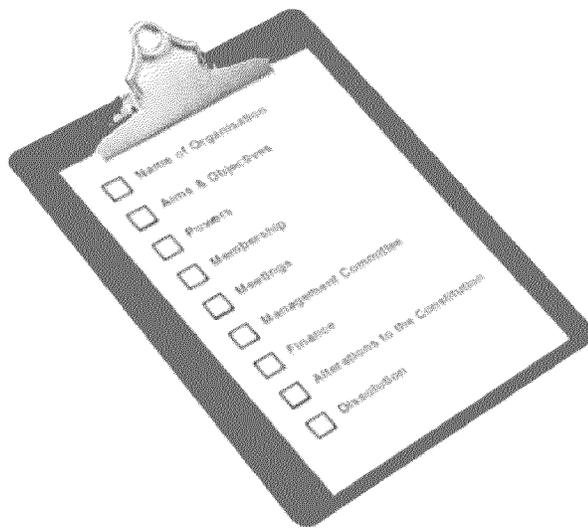


# Installation Instructions Checklist:

Based on the Model Installation Standards (24 CFR 3285) and the  
Manufactured Home Construction and Safety Standards (24 CFR 3280)



*Prepared by:*  
*The Institute for Building Technology and Safety*  
*Under Contract With:*  
*The US Department of Housing and Urban Development*

**ATTRIBUTE: VIII. - INSTALLATION INSTRUCTIONS**

<b>VIII-A: General</b> .....	<b>1</b>
<b>VIII-B: Pre-Installation Considerations</b> .....	<b>2</b>
<b>VIII-C: Site Preparations</b> .....	<b>3</b>
<b>VIII-D: Foundations</b> .....	<b>4</b>
<b>VIII-E: Anchoring</b> .....	<b>10</b>
<b>VIII-F: Optional Features</b> .....	<b>13</b>
<b>VIII-G: Plumbing and Mechanical Systems</b> .....	<b>14</b>
<b>VIII-H Electrical Systems</b> .....	<b>16</b>
<b>VIII-I: Assembly and Close Up</b> .....	<b>17</b>
<b>VIII-J: Optional Information</b> .....	<b>19</b>

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-A: GENERAL</b>		
VIII-A-1 Notices and General Design Requirements	Installation instructions indicates: <ul style="list-style-type: none"> <li>• The installation is to be completed in accordance with the DAPIA approved manufacturer's installation instructions or by an alternate design prepared and approved by a Professional Engineer or Registered Architect for the support and anchorage of the home, if the home is not to be installed using the manufacturer's instructions.</li> <li>• Installation instructions must include all topics covered in the Standards.</li> </ul>	3280.306 (a)(1) 3285.2(a) & (b)
VIII-A-2 Temporary Support	Installation instructions includes at least one method for temporary support, including how it is to be accomplished and under what circumstances temporary support is required.	3285.2 (e)
VIII-A-3 Final Leveling	Installation instructions includes criteria that addresses or indicates that: <ul style="list-style-type: none"> <li>• Adequate leveling upon completion of installation. "Adequate" is considered as 1/4" maximum difference between adjacent pier supports.</li> <li>• Exit doors and windows must operate properly without binding.</li> </ul>	3285.6
VIII-A-4 Alterations	Installation instructions includes information on alterations made during the initial installation.	3285.2(a) 3285.3
VIII-A-5 Design and Structural Option Compatibility	Installation instructions address all construction designs that show a basement or other unique construction elements. The instructions provide at least one method of support and anchorage for the different models or construction considerations.	3280.305 (b) 3285.2

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-B: PRE-INSTALLATION CONSIDERATIONS</b>		
VIII-B-1 Fire Separation	Installation instructions indicate fire separation distances required by NFPA 501A, Chapter 6, and requires that local ordinances be followed.	3285. 101
VIII-B-2 Flood Hazard Determination	Installation instructions indicate the installer is responsible for determining whether the home site is within a Flood Hazard Area. If so located, the instructions shall address additional requirements for installation methods and practices, outside appliances, and where to find related guidance.	3285. 102
VIII-B-3 Compliance w/ Data Plate	Installation instructions indicate that the installer shall make a determination and verify that the home design is suitable for the site as indicated on the data plate for wind, roof load and thermal zones.	3285. 103 (a),(b),(c)

