

**THE NEVADA  
MANUFACTURED HOME  
MOBILE HOME  
&  
COMMERCIAL COACH  
INSTALLATION STANDARDS**

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The *blue italicized font* of this document indicates changes from the previous published edition.

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# Chapter 1 GENERAL

## **LEGAL AUTHORITY.**

In accordance with Nevada Revised Statute (NRS) Chapter 489, the Nevada Division of Manufactured Housing (herein referred to as the Division) is authorized to promulgate rules specifying standardized installation instructions for manufactured homes. These rules constitute a preemptive statewide standard and no other code, standard, or regulation shall be used regarding the installation of manufactured homes, except as provided for in **Subsection 301.04** and **Subsection 306.03.b**. These Standards are required to be equal to or more restrictive than the 24 CFR part 3285 required by the U.S. Department of Housing and Urban Development. If there is a discrepancy and the HUD standards are shown to be more restrictive the HUD Standards will be the governing Standard.

## **01. TITLE AND SCOPE.**

These rules shall be cited as the "Nevada Manufactured Home, Mobile Home and Commercial Coach Installation Standards." These rules apply to persons engaged in the business of manufacturing, selling, setting, installing, servicing, repairing, or altering manufactured homes in the state of Nevada. Within this standard the phrase "manufactured home" includes mobile home.

## **02. WRITTEN INTERPRETATIONS.**

There are no written statements that pertain to the interpretation of these standards.

## **03. ADMINISTRATIVE APPEALS.**

There are no provisions for administrative appeal of the requirements outlined herein.

## **04. MINIMUM STANDARDS.**

This standard provides minimum statewide standards for the safety of the consumer, general public, and the owners and occupants of manufactured homes regulated by this standard. A homeowner, contractor, or dealer may exceed this standard, but no jurisdiction shall require a person to exceed this standard, except as permitted by Nevada Revised Statute Chapter 278, regarding setting within residential areas. This standard also incorporates by reference all listings and standards mentioned within the 24 CFR Parts 3280 and 3285, "Model Manufactured Home Installation Standards".

## **05. FIGURES.**

Every figure used in this standard pertains specifically to the Section(s) or Subsection(s), which references it. Figures will not show every method described by the narrative in the referencing Section or Subsection. They are intended to aid the user of this standard by visually describing requirements of the referencing Section or Subsection. The requirements that are prescribed in the text of the referencing Section or Subsection must be complied with regardless of the specific details, which may be shown in the figures. An alternative configuration, design, or technique, which can be shown to comply with the text prescribed requirements, will be acceptable. Also, an alternative configuration,

design, or technique, which can be shown by engineering calculation or demonstrated by experience or testing to meet or exceed the requirements of the associated Section or Subsection, and which is approved by the Division may be acceptable.

**06. LICENSING.**

Pursuant to the Nevada Revised Statute Chapter 489, the regulation and control of those persons engaged in the business of manufacturing, selling, installing, or servicing of manufactured homes and commercial coaches is necessary to protect the health and safety of the citizens of Nevada. To that end, it shall be unlawful for any person to engage in business as a manufacturer of manufactured homes or commercial coaches, a manufactured home dealer, manufactured home installer, manufactured home service company or a manufactured home salesman without being duly licensed as provided for in the Nevada Revised Statute Chapter 489.

**07. ALTERATIONS DURING INSTALLATION. (3285.3)**

Additions, modifications, or replacement or removal of any equipment that affects the installation of the home made by the manufacturer, retailer, or installer prior to completion of the installation by an installer must equal or exceed the protections and requirements of these Model Installation Standards, the MHCSS (24 CFR part 3280) and the Manufactured Home Procedural and Enforcement Regulations (24 CFR part 3282). An alteration, as defined in § 3282.7, must not affect the ability of the basic manufactured home to comply with the MHCSS, and the alteration must not impose additional loads to the manufactured home or its foundation, unless the alteration is included in the manufacturer's DAPIA-approved designs and installation instructions, or is designed by a registered professional engineer or architect consistent with the manufacturer's design and that conforms to the requirements of the MHCSS.

**08. FINAL LEVELING OF MANUFACTURED HOME. (3285.06)**

The manufactured home must be adequately leveled prior to completion of the installation, so that the home's performance will not be adversely affected. The home will be considered adequately leveled if there is no more than 1/8 inch difference in floor level within 10 feet radius from any point and the exterior doors and windows of the home do not bind and can be properly operated.

**009. -- 199. RESERVED.**

**Chapter 2**  
**PERMITS AND INSPECTIONS**

**201. -- 299. RESERVED.**

# Chapter 3

## MANUFACTURED HOME INSTALLATION STANDARDS

### **301. GENERAL.**

There are two basic types of installations - standard set and perimeter foundation set. This series of Sections, 300 - 399, prescribes the installation requirements for both types. See **Figures 301.1** and **301.2**.

In flood hazard areas, installations, anchoring, and support systems must be capable of resisting loads associated with design flood and wind events or combined wind and flood events, and homes must be installed on foundation supports that are designed and anchored to prevent floatation, collapse, or lateral movement of the structure.

Manufacturer's installation instructions must indicate whether:

- A. The support system specifications have been designed for flood-resistant considerations, and, if so, the conditions of applicability for velocities, depths, or wave action; or
- B. The support system specifications are not designed to address flood loads.

**01. Content:** This series of sections prescribes requirements for:

- A. The setting, design, and installation of manufactured homes;
- B. Tie down anchoring;
- C. Flood resistance; and
- D. Access and egress.

**02. Installation Standard:** The setting and installation requirements contained in this standard are based on a roof live load of twenty to one hundred twenty pounds per square foot (20 to 120 PFS), a roof dead load of ten to eighteen pounds per square foot (10 to 18 PFS), and a soil bearing capacity of one thousand five hundred pounds per square foot (1,500 PFS). All manufactured homes shall be installed to the minimum requirements of this standard.

- A. Manufacturers' installation instructions may be used where specifically permitted in **Subsections 301.04, 304.03.b, and 306.03.b**.
- B. Manufactured homes placed temporarily on display, or are in storage and not occupied or intended to be occupied, shall be temporarily placed according to the requirements of **Subsection 301.15**.

**03. Snow Loads and Thermal Zone:** New manufactured homes sold in Nevada are required by HUD to be constructed to withstand a minimum of twenty pounds per

square foot (20 PFS) roof load. In some jurisdictions within the state, it is advisable to increase the roof load to coincide with the local area snow load requirements or provide some other means to protect the home against heavy snow. The dealer shall verify that snow load recommendations are being complied with or disclosures are signed by the home consumer before installing the home in those jurisdictions.

Note: HUD also requires new manufactured homes being installed within the State of Nevada to have a thermal zone rating for Zone 3.

**04. Unique Installations:** Manufactured homes with unique installation requirements not specifically addressed in this standard shall be installed according to the manufacturer's installation instructions. However, the use of those instructions shall be limited to the specific aspects that are unique. Examples of unique installation aspects are: hinged rafters, perimeter floor frames, two storied homes, hinged eaves, add-on roofs, marriage line tie-downs, basements, items identified in a HUD and DAPIA approved Alternate Construction (AC) Letter, and those items specifically identified in a Division interpretation.

**05. Manufacturer's Installation Instructions:** If the manufacturer's installation instructions have been used for any portion of the installation, as permitted by **Subsection 301.04**, a copy of those instructions shall be provided to the inspecting jurisdiction.

**06. Unusual Installations:** A person is allowed to design for unusual installations not provided for in this standard or in the manufacturer's installation instructions. However, the Nevada Manufactured Housing Division must grant prior written approval. The Division may require an approved design by a Nevada Registered Professional engineer.

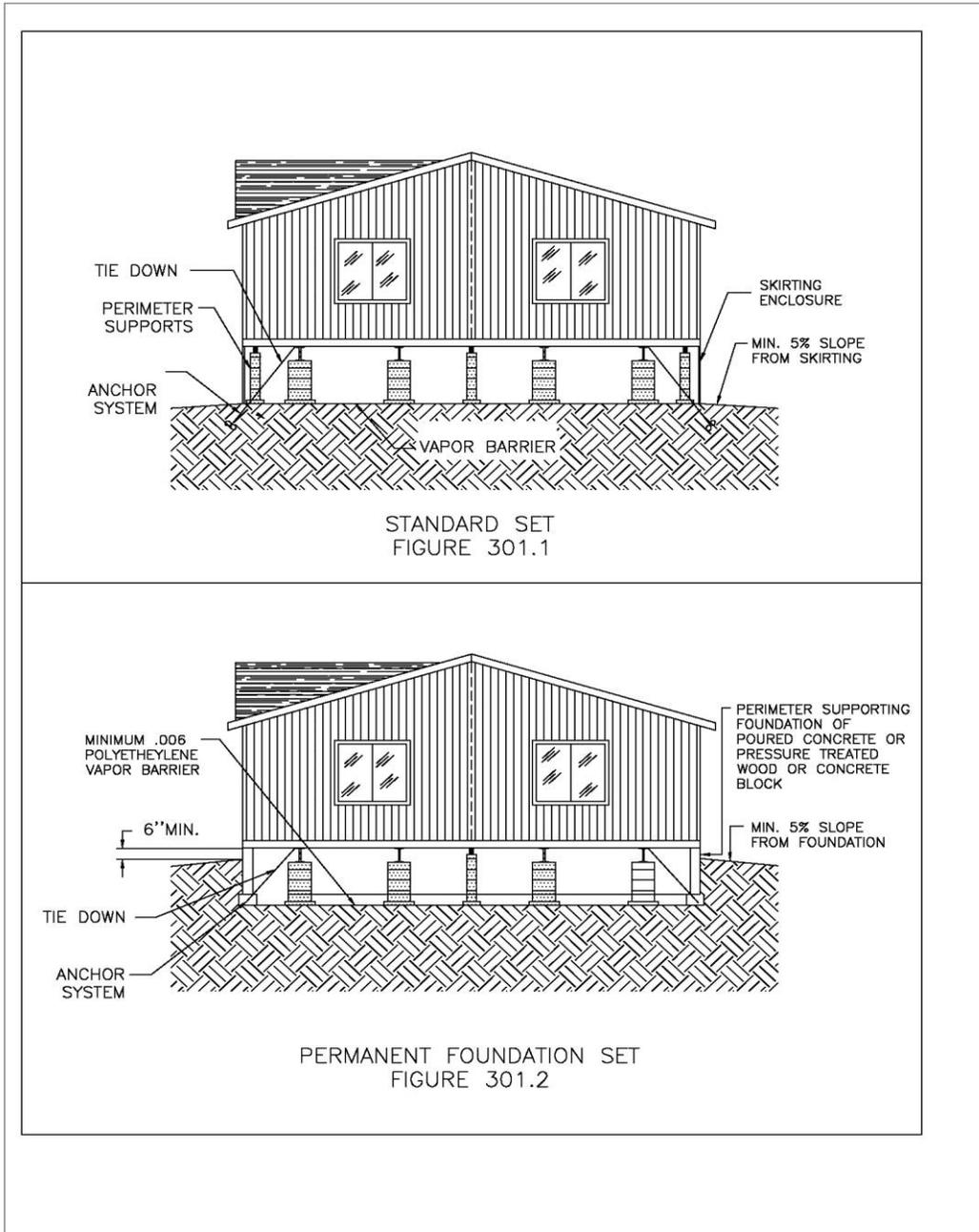
**07. Basic Requirement:** Regardless of the type of installation system provided, it shall assure that the manufactured home has adequate support and a flush floor connection at the marriage lines of multi-section manufactured homes. The manufactured home must be adequately leveled prior to completion of the installation, so that the home's performance will not be adversely affected. The home will be considered adequately leveled if there is no more than 1/8 inch difference in floor level within 10 feet radius from any point and the exterior doors and windows of the home do not bind and can be properly operated.

**08. Chassis Removal:** Except for wheels, tires, axles, suspension devices, hitches, and transportation lights, no portion of a manufactured home chassis shall be removed before or after the manufactured home is installed. The chassis can be altered only according to the manufacturer's written instructions.

**09. Alterations During Installation: (See Chapter 1 paragraph 07)**

**10. Under floor Ventilation:** Under-floor areas of all manufactured homes shall be

enclosed and ventilated according to **Sections 702 and 703** of this standard.



- 11. Separation from Ground:** After installation and final grading of the site, the bottom edge of the floor-framing members of the manufactured home must be at least six inches (6") above the exterior ground level and at least two inches (2") above any other surface where water might collect. A minimum of twelve inches (12") must be maintained between the lowest member of the main frame and the grade under all areas of the home.
- 12. Close Up:** Multi-section manufactured homes shall be sealed at the marriage lines to resist the elements and exterior air infiltration or loss of conditioned air. Wall and roof close up shall be made with similar materials and installed according to the material manufacturer's installation instructions. Shipping fasteners shall be removed from the roof and the roof sealed.
- 13. Compliance:** A manufactured home shall not be installed in a manner that takes the manufactured home out of compliance with state or federal manufactured home construction and safety standards.
- 14. Approval:** Installations shall not be approved until all applicable provisions of this standard have been met, including but not limited to, site preparation, support system, structural connections, tie-down requirements, access and egress requirements, under-floor enclosures (when used) with ventilation and access, all utility connections and crossovers and completion of operational checks and adjustments.
- 15. Temporary Placement:** When a manufactured home is placed temporarily in storage by a manufacturer, dealer, or distributor in excess of thirty (30) days, the owner shall assure the manufactured home is adequately supported at each corner and under each main frame beam by a minimum of four supports located within two feet (2') from each end and within eight feet (8') of the front and rear axle. The home shall be sealed to resist exposing the interior of the manufactured home to the elements of weather. When the home is to be set up in excess of 30 days for display, the owner shall assure the home is adequately supported by a minimum of main frame supports located within two feet (2') of each end and spaced a maximum of eight feet (8') on center. The perimeter shall be blocked at all doors and windows over forty-eight inches (48") wide, under all roof structures such as dormers, and at each corner. The marriage line shall be supported at each ridge beam column, and sealed against the weather.

## **302. SITE PREPARATION. (To be enforced by the Division when local jurisdictions have lesser requirements or do not wish to enforce these requirements)**

- 01. Suitability of Site:** Each site shall be suitable for its intended use and acceptable to the authority having jurisdiction of the local land use regulations. No person shall install a manufactured home on a site that is not in compliance with zoning, deed restrictions or other land use restrictions. It is the responsibility of the landowner to verify all land use restrictions have been met before beginning the installation of the

home.

- 02. Unforeseen Factors:** When unforeseen factors are encountered (e.g., rock formation, high ground water levels, springs), corrective work shall be completed prior to installing the manufactured home.
- 03. Grading:** Drainage must be provided to direct surface water away from the home to protect against erosion of foundation supports and to prevent water build-up under the home, § 3285.203.
  - A.** All drainage must be diverted away from the home and must slope a minimum of one-half inch per foot away from the foundation for the first ten feet. Where property lines, walls, slopes, or other physical conditions prohibit this slope, the site must be provided with drains or swales or otherwise graded to drain water away from the structure, as shown in Figure to 301.1.
  - B.** Sloped site considerations. The home, where sited, must be protected from surface runoff from the surrounding area.
  - C.** Drainage structures. Ditches and culverts used to drain surface runoff meet the requirements of the Local Authority Having Jurisdiction (LAHJ) and are considered in the overall site preparation. Finished grade away from the home's foundation or skirting at a minimum slope of five percent (5%) horizontally. See Figures 301.1 and 301.2
  - D.** Gutters and downspouts. Manufacturers must specify in their installation instructions whether the home is suitable for the installation of gutters and downspouts. If suitable, the installation instructions must indicate that when gutters and downspouts are installed, the runoff must be directed away from the home.
  - E.** Uncovered slabs, patios, or walks shall slope away from the home and structures in order to drain water away from the home and structures.
- 04. Erosion:** Where erosion due to high wind and/or runoff velocity threatens the manufactured home site, adequate grading, landscaping, or drainage systems shall be provided for the stabilization of the soil to protect the site from degradation. See section 308 for more information.
- 05. Frost Line:** Manufactured homes on a standard set with proper frost protection at the perimeter are not required to have interior support footings below the frost line. However, perimeter blocking must be installed in a manner, and skirting or other approved fascia material must be installed, to minimize the effects of frost.. The local authority having jurisdiction will prescribe the required frost depth.
- 06. Site:** Manufactured home sites shall be natural undisturbed soils or controlled fills and shall be free of grass and other organic material. All fill shall be engineered,

compacted, and tested per local jurisdiction requirements.

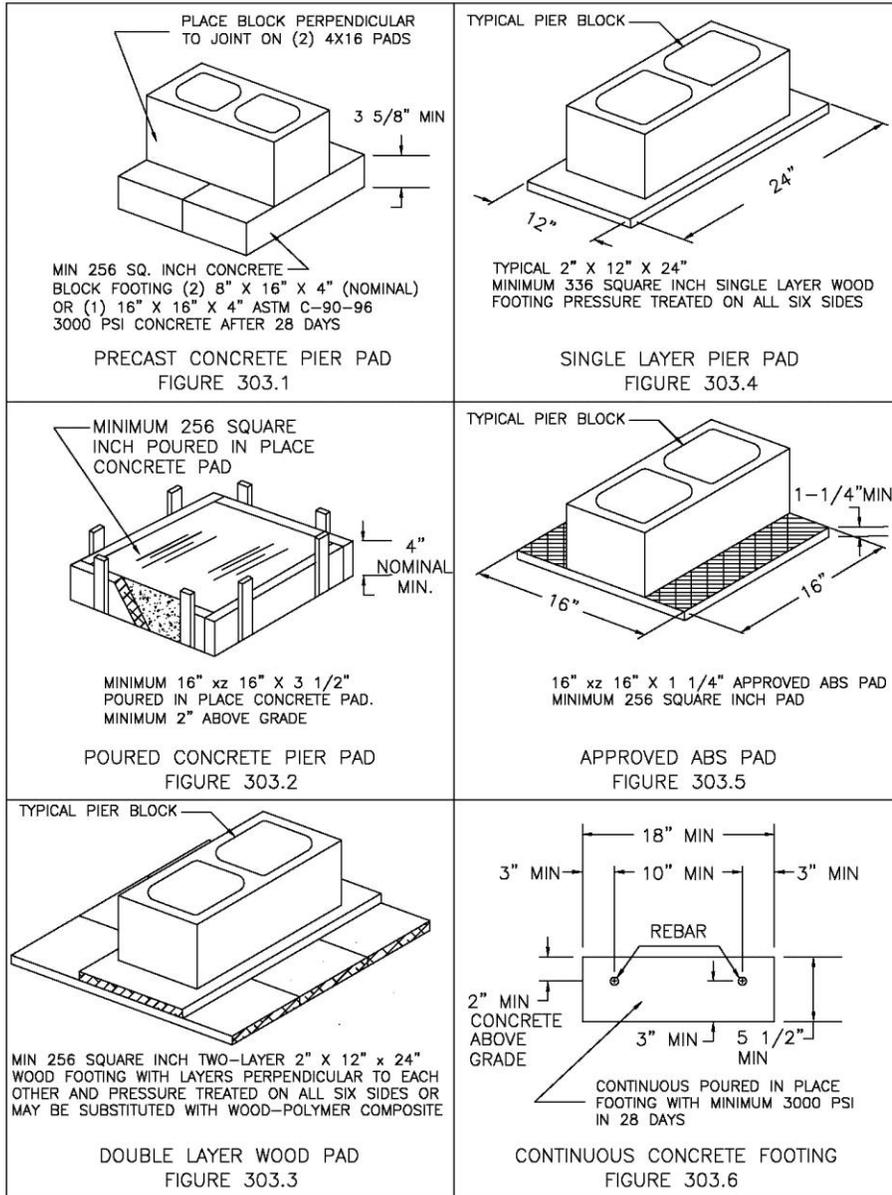
- 07. Vapor Retarder:** The ground within the enclosed crawl space beneath a manufactured home shall be covered with a six one-thousandths inch (.006") thick continuous black membrane sheeting vapor barrier installed according to the following requirements.
- A.** Membrane sheeting seams shall be overlapped by at least twelve inches (12").
  - B.** Edges of the membrane sheeting shall not extend beyond the perimeter of the manufactured home.
  - C.** All holes, tears, and penetrations in the membrane sheeting shall be adequately sealed or patched with durable tape.
  - D.** Under floor membrane sheeting shall not be in contact with wood unless the wood is pressure treated lumber.
  - E.** Black polyethylene membrane sheeting shall be installed over the ground. Clear sheeting may be installed under gravel or concrete.
  - F.** When the manufactured home has a recessed entry, porch, or deck, and the floor in the recessed area is constructed of open decking, the membrane sheeting shall not be installed below the open decking floor.

### **303. APPROVED INSTALLATION MATERIALS AND COMPONENTS.**

- 01. Footings:** Pier support footings shall be a minimum of two hundred fifty-six (256) square inches and not less than the width of the pier being supported. Ridge beam column support footings shall be sized according to **Subsection 304.03.b**. Footings shall be any one of the following, except where specifically stated otherwise. Concrete used in "Pre-cast" and "Poured Concrete Pads" must have a compressive strength of 3,000 psi after 28 days cure time as prescribed by ASTM C-39.
- A. Pre-cast Pads.** One (1) or more pre-cast concrete pads with a nominal size of sixteen inches by sixteen inches (16" x 16") by four inches (4") thick or two (2) or more pads with a nominal size of eight inches by sixteen inches (8" x 16") by four inches (4") thick. Eight inch by sixteen (8" x 16") pads may be used only with concrete block piers. The pier blocks shall be perpendicular to the joint of the pad. **See Figure 303.1.**
  - B. Poured Concrete Pads.** Nominal four inch (4") or thicker poured-in-place individual concrete pads, either square or round. **See Figure 303.2.**
  - C. Lumber or Polymer Stacked Pads.** Pads fastened together in two (2) to four (4) layers, of two inch (2") nominal size thick foundation grade lumber, pressure and

insect treated on all six sides, or pads of two to four layers of two inch (2") nominal size thick polymer composite. Each layer shall be laid perpendicular to the layer below it. **See Figure 303.3.**

- D. Lumber Pads.** Pads of two layers of two inch (2") nominal size thick foundation grade lumber pressure treated on all six sides. If used with concrete piers, the grain shall be parallel with the long side of the block with no more than one inch (1") of wood exposed beyond the long sides of the block. **See Figure 303.4.** a single 2 X 12 X 18 will not meet the minimum 256 sq. in. requirement in 303.01. Cut ends of pressure treated lumber must be field-treated, in accordance with AWPA Standard M4-06.
- E. Runners. Runners. If used, will *be governed by the* local jurisdiction having authority.**
- F. Other.** Listed prefabricated pads or other equivalent materials approved by the Division.



**02. Piers:** Material or products used for the support of a manufactured/mobile home or commercial coach must be approved by the Division or listed specifically as a support pier or system.

**A. Block Piers.** The blocks shall be either open or closed cell precast lightweight concrete of nominal size of eight inches by eight inches by sixteen inches (8" x 8" x 16"). Open cell blocks shall be positioned vertically. All load bearing concrete masonry units must comply with ASTM C 90-02a, Standard Specification for Load bearing Concrete Masonry Units

- 1) Concrete block piers shall be placed on approved minimum two hundred fifty-six (256) square inch (or sized as required for ridge beam column supports) piers shall not exceed the size of the footing. Block piers shall be separated from a poured in place concrete footing with a minimum of one half inch (1/2) pressure treated wood or plywood of a size equal to the block, be capped and shimmed with approved components. Piers shall be:

**B. Frame Piers:** Frame Piers less than 36 inches High.

- 1) Frame piers less than 36 inches high are permitted to be constructed of single, open, or closed-cell concrete blocks, 8 inches by 8 inches by 16 inches, when the design capacity of the block is not exceeded.
- 2) The frame piers must be installed so that the long sides are at right angles to the supported I-beam, as shown in Figure 303.7 of this section.
- 3) The concrete blocks must be stacked with their hollow cells aligned vertically and must be positioned at right angles to the footings.
- 4) Horizontal offsets from the top to the bottom of the pier must not exceed one-half inch.
- 5) Mortar is not required, unless specified in the installation instructions or required by a registered professional engineer or registered architect.

**C. Frame Piers:** Frame piers 36 inches to 67 inches high and corner piers.

- 1) All frame piers between 36 inches and 67 inches high and all corner piers over three blocks high must be constructed out of double, interlocked concrete blocks, as shown in **Figure 303.8** to this section, when the design capacity of the block is not exceeded. Mortar is not required for concrete block piers, unless otherwise specified in the:
  - a) Installation instructions or required by a professional engineer or registered architect.

- b) Horizontal offsets from the top to the bottom of the pier must not exceed one inch.

**D. All Piers:** All piers over 67 inches high.

- 1) Piers over 67 inches high must be designed by a registered professional engineer or registered architect, in accordance with acceptable engineering practice.

**E. Perimeter Support Piers:**

- 1) Piers required at mate-line supports, perimeter piers, and piers at exterior wall openings are permitted to be constructed of single open-cell or closed-cell concrete blocks, with nominal dimensions of 8 inches by 8 inches by 16 inches, to a maximum height of 54 inches, when the design capacity of the block is not exceeded.
- 2) Piers used for perimeter support must be installed with the long dimension parallel to the perimeter rail.

**F. Capacity:** Single stack block piers shall be used for loads not to exceed five thousand (5,000) pounds. Double stack block piers shall be used for loads not to exceed sixteen thousand (16,000) pounds. Double and single piers may be combined for higher loads.

**03. Block Pier Caps:** Each block pier shall be capped with a pier cap equal in area to the pier blocking (i.e., 8" x 16" or 16" x 16"). **See Figure 303.9.** Pier caps shall be one or more of the following. When split caps are used on double-stacked blocks, the caps must be installed with the long dimension across the joint in the blocks below.

**A. Pre-cast Block.** A solid concrete block with a nominal thickness of four inches (4"). When split caps are used on double-stacked blocks, the caps must be installed with the long dimension across the joint in the blocks below.

