walls.
- 13 **Figure 3285.310(b) Typical Mating Line Column Pier and Mating Wall Support When**
- 14 **Perimeter Blocking is Required.**



1

2 Notes:

3 1. Mating line and mating line column support piers are installed with the long dimension of the concrete block
4 perpendicular to the rim joists.

5 2. Pier and footing designed to support both floor sections. Loads as listed in 3285.303(d)(1)(iii) are total column
6 loads for both sections.

7 **Figure 3285.310(c) Typical Mating Line Column and Piers.**

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

10 (d) **Pier Support Locations.** Home manufacturer installation instructions must show pier
11 supports at the locations and spacing identified in Figures 3285.312(a) and 3285.312(b), as
12 applicable, unless alternative designs are provided by a professional engineer or registered
13 architect in accordance with acceptable engineering practice.

14

15 **§ 3285.311 Required Perimeter Supports.**

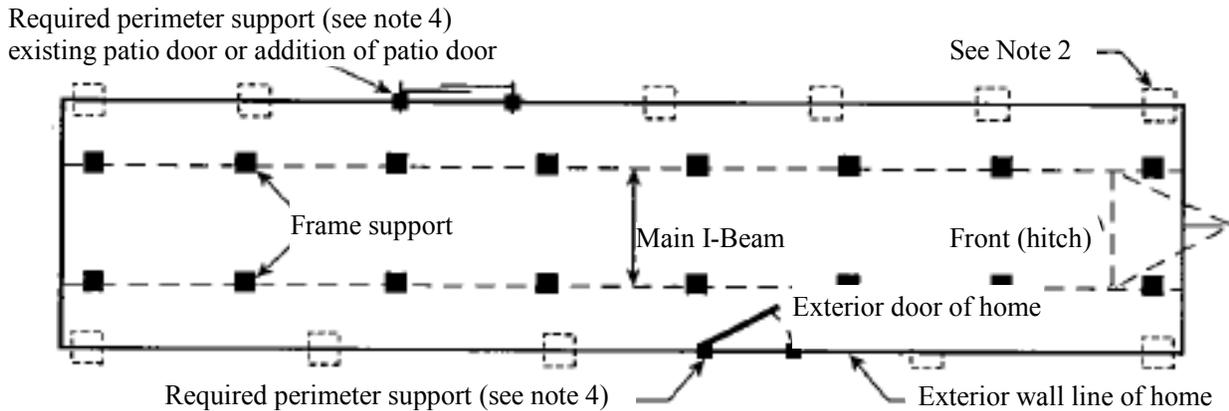
16 (a) Pier supports must be placed on both sides of side wall exterior doors and any other

1 side wall openings greater than 48 in. (such as entry and sliding glass doors), and under porch
2 posts, factory installed fireplaces, and wood stoves).

3 (b) Other perimeter supports must be required in accordance with 3285.303(d)(1)(i),
4 3285.303(d)(1)(ii), or 3285.303(d)(1)(iii), as applicable.

5
6 **§ 3285.312 Footings.**

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

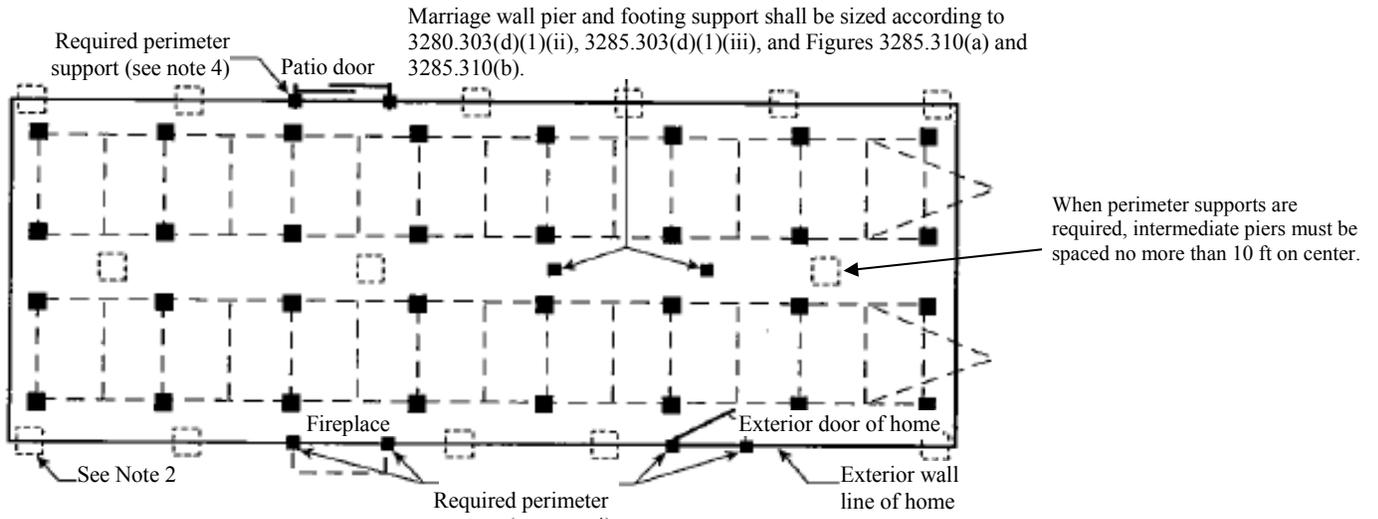


11
12 Notes:

- 13 1. Refer to 3285.303(d)(1)(i) for pier and footing requirements when frame blocking only is used.
- 14 2. In addition to blocking required by 3285.311, refer to 3285.303(d)(1)(ii).
- 15 3. End piers may be set back a maximum of 24 in. from inside edge of end walls.
- 16 4. Place piers on both sides of entry doors; at any other openings greater than 48 in. width, such as patio or atrium
- 17 doors; and under porch posts, factory installed fireplaces, and wood stoves.

18 **Figure 3285.312(a) Typical Blocking Diagram for Single Section Homes.**

1



2 Notes:

- 3 1. Refer to 3285.303(d)(1)(i) for pier and footing requirements when frame blocking only is used.
- 4 2. In addition to blocking required by 3285.311, refer to 3285.303(d)(1)(ii) and 3285.303(d)(i)(iii).
- 5 3. End piers may be set back a maximum of 24 in. from inside edge of end walls.
- 6 4. Place piers on both sides of entry doors; at any other openings greater than 48 in. width, such as patio or atrium
- 7 doors; and under porch posts, factory installed fireplaces, and wood stoves.

8 **Figure 3285.312(b) Typical Blocking Diagram for Single Multi-section Home.**

9

10 **(b) Acceptable Types of Footings. (1) Concrete.** Footings must be permitted to consist

11 of either of the following: (1) 4 in. nominal precast concrete pads meeting or exceeding ASTM C

12 90-02, *Standard Specification for Load Bearing Concrete Masonry Units*, without

13 reinforcement, with at least a 28-day compressive strength of 4000 psi; and (2) 6 in. nominal

14 poured-in-place concrete pads, slabs, or ribbons with at least a 28-day compressive strength of

15 3000 psi

16 **(2) Pressure-Treated Permanent Wood. (i)** A minimum of two layers of nominal 2 in.

