

**OREGON  
MANUFACTURED  
DWELLING  
AND PARK  
SPECIALTY CODE**

**2002 EDITION**

Published by the Oregon Manufactured Housing Association and  
Oregon Building Codes Division, Department of Consumer and Business Services

**OREGON MANUFACTURED DWELLING AND PARK  
SPECIALTY CODE**

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# **OREGON MANUFACTURED DWELLING AND PARK SPECIALTY CODE - 2002 EDITION**

## **ORIGIN AND DEVELOPMENT OF THE OREGON MANUFACTURED DWELLING AND PARK SPECIALTY CODE**

The **Oregon Manufactured Dwelling and Park Specialty Code** was developed with four purposes in mind. The first and most important is to provide safe, accessible, and energy-efficient construction. The second is to improve the quality of manufactured dwelling installations and inspections by providing a single installation code for all manufactured dwellings. The third is to insure consistency among jurisdictions in plan review and inspection of manufactured dwelling installations and alterations, of manufactured dwelling accessory buildings and structures, and of manufactured dwelling park construction. The fourth is to insure consistency statewide in the use and occupancy of manufactured dwellings and manufactured dwelling parks.

The **Oregon Manufactured Dwelling and Park Specialty Code** was originally published under the title **Oregon Manufactured Dwelling Standard** in 1996 and again in 1997. This is the third publication of the original standard containing several major changes. This edition has been completely reformatted to the American National Standards Institute style to be consistent with the division's other specialty codes. It also has a new chapter devoted to the construction of manufactured dwelling parks, not contained in previous editions. In addition, this code contains hundreds of changes submitted to the division by consumers, industry, municipalities, and Division staff.

The **Oregon Manufactured Dwelling and Park Specialty Code** was developed at the direction of the **Oregon Building Codes Division Administrator** through the **Oregon Manufactured Structures and Parks Advisory Board**. The board appointed a special task force called the **Manufactured Dwelling Advisory Committee** made up of representatives from the public, industry, local government, educational institutions, and the Division's technical experts. The committee reviewed more than 500 code change proposals and worked out solutions to difficult problems

The **Oregon Manufactured Dwelling and Park Specialty Code** is published on a four year cycle. Suggestions for code changes for the next edition of this code may be submitted to the Secretary, **Manufactured Structures and Parks Advisory Board, PO Box 14470, Salem, OR 97309**. Code change forms are available from the Chief of Manufactured Structures and Parks at the Oregon Building Codes Division.

The **Oregon Manufactured Dwelling and Park Specialty Code** is dedicated to the memory of Ben Benson and Mike Blegen, state manufactured home and park inspectors, who contributed their expertise to the writing of this book but have since passed away.

## CHAPTER ONE ADMINISTRATIVE

- 1-1 General
- 1-2 Authority
- 1-3 Mfg. Dwellings Sold “As Is”
- 1-4 Other Applicable Standards
- 1-5 Fees
- 1-6 Plans
- 1-7 Permits
- 1-8 Inspections
- 1-9 Insignias and Labels
- 1-10 Certifications
- 1-11 Licensing Requirements
- 1-12 Violations and Penalties
- 1-13 Appeals

### 1-1 General.

**1-1.1 Title.** These provisions shall be known as the **Oregon Manufactured Dwelling and Park Specialty Code, 2002 Edition**, may be cited as such, and will be referred to herein as “**this code**” or the “**MD&P**”. This code shall remain in the public domain and may not be copyrighted. The public is welcome to make copies for their use.

**1-1.2 Purpose.** This code is intended to provide statewide standards for the protection of life, limb, health, property, and for the safety and welfare of the consumer, general public, and the owners and occupants of manufactured dwellings. The requirements of this code may be exceeded by a homeowner, contractor, dealer, distributor, financial institution, or manufacturer, but no jurisdiction may require a person to exceed this code except where specifically permitted within this code.

**1-1.3 Scope.** This code applies to the siting, installation, alteration, repair, construction, addition, conversion, use, and occupancy of manufactured dwellings, accessory buildings, accessory structures, mobile home parks, and manufactured dwelling parks

in Oregon as authorized by **ORS 446.062** and **446.155** and the following:  
**(a)** When city, county or state rules, regulations, standards, ordinances, or codes refer to the **Oregon Manufactured Dwelling Standard (OMDS)** or **Oregon Administrative Rule (OAR) 918-600**, it shall be understood that those documents are referring to this code, the **2002 Oregon Manufactured Dwelling and Park Specialty Code**;

**(b)** Except where otherwise noted, illustrations (figures) used in this code are examples of typical methods of construction and should not be construed as the only method permitted by this code. Appendices used in this code are not adopted as part of this code and should be considered informational only. However, some of the information contained in the appendices are from other standards, rules, regulations, or statutes having the same authority as this code. Highlighted notes and warnings are not part of this code but contain vital information for the user. Tables contained in this code are part of the code; and

**(c)** Where differences occur between a city or county ordinance and this code, the provisions of this code shall apply.

**1-1.4 Design Loads.** Except as otherwise stated, the manufactured dwelling siting, foundation and installation requirements contained in this code shall be based on the following criteria:

**(a)** Assumed soil bearing capacity of 1,000 pounds per square foot (4880 kgs per sq. m);

**(b)** Minimum pier capacity of 4,000 pounds (1800 kgs),

**(c)** Floor live load (LL) of 40 pounds per square foot (195.2 kgs per sq. m);

**(d)** Floor dead load (DL) of 15 pounds per square foot (73.2 kgs per sq. m);

**(e)** Wall dead load (DL) of 10 pounds per square foot (48.8 kgs per sq. m);

**(f)** Roof live load (LL) of 30 pounds per square foot (146.4 kgs per sq. m);

- (g) Roof dead load (LL) of 10 pounds per square foot (48.8 kgs per sq. m);
- (h) Total manufactured dwelling LL and DL , 105 pounds per square foot (4.88 kgs per sq. m.);
- (i) Horizontal wind load of 15 pounds per square foot (73.2 kgs per sq. m.);
- (j) Roof uplift of 9 pounds per square foot (43.92 kgs per sq. m.);
- (k) Deck live load (LL) of 40 pounds per square foot (195.2 kgs per sq. m);
- (l) Stairs live load (LL) of 40 pounds per square foot (195.2 kgs per sq. m);
- (m) Landing live load (LL) of 40 pounds per square foot (195.2 kgs per sq. m);
- (n) Handrail live load (LL) of 200 pounds (976 kgs per m) at any point in any direction; and
- (o) Guardrail live load (LL) of 50 pounds (244 kgs per m) per lineal foot and 200 pounds (976 kgs per m) at any point in any direction.

**1-1.5 Not Applicable Provisions.**

Except where otherwise stated, this code is not applicable in certain situations including, but not limited to, the following:

- (a) Installation of manufactured dwellings on land owned and occupied by the federal government may not be subject to this code;
- (b) Construction of manufactured dwelling parks on tribal lands or on land owned and occupied by a tribal council may not be subject to this code;
- (c) Construction or installation of prefabricated structures, modular building, or modular homes regulated under **ORS 455.010** and **OAR 918-674**;
- (d) Construction of site-built dwellings except for cabanas or as indicated in this code; and
- (e) Owner-built manufactured dwellings.

**1-1.6 Conflicts.** Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement in this code, the specific requirement shall apply. Where there is a conflict

between this code and any referenced standard, this code shall apply. Where there is a conflict between this code and any local ordinance or regulation, this code shall apply. Where, in any specific case, there is a conflict between this code and applicable Oregon Revised Statutes, the applicable statute shall apply.

**1-1.7 Code Changes.** This specialty code is reviewed and updated on a regular basis. Persons requesting code changes may submit their request to the Building Codes Division on forms supplied by the Division. Code change requests should be addressed to the Secretary of the Manufactured Structures and Parks Advisory Board. To receive information on code change notices and interpretations or to be placed on the Division’s manufactured dwelling interested parties mailing list send a written request to the Division’s Mail Support Specialist. To subscribe to the Division’s publication “**Codelink**”, send a written request to the Division’s publications editor. Codelink is also available on the Division’s WEB site at “**<http://www.cbs.state.or.us>**”.

**1-2 Authority**

**1-2.1 Code Preemption.** The Building Codes Division adopts this code under the authority of **ORS 446.062, 446.155, 446.185, 446.200, 446.230, 446.240, 446.400, and 455.040**. This code is a statewide preemptive code, and is the minimum acceptable and maximum required in the state of Oregon. Except as provided in **ORS 455.040** or specifically referenced within this code, no municipality shall enforce any other code, standard, rule, regulation, or ordinance regarding the regulation of manufactured dwellings, manufactured dwelling parks, mobile home parks, and combination parks in Oregon.

**1-2.2 Enforcement.** The Building Codes Division has delegated the responsibility of enforcing the requirements contained

in **OAR 918-500, OAR 918-515, OAR 918-520, ORS 446, ORS 455**, and this code to certain municipalities. The municipality's building official, as the authority having jurisdiction, is hereby authorized and directed to enforce all of the provisions of this code. With this delegation, and acting as an agent of the Division, the building official has the authority to issue permits, review plans, perform inspections, investigate violations, issue stop work orders, issue citations, enforce the state's labeling and licensing requirements, require corrections, and serve notice of proposed civil penalty assessments.

**1-2.3 Interpretation.** The building official shall have the authority to render interpretations of this code. Such interpretations, rules and regulations shall be in conformance with the intent and purpose of this code. When the building official finds that the strict letter of this code is impractical for a special situation, the building official may accept a modification as long as the modification does not lessen the health, life safety, and fire safety requirements intended by this code. Persons requesting formal interpretations of this code shall submit their request in writing to the Division's Chief of Manufactured Structures and Parks. To receive copies of code interpretations see the Division's WEB page at "<http://www.cbs.state.or.us>".

**1-2.4 Energy Conservation Equivalents.** When it is necessary to determine that a manufactured dwelling is performing at a level greater or equivalent to the Oregon Energy Code, certification or verification of the home to any of the following shall be considered equivalent and acceptable:

- (a) Equivalent U-value identified on the manufacturer's heat loss certificate as required by **24 CFR 3280.510**;
- (b) Super Good Cents (SGC) program;
- (c) Manufacturer's Acquisition Program (MAP);

- (d) Natural Choice program;
- (e) Earth Advantage Program;
- (f) Energy Star program;
- (g) Equivalent energy conservation or weatherization programs found acceptable by the authority having jurisdiction; or
- (h) A visual inspection of the retrofit installations of insulation, sealing, and ventilation found acceptable to the authority having jurisdiction.

**1-2.5 Alternate Methods and Materials.** The provisions of this code are not intended to limit the appropriate use of materials, appliances, equipment, or methods of construction design not specifically prescribed by this code. The building official may accept proposed alternate materials, appliances, equipment, or methods of design or construction if they are at least equivalent to that prescribed in this code in suitability, quality, strength, effectiveness, fire resistance, durability, dimensional stability, safety and sanitation. Compliance with specific performance-based provisions of this code, in lieu of a prescriptive requirement, shall also be permitted as an alternate. This code also promotes the use of recycled materials whenever possible as long as there are no adverse affects and the materials are equal to those prescribed. Persons requesting approval for alternate methods or materials shall submit their request to the authority having jurisdiction. The building official may require evidence or proof to substantiate any claims regarding the proposed alternate.

**1-2.6 Liability.** The building official or the building official's authorized representative, acting in good faith and without malice in the discharge of his or her duties shall not render himself or herself personally liable for any damage that may occur to persons or property as a result of any act or by reason of any act or omission in the discharge of his or

her duties. Any suit brought against the building official or employees because of such an act or omission performed in the enforcement of this code shall be defended by the jurisdiction until final determination and any judgement thereof shall be assumed by the jurisdiction.

**1-3 Manufactured Dwellings Sold “As Is”** Persons selling or buying a previously owned manufactured dwelling “as is” or “with all faults”, as permitted by **ORS 446.155**, shall comply with the following:

**(a)** The seller shall state in the bill of sale, “This manufactured dwelling is being sold as is and with all faults.” The buyer assumes the entire risk as to the quality and performance of this manufactured dwelling and the entire cost of all servicing and repair”;

**(b)** When required, the buyer shall bring the manufactured dwelling into conformance with this code as verified through a visual inspection and, when required, by the attachment of an Oregon insignia of compliance prior to occupancy;

**(c)** When a manufactured dwelling sold “as is” or “with all faults” is intended to be used as a non-regulated structure, such as an agricultural use, the buyer shall remove all appliances, all plumbing fixtures in the kitchen and baths, and shall return any state or federal insignias of compliance or certification labels to the Building Codes Division.

#### **1-4 Other Applicable Standards.**

**1-4.1 Reference Standards.** The **MD&P** is not a stand-alone code and depends on other documents to complete it. Referenced standards in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced standards, the provisions of this code shall apply. The **MD&P** will make references to other codes,

standards, and regulations according to the following:

**(a)** When this code refers to “**24 CFR 3280**” or the federal “**Manufactured Home Construction and Safety Standards**”, it is referring to the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280**;

**(b)** When this code refers to “**24 CFR 3282**” or the federal “**Manufactured Home Procedural and Enforcement Regulations**”, it is referring to the federal **Manufactured Home Procedural and Enforcement Regulations 24 CFR 3282**;

**(c)** When this code refers to “**ORS**”, it is referring to **Oregon Revised Statutes**;

**(d)** When this code refers to “**OAR**”, it is referring to **Oregon Administrative Rule**;

**(e)** When this code refers to “**NFPA 501**”, it is referring to **Standard on Manufactured Housing, 1999 Edition**;

**(f)** When this code refers to “**NFPA 501A**”, it is referring to **Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities, 1999 Edition**;

**(g)** When this code refers to the “**Oregon One and Two Family Dwelling Specialty Code**” or “**OTFDSC**”, it is referring to the **Oregon One and Two Family Dwelling Specialty Code, 1999 Edition**;

**(h)** When this code refers to the “**Oregon Structural Specialty Code**” or “**OSSC**”, it is referring to the **Oregon Structural Specialty Code, 1998 Edition**;

**(i)** When this code refers to the “**Oregon Plumbing Specialty Code**” or “**OPSC**”, it is referring to the **Oregon Plumbing Specialty Code, 2000 Edition**;

**(j)** When this code refers to the “**Oregon Mechanical Specialty Code**” or “**OMSC**”, it is referring to the **Oregon Mechanical Specialty Code, 2000 Edition**;

**(k)** When this code refers to the “**National Electrical Code**” or “**NEC**”, it is referring to the **National Fire**

**Protection Association standard publication (NFPA 70), 1999 Edition;**

**(l)** When this code refers to the “**Uniform Fire Code**” or “**UFC**”, it is referring to the **Oregon Uniform Fire Code, 1998 Edition;**

**(m)** When this code refers to the “**NFPA 54**” it is referring to the **National Fuel Gas Code, 1999 Edition;**

**(n)** When this code refers to the “**NFPA 58**” it is referring to the **Standard for Liquefied Petroleum Gases, 1998 Edition;** and

**(o)** Other reference standards may be indicated within this code.

### **1-5 Fees.**

**1-5.1 State Fees.** Plan review, permit, investigation, and other fees have been established in **OAR 918-500-0100, 918-500-0105, and 918-500-0110.** The delegation of authority includes the obligation to collect and remit to the Division all required State fees and surcharges.

**1-5.2 Local Fees.** Local plan review, permit, investigation, and other fees may be established through local ordinance by the authority having jurisdiction. A municipality’s fees shall be reasonable and shall not exceed the cost of administering these programs. When a municipality establishes fees for manufactured dwelling installations based on valuation, those fees shall only reflect the value of the installation and shall not include the value of the manufactured dwelling. Where a municipality has not established fees through local ordinance, the State fees shall apply. Local fee adoption must comply with the requirements of ORS 455.210.

### **1-6 Plans.**

**1-6.1 Plan Required.** When plans are required, a minimum of two sets of plans shall be submitted to the authority having jurisdiction. The authority having jurisdiction may require additional sets of plans. Plans shall be clear to indicate

the nature and extent of the work proposed and shall show in detail how the work will conform to the provisions of this code and all relevant laws, ordinances, rules, and regulations. Required plans shall be reviewed and approved by the authority having jurisdiction prior to permits being issued.

**1-6.2 Plan Format.** All plans shall be submitted in duplicate and;

**(a)** Shall contain the owners name, project name if applicable; the name of the person who prepared the plans, and the location of the proposed work site;

**(b)** Shall be drawn to scale, indicate the scale used, and contain a key to all symbols used;

**(c)** Shall be of sufficient clarity to indicate the nature and extent of the work proposed; and

**(d)** Shall show in detail how the work will conform to the provisions of this code and all relevant laws, ordinances, rules, regulations and other specialty codes.