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-C: SITE PREPARATIONS</b>		
VIII-C-1 Soils	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Foundations are to be built on firm, undisturbed soil or fill compacted to at least 90% of its maximum relative density.</li> <li>• Organic materials in footing areas are to be removed.</li> <li>• How to identify and determine soil classification and bearing capacity, such as by acceptable soil tests, soil records, or on-site investigation. Reference Table §3285.202 for further details.</li> <li>• Default bearing capacity of 1,500 psf may be used unless lower values are necessary based on soil classification and type.</li> </ul>	3285. 202
VIII-C-2 Drainage	Installation instructions indicates proper site drainage is to be provided at a minimum of ½" per foot for ten feet.	3285. 203 (a),(b),(c)
VIII-C-3 Gutters and Downspouts	Installation instructions indicates if the home is suitable for installation of gutters and downspouts.	3285. 203 (f)
VIII-C-4 Ground Moisture Control	Installation instructions indicates if home is skirted, a vapor retarder is required. For 6 mil polyethylene: joints need to be overlapped 12", and voids or tears must be repaired by stated repair method.	3285. 204 (a),(b),(c)

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-D: FOUNDATIONS</b>		
VIII-D-1 Foundation General Requirements	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Pier and footing type or foundations not in accordance with the MIS specs including block and/or footing size, spacing, material, load or other model or construction considerations must be verified by engineering data and designed in accordance with §3285.301(d). All such details, plans, test data, calculations, etc. must be stamped by P.E. or R.A..</li> <li>• Alternative foundations in installation instructions must be listed by a nationally recognized agency based on a nationally recognized testing protocol. Designs must be prepared or tested and certified by a P.E. or R.A..</li> <li>• Support systems that combine both load-bearing capacity and uplift resistance must be sized accordingly and designed for all applicable loads.</li> </ul>	3285.301 3285.313
VIII-D-2 Flood Consideration	Installation instructions indicates whether foundation instructions are designed to address flood resistance and, if so, the conditions of applicability (velocity, depths, wave action). If not, the instructions must state that the foundation is not designed to resist flood loads.	3285. 302
VIII-D-3 Piers General Requirements	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Piers are designed to transfer live and dead loads to the footings/foundation and configuration and conform to the following:               <ul style="list-style-type: none"> <li>a. Materials: concrete blocks, PT wood (AWPA U1-04 for Category 4B), adjustable metal (need listing/rating info), or concrete. Any manufactured piers must be listed or labeled for appropriate horizontal and vertical loads.</li> <li>b. Center support required for multi-section homes and designs are consistent with requirements and conditions set forth in Tables 2 and 3 to §3285.303 and Figures A, B, and C to §3285.310, or designed by a P.E. or R.A.</li> </ul> </li> <li>• Manufactured piers, if used, are to be rated for appropriate loads and must be protected from weather and corrosion at least equivalent to coating of zinc on steel of 0.30oz/ft<sup>2</sup>. Installation instructions must be consistent with Tables 1, 2, and 3 to §3285.303.</li> </ul>	3280.303 (b) 3285. 304 (a),(b),(c),(d) 3285. 308 (a),(b) 3285.301

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-D: FOUNDATIONS</b>		
Pier Substantiation	<ul style="list-style-type: none"> <li>• Verify pier load capacity is acceptable for the I-beam configuration and support spacing needed to resist the required design live and dead loads and agrees with pier configuration in the instructions.</li> <li>• Verify pier loads and spacing do not exceed capacity according to Table 1 for frame blocking only, Table2 for frame plus perimeter blocking, and Table 3 for ridge beams or foundation supports design by a P.E. or architect.</li> </ul>	
VIII-D-4 Ground Clearance	Installation instructions indicates a 12" minimum clearance is to be maintained between lowest frame member and grade under all areas of the home.	3285. 305