17 thick pressure-treated wood having 0.60-pcf (9.6 kg/m³) retention in accordance with AWP

1 C2-02, *Standard for the Preservative Treatment of Lumber, Timber, Bridge Ties and Mine Ties,*
2 *by Pressure Processes*, or AWWA C9-00, *Plywood — Preservative Treatment by Pressure*
3 *Processes*, with the long dimensions of the second layer placed under the pier and perpendicular
4 to that of the first layer, must be used.

5 (ii) Pressure-treated wood footings must be pressure treated on all six sides and shall be
6 permitted to consist of nominal 2 in. thick pressure-treated wood in accordance with AWWA C2-
7 02, or a single layer of a minimum thickness of $\frac{3}{4}$ in. and a maximum size of 16 in. \times 16 in., or,
8 for larger sizes, two pieces of nominal $\frac{3}{4}$ in. thick plywood (APA-rated sheathing, exposure 1,
9 PS1) pressure-treated for soil contact in accordance with AWWA C9-00.

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

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

13 (c) **Placement in Freezing Climates. (1) Conventional Footings.** Footings placed in
14 freezing climates must be placed below the frost line depth for the site unless an insulated
15 foundation or monolithic slab is used (Refer to 3285.312(b)(2) and 3285.312(b)(3)). When the
16 frost line depth is not available from the LAHJ, a registered professional engineer, a registered
17 architect, or a registered geologist must be consulted to determine the required frost line depth
18 for the site.

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

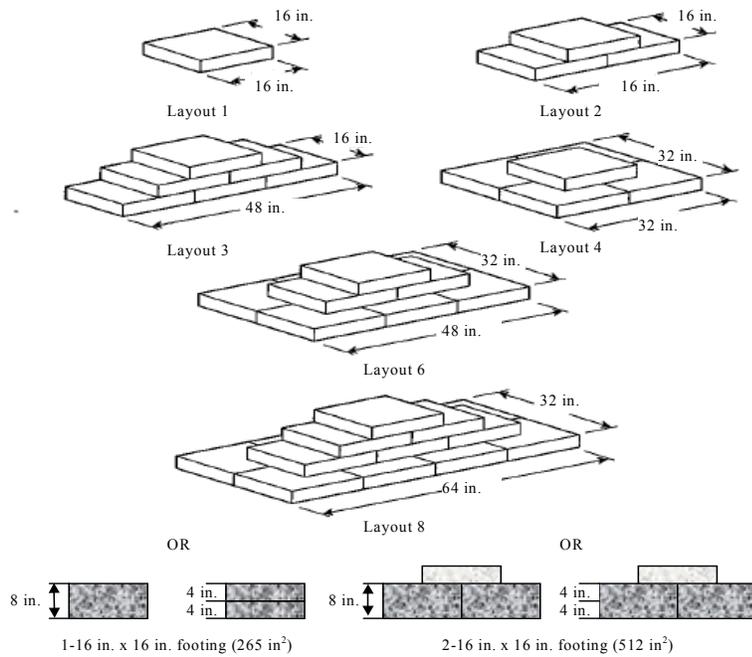
22 (ii) The design must accommodate anchorage requirements in 3285.401.

23 (3) **Insulated Foundations.** Insulated foundation systems must be designed by a

1 registered professional engineer or registered architect in accordance with acceptable engineering
2 practice and ASCE/SEI 32-01 and are permitted to be above the frost line.

3 **(d) Sizing of Footings.** The sizing of footings depends on the load-bearing capacity of
4 both the piers and the soil. Refer to 3285.316(a) and Figure 3285.316 for minimum footing sizes.

5



6

7 Notes:

8 1. Typical pier pad: 16"x16"x4" thick precast concrete.

9 2. The pad thickness for table entries with shade is minimum 8", or two 4" pads one on top of the other.

10 3. $F_c' = 4000$ psi min.

11

12 **Figure 3285.312(c) Footing Configuration Layout Designs.**

1 (e) Table – Size and Capacity for Unreinforced Cast-in-Place Footings

Soil Capacity (psf)	Single Stack Pier (8 in. × 16 in.)			Double Stack Pier (16 in. × 16 in.)	
	Minimum Footing Size (in.)	Maximum Footing Capacity (lb)	Unreinforced Cast-in-Place Minimum Thickness (in.)	Maximum Footing Capacity (lb)	Unreinforced Cast-in-Place Minimum Thickness (in.)
1,000	16 × 16	1,600	6	1,600	6
	20 × 20	2,600	6	2,600	6
	24 × 24	3,700	6	3,700	6
	30 × 30	5,600	8	5,800	6
	36 × 36	7,900	10	8,100	8
	42 × 42	10,100	12	10,700	10
	48 × 48	13,000	15	13,600	12
1,500	16 × 16	2,500	6	2,500	6
	20 × 20	4,000	6	4,000	6
	24 × 24	5,600	8	5,700	6
	30 × 30	8,600	10	8,900	6
	36 × 36	12,200	12	12,600	8
	42 × 42	16,100	15	16,500	12
	48 × 48	20,400	18	21,000	15
2,000	16 × 16	3,400	6	3,400	6
	20 × 20	5,300	6	5,300	6
	24 × 24	7,600	8	7,700	6
	30 × 30	11,600	10	11,900	8
	36 × 36	16,300	15	16,900	10
	42 × 42	21,700	18	22,700	12
2,500	16 × 16	4,300	6	4,300	6

	20 × 20	6,700	6	6,700	6
	24 × 24	9,600	8	9,700	6
	30 × 30	14,700	12	15,000	8
	36 × 36	20,800	15	21,400	10
3,000	16 × 16	5,200	6	5,200	6
	20 × 20	8,100	8	8,100	6
	24 × 24	11,500	10	11,700	6
	30 × 30	17,800	12	18,100	8
	36 × 36	25,000	18	25,700	12
4,000	16 × 16	7,000	6	7,000	6
	20 × 20	10,800	8	10,900	6
	24 × 24	15,500	10	15,600	8
	30 × 30	23,800	15	24,200	10

1

2 Notes:

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

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

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

9

10 **§ 3285.313 Combination Systems.**

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

13

14 **§ 3285.314 Permanent Foundations.**

1 **(a)** Designs for permanent foundations (such as basements, crawl spaces, or load-bearing
2 perimeter foundations) are permitted to be obtained from the home manufacturer and must be
3 designed in accordance with acceptable engineering practice by a registered professional
4 engineer or registered architect, and constructed in accordance with local codes.

5 **(b)** When a permanent foundation design is not available from the home manufacturer or
6 covered in the local building code, a registered professional engineer or registered architect must
7 be consulted in order to obtain a design to satisfy the house support and anchoring requirements.

8

9 **§ 3285.315 Foundations for Flood Hazard Areas.**

10 Refer to 3285.101 for special elevations and foundation requirements when locating a
11 home in a flood hazard area.

12

13 **§ 3285.316 Special Snow Load Conditions.**

14 **(a) In general.** Foundations for homes designed for and located in areas with roof live
15 loads greater than 40 psf must be designed according to the home manufacturer installation
16 instructions or designed in accordance with acceptable engineering practice by a registered
17 professional engineer or registered architect for the special snow load conditions.