**B. Lumber.** One (1) two inch (2") nominally thick Number 2 (#2) or better grade lumber.

**C. Polymer.** One (1) two inch (2") nominally thick wood polymer composite.

**D. Other.** Listed or equivalent materials approved by the Division and the Manufactured Home Installation Committee.

**04. Block Pier Shims:** Where shim material is used between the top of the pier cap and the bottom of the main frame, the shimming material shall not exceed five inches (5") vertically. **See Figure 303.9.** Pier shims, when used, shall be one or more of the following;

- A. Pre-cast Concrete.** Two or four inch (2" or 4") thick solid concrete blocks equal in area to the pier cap;
- B. Lumber.** Two inch (2") nominally thick Number Two (#2) or better grade lumber not less than five and one-half inches (5-1/2") in width and sixteen inches (16") long;
- C. Polymer.** One and one-quarter inch (1-1/4") minimum thickness wood polymer not less than five and one-half inches (5-1/2") in width and sixteen inches (16") long; or
- D. Other.** Listed or equivalent materials approved by the Division

**05. Block Pier Wedges:** No more than two sets of wedges nominal 4 inch × 6 inch × 1 inch shims to level the home and fill any gaps between the base of the main chassis beam and the top of the pier cap may be used. They must be fitted perpendicular with, and driven tight to, the bottom of the main frame or floor to transfer loads uniformly to the pier. See **Figure 303.9**. Wedges must be driven in tightly so they do not occupy more than one inch of vertical height.

**06. Prefabricated Piers:** Prefabricated piers shall be placed on approved footings. They shall not exceed the size of the footing and shall be used in a manner consistent with its listing. See **Figure 303.10**. Piers shall be:

- A. Tested and Listed.** All prefabricated piers shall be tested and listed to be used as a manufactured/mobile home support and labeled for a capacity of not less than four thousand (4,000) pounds. See **Subsection 303.09**. Metal or other manufactured piers must be provided with protection against weather deterioration and corrosion at least equivalent to that provided by a coating of zinc on steel of .30 oz./ft.<sup>2</sup> of surface coated.
- B. Instructions.** The installation of the piers shall be in compliance with pier manufacturers' instructions, which shall be present at the time of inspection.
- C. Shims.** No shims shall be used with a prefabricated pier.
- D. Adjustable Heads.** All piers shall be of the type fitted with an adjustable head and nut. The extension of the head adjustment shall not exceed 2 inches when finally positioned.

**07. Other piers:** Other piers may be used only by approval from the Division

**08. Component and Materials Specifications:** All installation components shall be designed for their intended use and shall comply with the following:

- A. Concrete Products.** All pre-cast blocks, caps, and shims shall be equivalent to, or exceed, ASTM C-90-96 and constructed to be lightweight with a blend of

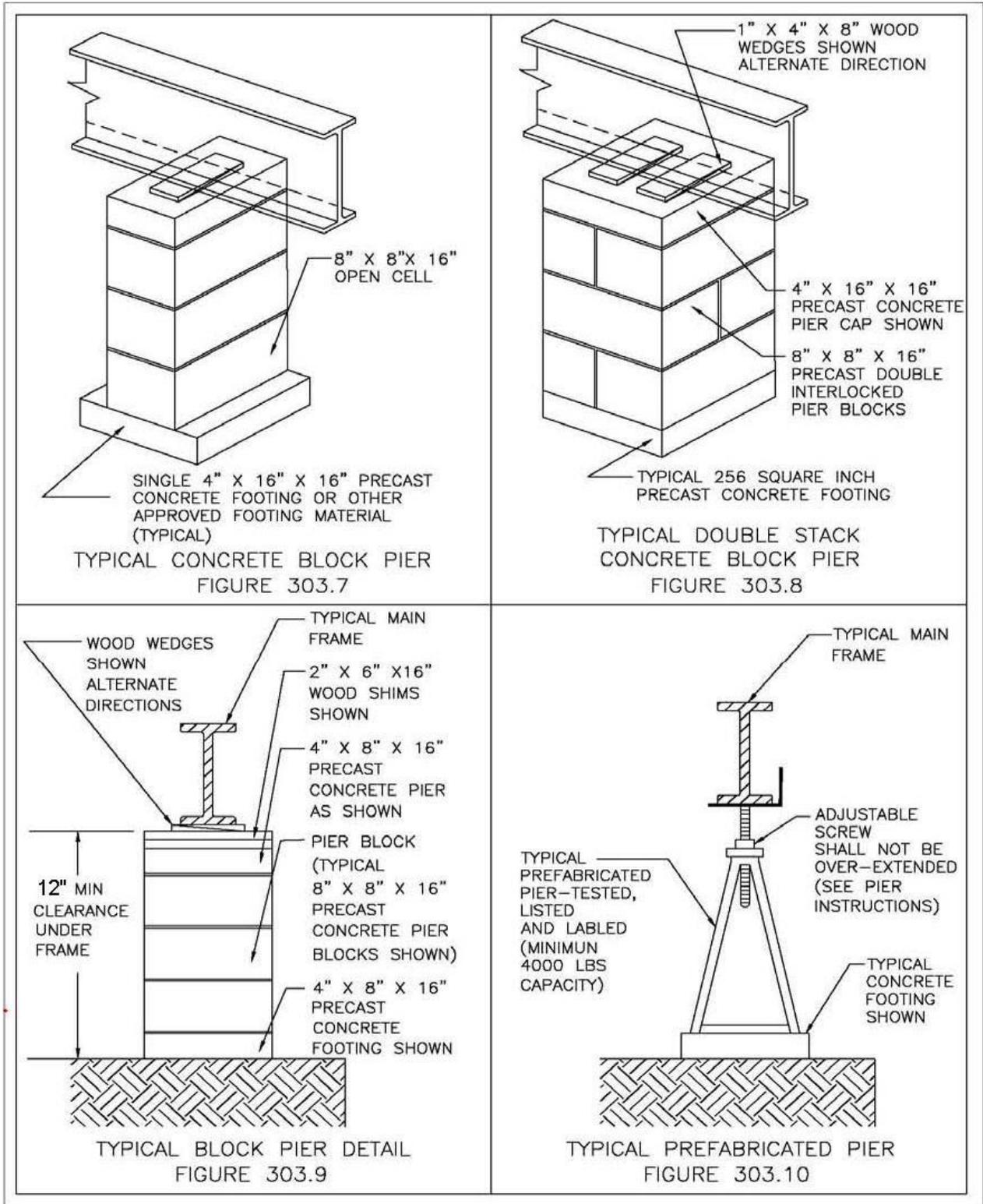
aggregates that conform to ASTM C-33 and ASTM C-331. Pumice and cinder block components shall not be used.

**B. Poured Concrete.** All poured in place concrete and pre-cast footings shall cure at least four days prior to the installation of the manufactured home and shall have a compressive strength of not less than three thousand pounds per square inch (3,000 psi) in twenty-eight (28) days.

**C. Wood Products.** All pressure treated wood shall be treated with preservative according to AWPAC22 and shall be identified as to conformance with such standard by an approved agency. All pressure treated wood shall be treated with an agent that will guard against attack by the subterranean termite and other cellulose destroying insects. Field treatment of cut ends of pressure treated wood is not allowed by this standard.

**D. Wood-Polymer Composite Products.** All wood-polymer composites shall comply with ASTM 790, ASTM 1037, ASTM D-1413, and AWPAC E172.

**09. Testing:** All components of the support system shall be tested to their dead load plus superimposed live load equal to three times the required live load using the test procedures in 24 CFR 3280.401.



## **304. INSTALLATION SUPPORT REQUIREMENTS.**

**01. Main Frame Supports:** The main frame of all manufactured home installations - standard and perimeter foundation sets - shall be supported as prescribed in the following Subsections. **See Figure 304.1.** All materials and components shall comply with the requirements of **Section 303.**

**A. Footings for Standard Sets.** The footings for the support piers under the main frames and perimeter of a standard set manufactured home shall be any of the footings in **Subsection 303.01.** The minimum size shall be two hundred fifty-six (256) square inches. If required by the local jurisdiction, footings must be placed below the frost line.

**B. Footings for Perimeter Foundations.** The footings for the support piers under the main frames of a perimeter foundation set manufactured home shall be poured-in-place concrete pads. **See Subsection 303.01.b.** The homeowner may opt to have six-inch (6") thick poured concrete footing runners (**See Subsection 303.01.f.**), but this shall not be required by the local authority having jurisdiction, dealers, or installers.

1) **Exception:** When a perimeter foundation for an existing standard set home is being installed, (**See Subsection 305.02.**) any of the footings in **Subsection 303.01** which are already in place are approved.

**C. Piers for all Sets.** The piers for the support of main frames in standard and perimeter foundation sets shall be any of the piers in **Subsections 303.02, 303.06, or 303.07.** When block piers are used they shall be placed perpendicular to the main frame.

**D. Location of Supports.** The footings and pier stands under the main frame shall be placed not more than twelve inches (12") from the ends of the frames on standard set homes and not more than thirty inches (30") on perimeter foundation set homes. The footings and pier stands shall continue to be set a maximum of six feet (6') on center the full length of the frame. For homes less the 11 feet in width and perimeter supports are not being used, the maximum pier spacing of five feet on center for the full length of the frame is to be used. A six-inch (6") variance is allowable to clear obstructions. This spacing shall be maintained in all roof loads up to and including forty pounds per square foot (40 psf).

**02. Perimeter Supports:** The perimeter sidewalls of all manufactured homes over eleven feet (11') in width shall be supported as prescribed in the following Subsections. **See Figure 304.1.** All materials and components shall comply with the requirements of **Section 303.**

**A. Perimeter Footings for Standard Sets.** The footings for the support piers under the perimeter sidewalls of a standard set manufactured home shall be any of the footings in **Subsection 303.01.** The minimum footing size shall be two hundred fifty-six (256)

square inches. Footings shall not extend beyond the exterior perimeter walls of the manufactured home.

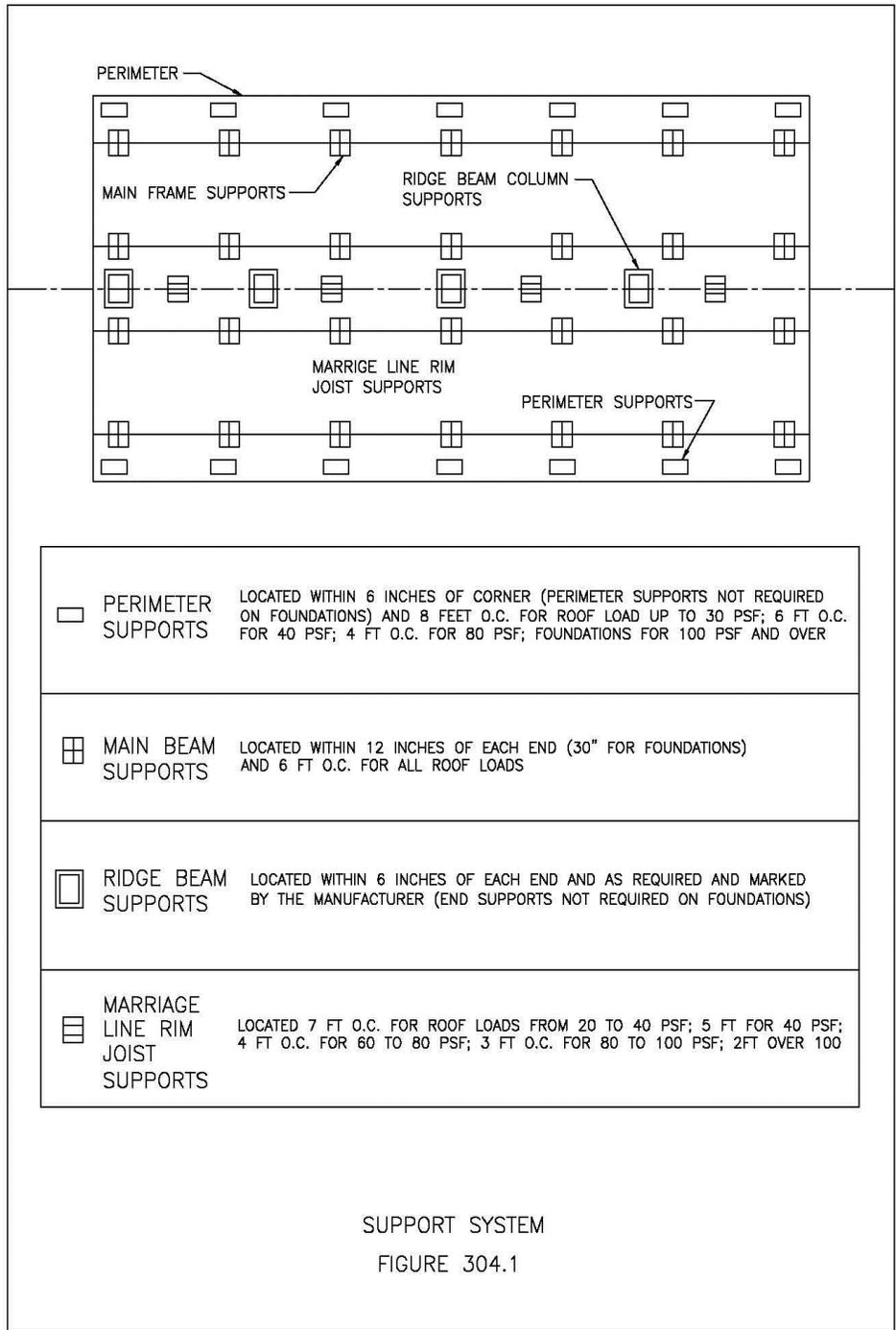
**B. Perimeter Piers for Standard Sets.** The piers for the support under the perimeter sidewalls of a standard set manufactured home shall be any of the piers in **Subsections 303.02, 303.06, or 303.07.**

- 1) All piers must be installed on approved footings which meet the requirements of **Subsection 303.01.** Block piers are required if the footing is constructed of eight inch by sixteen inch by four inch (8" x 16" x 4") pre-cast pads. The pier blocks must be placed perpendicular to the joint of the pads. **See Figure 303.1.**
- 2) When it is not possible to install a perimeter pier directly under the exterior sidewall, the floor shall be supported by a four inch (4") wide by six inch (6") high nominal size or equal horizontal Number Two (#2) or better grade wood beam, spanning a minimum of three floor joists and supported by an approved pier recessed not more than ten inches (10") from the perimeter. **See Figures 304.2 and 304.3.** When wood wedges are used with the beams, they shall be installed at each end of the block pier between the top of the pier and the bottom of the beam. Block piers shall be placed perpendicular to the floor joists.
  - a) **Exception:** In homes with longitudinal joists and where the third joist is above or inside the main frame beam, the pier support beam shall span a minimum of two joists.
  - b) **Exception:** The four inch (4") by six inch (6") wood beam may be replaced by blocking suggested or required by either the manufacturer's installation manual or a registered professional engineer.
- 3) Where a manufactured home has cantilevered portions and expanded rooms, these protrusions shall be supported by piers at each corner and along the cantilevered portion of the sidewall perimeter.

**C. Location of Supports.** Footings and pier stands under the perimeter side walls shall be located as prescribed below.

- 1) Six inches (6") or less from each corner.
- 2) Eight feet (8') on center maximum for roof loads up to thirty pounds per square foot (30 psi). Twenty pounds per square foot is the minimum permissible snow load rating in Nevada.
- 3) Six feet (6') on center maximum for roof loads of forty pounds per square foot (40 PFS).

- 4) Four feet (4') on center maximum for roof loads of eighty pounds per square foot (80 PSF).
  - 5) For all homes with roof loads over eighty pounds per square foot (80 PSF) outside of parks a perimeter foundation shall be installed. For homes within a park with an eighty pounds per square foot (80 PSF) or greater, the perimeter supports shall not be more than three (3') feet apart.
- D. Perimeter Foundation Sets.** There shall be an access to the crawl space no smaller than twenty four by eighteen inches by twenty-four inches (18" x 24") with a 24" clear space in front of and behind the wall.



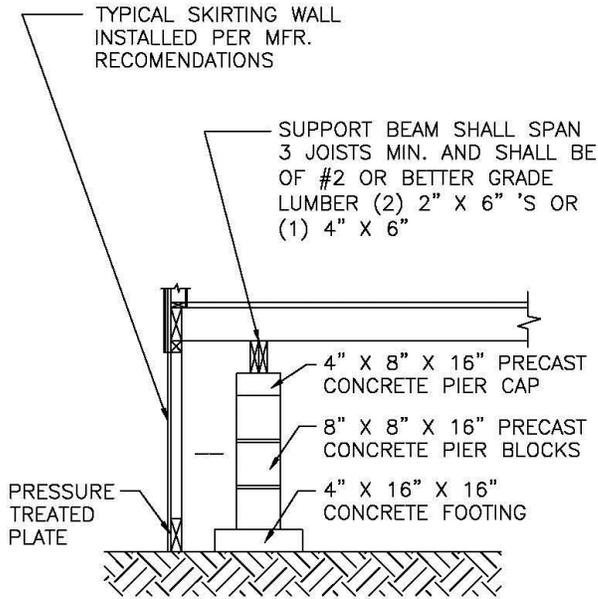
**03. Marriage line Supports:** The marriage line rim joists and ridge beam columns of all standard set and perimeter foundation set multi-section manufactured homes shall be supported as prescribed in the following Subsections. **See Figure 304.1.** All materials and components shall comply with the requirements of **Section 303.**

**A. Marriage Line Rim Joist Supports.** The entire marriage line shall be supported by minimum two hundred fifty-six (256) square inch footings and piers. **See Subsections 303.01, 303.02, 303.06, or 303.07.** Perimeter foundations shall have poured in place footings.

**B. Ridge Beam Column Supports.** Marriage line roof ridge beam column supports shall comply with the requirements prescribed in the following subsections.

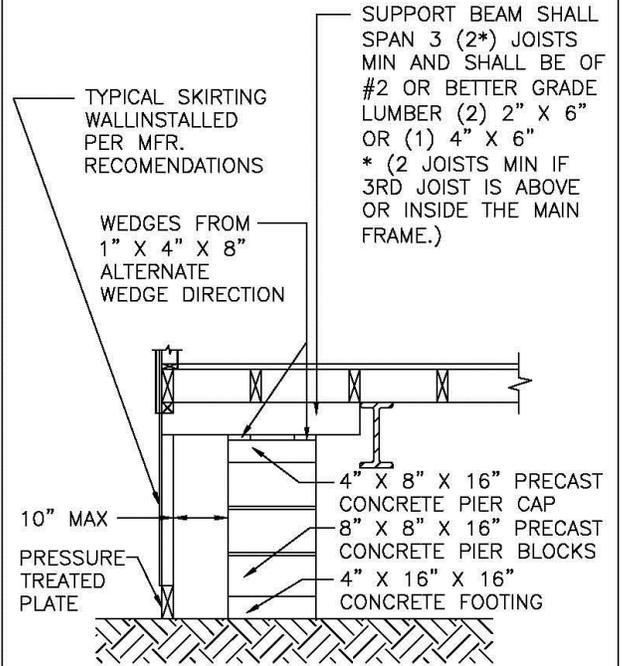
1. The manufacturer shall identify in a diagram the load on, and the location of, each column. The diagram shall be provided at the time of inspection and to the homeowner, and upon request, to the dealer and/or installer.
2. The manufacturer shall clearly mark the location of each column. These markings shall remain visible for inspection after the installation is completed.
3. Pads of two to four layers of minimum two inch by ten inch (2" x 10") nominal size lumber pressure treated on all six sides. The length of the pad shall not exceed double the width. The boards in each layer shall be laid crosswise to the boards in the layer beneath.
4. The installer shall use the manufacturer's diagram and markings to determine locations and loads of column supports.
5. The installer shall use Table 300-A to determine the size of footing required for each column load.
6. Footings for marriage line roof ridge beam support columns shall be constructed according to any one of the following four methods:
  - a) Multi-layered sixteen inch by sixteen inch by four inch (16" x 16" x 4") pre-cast concrete pads placed in a pyramid shape to distribute the load from the pier to the base. **See Figures 304.4 and 304.5.** Each layer of blocks shall span at least fifty percent (50%) of each block in the layer beneath.
  - b) Poured in place concrete pads a minimum of six inches (6") nominal thickness with two (2) three-eighths inch diameter (#3) reinforcing bars in each direction.
  - c) A poured concrete footing runner with a minimum of six inches (6") nominal thickness by twenty inches (20") wide with two properly positioned three-eighths inch (#3) reinforcing bars. **See Subsection 303.01.e.**

NOTE:  
WHEN WOOD WEDGES ARE USED WITH WOOD  
SUPPORT BEAMS THEY SHALL BE INSTALLED  
AT EACH END BETWEEN THE TOP OF THE  
PIER SHIM AND THE BOTTOM OF THE  
HORIZONTAL BEAM

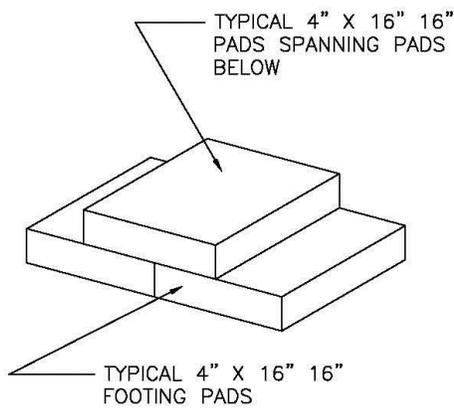


PERIMETER PIER W/ TRANSVERSE JOISTS  
FIGURE 304.2

NOTE:  
WHEN WOOD WEDGES ARE USED WITH WOOD  
SUPPORT BEAMS THEY SHALL BE INSTALLED  
AT EACH END BETWEEN THE TOP OF THE  
PIER SHIM AND THE BOTTOM OF THE  
HORIZONTAL BEAM

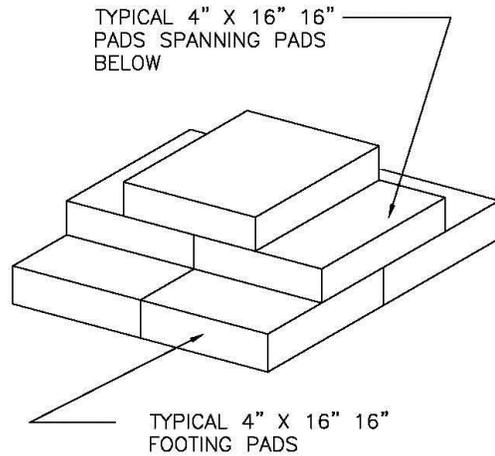


PERIMETER PIER W/ LONGITUDINAL JOISTS  
FIGURE 304.3



512 SQ IN PIER PAD  
(5000 POUND CAPACITY)

FIGURE 304.4



1024 SQ IN PIER PAD  
(11,000 POUND CAPACITY)

FIGURE 304.5

**C. Piers:** Marriage line piers shall be concrete block or listed prefabricated piers. **See Subsections 303.02 and 303.06.** All ridge beam columns with a load in excess of five thousand pounds (5,000 lbs.) shall have multiple concrete block piers or prefabricated piers listed and labeled to support the load either by itself or in combination with another pier.

**D. Location of Supports:** Marriage line supports shall be located as prescribed below. **See Figure 304.1.**

1. On perimeter foundation sets, the foundation wall shall be the first support at each end. On a standard set the first support will be the first ridge beam column support, which shall be within six inches (6") of each end.
2. Ridge beam column supports shall be sized and located per the diagrams supplied by the manufacturer for each home and Table 300-A.
3. Marriage line rim joist supports shall be located along the entire length of the marriage line as prescribed below:
  - a) Seven feet (7') on center maximum for all roof loads twenty to forty pounds per square foot (20 to 40 psf) and greater wherever there is a wall above the marriage line. Twenty pounds per square foot is the minimum permissible snow load rating in Nevada for new manufactured homes.
  - b) Five feet (5') on center maximum for roof loads over forty and up to sixty pounds per square foot (40 to 60 psf) wherever there is a wall above the marriage line.
  - c) Four feet (4') on center maximum for roof loads over sixty and up to eighty pounds per square foot (60 to 80 psf) wherever there is a wall above the marriage line.
  - d) Three feet (3') on center maximum for roof loads over eighty and up to one hundred pounds per square foot (80 to 100 psf) wherever there is a wall above the marriage line.
  - e) Two feet (2') on center maximum for roof loads over one hundred pounds per square foot (100 psf) wherever there is a wall above the marriage line.
  - f) As an alternate support system to that specified in (d) and (e) above, a marriage line pony wall may be constructed of minimum two inch by six inch (2" x 6") nominal size studs, twenty-four inches (24") on center, with double top and single (treated) bottom plates to support the marriage line. A shear panel must be installed on all above mentioned pony walls. The shear panel must be constructed with a minimum of ½ CDX plywood and must extend from the bottom of the bottom plate to the top of the top plates and cover at least two 24 inch stud bays. A four inch by six inch

(4" x 6") nominal size post shall be placed in this pony wall at all ridge beam support locations identified by the manufacturer. All wood shall have a structural rating equal to, or greater than, #2 SPF and pressure treated when located within 3 inches of the concrete footing or runner.

- g) Ridge beam column supports may be considered to be rim joist supports as long as the maximum allowable spacing between supports is not exceeded.

**A. Height of Installation:** No more than twenty-five percent (25%) of the main frame pier supports of a manufactured home shall be less than twelve inches or exceed thirty-six inches (36") in height without prior approval of the Division, the 36" height limit may be exceeded if the home is set on a basement. **See Section 305.03.** Pier heights shall be measured from the top of the footing to the bottom of the frame. **See Figure 303.9.** Maximum pier height shall not exceed sixty inches (60"). **See Figure 303.9.**

<b>Table 300-A</b>				
Footing Size (inches)	Capacity (pounds)		Footing Size (inches)	Capacity (pounds)
15 X 15	2,500		29 X 29	8,500
17 X 17	3,000		30 X 30	9,000
18 X 18	3,500		31 X 31	10,000
20 X 20	4,000		32 X 32	11,000
21 X 21	4,500		34 X 34	12,000
22 X 22	5,000		35 X 35	13,000
23 X 23	5,500		37 X 37	14,000
24 X 24	6,000		38 X 38	15,000
25 X 25	6,500		39 X 39	16,000
26 X 26	7,000		40 X 40	17,000
27 X 27	7,500		42 X 42	18,000
28 X 28	8,000		43 X 43	19,000
<p>The footing sizes shown are for square pads and are based on the area (square inches) required for the load. Other footing configurations, such as a rectangular configuration, may be used provided the area (square inches) is equal to or greater than the area of the square footing shown in the table. For example, a 12-inch x 22-inch (264 square inch) footing may be used in place of a 16 x 16 (256 square inch) footing. Also, two 12-inch x 24-inch pads may be used in place of one 24-inch x 24-inch pad.</p>				

305. CONTINUOUS FOUNDATIONS.

1. *.01 Continuous Foundations are governed by the local jurisdiction having authority pursuant to NAC489.180. Contact your local building Departments for details and approval*

**B. Vents.** See section 703 of this standard.

**C. Installation.** If the manufactured home is to be installed with perimeter walls supported on a continuous foundation, the main frames shall be supported according to subsection 304.01 and the marriage line shall be supported according to subsection 304.03.