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-D: FOUNDATIONS</b>		
VIII-D-5 Pier Configuration Specifications	<p>Installation instructions indicates:</p> <ul style="list-style-type: none"> <li>• Concrete block pier requirements are consistent with the following:               <ul style="list-style-type: none"> <li>a. Reference figures A and B to §3285.306.</li> <li>b. Minimum 8"x8"x16" and load-bearing blocks.</li> <li>c. Stacked with cells aligned vertically.</li> <li>d. Side by side stacks require each layer at right angles.</li> <li>e. Caps are to be 4" solid concrete or masonry cap, nominal 2" hardwood lumber, ½" corrosion-resistant minimum steel, or listed material. Split caps must be placed with long dimension perpendicular to joints in blocks.</li> <li>f. Gaps are filled with nominal 4"x6"x1" shims used in pairs, driven tightly, maximum 1" vertical height, 2" nominal hardwood plates or 2" or 4" concrete block must be used to fill remaining gaps.</li> </ul> </li> <li>• Manufactured piers may be used if a 2" maximum adjustable riser is in final position</li> <li>• Frame piers less than 36" (reference Figure A to §3285.306) must conform to the following:               <ul style="list-style-type: none"> <li>a. May be single, open or closed cell blocks (8"x8"x16"); design capacity of block cannot be exceeded.</li> <li>b. At right angle to support I-beam.</li> <li>c. Stacked with cells aligned vertically.</li> <li>d. Horizontal offset from top to bottom limited to ½" or less.</li> <li>e. Mortar is not required unless by instruction or design by P.E. or R.A.</li> </ul> </li> <li>• Frame piers greater than 36" and less than 67" and corner piers greater than 3 blocks high (reference Figure B to 3285.306(b)) must conform to the following:               <ul style="list-style-type: none"> <li>a. Double interlocked concrete blocks, design capacity of block cannot be exceeded.</li> <li>b. Horizontal offset from top to bottom of pier limited to 1" or less.</li> <li>c. Mortar is not required unless by instruction or design by P.E. or R.A.</li> </ul> </li> <li>• All piers greater than 67" in height must conform to the following:               <ul style="list-style-type: none"> <li>a. Must be designed by P.E. or R.A.</li> <li>b. Mortar is not required unless by instruction or design by P.E. or R.A.</li> </ul> </li> </ul>	<p>3285.304            3285.306            (a),(b),(c)</p>

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-D: FOUNDATIONS</b>		
VIII-D-6 Perimeter Support Piers	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Perimeter piers at mate line, exterior walls and openings are to conform to the following:               <ul style="list-style-type: none"> <li>a. 8" x 8" x 16" concrete block.</li> <li>b. Maximum height of 54".</li> <li>c. Design capacity of block cannot be exceeded (8K single, 16K double).</li> <li>d. Long dimension parallel to perimeter rail.</li> </ul> </li> <li>• Perimeter pier supports are to be located:               <ul style="list-style-type: none"> <li>a. On both sides of sidewall exterior doors (entry, patio, SGD, etc.).</li> <li>b. On both sides of sidewall openings 48" or greater.</li> <li>c. Under load-bearing porch posts, factory installed fireplaces, fireplace stoves, and jamb studs at multiple window openings.</li> </ul> </li> <li>• Pier supports not located in accordance with Table 2 to §3285.303 are to have pier support locations designed by a P.E. or R.A.</li> </ul>	3285. 307 (a), (b) 3285. 311 (a), (b) 3280.303 (b)
VIII-D-7 Pier Location and Spacing	Installation instructions indicates pier location and spacing is to conform to the following: <ul style="list-style-type: none"> <li>a. Frame piers 24" maximum from ends (outside edge of floor to center of pier).</li> <li>b. Maximum 120" O.C. along main support beams.</li> <li>c. If required by the analysis of shear wall locations, piers are to be located to support the vertical loads created by shear wall forces. If there is a shear wall location and marriage wall opening support coinciding, consideration for increased load should be addressed.</li> </ul>	3285.310 (c)