18 **(b) Ramadas.** Ramadas may be used in areas with roof live loads greater than 40 psf.
19 Any connection to the home must be for weatherproofing only.

20

21 **SUBPART E – ANCHORAGE AGAINST WIND**

22

23 **§ 3285.401 Anchoring Instructions.**

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

4 (b) For ground anchor type installations, the manufactured home must be secured against
5 the wind as described in 3285.401(a)(2) and 3285.401(a)(3). So as not to preclude other
6 alternative foundation systems, when using another type of installation, the design must be
7 prepared by a registered professional engineer or registered architect in accordance with
8 acceptable engineering practice and §3285.301(d).

9 (c) All anchoring and foundation systems must be capable of meeting the loads required
10 by Subpart D, 24 CFR part 3280, *Federal Manufactured Home Construction and Safety*
11 *Standards*.

12
13 **§ 3285.402 Ground Anchor Installations.**

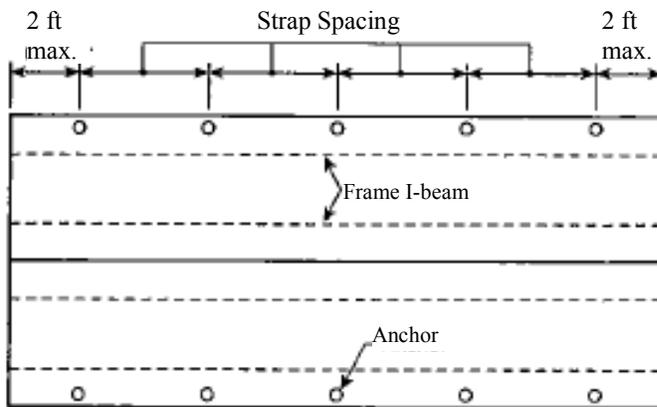
14 (a) **Specifications for Tie-Down Straps and Ground Anchors. (1) Ground Anchors.**
15 Ground anchors must be listed and capable of resisting a minimum total load capacity of 4725 lb
16 and a working load capacity of 3150 lb, unless reduced capacities are noted in accordance with
17 note 11 of 3285.402(c)(1) or note 12 of 3285.402(c)(2) and 3285.402(c)(3). The resistance
18 capability of ground anchors and anchoring equipment must be determined by a registered
19 professional engineer, registered architect, or tested by a nationally recognized third party testing
20 agency in accordance with a nationally recognized testing protocol.

21 (2) **Tie-Down Straps.** A $1\frac{1}{4}$ in. \times 0.035 in or larger zinc-coated (0.30 oz/ft² of surface
22 area) steel strapping conforming to ASTM D 3953-97, *Standard Specification for Strapping,*
23 *Flat Steel and Seals*, Type 1, Grade 1, Finish B with a minimum total capacity of 4725 lb and a

1 working capacity of 3150 lb must be used. Slit or cut edges of coated strapping need not be zinc
2 coated.

3 **(b) Number and Location of Ground Anchors.** (1) The number and location of ground
4 anchors and anchor straps for installation of single-section and multi-section manufactured
5 homes must not be spaced greater than that shown in 3285.402(c)(1) through 3285.402(c)(3), and
6 Figures 3285.402(b)(1) and 3285.402(b)(2).

7



8

9 Notes:

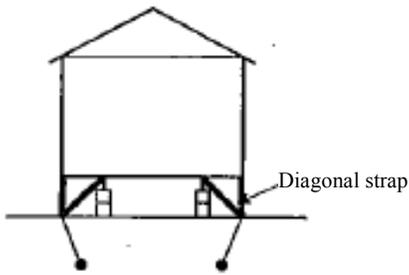
- 10 1. Refer to 3285.402(c)(1), 3285.402(c)(2), and 3285.402(c)(3) for maximum ground anchor spacing
11 2. Refer to 3285.402(b)(2) for longitudinal anchoring requirements.

12 **FIGURE 3285.402(b)(1) Ground Anchor Locations and Spacings – Plan View.**

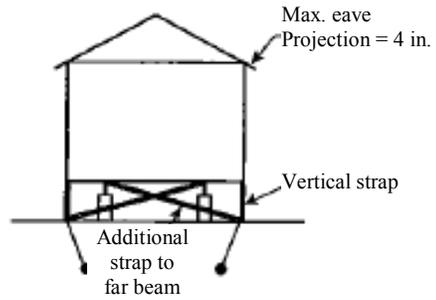
13

14 **(2) Longitudinal Anchoring.** Manufactured homes located in wind zones II and III must
15 have longitudinal ground anchors installed on the ends of the manufactured home transportable
16 section(s), in accordance with the home manufacturer installation instructions. A registered
17 professional engineer or registered architect must design alternative longitudinal anchoring
18 methods in accordance with acceptable engineering practice.

1

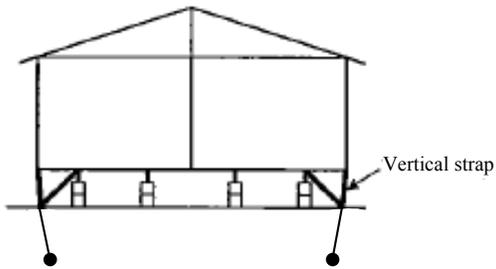


Near Beam Method



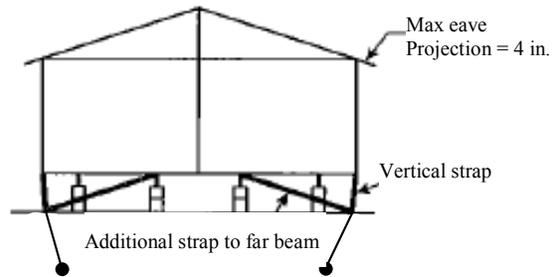
Second Beam Method

(Vertical tiedown straps required)



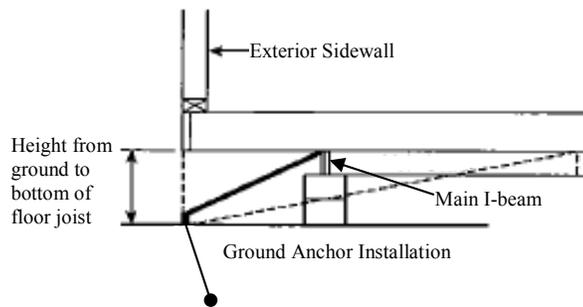
Near Beam Method

(Mating line piers and anchors omitted for clarity)



Second Beam Method

(Mating line piers and anchors omitted for clarity)



2 Note:

3 Vertical Straps not required in Wind Zone 1

4

5 **FIGURE 3285.402(b)(2) Anchor Strap and Pier Relationship.**

1 **(i)** The requirements in 3285.402(b)(1) must be used to determine the maximum spacing
2 of ground anchors and their accompanying anchor straps based on the soil classification
3 determined in accordance with 3285.203.