**1-6.3 Engineered Plans.** Plans requiring engineering shall be prepared by an Oregon professional engineer or architect. Engineering calculations, tests, or analyses may be produced by out-of-state professional engineers or architects if approved by a DAPIA or in the case of earthquake-resistant bracing systems or engineered foundation systems, approved by the state of California Department of Housing and Community Development.

**1-6.4 Expiration of Plan Review.** Plan review applications for which no permit is issued within 180 days following the date of application shall expire by limitation. Plans and other data submitted for review may be returned to the applicant or destroyed by the authority having jurisdiction. The authority having jurisdiction may extend the time for action by the applicant for a period not to exceed 180 days upon request by the applicant showing that circumstances beyond the control of the

applicant have prevented action from being taken. No application shall be extended more than once. In order to renew action on an application after expiration, the applicant shall resubmit plans and pay a new plan review fee.

**1-6.5 Plan Location.** One set of the approved plans shall be kept on file with the authority having jurisdiction. The second set of the approved plans shall be kept available on the site where the work is taking place.

**1-6.6 Retention of Plans.** One set of approved plans, specifications, and computations shall be retained by the authority having jurisdiction for a period of 90 days from the date of completion of the work.

**1-6.7 Plot Plans Required.** The authority having jurisdiction shall require a plot plan prior to the installation of a manufactured dwelling. Plot plans are not required to be prepared by a professional engineer or architect. Plot plans shall be drawn to a scale of not less than 1 (one) inch to 50 (fifty) feet (minimum 50' = 1") and shall show all proposed work. Plot plans shall include:

- (a) Approximate elevations at each corner of the lot or lots;
- (b) Location of all cuts and fills on the lot (excluding the stand's six inches of gravel);
- (c) Locations of the manufactured dwelling and all accessory buildings and structures;
- (d) Set-backs from property lines, lot lines, streets, public sidewalks, easements of record and structures on the same lot or adjacent lots if within ten feet of the property line;
- (e) Intended finish grade around the manufactured dwelling and all accessory buildings and structures;
- (f) Location and type of the storm water drainage system, including rain drains;
- (g) Where there is more than a 12-inch (30.5 cm) difference in elevation between two adjacent corners of a site,

the plot plan shall include contour lines or shall be submitted with a cross-sectional drawing of the lot showing the approximate elevations of the lot;

(h) When in a flood hazard area, an elevation certificate is required; and

(i) Where installed outside a mobile or manufactured dwelling park, the authority having jurisdiction may also require the location of wells, septic tanks, leach lines, petroleum tanks, chemical storage, natural water ways, and easements of record.

**1-6.8 Plot Plans Not Required.** Plot plans are not required if the permit is being issued only for the installation of anchoring devices, earthquake-resistant bracing systems, or perimeter enclosures on existing manufactured dwellings.

**1-6.9 Park Plans.** Plans shall be submitted to the authority having jurisdiction for the construction of new manufactured dwelling parks, temporary manufactured dwelling parks, combination parks, and additions, conversions, or alterations of existing mobile home parks, manufactured dwelling parks, or combination parks. Park plans shall show existing and proposed construction and how the park will comply with the construction requirements of this code. Park plans shall be prepared and stamped by an Oregon professional engineer or architect. The authority having jurisdiction may waive some of the park plan requirements for temporary parks. Plot plans shall be drawn to a scale of not less than 1 (one) inch to 50 (fifty) feet (minimum 50' = 1"). Plans shall provide the following information:

(a) Name of park, name of park owner and operator, name of person preparing the plans, scale and a key to the symbols used,

(b) The general layout of the entire park including all property lines, streets, street widths, alleys, driveways, common driveways, parking, storage



areas, sidewalks, applicable **ADA** accessibility, signage, and park street connections to the public way;

**(c)** Location and size of all play areas and recreation areas, hazards, and type, size, and location of safety barriers;

**(d)** Location of all open areas, green ways, buffer zones, perimeter setbacks, and perimeter fencing;

**(e)** Illumination Plan for park lighting;

**(f)** Location of all cuts and fills within the park;

**(g)** Location of all existing and proposed buildings, structures, and retaining walls within the park and on adjacent land within 20 (twenty) feet (6.1 m) of the park's property line. (This does not include the manufactured dwellings or their accessory buildings or accessory structures proposed for the park);

**(h)** Location, size, and numerical identification of all proposed manufactured dwelling lots;

**(i)** Set-backs from park property lines, public streets, public sidewalks, public utilities, and easements of record on the same lot or adjacent lots if within 20 (twenty) feet (6.1 m) of the park's property line;

**(j)** Locations of all cuts and fills before and after final grading;

**(k)** Where the existing grade or slope exceeds 5 percent, the plans shall include a topography of the park consisting of contour lines indicating the elevations within the park and the intended finish grade of the park;

**(l)** Location, size, and material of the park's storm water drainage, sewer, water, fuel gas, and electrical systems;

**(m)** Location, size, and description of the park's fire fighting facilities;

**(n)** Location of all existing and proposed wells, septic tanks, leach lines, petroleum tanks, and chemical storage within the park;

**(o)** Location of all water ways including ponds, lakes, wet lands, streams, creeks, and rivers within the park boundaries;

**(p)** Cross section of the street, alley, sidewalk, and driveway construction;

**(q)** Design and engineering of all bridges and culverts within the park.

**(r)** The authority having jurisdiction may, when conditions warrant, also require:

1. An elevation certificate;

2. A soil investigation report; and

3. An evaluation and recommendation concerning potential geological hazards.

**1-6.10 Alteration Plans.** Depending on the complexity of the work, the authority having jurisdiction may require plans to be submitted prior to a person being permitted to alter, convert, or repair a manufactured dwelling, accessory building, accessory structure, mobile home park, or manufactured dwelling park.

#### **1-6.11 Multiple-family Housing Plans.**

Where two or more manufactured dwellings are to be grouped together to form the equivalent of multiple-family housing, as permitted by **ORS 446.055**, plans shall be submitted according to this section.

**(a)** Plans shall be submitted to the Building Codes Division's Chief of Manufactured Structures and Parks to verify compliance with state codes.

**(b)** After approval by the Division, plans shall be submitted to the local planning and building departments. No municipality shall approve plans that have not been approved by the Division.

**(c)** Plans for proposed groupings of manufactured dwellings shall:

1. Be drawn to scale and of sufficient clarity to indicate the nature and extent of the work proposed and shall show in detail the work will conform to the provisions of this code and all relevant laws, ordinances, rules, regulations and specialty codes;

2. Include a master floor plan showing the configuration of all adjoined manufactured dwellings, cabanas, garages and accessory structures. Where there is more than one configuration, each configuration shall be submitted;

3. Indicate exit door and window sizes, types and locations for each garage, cabana and manufactured dwelling model;
4. Indicate the location of all utility connections for each garage, cabana and manufactured dwelling model;
5. Show the size and use of each room and space in each garage, cabana and manufactured dwelling model;
6. Show the location of each fire separation wall required between cabanas, manufactured dwellings, garages and accessory structures;
7. Show the location of the HUD labels or state insignias on each cabana and manufactured dwelling model;
8. Show a detailed section of the fire separation wall(s) where the cabanas, manufactured dwellings, garages or accessory structures are to be adjoined; and
9. Be submitted with copies of the appropriate DAPIA approved plans for each manufactured dwelling model.

### 1-7 Permits.

**1-7.1 Permit Requirements.** A permit shall be obtained before beginning any work requiring a permit by this or any other specialty code. Signed and dated application shall be made to the authority having jurisdiction. Multiple permits may be required when the proposed work involves two or more code areas (i.e., structural, electrical, plumbing, or mechanical).

### 1-7.2 Content of Permit Application.

The permit application used by the authority having jurisdiction shall contain at least the following information in addition to any other information deemed necessary:

- (a) Jurisdiction's name, mailing address, and telephone number;
- (b) The permit number and issue date;
- (c) Name, address, and telephone number of the property owner;
- (d) Name, address, and telephone number of the primary contractors. (i.e.,

installer; concrete contractor, electrician, plumber, etc.)

- (e) Name and contractor's CCB and BCD license numbers;
- (f) Address of and directions to the construction site;
- (g) General description of the proposed work to be performed;
- (h) A checkbox to indicate zoning approval verification;
- (i) A checkbox to indicate sewer approval;
- (j) Base flood elevation;
- (k) Space for calculating fees and surcharges;
- (l) The owner's or applicant's signature; and
- (m) A space for indicating jurisdiction approval.

**1-7.3 Content of Permit.** The permit used by the authority having jurisdiction shall contain at least the following information in addition to any other information deemed necessary by the authority having jurisdiction:

- (a) Jurisdiction's name, mailing address, and telephone number;
- (b) The permit number, issue date, and expiration date;
- (c) Address of the job site;
- (d) Description of work being permitted; and
- (e) Instructions on how to request required inspections.

**1-7.4 Posting permit.** A durable weather-resistant permit card shall be issued by the authority having jurisdiction with each permit. The applicant shall post the permit card in a semi-permanent and conspicuous location on the job site prior to any construction, installation, or alteration. The authority having jurisdiction may charge re-inspection fees if the permit card is lost or not posted at the time of inspection. The permit card used by the authority having jurisdiction shall contain at least the following information in addition to any other information

deemed necessary by the authority having jurisdiction:

- (a) Jurisdiction's name, mailing address, and telephone number;
- (b) The permit number, issue date, and expiration date;
- (c) Address of the job site;
- (d) Description of work being permitted;
- (e) Space for the inspector to sign and date each inspection made; and
- (f) Instructions on how to request required inspections.

**1-7.5 Permit Expiration.** Every permit issued by the authority having jurisdiction under the provisions of this code shall expire by limitation and become null and void if the work authorized by such permit is not commenced within 180 days from the issue date of the permit, or if the work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days or more.

**1-7.6 Permit Extension.** A person holding a non-expired permit may apply for a 180 day extension, provided the person shows good and satisfactory reasons why the work could not be commenced within the last 180 day period. The authority having jurisdiction may grant an extension for a period not exceeding 180 days.

**1-7.7 Permit Renewal.** A permit that has expired for 180 days or less shall be permitted to be renewed provided no changes have been made in the original plans and specifications for such work. The renewal fee shall be one-half (1/2) the amount required for a new permit. Permits that have been expired for more than 180 days require a new permit application and the full permit fee.

**1-7.8 Permit Validity.** The issuance of a permit shall not authorize the violation of any of the provisions of this code. Permits presuming to give authority to violate or cancel any provisions of this

code are not valid. The issuance of a permit based on plans, specifications and related material shall not prevent the authority having jurisdiction from requiring the correction of errors in plans, specifications and related material or from preventing the building from being operated in violation of this code.

**1-7.9 Permit Suspension or Revocation.** Suspension or revocation of permits shall be according to the provisions of the Oregon Administrative Procedures Act or local ordinances.

**1-7.10 Permit Investigation.** Whenever any work for which a permit is required by this code has been commenced without first obtaining a permit, the authority having jurisdiction may initiate a special investigation. Whenever work appears to be abandoned or required inspections have not been requested on a timely basis, the authority having jurisdiction may initiate a special investigation. An investigation fee may be collected in an amount equal to the permit fee, whether or not a permit is issued.

**1-7.11 Park Permits Required.** Any person wanting to obtain a permit shall first make application to the authority having jurisdiction. As required by **ORS 446.062**, permits shall be obtained using application forms furnished by the authority having jurisdiction.

(a) No person, firm, or corporation shall establish, construct, enlarge, or alter any mobile home or manufactured dwelling park or cause the same to be done without first obtaining all required permits and approvals from the authority having jurisdiction.

(b) The authority having jurisdiction shall not issue a permit until approval is received from the local planning department. The authority having jurisdiction may also require prior approvals from DEQ, the local fire official, and local health department.

(c) The authority having jurisdiction shall require evidence of flood hazard mitigation when reviewing plans prior to issuing a permit when the site is in a flood hazard area as designated on the **Flood Insurance Rate Maps (FIRM)**. (See Chapter 10-2.2)

(d) A park permit includes, but is not limited to, excavation, park layout, drainage, paving, and street, curb, sidewalk, walkway, and driveway construction.

(e) Separate permits are required by the authority having jurisdiction for all plumbing and electrical installations, the construction of park buildings, installation of manufactured dwellings and cabanas, and other items. Examples of other items may include swimming pools, spas, fences, retaining walls, accessory buildings, accessory structures, bridges, and culverts.

**1-7.12 Manufactured Dwelling Installation Permits.** As required by **ORS 446.252**, permits shall be obtained from the authority having jurisdiction before installing a manufactured dwelling.

(a) Installation permits include, but are not limited to, excavation, grading, stand preparation, placement of fill and the construction or installation of the vapor barrier, concrete-encased grounding electrodes, electrical feeder connections, electrical crossover connections, electrical ship loose fixture installations, water supply connections, water valve installation, water crossover connections, heat tape installation, drain line connections, drain crossover connections, ship loose drain line assembly, fuel gas supply connection, and fuel gas crossover connections, footings, piers, foundation walls, perimeter retaining walls, skirting, roof gutters, down spouts, drainage systems, anchoring devices, fire separation walls, temporary steps, structural marriage line connections, weather seals, heat tapes, insulation, ducts, vents, flues, sidewalks,

and driveways located on a single manufactured dwelling lot.

(b) Installation permits do not include electrical service installations and connections, alterations, additions, or the construction or installation of grounding rods, sewer systems, septic systems, appliances, water supply systems, accessory buildings, accessory structures, basements.

(c) Installation permits are not required for manufactured dwellings or cabanas that are temporarily on display or in storage;

1. This exception is not applicable to manufactured dwellings or cabanas installed and on display on a manufactured dwelling park lot, mobile home park lot, subdivision lot or residential lot; and

2. This exception is not applicable to manufactured dwellings or cabanas occupied as sales offices or residences on a dealer lot, storage lot, or at the manufacturer's facility.

**1-7.13 Accessory Building and Structure Permits.** As required by **ORS 455.020**, permits shall be obtained from the authority having jurisdiction before adding, constructing, installing, altering, repairing, or converting a manufactured dwelling accessory building or accessory structure involving structural, mechanical, electrical, or plumbing work.

(a) Manufactured dwelling accessory buildings and accessory structures consist of, but are not limited to, decks, ramps, steps, landings, guardrails, handrails, awnings, carports, utility buildings, storage sheds, equipment sheds, cabanas, ramadas, and garages.

(b) As described in **Section 111** of the **Oregon One and Two Family Dwelling Specialty Code**, permits are not required on manufactured dwelling accessory buildings or accessory structures for the following if the work does not encroach over subsurface disposal systems or into required yards:

1. Retrofitted insulation (weatherization projects by or on behalf of the owner or the local utility company);
2. Private concrete slabs (when not part of the manufactured dwelling foundation);
3. Private driveways and sidewalks;
4. Masonry repair (when not a structural support column or beam);
5. Porches and decks, where the floor or deck is not more than 30 inches (762 mm) above grade and where the edge of the porch, deck or floor does not come closer than 3 feet (914 mm) to the property line (does not include porch or deck roofs or enclosures);
6. Patio covers (includes awnings and carports), not over 120 square feet (11 sq. m.) in area;
7. Painting;
8. Interior wall, floor or ceiling covering;
9. Non-bearing partitions, except when such partitions create habitable rooms (does not include alteration or removal of existing shear walls);
10. Shelving and cabinet work;
11. Gutters and downspouts;
12. Nonhabitable small accessory buildings not over 120 square feet (11 sq. m.) (does not include cabanas or other structures adjoined to and capable of adding floor space to a manufactured dwelling);
13. Door and window replacements (where no structural member is changed);
14. Replacement or repair of siding not required to be fire resistant;
15. Reroofing, except in wildfire hazard zones or where the roofing exceeds 30 percent of the roofing design load (See Sections 7-5 and 9-8.3 for more details);
16. Plastic glazed storm windows;
17. Except for barriers around swimming pools, fences not over 6 feet (182.9 cm) high;
18. Retaining walls which are not over 4 feet (121.9 cm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge (**ORS 455.310**) (except when used as

part of the under-floor enclosure beneath a manufactured dwelling);

**19.** Self-supporting fabric structures used as patio covers or carports which do not exceed 500 square feet (46.5 sq. m) in floor area;

**20.** The replacement of light bulbs, fluorescent tubes, or approved fuses; and

**21.** The connection of approved portable electrical equipment to permanently installed and properly wired electrical receptacles (see also **ORS 479.540(14)**).

**1-7.14 Manufactured Dwelling Alteration Permits.** As required by **ORS 455.020**, permits shall be obtained before altering, converting, or repairing the structural, mechanical, electrical, or plumbing systems of a manufactured dwelling.