**D. Recesses and Decks.** When a manufactured home has a factory installed deck, porch, or recessed entry larger than thirty-six (36) square feet which has open decking a stem wall shall encompass that area to separate it from the remainder of the foundation area. No vapor barrier shall be installed under this open deck area.

**D. Flexible Utility Connectors:** When a perimeter foundation is used to support the home and the home is structurally attached to the foundation, the flexible utility connectors can be eliminated.

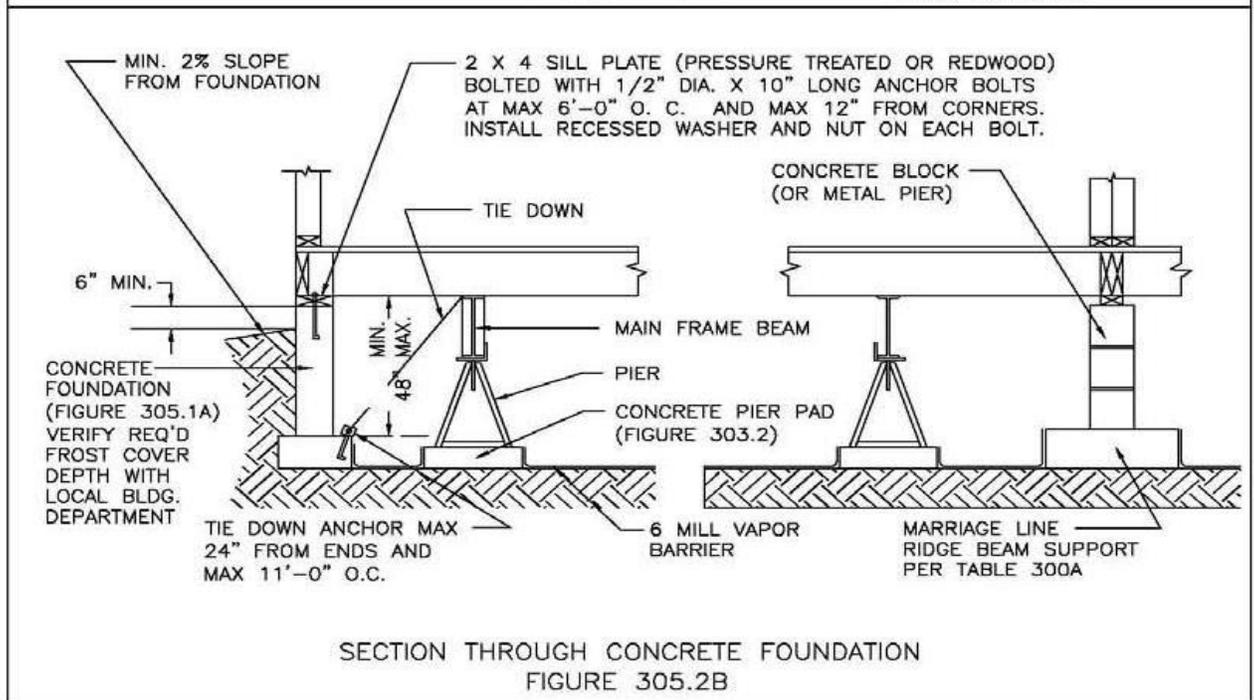
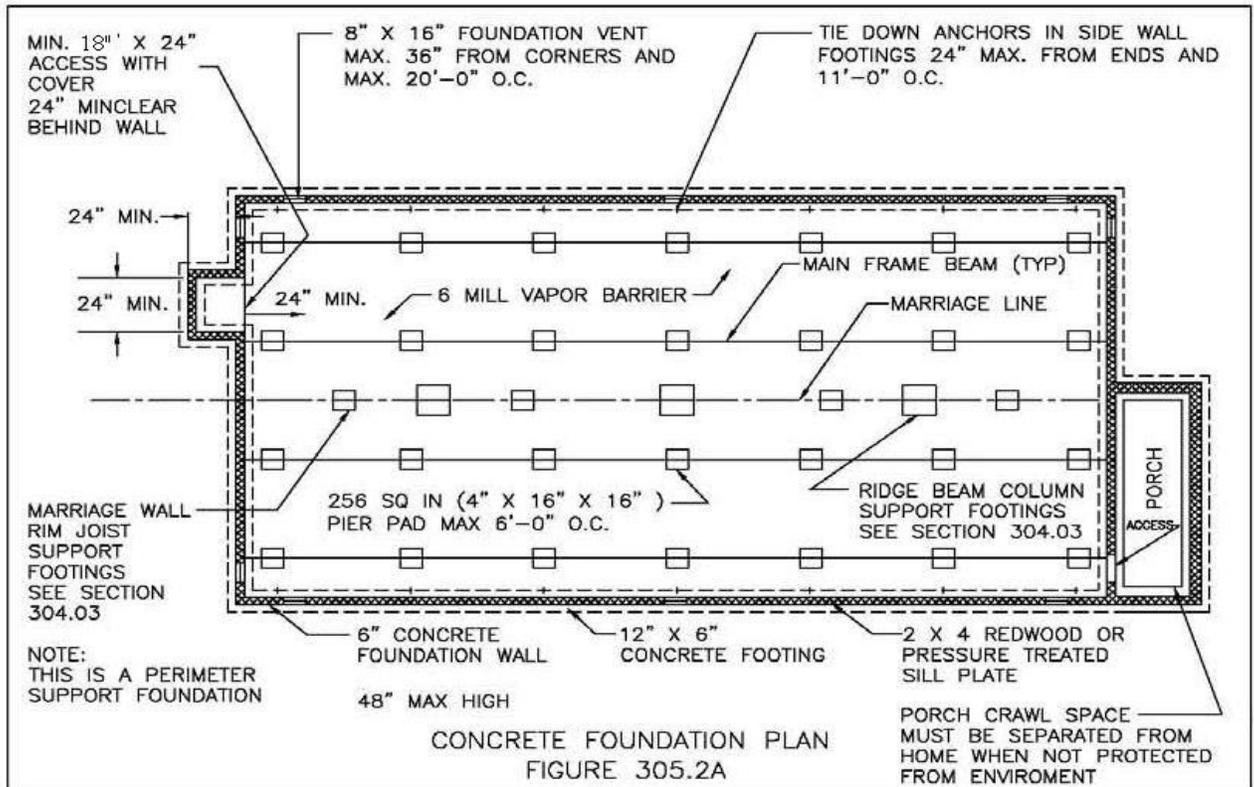


Diagram is for reference only.

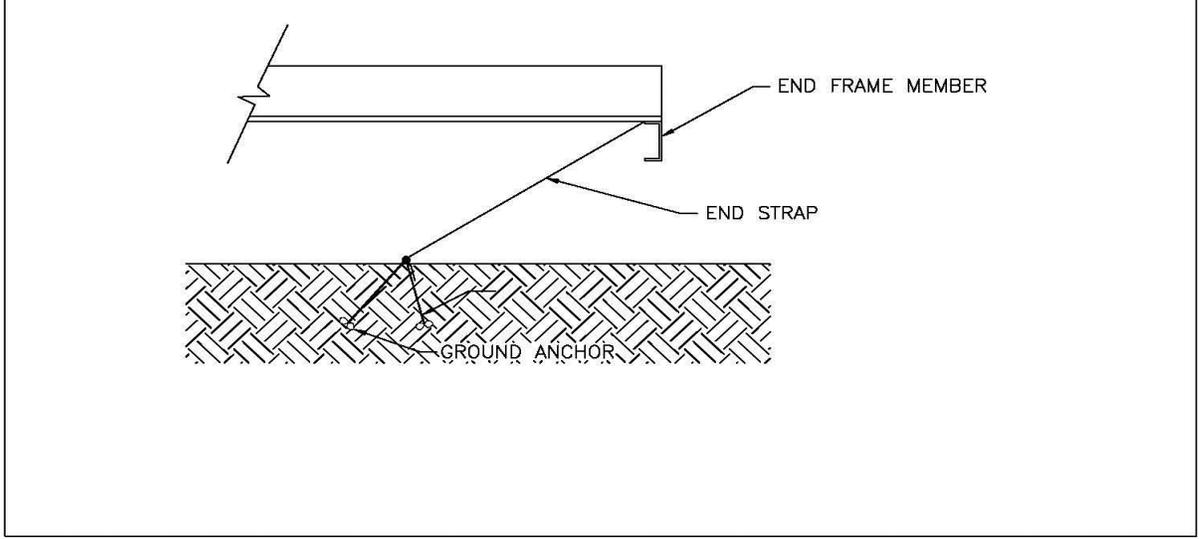
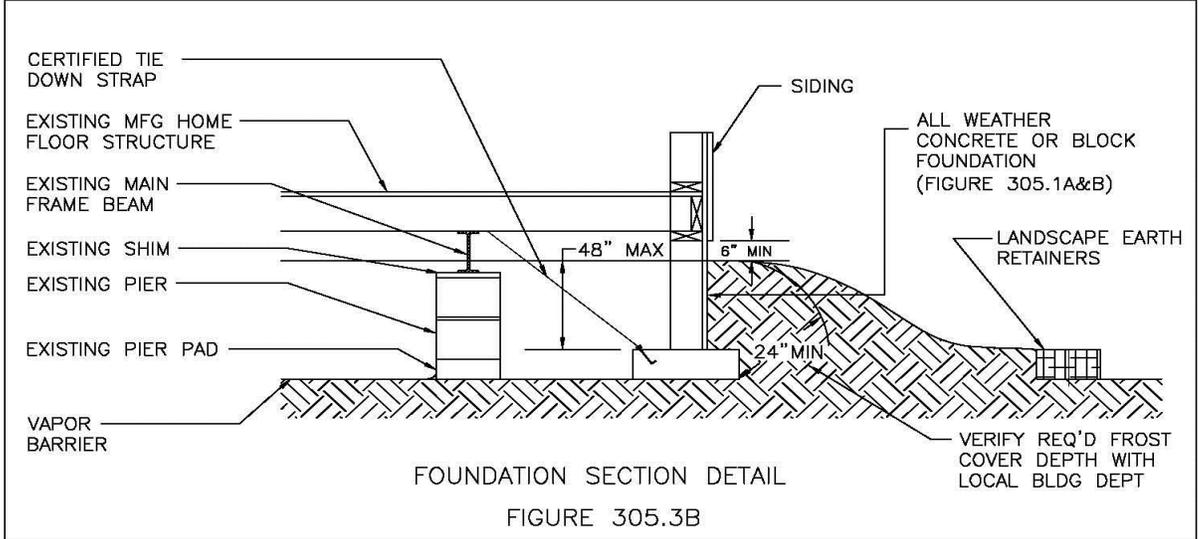
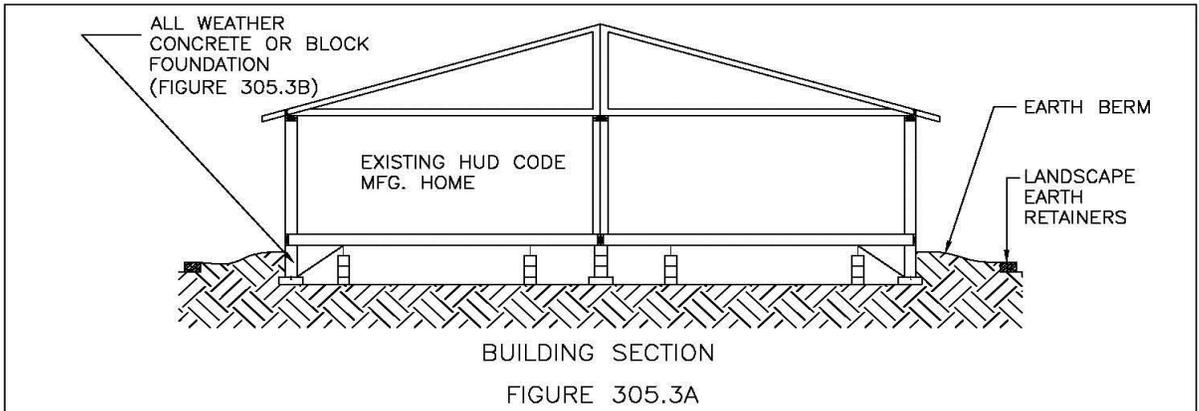
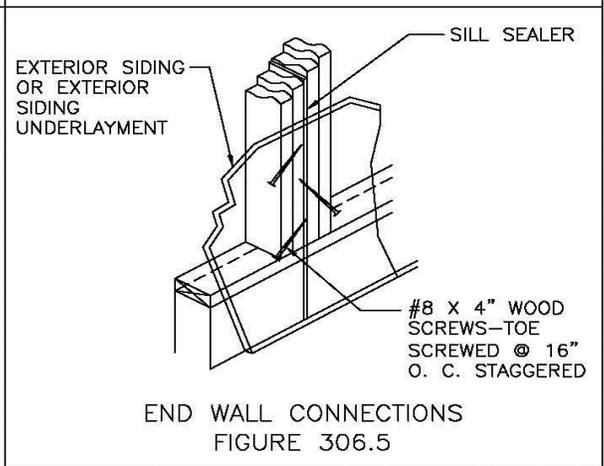
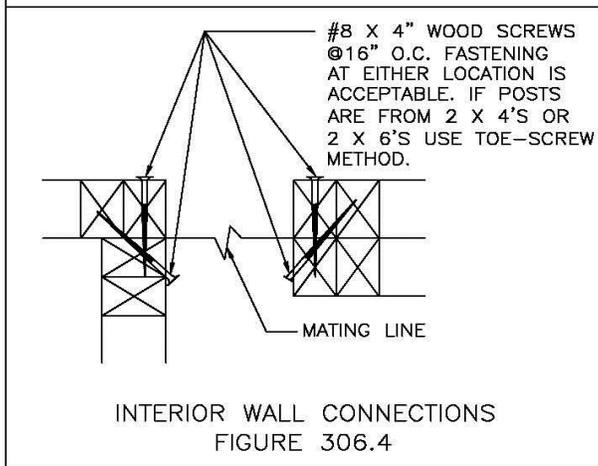
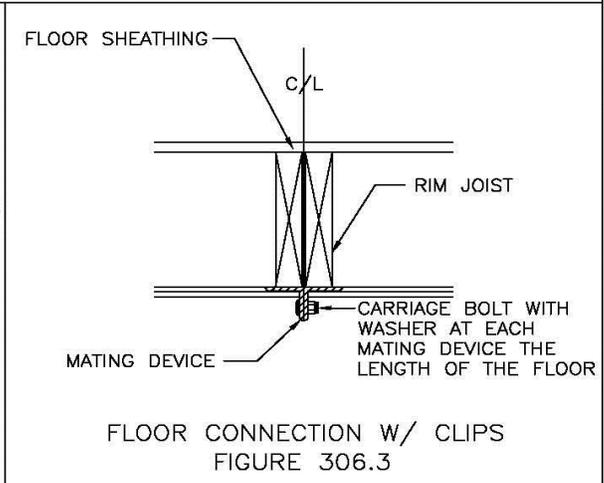
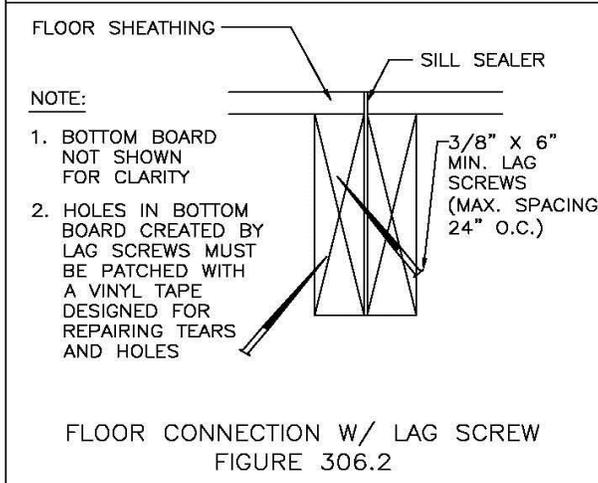
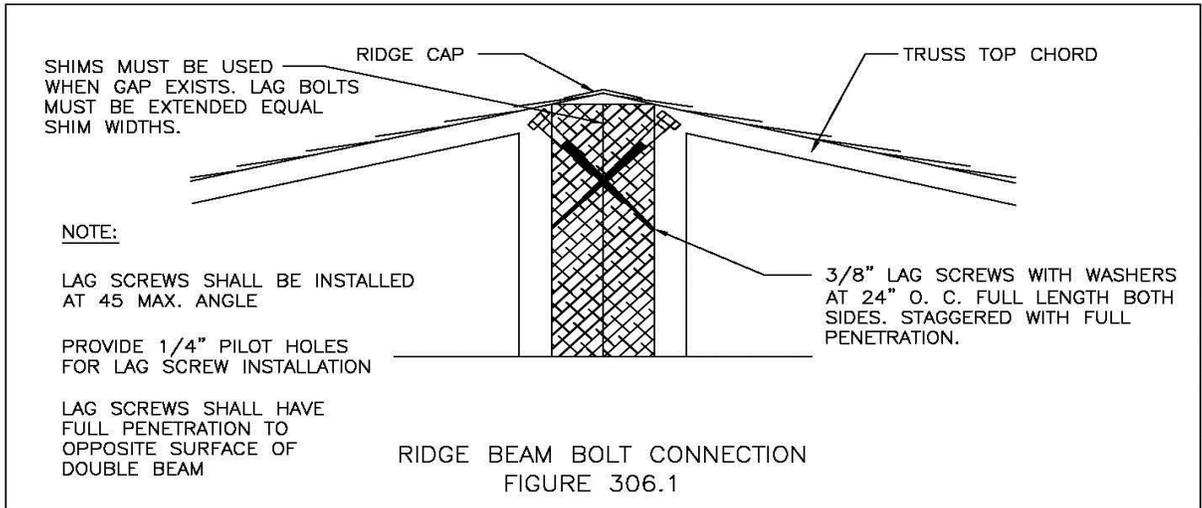


Diagram is for reference only.

## 306. MARRIAGE LINE CONNECTIONS.

- 01. General:** After all shipping and close-up material is removed, all sections of multi-section manufactured homes shall be secured to immobilize each section, allow for the transfer of required loads, and protect interior and enclosed spaces.
- 02. Shimming:** Gaps from one-half inch (1/2") to one and one-half inch (1 1/2") between manufactured home sections shall be shimmed and sealed according to **Subsection 306.07**. For gaps greater than one-half inch, the fastener length must be increased by the amount of the gap. Gaps greater than one and one-half inch (1 1/2") shall be corrected by the manufacturer. In no case shall the installer attempt to close gaps by tensioning the lag screws while joining the sections together. This procedure will destroy the truss and floor integrity.
- 03. Ridge Beam Connections:** Ridge beams of multi-section manufactured homes shall be secured together either:
- A.** With three-eighths inch (3/8") diameter lag screws with full penetration through the ridge beams, with washers, and spaced equally along the length of the ridge beam at a maximum of twenty-four inches (24") on center and no more than forty-five (45) degrees from perpendicular. Lag screws will be installed on both sides of the beam offset approximately one-half of the spacing from each other. **See Figure 306.1**. All ridge beam lag screws shall be installed in an area where there is solid ridge beam material between the manufactured home sections. Ridge beams shall be predrilled for lag screws; or
  - B.** With a connection system other than lag bolts which may be engineered by the manufacturer who shall supply the dealer and installer with complete installation instructions. Those instructions shall be in the manufactured home at the time of inspection and the ridge beams shall be tagged to indicate an alternate system is required.
- 04. Floor Connections:** Floors of multi-section manufactured homes shall be secured together. **See Figures 306.2** and **306.3**. Rim Joists shall be predrilled for lag screws.
- A.** For homes with a single rim joist use three-eighths inch (3/8") diameter by six inch (6") long lag screws with washers installed diagonally at forty-five (45) degrees or less through each section's rim joists installed in pairs or staggered, but not exceeding a maximum spacing of twenty-four inches (24") on center. or
  - B.** For homes with a double rim joist use three-eighths inch (3/8") diameter by eight inches (8") long lag screws with washers installed diagonally at forty-five (45) degrees or less through each section's rim joists installed in pairs or staggered, but not exceeding a maximum spacing of twenty-four inches (24") on center; or
  - C.** With the manufacturer's installed mating devices bolted together with appropriately sized bolts and washers.

- 05. End Wall and Interior Wall Connections:** All end wall studs and interior wall column supports shall be screwed together with four inch (4") long Number Eight (#8) screws long enough to have a minimum of one and a half inches (1 ½") penetration into the receiving member spaced sixteen inches (16") on center. See **Figures 306.4 and 306.5.**
- 06. Lag Screws:** Whenever lag screws are used one-quarter inch (1/4") pilot holes shall first be drilled. The screws shall be installed so as to provide full penetration of the lag screw into both beams and joists.
- 07. Sealing:** During installation, joints between all sections shall be cleaned. Where the gap exceeds one-half inch (1/2") top or bottom it shall be filled with a shim. The joints shall then be sealed with a weather stripping gasket material to limit heat loss and prevent air, moisture and other damaging infiltration. The gasket material shall be durable, non-porous caulking, closed cell foam, urethane, or sill seal. If the manufacturer supplies a sealer, the installer shall use it. Caulking, when used, shall fill the gap and be capable of compressing and stretching. Sill seal, if used, shall be a minimum of five and one-half inches (5-1/2") wide and attached with fasteners staggered at six inches (6") on center and compressed to form a tight seal. Any remaining gaps shall be caulked or foamed to complete the seal.
- 08. Patching:** All cuts, holes, or tears in the bottom board (rolled plastic material) or floor insulation including, but not limited, to areas around structural connections and electrical, plumbing, mechanical, and heating equipment penetrations shall be adequately repaired to prevent the entrance of rodents and to limit heat loss. Repairs shall be made with materials and adhesives designed for this use.



**307. ANCHORING.** Caution: Before installing ground anchors, the site should be checked for marked and unmarked underground utilities.

**01. Anchoring:** To resist lateral movement from high winds, earthquakes, and flooding, all manufactured homes shall be anchored down.

**02. Loads:** Anchoring equipment including all anchors, straps, and tension devices used to secure a manufactured home when installed, shall be capable of resisting an allowable working load at least equal to or exceeding three thousand one hundred-fifty pounds (3,150 lbs) and shall be capable of withstanding fifty percent (50%) overload (4,725 lbs) without failure of either the anchoring equipment or the attachment point to the manufactured home. When a qualified Nevada Registered Engineer designs the stabilizing system, alternate working loads may be used, provided the anchoring equipment is capable of withstanding a fifty percent (50%) overload equal to or exceeding 4,725 lbs. Each type of anchor suitable for the purpose of this standard shall meet the following criteria.

- A. Each anchor shall be certified and listed as to its resistance against pulling based on the maximum angle of diagonal or vertical tie loading and the angle of anchor installation and the type of soil in which the anchor is to be installed.
- B. Anchors designed for the connection of multiple ties shall be certified and listed as being capable of resisting the combined working load and overload consistent with the intent expressed herein; and shall be installed to resist resultant forces.
- C. Each anchor shall be selected based on the soil class at the depth where the anchor will be installed.
- D. Each anchor shall, at a minimum, be installed to the full depth shown in the anchor manufacturer's installation instructions. The retainer or stabilizer plates shall be installed to achieve the required ground anchor resistance capacity. **See Figure 307.1.**
- E. Each anchor shall be provided with protections against weather deterioration and corrosion at least equivalent to that provided by a coating of zinc on steel on not less than 3.302 oz./sq ft of surface coated.
- F. The load-carrying portion of the anchor shall extend below the frost line.