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

5 **(iii)** All ground anchors must be installed in accordance with their listing and the ground
6 anchor manufacturer installation instructions; stabilizer plates must be installed as required by
7 the ground anchor listing or certification.

8 **(c)** Each ground anchor must be manufactured and provided with installation instructions
9 in accordance with its listing. A nationally recognized testing agency must list, or a registered
10 professional engineer or registered architect must certify the ground anchor for use in a classified
11 soil (refer to 3285.203) based on a nationally recognized testing protocol.

1 **(1) Table – 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. box(es)	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. box(es)	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. box(es)	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.
18 ft, 204 in. to 216 in. box(es)	25 in.	22 ft 4 in.	21 ft 8 in.
	33 in.	21 ft 1 in.	20 ft 2 in.
	46 in.	19 ft 0 in.	17 ft 8 in.
	67 in.	15 ft 9 in.	14 ft 3 in.

2 Notes:

- 3 1. Sidewall heights not to exceed 90 in.
- 4 2. Maximum inset for ground anchor head from edge of floor or wall is 4 in.
- 5 3. Main rail (I-beam) spacing is the maximum spacing per given column (maximum I-beam spacing is 99.5 in.).
- 6 4. Maximum eave width is 4 in. for single-section homes and 12 in. for multi-section homes.
- 7 5. Maximum roof pitch is 20 degrees (4.3/12).
- 8 6. The minimum height from the ground to the bottom of the floor joist shall be 18 in.
- 9 7. Additional tiedowns may be required per the home manufacturer instructions.
- 10 8. Ground anchors must be certified for these conditions by a professional engineer, architect, or listed by a

- 1 nationally recognized testing laboratory.
- 2 9. Ground anchors must be installed to their full depth, and stabilizer plates must be installed per the ground anchor
- 3 and home manufacturer instructions.
- 4 10. Strapping and strapping equipment must be certified by a registered professional engineer or registered architect,
- 5 or listed by a nationally recognized testing agency to resist these specified forces in accordance with testing
- 6 procedures in ASTM D 3953–97, *Standard Specification for Strapping, Flat Steel and Seals*.
- 7 11. A reduced ground anchor or strap working load capacity will require reduced tiedown strap spacing.
- 8 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.

1 **(2) Table – 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. box(es)	25 in.	6 ft 2 in.	4 ft 3 in.	7 ft 6 in.	7 ft 7 in.
	33 in.	5 ft 2 in.	N/A	7 ft 2 in.	7 ft 4 in.
	46 in.	4 ft 0 in.	N/A	6 ft 9 in.	6 ft 11 in.
	67 in.	N/A	N/A	6 ft 1 in.	6 ft 3 in.
14 ft/28 ft, 156 in. to 179 in. box(es)	25 in.	7 ft 7 in.	6 ft 9 in.	7 ft 8 in.	7 ft 9 in.
	33 in.	6 ft 10 in.	5 ft 9 in.	7 ft 5 in.	7 ft 6 in.
	46 in.	5 ft 7 in.	4 ft 6 in.	7 ft 0 in.	7 ft 2 in.
	67 in.	4 ft 3 in.	N/A	6 ft 5 in.	6 ft 7 in.
16 ft/32 ft, 180 in. to 204 in. box(es)	25 in.	7 ft 9 in.	7 ft 10 in.	7 ft 10 in.	7 ft 10 in.
	33 in.	7 ft 6 in.	7 ft 2 in.	7 ft 7 in.	7 ft 8 in.
	46 in.	6 ft 9 in.	6 ft 0 in.	7 ft 2 in.	7 ft 3 in.
	67 in.	5 ft 4 in.	4 ft 7 in.	6 ft 8 in.	6 ft 9 in.
18 ft, 204 in. to 216 in. box(es)	25 in.	7 ft 10 in.	7 ft 9 in.	7 ft 11 in.	8 ft 0 in.
	33 in.	7 ft 8 in.	7 ft 8 in.	7 ft 9 in.	7 ft 9 in.
	46 in.	7 ft 4 in.	7 ft 0 in.	7 ft 4 in.	7 ft 5 in.
	67 in.	6 ft 3 in.	5 ft 8 in.	6 ft 10 in.	6 ft 11 in.

2 Notes:

3 1. Sidewall heights not to exceed 90 in.

4 2. Maximum inset for ground anchor head from edge of floor or wall is 4 in.

5 3. Main rail (I-beam) spacing is the maximum spacing per given column (maximum I-beam spacing is 99.5 in.).

6 4. Maximum eave width is 4 in. for single-section homes and 12 in. for multi-section homes.

7 5. Maximum roof pitch is 20 degrees (4.3/12).

8 6. All manufactured homes designed to be located in Wind Zone II must have a vertical tie installed at each diagonal
9 tie location.

- 1 7. The minimum height from the ground to the bottom of the floor joist shall be 18 in.
- 2 8. Additional tiedowns may be required per the home manufacturer instructions.
- 3 9. Ground anchors must be certified by a professional engineer, or registered architect, or listed by a nationally
4 recognized testing laboratory.
- 5 10. Ground anchors must be installed to their full depth, and stabilizer plates must be installed per the ground anchor
6 and home manufacturer instructions.
- 7 11. Strapping and strapping equipment must be certified by a registered professional engineer or registered architect
8 or shall be listed by a nationally recognized testing agency to resist these specified forces in accordance with testing
9 procedures in ASTM D 3953–97, *Standard Specification for Strapping, Flat Steel and Seals*.
- 10 12. A reduced ground anchor or strap working load capacity will require reduced tiedown strap spacing.
- 11 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.

1 **(3) Table – 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. box(es)	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. box(es)	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. box(es)	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. box(es)	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.

2 Notes:

- 3 1. Sidewall heights not to exceed 90 in.
- 4 2. Maximum inset for ground anchor head from edge of floor or wall is 4 in.
- 5 3. Main rail (I-beam) spacing is the maximum spacing per given column (maximum I-beam spacing is 99.5 in.).
- 6 4. Maximum eave width is 4 in. for single-section homes and 12 in. for multi-section homes.
- 7 5. Maximum roof pitch is 20 degrees (4.3/12).
- 8 6. All manufactured homes designed to be located in Wind Zone III must have a vertical tie installed at each
- 9 diagonal tie location.

- 1 7. The minimum height from the ground to the bottom of the floor joist shall be 18 in.
- 2 8. Additional tiedowns may be required per the home manufacturer instructions.
- 3 9. Ground anchors must be certified by a professional engineer, or registered architect, or listed by a nationally
4 recognized testing laboratory.
- 5 10. Ground anchors must be installed to their full depth, and stabilizer plates must be installed per the ground anchor
6 and home manufacturer instructions.
- 7 11. Strapping and strapping equipment must be certified by a registered professional engineer or registered architect
8 or shall be listed by a nationally recognized testing agency to resist these specified forces in accordance with testing
9 procedures in ASTM D 3953–97, *Standard Specification for Strapping, Flat Steel and Seals*.
- 10 12. A reduced ground anchor or strap working load capacity will require reduced tiedown strap spacing.
- 11 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.