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-D: FOUNDATIONS</b>		
VIII-D-8 Footing Requirements	<p>Installation instructions indicates footings must support every pier, placed on undisturbed soil or fill compacted to 90% maximum relative density, and conform to the following requirements:</p> <ul style="list-style-type: none"> <li>a. Concrete:               <ol style="list-style-type: none"> <li>1. 4" precast concrete pad meeting ASTM C90-02a, 1,200 psi.</li> <li>2. Minimum 6" poured in place pad, slab, or ribbon, 3,000 psi minimum.</li> <li>3. Instructions must address that site-specific soil conditions or design load requirements may require use of reinforcing steel.</li> </ol> </li> <li>b. PT Wood:               <ol style="list-style-type: none"> <li>1. Lumber: 2 layers nominal 2" PT lumber (AWPA U1-04 4B ground contact); cut ends must be field treated (AWPA M4-02).</li> <li>2. 3/4" PT Exposure 1 or exterior grade plywood (max 16"x16").</li> <li>3. 2 layers 3/4" PT Exposure 1 or exterior grade plywood above 16"x 16". Cut ends must be field treated.</li> </ol> </li> <li>c. ABS footing pads:               <ol style="list-style-type: none"> <li>1. Installed to product manufacturers instructions.</li> <li>2. Certified for use in the appropriate soil class.</li> <li>3. Listed or labeled for appropriate load capacity.</li> </ol> </li> <li>d. Other listed materials listed for the use, application, loads.</li> </ul>	3285. 312 (b) 3280.303 (b)
VIII-D-9 Placement in Freezing Climates	<p>Installation instructions indicates:</p> <ul style="list-style-type: none"> <li>• Footings are to be protected from frost heave in freezing climates.</li> <li>• Methods to determine frost depth include LAHJ, P.E., R.A., Geologist.</li> <li>• Acceptable protection must be through at least one of the following methods:               <ol style="list-style-type: none"> <li>a. The bottom of conventional footings must be placed below frost depth.</li> <li>b. Monolithic slab above the frost line designed by P.E. or R.A. according to SEI/ASCE 32-01 (note anchorage requirements must be accommodated).</li> <li>c. Insulated foundation designed by P.E. or R.A. according to SEI/ASCE 32-01.</li> </ol> </li> </ul>	3285. 312 (b) 3280.303 (b)

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-D: FOUNDATIONS</b>		
VIII-D-10 Footings Size	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Footings shall be sized and laid out to conform to Figures A and B to §3285.312 and pier/footing Tables 1, 2, and 3 to §3285.303 in MIS. Refer to Table 2 to §3285.312 for unreinforced cast in place footings.</li> <li>• Note: 4" unreinforced precast concrete may be used for 6" cast in place values in Table.</li> </ul>	3285. 312 (b) 3280.303 (b)
VIII-D-11 Special Snow Load Conditions	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Roof loads over 40 psf must be designed by a P.E. or R.A.</li> <li>• Maximum sidewall opening permitted without perimeter piers or other supports.</li> <li>• Ramadas, if used, must be self-supporting; any connections to the home must be for weather-proofing only.</li> </ul>	3285.311(b) 3285. 315

**Installation Manual Checklist:  
New Checklist Based on the Model Installation Standards (MIS)  
& Manufactured Home Construction and Safety Standards**

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-E: ANCHORING</b>		
VIII-E-1 General	Installation instructions indicates homes be secured against wind loads by use of anchor-type assemblies or alternative foundation systems.	3285. 401 (a)
VIII-E-2 Instruction Requirement	Installation instructions indicates: <ul style="list-style-type: none"> <li>• At least one acceptable anchoring design system must be certified by a P.E or R.A.</li> <li>• Installation instructions may permit installation of homes in less restrictive roof and wind zone areas if the installation requirements are adequately and properly addressed.</li> </ul>	3280.306 (b)
VIII-E-3 Specifications Required  Anchoring Substantiation	Installation instructions indicates at least the following for anchor type assemblies: <ul style="list-style-type: none"> <li>a. Maximum spacing for installing diagonal and any required vertical ties.</li> <li>b. Minimum and maximum angles or dimensions for installing diagonals to anchors and the main chassis beam.</li> <li>c. Requirements for connecting diagonal ties to main chassis members including design to prevent rotation of the beam if straps are attached or come from the bottom flange of the beam.</li> <li>d. Requirements for longitudinal and mating wall tie downs and anchors.</li> <li>e. Method of strap attachment to chassis member and ground anchor</li> <li>f. Method for protecting diagonal and vertical straps at sharp corners (radius clip or other method)</li> <li>g. Requirements for sizing and installation of stabilizing plates as required</li> </ul> <ul style="list-style-type: none"> <li>• Verify tie down system is adequate to resist horizontal and vertical design wind forces.</li> <li>• Verify that all wind forces from shear walls and end walls are transferred to anchors or a foundation system. If required by the analysis of shear wall locations, anchoring is to be located to support the uplift loads created by shear wall forces. If there is a shear wall location and marriage wall opening support coinciding, consideration for increased load should be addressed.</li> </ul>	3285. 401 3280.306