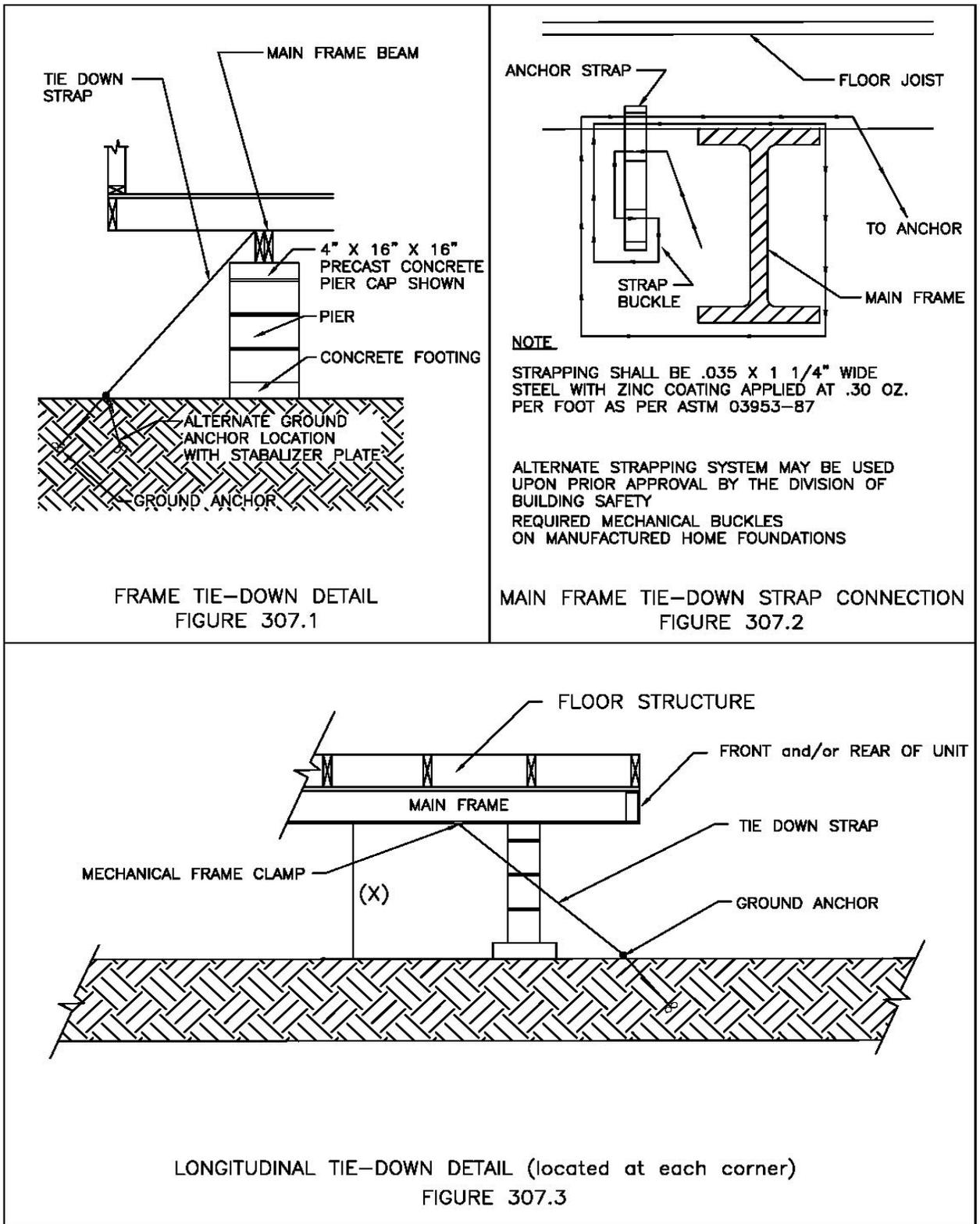
**03. Installation Instructions:** Anchor manufacturers shall provide manufacturer's installation instructions for all listed and approved anchoring systems sold in Nevada. Anchor manufacturer's installation instructions shall be consistent with the product listing and approval. One copy of the anchor manufacturer's instructions must be made available for the inspector at the time of inspection.

**04. Testing:** Anchoring devices shall be tested to one and one-half (1.5) times the

horizontal wind load of fifteen pounds per square foot (15 psf) and a roof uplift of nine pounds per square foot (9 psf) using the test procedures in the current version of ASTM D-3953.

- 05. Ties:** All tie strapping shall be fastened to anchors and drawn tight with adjustable tensioning devices supplied with the anchor.
- A.** Tie strapping shall be certified and listed to be capable of resisting an allowable working load of three thousand one hundred-fifty pounds (3,150 lbs) with no more than two percent (2%) elongation and shall withstand a fifty percent (50%) overload.
  - B.** Ties shall connect the anchor to the main frame I-beams that run lengthwise under the manufactured home. Ties shall not connect to steel outrigger or cross member beams that fasten to, and intersect with, the main frame I-beams. If the ties are attached to the bottom flange of the main chassis beam, the frame must be designed to prevent rotation of the beam.
  - C.** Tie materials shall be designed to prevent self-disconnection when ties are slack. Open hook ends shall not be used in any part of the anchoring system. **See Figure 307.2.**
  - D.** A methods must be used for protecting vertical and diagonal strapping at sharp corners by use of radius clips or other means
- 06. Spacing:** Unless otherwise specified in the anchoring equipment manufacturer's installation instructions, anchoring devices shall be installed on both sides of the manufactured home with a maximum spacing of eleven feet (11') on center for homes installed on piers with a maximum of sixty inches (60") in height and no more than two feet (2') from each end. For homes installed with piers greater than sixty inches (60") the tie down system must be designed by a Nevada Registered Engineer.
- 07. Longitudinal Anchors:** Each home being installed must be installed with an anchoring devise designed to resist longitudinal (lengthwise) movement. Any device used must be tested and listed for this specific use and installed to the device's manufactures instructions. If the number of devices to be used is not mentioned or is unclear, a minimum of one device for each direction per chassis main beam must be used. (See figure 307.3)
- 08. Sidewall, Over-the-Roof, Mate-line, and shear Wall Straps:** If sidewall, over-the-roof, mate-line, or shear wall straps are installed on the home, they must be connected to an anchoring assembly.
- 09. Certification:** Anchoring equipment is certified when tested, listed, and labeled by a nationally recognized testing and listing laboratory, or designed by a Nevada Registered Professional Engineer and approved by the Division

**10. Alternate anchoring systems:** Alternate anchoring systems may be used when approved by the Division.



## **308. FLOOD RESISTANCE.**

**01. Location:** Manufactured homes shall not be installed in designated flood ways but may be installed in flood hazard areas according to the minimum requirements of this section.

**02. Installation:** All manufactured homes installed in designated 100 year flood hazard areas shall be installed according to FEMA guidelines to resist flotation, collapse, or lateral movement during a base flood. Homes installed in Manufactured/Mobile home parks shall be allowed to be installed and anchored in accordance with FEMA guidelines.

**03. Elevation:** The underside of the floor of all manufactured homes installed in designated 100 year flood hazard areas shall be a minimum of twelve inches (12") above the flood elevation to resist flotation, collapse, or lateral movement

**04. Under-floor Enclosures:** Notwithstanding the requirements of **Section 703**, manufactured homes installed in designated flood hazard areas shall have the under-floor enclosure foundation vents located within twelve inches (12") vertically of the finished grade.

### **05. Installation of manufactured homes in flood hazard areas:**

- A. Definitions.** Except to the extent otherwise defined in Subpart A, the terms used in this subpart are as defined in 44 CFR 59.1 of the National Flood Insurance Program (NFIP) regulations.
- B. Applicability.** The provisions of this section apply to the installation of manufactured homes located wholly or partly within a flood hazard area.
- C. Pre-installation considerations.** Prior to the initial installation of a manufactured home, the installer is responsible for determining whether the manufactured home site lies wholly or partly within a special flood hazard area as shown on the LAHJ's Flood Insurance Rate Map, Flood Boundary and Floodway Map, or Flood Hazard Boundary Map, or if no LAHJ, in accordance with NFIP regulations. If so located, and before an installation method is agreed upon, the map and supporting studies adopted by the LAHJ must 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 on foundations engineered to incorporate methods and practices that minimize flood damage during the

base flood, in accordance with the requirements of the LAHJ, 44 CFR 60.3(a) through (e), and other provisions of 44 CFR referenced by those paragraphs.

**2. Outside appliances.**

a) Appliances installed on the manufactured home site in flood hazard areas must be anchored and elevated to or above the same elevation as the lowest elevation of the lowest floor of the home.

b) Appliance air inlets and exhausts in flood hazard areas must be located at or above the same elevation as the lowest elevation of the lowest floor of the home.

**3. Related guidance.** Refer to FEMA 85/September 1985, Manufactured Home Installation in Flood Hazard Areas, 1985 (incorporated by reference, see § 285.4).

**NOTE:** The following information on FEMA is not adopted as part of this standard but referenced in this standard for the convenience of the user. Federal Emergency Management Agency (FEMA). In addition to the state's minimum standards for elevating manufactured homes in flood hazard areas, 44 CFR, Chapter 1, Section 60.3(c) (6) (iv) of the Federal Emergency Management Agency (FEMA) regulations, requires all manufactured homes in designated flood areas to be elevated to resist flotation, collapse, and lateral movement during the base flood. For additional up-to-date information of FEMA requirements, programs, or insurance contact:

a) Federal Emergency Mgmt. Agency Federal Regional Center 130-228th St. SW  
Bothell, Washington 98021-9796

## **309. EGRESS REQUIREMENTS.**

**01. Egress:** Upon completion of installation each manufactured home shall conform with the following requirements:

**A.** Each required egress door on a manufactured home shall be accessible by stairs, a ramp, or a deck equipped with stairs or ramp.

**B.** Windows and doors shall be adjusted, secured in place, and made operational to provide security, egress, and to minimize air leakage and water penetration.

**C.** Damage to windows and doors, which affect their safety features, thermal performance, or operation, shall be repaired or replaced.

**D.** Each manufactured home shall have an under-floor access provided and constructed according to **Section 704**.

- 02. Inspection Approval:** Installations shall not be approved until a means of access has been provided to each of the two required exit doors on the manufactured home.
- 03. Stairs:** Stairs must be provided by the dealer or installer. Minimum standards are prescribed in the following Subsections.
- A.** Stairs shall be constructed with a minimum thirty-six inch (36") width, seven inch (7") maximum tread rise, minimum eleven inch (11") tread run, and a minimum thirty-six inch by thirty-six inch (36" x 36") top landing located not more than three quarters of an inches (3/4") below the floor of the home. All stairways with four or more risers shall be equipped with a handrail on at least one side with the top located between thirty-four inches (34") and thirty-eight inches (38") above landings and the nosing of treads. Any stairway with a landing greater than twenty-nine inches (29") above grade must have guard rails constructed in accordance with Section 710.
  - B.** Stairs shall be constructed and cross braced with Number 2 (#2) or better grade lumber. All lumber within six inches (6") of grade shall be pressure treated for decay and insect resistance.
  - C.** Stairs shall be supported on a minimum of four (4) 128 square inch footings as described in **Subsection 303.01** of this standard.
- 04. Permanent Construction Requirements:** All permanent ramps, steps, stairways, railings, decks, porches, and landings shall be constructed and installed according to **Section 710**.

## **310. Installation of Non-Public Use Commercial Coaches**

- 01. Public use Commercial Coaches:** Public use Commercial Coaches must be installed to drawings approved by the Division and stamped by a Nevada Registered Engineer and consistent with the manufacturer's installation requirements for the specific unit.
- 02. Site Preparation.**
- A.** Suitability of the site. It shall be the responsibility of the Commercial Coach Dealer to disclose the requirements or zoning and/or land us restrictions and the permitting requirements of the lease or sold commercial coach to the customer.
  - B.** It will be the responsibility of the dealer and the installation company to determine the site is adequate to safely install a commercial coach regardless of its intended use.

### 03. Support of the Commercial Coach:

- A. Main Frame Supports.** The main frame of all commercial coach installations - standard and perimeter foundation sets - shall be supported as prescribed in the following Subsections.
- B. Footings for Standard Sets.** The footings for the support piers under the main frames and perimeter of a standard set commercial coach shall be any of the footings in **Subsection 303.01**. The minimum size shall be two hundred eighty eight (288) square inches.
- C. Piers for all Sets.** The piers for the support of main frames in standard and perimeter foundation sets shall be any of the piers in **Subsections 303.02, 303.06, or 303.07**. When block piers are used they shall be placed perpendicular to the main frame.
- 1. Exception:** Prefabricated Piers used for a temporary installation of a commercial coach are not required to have the coating of zinc on steel of .30 oz./ft.<sup>2</sup> of surface coated. The pier must be painted and can not be rusted or in poor condition, the inspector can determine "poor condition".
- D. Location of Supports.** The footings and pier stands under the main frame shall be placed not more than eighteen inches (18") from the ends of the frames. The footings and pier stands shall continue to be set a maximum of four feet (4') on center the full length of the frame. A six-inch (6") variance is allowable to clear obstructions. This spacing shall be maintained in all roof loads up to and including seventy-five pounds per square foot (75 psf).
- E. Perimeter Supports.** The perimeter sidewalls of a commercial coach being installed in an area with a snow load greater than thirty pounds per square foot (30psf), shall be supported as prescribed in the following Subsections. If the unit has an exterior wall or roof covering with a dead load of four and one half pounds per square foot (4.5 psf) or greater the perimeter sidewalls shall be supported as prescribed in the following Subsections.
- 1. Perimeter Piers for Standard Sets.** The piers for the support under the perimeter side walls of a standard set commercial coach shall be any of the piers in **Subsections 303.02, 303.06, or 303.07**. See exception in paragraph (c) of this section.
  - 2.** All piers must be installed on approved footings that meet the requirements of **Subsection 303.01** and (b) of this section.
  - 3.** Block piers are required if the footing is constructed of eight inch by sixteen inch by four inch (8" x 16" x 4") pre-cast pads. The pier blocks must be placed perpendicular to the joint of the pads. **See Figure 303.1.**

4. When it is not possible to install a perimeter pier directly under the exterior sidewall, the floor shall be supported by a four inch (4") wide by six inch (6") high nominal size or equal horizontal Number Two (#2) or better grade wood beam, spanning a minimum of three floor joists and supported by an approved pier recessed not more than ten inches (10") from the perimeter. **See Figures 304.2 and 304.3.** When wood wedges are used with the beams, they shall be installed at each end of the block pier between the top of the pier and the bottom of the beam. Block piers shall be placed perpendicular to the floor joists.

a) **Exception:** In commercial coaches with longitudinal joists and where the third joist is above or inside the main frame beam, the pier support beam shall span a minimum of two joists.

5. Where a commercial coach has cantilevered portions and expanded rooms, these protrusions shall be supported by piers at each corner and along the cantilevered portion of the sidewall perimeter.

**F. Location of Perimeter Supports.** Footings and pier stands under the perimeter side walls shall be located as prescribed below.

1. Twelve inches (12") or less from each corner.
2. Six feet (6') on center maximum for roof loads from twenty to sixty pounds per square foot (20 to 60 psf).
3. Five feet (5') on center maximum for roof loads over sixty and up to eighty pounds per square foot (60 to 80 psf).
4. For all commercial coaches with roof loads over eighty pounds per square foot (80 psf) the perimeter supports shall not be more than three (3') feet apart.

**G. Perimeter Foundation Sets.** Commercial coaches installed on a perimeter foundation shall have the entire perimeter of the unit supported by the foundation walls.

**F. Marriage line Supports.** The marriage line rim joists and ridge beam columns of all standard set and perimeter foundation set multi-section commercial coaches shall be supported as prescribed in the following Subsections. **See Figure 304.1.**

1. **Marriage Line Rim Joist Supports.** The entire marriage line shall be supported by minimum two hundred eighty eight (288) square inch footings and piers. **See Subsections 303.01, 303.02, 303.06, or 303.07.**
2. **Ridge Beam Column Supports.** Marriage line roof ridge beam column supports shall be any of the footings in **Subsection 303.01.** The minimum size

shall be two hundred eighty eight (288) square inches. The piers used for column supports must be rated to support a minimum of six thousand (6000) pounds

**H. Pier Height of Installation.** No more than twenty-five percent (25%) of the main frame pier supports of a commercial coach shall be less than sixteen inches or exceed thirty-six inches (36") in height without prior approval of the Division, unless it is set on a basement. **See Section 305.03.** Pier heights shall be measured from the top of the footing to the bottom of the frame. **See Figure 303.9.** Maximum pier height shall not exceed eighty inches (80"). **See Figure 303.8.**

#### **04. Anchoring For Commercial Coaches:**

**A. Longitudinal Anchoring System:** A longitudinal anchoring system must be used to eliminate the unit from moving lengthwise during a wind or seismic event. If the conventional system of anchors and straps are used there must be two anchors and straps per unit. One anchor and strap provides resistance in each direction.

Exceptions:

1. The four corner anchors and straps can be installed at a 45 degree angle to the main frames to provide the required longitudinal resistance.
2. An approved bracing system can be used in place of the anchors and straps. The system must be intended for the purpose it is being used and installed per the system manufacturer's instructions.

**B. Anchoring:** To resist lateral movement from high winds, earthquakes, and flooding, all Commercial Coaches shall be anchored down.

Exceptions:

1. Commercial Coaches installed inside buildings and/or structures giving the coach protection from wind loading will not be required to be anchored. Adequate wind shelter shall be determined by the inspector at the time of inspection.
2. Commercial Coaches being installed inside an occupied building must be equipped with adequate anchoring to resist the effects of a seismic event. Adequate anchoring must be determined by a Nevada Registered Engineer.
3. Commercial Coaches installed on a minimum thickness of four (4) inches of asphalt or concrete will be allowed to be anchored with a standard rock anchor or anchoring system. The number of anchors and spacing will comply with section 307 or the manufacturer's instructions.

**C. Loads:** Anchoring equipment including all anchors, straps, and tension devices used to secure a commercial coach when installed, shall be capable of resisting an allowable working load at least equal to or exceeding three thousand one hundred-fifty pounds (3,150 lbs) and shall be capable of withstanding fifty percent (50%) overload (4,725 lbs) without failure of either the anchoring equipment or the attachment point to the manufactured home. When a qualified Nevada Registered Engineer designs the stabilizing system, alternate working loads may be used, provided the anchoring equipment is capable of withstanding a fifty percent (50%) overload equal to or exceeding 4,725 lbs. Each type of anchor suitable for the purpose of this standard shall meet the following criteria.

1. Each anchor shall be certified and listed as to its resistance against pulling based on the maximum angle of diagonal or vertical tie loading and the angle of anchor installation and the type of soil in which the anchor is to be installed.
2. Anchors designed for the connection of multiple ties shall be certified and listed as being capable of resisting the combined working load and overload consistent with the intent expressed herein; and shall be installed to resist resultant forces.
3. Each anchor shall be selected based on the soil class at the depth where the anchor will be installed.
4. Each anchor shall, at a minimum, be installed to the full depth shown in the anchor manufacturer's installation instructions. The retainer or stabilizer plates shall be installed to achieve the required ground anchor resistance capacity. **See Figure 307.1.**
5. The load-carrying portion of the anchor shall extend below the frost line.

**D. Installation Instructions:** Anchor manufacturers shall provide manufacturer's installation instructions for all listed and approved anchoring systems sold in Nevada. Anchor manufacturer's installation instructions shall be consistent with the product listing and approval. One copy of the anchor manufacturer's instructions must be made available for the inspector at the time of inspection.

1. **Caution:** Before installing ground anchors, the site should be checked for marked and unmarked underground utilities.
2. **Ties.** All tie strapping shall be fastened to anchors and drawn tight with adjustable tensioning devices supplied with the anchor.
3. **Tie strapping** shall be certified and listed to be capable of resisting an allowable working load of three thousand one hundred-fifty pounds (3,150 lbs) with no more than two percent (2%) elongation and shall withstand a fifty

percent (50%) overload.

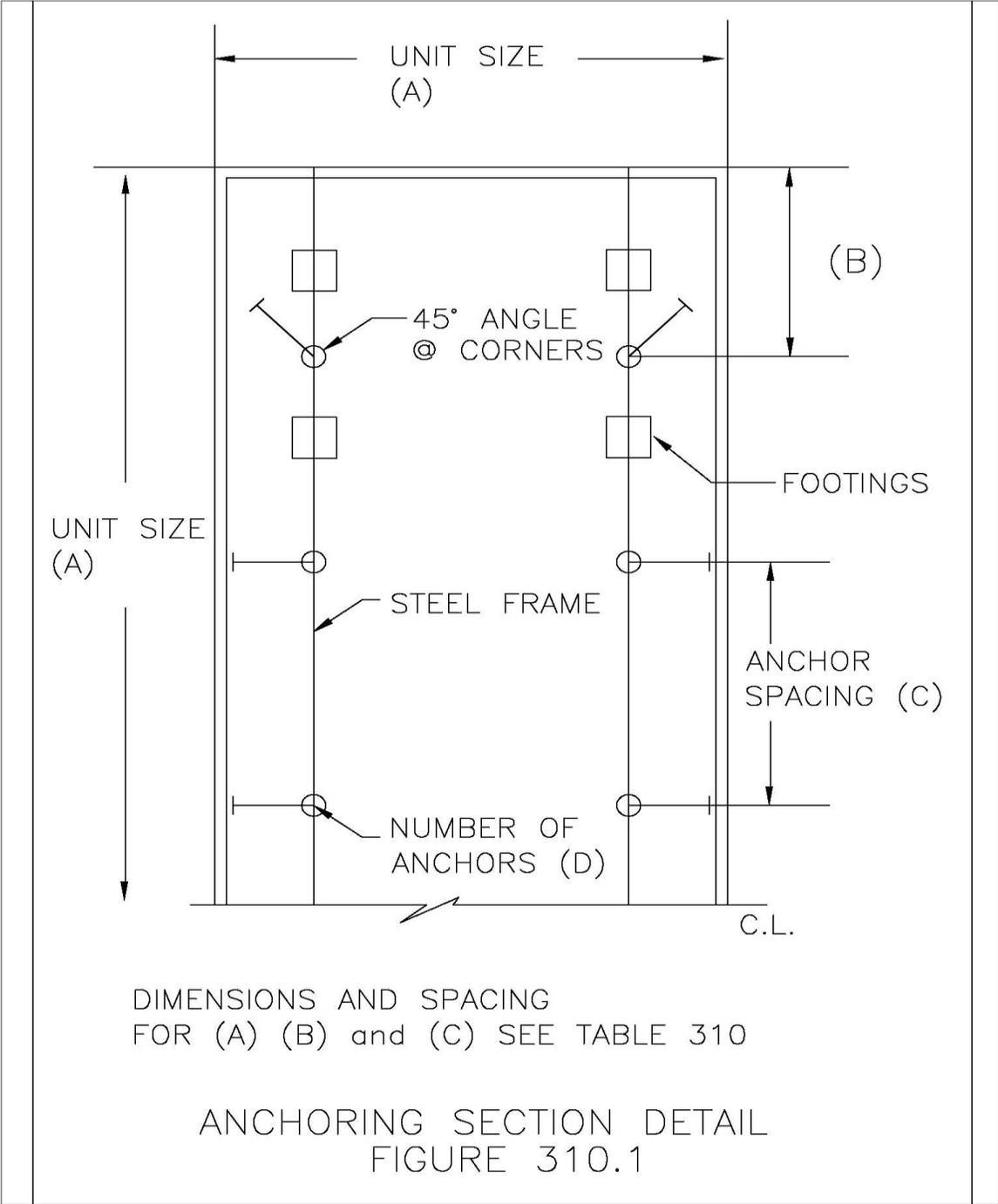
4. **Ties shall** connect the anchor to the main frame I-beams that run lengthwise under the commercial coach. Ties shall not connect to steel outrigger or cross member beams that fasten to, and intersect with, the main frame I-beams. If the ties are attached to the bottom flange of the main chassis beam, the frame must be designed to prevent rotation of the beam.
5. **Tie materials** shall be designed to prevent self-disconnection when ties are slack. Open hook ends shall not be used in any part of the anchoring system. **See Figure 307.2.**
6. A method must be used for protecting vertical and diagonal strapping at sharp corners by use of radius clips or other means.

**E. Multiple Section Commercial Coach Anchoring.**

1. Straps and anchors for multi-section commercial coaches will be installed around the entire perimeter of the unit at a maximum separation of twelve feet (12 ft.).
2. An approved bracing system can be used in place of the anchors and straps. The system must be intended for the purpose it is being used and installed per the system manufacturer’s instructions.

Table 310  
**Single Section Units**

A	B	C	D	
Unit Size	Max Spacing from frame end	Anchor Spacing On Center	Number of Anchors	
8’ X 20’	2 feet	Corners	4	
8’ X 28’	2 feet	12 feet	6	
10’ X 24’	2 feet	10 feet	6	
10’ X 32’	3 feet	13 feet	6	
10’ X 40’	2 feet	12 feet	8	
10’ X 44’	3 feet	12 feet 8 inches	8	
10’ X 48’	2 feet	11 feet	10	
12’ X 40’	2 feet	12 feet	8	
12’ X 44’	3 feet	12 feet 8 inches	8	
12’ X 56’	3 feet	12 feet 6 inches	10	
12’ X 60’	2 feet 6 inches	11 feet	12	



# **Electrical**

## **05. Electrical system:**

- A.** All metal parts of a commercial coach must be grounded by connection to the grounding bus of the distribution panel-board in the commercial coach. The grounding bus must be grounded through the green-insulated conductor in the supply cord or feeder wiring to the service ground in the service entrance equipment. The frame of the commercial coach and the frames of appliances may not be connected to the neutral conductor of the power supply to the commercial coach. Grounding conductors must be No. 6 copper wire or equivalent.
  
- B.** The electrical service feeder connecting a commercial coach to the onsite power supply can consist of a flexible supply cord molded of butyl rubber, neoprene or other material approved by a recognized testing laboratory to the onsite power supply. This supply cord must be sufficient in size to carry the required load for the coach. The cord does not require a molded end and may be hard wired at both ends
  
- C.** Branch circuits of a commercial coach must pass one of the following tests before a certificate of installation and label will be issued. The outside main circuit breaker, which controls electrical power to the commercial coach, must be in the off position, and the neutral or white wire must be disconnected in the commercial coach panel before the continuity or megohmmeter test is performed. The tests must be conducted as follows:
  - 1.** The continuity test must be made with all interior branch circuit switches, circuit breakers and switches controlling individual outlets, fixtures and appliances in the “on” position. The test must be made by connecting one lead of the test instrument to the grounding conductor of the commercial coach at the point of supply to the feeder assembly and applying the other lead to each of the supply conductors, including the neutral conductor. There must be no evidence of a connection between any supply conductor and the grounding conductor. In addition, each noncurrent-carrying metal part of electrical equipment in the commercial coach, including fixtures and appliances, must be tested to determine continuity between the part and the equipment grounding conductor.
  
  - 2.** The electrical wiring of the commercial coach must be subjected to a 500-volt dielectric test using a megohmmeter. Each phase leg and neutral leg must be tested to ground. All branch circuits must be in the “on” position and all switches in the “off” position. All appliances including smoke detectors must be disconnected from receptacles during the test. This test will determine the insulation resistance of all circuits and conductors. The neutral wire must be reconnected before the main breaker is turned on.

- D. The commercial coach must be connected to a single main disconnect locate no more than thirty (30) feet from the coach. The main disconnect in the distribution panel can be considered the main disconnect for the unit if it is located on the exterior of the unit. The height of the disconnect from the ground or walking surface cannot exceed six feet one inch to the center of the disconnect lever.