**(a)** As described in **ORS 446.003(2)(b)**, permits are not required on manufactured dwelling alterations consisting of the following and as further defined in Appendix A of this code:

**1.** Minor repairs with approved component parts (see Appendix A for definition of minor repairs);

**2.** Conversion of listed fuel-burning appliances in accordance with the terms of their listing;

**3.** Adjustment and maintenance of equipment (see Appendix A for definition of adjustment of equipment); or

**4.** Replacement of equipment or accessories in kind (see Appendix A for definition of replacement in kind);

**(b)** As described in **24 CFR 3282.251** and **3282.401**, permits are not required for manufactured dwelling warranty work including the replacement of defective materials or equipment (this exemption does not apply to those alterations made by or for dealers or distributors);

**(c)** As described in **24 CFR 3282.201**, permits are not required for alterations made by the manufacturer to the DAPIA plans under the control of an IPIA (this exemption does not apply to those

alterations made by or for dealers or distributors); and

**(d)** Permits are not required on manufactured dwellings for: **Refer to Section 1-8.13(b)**

1. Retrofitted insulation (includes weatherization projects by or on behalf of the owner or the local utility company);
2. Masonry repair (when not a structural support column or beam);
3. Painting;
4. Interior wall, floor or ceiling covering;
5. Non bearing partitions, except when such partitions create habitable rooms (does not include alteration or removal of existing shear walls);
6. Shelving and cabinet work;
7. Gutters and down-spouts;
8. Door and window replacements (where no structural member is changed);
9. Replacement or repair of siding not required to be fire resistant;
10. Re-roofing, except in wildfire hazard zones or where the roofing exceeds 30 percent of the roofing design load (See Sections 7-5 and 9-8.3 for more details);
11. Plastic glazed storm windows;
12. The replacement of light bulbs, fluorescent tubes, or approved fuses; and
13. The connection of approved portable electrical equipment to permanently installed and properly wired electrical receptacles (see also ORS 479.540(14)).

**1-7.15 Conversion Permits.** Permits shall be obtained from the authority having jurisdiction prior to a manufactured dwelling, accessory building, or accessory structure being converted to another occupancy or use.

**1-7.16 Manufactured Dwelling Permits Not Required.** Persons performing work on a manufactured dwelling shall obtain a permit from the authority having jurisdiction unless specifically exempted by this code.

**(a)** Individual permits are not required for those in the business of manufacturing manufactured dwellings if the business or person is a registered manufacturer with the Division and working under an approved quality assurance program. Persons re-manufacturing or rehabilitating manufactured dwellings shall obtain alteration permits according to **Chapter 1-7.14.**

**(b)** Persons performing warranty work on a manufactured dwelling authorized by and on behalf of the manufacturer are not required to obtain a permit.

**(c)** Individual homeowners repairing or altering their own manufactured dwelling for the purpose of obtaining an insignia from the Division through the Division's visual inspection process are not required to obtain a permit.

### **1-8 Inspections.**

**1-8.1 Inspections Required.** All work for which a permit is required shall be inspected by the authority having jurisdiction. Upon notification by the permit holder, the authority having jurisdiction shall make any necessary inspections and shall either approve that portion of the construction as completed or shall notify the permit holder or the permit holder's agent of the failures to comply with this code or other regulations. In addition to the inspections required by this code, the authority having jurisdiction may make or require any other inspections deemed necessary to ascertain compliance with this code and other referenced standards. Approval as a result of an inspection shall not be confused to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspection presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid.

**1-8.2 Call for Inspections.** It shall be the responsibility of the permit holder to

assure the authority having jurisdiction is notified when work is ready for inspection. Work shall not be covered until inspections have been made and approved unless otherwise approved to do so by this code or the authority having jurisdiction. When a contractor is not the permit holder, the contractor shall advise the permit holder when the work is ready for an inspection.

### **1-8.3 Inspection Approval Required.**

All work requiring a permit shall be inspected and approved by the authority having jurisdiction.

**(a)** Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the authority having jurisdiction.

**(b)** The authority having jurisdiction, upon notification, shall make requested inspections in a timely manner during normal business hours or other times if arranged with the permit holder.

**(c)** The inspector shall sign and date the permit card on the job site for each inspection approved.

**(d)** If the inspector identifies code violations, the inspector shall identify the failures in writing and post them on the job site or give them to the permit holder or the permit holder's agent.

**(e)** Construction that does not comply with the code shall be corrected within 30 days of notification or at a later date if agreed upon by the authority having jurisdiction.

**(f)** Construction that has been identified as not complying with the code shall not be covered or concealed until authorized by the authority having jurisdiction.

**1-8.4 Accessible Work.** All construction work for which a permit is required shall be subject to inspection by the authority having jurisdiction and all such construction or work shall remain accessible for inspection purposes until approved by the authority having jurisdiction. Arrangements may be made

between the installer and the authority having jurisdiction for work that is not feasible to leave open for inspection (an example of this would be fastening of the ridgebeams, walls or other work which in the process of assembly must be covered). Occupancy shall not prevent the physical inspection at reasonable times.

### **1-8.5 Failure to Call for Inspection.**

Covering work prior to a required inspection may require the removal of building materials or the dismantling of a structure. Failure of the permit holder or the permit holder's agent to call for required inspections may result in permit expiration by limitation. Permit expiration prior to the final inspection may require the permit holder to reapply for the permit and plan review and submit all associated fees.

### **1-8.6 Visual Inspections.**

Persons needing verification of code compliance to sell, lease, rent, exchange, or site a manufactured dwelling may request a visual inspection from the Division. The Division will perform a visual inspection on the manufactured dwelling to verify that it meets the appropriate code for the time period in which it was built. Upon satisfactory completion of a visual inspection, the Division may issue an inspection report verifying the manufactured dwelling conforms to the code. If the manufactured dwelling was originally constructed on or after January 1, 1962. The Division may verify code compliance by issuing an Oregon insignia of compliance.

### **1-8.7 Appliance Inspections.**

The installation or replacement of fuel burning fireplaces, wood stoves, pellet stoves, room heaters, heat pumps air conditioners, and other mechanical equipment shall be inspected by the authority having jurisdiction. When the manufactured dwelling is already sited on the consumer's lot or is located on a dealer's or distributor's sales lot, the

inspections shall be performed by the authority having jurisdiction. When a new manufactured dwelling has not been sited and is in the possession of the manufacturer, the inspections shall be performed by the Building Codes Division (IPIA).

**1-8.8 Park Inspections.** No manufactured dwelling park shall receive a certificate of occupancy until all inspections have been made and approved by the authority having jurisdiction. Manufactured dwellings may be placed in unfinished parks with prior approval from the authority having jurisdiction but may not be occupied until the final inspection has been approved and the certificate of occupancy issued. Manufactured dwelling parks shall be inspected in three phases:

**(a)** A layout inspection includes, but is not limited to, an inspection of the park layout, sub-grade, concrete forms, setbacks, and the location and size of streets, lots, buildings, utilities, drainage, and play areas;

**(b)** A pre-cover inspection includes, but is not limited to, an inspection of sub-grade base rock, utilities installation and concrete forms;

**(c)** A final inspection includes, but is not limited to, an inspection of the finished streets, lighting, and all poured concrete curbs, sidewalks, curb cuts, signage, parking, lighting, accessibility, play area, fences, sidewalks, driveways, and general safety hazards.

**1-8.9 Alteration Inspections.** The authority having jurisdiction shall inspect manufactured dwelling alterations, repairs, conversions, and additions as required. Inspections of manufactured dwelling alterations or repairs shall be performed according to the following:

**(a)** The local authority having jurisdiction shall perform inspections of manufactured dwelling alterations, repairs, conversions, or additions occurring after the first consumer has

taken possession of the home and all the terms of the sales contract have been completed.

**(b)** The State Building Codes Division shall perform inspections of manufactured dwelling alterations, repairs, conversions, or additions occurring prior to the first consumer taking possession of the home or prior to the terms of the sales contract being completed.

**(c)** See Section 7.9 re-manufacturing if the repairs are extensive and the home has been decertified or declared salvage.

**1-8.10 Accessory Buildings and Structures.** The authority having jurisdiction shall inspect the construction, installation, or alteration of all manufactured dwelling accessory buildings or structures requiring permits.

**1-8.11 Quality Assurance Inspections.** A business manufacturing, re-manufacturing, or rehabilitating manufactured dwellings shall be a registered manufacturer with the Division and working under an approved quality assurance program with routine inspections by the Division. Persons re-manufacturing or rehabilitating an individual manufactured dwelling are not required to be a registered manufacturer but shall have inspections performed by the Division. (see **OAR 918-500** for further information)

**1-8.12 Conversion Inspections.** The authority having jurisdiction shall inspect the conversion to another occupancy or use of a manufactured dwelling, accessory building, accessory structure, mobile home park, or manufactured dwelling park as necessary to assure compliance with the applicable codes.

**1-8.13.1 Installation Inspections Required.** The authority having jurisdiction shall inspect all manufactured dwelling and cabana installations.



**(a)** A minimum of two inspections shall be performed consisting of a “**set-up inspection**” and a “**final inspection**”. The authority having jurisdiction may also perform a “**site inspection**” to verify the information on the plot plan, instead of requiring a plot plan submittal, or to verify items needing to be covered prior to the set-up inspection. The authority having jurisdiction shall perform a “**site inspection**” at the request of an installer.

**(b)** A minimum or one inspection shall be performed by the authority having jurisdiction for each retrofit installation of an engineered foundation system, earthquake-resistant bracing system, anchoring, or under-floor enclosure.

**1-8.13.2 Inspection Criteria.** Manufactured dwelling installation inspections shall consist of at least the following:

**(a)** A “**site inspection**” includes a verification of the following:

1. Applicable permits obtained;
2. Set-backs are maintained;
3. Vegetation removal;
4. Stand leveled;
5. Site graded and drained;
6. Engineered fill tested and report submitted;
7. Poured-in-place footing and slab forms and reinforcement;
8. Concrete encased grounding electrodes, if applicable; and

**(b)** A “**set-up inspection**” includes verification of the following:

**Structure**

1. Foundation installation;
2. Applicable permits obtained;
3. Plot plan information and a soil compaction test or soil investigation report when required;
4. Stand preparation, vegetation removal, placement of gravel pad, and gravel compaction when required;
5. Vapor barrier installation;
6. Pier and footing type, size, and spacing;
7. Perimeter foundation or basement construction; and

8. Earthquake-resistant bracing system if applicable.

9. Bottom board repair;

10. Fire separation between adjacent structures (i.e. garage); and

11. Temporary steps in place and adequately supported.

**Marriage Line connections**

1. Weather stripping and weather seals at floor, walls, and roof connections;

2. Exposed roof and wall marriage line structural connections;

3. Floor marriage line structural connections, and

4. Anchor type, approval, location, installation, and attachments.

**Plumbing Connections**

1. Shut-off and pressure-reducing valves;

2. Heat tape or pipe insulation

3. Pipe size, material, grade, and support;

4. Pipe fitting type, size, use, and direction;

5. Marriage line cross-over pipe connections;

6. Water supply utility connection within 30 lineal feet of home; and

7. Septic or sewer utility pipe connection within 30 lineal feet of home.

**Mechanical Connections**

1. Under-floor dryer and range exhaust duct rough-in;

2. Duct crossover material, R-value, size, clearance, and connection; and

3. Flue, chimney and vent material, size, clearance, connections, and terminations.

**Fuel Gas Piping**

1. Pipe type, size, material, and support;

2. Pipe fittings, type, size, material, and use;

3. Marriage line fuel gas pipe cross-over connection; and

4. Fuel gas supply connection.

**Electrical Connections**

1. Feeder type, size, clearance, and installation within 30 feet and in sight of home;

2. Service type, size, clearance, location, support, and installation;

3. Fixture type, support, and connections;
4. Marriage line electrical cross-over connections;
5. Conduit and fitting type, size, material, and support;
6. Wiring type, size, material, and securement; and
7. Wiring methods and connections.

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Construction**

1. Applicable permits obtained;
2. DAPIA approval available; and
3. Construction matches DAPIA approved plans.

**(c)** A “**final inspection**” includes a verification of the following:

1. Skirting installation;
2. Under-floor access;
3. Under-floor ventilation;
4. Temporary step removal;
5. Permanent step or ramp installation;
6. Permanent landing, guardrail, and handrail construction;
7. Site grading and drainage;
8. Sidewalks and driveways;
9. Door and window adjustment, seal, and securement;
10. Accessory building and structure permits obtained (i.e., deck, awning, cabana, ramada, carport, and garage);
11. Under-floor dryer and range exhaust duct through skirting or perimeter foundation and terminated with approved devices;
12. Smoke detector location, installation, and test;
13. Ground fault circuit interrupter (GFCI) test; and
14. Installer's certification tag(s) are installed.

**1-8.13.3 Set-up Inspection.** A set-up inspection shall be performed by the authority having jurisdiction on each manufactured dwelling installation. The permit holder or the permit holder's agent shall request a set-up inspection when the manufactured dwelling is ready for occupancy.

**(a)** Inspections of the foundation system, earthquake bracing system,

utility connections, and marriage line connections shall be made prior to the under-floor area being enclosed by skirting or retaining walls.

**(b)** On the West side of the Cascade summit, the authority having jurisdiction shall perform the set-up inspection within 48 hours of notification by the permit holder or the permit holder's agent (excluding weekends and holidays).

**(c)** On the East side of the Cascade summit, the authority having jurisdiction shall perform the set-up inspection within 72 hours of notification by the permit holder or the permit holder's agent (excluding weekends and holidays).

**(d)** If the authority having jurisdiction does not perform the inspection within the stated time lines, the permit holder may proceed to enclose the under-floor area of the manufactured dwelling.

**(e)** Basement walls and foundation walls may be constructed and inspected prior to the installation of a manufactured dwelling provided prior arrangements are made with the authority having jurisdiction.

**(f)** If the inspection is not performed within the stated time lines, the authority having jurisdiction shall either perform the set-up inspection or shall be responsible for hiring a certified inspector to perform the inspection at the jurisdiction's expense.

**(g)** If the permit holder or the permit holder's agent fails to call for an inspection, or causes the under-floor area to be enclosed prior to the set-up inspection, the authority having jurisdiction may perform the set-up inspection at an additional cost to the permit holder or may require the permit holder to hire a certified inspector to perform the set-up inspection at the permit holder's expense. A copy of the certified inspector's report shall be provided to the authority having jurisdiction.

**(h)** A certified inspector shall be certified by the Division as an active Oregon

Manufactured Dwelling Installation Inspector. All identified non-conformances shall be corrected and verified prior to the authority having jurisdiction approving the installation.

**1-8.13.4 Final Inspection.** The permit holder or the permit holder's agent shall request a final inspection within 10 working days of the completion of the manufactured dwelling installation. If the authority having jurisdiction determines through investigation that the permit holder or the permit holder's agent failed to call for an inspection, the authority having jurisdiction may charge an investigation fee and a reinspection fee. If the permit has expired by limitation, the permit holder may be required to obtain a new permit.

#### **1-9 Insignias and Labels.**

**1-9.1 Insignia Required.** State insignias of compliance and HUD certification labels indicate a manufactured dwelling is in compliance with applicable codes and gives the owner the right to occupy, sell, exchange, rent, lease or offer for sale, exchange, rent, or lease the manufactured dwelling in Oregon. As required by **24 CFR 3282.362(c)(2)(i)**, U.S. Department of Housing and Urban Development (HUD) Certification Labels are required on all manufactured dwellings built on or after June 15, 1976. As required by **ORS 446.155**, Oregon Insignias of Compliance are required on all manufactured dwellings built on or after September 1, 1969, when they are sold, rented, leased, exchanged or offered for rent, sale, lease or exchange. When this code refers to the generic term "insignia" it is referring to both the Oregon Insignia of Compliance and HUD Certification Label.

**1-9.2 Insignia Not Required.** Manufactured dwellings are not required to have Oregon Insignias of Compliance or HUD Certification Labels if the

manufactured dwelling meets any of the following conditions:

**(a)** Manufactured dwelling was built before September 1, 1969, per **ORS 446.155(1)**;

**(b)** Manufactured dwelling is labeled with insignias from an approved state, and which has not been altered without permit, per **ORS 446.180(2)**; or

**(c)** Owner occupied manufactured dwelling was built prior to June 15, 1976, per **ORS 446.155(1)** and **(2)**;

**(d)** Manufactured dwelling is sold on an "as is" or "with all faults" basis as disclosed by the seller in the bill of sale, per **ORS 446.155(5)(d)** and complies with Section 1-3 of this code.

**1-9.3 Siting Without Insignia.** Insignias of compliance are not a prerequisite to siting a manufactured dwelling in Oregon by Oregon law but may be a requirement of the local planning department.