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-E: ANCHORING</b>		
VIII-E-4 Ground anchors and Tie Down Straps	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Ground anchors are to be certified and tested. If instructions identify a brand of ground anchor, the anchors must be listed by a nationally recognized test agency or certified by a professional engineer or registered architect for use in a classified soil for required loads.</li> <li>• Ground anchors are to be:               <ol style="list-style-type: none"> <li>a. Installed to their full depth.</li> <li>b. Provided with weather and corrosion protection at least equivalent to a coating of zinc on steel of not less than 0.30 oz/ft<sup>2</sup>.</li> <li>c. Capable of resisting a minimum ultimate load capacity of 4,725 pounds and a working load of 3,150 pounds unless reduced capacities are noted and designed accordingly.</li> <li>d. Not spaced any closer than permitted by the listing or certification for the soil classification at the home site.</li> </ol> </li> <li>• Tie down straps must be:               <ol style="list-style-type: none"> <li>a. Listed and conform to ASTM 3593- 97, Type 1, Grade 1 Finish B</li> <li>b. Minimum 1 ¼"x .035 or larger ASTM D3953 Strapping Specification</li> <li>c. Capable of resisting a minimum ultimate load capacity of 4,725 pounds and a working load of 3,150 pounds unless reduced capacities are noted and designed accordingly.</li> <li>d. Provided with weather and corrosion protection at least equivalent to a coating of zinc on steel of not less than 0.30 oz/ft<sup>2</sup>.</li> <li>e. Slit or cut edges of strapping need not be zinc-coated.</li> </ol> </li> </ul>	3285.402 (a), (b) 3280.306 (g) (2)
VIII-E-5 Number and Location of Ground Anchors	Installation instructions indicates: <ul style="list-style-type: none"> <li>• First strap must be located within 2' from each end of each unit.</li> <li>• Ground anchor and anchor strap spacing must be:               <ol style="list-style-type: none"> <li>a. No greater than shown in Tables 1, 2, and/or 3 to §3285.402, or</li> <li>b. Designed by a P.E. or R.A. for any conditions outside of the parameters noted in the Tables (90" sidewall height, 4" inset, I beam spacing, max 4" eave for single section and 12" eave for multi section, max 20 degree roof pitch, 18" minimum between ground and bottom of joists).</li> </ol> </li> <li>• Stabilizer plates must conform to the following requirements:               <ol style="list-style-type: none"> <li>a. Must be correct size and type of stabilized plate as may be required in the ground anchor listing/certification.</li> <li>b. Weather and corrosion protection is to be provided that is at least equivalent to a coating of zinc on steel of not less than 0.30 oz/ft<sup>2</sup>. ABS plates may be used when listed and certified for such use.</li> </ol> </li> </ul>	3285.402 (c)

**Installation Manual Checklist:  
New Checklist Based on the Model Installation Standards (MIS)  
& Manufactured Home Construction and Safety Standards**

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-E: ANCHORING</b>		
Anchoring Substantiation	<ul style="list-style-type: none"> <li>• Verify friction coefficients used in the calculation must not be greater than 0.4 (without substantiation)</li> <li>• Verify friction is not used to resist sliding in WZ II&amp;III as uplift is greater than dead load.</li> </ul>	
VIII-E-6 Longitudinal Anchoring	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Homes must be stabilized for wind loads in longitudinal direction in all wind zones.</li> <li>• In WZ II &amp; III ground anchors must be installed on the ends of manufactured home sections or have an alternative system capable of resisting these wind forces.</li> <li>• Longitudinal anchorage requirements must be certified by a P.E. or R.A.</li> </ul>	3285.402 (c) (3)
Longitudinal Anchoring Substantiation	<ul style="list-style-type: none"> <li>• Verify friction coefficients used in the calculation must not be greater than 0.4 (without substantiation)</li> <li>• Verify friction is not used to resist sliding in WZ II&amp;III as uplift is greater than dead load.</li> </ul>	3285.402 (c) (3)
VIII-E-7 Other Straps	Installation instructions indicates over the roof, mateline or shearwall straps must be connected to an anchoring assembly.	3285.403
VIII-E-8 Vertical Straps	Installation instructions indicates WZ II & III vertical ties to ground are evenly spaced and secured to sidewall studs, no further than 2' from ends.	3280.306
VIII-E-9 Severe Climatic Conditions	Installation instructions indicates in frost-susceptible soil locations, ground anchor augers must be installed below the frost line unless the foundation is protected from effects of frost heave in accordance with §3285.306.	3285.404 3280.306
VIII-E-10 Severe Wind and Flood Zones	Installation instructions indicates: <ul style="list-style-type: none"> <li>• When any part of the home is installed within 1,500 feet of a coastline in Wind Zones II and III, the home must be designed for the increased requirements and noted as such on the data plate with anchorage appropriately designed.</li> <li>• For homes to be located in flood hazard areas, special requirements for anchoring are necessary, refer to §3285.302.</li> </ul>	3285.405 3285.406