Table 401 Service Conductor & Grounding Electrode Conductor Size

CONDUCTOR TYPES AND SIZES— THHN, THHW, THW, THWN, USE, XHHW, THW-2, THWN-2, XHHW-2, SE, USE-2		ALLOWABLE AMPACITY	MINIMUM GROUNDING ELECTRODE CONDUCTOR SIZE	
Copper (AWG)	Aluminum and copper-clad aluminum (AWG)	Maximum load (amps)	Copper (AWG)	Aluminum (AWG)
4	2	100	8	6
3	1	110	8	6
2	1/0	125	8	6
1	2/0	150	6	4
1/0	3/0	175	6	4
2/0	4/0	200	4	2

**E. Plumbing:**

**06. Plumbing and Potable Water System:**

- A. Each commercial coach containing a potable water piping system must be connected to the water system outlet by semi rigid tubing, such as copper tubing, or by a flexible connector of a size that will provide an adequate supply of water to the unit. Provisions must be made to prevent freezing of service lines, pipes and valves

**07. Sewage Collection System:**

- A. All pipe used for sewer connections between a commercial coach and the inlet of the municipal sewage system or collection device must be semi rigid, approved pipe of not less than ABS schedule 40, corrosive resistant, nonabsorbent and durable. The inner surface must be smooth. The outlet of the commercial coach and the inlet of the sewage collection system must have a nominal inside diameter of at least 3 inches. The lateral lines from the outlet of the commercial coach to the inlet of the public sewage collection system or collection device must slope at least 1/4 inch per foot. The piping for the sewage system must be brought to a single outlet. The sewage connection between the outlet of the commercial coach to the inlet of the public sewage collection system must be sealed with a rubber coupler or a semi rigid coupler approved by the appropriate public health agency.

## **311. -- 399. RESERVED.**

### **Chapter 4 ELECTRICAL CONNECTIONS**

#### **401. GENERAL.**

**01. Installation:** A person or company licensed with the Division as a General Service or Specialty Service Electrical shall perform all electrical work in connection with a manufactured home installation, alteration, repair, or conversion. A homeowner can perform these functions provide the home is located outside a manufacture home park.

#### **402. ELECTRICAL FEEDER CONNECTIONS.**

**01. Power Supply:** A manufactured home power supply shall be provided according to Article 550-33 of the 2005 National Electrical Code.

#### **403. SERVICE EQUIPMENT CONNECTION.**

**01. Service Equipment on Manufactured Home:** As permitted by 24 CFR 3280.803, service equipment may be permanently installed on a manufactured home if:

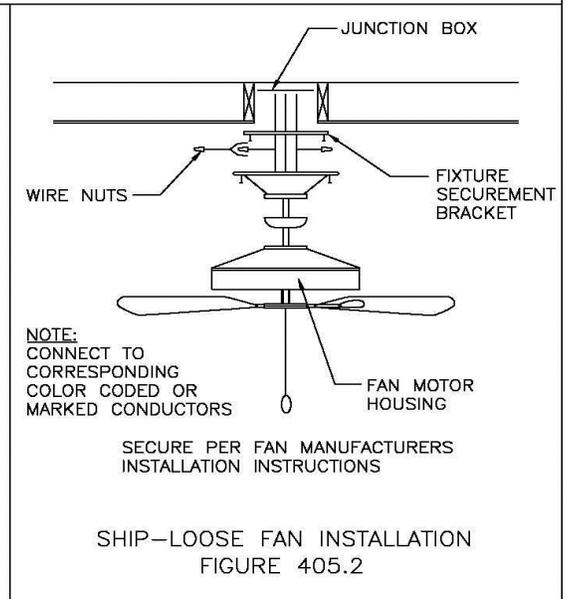
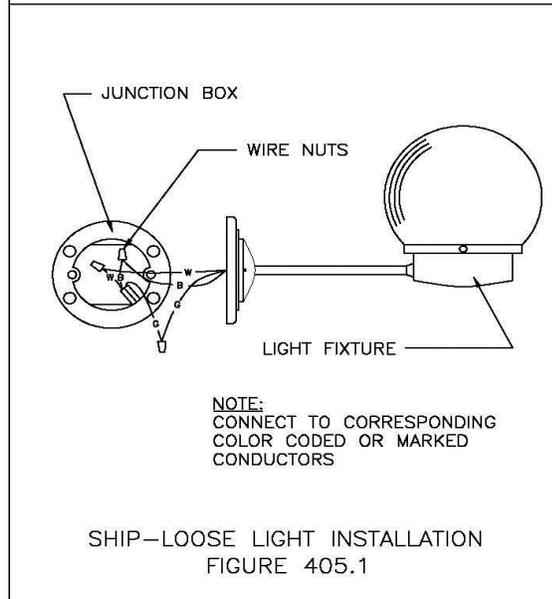
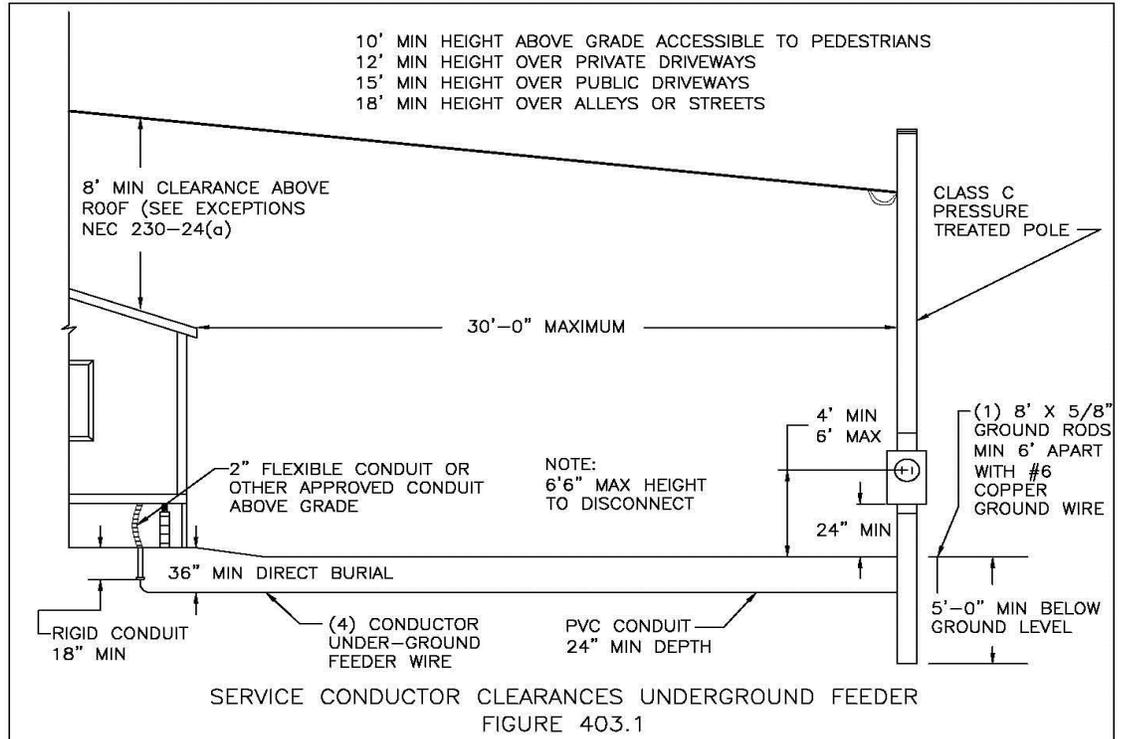
- A.** The service equipment is installed by the manufacturer at the manufacturing plant during initial construction;
- B.** The service equipment is installed on site by the manufacturer according to 24 CFR 3280.803 (k) (3)
- C.** The service equipment is grounded according to Article 250 of the 2005 National Electrical Code.

**Note.** The following information is not adopted as part of this standard but is referenced in this standard for the convenience of the user. Users should review the code provisions cited to determine if any of the requirements have changed.

**02. Article 550-32(a)** of the National Electrical Code requires that the manufactured home service equipment be readily accessible, be located in sight of the manufactured home, and shall not be located more than thirty feet (30') from the exterior wall of the manufactured home it serves and is rated not less than that required for service equipment.

### 03. Service Equipment Not Attached To Manufactured Home:

The service connections to the home shall be made in accordance with 2005 National Electric Code Article 550.



**04. Service Clearances.** Service conductors shall maintain the overhead clearances required by Article 230-24 of the 2005 National Electrical Code. Underground installation clearances shall be as required by Article 300 of the National Electrical Code or as may be required by the electric utility company. **See Figure 403.1**

## **404. ELECTRICAL CROSSOVER CONNECTIONS.**

**01. Crossover Connection.** Each circuit shall be connected to the corresponding color coded or marked circuit of the adjacent section in an approved manner. The connection shall be made by a person or company licensed by the Division as a General Service or Specialty Service Electrical company or homeowner.

**02. Chassis Bonding.** Each chassis shall be bonded to the adjacent chassis with a solid or stranded, green insulated or bare, No. 8 copper conductor, or by an equal bonding method. All equipment in or on a manufactured home likely to become energized must be properly bonded to the equipment grounding system.

**A. Chassis-** Each chassis shall be bonded to the adjacent chassis with a solid or stranded, green insulated or bare, No. 8 copper conductor, or by an equal bonding method.

**B. Flexible Metal Conduit-** All flexible conduit and raceways used in the service connections must be properly bonded to the equipment grounding system.

## **405. ELECTRICAL EQUIPMENT.**

**01. Shipped Loose Equipment.** Electrical equipment such as ceiling fans, chandeliers, exterior lights, and mechanical equipment which are shipped loose with the manufactured home shall be installed on-site according to the 2005 National Electrical Code, and the product manufacturer's listings. Wiring connections of shipped-loose electrical equipment shall be connected to the corresponding color coded or marked conductors to all applicable provisions of the National Electrical Code. **See Figures 405.1 and 405.2.**

**02. Bonding Strap Removal.** 240 volt appliances, such as ranges and dryers, shall have the bonding strap between the ground and neutral conductors removed before installation in a manufactured home. Cords used on 240 volt appliances shall have 4 conductors and 4 prongs when connected to a manufactured home.

## **406. ELECTRICAL TESTING.**

**01. Testing.** At the time of installation, all manufactured homes shall be tested as follows:

**A.** All 120 volt electrical receptacle outlets shall be subjected to a polarity test to assure that connections have been made properly;

- B. All shipped-loose fixtures shall be subjected to a polarity test to assure that connections have been made properly;
- C. All receptacles protected by a ground fault circuit interrupter (GFCI) shall be tested with a GFCI tester;
- D. All grounding and bonding conductors installed or connected during the manufactured home installation shall be tested for continuity; and

**Before conducting the continuity and mega ohm meter test, the outside main circuit breaker, which controls electrical power to the manufactured home, mobile home or commercial coach, must be in the off position, and the neutral or white wire must be disconnected in the manufactured home, mobile home or commercial coach panel. The tests must be conducted as follows:**

- E. The continuity test must be made with all interior branch circuit switches, circuit breakers and switches controlling individual outlets, fixtures and appliances in the "on" position. The test must be made by connecting one lead of the test instrument to the grounding conductor of the manufactured home, mobile home or commercial coach at the point of supply to the feeder assembly and applying the other lead to each of the supply conductors, including the neutral conductor. There must be no evidence of a connection between any supply conductor and the grounding conductor. In addition, each non-current-carrying metal part of electrical equipment in the manufactured home, mobile home or commercial coach, including fixtures and appliances, must be tested to determine continuity between the part and the equipment-grounding conductor.
- F. When an electrical system of a home has been altered, the electrical wiring of the manufactured home, mobile home or commercial coach must be subjected to a dielectric strength test as prescribed 24 CFR 3280.810. All appliances including smoke detectors must be disconnected from receptacles during the test. This test will determine the insulation resistance of all circuits and conductors. The neutral wire must be reconnected before the main breaker is turned on
- G. All electrical lights, equipment, ground fault circuit interrupter, and appliances shall be subjected to an operational test to demonstrate that all equipment is connected and in working order.
- H. Smoke alarms must be functionally tested in accordance with applicable requirements of the smoke alarm manufacturer instructions and must be consistent with § 3280.208 of this chapter.

**407. -- 499. RESERVED.**

## **Chapter 5**

### **PLUMBING CONNECTIONS**

#### **501. GENERAL.**

- 01. Connections.** Plumbing installations involving the connection of the manufactured home to the site water and sewer utilities shall be plumbed according to the 2006 Uniform Plumbing Code.
- 02. Installer.** Plumbing installations to connect the manufactured home to site water and sewer utilities may be performed by any one of the following:
- A. A manufactured home installer (which limits the work to under the perimeter of the home).
  - B. Nevada Licensed Plumber (for work out side the skirting line).
  - C. The homeowner.
- 03. Location.** All site utility plumbing installations outside the fixed limits of the perimeter of the manufactured home shall be installed by a person or company licensed appropriately with the Nevada Contractors Board, or the homeowner.

#### **502. SHIP-LOOSE PLUMBING.**

- 01. Ship-Loose Plumbing.** Manufactured home under floor drain pipe systems may be shipped by the manufacturer in one of the following methods:
- A. Complete and ready to be connected to the site sewer utility;
  - B. Loose in one or more pre-assembled sections to be attached to the site sewer utility;
  - C. Loose sections intended to be assembled on-site as approved by the DAPIA and in accordance with the manufacturer's instructions.

#### **503. WATER CONNECTIONS.**

- 01. Water Connection.** The installation and connection of the manufactured home water distribution system to the site water utility shall be limited to under the perimeter of the home, and shall be done by a Licensed Manufactured Home Installer, or the homeowner.
- 02. Material.** Water service pipe installed to a manufactured home shall be of approved type material, 2006 UPC, Section 604.

- A. As required by the 2006 Uniform Plumbing Code, Section 605.2, an accessible full way shutoff valve shall be provided on the water supply serving the manufactured home.
- B. As required by the UPC, Section 608.2, where static water pressure exceeds eighty pounds per square inch (80 psi) an approved type pressure regulator preceded by an adequate strainer shall be installed and the static pressure reduced to eighty (80) pounds per square inch or less.
- C. As required by the UPC, Section 313.6, water inlets shall be adequately protected from freezing by insulating the pipe and/or using an electric heat tape listed for use with manufactured homes.
- D. As required by 24 CFR 3280.609(b), the water pipe crossover on multi-section manufactured homes shall be connected with the connectors supplied by the manufacturer. **See Figures 503.1 and 503.2.** When the manufacturer's connector is not available the connector shall consist of an approved flexible water connector sized no less than the waterlines being connected or shall be fabricated from other approved materials. Exposed water line crossover connections shall be insulated to protect them from freezing.
- E. Water service shall be installed according to the following requirements:
  - 1. No water pipe shall be installed or permitted outside of a building or exterior wall unless adequate provisions are made to protect the pipe from freezing.
  - 2. There shall be no connections between potable and non-potable water.

**03. Water Valve Access.** The full way main valve shall be installed between the water service utility and the manufactured home connection, within a readily accessible and visible location (within 30 feet of the home).

**04. Water Utility Size.** The minimum requirement is a three-quarter inch (3/4") nominal size service line or equal to the pipe size at the home connection point provided by the manufacturer.

**05. Testing procedures.**

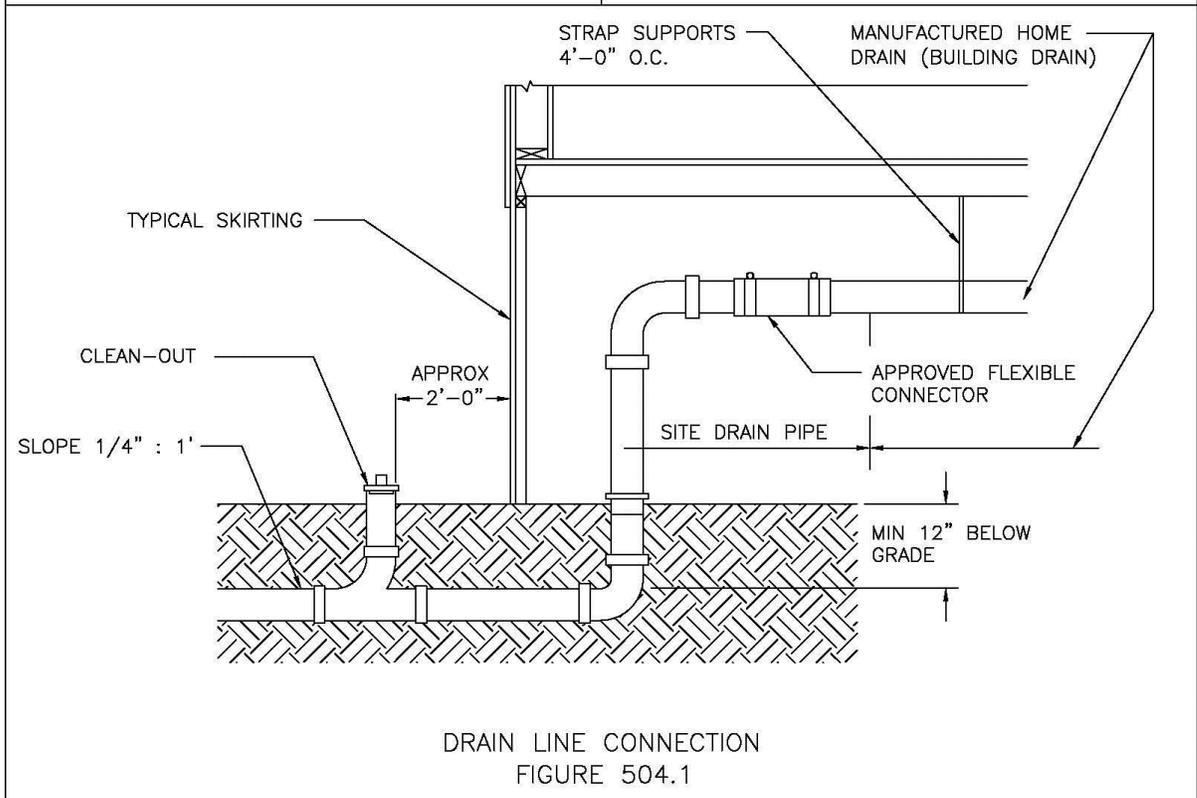
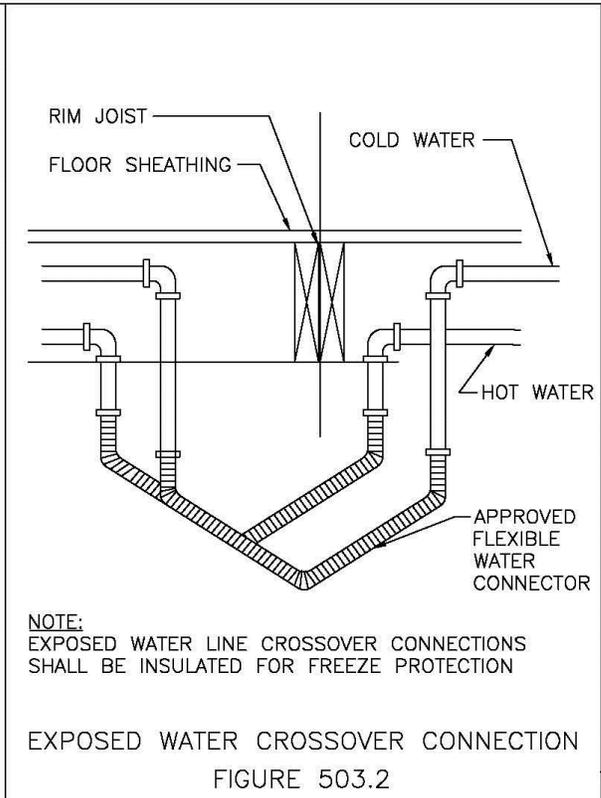
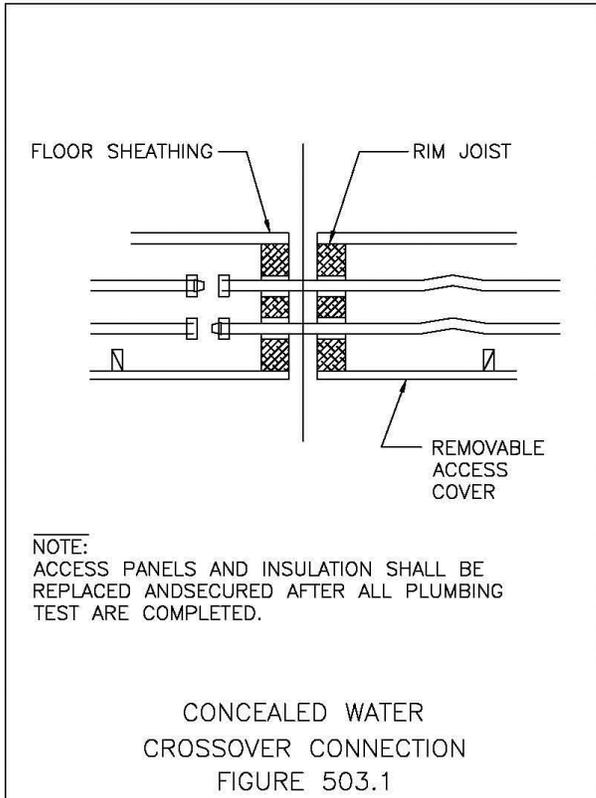
- A. The water system must be inspected and tested for leaks after completion at the site. The installation instructions must provide testing requirements that are consistent with 24 CFR 3280.612.
- B. The water heater must be disconnected when using an air-only test.

## **504. DRAIN AND SEWER CONNECTIONS.**

**01. Drain Connection.** The installation and connection of the manufactured home drain to the sewer utility shall be limited to under the perimeter of the home by a licensed General Service company. Installation outside the perimeter of the home shall be according to the local jurisdiction.

- A.** As required by 24 CFR 3280.610(c), each manufactured home shall have only one drain outlet.
- B.** As required by 24 CFR 3280.610(c), each manufactured home shall be connected to the sewer inlet by means of a drain connector consisting of approved pipe fittings schedule 40 or heavier and a nominal size of three inches (3") or larger. Listed and approved flexible connectors shall be used to connect the drain pipe to the sewer inlet. (Not part of 610 .c)
- C.** As required by 24 CFR 3280.610, the drain pipe crossover on multi-section manufactured homes shall be connected with the connectors supplied by the manufacturer, or when not available, shall consist of approved pipe and fittings, not less than Schedule 40 and not less in diameter than the pipes being connected.
- D.** As required by the adopted Plumbing Code, site drain plumbing shall be installed as prescribed in the following Subsections. **See Figure 504.1.**
  - 1.** No soil or waste pipe shall be installed or permitted above ground outside of a building or exterior wall or skirting without being listed for that purpose.
  - 2.** All drain pipe shall be installed at a grade of one-quarter inch (1/4") per foot slope
- E.** A full sized clean out extending to or above finished grade, shall be installed at the junction of the building drain and the building sewer. The clean out shall be located approximately two feet (2') from the foundation or skirting. **See Figure 504.1.**
- F.** Testing procedures. The drainage system must be inspected and tested for leaks after completion at the site. The installation instructions must provide testing requirements that are consistent with § 3280.612.

**02. Sewer Clean out Access.** An accessible sewer clean out shall be located under the manufactured home within the under-floor enclosure.



## **505. PLUMBING ASSEMBLY.**

- 01.** All plumbing assemblies shall be free from defects, demonstrate acceptable workmanship, and be installed in conformance with acceptable engineering practices and the applicable codes
- A.** As required by the UPC, Section 300, under-floor water and drain plumbing shall meet the following requirements:
- 1.** Threaded pipe ends shall be reamed and all burrs, chips, cutting oil, and foreign matter removed. Pipe joint compound used on water pipes shall be nontoxic and shall be applied to male threads only;
  - 2.** Pipe joint cement shall be of approved type and applied to male threads only;
  - 3.** Joints and connections in the plumbing system shall be gas-tight and watertight; and
  - 4.** All joints and connections shall be correctly assembled for tightness. Pipe threads shall be fully engaged into the threads of the fitting. Plastic pipe shall be inserted to the full depth of the welding sockets of each fitting. Pipe threads and slip joints shall not be wrapped with string, paper, putty, or similar fillers.
- B.** As required by 24 CFR 3280.608, water and drain pipe under the manufactured home shall:
- 1.** Be installed without undue strains and stresses;
  - 2.** Have provisions for expansion contraction and structural settlement;
  - 3.** Be supported or anchored at four foot (4') intervals except for plastic water pipe which shall be secured at thirty-two inch (32") intervals;
  - 4.** Have hangers or anchors of sufficient strength to support the weight of the pipe and its contents; and
  - 5.** Have hangers, clamps, brackets, or anchors which do not compress, distort, cut, or abrade the pipe. Sheet metal or plastic straps (i.e., plumbers tape) may be used for support as long as the strap is flat against the pipe.
- C.** As required by the UPC, drainage pipe under the manufactured home shall:
- 1.** Be installed according to the UPC, using the component parts supplied by the manufacturer;
  - 2.** Be assembled using approved pipe and fittings;

3. Be installed to provide a one-quarter inch (1/4") per foot grade in all horizontal drain piping. When a full size clean out is installed at the upper end, the grade may be reduced to one-eighth inch (1/8") per foot;
  4. Have clean outs located so a cleaning tool does not have to pass through more than 135 degrees of fittings excluding removable traps;
  5. Have clean outs installed so they open opposite of the flow, or at right angles to the pipe;
  6. Be not less in diameter than the pipe it is being connected to;
  7. Use approved fitting for all changes in direction;
  8. Use 45 degree "Y" branches, 60 degree "Y" branches, long turn "TY" branches, sanitary "T" branches, or other approved fittings or combination of fittings having equivalent sweep for all horizontal to vertical drain pipe connections; and
  9. Use 45 degree "Y" branches, long-turn "TY" branches, or other approved fittings or combination of fittings having equivalent sweep for all horizontal to horizontal and vertical to horizontal drain pipe connections;
- D.** As per 24 CFR 3280.606, the following shall be provided for manufactured home water and drain plumbing:
1. An unobstructed minimum clearance of twelve inches (12") in front of each clean out opening;
  2. An access panel for each trap which has mechanical joints and is located inside a floor or wall;
  3. Accessibility to all water and drain crossover connections;
- E.** All access panels in walls and floors shall be insulated and shall be secured in place after all plumbing tests are complete.
- F.** As per 24 CFR 3280.603(6), the following are prohibited:
1. Drilling or cutting holes in drain or vent piping;
  2. Using vent pipes as waste or drain pipes except as provided by the manufacturer's original design;
  3. Using fittings which retard the flow of sewage or air;

4. Patching or concealing cracked or imperfect pipe rather than replacing it; and
5. Bending rigid piping rather than installing directional fittings.