**1-9.4 Removal of Insignia.** No person shall remove, destroy, alter, or cover an insignia except as permitted by this code. Insignias of compliance may be removed when a manufactured dwelling bearing an insignia is found to be in violation of **ORS 446.155** or this code or is determined to be a dangerous structure. The authority having jurisdiction removing the label shall provide the owner or occupant with an inspection report listing the violations. The insignia may be removed and reinstalled by the homeowner or contractor when a manufactured dwelling is being re-sided. Insignia shall not be covered or obscured by the installation of accessory buildings, accessory structures, or by any other method.

**1-9.5 Voided Insignia.** An insignia of compliance may be voided and returned to the Division if any alteration or repairs are made without the permits and inspections required by this code.

**1-9.6 Returned Insignia.** Manufactured dwellings damaged beyond repair as a result of flood, fire, earthquake, mishap in transit or any other reason shall have the insignias of compliance removed and returned to the Building Codes Division.

**1-9.7 Lost or Damaged Insignia.** Lost or damaged insignias shall be processed according to the following:

**(a)** The owner shall notify the Division immediately in writing specifying the manufacturer, serial number, insignia number, and approximate date of manufacture;

**(b)** All damaged insignias shall be promptly returned to the Division. Damaged or lost insignia may be replaced by the Division by requesting replacement on a Division application form and accompanied by the appropriate fee;

**(c)** A replacement insignia may be issued by the Division after a visual inspection indicates the manufactured dwelling meets the requirements of this code; and

**(d)** Replacement HUD labels may only be issued if there is satisfactory evidence that the manufactured dwelling has not been altered or damaged.

**1-9.8 New Insignia.** A new insignia of compliance may be issued on a previously owned manufactured dwelling when visual inspections and tests are performed by the Division to verify substantial compliance with the appropriate codes.

**1-9.8.1 State Codes.** After satisfactory inspections, the Division may issue an insignia of compliance that certifies a manufactured dwelling complies with state code in effect at the time of its original construction for manufactured dwellings built on or after January 1, 1962. After satisfactory inspections, the Division may issue an insignia of compliance that certifies a re-manufactured or refurbished

manufactured dwelling complies with the **American National Standards Institute (ANSI) Standard for Mobile Homes, 1969 Edition.** (See Chapter 7 for minimum safety requirements)

**1-9.8.2 Federal Codes.** After satisfactory inspections, the Division may issue an insignia of compliance to certify that a manufactured dwelling, originally manufactured on or after September 1, 1969, is substantially equivalent to homes built to the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280.** After satisfactory inspections, the Division may issue an insignia of compliance to certify that a re-manufactured or refurbished manufactured dwelling, manufactured on or after June 15, 1976, is substantially equivalent to homes built to the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280.** (See Chapter 7 for minimum safety requirements.)

**1-10 Certifications.**

**1-10.1.1 Installer Certificate Required.** Upon completion of a manufactured dwelling installation, cabana installation, anchoring system installation, skirting installation, or perimeter retaining wall installation and prior to a request for inspection, the person who performed the installation shall affix an Installer Certification Tag according to **OAR 918-515-0300** and **918-515-0310.**

**(a)** Certification tags shall be affixed to the manufactured dwelling, cabana, or skirting in a visible location on the exterior of the rear end wall near the insignia or HUD label;

**(b)** When more than one installer installs a manufactured dwelling (i.e., one installs the foundation, one installs the tie-downs, and another installs the skirting), each installer shall affix a separate Installer Certification Tag on the manufactured dwelling indicating the work performed;

- (c) Required installer certificates shall not be covered or obscured;
- (d) Required Installer Certification Tags shall not be removed, damaged or altered until the manufactured dwelling is moved; and
- (e) On secondary installations, all previous Installer Certification Tags shall be removed and replaced with new tags for the new installation.

**1-10.1.2 Installer Certificate Not Required.** Manufactured dwelling Installer Certification Labels are not required to be installed by Oregon licensed plumbing contractors performing plumbing installations and connections only, Oregon licensed electrical contractors performing electrical installations and connections only, or homeowners installing their own home. However, this does not waive the code or testing requirements contained in this code.

**1-10.2.1 Certificates of Occupancy Required.** Certificates of occupancy when required by this code shall be permanently mounted and displayed in a prominent location, or as required by the authority having jurisdiction. A certificate of occupancy:

- (a) May be required when a manufactured dwelling is being used for other than single family dwelling occupancy when required by Section 2-1 of this code;
- (b) Is required on any public use building within a manufactured dwelling park;
- (c) Is required for manufactured dwelling parks;

**1-10.2.2 Certificates of Occupancy Not Permitted.** No state or local authority having jurisdiction may require a certificate of occupancy or any other similar certificate for a manufactured dwelling used as a single-family dwelling in accordance with **ORS Chapter 446** and **24 CFR 3282.11(b)**.

## **1-11 Licensing Requirements**

**1-11.1 Installer License Required.** As required by **ORS 446.395**, all persons engaging in the business of installing manufactured dwellings, cabanas, anchoring systems, earthquake-resistant bracing systems, under-floor enclosures, skirting, or repairing existing installations, or who supervise any of these activities shall be licensed with the Division.

(a) Installer licenses consist of several categories including Installer, Limited Installer, Limited Skirting Installer, and Temporary Limited Installer;

(b) Each person working on an installation shall have a license, unless specifically exempted by this code or **OAR 918-515**;

(c) Installers and Limited Skirting Installers are permitted to work on the job site alone and can supervise others;

(d) Limited Installers and Temporary Limited Installers can only work under the direct supervision of an Installer or Limited Skirting Installer;

(e) Limited Skirting Installers are limited to working on skirting, perimeter supports, foundation walls, perimeter retaining walls, and basement walls;

(f) Limited Skirting Installers are limited to supervising others only in the areas for which they are licensed; and

(g) Persons licensed by the Construction Contractors Board are not exempt from the installer licensing law.

**1-11.2 Installer License Not Required.** A manufactured dwelling installation license is not required:

(a) By homeowners or their immediate family installing their own manufactured dwelling if it is their principle residence and is not intended for sale, exchange, lease, or rent within one year of the date of the final inspection;

(b) Homeowners or their immediate family repairing, correcting, or maintaining the installation of their own manufactured dwelling;

- (c) Adding perimeter blocking specifically for the purpose of supporting an awning, carport, or roof addition;
- (d) Installing a manufactured dwelling temporarily on a dealer's, distributor's, or manufacturer's sales or storage lot when it is not occupied or located in a mobile home park, a manufactured dwelling park, or a subdivision;
- (e) Installing a manufactured dwelling temporarily for display at a show or fair when it is not occupied;
- (f) Maintenance, repairs, corrections or warranty work on a manufactured dwelling installation by a manufacturer (see Section 1-12.4 and 1-12.5 of this code);
- (g) Crane operation, transportation, excavation, concrete flat work, carpet laying, and drywall services;
- (h) Electrical connections when made by an Oregon licensed electrician;
- (i) Plumbing connections when made by an Oregon licensed plumber;
- (j) Construction and/or installation of ramadas, garages, awnings, carports, roof additions, decks, landings, stairs, ramps, guardrails, handrails, and other accessory buildings or structures that are not part of the manufactured dwelling; or
- (k) Construction of concrete foundation walls, or concrete retaining walls of a manufactured home under the supervision of a licensed installer or licensed limited skirting installer.

**1-11.3 Electrical.** As required by **ORS 479.620** and **ORS 446.395**, electrical installations and connections shall be made by persons identified in this section.

- (a) Electrical feeder, crossover, and fixture connections for the installation of manufactured dwellings may be made only by the homeowner, members of the homeowner's immediate family, an Oregon licensed manufactured dwelling installer, or an Oregon licensed electrician. Temporary electrical feeder connections used for the temporary installation of a manufactured dwelling

on a dealer lot or at an industry show may be made only by the manufacturer, an Oregon licensed manufactured dwelling installer, or an Oregon licensed electrician.

- (b) Concrete encased grounding electrodes for the installation of manufactured dwellings may be installed only by the homeowner, members of the homeowner's immediate family, an Oregon licensed manufactured dwelling installer, a masonry contractor under the direct supervision of an Oregon licensed manufactured dwelling installer, or an Oregon licensed electrician. Ground rods may be installed only by the homeowner, members of the homeowner's immediate family, or an Oregon licensed electrician.

(c) Electrical service installations and connections shall be made only by the homeowner, members of the homeowner's immediate family, an Oregon licensed electrician, or the appropriate public utility company.

(d) Electrical warranty work on a manufactured dwelling, consisting of minor repairs with approved component parts, adjustment and maintenance of equipment, or replacement of equipment or accessories in kind, may be performed only by the manufacturer, the manufacturer's representative, the homeowner, the homeowner's immediate family, an Oregon licensed electrician, or an Oregon licensed manufactured dwelling limited maintenance electrician as permitted by **ORS 446.210**.

- (e) Electrical installations, alterations, or repairs on a manufactured dwelling may be performed by the manufacturer or manufacturer's representative, if the work is done at the plant or is part of the manufacturer's warranty work. All other electrical installations, alterations, or repairs on a manufactured dwelling may be performed only by the homeowner, the homeowner's immediate family, or by an Oregon licensed electrician.

(f) Electrical installations, alterations, or repairs on cabanas, accessory structures, accessory buildings, and manufactured dwellings being re-manufactured or rehabilitated shall be made only by the homeowner, the homeowner's immediate family, or an Oregon licensed electrician.

(g) Electrical installations, alterations, or repairs performed in conjunction with re-manufacturing or refurbishing a manufactured dwelling shall be performed only by an Oregon licensed electrician, unless the manufacturer is certified according to **24 CFR 3282.362**.

(h) Electrical installations, alterations, or repairs in mobile home parks or manufactured dwelling parks shall be performed by an Oregon licensed electrician only, except as otherwise stated in this section.

**1-11.4 Plumbing.** As required by **ORS 693.030** and **ORS 446.395**, plumbing installations and connections shall be made only by persons identified in this section.

(a) Plumbing utility, crossover and fixture connections that are part of a manufactured dwelling installation shall be made only by the homeowner, an Oregon licensed manufactured dwelling installer, or an Oregon licensed plumber.

(b) Under-floor drain pipe systems that are shipped loose and ready to be connected to the site sewer inlet; shipped loose in one or more pre-assembled sections to be attached with unions and then connected to the site sewer inlet; or shipped loose in sections for site assembly and provided with all pipe, fittings, cement, supports, and DAPIA approved manufacturer's instructions necessary for proper site installation, shall be installed only by the homeowner, an Oregon licensed manufactured dwelling installer, or an Oregon licensed plumber.

(c) Under-floor drain pipe systems that are shipped loose with no pre-assembled sections, supports, or

instructions; requiring extensive plumbing design and work on site shall be installed only by the homeowner or an Oregon licensed plumber.

(d) Plumbing utility terminations on a manufactured dwelling lot shall be installed only by the homeowner, an Oregon licensed plumber, or by others as permitted by **ORS 693.030**.

(e) Plumbing warranty work on a manufactured dwelling, consisting of minor repairs with approved component parts, adjustment and maintenance of equipment, or replacement of equipment or accessories in kind, may be performed by the manufacturer, manufacturer's representative, the homeowner, or an Oregon licensed plumber.

(f) Plumbing installations, alterations, or repairs on a manufactured dwelling may be performed by the manufacturer or the manufacturer's representative if the work is done at the plant or is part of the manufacturer's warranty work. All other plumbing installations, alterations, or repairs on a manufactured dwelling may be performed only by the homeowner or by an Oregon licensed plumber.

(g) Plumbing installations, alterations, or repairs on cabanas, accessory structures, accessory buildings, and manufactured dwellings being re-manufactured or rehabilitated shall be made only by the homeowner or an Oregon licensed plumber.

(h) Plumbing installations, alterations, or repairs performed in conjunction with re-manufacturing or refurbishing a manufactured dwelling shall be performed only by an Oregon licensed plumber, unless the manufacturer is certified according to **24 CFR 3282.362**.

(i) Plumbing installations, alterations, or repairs in mobile home or manufactured dwelling parks shall be performed only by an Oregon licensed plumber, except as otherwise stated in this section.

**1-11.5 Liquid Petroleum Gas.** As required by **ORS 484.010** through

**484.460**, persons installing or connecting liquid petroleum gas (LPG) shall be licensed by the State Fire Marshal's Office as "licensed LPG fitters".

**1-11.6 Fuel Gas.** As required by **ORS 701.055** and **446.395**, fuel gas crossover and appliance connections shall be made only by the manufacturer or the manufacturer's representative, an Oregon registered contractor, an Oregon licensed manufactured dwelling installer, the homeowner, or members of the homeowner's immediate family. Gas utility connections shall be made only by an Oregon registered contractor, a gas utility company, the homeowner, or members of the homeowner's immediate family.

**1-11.7 Mechanical.** As required by **ORS 701.055** and **446.395**, mechanical installations and connections shall only be made by persons identified in this section.

**(a)** Appliance and crossover connections on manufactured dwellings and cabanas shall be made only by the manufacturer or the manufacturer's representative, or an Oregon registered contractor, an Oregon licensed manufactured dwelling installer, the homeowner, or members of the homeowner's immediate family.

**(b)** Mechanical warranty work on a manufactured dwelling, consisting of minor repairs with approved component parts, conversion of listed fuel burning appliances in accordance with the terms of their listing, adjustment and maintenance of equipment, or replacement of equipment or accessories in kind, may be performed by the manufacturer, manufacturer's representative, the homeowner, or an Oregon registered contractor.

**1-11.8 Accessory Structures.** As required by **ORS 701.055** through **701.065**, persons, other than the homeowner or the homeowner's immediate

family, building, installing, altering, or repairing manufactured dwellings, cabanas, ramadas, or manufactured dwelling accessory buildings or structures shall be registered or licensed with the Oregon Construction Contractors Board or shall be employed by a person licensed with the Oregon Construction Contractors Board.

## **1-12 Violations and Penalties**

**1-12.1 Notice of Violation.** Notices of violation shall be issued according to the following:

**(a)** When an inspection reveals a manufactured dwelling installation, alteration, repair, or conversion violates any portion of this code, law, rule, or regulation, the authority having jurisdiction shall serve a Notice of Violation upon the owner or contractor.

**(b)** When an inspection reveals mobile home or manufactured dwelling park construction, alterations, additions, or conversions violates any portion of this code, law, rule, or regulation, the authority having jurisdiction shall serve a Notice of Violation upon the owner or contractor.

**(c)** Upon such notices, no work shall be covered unless authorized by the authority having jurisdiction. Such notice shall be in writing, shall state the specific violations and cite the applicable code references. The notice shall be posted on the work site or given to the owner or owner's authorized agent.

**(d)** All violations noted shall be corrected within 30 days from the date of such notice, or at a later date if approved by the authority having jurisdiction.

**(e)** A Notice of Violation posted on the work site shall not be removed until authorized by the authority having jurisdiction.

**1-12.2 Injunctions.** As authorized by **ORS 446.190**, the authority having jurisdiction may obtain an injunction



against a person when it appears the person is engaged in, or about to engage in, an act or practice in violation of this code, statute, or state rules or regulations.

**1-12.3 Civil Penalties.** Persons violating this code, failing to make required corrections, employing unlicensed persons, or working without a license when one is required, may be subject to the penalties contained in **ORS 446.270, 446.415, 446.990, 455.895** and the ordinances of the municipality.

### **1-13 Appeals.**

**1-13.1 Informal Appeal.** Persons with complaints or disagreements with decisions, interpretations or actions of the authority having jurisdiction may appeal to the Division's Chief of Manufactured Structures and Parks through an appeal process as authorized by **ORS 455.475**.

**1-13.2 Municipal Appeal Board.** As authorized by **ORS 455.020(4)**, a municipality may enact administrative regulations for enforcement and appeals. Disagreements with the decisions resulting from the appeal process may be taken to the municipality's appeal board if one exists. Appeals must be written and submitted to the municipal appeal board prior to their meeting in accordance with local regulations.

**1-13.3 State Appeal Board.** As required by **ORS 455.690**, decisions resulting from a municipal appeal board or from the informal appeal process, where no municipal board exists, may be formally appealed to the Oregon Manufactured Structures and Parks Advisory Board or other appropriate board. A formal appeal must be submitted to the Oregon Building Codes Division in writing on a Division form and be accompanied by a \$20 fee. A hearings officer may be appointed to

hear the case and make recommendations to the board. The Division may refer matters to other boards where appropriate.

**1-13.4 Appeals to State Courts.** As permitted by **ORS 455.070**, decisions and interpretations resulting from the formal appeal process may be appealed to the state court system. Code interpretations may be appealed to the Circuit Court. License revocations may be appealed to the Court of Appeals.