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-F: OPTIONAL FEATURES</b>		
VIII-F-1 Optional Equipment	Installation instructions includes: <ul style="list-style-type: none"> <li>• Instructions for optional equipment or features that are DAPIA approved.</li> <li>• Provisions for expandable rooms that are supported and anchored in accordance with installation instructions or by design from a P.E. or R.A..</li> <li>• Requirements for optional equipment and appliances, such as air conditioners, evaporative coolers, heat pumps, fireplaces and wood stoves, appliance venting, clothes dryers.</li> </ul>	3285.501 3285.502 3285.503
VIII-F-2 Skirting	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Skirting, if used must be of weather-resistant material or provided with protection at least equivalent to coating of zinc on steel of not less than 0.30 oz/ft<sup>2</sup>.</li> <li>• Skirting must be attached so as to not trap water between the siding and trim and not impede expansion and contraction to the homes exterior covering.</li> <li>• Wood skirting within 6" of the ground must be PT (AWPA U1, 4A) or be naturally resistant to decay and termite infestations.</li> </ul>	3285.504
VIII-F-3 Crawlspace Ventilation	Installation instructions indicates: <ul style="list-style-type: none"> <li>• A crawlspace with skirting must be ventilated as follows:               <ol style="list-style-type: none"> <li>a. 1 square foot opening per 150 sq ft of floor area, or</li> <li>b. 1 square foot for 1,500 square feet of floor with acceptable vapor retarder.</li> </ol> </li> <li>• Vent openings must be:               <ol style="list-style-type: none"> <li>a. Located as high as is practical above the ground.</li> <li>b. Located on at least 2 opposite sides to provide cross-ventilation.</li> <li>c. Covered for their full height and width with a perforated corrosion and weather resistant covering designed to prevent entry of rodents.</li> <li>d. Of adjustable type in areas subject to freezing..</li> </ol> </li> </ul>	3285.505
VIII-F-4 Other Crawlspace Considerations	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Crawlspace with skirting is to have an access opening with dimensions of minimum 18" in width and 24" in height, and at least 3 square feet in area.</li> <li>• Dryer vents and combustion air inlets are to pass through skirting to the outside.</li> <li>• Water runoff from the furnace, air conditioning, or water heater drains must be directed away from the home or collected by other methods (§3285.203).</li> </ul>	3285.505 (e) & (f)

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-G: PLUMBING AND MECHANICAL SYSTEMS</b>		
VIII-G-1 Field Assembly Instructions	Specific instructions for proper field assembly of ship loose ducts, plumbing, and fuel systems necessary to join all sections are provided in the installation instructions.	3285.601 3280.610 (c) (5)
VIII-G-2 Water Supply PRV	Installation instructions indicates a pressure-reducing valve is to be installed when local water supply exceeds 80 psi.	3285.603(b) 3280.609 (a)(1)
VIII-G-3 Water Supply Shut Off	Installation instructions indicates a water shut-off valve is mandatory and is to be: <ul style="list-style-type: none"> <li>• Installed between the water supply and the inlet.</li> <li>• The water riser for the shut-off must be located under or adjacent to the home.</li> <li>• A flow gate, ball valve, or equivalent valve.</li> </ul>	3285.603(c) 3280.609(b)(1)
VIII-G-4 Freeze Protection	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Water line crossovers completed during installation are to be protected from freezing.</li> <li>• If subject to freezing temperatures, exposed sections of supply piping, shut-off valves, pressure reducers, and pipes in water heater compartments are to be insulated or otherwise protected from freezing.</li> <li>• If heat tape is used, it is to be listed for use with manufactured homes.</li> </ul>	3285.603(d) 3280.604(b)(4)
VIII-G-5 Water Line Testing	Installation instructions indicates inspection and testing requirements consistent with §3280.612.	3285.603(e) 3280.612
VIII-G-6 Drain Assembly Slope	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Drain lines to be completed under the home must not slope less than ¼" per foot.</li> <li>• A slope of 1/8" per foot may be permitted with a cleanout provided at the upper end of the run.</li> </ul>	3285.604 (a),(b), (c) 3280.610
VIII-G-7 Drain Assembly Testing	Installation instructions indicates inspection and testing requirements consistent with §3280.612.	3285.604(d) 3280.612(b)
VIII-G-8 Fuel Supply Pressure	Installation instructions indicates fuel gas supply pressure is to not exceed .5 psi; otherwise a pressure regulator may be required by the LAHJ.	3285.605(a) 3280.705(a)
VIII-G-9 Quick Disconnect	Installation instructions indicates tools must not be required to connect or remove the flexible connector quick disconnect.	3285.605(b)(2)
VIII-G-10 Fuel System Testing	Installation instructions indicates inspection and testing requirements consistent with §3280.705.	3285.605(c) 3280.705