## **02. Fuel supply system:**

**A. Proper supply pressure.** The gas piping system in the home is designed for a pressure that is at least 10 inches of water column [4oz./in.2 or 0.25 psi] and not more than 14 inches of water column [8 oz./in.2 or 0.5 psi]. If gas from any supply source exceeds, or could exceed this pressure, a regulator must be installed if required by the LAHJ.

## **B. Crossovers.**

1. Multi-section homes with fuel supply piping in both sections require crossover connections to join all sections of the home. The crossover design requirements are located in, and must be designed in accordance with, § 3280.705 of this chapter.
2. Tools must not be required to connect or remove the flexible connector quick-disconnect.
3. Testing procedures. The gas system must be inspected and tested for leaks after completion at the site. The installation instructions must provide testing requirements that are consistent with § 3280.705 of this chapter.

## **506. PLUMBING TESTS.**

**01. Water Test.** The water distribution system of the manufactured home and the supply connection shall be tested to assure there is no leakage under normal operating pressure. This test is to be conducted per MHCSS 3280.612(a).

**02. Drain Test.** The manufactured home drainage piping system shall be connected to the site sewer inlet, and tested by allowing water to flow into all fixtures and receptors, including the clothing washer standpipe, for a period of three (3) minutes. If water under pressure is not available, the drainage piping system shall be tested by letting at least three (3) gallons of water into each fixture and receptor. Each P-trap and clean out shall be visible during this test to assure there are no leaks.

**03. Gas Piping Pressure Test.** For gas piping system having been altered from the design of the manufacturer the following tests (“a” & “b”) must be completed. For homes being installed without the piping system being altered only the “b” test is required.

- A. Before appliances are connected, piping systems shall stand a pressure of at least six inches mercury or three PSI gage for a period of not less than ten minutes without showing any drop in pressure. Pressure shall be measured with a mercury manometer or slope gage calibrated so as to be read in increments of not greater than one-tenth pound, or an equivalent device. The source of normal operating pressure shall be isolated before the pressure tests are made. Before a test is begun, the temperature of the ambient air and of the piping shall be approximately the same, and constant air temperature be maintained throughout the test.
- B. After appliances are connected, the piping system shall be pressurized to not less than 10 inches or more than 14 inches water column and the appliance connections tested for leakage with soapy water or bubble solution. For systems not being alter from the manufacturers design only test number “b” is required.

**507. -- 599. RESERVED.**

## **Chapter 6**

### **MECHANICAL CONNECTIONS**

#### **601. GENERAL.**

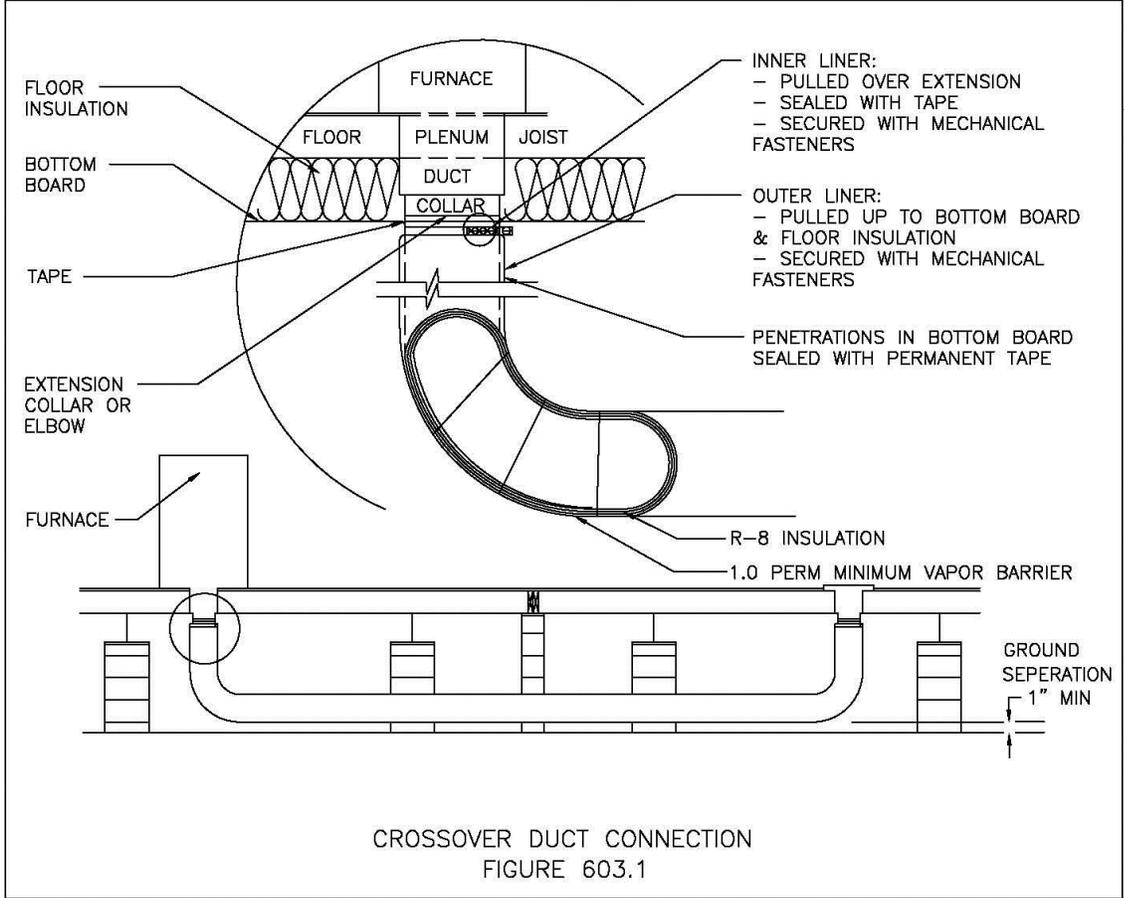
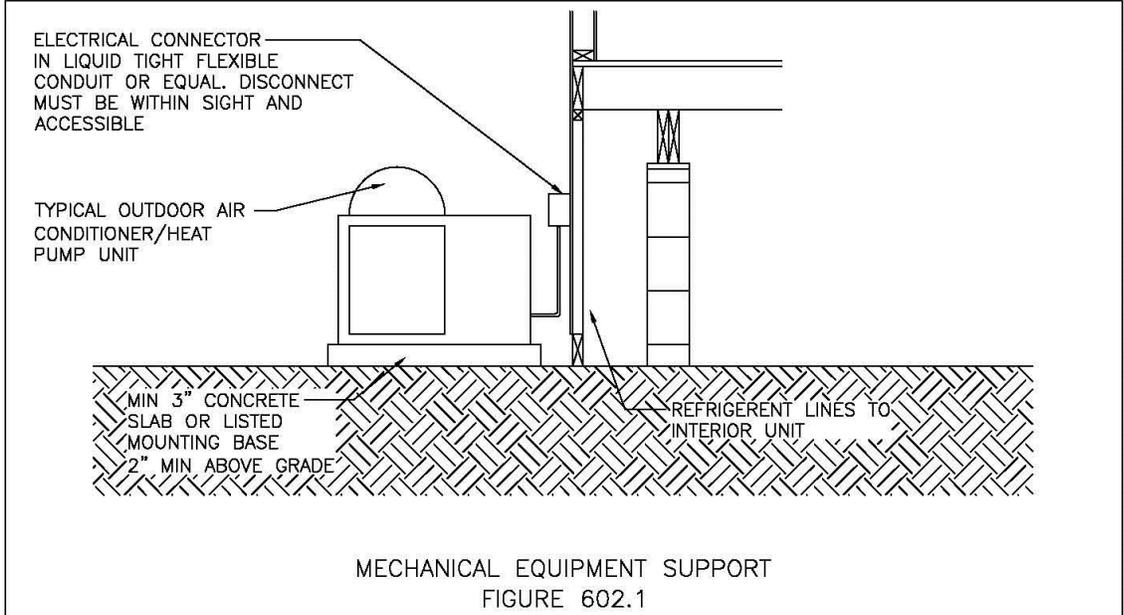
- 01. Permits.** A separate permit is not required for the installation of heat duct crossovers or appliance exhaust ducts. This work is covered by the manufactured home installation permit. A separate permit may be required by local ordinances for alterations and all field installations of air conditioners, heat pumps, and solid fuel burning appliances.
- 02. Installations.** All mechanical installations in connection with the alteration, repair, conversion of, or addition to, a manufactured home shall comply with the appropriate mechanical code as adopted by local authority having jurisdiction and this standard.

#### **602. MECHANICAL EQUIPMENT.**

- 01. Original Installations.** Mechanical connections designed for the manufactured home by the manufacturer shall be installed to the manufacturer’s installation instructions. Heat pumps or air conditioners added to a home during, or prior to, the initial sale to the first consumer shall be listed for manufactured home or mobile home use and shall be listed for use with any manufactured home heating or air handling equipment it is used in conjunction with.
- 02. After Market Installations.** Mechanical installations not a part of the original

manufactured home shall be in conformance with the appropriate mechanical code as adopted by the authority having jurisdiction and installed according to their listings. It is required that water heaters, furnaces and all gas heat producing appliances installed in a manufactured home after the initial sale to the first consumer be listed for manufactured or mobile home use.

- 03. Equipment Support.** Mechanical equipment installed outside of, and not supported by, the manufactured home shall be mounted on a minimum three inches (3") thick level concrete slab, pre-cast reinforced concrete slab, or a listed mounting base. The equipment shall be mounted according to the applicable equipment manufacturer's installation instructions. The top surface of the slab or base shall be a minimum of two inches (2") above the finished grade. **See Figure 602.1.**
- 04. Prohibited Installations.** Mechanical equipment shall not be installed in any required egress window or obstruct any egress from the home.
- 05. Condensation Drains.** Condensation drains from air conditioners, pumps, evaporative coolers, dehumidifiers, refrigeration equipment, or any other appliance shall not terminate under a manufactured home and shall deliver drained liquids away from the home.



## 603. CROSSOVER DUCTS.

- 01. General.** All parts of the heating and cooling ducts system which are connected on the site shall be installed to be mechanically secure, protected from ground moisture and water, sealed with durable materials installed per the duct manufacturer's instructions, and insulated to R-8 minimum. This includes crossover ducts, extensions, elbows, splitter boxes, and all other components.
- 02. Crossover Ducts.** Heat crossover ducts shall be made of the following material and according to the following requirements. **See Figure 603.1.**
- A.** Crossover ducts shall have a minimum of R-8 insulation, a vapor retarder rated at one (1.0) perm or less, an inner liner of spring steel wire helix banded within two (2) layers of 57 gauge Mylar polyester film or equal and an interior diameter not less than that of the plenum collars.
  - B.** Crossover ducts shall be designed and installed to eliminate pressure of the bottom board and floor insulation against the connection. Common practice includes adding an extension and elbow to the collar. Where such extensions and elbows are used they shall be a minimum 26 gauge metal, connected to the collar with at least three (3) sheet metal screws, and sealed at the collar connection with minimum two inch (2") wide foil tape (Nashua #322 or Hardcast AFG 1402 or equivalent) or duct sealer for outdoor application (RCD #6 or equivalent) installed per the manufacturer's specifications. If jointed elbows are used; the joints shall be sealed in the same manner as the collar connection. A rigid 90 degree elbow shall be used to connect the crossover duct to the main supply duct collar.
  - C.** Where an extension or elbow is used, the inner liner, shall be cut back leaving sufficient outer liner, insulation, and vapor retarder to cover the extension or elbow. The outer liner, R-8 insulation, and vapor retarder shall cover the extension or elbow (**See Figure 603.1**), and shall extend up into the floor insulation and bottom board and be taped to the bottom board where the crossover duct enters with approved bottom board tape.
  - D.** The inner liner, along with the wire helix, of the crossover duct shall be extended over, and be secured to, the sheet metal extensions, elbows, or collars with at least three sheet metal screws placed to securely hold the wire helix. Alternatively, a tool tightened plastic cable tie strap ("Panduit" strap or equivalent) may be used where a lip on the extension, elbow or collar will prevent the strap from slipping off. Where screws are used, the tears shall be repaired with foil or Mylar tape. The joint shall be sealed with minimum two inch (2") wide foil tape (Nashua #322 or Hardcast AFG 1402 or equivalent) or with a duct sealer rated for outdoor applications (RCD #6 or equivalent). The tape or sealer shall be installed per the manufacturer's specifications. The outer liner and insulation shall be returned back to cover the inner liner and the extension, elbow, or collar, and shall be secured in place with a mechanical fastener.

- E. Adequate clearance shall be maintained under the manufactured home for the heating and cooling duct crossovers. Crossover ducts shall be suspended above the ground providing two inches (2") minimum clearance.
- F. Crossover ducts shall be installed with a minimum of bends and length which restrict air flow, shall be adequately supported, and not be crushed, dented, compressed, or have sharp bends or stress at the connections. All tears or holes in the inner liner shall be sealed with sealer specified in **Subsection 603.02.d.** and the NMHIS Chapter 6 - Mechanical Connections 2004 Edition 49 outer liner shall be repaired with bottom board sealer.

## **604. APPLIANCE VENTING.**

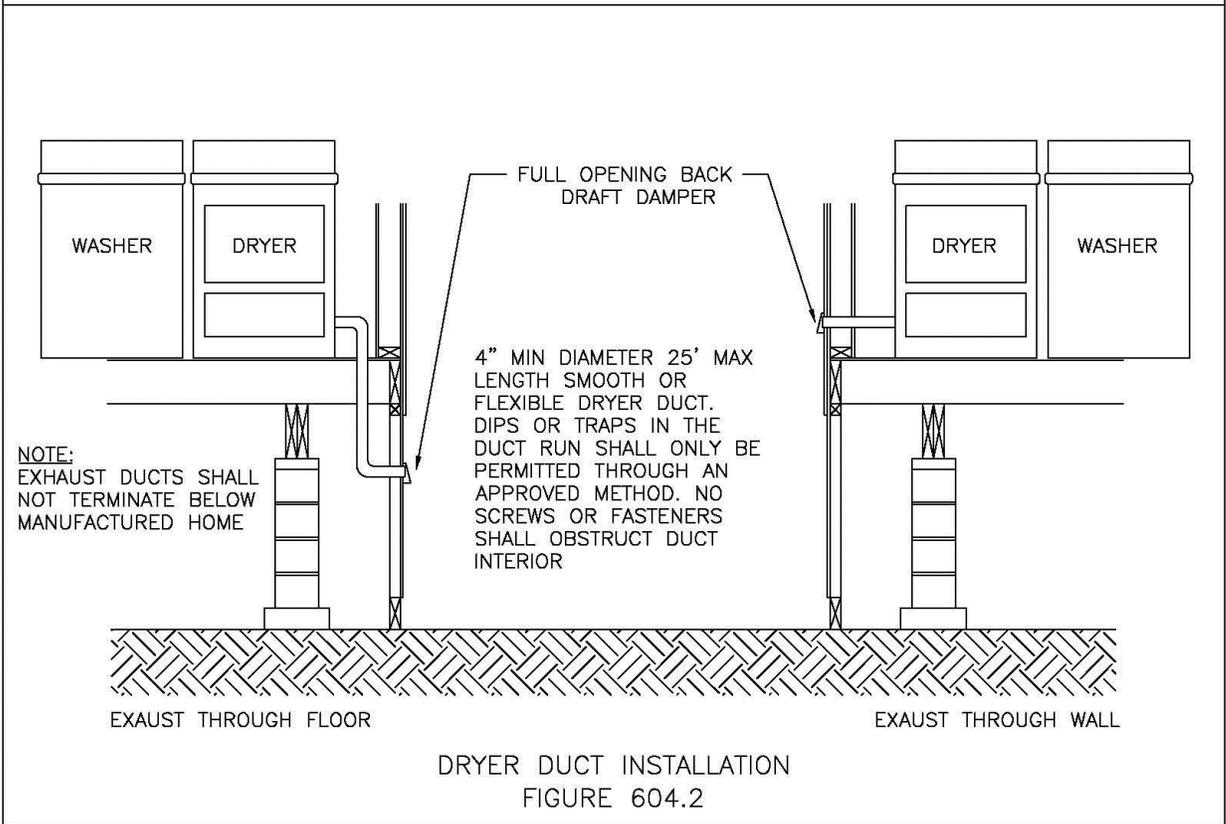
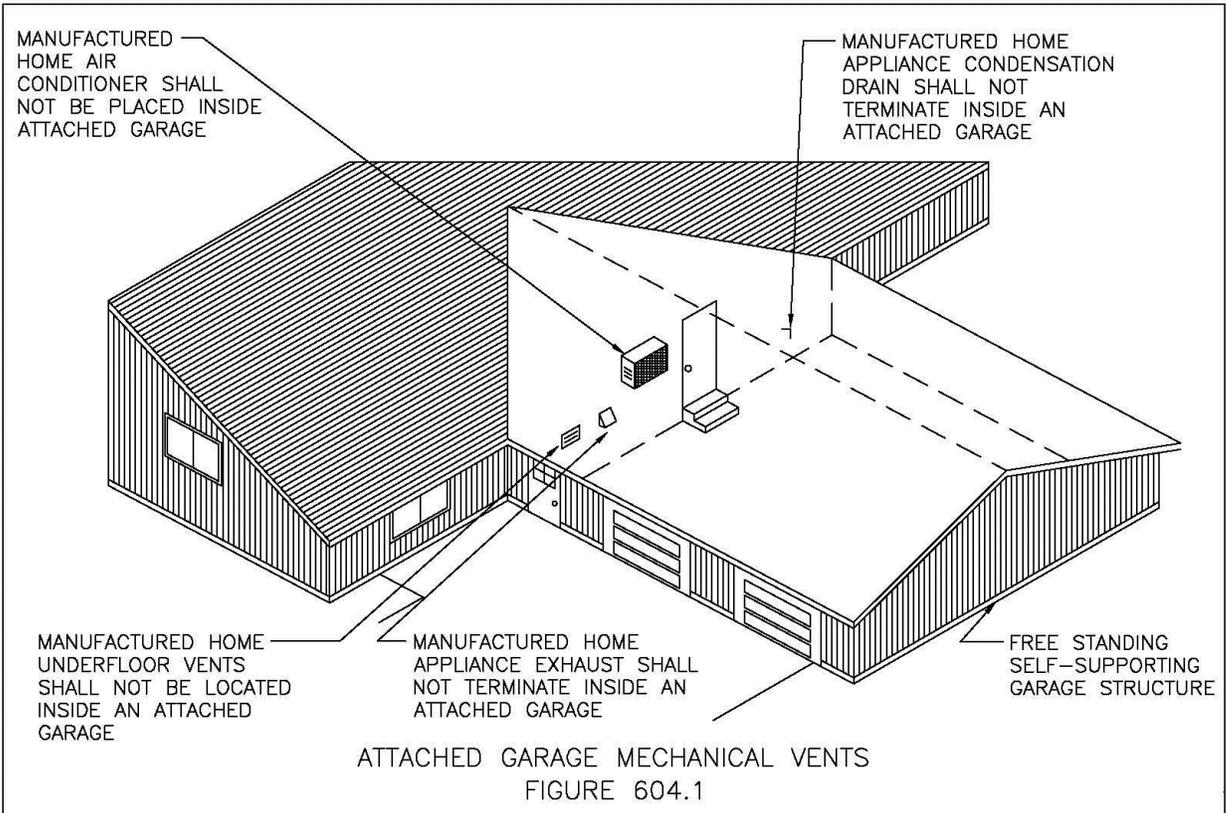
**01. Venting.** Appliance venting shall comply with the appliance manufacturer's installation instructions and the following requirements:

- A. Moisture or heat producing appliances, such as dryers, shall be vented to the outside atmosphere in a manner to ensure moisture-laden air is carried out beyond the perimeter of the home. Listed non-venting appliances are not required to have external vents.
- B. Exhaust ducts shall be routed through the wall, floor, skirting, or foundation, to the exterior. Exhaust duct systems of clothes dryers, ranges, or other appliances shall not terminate beneath the manufactured home. Exhaust duct installations shall, whenever possible have no dips or traps and shall be installed according to the applicable appliance manufacturer's installation instructions.
- C. No inlets or outlets of an exhaust vent, combustion air vent, or return air vent capable of conveying air, liquid, or gasses into or out of any appliance shall be located under the manufactured home when it is installed over a basement, or in an area where a garage is to be attached. **See Figure 604.1.**

**02. Dryer Exhaust Vents.** Dryer exhaust ducts, when required, shall be installed according to the dryer manufacturer's installation instructions or as prescribed in the following Subsections. **See Figure 604.2.**

- A. The duct shall be a minimum of four inches (4") in diameter and no longer than twenty-five feet (25'). The total length shall be reduced five feet (5') for each ninety (90) degree turn.
- B. The duct material shall be rigid metal, rigid PVC, or flexible metal.
- C. Nonmetallic duct or flexible foil duct material shall not be used within three feet (3') of the dryer connection or enclosed within a wall or floor cavity;
- D. No screws, fasteners, screens, or other obstructions, shall extend into the duct.

**605. -- 699. RESERVED**



## **Chapter 7**

# **ACCESSORY BUILDINGS AND STRUCTURES**

### **701. GENERAL.**

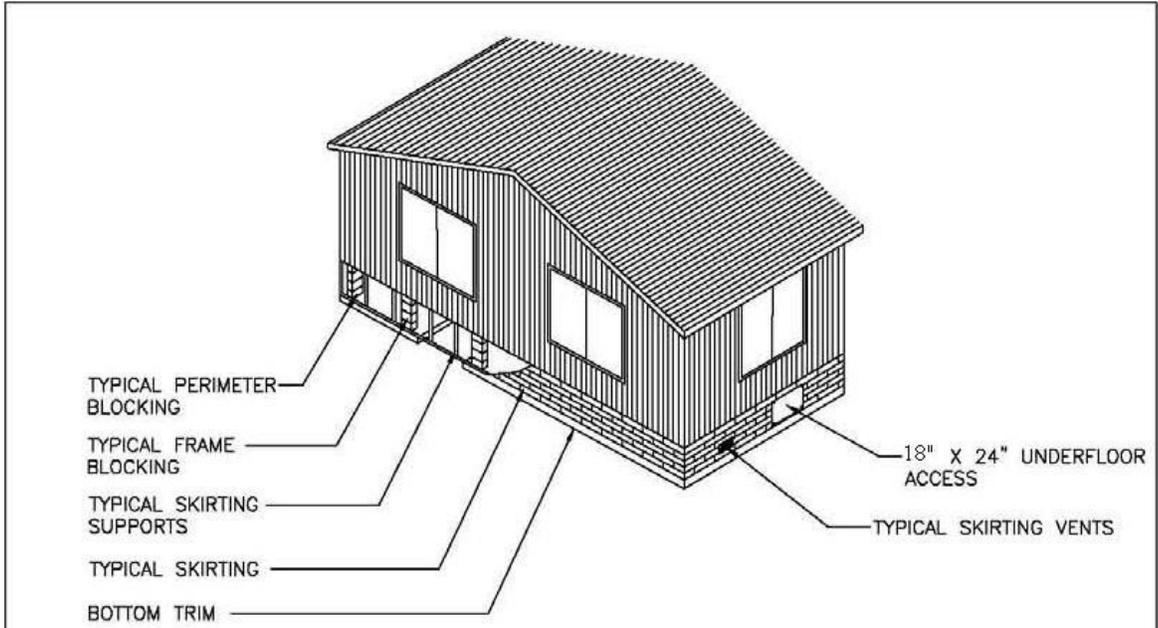
**01. Standards.** Every manufactured home accessory building or structure shall be designed and constructed according to the applicable locally adopted Building Codes and this standard. Permits must be obtained prior to construction.

### **702. UNDER FLOOR ENCLOSURES.**

**01. Requirement.** It is recommended that all manufactured homes should have the under floor crawl space entirely enclosed with a perimeter foundation or approved skirting material. The perimeter foundation or skirting material should be installed at the time the home is set.

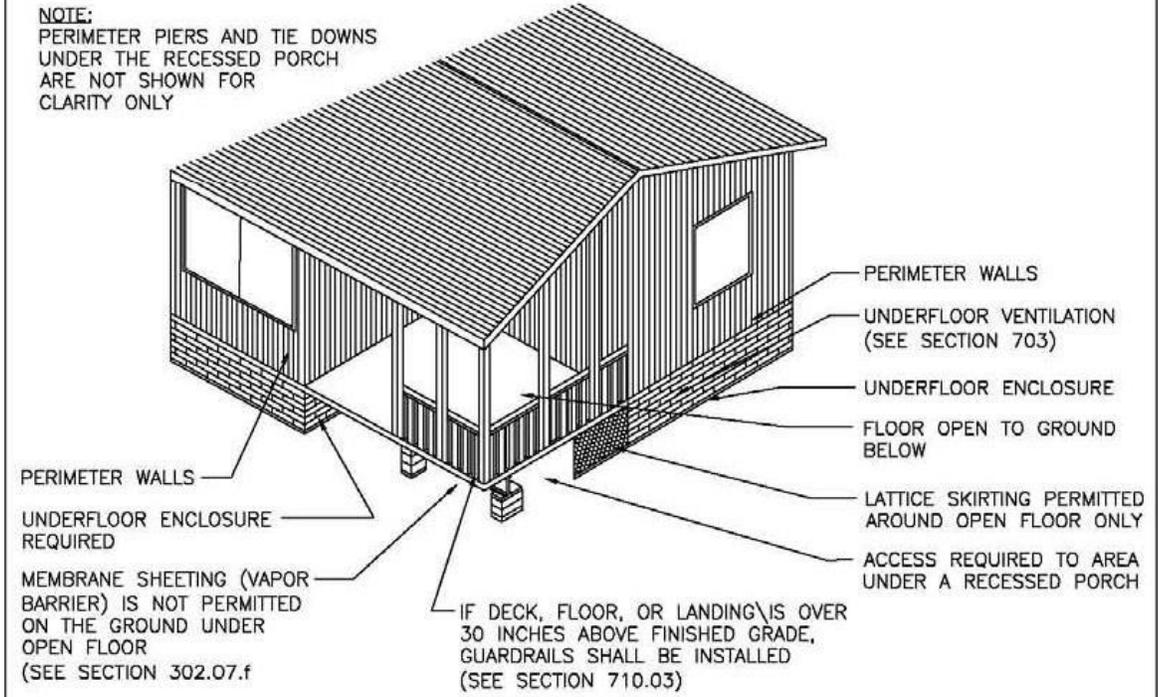
**02. Skirting.** Skirting, if used, shall conform to the requirements of 24 CFR 3285.504. See Figures 702.1 and 702.2.