## CHAPTER TWO ALTERNATE MANUFACTURED DWELLING USES

- 2-1 Alternate Uses
- 2-2 Change of Occupancies
- 2-3 Accessibility

### 2-1 Alternate Uses

**2-1.1 General.** Manufactured dwellings are constructed, intended, and approved for use as single-family detached dwellings. However, manufactured dwellings may be used as other than single-family detached dwellings when they comply with the provisions of this chapter. Factory-built structures constructed or intended for use for other than a single-family dwelling or those uses permitted in this chapter, shall be built and certified by the Division as prefabricated structures.

**2-1.2 Temporary Sales Offices.** As permitted by **ORS 446.245**, manufactured dwellings may be used as temporary sales offices by manufactured dwelling and recreational vehicle dealers and distributors provided the manufactured dwelling:

- (a) Does not have any design, construction, transportation, fire and life safety, plumbing, mechanical, or electrical alterations made to it by the manufacturer, dealer or distributor to accommodate the office use that would take it out of conformance with the federal **Manufactured Home Construction and Safety Standards** (24 CFR 3280) or this code;
- (b) Has a 36 inch (91 cm) wide by 80 inch (203 cm) high exit door;
- (c) Is accessible to persons with disabilities according to Section 2-3.1 prior to occupancy;
- (d) Is installed and connected to utilities according to this code prior to occupancy;

- (e) Is continuously offered for sale to the public as a manufactured dwelling during the office use; and
- (f) Has a certificate of occupancy issued by the authority having jurisdiction prior to occupancy.

**2-1.3 In-home Business.** As permitted by **ORS 446.245**, a portion of a manufactured dwelling may be used for an In-home business provided:

- (a) The business portion of the manufactured dwelling is restricted to one room only (not including a bath room, entry, or foyer);
- (b) The remainder of the manufactured dwelling is used as a single family dwelling by the same person using it as a business;
- (c) The manufactured dwelling is installed and connected to utilities according to this code prior to occupancy;
- (d) The manufactured dwelling has one 36 inch (91 cm) wide by 80 inch (203 cm) high door exiting to the exterior from the business portion of the manufactured dwelling;
- (e) The type of business and location is approved by the authority having jurisdiction and local planning department prior to installation or occupancy;
- (f) Remains in conformance with the federal **Manufactured Home Construction and Safety Standards** (24 CFR 3280) and all applicable state regulations;
- (g) The business portion of the manufactured dwelling is accessible to persons with disabilities when the business is open to the public or has employees other than family members using the business space; and
- (h) The manufactured dwelling has a certificate of occupancy issued by the authority having jurisdiction prior to occupancy.

**2-1.4 Labor Housing.** Manufactured dwellings may be used for farm worker

housing provided the manufactured dwelling:

(a) Is located in a labor camp as defined in **OAR 437-02-0142** which consists of:

1. Not more than six manufactured dwellings on a lot, parcel or aggregation of lots or parcels according to **ORS 446.055**; or

2. Four or more manufactured dwellings in a manufactured dwelling park, a mobile home park, a temporary manufactured dwelling park, or a combination park according to **ORS 446.003**;

(b) Is not occupied by more than ten persons not related by blood or marriage;

(c) Has a maximum of five bedrooms;

(d) Remains in conformance with the federal **Manufactured Home Construction and Safety Standards** (24 CFR 3280) and all applicable state regulations;

(e) Has operable smoke alarms or detectors located according to Chapter 9 of this code.

(f) is accessible to persons with disabilities, if an affected building.

(g) Is installed and connected to utilities according to this code prior to occupancy;

(h) Conforms to the **Oregon Occupational Safety and Health Code, OAR 437**; and

(i) Has a certificate of occupancy issued by the authority having jurisdiction prior to occupancy.

**2-1.5 Multi-Family Housing.** As permitted by **ORS 446.055**, up to six manufactured dwellings may be placed on a single lot, parcel, or aggregation of lots or parcels and adjoined to give the appearance and economy of multi-family housing provided: (**See Fig. 9-7.1**);

(a) Plans showing the adjoined structures are submitted to and approved by the Manufactured Structures and Parks Chief of the Building Codes Division to verify compliance with the federal

**Manufactured Home Construction and Safety Standards** (24 CFR 3280), the federal **Manufactured Home Procedural Regulations** (24 CFR 3282), and this code;

(b) Land use is approved by the local planning department;

(c) Division-approved plans are submitted and approved by the authority having jurisdiction prior to installation permits being issued;

(d) Each manufactured dwelling is used only as a single-family dwelling;

(e) Each manufactured dwelling remains in compliance with all applicable federal **Manufactured Home Construction and Safety Standards** and state codes;

(f) Fire separation is provided at the wall separating each manufactured dwelling according to Sec 9-7 of this code;

(g) It is located on the property and has fire-resistive protection of exterior walls and openings according to **Section 503** and **Chapter 6** of the **Oregon Structural Specialty Code**;

(h) Each manufactured dwelling is structurally independent of an adjacent manufactured dwelling. However, two manufactured dwellings may be supported by a common foundation wall adequately sized to support both structures;

(i) Each electrical, plumbing, heating, and mechanical system within a manufactured dwelling is independent of the systems within adjacent manufactured dwellings;

(j) The manufactured dwellings are joined only by flashing and weather resistant roofing materials;

(k) These manufactured dwellings are not placed inside a manufactured dwelling park or mobile home park; and

(l) Each manufactured dwelling is installed and connected to individual utility connections according to this code prior to occupancy.

**2-1.6 Group R Occupancies.** Manufactured dwellings accommodating not more than 10 persons may be used as lodging houses, congregate

residences, adult foster homes, or family day care provided the manufactured dwelling:

- (a) Has no design, construction, transportation, fire and life safety, plumbing, mechanical or electrical alterations made to it by the manufacturer, dealer, or distributor to accommodate this occupancy which would take it out of conformance with the federal **Manufactured Home Construction and Safety Standards, 24 CFR 3280** or this code;
- (b) Meets all applicable requirements of **Section 310 of the Oregon Structural Specialty Code**;
- (c) May be required to be accessible to persons with disabilities, if an affected building;
- (d) Has a minimum of two 36 inch (91 cm) wide by 80 inch (203 cm) high exit doors located remote from each other, exiting to the exterior of the manufactured dwelling;
- (e) Has a minimum of two restrooms;
- (f) Is located on the property meets the minimum setback requirements of the **Oregon One and Two Family Dwelling Specialty Code**;
- (g) Has operable smoke alarms or detectors located according to Chapter 9 of this code.
- (h) Has the occupancy and its location approved by the authority having jurisdiction and local planning department prior to installation or occupancy;
- (i) Is installed and connected to utilities according to this code prior to occupancy; and
- (j) Has a certificate of occupancy issued by the authority having jurisdiction prior to occupancy.

## **2-2 Change of Occupancies**

**2-2.1 Change of Occupancy.** As permitted by **ORS 446.245**, a manufactured dwelling may be converted to another occupancy (use) not specifically addressed in this chapter under the following conditions:

- (a) Application shall be made to the authority having jurisdiction for a change of occupancy;
- (b) If already sited, application shall also be made to the local planning department, for a change of occupancy and possibly a change in land use;
- (c) The manufactured dwelling shall be brought into conformance with the appropriate Oregon specialty codes for the new use and occupancy;
- (d) If an affected building, it shall be made accessible to persons with disabilities.
- (e) Persons converting the manufactured dwelling shall have the appropriate state licenses and registrations required to perform such work;
- (f) The converted structure loses its identity as a manufactured dwelling and the owner or converter shall surrender any state or federal insignias of compliance and/or certification labels to the authority having jurisdiction for return to the Division;
- (g) When required, the converted manufactured dwelling shall have a certificate of occupancy issued by the authority having jurisdiction prior to occupancy.

## **2-3 Accessibility.**

**2-3.1 Temporary Sales Office Accessibility.** All manufactured dwellings used as temporary sales offices as permitted in this chapter shall be made accessible for both employees and the public according to **Chapter 11 of the Oregon Structural Specialty Code** in the following areas:

- (a) All rooms and all floor levels within the manufactured dwelling that will be used for office use, such as bedrooms, dens, living rooms, family rooms, foyers, entry ways, and hallways shall be accessible.
- (b) Restrooms shall contain a water closet and a lavatory and shall be made accessible. Only one restroom is required to be accessible if the restroom is properly marked as a unisex facility

and provided with a privacy lock. Bathtubs and showers are not required to be accessible if they are not part of the regular office function.

**(c)** Areas that are not a part of the regular office function, such as the kitchen, utility room, and unused cabinets or clothes closets are not required to be accessible.

**(d)** One main entry door is required to be accessible. Secondary exterior doors are not required to be accessible. Interior doors that are part of the regular office function shall be accessible.

**(e)** Appropriate signage shall be provided in all accessible areas, both inside and outside of the office;

**(f)** Optional drinking fountains, public telephones, furnishings, and similar equipment shall be accessible when provided;

**(g)** Accessibility from the public way up to the main entry door shall be provided;

**(h)** An accessible parking area shall be provided near the main entry.

**2-3.2 Other Occupancies.** All manufactured dwellings used for other than residential, temporary sales offices or In-home businesses that are affected buildings under the Americans with Disabilities Act (see Appendix A Definitions, “affected building”) shall be accessible according to the requirements of **Chapter 11** of the **Oregon Structural Specialty Code**.

**2-3.4 Enforcement.** The authorities having jurisdiction shall require compliance to this section according to the following:

**(a)** Exterior accessibility requirements from the public way up to the manufactured dwelling shall be enforced by the authority having jurisdiction;

**(b)** Interior accessibility requirements occurring due to a change in occupancy for existing or previously owned manufactured dwellings shall be enforced by the authority having jurisdiction; and

**(c)** Interior accessibility requirements for new, prior to original sale manufactured dwellings shall be enforced through the Building Codes Division at the time of manufacture or at the time of alteration.

**2-3.5 Occupancy.** No jurisdiction shall issue a certificate of occupancy for, or permit occupancy of, a manufactured dwelling required to be accessible until all appropriate provisions of this Section have been met.

## CHAPTER THREE MANUFACTURED DWELLING INSTALLATIONS

- 3-1 General
- 3-2 Geographical Requirements
- 3-3 Chassis
- 3-4 Site and Stand Preparation
- 3-5 Approved Foundation Materials
- 3-6 Foundation Pier Spacing
- 3-7 Foundation Heights
- 3-8 Foundation Construction
- 3-9 Under-floor Enclosures
- 3-10 Under-floor Ventilation and Access
- 3-11 Marriage Line Connections and Seal
- 3-12 Access and Egress

### 3-1 General.

**3-1.1 Content.** This Chapter prescribes the minimum requirements for the siting, design, materials, access, and installation of manufactured dwellings, accessory structures, accessory buildings, earthquake-resistant bracing, and wind and flood resistant anchoring.

**WARNING:** Manufactured dwellings weigh several tons and may be unstable during installation. Personnel should not be permitted to work under a manufactured dwelling until adequate support blocking is in place.

**3-1.2 Temporary Placement or Storage.** When a manufactured dwelling is placed temporarily, on display or in storage by a manufacturer, dealer, or distributor for a period of over thirty (30) days from the date of manufacture, the owner shall protect the home from deterioration according to the following:

(a) Manufactured dwellings supported on their wheels and at the draw bar (hitch) shall be adequately supported under the perimeter of each floor section at 10 feet (305 cm) on center and under the marriage line at each column support post location. Perimeter supports shall start not more than 5 feet

(152 cm) from the end of the home and shall not be located under any window or door opening;

(b) Manufactured dwellings not supported on their wheels and at the draw bar shall be adequately supported under each main frame (I-beam) and under the perimeter of the floor at 10 feet (305 cm) on center, and under the marriage line at each column support post location. Perimeter and main frame supports shall start not more than 5 feet (152 cm) from the end of the home and shall not be located under any window or door opening;

(c) Manufactured dwellings shall be sealed at the centerlines and at all other openings to prevent exposure to the elements; and

(d) Manufactured dwellings occupied or intended to be occupied or manufactured dwellings on display in manufactured dwelling parks, mobile home parks, or manufactured dwelling subdivisions may not be installed temporarily but shall be installed according to this chapter.

**3-1.3 Installation Code.** All manufactured dwellings shall be installed to the requirements of this code. Where authorized or required by this code, installation may be according to the manufacturer's installation instructions, according to site specific engineering, or as allowed by the authority having jurisdiction.

**3-1.4 Smoke Detectors.** All manufactured dwellings shall be equipped with operating smoke detectors or alarms at the time of installation regardless of the age of the manufactured dwelling. Smoke detectors or alarms shall be installed according to **Chapter 9** of this code.

**3-1.5 Manufacturer's Installation Instructions.** This code requires the use of the manufacturer's installation instructions for unique installations, and for high roof snow loads requirements only. All other installation

requirements shall be made according to this code. At the time the permit is issued, the applicant should inform the authority having jurisdiction when the home or any portion of the home will be installed to the manufacturer's installation instructions for high roof snow loads. The permit applicant shall provide a copy of the manufacturer's installation instructions to the inspector .

**3-1.6 Unique Installations.** Manufactured dwellings with unique installation requirements specifically addressed by the manufacturer but not addressed in this code shall be installed to the manufacturer's installation instructions. Typical items may include but are not limited to:

- (a) Hinged rafters;
- (b) Hinged eaves;
- (c) Add-on roofs;
- (d) Adjustable outriggers;
- (e) Over height foundations;
- (f) Split level foundations;
- (g) Perimeter main frames;
- (h) Integrated floor framing systems;
- (i) Multi-storied homes;
- (j) Expanding rooms (i.e., pop-outs, tip-outs, expandos);
- (k) Marriage line fastening;
- (l) Marriage line anchoring;
- (m) Ship-loose plumbing and electrical equipment;
- (n) Items identified in a HUD and DAPIA approved Alternate Construction (AC) Letter;
- (o) Manufactured dwellings specifically designed to be placed in areas of high roof snow loads; and
- (p) Items specifically identified by the Division through interpretation shall be installed to the manufacturer's installation instructions for that specific portion of the installation only.

**3-1.7 Unusual Installations.** This code is not intended to limit the appropriate use of materials, equipment, or methods of design or construction not specifically prescribed by this code. A person may design for unusual installations as long as the alternate method or material is at least equivalent to the requirements of this code in suitability, quality, strength, effectiveness, fire resistance, durability, dimensional stability, safety, and

sanitation. All alternate methods or materials shall have prior approval from the authority having jurisdiction.

**3-1.8 Basic Requirement.** Regardless of the type foundation system provided, the foundation shall assure the manufactured dwelling has adequate support, a level floor, flush roof, flush floor, and flush wall connections at the marriage lines of multi-section manufactured dwellings.

**3-1.9 Information Packet.** An information packet, consisting of a clear waterproof plastic pouch or equal, shall be provided by the permit holder in an accessible location and made available to the inspector. This pouch shall be used to hold all required material, product, and equipment installation instructions, engineering documents, special approvals, the installation permit card, the approved plot plan, the manufacturer's installation instructions, and any other documents required by this code. If the information packet is not provided or the required contents are missing, causing re-inspections, the authority having jurisdiction may charge additional reinspection fees.

### **3-2 Geographical Requirements**

**3-2.1 Frost Line.** Manufactured dwelling footings are not required to be below the frost line. Manufactured dwelling footings may, at the owner's option, be placed below the frost line. (See **Table 3-A** for frost line depths.)

**3-2.2 Manufactured Dwelling Snow Loads.** When siting a manufactured dwelling in a high snow load area the following shall be taken into consideration:

- (a) The foundation criteria in this code is based on a maximum roof snow load of only 30 pounds per square foot (146.4 kg per sq. m) and is not intended to support manufactured dwellings constructed for heavier snow loads;
- (b) Manufactured dwellings constructed for specific roof snow loads exceeding 30 pounds per square foot (146.4 kg per sq. m) shall be installed to the manufacturer's installation instructions dealing with the foundation criteria for that specific roof load;

(c) Pursuant to federal preemption, the authority having jurisdiction or the state of Oregon may not require manufactured dwellings to be built or installed for a roof snow load greater than that required in **24 CFR 3280.305(c)(3)**, which is a 20 pounds per square foot (97.6 kgs per sq. m) roof live load, and

(d) Manufactured dwellings sited in high snow load areas may be constructed to the snow loads designated in **Table 3-A** and as further identified by the authority having jurisdiction. However, home owners siting a manufactured dwelling in a high snow load area have three choices in eliminating the danger of excessive snow loads. The home owner can:

1. Manually remove the snow from the roof after each snow fall;
2. Build a Ramada over the manufactured dwelling for protection; or
3. Special order the manufactured dwelling to be constructed for the appropriate snow load for the area in which the home is to be sited.