1 **§ 3285.403 Sidewall or Over-the-Roof Straps.**

2 If sidewall or over-the roof straps are installed on the home, they must be connected to an
3 anchoring device, or an alternate method must be provided that enables the home to meet this
4 requirement.

5
6 **§ 3285.404 Severe Climatic Conditions.**

7 In frost-susceptible soil locations, ground anchor augers must be installed below the frost
8 line, or frost protected as designed by a registered professional engineer or registered architect in
9 accordance with acceptable engineering practice.

10

11 **§ 3285.405 Severe Wind Zones.**

12 When a home is installed within 1500 ft of a coastline in Wind Zones II or III, the
13 anchoring system must be designed by a registered professional engineer or registered architect
14 in accordance with acceptable engineering practice.

15

16 **§ 3285.406 Flood Hazard Areas.**

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

19

20 **SUBPART F – OPTIONAL FEATURES**

21

22 **§3285.501 Home Installation Manual Supplements.**

1 Supplemental instructions must be included with the home by the home manufacturer,
2 outlining special features in the home that are not covered by these Model Installation Standards.

3
4 **§ 3285.502 Expanding Rooms.**

5 The support and anchoring systems for expanding rooms shall be installed in accordance
6 with designs prepared by a registered engineer or registered architect or included in home
7 manufacturer installation instructions.

8
9 **§ 3285.503 Optional Appliances.**

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

13 **(1) Air Conditioners.** Air conditioning equipment must be listed for use with
14 manufactured homes and must be installed according to the product manufacturer instructions.

15 **(i) Energy Efficiency. (A)** For proper operation and energy efficiency, site-installed
16 central air conditioning equipment must be sized to closely match the home's heat gain,
17 following Chapter 28 of the 2001 *ASHRAE Handbook of Fundamentals* or ACCA Manual J,
18 *Residential Cooling Load*, 8th edition. Information necessary to calculate the home's sensible
19 heat gain can be found on the home's compliance certificate.

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

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

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

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

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

10 **(2) Heat Pumps.** Heat pumps must be listed for use with manufactured homes and must
11 be installed according to the heat pump manufacturer instructions.

12 **(3) Evaporative Coolers.** A roof-mounted cooler must be listed for use with manufactured
13 homes and must be installed in accordance with the home and appliance manufacturer
14 instructions. Any discharge grill must not be closer than 3 ft from a smoke alarm.

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

17 **(ii)** A rigid base must be provided to evenly distribute the cooler weight over several
18 rafters.

19 **(b) Fireplace and Wood-Stove Chimneys and Air Inlets.** Fireplace and wood-stove
20 chimneys and air inlets must be listed for use with manufactured homes and must be installed in
21 accordance with their listings.

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

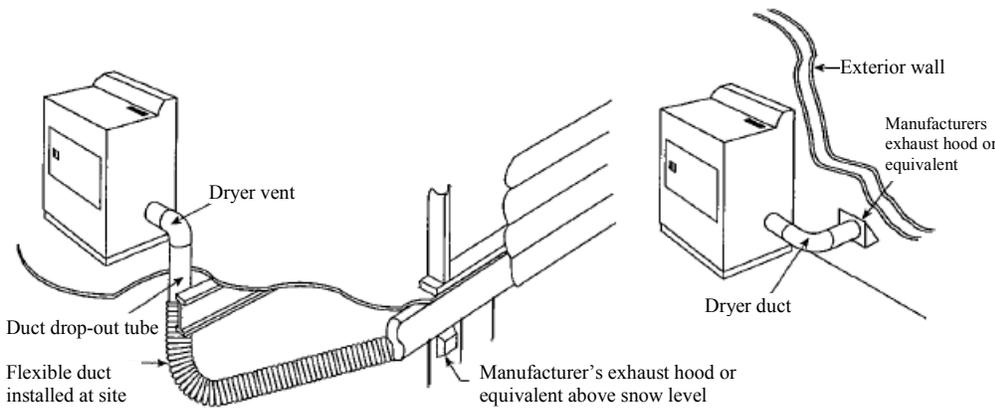
1 (2) When the vent exhausts through the floor and if perimeter skirting is installed, the
2 vent must extend through the exterior perimeter of the home.

3 (d) **Flood Hazard Areas. (1) Outside Appliances.** Appliances installed on the
4 manufactured home site must be anchored and elevated to or above the same elevation as the
5 lowest elevation of the lowest floor of the home.

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

8 (e) **Clothes Dryer Exhaust Duct System.** A clothes dryer exhaust duct system must
9 conform with and be completed in accordance with the home and appliance manufacturer
10 instructions. The vents must exhaust to the exterior of the home, beyond any perimeter skirting
11 installed around it, as shown in Figure 3285.503(e).

12



13

14 Notes:

15 1. Installation of the exhaust system must be in accordance with the dryer manufacturer instructions.

16 2. Dryer exhaust system must not terminate under the home.

17

18 **FIGURE 3285.503(e) Dryer Exhaust System.**

19

1 **§ 3285.504 Skirting.**

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

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

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

7
8 **§ 3285.505 Crawlspace Ventilation.**

9 (a) A crawlspace with skirting must be provided with ventilation openings. The minimum
10 net area of ventilation openings must not be less than 1ft² for every 150 ft² of the home's floor
11 area. The total area of ventilation openings may be reduced to 1ft² for every 1500 ft² of the
12 home's floor area where a uniform 6-mil polyethylene sheet material or other acceptable vapor
13 retarder is installed on the ground surface beneath the entire floor area of the home.

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

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

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

18 (e) Access opening(s) not less than 18 in. in any dimension and not less than 3 ft² in area
19 must be provided and must be located so that any water supply and sewer drain connections
20 located under the home are accessible for inspections.

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

23

1 **SUBPART G – DUCTWORK AND PLUMBING AND FUEL SUPPLY SYSTEMS**

2

3 **§3285.601 Field Assembly.**

4 Home manufacturers must provide specific written instructions for installers on the
5 proper field assembly for any shipped loose duct, plumbing, and fuel supply system parts,
6 necessary to join all sections of the home and designed to be located underneath the home. The
7 home manufacturer installation instructions must be designed in accordance with applicable
8 requirements of 24 CFR 3280 Subparts G and H.

9

10 **§3285.602 Utility Connections.**

11 Refer to §3285.905 for considerations for utility system connections.

12

13 **§ 3285.603 Water Supply.**

14 **(a) Crossover.** Multi-section homes with plumbing in both sections require water-line
15 crossover connections to join all sections of the home in accordance with the home manufacturer
16 installation instructions. Home manufacturers must provide specific written instructions for
17 installers on how to complete the crossover in accordance with 24 CFR 3280.609(b).

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

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

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

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

2 **(d) Freezing Protection.** Home manufacturers must provide specific written instructions
3 for installers on how to complete freeze protection in accordance with the requirements of 24
4 CFR 3280.603(b)(4).

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

7 **(2)** In areas subject to freezing or subfreezing temperatures, exposed sections of water
8 supply piping, shutoff valves, pressure reducers, and pipes in water heater compartments must be
9 insulated or otherwise protected from freezing, under normal occupancy.