- A.** Skirting must be of weather-resistant materials or provided with protection against weather deterioration at least equivalent to that provided by a coating of zinc on steel of not less than 0.30 oz./ft.<sup>2</sup> of surface coated.
- B.** Skirting shall be installed according to the skirting manufacturer's installation.
- C.** Skirting must not be attached in a manner that impedes the contraction and expansion characteristics of the home's exterior covering.
- D.** Skirting must not be attached in a manner that can cause water to be trapped between the siding and trim or forced up into the wall cavities trim to which it is attached.
- E.** All wood skirting within 6 inches of the ground must be pressure-treated in accordance with AWPA Standard U1 (incorporated by reference, see 24 CFR 3285.4) for Use Category 4A, Ground Anchor Contact Applications, or be naturally resistant to decay and termite infestations



UNDERFLOOR ENCLOSURES  
FIGURE 702.1

**NOTE:**  
PERIMETER PIERS AND TIE DOWNS  
UNDER THE RECESSED PORCH  
ARE NOT SHOWN FOR  
CLARITY ONLY



TYPICAL RECESSED PORCH DETAIL  
FIGURE 702.2

**F.** Deck, porch, or landing floors which are not insulated and which allow for the free flow of air and moisture through them shall be separated from the under floor area of a manufactured home by skirting, a foundation, or a durable flexible material such as sheet vinyl, Plexiglas, Fiberglass, ABS, or EPDM. The area below an open floor may be enclosed with lattice work, skirting, or a foundation wall if made accessible according to **Section 704** of this standard. **See Figure 702.2. See Subsection 302.07.f.** for vapor retarder installation at this location. Vents shall be installed as prescribed in Section 703.

**03. Perimeter Foundations.** Perimeter foundation walls of concrete or concrete block supporting the exterior walls of the manufactured home shall be designed and constructed according to Section 305.

## **703. UNDER FLOOR VENTILATION.**

**01. Requirement.** All manufactured homes shall be provided with under floor ventilation meeting the requirements prescribed in 24 CFR 3285.505.

- A.** A crawlspace with skirting must be provided with ventilation openings. The minimum net area of ventilation openings must not be less than one square foot (ft.<sup>2</sup>) for every 150 square feet (ft.<sup>2</sup>) of the home's floor area. The total area of ventilation openings may be reduced to one square foot (ft.<sup>2</sup>) for every 1,500 square feet (ft.<sup>2</sup>) of the home's floor area, where a uniform 6-mil polyethylene sheet material or other acceptable vapor retarder is installed, according to 24 CFR 3285.204, on the ground surface beneath the entire floor area of the home.
- B.** Ventilation openings must be placed as high as practicable above the ground.
- C.** Ventilation openings must be located on at least two opposite sides to provide cross-ventilation.
- D.** Ventilation openings must be covered for their full height and width with a perforated corrosion and weather-resistant covering that is designed to prevent the entry of rodents. In areas subject to freezing, the coverings for the ventilation openings must also be of the adjustable type, permitting them to be in the open or closed position, depending on the climatic conditions.
- E.** Access opening(s) not less than 18 inches in width and 24 inches in height and not less than three square feet (ft.<sup>2</sup>) in area must be provided and must be located so that any utility connections located under the home are accessible.
- F.** Dryer vents and combustion air inlets must pass through the skirting to the outside. Any surface water runoff from the furnace, air conditioning, or water heater drains must be directed away from under the home or collected by other

methods identified in 24 CFR 3285.203.

- G. Intake air for indoor ventilation purposes, except for combustion air, shall not be drawn from under floor spaces of the manufactured home.
- H. When combustion air for heat producing appliances is taken from the under floor area, ventilation shall be adequate to assure proper operation of the appliances. No increase in the minimum under floor ventilation is necessary.
- I. When a manufactured home is placed over a basement and the combustion air for heat producing appliances is designed to be taken from the under floor area, the combustion air inlets shall be ducted to the outside of the basement area.

## **704. UNDER FLOOR ACCESS.**

- 01. Requirement.** All manufactured homes with an under floor area shall be provided with an access to the under floor area through one of the methods described in this section.
- 02. Skirting Access.** Under floor access through the skirting, if used, shall:
  - A. Have a minimum clear opening of eighteen inches by twenty four inches (18" x 24");
  - B. Have a minimum thirty inch (30") clear space directly in front, outside the perimeter of the home, of each access panel or door.
- 03. Foundations and Ground Level Access.** Ground level installations shall be provided with an access well, which shall conform to the following requirements.
  - A. The access well shall have a minimum inside dimension of twenty-four inches (24") high by thirty-six inches (36") wide, and extend at least twenty-four inches (24") from the perimeter of the home.
  - B. The access well shall have a minimum clear opening of twenty-four inches high by twenty-four inches wide (24"x24") to the underside of the home.
  - C. The access well shall have a lightweight removable watertight cover made to resist the entrance of animals or water. The cover shall be designed and installed so that it cannot be locked. The cover shall be designed and installed so that it can be easily opened without using any tools.
- 04. Floor Access.** Access openings through the floor of a manufactured home shall be provided only by the manufacturer and constructed according to approved Design Approval Primary Inspection Agency (DAPIA) plans. For other approvals see **Subsection 201.02.**

**05. Stairway Access.** Access openings through the manufactured home floor for stairways shall be provided only by the manufacturer and constructed according to approved DAPIA plans. For other approvals see **Subsection 201.02**.

## **705. CARPORTS & AWNINGS.**

**01. Accessories.** Permanent awnings or carports shall be erected or constructed on a manufactured home site only as an accessory to a manufactured home located on the same site. This section of the standard does not apply to temporary, flexible, or fabric awnings and carports, nor to fixed window awnings used with manufactured homes. Any site constructed structure must be constructed as a free standing structure and inspected to the adopted codes of the local jurisdiction.

**02. Site Built.** Permanent or rigid awnings or carports shall be constructed, supported, and anchored according to locally adopted building codes and this standard.

**03. Prefabricated.** Approved prefabricated awnings and carports shall be installed, attached to the manufactured home and anchored into the ground according to methods prescribed in the awning or carport manufacturer's installation instructions.

**04. Windows and Doors.** Manufactured home windows and doors may open directly into a space occupied by a permanent or rigid awning or carport.

**05. Enclosure.** Permanent awnings or carports shall not be enclosed with rigid materials or walls or used for habitation or storage.

**A. Exception:** Awnings may be enclosed with insect screening if required egress paths are not blocked. **See Section 709.**

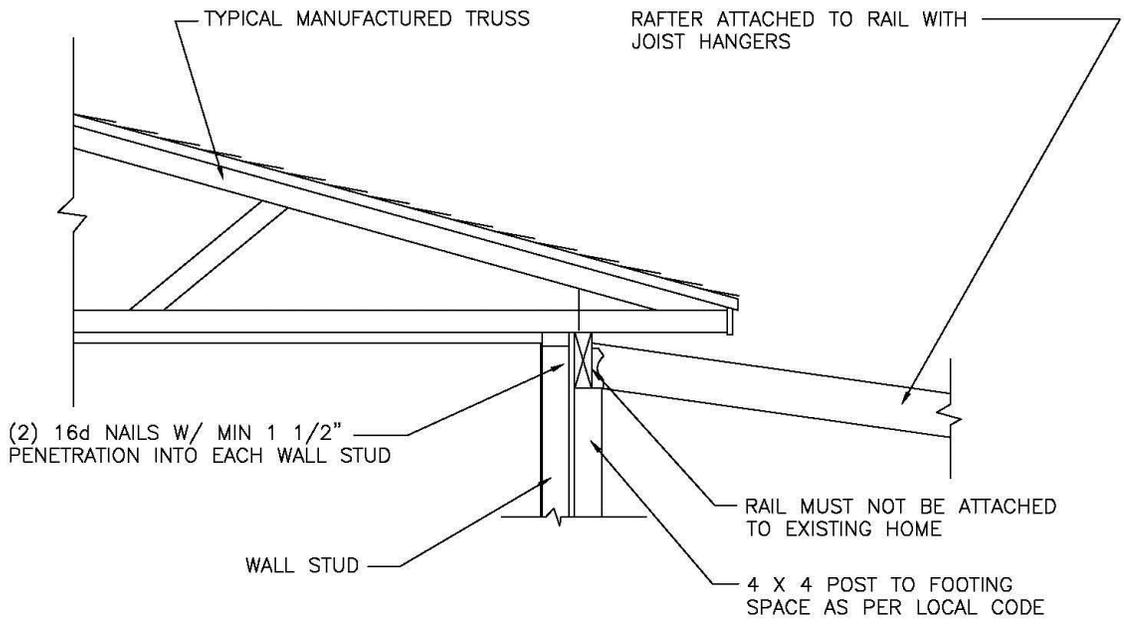
**06. Roof Support.** A prefabricated awning or carport may only be attached to manufactured home roof trusses, or structural member according to engineered plans or the product's listing.. The prefabricated awning or carport must not have a dead load of more than one (1) pound per square foot and a live load of more than twenty (20) pounds per square foot.

## **706. PORCHES.**

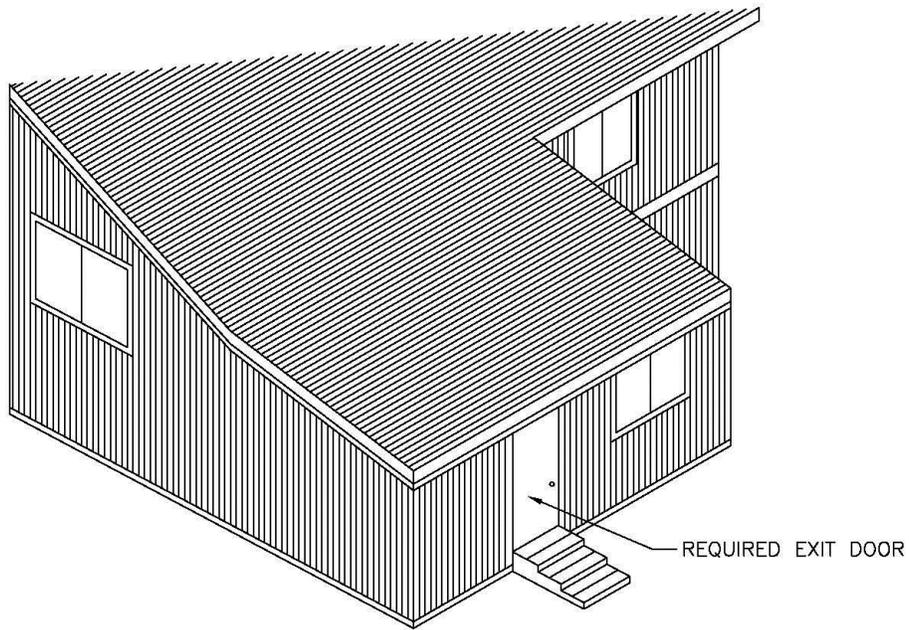
**01. Accessory.** A porch may be installed or constructed on a manufactured home site only as an accessory to a manufactured home on the same site.

**02. Self Supportive.** A porch shall be designed and constructed as a self supporting structure but may be constructed in a manner to provide a weather seal. **See Figure 706.1.**

**03. Code.** Porches shall be designed and constructed to the requirements of the locally adopted building code.



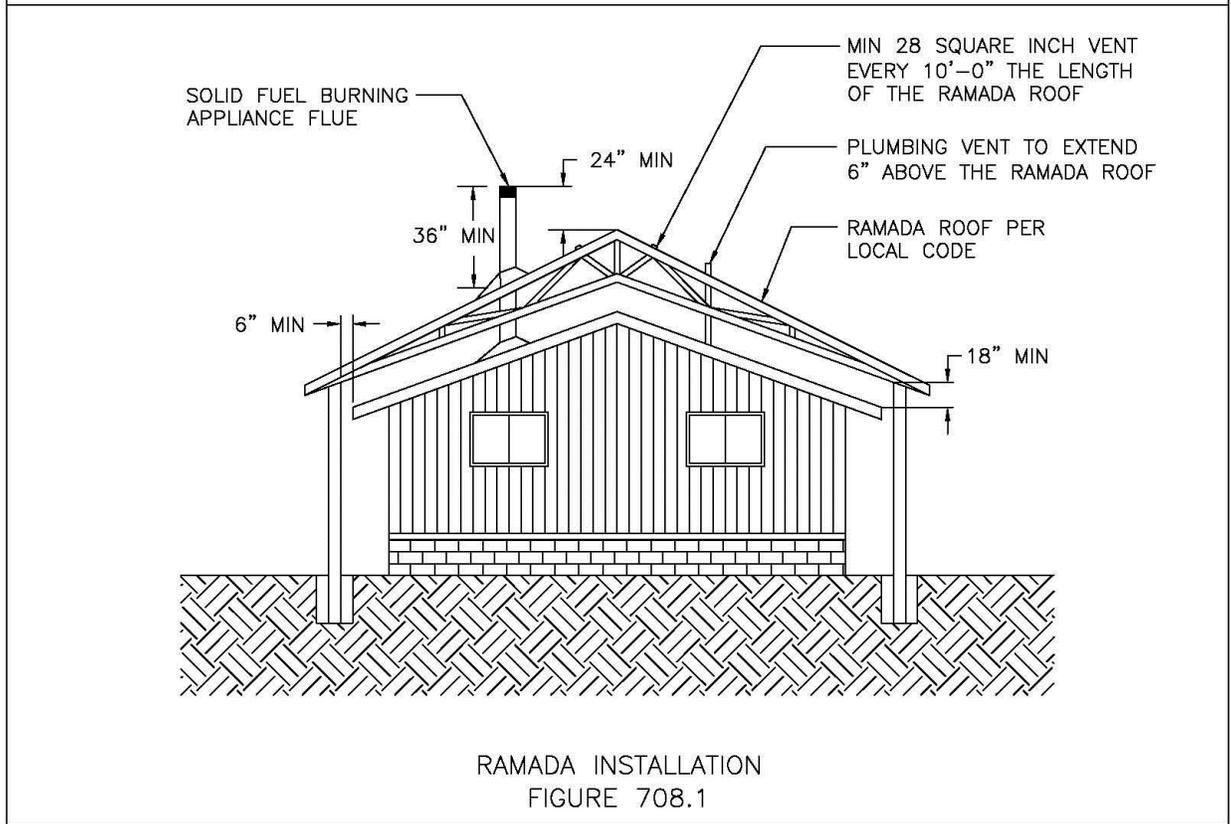
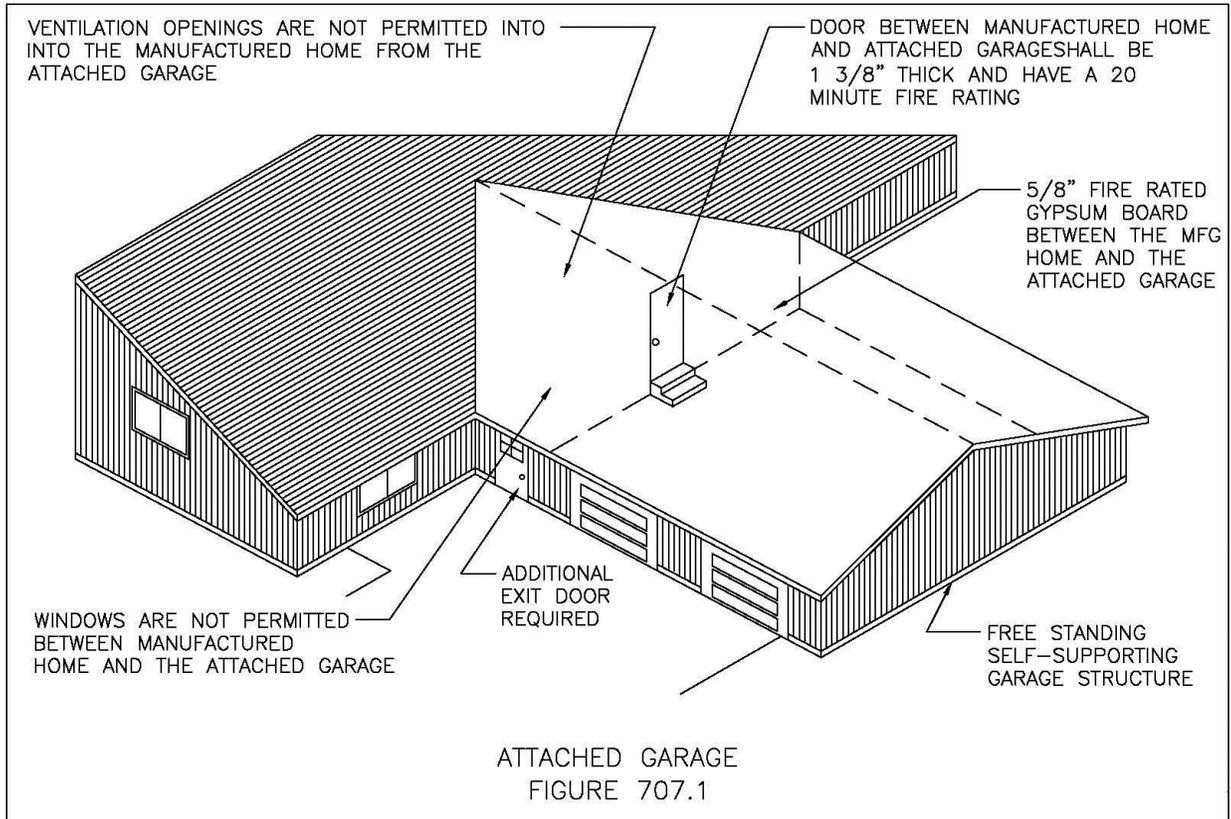
CARPORT CONNECTION  
FIGURE 705.1



PORCH INSTALLATION  
FIGURE 706.1

## 707. ACCESARY STRUCTURES.

- 01. Accessory Structures.** An accessory structure shall be constructed on a manufactured home site only as an accessory to a manufactured home on the same site. Examples or accessory structures are garages, room additions, patio covers, etc.
- 02. Self Supportive.** An accessory structure adjoined to a standard set manufactured home shall be designed and constructed as a freestanding, self supporting structure and may only be adjoined to a manufactured home to provide a weather seal. If both the home and accessory structure are on a perimeter foundation, the accessory structure may be adjoined to the home but must remain self-supporting. A dormer may be constructed to the manufactured home roof to provide this attachment. **See Figure 707.1.**
- 03. Code.** Adjoined accessory structures shall be designed and constructed according to locally adopted building codes and this section.
- 04. Separation.** Adjoined accessory structures shall be separated from the manufactured home according to the requirements prescribed in the following Subsections. **See Figure 707.1.**
- A.** No opening shall be permitted from a garage directly into a room used for sleeping purposes. No windows shall be permitted in the exterior wall of a manufactured home where a garage is to be adjoined. Any opening between the garage and manufactured home shall be equipped with a twenty (20) minute fire rated door of solid wood not less than one and three-eighths inches (1-3/8") in thickness, or the equivalent;
  - B.** The garage shall be completely separated from the manufactured home, including attic and crawl space areas, with a minimum of a one-hour fire rated assembly.
  - C.** Exhaust vent, combustion air vent, return air vent, condensation drain, or any other vent or opening capable of conveying air, moisture, liquid, or gasses into or out of the manufactured home, or to or from any appliance used in conjunction with the manufactured home, shall not be located in an area where a accessory structure is intended to be adjoined.
  - D.** When a garage or accessory structure is to be constructed next to a manufactured home where access to this structure is or can be directly from the manufactured home, the plans or drawings must be approved by the Manufactured Housing Division before being submitted to the local jurisdiction.



## **708. ACCESS & EGRESS.**

- 01. Requirement.** There shall be a minimum of two exit doors in each manufactured home. Each bedroom shall have at least one emergency egress window providing access to the outside.
- 02. Obstructions.** Accessory buildings or structures shall not obstruct a required exit, egress window, appliance access, or utility access except where specifically permitted in this standard. No hinged exterior egress door shall be prevented from opening at least 90 degrees. Door locks requiring special equipment to operate from the interior of the home, or other obstructions that would obstruct the path of egress from a manufactured home shall not be installed nor be permitted to remain.
- 03. Enclosed Exit Doors.** When an accessory building or structure, other than an awning or carport, encloses an exit door of the manufactured home so that it no longer provides egress to the outside an additional exit door, opening to the outside, shall be installed in either the manufactured home (**See Subsection 201.02**) or the accessory building or structure. This new door must be located in close proximity to the original door so as to maintain the egress requirements of MHCSS 3280.
- 04. Original Exit Door.** One of the original manufactured home exit doors must open directly to the outside without passing through an accessory building or structure.
- A. Exception:** Egress may open directly into and pass through a carport as described in **Section 705** of this standard.
- 05. Prohibited Construction.** No accessory building or structure shall be constructed which obstructs any required means of egress from a manufactured home.

## **709. RAMADAS.**

- 01. Accessory.** A ramada shall be erected, constructed or maintained on a manufactured home site only as an accessory to a manufactured home located on the same site.
- 02. Clearance.** A ramada or any portion thereof shall have a clearance of not less than eighteen inches (18") in a vertical direction above the highest portion of a manufactured home roof and not less than six inches (6") in a horizontal direction from each side of a manufactured home. **See Figure 708.1.**
- 03. Self-Supportive.** A ramada shall be designed and constructed as a freestanding, self-supporting structure meeting the requirements of the locally adopted building code.
- 04. Enclosures.** A ramada shall not be wholly enclosed on any side or end. Gable ends must be vented if they are enclosed.
- 05. Chimneys and Flues.** Manufactured home chimneys, flues and vents shall be

extended through the ramada roof as prescribed in the following Subsections. See **Figure 708.1**.

- A. Chimneys or flues from solid fuel burning appliances shall extend at least three feet (3') above the part of the ramada roof through which it passes and at least two feet (2') above the highest elevation of any part of the ramada roof within ten feet (10') horizontal of the chimney.
- B. Vents for fuel burning appliances shall extend through the ramada roof according to the listing of the appliance.
- C. Plumbing vents shall extend through the ramada roof a minimum of six inches (6") above the flashing. Plumbing vents shall not be located within three feet (3') of any motor driven air intake that opens into habitable rooms.
- D. Chimneys, vents, flues and plumbing vents shall be equipped with a flexible connector or enough room to allow the ramada and home to move separately without damage.

**06. Egress and Exit.** Egress doors and windows may exit out of a manufactured home covered by a ramada provided there are no obstructions in the path of egress to the area outside the ramada.

## **710. DECKS, PORCHES, LANDINGS, STAIRS, RAMPS & HANDRAILS.**

**01. Construction Standard.** Every porch, deck, landing, stair, ramp, guard rail, or handrail erected, constructed, or maintained adjacent to a manufactured home shall comply with the locally adopted building code.

**02. Required Installations.** If during the installation of a manufactured home, a porch, deck, or landing (recessed porch) constructed by the manufactured home manufacturer is over thirty inches (30") above the finished grade, it shall have guardrails installed conforming to the locally adopted building code.

## **711. -- 799. RESERVED.**

## Chapter 8 HEAT PRODUCING APPLIANCES

### 801. GENERAL.

- 01. Listing Requirement.** All fuel burning appliances and equipment shall be listed for their intended use, and shall be listed for manufactured home or mobile home use pursuant to MHCSS.
- 02. Installation Instructions.** Installation instructions shall be provided with each heat-producing appliance and made available to the authority having jurisdiction during inspections.
- 03. Accessibility.** All fuel burning appliances shall be accessible for inspection, service, repair, or replacement without removing permanent construction.
- 04. Clearance.** Flue gas outlets and exhaust vents shall terminate not less than four feet (4') distant from any motor driven air intake discharging into habitable areas.
- 05. Other Appliances.** Heat producing appliances not specifically mentioned in this standard shall, at a minimum, be listed and approved for use in manufactured homes and shall be installed according to the listing and the appliance manufacturer's installation instructions.
- 06. Operating Instructions.** Operating instructions shall be provided to the homeowner with each heat producing appliance installed.

### 802. RANGES & DRYERS.

- 01. Listed Standards.** Fuel burning cooking range and clothes dryer appliances shall be listed for their intended use. Replacement fuel burning range and dryer appliances are not required, but are recommended, to be listed for manufactured home or mobile home use. However, they must be, at a minimum, installed according to their listings and the appliance manufacturer's installation instructions. Electric cooking range and clothes dryer appliances shall be listed for manufactured home or mobile home use or shall be manufactured so that the neutral conductor is insulated from the grounding conductor and the equipment enclosure.
- 02. Clearances.** Ranges shall be installed so that there is a minimum vertical clearance of twenty-four inches (24") above the cooking top.
- 03. Dryer Exhaust.** Dryer appliances shall exhaust directly to the outside of the manufactured home and shall not terminate beneath manufactured homes or into any confined space. Venting material (pipe) shall have a smooth interior installed in a manner to prevent blockage from lint or other materials. Listed non-venting dryers

are not required to have an external vent.

- 04. Range Exhaust Vents.** Range and cook-top appliances equipped with integral exhaust vents shall exhaust directly to the outside of the manufactured home according, at a minimum, to the appliance manufacturer's installation instructions, and shall not terminate beneath the manufactured home or in a confined space.

## **803. FURNACES, GAS STOVES, WATER HEATERS, & GAS FIREPLACES.**

- 01. Appliance Listing.** Fuel burning (gas or oil) furnace and water heater appliances shall be listed for the specific use in manufactured and mobile homes. Electric appliances must be used in accordance with their listings.
- 02. Installation.** Fuel (gas or oil) burning furnaces, stoves, fireplaces, and water heater appliances shall be installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured home. This separation shall be accomplished by one or both of the following two methods;
- A.** Install a direct vent system (sealed combustion system) listed or certified as components of the appliance.
  - B.** Install the appliance within an enclosure accessible only from outside the manufactured home so as to separate the appliance combustion and venting systems from the interior atmosphere of the manufactured home. There shall not be any door, removable access panel, or other opening into the enclosure from the inside of the manufactured home. Any openings or penetrations for ducts, return air inlets, piping, or wiring shall be sealed.
- 03. Combustion Air.** Combustion air shall not be taken from within any wall cavity, floor cavity, or ceiling cavity, or from a basement area. Combustion air may be taken from a ventilated crawl space below the manufactured home or directly from outside the home.
- 04. Flue Listing.** Flue gas outlets shall be listed or certified as components of the appliance and installed, at a minimum, according to the listing and the appliance manufacturer's installation instructions.
- 05. Appliance Compartment.** All furnace and water heater appliance compartments shall have the interior walls, door and ceiling lined with minimum three-eighths inch (3/8") thick type X gypsum board or equivalent material having a maximum flame spread rating of twenty-five (25). All joints or seams in the gypsum board must be filled or sealed.
- 06. Securement.** All furnace and water heater appliances shall be secured in two places to prevent movement.