**3-2.3 Wind Hazards.** There are two wind areas in Oregon to indicate different levels of wind intensity as shown on **Map 3-A** of this code. These two wind areas are based on Oregon's actual experience with manufactured dwellings over the past 25 years. Within these two wind areas, wind patterns and intensity will differ depending on the amount of exposure the manufactured dwelling has to the wind. Natural barriers like trees, hills, and other buildings may reduce this exposure. Likewise, manufactured dwellings sited in areas where there are no buffers, like in open fields or near a beach, may have greater exposure to the wind. Manufactured dwellings that are elevated, have higher roof pitches, or are two storied also have an increased exposure to the wind. This standard requires some manufactured dwellings to be anchored to the ground in areas where they will most likely be subjected to overturning, sliding, and lateral movement from high winds.

**3-2.3.1 High Wind Areas.** The following counties are designated high wind areas: Clatsop, Tillamook, Lincoln,

Coos, Curry, Multnomah, Hood River, Sherman, Gilliam, Morrow, and Umatilla; also Lane and Douglas when located within 20 miles (32 kilometers) of the coast, and Wasco when located within 30 miles (48 kilometers) of the Columbia River as indicated on **Map 3-A** of this code.

**3-2.3.2 Standard Wind Areas.** All areas in Oregon not identified as high wind areas in this code are designated standard wind areas as indicated on **Map 3-A** of this code.

**3-2.3.3 Wind Resistant Anchoring.** To resist overturning, sliding and lateral movement, manufactured dwellings shall be anchored:

(a) Single-section manufactured dwellings installed in the high wind area shall be anchored according to this section;

(b) Multi-storied manufactured dwellings in either wind area shall be anchored according to the DAPIA approved plans;

(c) Multi-section manufactured dwellings installed in the high wind area with more than 25 percent of the piers (including cap and shims) under the main frame exceeding 24 inches (61 cm) in height shall be anchored according to this section (**See Figure 3-7.2B**);

(d) Single section and multi-section manufactured dwellings installed in the standard wind area with more than 25 percent of the piers (including cap and shims) under the main frame exceeding 36 inches (91 cm) in height shall be anchored according to this section;

(e) All manufactured dwellings manufactured with factory-built porches having an exposed roof covering in excess of 70 square feet (75,325 cm<sup>2</sup>) in area, including eaves, shall be anchored under the porch to the foundation wall, basement wall, or with ground anchors.

(f) A factory-built porch anchored with tie-downs, shall be anchored at the main frame closest to the vertical support post(s) located at the outer corners; and



1. If a porch is on only one side of a multi-section manufactured dwelling, a frame tie-down is required at the outside corner;
2. If a full width porch is on two or more sides of a multi-section manufactured dwelling, frame tie-downs are required at each outside corner;
3. If a full width porch is on a single section manufactured dwelling, frame tie-downs are required at each outside corner (**See Figure 3-2.3.3**);
4. If a porch is located in the middle of a manufactured dwelling sidewall area so the roof is attached to the structure on at least three sides, no tie-downs are required; and
5. If a porch is located between two sections of a manufactured dwelling so the roof is attached to the structure on at least three sides, no tie-downs are required.

#### **3-2.3.4 Wind Resistant Anchoring.**

When required by this section, manufactured dwellings shall be anchored by one of the following methods:

- (a) Installation of approved ground anchors;
- (b) Structural attachment to a foundation wall or footing;
- (c) Structural attachment to a basement wall;
- (d) Structural attachment to structural skirting or;
- (e) Structural attachment to a foundation system capable of resisting the wind forces when designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

#### **3-2.4 Flood Hazards.**

##### **3-2.4.1 Flood Hazard Areas.**

Manufactured dwellings may only be located in hazardous areas according to the following minimum requirements:

- (a) When manufactured dwellings are to be located in a flood hazard zone, according to the **Flood Insurance Rate Map** (FIRM), a **FEMA Elevation**

**Certificate** shall be submitted to the authority having jurisdiction;

(b) Manufactured dwellings located in a flood hazard zone shall have the finished floor elevated a minimum of 18 inches (46 cm) above the **Base Flood Elevation** (BFE) as identified on the FIRM. When the Base Flood Elevation has not been established within a flood hazard zone, the finished floor shall be elevated to the elevation established by the Flood Plain Administrator. (**see Figure 3-2.4.1A**):

1. Where a manufactured dwelling has a ground level or pit set installation, the manufactured dwelling stand shall be a minimum of one foot (305 mm) above the BFE unless openings are provided per FEMA Technical Bulletin 1-93. (**see Figure 3-2.4.1B**);

2. Where a manufactured dwelling is installed over a basement, the floor of the basement, whether finished or unfinished, shall be a minimum of one foot (305 mm) above the BFE or openings are provided per FEMA Technical Bulletin 1-93. (**see Figure 3-2.4.1C**);

3. Manufactured dwelling electrical and mechanical components and equipment shall be elevated a minimum of one foot (305 mm) above the BFE. Under-floor crossover ducts are exempt from this requirement; and

4. Plumbing openings below the elevation of one foot (305 mm) above the BFE shall be flood proofed and equipped with backwater valves.

##### **3-2.4.2 Floodways.**

Floodways, as identified on **National Flood Insurance Program** (NFIP) maps, are generally along the waterway's edge and carry most of the floodwater. The water in a floodway is often deeper and faster than in the adjacent floodplain. Homes in floodways are subject to greater damage and risk to the occupants than homes in a floodplain; therefore, new installations of manufactured dwellings in floodways are prohibited.

Manufactured dwellings may only be located in floodways according to one of the following conditions:

**(a)** If the manufactured dwelling already exists in the floodway, the placement was permitted at the time of the original installation, and the continued use is not a threat to life, health, property, or the general welfare of the public; or

**(b)** A new manufactured dwelling is replacing an existing manufactured dwelling whose original placement was permitted at the time of installation and the replacement home will not be a threat to life, health, property, or the general welfare of the public and it meets the following criteria:

**1.** As required by **44 CFR Chapter 1, Subpart 60.3(d)(3)**, it must be demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the manufactured dwelling and any accessory buildings, accessory structures, or any property improvements (encroachments) will not result in any increase in flood levels during the occurrence of the base flood discharge;

**2.** The replacement manufactured dwelling and any accessory buildings or accessory structures (encroachments) shall have the finished floor elevated a minimum of 18 inches (46 cm) above the BFE as identified on the Flood Insurance Rate Map;

**3.** The replacement manufactured dwelling is placed and secured to a foundation support system designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction;

**4.** The replacement manufactured dwelling, its foundation supports, and any accessory buildings, accessory structures, or property improvements (encroachments) do not displace water to the degree that it causes a rise in the water level or diverts water in a manner that causes erosion or damage to other properties;

**5.** The location of a replacement manufactured dwelling is allowed by the local planning department's ordinances; and

**6.** Any other requirements deemed necessary by the authority having jurisdiction.

**3-2.4.3 Other Water Hazards.** Storms can cause other serious hazards in addition to flooding. To reduce or eliminate damage manufactured dwellings shall only be sited in these hazardous areas according to the following. Manufactured dwellings may only be:

**(a)** Located in a flood related erosion area with prior approval from the authority having jurisdiction;

**(b)** Located in a geological hazard area (includes slide hazards) with prior approval from the authority having jurisdiction; and

**(c)** Permitted in a Coastal High Hazard Zone, as identified on the Flood Insurance Rate Map, when the manufactured dwelling is installed according to the requirements of **Appendix Chapter 31, Section 3108** of the **Oregon Structural Specialty Code** and with prior approval from the authority having jurisdiction.

**3-2.4.4 Local Requirements.** The local flood plain manager may require manufactured dwellings to be located higher than the minimum requirements of this code when justified by updated mapping of the specific area. When fill is used to elevate a manufactured dwelling above the BFE, the local flood plain manager may require an equal amount of earth be removed from the same lot so the fill will not cause a net rise in the water level. Local requirements for manufactured dwellings in flood hazard areas should be no greater than the requirements for other types of single family residential construction in the same area. Because of the substantial increased cost of raising a manufactured dwelling an additional 30 inches (76 cm) in height {48 inches (122

cm) above the BFE}, this code allows the under-floor crossover ducts to be located below the BFE. The crossover ducts are considered to be expendable since their replacement cost is minimal in comparison to the cost of elevating the home.

**3-2.4.5 Flood Resistant Anchoring.** To resist flotation, collapse, or lateral movement during a base flood; manufactured dwellings located in a flood hazard area shall be anchored according to one of the following. Manufactured dwellings may only be:

- (a) Installed on positive connection piers and anchored with approved ground anchors;
- (b) Supported on and secured to an approved foundation wall or basement wall;
- (c) Attached to an approved structural skirting system; or
- (d) Supported on and secured to a foundation system capable of resisting flooding that was designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

**3-2.5 Seismic Zones.** To identify the different levels of earthquake activity three seismic zones have been established in Oregon as shown on **Map 3-C** of this code. Each seismic zone is based on the estimated frequency and intensity of earthquake activity and the level of potential risk relating to property damage and injury within that area. Of these three zones, Seismic Zone 2b has the lowest risk, Seismic Zone 3 has a medium risk, and Seismic Zone 4 has the highest risk. The safeguards in this code are designed to reduce the risk of property damage and injury during an earthquake.

**3-2.5.1 Seismic Zone 2b.** Manufactured dwellings in Seismic Zone 2b shall comply with the following (**see Map 3-C**):

- (a) Manufactured dwellings shall be limited in height to 3 feet (91 cm) as measured from the top of the footing to the bottom of the main frame for 75 percent of the under-floor area;
- (b) Manufactured dwellings shall be limited in height to 6 feet (183 cm) as measured from the top of the footing to the bottom of the main frame for 25 percent of the under-floor area;
- (c) The fuel gas supply to the manufactured dwelling shall be made with a minimum 2-foot (61 cm) flexible gas connector.
- (d) The maximum height limitations identified in this section may be exceeded when the support system is designed for the appropriate wind and/or seismic zones by an Oregon professional engineer, architect, or manufacturer's DAPIA approved plans, and accepted by the authority having jurisdiction.

**3-2.5.2 Seismic Zone 3.** Manufactured dwellings in Seismic Zone 3 shall comply with the following (**see Map 3-C**):

- (a) Manufactured dwellings shall be limited in height to 3 feet (91 cm) as measured from the top of the footing to the bottom of the main frame for 75 percent of the under-floor area;
- (b) Manufactured dwellings shall be limited in height to 6 feet (183 cm) as measured from the top of the footing to the bottom of the main frame for 25 percent of the under-floor area;
- (c) The fuel gas supply to the manufactured dwelling shall be made with a 6 foot (183 cm) flexible gas connector; and
- (d) The maximum height limitations identified in this section may be exceeded when the support system is designed for the appropriate wind and/or seismic zones by an Oregon professional engineer, architect, or manufacturer's DAPIA approved plans, and accepted by the authority having jurisdiction.

**3-2.5.3 Seismic Zone 4.** Manufactured dwellings in Seismic Zone 4 shall comply with the following:

- (a) Manufactured dwellings shall be limited in height to 2 feet (61 cm) as measured from the top of the footing to the bottom of the main frame for 75 percent of the under-floor area;
- (b) Manufactured dwellings shall be limited in height to 5 feet (152 cm) as measured from the top of the footing to the bottom of the main frame for 25 percent of the under-floor area;
- (c) The fuel gas supply to the manufactured dwelling shall be made with a 6 foot (183 cm) flexible gas connector;
- (d) The manufactured dwelling shall be braced or anchored to resist overturning, sliding, and lateral forces according to this section.
- (e) The maximum height limitations identified in this section may be exceeded when the support system is designed for the appropriate wind and/or seismic zones by an Oregon professional engineer, architect, or manufacturer's DAPIA approved plans, and accepted by the authority having jurisdiction.

**3-2.5.4 Earthquake Resistant Anchoring.** When required, manufactured dwellings shall be anchored or braced to resist seismic forces by:

- (a) Installing an approved earthquake-resistant bracing system;
- (b) Installing an approved anchoring system designed to resist seismic conditions;
- (c) Installing positive connection piers at the main frame and anchored with approved ground anchors;
- (d) Supporting and securing to a foundation wall, basement wall, or positive connection piers; and to a marriage line pony wall constructed according to this chapter;
- (e) Supporting and securing to an approved structural skirting system designed to resist seismic conditions

and to a marriage line pony wall constructed according to this chapter.

(f) Supporting and securing to a foundation system capable of resisting seismic forces designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

**3-2.6.1 Anchoring Equipment.** All prefabricated anchoring equipment, including but not limited to, ground anchors, tie-downs, and earthquake-resistant bracing, shall be:

- (a) Approved for its intended use according to this chapter (**see Figure 3-2.6.2A and B**);
- (b) Installed according to the equipment manufacturer's installation instructions even when the installation of the devices is not required by this code.
- (c) Tie down straps shall be installed only after the manufactured dwelling is in its final level position.

**3-2.6.2 Anchoring.** Anchoring of a manufactured dwelling when required shall be accomplished by one of the following methods:

- (a) Ground anchors shall be sized and spaced according to the dwelling manufacturer's instructions. The mechanical connections of the anchoring equipment must be made according to the equipment manufacturer's instructions (**See Figure 3-2.6.2B**).
- (b) Foundation Footing U-Bar anchoring may be installed (**See Figure 3-2.6.2A**):
  - (1) Anchoring ties shall be sized and the U-Bars spaced according to the dwelling manufacturer's instructions and the mechanical connections of the anchoring ties must be made according to the equipment manufacturer's instructions; or
  - (2) In the absence of manufacturer's instructions, the U-Bar attachments shall be installed 11 feet (3.35 meters) on center and no more than 1 foot (30 cm) from each end on both sides of the manufactured dwelling. Tie materials

and strapping shall be capable of resisting an allowable working load of 3,150 pounds (1,430 kg) with no more than two percent elongation and shall withstand a 50 percent overload.

**(c) Connector Plate anchoring may be installed (See Figure 3-2.6.2C):**

**(1)** At least 3 ½ inch x 7 inch (9 cm x 18 cm), 20 ga connector plates no more than 1 foot (30 cm) from each end on both sides and 4 feet (122 cm) on center for single wide dwellings, and 5 feet (152 cm) on center for multiple section dwellings.

**(2)** Such plates shall be fastened with 32 8d nails into the rim joist and foundation wall top plate.

**(d) Plywood trim board anchoring may be installed (See Figure 3-2.6.2C):**

**(1)** Exterior type 15/32 inch (1.2 cm) grade B plywood at least 3 ½ " wide and continuous on both sides of the dwelling.

**(2)** Trim board must be secured to the rim joist and the foundation wall top plate with 8d nails 6 inches on center (15 cm) in each row and caulked for weather seal.

### **3-3 Chassis (transportation platform).**

**3-3.1 Chassis Removal.** Except for wheels, tires, axles, hitches, transportation lights, and those parts of the chassis specifically made to be removed to accommodate the foundation, no portion of a manufactured dwelling chassis (transportation platform) shall be removed before, during, or after the manufactured dwelling installation. Axles, wheels, tires and hitches may be removed once the manufactured dwelling has been sited and supported.

**3-3.2 Chassis Alteration.** Alterations or modifications to the chassis may only be performed according to DAPIA approved plans and with approval from the Division.

## **3-4 Site and Stand Preparation**

**3-4.1 Suitability of Site.** Each site shall be suitable for its intended use and acceptable to the authority having jurisdiction based on this code and local land use regulations. Manufactured dwellings shall not be located on land that is unsuitable due to swampy terrain, lack of drainage, or proximity to the breeding places of rodents or vermin unless improvements have been made to the land to eliminate or control the hazards. In areas having highly expansive, compressible, or shifting soils, the authority having jurisdiction may require a soil test.

**3-4.2 Unforeseen Factors.** When unforeseen factors are encountered (i.e., rock formation, high ground water levels, springs, or biological generated gasses), corrective drainage work, acceptable to the authority having jurisdiction, shall be completed prior to the siting of the manufactured dwelling or cabana.