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

13 **(e) Testing Procedures.** (1) Home manufacturers must provide specific written
14 instructions for installers on how to inspect and test the water system for leaks after completion
15 at the site.

16 **(2)** The home manufacturer instructions for testing must be developed in accordance with
17 24 CFR 3280.612(a).

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

19

20 **§3285.604 Drainage System.**

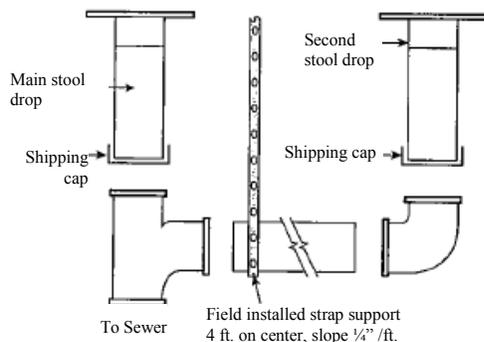
21 **(a) Crossovers.** Drainage line crossovers necessary to join all sections of multi-section
22 homes must be connected in accordance with the home manufacturer installation instructions.

1 Home manufacturers must provide specific written instructions for installers on how to complete
2 the crossover in accordance with 24 CFR 3280.610(b)(5).

3 **(b) Assembly and Support.** If portions of the drainage system were shipped loose
4 because they were necessary to join all sections of the home and designed to be located
5 underneath the home, they must be installed and supported in accordance with the home
6 manufacturer installation instructions.

7 **(c) Proper Slopes.** Drains must be installed in accordance with the home manufacturer
8 installation instructions and 3285.604(c)(1) or 3280.604(c)(2).

9 **(1)** Drain lines must slope at least $\frac{1}{4}$ in./ft unless otherwise noted on the schematic
10 diagram, as shown in Figure 3280.604(c).



11
12 **FIGURE 3285.604(c) Drain Pipe Slope and Connections.**
13 **(2)** A slope of $\frac{1}{8}$ in./ft must be permitted when a clean out is installed at the upper end of
14 the run.

15 **(d) Testing Procedures. (1)** Home manufacturers must provide specific written
16 instructions for installers on how to inspect and test the drainage system for leaks at the
17 installation site.

1 (2) The home manufacturer instructions for testing must be developed in accordance with
2 24 CFR 3280.612(b)(1) or (b)(2).

3

4 **§ 3285.605 Fuel Supply System.**

5 **(a) Proper Supply Pressure.** The gas piping system in the home is designed for a
6 pressure that is at least 10 in. of water column [5.8 oz or 0.36 psi] and not more than 14 in. of
7 water column [8 oz or 0.5 psi]. If gas from any supply source exceeds, or could exceed, this
8 pressure, a regulator may be installed as required by an LAHJ.

9 **(b) Crossovers. (1)** All crossovers and fittings necessary to join all sections of the home
10 must be listed for exterior use and must be installed in accordance with the home manufacturer
11 installation instructions.

12 (2) Home manufacturers must provide specific written instructions for installers on how
13 to complete the crossover in accordance with 24 CFR 3280.705(c)(2).

14 **(3)** Tools must not be required to connect or remove the flexible connector quick-
15 disconnect.

16 **(c) Testing Procedures. (1)** Home manufacturers must provide specific written
17 instructions for installers on how to inspect and test the gas system for leaks at the installation
18 site.

19 (2) The home manufacturer instructions for testing must be developed in accordance with
20 24 CFR 3280.705(l)(8).

21

22 **§ 3285.606 Ductwork Crossovers.**

23 **(a)** As necessary for the joining of all sections of the home, metal plumber's tape,

1 galvanized metal straps, or listed tape and mastics must be used around the duct collar and
2 secured tightly.

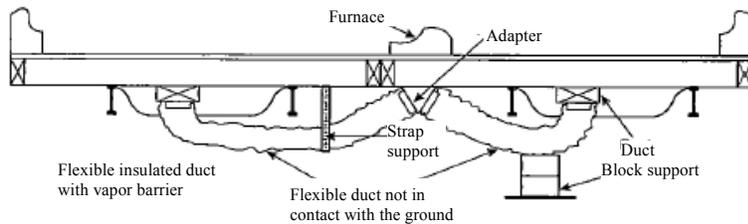
3 (b) If metal straps are used, they must be secured with galvanized sheet metal screws.

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

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

8 (e) The duct must be suspended or supported above the ground and arranged under the
9 floor to prevent compression or kinking in any location, as shown in Figures 3285.606(a)(1) and
10 3285.606(a)(2). In-floor crossover ducts are permitted in accordance with 3285.606(g).

11



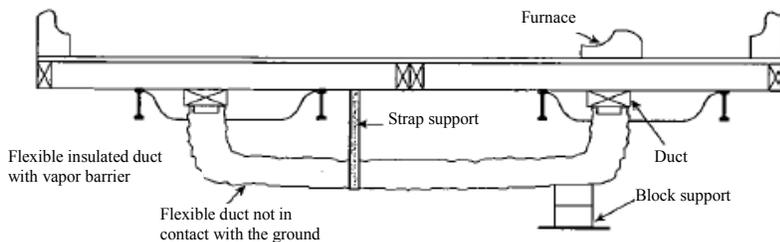
12

13 Note:

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

16 **FIGURE 3285.606(a)(1) Crossover Duct Installation with Two Connecting Ducts.**

17



18

1 Note:

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

5

6 **FIGURE 3285.606 (a)(2) Crossover Duct Installation with one Connecting Duct.**

7

8 (f) Crossover ducts outside the thermal envelope must be insulated with materials that
9 conform to the home manufacturer installation instructions.

10 (g) In-floor or ceiling crossover duct connections must be installed and sealed to prevent
11 air leakage in accordance with the home manufacturer installation instructions.

12

13 **SUBPART H – ELECTRICAL SYSTEMS AND EQUIPMENT**

14

15 **§ 3285.701 Electrical Systems.**

16 (a) **Crossovers.** (1) Electrical crossovers necessary for the joining of all sections of the
17 home must be completed in accordance with the home manufacturer installation instructions.

18 (2) Home manufacturers must provide specific written instructions for installers on how to
19 complete the crossover in accordance with 24 CFR Subpart I.

20

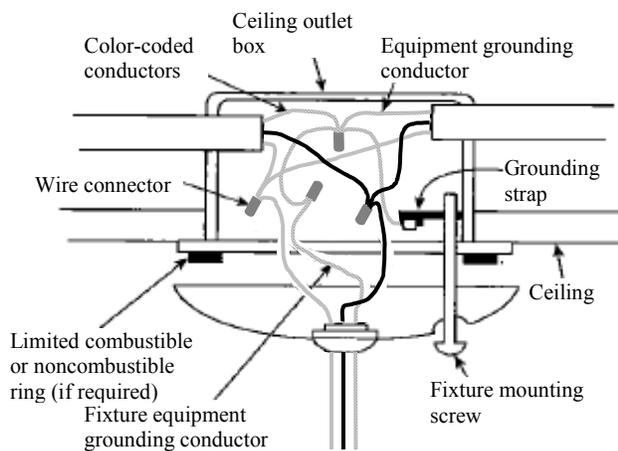
21 **§3285.702 Miscellaneous Lights and Fixtures.**

22 (a) Exterior lighting fixtures, ceiling-suspended (paddle) fans, and chain-hung lighting
23 fixtures are permitted to be installed in accordance with their listings and the home manufacturer
24 installation instructions, when the home is installed.