## **804. SOLID FUEL BURNING FIREPLACES & STOVES.**

**01. Listing Standard.** Solid fuel burning factory built fireplaces and stoves listed for use in manufactured homes or mobile homes may be installed in manufactured homes provided their installation conforms with this standard.

**02. Minimum Stove Construction Requirements.** Solid fuel burning fireplaces and stoves shall:

- A.** Be constructed to the Department of Housing and Urban Development Manufactured Home Construction and Safety Standards 24 CFR 3280.709;
- B.** Be equipped with integral door(s) or shutters designed to close the fireplace or stove fire chamber opening;
- C.** Be equipped with a combustion air inlet designed to conduct air directly into the fire chamber and prevent material from the hearth dropping onto the area beneath the manufactured home;
- D.** Have a complete means for venting through the roof;
- E.** Have a hearth extension; and
- F.** Have a means to secure the fireplace or stove to the floor.

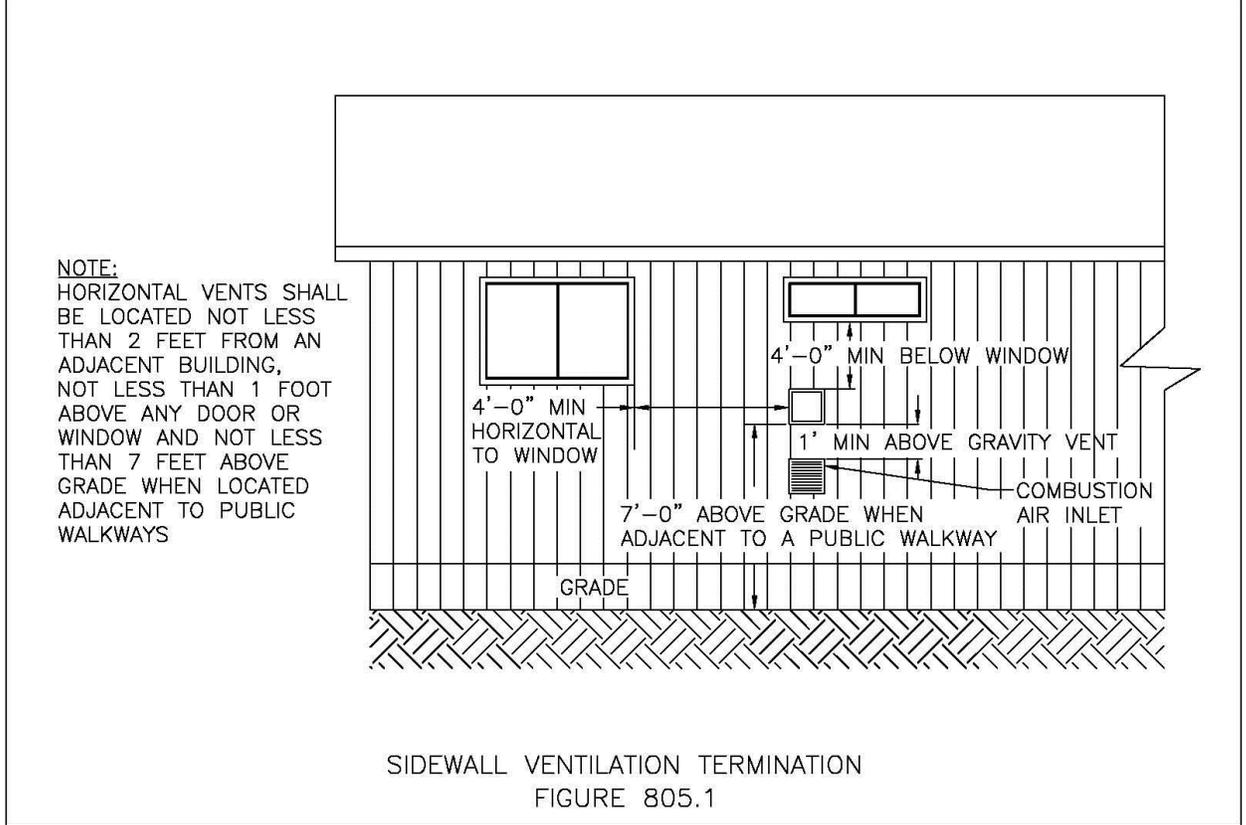
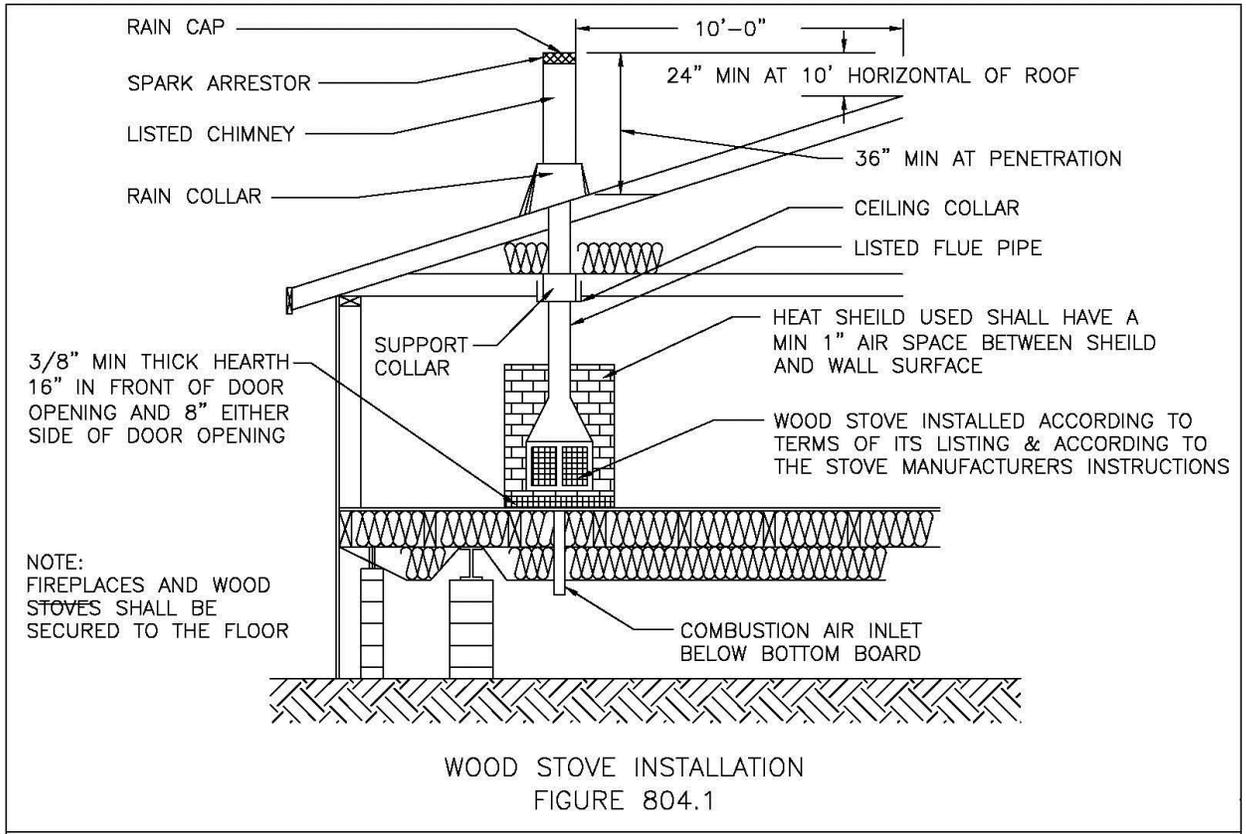
**03. Labeling.** The label on each solid fuel burning fireplace and stove shall include the following wording, "For use with solid fuel only" and "Approved for manufactured home use" or "Listed for manufactured home use," and contain the name of the manufacturer and Chapter 8 - Heat Producing Appliances NMHIS 2004 Edition 64 listing agency, the model number, serial number, and listing number.

**04. Installation.** Installation of solid fuel burning fireplaces and stoves shall, at a minimum, conform to the terms of their listings, the fireplace or stove manufacturer's installation instructions, and the requirements prescribed in the following Subsections. **See Figure 804.1.**

- A.** A listed factory-built chimney designed to be attached directly to the fireplace or stove shall be used. The chimney shall be equipped with, and contain as part of its listing, a termination device and spark arrestor.
- B.** The fireplace or stove air intake assembly, hearth extension, and chimney shall, at a minimum, be installed according to the terms of their listings and the fireplace or stove manufacturer's installation instructions.
- C.** The combustion air inlet shall conduct air directly into the fire chamber and be installed to prevent material from the hearth dropping onto the area beneath the

manufactured home.

- D. The fireplace or stove shall not be installed in a sleeping room.
- E. A hearth extension shall be constructed of noncombustible material not less than three-eighths inch (3/8") thick.
- F. The hearth shall extend at least sixteen inches (16") in front of, and at least eight inches (8") beyond each side of, the fireplace or stove opening and cover the entire surface beneath a stove or beneath an elevated or overhanging fireplace.
- G. Fireplaces and stoves shall be secured in place to prevent displacement.
- H. The chimney shall extend at least three feet (3') above that part of the roof through which it passes and at least two feet (2') above the highest elevation of any part of the manufactured home structure within ten feet (10') of the chimney. If a ramada is installed the chimney must conform to the requirements prescribed in **Subsection 708.05**.
- I. Portions of the chimney flue, spark arrestor, and rain cap, shipped-loose for transportation purposes, shall, at a minimum, be installed on-site to the fireplace or stove manufacturer's installation instructions during the installation of the manufactured home.
- J. Heat shields used with fireplaces or stoves shall have a minimum one inch (1") air space between the heat shield and any wall surface.
- K. Fireplaces and stoves shall not be installed in alcoves unless specifically listed for use within alcoves.
- L. Fireplaces and stoves shall be located so that no doors, drapes, or other such material can be placed, or swing closer, to the appliance than the clearances specified on the appliance label.
- M. Clearances surrounding fireplaces and stoves shall not be less than the clearances specified in the terms of the listing; and
- N. Combustion air shall not be taken from within any wall cavity, floor cavity, or ceiling cavity, or from any basement area.



## **805. PELLET FIRED APPLIANCES.**

**01. Installations.** Pellet-fired appliances may be installed in manufactured homes provided such appliances and the installations conform to the following requirements.

- A.** Pellet-fired appliances shall not be substituted for the required heating facility.
- B.** The installation of each appliance shall, at a minimum, conform to the terms of its listing, the appliance manufacturer's installation instructions, and this standard.
- C.** Each appliance shall be secured in place to prevent displacement.
- D.** Each appliance shall be accessible and removable for purposes of servicing and replacement.
- E.** Pellet-fired appliances shall be located so that no doors, drapes, or other such material can be placed, or swing closer to, the appliance than the clearances specified on the appliance label.
- F.** Clearances surrounding pellet-fired appliances shall not be less than the clearances specified in the terms of their listings.
- G.** Pellet-fired appliance air intake assemblies, hearth extensions, and exhaust vents shall, at a minimum, be installed according to the terms of their listings, and the appliance manufacturer's instructions.
- H.** Combustion air shall not be taken from within any wall cavity, floor cavity, or ceiling cavity, or from a basement area.
- I.** Pellet-fired appliances shall not be installed in a sleeping room.
- J.** Hearth extensions, when required by the appliance listing, shall be of noncombustible material constructed, at a minimum, to the specifications included in the appliance listing and the appliance manufacturer's instructions.
- K.** Horizontal exhaust vents shall, at a minimum, be installed to conform to the terms of the appliance listing and the appliance manufacturer's instructions. Horizontal exhaust vent terminations shall be located not less than four feet (4') below, four feet (4') horizontally from, or one foot (1') above any window or gravity air inlet into any building, and not less than 2 feet from an adjacent building. Horizontal exhaust vents shall be installed not less than seven feet (7') above grade when located adjacent to public walkways. **See Figure 805.1.**
- L.** Vertical exhaust vents shall extend at least three feet (3') above the part of the roof through which they pass, and at least two feet (2') above the highest elevations of any part of the manufactured home within ten feet (10') horizontally

of the exhaust vent. **See Figure 804.1.** If a ramada is installed the vents must conform to the requirements prescribed in **Subsection 708.05.**

- M.** Portions of the exhaust vent and termination, shipped loose for transportation purposes, shall, at a minimum, be installed on-site according to the appliance manufacturer's installation instructions during the installation of the manufactured home.
- N.** Every pellet fired appliance shall be accessible for inspection, service, repair, or replacement without removing permanent construction. Sufficient room shall be available to enable the operator to observe the burner, control, and means of ignition while starting the appliance.

**806. -- 899. RESERVED.**

## DEFINITIONS

- 01. Accessible.** Having access thereto, but which may require removal of an access panel or opening of a door.
- 02. Accessory Building or Structure.** Any permanent structure established for use of the occupant of the manufactured home and as further defined by rule by the Division.
- A. Accessory Building.** An accessory building including, but not limited to, ramadas, storage sheds, and garages. Does not include a manufactured/mobile home or commercial coach.
- B. Accessory Structures.** An accessory structure including, but not limited to, awnings, carports, decks, steps, and ramps.
- 03. Alteration.** Any change, addition, repair, conversion, replacement, modification, or removal of, any equipment or installation which may affect the operation, construction, or occupancy of a manufactured structure. Alteration does not mean:
- A.** Minor repairs with approved component parts;
- B.** Conversion of listed fuel burning appliances according to the terms of their listing;
- C.** Adjustment and maintenance of equipment, or replacement of equipment or accessories in kind.
- 04. Approved.** Approved, licensed, or certified by the Nevada Manufactured Housing Division or its designee.
- 05. Attached.** Means the fastening of an awning, carport, steps, porch or any accessory structure to a manufactured home, mobile home or commercial coach in such a manner that it:
- A.** Is dependent upon the manufactured home, mobile home or commercial coach for any part of its structural support; and
- B.** May be removed with any household tool without degrading the structural integrity of the manufactured home or mobile home.
- 06. Attached Garage.** A garage which is joined to a manufactured home but is self-supporting and separated with fire-resistive construction.
- 07. Authority Having Jurisdiction.** The State or local government that inspects and issues permits for installation, alteration, or conversion of manufactured homes, equipment, accessory buildings and structures.
- 08. Awning.** Any stationary structure, permanent or removable, used in conjunction with

a manufactured home for the purpose of providing shelter and having a roof with supports and not more than one wall. Window awnings are excluded from this definition.

- 09. Base Flood.** Defined by FEMA in 44 CFR Chapter 1 as the flood level that has a one percent (1%) probability of being equaled or exceeded in any given year.
- 10. Building Drain.** That part of the lowest piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the manufactured home and conveys it to the building sewer.
- 11. Building Sewer.** That part of the horizontal piping of a drainage system which extends from the end of the building drain and which receives the discharge of the building drain and conveys it to a public sewer, private sewer, individual sewage disposal system, or other point of disposal.
- 12. Building Supply.** The pipe carrying potable water from the water meter or other source of water supply to a building or other point of use or distribution on the lot. Building supply shall also mean water service.
- 13. Carport.** A stationary structure consisting of a roof with its supports and not more than one wall used for sheltering a motor vehicle.
- 14. Chassis.** The entire transportation system of a manufactured home.
- 15. Clearance.** The distance between two adjacent surfaces.
- 16. Concealed.** Rendered inaccessible by the structure or finish of the manufactured home.
- 17. Concrete.** A mass constructed of Portland Cement, aggregate and water that will have a compressive strength of at least 3,000 pounds per square inch after a 28 day curing time.
- 18. Controlled Fill.** Fill shall be engineered to bear a minimum one thousand five hundred pounds per square foot (1,500 psf) structural load in which the fill material is placed in layers of soil, crushed stone, or masonry waste material, compacted, and tested to ensure that it meets specified compaction standards determined by laboratory test of soil samples from the fill material.
- 19. Directly Accessible.** An area not within the manufactured/mobile home or commercial coach, but may be adjoined, although not attached, or which is easily entered from the manufactured/mobile home or commercial coach
- 20. Division.** The Nevada Manufactured Housing Division.
- 21. Drain.** A pipe that carries waste, water, or waterborne waste in a drainage system.

- 22. Dwelling Unit.** One or more habitable rooms that are designed to be occupied by one family with facilities for living, sleeping, cooking, and eating.
- 23. Equipment.** Materials, appliances, subassembly, devices, fixtures, fittings, and apparatuses used in the construction, plumbing, mechanical, and electrical systems of a manufactured structure.
- 24. Feeder Assembly.** The overhead or under-chassis feeder conductors, including the grounding conductor, together with the necessary fittings and equipment, or a power supply cord approved for manufactured home use, designed for the purpose of delivering energy from the source of electrical supply to the distribution panel board within the manufactured home.
- 25. Footing.** That portion of the support system that transmits loads directly to the soil.
- 26. Foundation System.** A perimeter footing and stem wall support system.
- 27. Foundation Set.** A manufactured home installed on footings and piers and which has the perimeter enclosed with a supporting perimeter foundation footing and stem wall extending below the frost line.
- 28. Frame.** The fabricated rigid substructure which provides considerable support to the affixed manufactured home structure both during transport and on-site. It also provides a platform for attaching the running gear assembly, the draw bar, and coupling mechanism to the home.
- 29. Garage.** A structure located on a manufactured home site designed for the storage of motor vehicles.
- 30. Gas Supply.** A listed connector designed for connecting the manufactured home to the gas supply source.
- 31. Grade.** The fall (slope) in reference to a horizontal plane expressed in inches per foot length or as a percentage. One hundred percent grade equals twelve inches fall in one foot length.
- 32. Grounded.** Connected to earth or to some conducting body that serves in place of the earth.
- 33. Ground Anchor.** Any device at a manufactured home site designed to transfer manufactured home anchoring load to the ground.
- 34. Ground Level Installation.** A manufactured home with a below-grade foundation system and a perimeter retaining wall or foundation which has earth back filled against it.

**35. Installation.** In relation to:

- A. Construction.** Work performed inside the home after it leaves the factory and which affects the arrangements and methods of construction of the home, the fire and life safety aspects of the home, Definitions, Acronyms & Abbreviations NMHIS 2004 Edition 70 and the electrical, plumbing, and mechanical equipment and systems of the home.
- B. Setting.** Work performed outside the home to place it on its site. This includes work associated with the manufactured home support and tie-down system, structural work, work associated with the fire and life safety aspects of the home, work associated with electrical, plumbing, and mechanical equipment, work to make up utility connections, and the work to install skirting and steps.

**36. Installer.** Any individual licensed to install, set up, block, tie down, secure, support, or install skirting to manufactured homes.

**37. Labeled.** Equipment or materials used in the manufacture or installation of a manufactured home, to which has been attached a label, symbol, or other identifying mark of a nationally recognized testing laboratory, inspection agency, or other organization which evaluates products to nationally recognized standards and periodically inspects production of equipment and materials to show compliance with those standards for usage in a specified manner.

**38. LAHJ** Local Authority Having Jurisdiction

**39. Listing Agency.** An agency that:

- A.** Is regularly engaged in conducting its own tests, listing, labeling, or contracting its testing procedures to a nationally recognized testing agency;
- B.** Maintains a periodic inspection program on production of currently listed products; and
- C.** Publishes, at a minimum, an annual report that is used to determine whether products have been tested to such national standards and found safe for use in a specified manner.

**40. Load Bearing Device.** Any equipment or device used in the support of manufactured home including but not limited to footings, piers, caps, and shims.

**41. Maintenance of Equipment.** Performing routine tasks such as lubricating or changing filters, washers, fuses, or bulbs as necessary for the continued operation of the equipment but does not include the replacement, conversion, alteration, or addition of any equipment.

**42. Manufactured Home.** A manufactured home or mobile home.

**43. Manufacturer's Representative.** An employee, dealer, or person authorized by a

manufacturer through contract to act on behalf of the manufacturer.

- 44. Minor Repair.** A simple repair such as replacing broken glass, fittings, devices, or fixtures, using approved component parts. This does not include the repair, replacement, conversion, alteration, or addition to, of major portions of the structural, plumbing, electrical, or mechanical systems of the manufactured home.
- 45. Model.** An individual manufactured home as designated by the manufacturer, intended to be manufactured with a specific floor plan, structural components, and the type, location, and installation of plumbing, mechanical, and electrical equipment according to the plans submitted to the Design Approval Primary Inspection Authority.
- 46. Municipality.** A city, county, or other unit of local government otherwise authorized by law to enact codes.
- 47. Nominal.** A designated or theoretical size that may vary from the actual size.
- 48. Noncompliance.** A failure of a manufactured home, alteration, or installation to comply with an appropriate building code or standard. NMHIS Definitions, Acronyms & Abbreviations 2004 Edition 71
- 49. Option.** A provision made during the manufacture of a home to facilitate the future installation of any appliance other equipment (e.g., air conditioner, wet bar, or dishwasher).
- 50. Pier.** That portion of the support system between the footing and the manufactured home.
- 51. Porch.** A stationary structure which may be constructed with two (2) or more walls, used adjacent to, and in conjunction with, a manufactured home to provide additional space.
- 52. Prefabricated Pier.** A listed or approved pier which is manufactured at an off site location but does not include concrete blocks.
- 53. Ramada.** A stationary structure with a roof extending over a manufactured home which may also extend over a patio or parking space for motor vehicles, and is used principally for protection from snow, sun, or rain.
- 54. Recessed Porch.** An open floor area supported by the main frame which is located outside the exterior walls of the manufactured home.
- 55. Readily Accessible.** Direct access without the necessity of removing any panel, door, or similar obstruction.
- 56. Repair.** The reconstruction or renewal of any part of an existing manufactured home

or piece of equipment for the purpose of its maintenance (See alteration).

- 57. Replacement In Kind.** Replacing equipment or accessories with approved like equipment or accessories, such as switches, thermostats, fittings, elements, or motors, but does not include the replacement of major portions of the structural, plumbing, electrical, or mechanical system.
- 58. Service Equipment, Manufactured Home.** The equipment for connecting a manufactured home feeder assembly.
- 59. Set Up.** See the definition of installation.
- 60. Site, Manufactured Home.** A designated parcel of land designed to accommodate a manufactured home, its accessory structures or buildings, and accessory equipment for the exclusive use of the occupants.
- 61. Skirting.** A weather resistant material used to enclose the space below the manufactured home.
- 62. Stabilizing Devices.** All components of the anchoring system and support systems such as piers, footings, foundations, ties, anchoring equipment, ground anchors, and any other equipment which supports the manufactured home and secures it to the ground.
- 63. Standard Set.** A manufactured home installed on footings and piers which has a perimeter enclosed by an above ground skirting or fascia.
- 64. Support System.** A combination of foundations, footings, piers, caps, and shims that will, when properly installed, support the weight of the manufactured home.
- 65. Tag.** A label or insignia issued by the Division and applied to manufactured homes to indicate compliance with federal or state laws, rules, and regulations.
- 66. Testing Laboratory or Testing Agency.** An organization:
- A. In the business of testing equipment and systems;
  - B. Qualified and equipped to perform or to observe experimental testing to approved standards;
  - C. Not under the jurisdiction or control of any single manufacturer or supplier for an affected industry;
  - D. Which publishes reports including specified information about the equipment and systems tested and found safe for use in a specified manner; and
  - E. Whose methods and standards have been approved by the Division.

- 67. Tie.** Straps or securing devices used to connect the manufactured home to tie-down anchors.
- 68. Tie-down.** Any device designed to anchor a manufactured home securely to the earth.
- 69. Utilities.** The water, sewer, gas, or electric services provided on a lot for a manufactured home.
- 70. Utility Connection.** Includes, but is not limited to, the following:
- A.** Installation and connection of the manufactured home electrical feeders to the electric utility;
  - B.** Installation and connection of the manufactured home drain to the sewer utility;
  - C.** Installation and connection to the manufactured home water system to the water utility;
  - D.** Installation and connection of the manufactured home fuel gas system to the gas utility.
- 71. Vertical Tie.** A tie intended to resist the uplifting or overturning forces.
- 72. Visual Inspection.** An inspection of the visible portions of completed construction for the purpose of identifying code compliance.

## **ACRONYMS AND ABBREVIATIONS**

The following list defines acronyms and abbreviations as they are used in this standard.

- 01. ABS.** Acrylonitrile butadiene styrene.
- 02. ADA.** Americans with Disabilities Act.
- 03. ANSI.** American National Standard Institute.
- 04. ASTM.** American Society for Testing and Materials.
- 05. AWWA.** American Wood Products Association.
- 06. CFR.** Code of Federal Regulations.
- 07. CPVC.** Chlorinated polyvinyl chloride.
- 08. DAPIA.** Design Approval Primary Inspection Agency. A state or private organization that has been accepted by the Secretary of HUD to evaluate and approve

manufactured home designs and quality control procedures.

- 09. FEMA.** Federal Emergency Management Agency.
- 10. HUD.** US Department of Housing and Urban Development.
- 11. IPIA.** Production Inspection Primary Inspection Agency. A state or private organization that has been accepted by the Secretary of HUD to evaluate the ability of manufactured home manufacturers to follow approved quality control procedures and provide ongoing surveillance of the manufacturing process.
- 12. NEC.** National Electrical Code.
- 13. NFPA.** National Fire Protection Association.
- 14. PEX.** Cross linked polyethylene tubing.
- 15. PSI.** Pounds per square inch.
- 16. PSF.** Pounds per square foot.
- 17. PVC.** Polyvinyl chloride.
- 18. UPC.** Uniform Plumbing Code. . Definitions, Acronyms & Abbreviations NMHIS