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-G: PLUMBING AND MECHANICAL SYSTEMS</b>		
VIII-G-11 Ductwork Connections	Installation instructions indicates: <ul style="list-style-type: none"> <li>• All ductwork connections, including duct collars, are to be sealed to prevent air leakage.</li> <li>• Galvanized metal straps or tapes and mastics are to be used around the duct collar and securely tightened (UL181A for closure systems with rigid air ducts and connectors, and UL181B for closure systems with flexible air ducts and connectors).</li> <li>• If metal straps are used, they must be secured with galvanized sheet metal screws.</li> <li>• Metal ducts, if used, must be fastened at the collar with a minimum of 3 screws, equally spaced.</li> </ul>	3285.606(a)
VIII-G-12 Duct Support and Insulation	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Ducts are to be supported and/or suspended above the ground with supports measuring 48" O.C. maximum.</li> <li>• Straps for flex ducts are 1/2" wider than spacing of metal spirals encasing duct and installed to prevent kinking or compression in any location.</li> <li>• Crossover ducts outside the thermal envelope are insulated, with a minimum R-4.</li> </ul>	3285.606(e) & (f)
VIII-G-13 Dryer Vent Ducting	Installation instructions indicates: <ul style="list-style-type: none"> <li>• If applicable, instructions for the installation of a clothes dryer exhaust duct must be provided.</li> <li>• The exhaust duct must not terminate beneath the home, be connected to any other duct, or be connected with sheet metal screws or other fasteners which extend into the interior of the duct. The exhaust duct and any fittings comply with the duct manufacturers printed installation instructions.</li> </ul>	3280.708(b) & (c)

**Installation Manual Checklist:  
New Checklist Based on the Model Installation Standards (MIS)  
& Manufactured Home Construction and Safety Standards**

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-H ELECTRICAL SYSTEMS</b>		
VIII-H-1 Electrical Crossover	Installation instructions indicates instructions for completing electrical crossover connections must be provided.	3285.701
VIII-H-2 Lights and Fixtures	Installation instructions indicates or includes: <ul style="list-style-type: none"> <li>• Exterior lights, ceiling fans and chain-hung fixtures are to be installed in accordance with their listing and requirements of §3280.</li> <li>• Exterior lighting fixtures and ceiling fans are to be grounded by a fixture grounding device or by a fixture grounding wire.</li> <li>• Chain-hung lighting fixtures are to be grounded to both a fixture grounding device and a fixture grounding wire. The identified conductor is the neutral conductor.</li> <li>• Lighting fixtures mounted on combustible surfaces are to be provided with a limited combustible or non-combustible ring to completely cover the combustible surface exposed.</li> <li>• Instructions for connection and wiring are to address the connection and wiring of exterior lights (wiring, caulking, globe).</li> <li>• Instructions for connection and wiring are to address the connection and wiring of ceiling fans (support, wiring, 6'4" from floor to blade).</li> </ul>	3285.702 (a),(b),(c), (d), (e)
VIII-H-3 Electrical Testing	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Electrical systems are to be inspected and tested at the site consistent with requirements of §3280.810(f).</li> <li>• Each home is to be tested at the site for continuity and operation.</li> <li>• Polarity tests are to be conducted for equipment installed in the field.</li> </ul>	3285.702(f)
VIII-H-4 Smoke Alarms	Installation instructions indicates smoke alarms are to be functionality tested with instructions in accordance with §3280.208.	3285.703 3280.208(f)
VIII-H-5 Service and Feeder Requirements	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Instructions must include proper feeder conductor sizes and the size of the junction box to be used for panel box and raceway configuration.</li> <li>• When service equipment is installed on the home, one method of grounding the service must be included, along with the size of the grounding electrode conductor.</li> </ul>	3280.803(k)