**3-4.3 Grading and Drainage.** Site grading and drainage shall provide the following:

**(a)** Roof run-off from manufactured dwellings, cabanas, and accessory buildings shall be adequately diverted away from the structures;

**(b)** Lots and stands shall be provided with adequate drainage and shall be properly graded to divert surface water away from manufactured dwellings, accessory buildings, and accessory structures. **(see Figures 3-4.3A and B);**

**(c)** Dry wells or French drains shall be used for storm drains only when the soils are suitable for subsurface disposal of storm water;

**(d)** The top of any exterior foundation wall, perimeter retaining wall, or basement wall shall extend a minimum of 12 inches (305 mm) above the elevation of the street or driveway adjacent to the manufactured dwelling except where it can be demonstrated to the authority having jurisdiction that an alternate elevation will provide adequate

drainage away from the manufactured dwelling;

**(e)** Lots shall have sufficient drainage to prevent standing water, excessive soil saturation, or erosion from becoming detrimental to the lot, stand, or any structures;

**(f)** The ground within a five (5) foot (152 cm) perimeter adjacent to a stand shall be graded to a minimum fall of 3 inches (76 mm) in 5 feet (152 cm) **(see Figure 3-4.3A, B and C)**. Alternate grading methods may be used when needed and approved by the authority having jurisdiction within this 5 foot (152 cm) perimeter space;

**(g)** Sidewalks, walkways, patio slabs, or driveways abutting the manufactured dwelling stand or foundation shall have a slope of ¼ inch (6 mm) per foot (305 mm) to divert water away from the stand or foundation;

**(h)** The slope of cut or fill surfaces shall be no steeper than is safe for the intended use according to **Section 401.6 of the Oregon One and Two Family Dwelling Specialty Code**;

**(i)** Setbacks and clearances from ascending and descending slopes shall be according to **Section 401.6.1 of the Oregon One and Two Family Dwelling Specialty Code (see Figure 3-4.3D)**;

**(j)** Concrete poured along side a manufactured dwelling, shall be graded away from the manufactured dwelling at minimum grade of ¼ inch per foot (6 mm per 305 mm) and shall be no closer than 3 inches (76 mm) vertically to any untreated wood or siding **(see Figure 3-4.3E)**; and

**(k)** Earth back-filled along side a manufactured dwelling, shall be graded away from the manufactured dwelling at a minimum grade of 3 inches in 5 feet (76 mm in 152 cm ). Earthen back fill shall be no closer than 6 inches (15 cm) vertically to any untreated wood or siding **(see Figure 3-4.3F)**.

**3-4.4 Erosion.** Where erosion of the site, due to high water runoff velocity, threatens the manufactured dwelling

stand, adequate grading, plantings or drainage systems, acceptable to the authority having jurisdiction, shall be provided to protect the site, stand, and adjacent properties from degradation.

**3-4.5 Stands.** Manufactured dwelling and cabana stands shall be natural undisturbed soils or engineered fill and shall be free of grass, highly expansive, compressible, or shifting soils, and organic material and subject to the following:

**(a)** Stands shall be scraped smooth to remove all grass, weeds, or organic material prior to installation of a manufactured dwelling;

**(b)** All wood concrete forms shall be removed from the stand prior to the final inspection;

**(c)** Engineered fill, when used for a manufactured dwelling or cabana stand, shall have a soil compaction test to assure the stand is capable of supporting a minimum of 1,000 PSF (50 kgsm). Compaction tests shall be performed according to **ASTM D-698-98** or **ASTM D-1557-98** based on a 95 percent compaction rate.

**(d)** Undisturbed soils shall be assumed to have 1,000 pounds per square foot (49 kgsm) soil bearing capacity. If the authority having jurisdiction has site specific evidence the soil bearing capacity of a stand is less than 1,000 PSF (49 kgsm), the stand shall be brought up to a minimum 1,000 PSF (49 kgsm) through a system designed by an Oregon professional engineer and approved by the authority having jurisdiction; and

**(e)** Spacing of piers and size of footings is based on the soil bearing capacity of the stand. The higher the soil bearing capacity of a stand, the fewer piers and footings will be required as shown in **Tables 3-B and 3-C** of this code. The soil bearing capacity of a stand may be improved to reduce the number of piers and footings according to the following:

**1.** The capacity of a stand may be improved to 1,250 PSF (61 kgsm) by

covering the stand with 6 inches (152 mm) of ¾ inch (19 mm) minus crushed rock and shall not be considered as fill;

**2.** The capacity of a stand may be improved to 1,500 PSF (73 kgsm) by covering the stand with 6 inches (152 mm) of ¾ inch (19 mm) minus crushed rock and compacting it with two passes of a vibrating compacting machine (it is normal for the thickness of the gravel to diminish when it is compacted);

**3.** The capacity of a stand may be improved to 2,300 PSF (112 kgsm) with the installation of continuous concrete footings or a concrete slab;

**4.** Where the soil has already been tested or can otherwise be verified as having an equivalent soil bearing capacity to those mentioned in subsections 1, 2 or 3 of this section above, the piers and footings may be installed at the increased spacing without having to improve the stand with rock or concrete.

**3-4.6 Soil Tests.** When soil compaction tests are performed, a soil investigation report shall be submitted to the authority having jurisdiction. Soil investigation reports shall be made by an independent Oregon certified engineering geologist, Oregon registered licensed geotechnical engineer, Oregon professional engineer, or by a laboratory conforming to the requirements of **ORS Chapter 672**.

**3-4.7 Moisture Barrier.** Every manufactured dwelling and cabana stand shall be covered with a continuous 6 mil or 6x polyethylene membrane sheeting moisture barrier installed according to the following (**see Figure 3-4.7**):

**(a)** Seams shall be overlapped by at least 8 inches (20 cm);

**(b)** Shall be installed above the stand and any poured-in-place concrete footing;

**(c)** All holes, tears, and penetrations shall be adequately sealed or patched with permanent tape;

**(d)** Edges may be held in place by the foundation piers. Prior to the installation of the piers or in areas where there are no piers, the membrane sheeting shall be held in place at the perimeter edges and overlapping seams at not more than 8 feet (244 cm) on center; and

**(e)** Under-floor membrane sheeting shall not contact wood unless it is pressure treated foundation grade lumber;

**(f)** Not extend beyond the perimeter of the manufactured dwelling;

**(g)** Not be installed below a poured-in-place concrete slab footing, continuous concrete footing, foundation wall, retaining wall, or basement wall.

**(h)** Not permitted on the ground below factory-built porches, decks, or landing having open floors constructed so air and moisture can pass through. Individual footings below the porch may be placed on membrane sheeting as long as the sheeting is trimmed off and removed from the rest of the under porch, deck, or landing area.

### **3-5 Approved Materials**

**3-5.1 Minimum Capacity.** Engineered or site-built foundation systems, individual load bearing devices (i.e., footings, piers, and adjustable outriggers), anchoring systems, and earthquake resistant bracing systems shall be designed and constructed to distribute the loads evenly (These loads do not include the ultimate tested loads also required in this section of the code):

**(a)** Footings, piers, and other similar load-bearing devices used to support the weight of the manufactured dwelling shall be capable of individually supporting a minimum of 4,000 pounds (1,814 kg);

**(b)** Footings, piers, and other similar load bearing devices used to support the concentrated loads at the marriage line column support posts shall be individually or collectively capable of supporting those loads identified by the manufacturer on the marriage line labeling. If not marked, those loads are

those shown in **Table 3-B and 3-C** of this code;

**(c)** Anchoring equipment (including anchors, straps, cables, turnbuckles, chains, and tension devices) used to secure a manufactured dwelling shall be capable of resisting an allowable working load at least equal to or exceeding 3,150 pounds (1,429 kg) and withstanding a 50 percent overload (4,725 pounds (2,143 kg)) without failure of either the anchoring equipment or the attachment point to the manufactured dwelling;

**(d)** Wind resistant anchoring systems shall be designed to resist the minimum wind load requirements for Wind Zone 1 as identified in **24 CFR 3280.306**;

**(e)** Earthquake-resistant bracing systems shall be designed to resist the seismic forces for Seismic Zone 4;

**(f)** Prefabricated positive connection piers (PCP's) shall be designed to support a manufactured dwelling with a horizontal wind load of 15 pounds (68,009 g) per square foot (1,076 cm<sup>2</sup>); and

**(g)** Under no condition should the actual loads exceed the design capacities of these materials.

**3-5.2 Testing.** Engineered foundation systems, prefabricated footings and piers, individual load-bearing devices, adjustable outriggers, anchoring systems, and earthquake-resistant bracing systems shall be tested according to the following:

**(a)** Engineered foundation systems and individual load-bearing devices (i.e. footings, piers, or adjustable outriggers) shall be tested to their live load plus a superimposed live load equal to three (3) times the required live load using the test procedures in **24 CFR 3280.401**;

**(b)** Engineered foundation systems shall be tested to their live load plus a superimposed live load equal to three (3) times the required live load using the test procedures in **24 CFR 3280.401**;

**(c)** Anchoring devices shall be tested for Wind Zone 1, as identified in **24 CFR**

**3280.306**, with an increased 1.5 factor of safety using the test procedures in **ASTM Standard Specification D-3953-97**;

**(d)** Earthquake-resistant bracing systems shall be tested for Seismic Zone 4 to the requirements of **Article 7.5** of the **California Health and Safety Code 18-613.6 of January 1, 1993**;

**(e)** Prefabricated positive connection piers shall be tested for a horizontal wind load of 15 pounds (73.2 kgs) per square foot (1,076 cm<sup>2</sup>) while supporting a manufactured dwelling; and

**(f)** Precast concrete masonry units shall be tested at 1,900 pounds per square inch (93 kgsm) according to **ASTM C-90-99a**.

**3-5.3 Approval.** Each engineered foundation system, prefabricated footing or pier, adjustable outrigger, anchoring system, and earthquake resistant bracing system shall be evaluated and approved, listed, or certified according to the following (not applicable to precast concrete products, see Section 3-5.7):

**(a)** Engineered foundation systems may be evaluated and certified by the State of California or by a DAPIA to a nationally recognized model code;

**(b)** Prefabricated load bearing devices shall be tested and approved by a DAPIA or listed by a nationally recognized listing agency;

**(c)** Anchoring systems not identified in this code shall be evaluated and approved by a DAPIA or listed by a nationally recognized listing agency as meeting the minimum requirements of the **federal Manufactured Home Construction and Safety Standards 24 CFR 3280.306** for Wind Zone I;

**(d)** Earthquake resistant bracing systems shall be evaluated and certified by the State of California to **Article 7.5** of the **California Health and Safety Code 18-613.6 of January 1, 1993**; and

**(e)** Any of the above may also be designed by an Oregon professional engineer or architect for a site-specific



case and approved by the authority having jurisdiction.

**3-5.4 Marking.** Each prefabricated component or component assembly of an engineered foundation system, individual load bearing device, anchoring system, and earthquake-resistant bracing system shall be permanently marked or labeled according to the following (not applicable to precast concrete products, graded lumber, or certified wood polymer products):

- (a) The component's intended use (i.e., footing, pier, or anchor);
- (b) The component manufacturer's name and address;
- (c) The component's model or identification number;
- (d) The component's design loads or capacity;
- (e) The component's tested or calculated loads;
- (f) The name, logo, or identification mark of the agency providing the approval, listing, or certification; and
- (g) The product's test report or listing numbers.

**3-5.5 Engineering.** All engineering work shall be provided by an Oregon professional engineer or architect except:

- (a) Engineering by a California registered licensed professional engineer or architect is acceptable on earthquake-resistant bracing systems certified by the State of California;
- (b) Engineering by a California registered licensed professional engineer or architect is acceptable on engineered foundation systems certified by the State of California;
- (c) Engineering by an out-of-state professional engineer or architect is acceptable on DAPIA approved engineering documents.

**3-5.6 Installation Instructions.** Each engineered foundation system, individual load bearing device (i.e.,

footings, piers, and adjustable outriggers), anchoring system, and earthquake-resistant bracing system sold, offered for sale, or installed in Oregon shall be provided with manufacturer's installation instructions (not applicable to precast concrete products, graded lumber, or certified wood polymer products). Manufacturer's installation instructions shall:

- (a) Be consistent with the product listing or approval;
- (b) Include the manufacturer's name and address;
- (c) Include a description of the product by model or identification number;
- (d) Include the products intended use;
- (e) Detail instructions on how to install and use the product;
- (f) Be provided with each manufactured dwelling in which the device or system is used; and
- (g) Be placed in the information packet for the inspector's use. If installation instructions are not provided at the time of inspection, re-inspection fees may be charged by the authority having jurisdiction.

**3-5.7 Concrete Products.** Concrete products used in the construction of a foundation (i.e., precast footings, piers, and caps used in the foundation support system) must conform as follows:

- (a) Precast concrete masonry hollow core cell blocks (referred to herein as concrete masonry units or CMU's) conform to **ASTM C-90-96** (tested @ 1,900 pounds per square inch), and be constructed to be lightweight with a blend of aggregates that conform to **ASTM C-33** and **ASTM C-331**;
- (b) Solid precast concrete masonry used for footings, piers, pier caps, and shims is not required to be tested, listed, or rated;
- (c) Non-rated or tested pumice and cinder block material may not be used to support vertical loads but may be used in skirting where no vertical loads are applied;
- (d) All poured-in-place concrete shall have a compressive strength not less than 2,500 pounds (1,135 kg) per square inch (6.45 square centimeters) in

28 days. All poured-in-place concrete shall have seven days to cure before installation of the manufactured dwelling;

(e) All fibers used as reinforcement for poured-in-place concrete footings, runners, or slabs shall comply with and be tested to **ASTM Standards C-39, C-78, C-496, C-1116, and C-1018**;

(f) Poured-in-place concrete shall not be poured when the ambient temperature is at or below freezing unless adequately protected by a method acceptable to the authority having jurisdiction.

**3-5.8 Wood Products.** Wood products shall be free from decay and infestation and shall comply with the following:

(a) All pressure treated foundation grade lumber and plywood shall be pressure preservatively treated according to **AWPA C22-96** and shall be identified as to conformance with such standard by an approved agency;

(b) Where permitted, field cut ends, notches, and drilled holes in pressure treated lumber or plywood may be retreated in the field according to **AWPA M4-99**;

(c) Except where otherwise specifically stated in this code or in approved engineering, all lumber shall be at least number two or better or standard or better;

(d) Plywood shall conform with **B99-55** or **APA 510s-97**;

(e) Hardboard siding shall conform with **AHA 135.6-90**;

(f) Pre-finished hardboard paneling shall conform with **AHA 135.5-95**;

(g) Cedar, redwood, or wood polymer composite shall be considered to be equal to pressure treated wood unless otherwise specified;

(h) All wood-polymer composite shall comply with **ASTM 790, ASTM D-1037, ASTM D-1413, and AWPA EI-72**.

**3-5.9 Steel and Metal Products.** Steel and metal products used in the construction of the foundation shall comply with the following:

(a) Structural steel shall comply with either **AISC-S335-89** or **AISI-SG-673-89** and shall be adequately protected from corrosion by painting or equal;

(b) Steel beams used with recessed perimeter blocking shall be a minimum of 5 pounds (2,268 g) per lineal foot (305 mm) I-beams;

(c) Metallic anchor (tie down) strapping installed on manufactured dwellings located within 20 miles (32 kilometers) of the Oregon coast shall be made from stainless steel or 0.035 inch (1 mm) thick and 1-1/4 inch (32 mm) wide steel, coated with not less than 0.30 ounces (8.51 g) of zinc per square foot (.30 meters) and certified as conforming to **ASTM Standard Specification D-3953-91**;

**3-5.10 Bottom Board Patching.** All cuts, holes or tears in the bottom board or floor insulation including, but not limited to, areas around structural connections and plumbing, mechanical, and heating equipment penetrations shall be adequately repaired to prevent the entrance of rodents and to limit heat loss.

**3-5.11 Materials.** Construction materials subject to damage should be protected from the weather.

**3-5.12 Approved Foundation Materials.** Foundation materials shall meet the requirements contained within this section of the code. Listed or engineered foundation systems may incorporate the foundation footing, pier, and shimming requirements all into one device. Foundation materials made from wood or wood byproducts exposed to excess moisture, such as under open porches and decks, shall be cedar, redwood, pressure treated lumber, or wood-polymer composite.

**3-5.12.1 Foundation Footings.** Footings shall support each pier and be a minimum area of 256 square inches (1652 cm<sup>2</sup>) constructed with the

following (Refer to Table 3-B) (see Figure 3-5.12.1A):

(a) One 4-inch (10 cm) nominally thick individual precast concrete (see Figure 3-5.12.1A and B);

(b) One 3-1/2 inch (89 mm) thick poured-in-place individual concrete footing (see Figure 3-5.12.1A and C);

(c) One layer of 1-1/2 inch (38 mm) thick foundation grade lumber, pressure treated on all six sides. If used with concrete blocks no more than 1 inch (25.4 mm) of exposed wood is allowed beyond the long side of the block. (see Figure 3-5.12.1D);

(d) Two perpendicular layers of 1-1/2 inch (38 mm) thick foundation grade lumber, pressure treated on all six sides (see Figure 3-5.12.1E);

(e) Two perpendicular layers of 1-1/2 inch (38 mm) thick wood polymer composite (see Figure 3-5.12.1E);

(f) One piece of 1-1/4 inch (32 mm) thick plywood pressure treated on all six sides (see Figure 3-5.12.1F);

(g) Two pieces of 3/4-inch (19 mm) thick plywood pressure treated on all six sides (see Figure 3-5.12.1G);

(h) A minimum 5½-inch (14 cm) thick, continuous concrete footings (also known as concrete runners), not less than 18 inches (46 cm) wide reinforced with two continuous minimum #4 reinforcement rods (see Figures 3-5.12.1H, I, and J). Rods shall be lapped 12 inches (30 cm), connected with wire ties or equal, be 2 inches (5 cm) from the bottom of the footing, and not closer than 3 inches (76 mm) from the edge of the footing. Rods shall be located 10 inches (25 cm) apart in the footing and the pair centered beneath the pier locations. If a continuous concrete footing is wide enough to support two or more rows of piers (i.e., a three-pad pour), the reinforcement rods shall be installed under each row of piers including the mainframe, perimeter, and marriage line piers.