1 **(b)** Home manufacturers must provide specific written instructions for installers on how
2 to complete the installation in accordance with 24 CFR Subpart I.

3 **(c) Grounding. (1)** All the exterior lighting fixtures and ceiling fans installed per
4 3285.702(a) must be grounded by a fixture-grounding device or by a fixture-grounding wire.

5 **(2)** For chain-hung lighting fixtures, as shown in Figure 3285.702(c), both a fixture-
6 grounding device and a fixture-grounding wire must be used. The identified conductor must be
7 the neutral conductor.

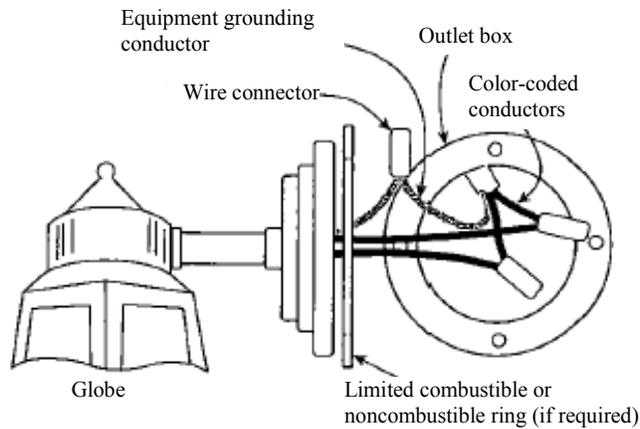


9 **FIGURE 3285.702(c) Typical Installation of Chain-Hung Lighting Fixture.**

10

11 **(d)** Where lighting fixtures are mounted on combustible surfaces such as hardboard, a
12 limited combustibility or noncombustible ring, as shown in Figures 3285.702(c) and 3285.702(d),
13 must be installed to completely cover the combustible surface exposed between the fixture
14 canopy and the wiring outlet box.

15



1

2 **FIGURE 3285.702(d) Typical Installation of Surface-Mounted Exterior Lighting Fixture.**

3

4 **(e) Exterior Lights. (1)** The junction box covers must be removed and wire-to-wire
5 connections must be made using listed wire connectors.

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

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

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

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

13 **(f) Ceiling Fans. (1)** To reduce the risk of injury, ceiling-suspended (paddle) fans must
14 be installed with the trailing edges of the blades at least 6 ft 4 in. above the finished floor.

15 **(2)** The wiring must be connected in accordance with the home and product manufacturer
16 installation instructions.

1 **(g) Testing.** (1) Home manufacturers must provide specific written instructions for
2 installers on how to inspect and test the completed electrical system at the installation site in
3 accordance with the testing requirements set forth in 24 CFR 3280.810(b).

4 (2) After completion, each manufactured home must be subjected to the following tests as
5 set forth in the home manufacturer installation instructions:

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

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

10 (iii) Electrical polarity checks to determine that connections have been made properly.

11 Visual verification is an acceptable electrical polarity check in accordance with the home
12 manufacturer instructions.

13

14 **§ 3285.703 Smoke Alarms.**

15 Smoke alarms must be functionally tested in accordance with applicable requirements of
16 the home and smoke alarm manufacturer instructions.

17

18 **§ 3285.704 Telephone and Cable TV.**

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

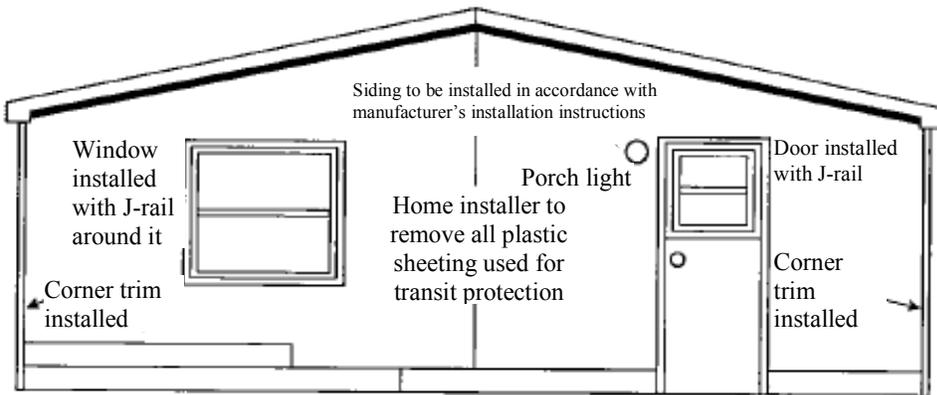
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21 **SUBPART I – EXTERIOR AND INTERIOR CLOSE UP**

22

23 **§ 3285.801 Exterior Close-Up.**

1 (a) Exterior siding necessary to join all sections of the home must be installed according
2 to the home and siding manufacturer installation instructions. Exterior close-up strips/trim must
3 be fastened securely and sealed with exterior sealant. Refer to figure 3285.801(a).



4

5 Notes:

- 6 1. Double section homes with horizontal-lap siding can be shipped with no siding on the front and rear end walls.
7 2. The manufacturer must install doors/windows trimmed with J-rail and will cover with plastic sheeting for
8 transport. All siding, starter trim, fasteners, and vents will be shipped loose in the home for installation on set up.
9 3. Home installer to complete installation after home is set up, including the installation of roof vents if required.
10 4. All home installers must ensure that all field installed trim, windows, doors, and other openings are properly
11 sealed according to the home and siding manufacturer installation instructions.

12 **FIGURE 3285.801(a) Installation of Field-Applied Horizontal Lap Siding**

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

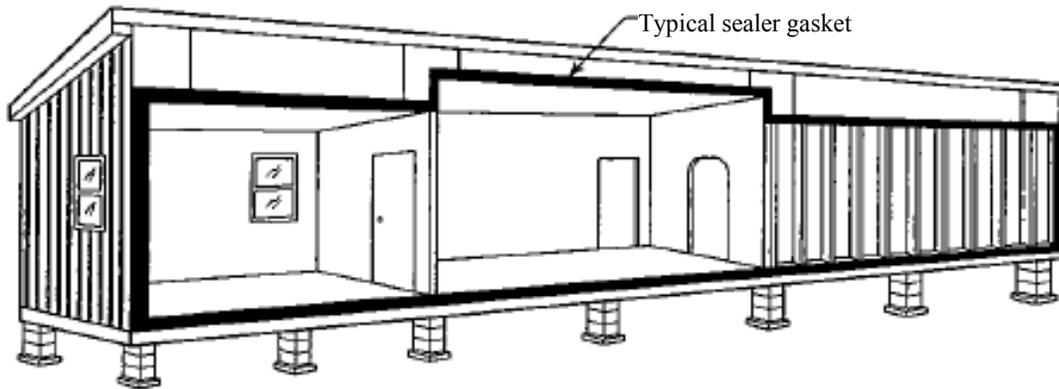
15 (c) Prior to installing the siding, the polyethylene sheeting covering exterior walls for
16 transit must be completely removed.