**Installation Manual Checklist:  
New Checklist Based on the Model Installation Standards (MIS)  
& Manufactured Home Construction and Safety Standards**

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-I: ASSEMBLY AND CLOSE UP</b>		
VIII-I-1 Exterior Connections          Substantiation	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Required structural connections at the roof line, ceiling line, and floor line and that contain the type, size, and spacing of all connections.</li> <li>• Instructions for the structural connection of exterior walls, interior walls, and columns must be included that contain the size, type, and spacing of all connections.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Check connection of diaphragms at shearwalls for wind stability.</li> <li>• Check connections of multi-section to transfer loads particularly in WZ II&amp; III.</li> </ul>	3285.802 3280.306(a)          3285.802 3280.306(a)
VIII-I-2 Reserved	<ul style="list-style-type: none"> <li>• AC letter installation.</li> </ul>	
VIII-I-3 Exterior Coverings	Installation instructions indicates: <ul style="list-style-type: none"> <li>• All exterior siding and roofing is to be securely fastened and sealed per product manufacturer's installation instructions.</li> <li>• All joints and seams are to be weather tight.</li> </ul>	3285.801(a), (b) & (c)
VIII-I-4 Mate Line Gasket	Installation instructions indicates the home manufacturer is to provide materials and /or designs for sealing exterior mate lines to resist the entry of air, water, water vapor, insects and rodents.	3285.801(e) 3280.307 (b)
VIII-I-5 Hinged Roofs and Eaves	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Provisions for installing and completing hinged roofs are included.</li> <li>• Hinged roofs may require special alternate construction inspections.</li> <li>• Wind Zone I homes with a roof pitch less than 7:12 and without fuel-burning appliance vent penetrations through the hinged portion of the roof do not require final inspection by an IPIA or qualified inspector and must be inspected in accordance with the Installation Program Regulations.</li> </ul>	3285.801(f)
VIII-I-6 Gaps	Installation instructions indicates: <ul style="list-style-type: none"> <li>• No gaps are permitted between structural elements upon completion of the installation.</li> <li>• Gaps found prior to completion up to a maximum of 1" may be shimmed with dimensional lumber and properly sealed; and structural connector lengths must account for the shim.</li> </ul>	3285.802(c)

**Installation Manual Checklist:  
New Checklist Based on the Model Installation Standards (MIS)  
& Manufactured Home Construction and Safety Standards**

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-I: ASSEMBLY AND CLOSE UP</b>		
VIII-I-7 Bottom Board Repair	Installation instructions indicates: <ul style="list-style-type: none"> <li>• Bottom board is to be inspected and any areas of missing insulation identified.</li> <li>• Bottom board splits or tears are to be resealed in accordance with instructions provided.</li> <li>• Utility penetrations must be properly insulated and closed.</li> <li>• Missing insulation is to be replaced.</li> </ul>	3285.804 3280.305(g)(5)
VIII-I-8 Interior Close-Up	Installation instructions indicates interior wall panel installation methods must be specified or installed with at least 1 ½" fasteners, 6" O.C. edge and 12" O.C. field with PVA adhesive.	3285.803 (a),(b) & (c)
VIII-I-9 Protection of Openings	Installation instructions are included for protection of window and sliding glass door openings in WZ II & III in lieu of providing shutters or protective covers, and whether receiving devices, sleeves or fasteners have been installed or provided.	3280.403(f)

Installation Manual Checklist:  
 New Checklist Based on the Model Installation Standards (MIS)  
 & Manufactured Home Construction and Safety Standards

JANUARY 2009

SUB-ATTRIBUTE	DESCRIPTION	REGULATION
<b>VIII-J: OPTIONAL INFORMATION</b>		
VIII-J-1 General	Installation instructions indicates optional information, if provided, is consistent with recommendations in 3285 for: <ul style="list-style-type: none"> <li>a. Moving the home to the location.</li> <li>b. Permits, alterations, and on-site structures.</li> <li>c. Utility system connections.</li> <li>d. Heating Oil Systems.</li> <li>e. Telephone and Cable TV.</li> <li>f. Additions to instructions not addressed in the MIS.</li> </ul>	3285.901 3285.907