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

18 (e) **Mating Line Gasket.** (1) Home manufacturers must provide specific written
19 instructions for installers on how to complete mating line gaskets other methods designed to
20 resist the entry of air, water, and rodents at the mating locations.

1 (2) A mating line gasket must be installed according to the home manufacturer
2 installation instructions. Refer to figure 3285.801(e).

3



4

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

7 **FIGURE 3285.801(e) Mating Line Gasket.**

8 (f) **Hinged Roofs and Eaves.** Hinged roofs and eaves may be subject to specific On-Site
9 and/or Alternative Construction requirements issued separately by the Secretary. Generally,
10 hinged roof homes with a pitch less than 7 on 12 or hinged roofs designed to be located in Wind
11 Zone I are not subject to such special requirements. However, the home manufacturer installation
12 instructions must be followed when erecting and securing in place hinged roofs or hinged eaves.

13

14 **§ 3285.802 Structural Interconnection of Multi-section Homes.**

15 (1) For multi-section homes, home manufacturers must provide specific written
16 instructions for installers on how to complete structural interconnections along the interior and
17 exterior structural elements at the mating line necessary to join all sections of the home.

1 (2) The home manufacturer instructions must be designed in accordance with 24 CFR
2 3280.305 to ensure a completely integrated structure.

3 (3) Structural interconnections must be completed in accordance with the home
4 manufacturer installation instructions.

5
6 **§ 3285.803 Interior Close-Up.**

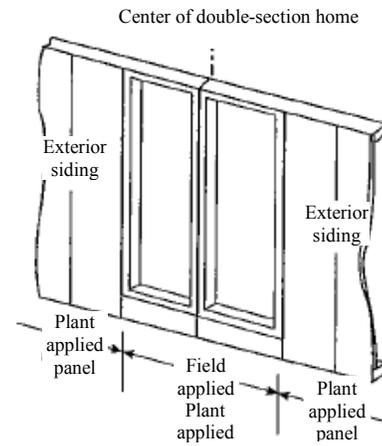
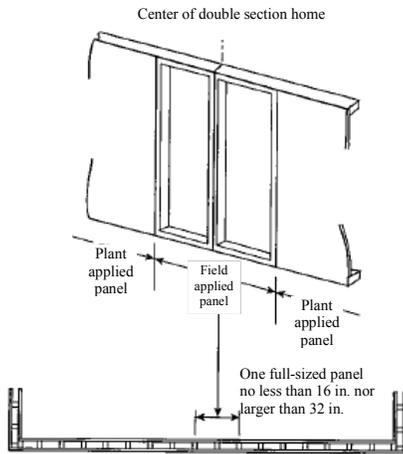
7 **(a)** All shipping blocking, strapping, or bracing must be removed from appliances,
8 windows, and doors.

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

11 **(c)** All items packaged or shipped with the home must be installed in accordance with the
12 home manufacturer installation instructions.

13 **(d)** All shipped-loose wall paneling, necessary for the joining of all sections of the home,
14 must be installed in accordance with the home manufacturer installation instructions or by using
15 polyvinyl acetate (PVA) adhesive on all framing members and fastened with minimum 1 in. long
16 staples or nails at 6 in. on center panel edges and 12 in. on center in the field. Refer to figure
17 3285.803.

18



Note:

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

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.

1 **FIGURE 3285.803 Installation of Field-Applied Panels.**

2

3 **§ 3285.804 Bottom Board Repair.**

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

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

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

9 (d) All edges of patches must be taped

10

1 **SUBPART J – RECOMMENDATIONS FOR MANUFACTURER INSTALLATION**
2 **INSTRUCTIONS**

3

4 **§ 3285.901 Recommendations for Manufacturer Installation Instructions.**

5 The planning and permitting processes as well as utility connection requirements are
6 outside of HUD’s authority and may be governed by LAHJs. Therefore, these Model Installation
7 Standards do not attempt to comprehensively address such requirements. The following
8 provisions are required to be addressed by manufacturer installation instructions in order to
9 protect the manufactured home as constructed in accordance with the MHCSS. Manufacturer
10 installation instructions must strongly recommend the following cautions to an installer:

11

12 **§3285.902 Moving Manufactured Home to Location.**

13 The manufactured home must be permitted to be moved to the site and placed on the site
14 when the site is prepared in accordance with Subpart C and when the utilities are available as
15 required by the LAHJ.

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

19 **(b) Positioning the Home.** The home must be installed and leveled by qualified
20 installation personnel.

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

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§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.** (i) All buildings, structures, and accessory structures must be designed to support all of their own live and dead loads.

(ii) Fire Separation distance must be provided, as the LAHJ requires for occupancy.

(iii) Any attached garage, carport, deck, or porch shall 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.

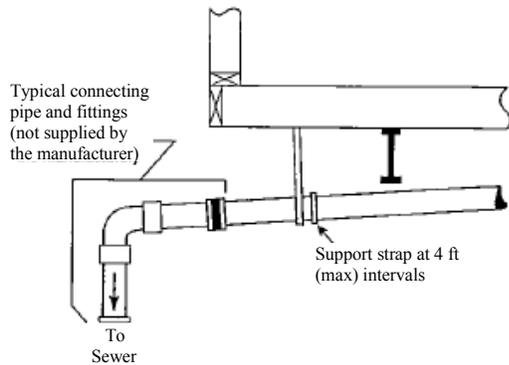
(a) **Proper Procedures.** The LAHJ shall be consulted before connecting the manufactured home to any utilities.

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

1 **(c) Drainage System.**

2 (i) The main drain line must be connected to the site's sewer hookup, using an elastomer
3 coupler acceptable to the LAHJ, as shown in Figure 3285.905(a).

4



5

6 Note:

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

9 **FIGURE 3285.905(a) Connection to Site Sewer.**

10

11 **(d) Fuel Supply System.**

12 (i) **Conversion of Gas Appliances.** A service person acceptable to the LAHJ shall
13 convert the appliance from one type of gas to another, following instructions by the manufacturer
14 of each appliance.

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

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

4 **(iv) Gas Appliance Startup Procedures.** When required by an LAHJ, the installer must
5 perform the following procedures:

6 **(A)** One at a time, equipment shutoff valves must be opened, pilot lights when provided
7 must be lit, and burners and spark igniters for automatic ignition systems must be adjusted in
8 accordance with each appliance manufacturer instructions.

9 **(B)** The operation of the furnace and water heater thermostats must be checked.
10

11 **§ 3285.906 Heating Oil Systems.**

12 **(a)** Homes equipped with oil burning furnaces must have their oil supply tank and piping
13 installed and tested on site in accordance with in accordance with NFPA 31 or the more stringent
14 requirements of an LAHJ.

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

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

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

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

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

4

5 **§3285.907 Telephone and Cable TV.**

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

8

9

10 **Date:** _____

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John C. Weicher, Assistant Secretary for
Housing-Federal Housing Commissioner

18 **(FR-4928-P-01)**

19