(i) A minimum of 3-1/2 inch (89 mm) thick continuous concrete slab footings (also known as a three-pad pour), not

less than 48 inches (122 cm) wide, reinforced with approved fibers or with 10 gauge 6 inch (15 cm) by 6 inch (15 cm) wire fabric centered vertically within the continuous footing and no closer than 1 inch (25 mm) from the edge of the continuous concrete slab footing (see Figure 3-5.12.1K) (Not suitable for U-bar anchoring method, see Section 3-2.6.2);

(j) A minimum 3-1/2 inch (89 cm) thick concrete slab (also known as a full slab) not less in area than the manufactured dwelling, reinforced with approved fibers or with 10 gauge 6-inch (15 cm) by 6-inch (15 cm) wire fabric centered vertically within the slab and no closer than 1 inch (25 mm) from the edge of the slab (see Figures 3-5.12.1L and M) (Not suitable for U-bar anchoring method, see Section 3-2.6.2);

(k) Listed or approved prefabricated footings (see Figures 3-5.12.1N and O); or

(l) Material or methods designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

(m) For requirements for foundation encased electrodes in footings, see section 3-9.2.1.

**3-5.12.2 Vertical Foundation Supports.** Vertical Foundation Supports (i.e. piers, foundation walls, etc.) shall be constructed from one of the following:

(a) Listed or approved prefabricated foundation piers (see Figure 3-5.12.2A);

(b) 8-inch (20 cm) by 8-inch (20 cm) high by 16 inch (41 cm) **ASTM** rated concrete masonry unit (CMU) foundation piers assembled according to this chapter (see Figure 3-5.12.2B) ;

(c) 8-inch (20 cm) by 6 inch (15 cm) high by 16 inch (41 cm) **ASTM** rated concrete masonry unit (CMU) foundation piers assembled according to this chapter;

- (d) 8-inch (20 cm) by 4-inch (10 cm) high by 16-inch (41 cm) solid concrete block;
- (e) Foundation walls built according to this chapter;
- (f) Basement walls built according to this chapter; or
- (g) Structural skirting built according to this chapter.
- (h) Material or methods designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

**3-5.12.3 Pier Caps.** Pier caps for concrete masonry unit (CMU) foundation piers shall be constructed from one of the following materials and shall be equal in size to the pier blocks:

- (a) A 4-inch (10 cm) nominally thick solid concrete block (see figure 3-5.12.3);
- (b) A 1-inch (25 mm) nominally thick group 2 or 3 parallel laminated veneer wood plate;
- (c) One piece of 1-1/4-inch (32 mm) plywood;
- (d) Two pieces of 3/4-inch (19 mm) plywood;
- (e) One 1-1/2-inch (38 mm) thick #2 or better grade board lumber;
- (f) One 1-1/2-inch (38 mm) thick wood polymer composite;
- (g) Listed and approved prefabricated pier caps; or
- (h) Material or methods designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

**3-5.12.4 Pier Shims.** Pier shims for concrete masonry unit (CMU) foundation piers shall be a minimum of 5½ inches (14 cm) by 16 inches (41 cm) constructed from any of the following materials but shall not exceed a combined height of 9 inches (23 cm):

- (a) 1-1/2 inch (38 mm) thick solid concrete block equal in area to the pier cap;
- (b) 1 inch (25 mm) thick group 2 or 3 parallel laminated veneer wood plate;

- (c) 1/4 inch (19 mm) or greater plywood;
- (d) 1-1/2 inch (38 mm) thick #2 or better grade board lumber (see Figure 3-5.12.3);
- (e) 3/4 inch (19 mm) thick #2 or better grade hardwood board lumber;
- (f) 1-1/4 inch (32 mm) minimum thick wood polymer composite;
- (g) 4-inch (10 cm) by 6-inch (15 cm) wood beam;
- (h) Listed and approved shimming material; or
- (i) Material or methods designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction.

**3-5.12.5 Wedges.** Wedges for concrete masonry unit (CMU) foundation piers shall be made with one of the following materials (wedges are included in the 9 inch height limitation for shims):

- (a) Two sets of 3/4-inch (19 mm) thick by 3-1/2-inch (89 mm) wide by 8-inch (20 cm) to 16-inch (41 cm) long wood wedges;
- (b) One set of 1-1/2-inch (38 mm) thick by 3-1/2-inch (89 mm) wide by 8-inch (20 cm) to 16-inch (41 cm) long wood wedges (see Figure 3-5.12.3);
- (c) Listed or approved shimming material; or
- (d) Material or methods designed by an Oregon professional engineer or architect and approved the authority having jurisdiction.

### **3-6 Foundation Pier Spacing and Sizing**

**3-6.1 Main Frame Pier Supports.** Under the chassis main frames (also known as I-beams or channel beams), the manufactured dwelling shall be supported according to the following (see Figures 3-5.12.2A and B):

- (a) Footings shall be located and sized according to Table 3-B of this code;
- (b) Piers shall be located under each main frame member within 1 foot (30 cm) from the end of each beam then spaced according to Table 3-B of this code;

(c) Where a chassis main frame is recessed under the end wall to accommodate a foundation wall installation, the piers shall begin as close as possible to the end of the main frame; and

(d) In addition to those offsets already permitted in this section, all other piers under the main frame may be offset up to 1 foot (30 cm) to allow for such obstructions as outriggers, cross members, heat ducts, vents, and electrical, gas, and plumbing connections:

### **3-6.2 Perimeter Wall Pier Supports.**

Under the perimeter walls (also known as side walls and end walls), the manufactured dwelling shall be supported according to the following (see **Figure 3-6.2**):

(a) Footings for perimeter piers shall be located and sized according to **Table 3-B** of this code;

(b) Piers shall be located according to the following:

1. On either side of each door over 30 inches (76 cm) wide, side wall window opening over 4 feet (122 cm) wide, and recessed side wall over 4 feet (122 cm) wide;

2. At cantilevered portions of the floor supporting bay windows and similar protrusions. These protrusions shall be supported by piers at each end of the side wall opening, at the outside corners of the protrusion, and under each end of any support beams;

3. Under each factory-built porch roof support post; and

4. Intermediate piers shall be placed at any remaining horizontal spaces under the perimeter side wall, spaced according to **Table 3-B** of this code;

(c) Perimeter pier supports may be recessed from the side wall to allow for skirting installations; (**See Figures 3-8.4.3A, B, C and D**)

(d) Intermediate perimeter piers located under the side wall may be recessed up to sixteen (16) inches (40.6 cm) in from each end wall;

(e) Intermediate perimeter piers may be offset under the side wall up to one (1) foot (30 cm) to allow for such obstructions as outriggers, cross members, heat ducts, vents, and electrical, gas, or plumbing connections.

(f) Where a side wall is interrupted by an additional intersecting section of the home (also known as a pod, tag, tip-out, or expando unit), the opening on both sections of the manufactured dwelling shall be treated as a marriage line and shall be provided with the necessary foundation supports for the column support posts according to **Table 3-B** of this code;

(g) Where a manufactured dwelling has tip-outs or expandos, these protrusions shall be supported by piers at each corner, under each floor beam, at either side of each exterior door opening, and around the perimeter spaced according to **Table 3-B** of this code;

(h) When a prefabricated carport or awning (also known as a patio cover) is attached to the roof or exterior wall of a manufactured dwelling for support, the perimeter pier spacing shall be reduced by 50 per cent under those areas where the cover is attached to the dwelling to a minimum of 48 inches (122 cm). Pier spacing is reduced by 50 per cent of that required in **Table 3-B** under the area of the carport or awning attachment, but not required closer than 48 inches (122 cm); and

(i) Perimeter piers may be replaced with foundation walls, basement walls, or structural skirting according to **Sections 3-9 and 3-10** of this Chapter.

### **3-6.3 Marriage Line Column Support Piers.**

Under the marriage line(s) (also known as the center-line) of multi-section manufactured dwellings, piers and footings shall be placed under the column support posts at each end of a ridge beam span according to the location marked by the manufacturer. (**see Figures 3-6.3A and B**)

(a) Where the column support post location is not identified by the

manufacturer, the column support post must be visually located and identified by the installer to determine the spans according to **Table 3-C** of this code;

**(b)** Where the column support post capacity is not identified by the manufacturer, the capacity of the piers and footings shall be determined by **Table 3-C** of this code;

**(c)** Where a single column support post supports a ridge beam in the middle of a combined span (two adjacent single spans), the footing size and pier capacity under that column support post shall be based on the sum of the combined spans. The footing size required shall be determined by using the next higher distance to that sum as shown in **Table 3-C** for the appropriate soil condition. **(See Figure 3-6.3A)**;

**(d)** Piers supporting column support posts located in the end wall shall be as close as possible to the end wall but may be recessed so the edge of the pier is not greater than 12 inches (30 cm) from the face of the exterior wall;

**(e)** Piers under interior column support posts may be offset up to six (6) inches (15 cm) to allow for such obstructions as outriggers, cross members, heat ducts, vents, and electrical, gas, or plumbing connections; and

**(f)** Marriage line column support piers may be replaced with a full-length pony wall constructed according to **Section 3-9** of this chapter.

**3-6.4 Intermediate Marriage Line Piers.** Any horizontal spaces between the column support posts that exceed the maximum spacing permitted in **Table 3-B** of this code, shall be supported under the marriage line floor and walls with intermediate piers spaced according to **Table 3-B**. This includes the areas beneath full or partial height walls and areas with no walls **(see Figure 3-6.3B)**.

**(a)** Intermediate piers may be offset up to 12 inches (30 cm) to allow for such obstructions as outriggers, cross

members, heat ducts, vents, and electrical, gas, or plumbing connections;

**(b)** Additional marriage line piers are not required on either side of door openings located in the marriage line wall unless the door opening exceeds the minimum span identified in **Table 3-C** of this code, contains a column support post, or happens to fall on an intermediate pier location;

**(c)** Marriage line piers may be replaced with a full length pony wall constructed according to **Section 3-9** of this chapter; and

**(d)** When a marriage line wall is an exterior wall, it shall be considered a perimeter wall and supported according to **Section 3-7.2** of this chapter.

### **3-7 Foundation Heights**

**3-7.1 Minimum Foundation Heights.** Manufactured dwellings shall have the following minimum foundation heights **(see Figure 3-7.1)**:

**(a)** 75 percent of the under-floor crawl space of a manufactured dwelling shall be at least 18 inches (46 cm) in height between the underside of the main frame and the top of the continuous concrete footing or slab;

**(b)** No area under the chassis main frame shall have a clearance less than 12 inches (30 cm) between the underside of the main frame and the top of the footing.

**3-7.2 Maximum Foundation Heights.** Manufactured dwellings shall have the following maximum foundation heights:

**(a)** In the Standard Wind Areas and Seismic Zones 2b and 3, 75 percent of all main frame piers shall not exceed 36 inches (91 cm) in height, as measured from the top of the footing to the bottom of the main frame **(see Figure 3-7.2A)**. The remaining 25 percent of the main frame piers shall be limited according to the following:

**1.** Prefabricated or single stacked CMU piers may be 48 inches (122 cm) in height **(see Figures 3-8.4.2A)** ;

2. Prefabricated or single stacked CMU piers may be 60 inches (152 cm) in height if they are positive connection piers (see Figures 3-8.4.1 and 3-8.4.2B);

3. Double interlocked CMU piers shall not exceed 72 inches (183 cm) in height (see Figure 3-8.4.2C); or

4. Double interlocked CMU piers shall not exceed 84 inches (213 cm) in height if they are positive connection piers (see Figure 3-8.4.2D).

(b) In the High Wind Areas and Seismic Zone 4, 75 percent of all main frame piers shall not exceed 24 inches (61 cm) in height, as measured from the top of the footing to the bottom of the main frame (see Figure 3-7.2B). The remaining 25 percent of the main frame piers shall be limited to the following:

1. Prefabricated or single-stacked CMU piers may be 36 inches (91 cm) in height (see Figure 3-8.4.2A);

2. Prefabricated or single-stacked CMU piers may be 48 inches (122 cm) in height if they are positive connection piers (see Figures 3-8.4.1 and 3-8.4.2B);

3. Double interlocked CMU piers may be 48 inches (122 cm) in height (see Figures 3-8.4.2C); or

4. Double interlocked CMU piers may be 60 inches (152 cm) in height if they are positive connection piers (see Figures 3-8.4.2D).

(c) 100 percent of all main frame piers may exceed the height limitations established in this section when designed for the appropriate wind and/or seismic zones by an Oregon professional engineer or architect and the design is approved by the authority having jurisdiction. The authority having jurisdiction may also accept DAPIA approved plans.

(d) Footings under the main frame piers shall not be increased in thickness, double stacked, or raised for the purpose of elevating the manufactured dwelling above the limits established within this section of the code.

## 3-8 Foundation Construction Requirements

**3-8.1 Foundation Types.** It is essential to support the main frame, marriage line, and the perimeter sidewalls of the manufactured dwelling. This code permits several different types of foundation systems. Most foundation support systems described in this section are interchangeable. The type anchoring system used on a manufactured dwelling may dictate the type foundation system needed. (See Section 3-2 of this chapter for anchoring requirements before planning the manufactured dwelling foundation.)

### 3-8.2.1 Foundation-Encased Electrode in Footings.

Manufactured dwellings with poured-in-place continuous concrete footings, foundation wall footings, basement wall footings, structural concrete skirting footings, or retaining wall footings may have an electrode encased to provide a grounding path according to the following (see Figure 3-8.2.1):

(a) The electrode shall be at least 20 feet (610 cm) of one or more bare or zinc galvanized or other electrically conductive coated steel reinforcing bars or rods not less than ½-inch (13 mm) diameter;

(b) The electrode shall be encased in at least 2 inches (50.8 mm) of concrete and located not less than 3 inches (76 mm) from the bottom of the footing;

(c) The reinforcing bars may be bonded together with steel tie wires or by other effective means;

(d) Where there are multiple concrete footings, only one footing is required to have an encased electrode;

(e) The electrode shall protrude through the concrete footing a minimum of 12 inches (30 cm) into the crawl space;

(f) The protruding electrode should be located near the main electrical distribution panel, service disconnect; and

(g) There shall not be any vapor barrier or other insulating material installed below the concrete footing.

**3-8.2.2 Foundation-Encased Electrode in Slabs.** Manufactured dwellings with poured-in-place continuous concrete slabs or full-size concrete slabs may have an electrode encased to provide a grounding path according to the following (see **Figure 3-8.2.2**).

(a) The electrode shall be at least 20 feet (610 cm) No. 4 bare copper conductor or larger;

(b) The copper conductor shall be placed in a large loose loop or coil and shall not be bunched;

(c) The electrode shall be encased by centering it vertically in the concrete slab footing;

(d) Where there are multiple slabs, only one slab is required to have an encased electrode;

(e) The electrode shall protrude through the concrete slab a minimum of 12 inches (30 cm) facing the crawl space;

(f) The protruding electrode should be located near the electrical main distribution panel and service disconnect; and

(g) There shall not be any vapor barrier or other insulating material installed below the concrete slab footing.

**3-8.3 Foundation Footings.**

Foundation footings shall be made of approved materials and constructed or installed according to the following (see **Figures 3-5.12.1 A through O**):

(a) Individual footings shall be placed on undisturbed soil free of organic materials; (See **Table 3-B**)

(b) When it is necessary to mix footing types:

1. Different types of individual footings (i.e. concrete and wood) shall not be used side by side under a single foundation pier;

2. Different types of individual footings may be used under the same manufactured dwelling;

3. Continuous concrete footings, individual footings and concrete slabs may be used under the same manufactured dwelling as long as no pier is supported at the transition of the two footing types; and

4. When a manufactured dwelling is installed on the lot of a previously sited manufactured dwelling and the stand is over an existing non-reinforced concrete slab or sidewalk, individual footings shall be used for the entire installation.

(c) Footings shall be equal or greater in area than the base of the pier being supported.

(d) The top surface of poured-in-place continuous concrete footings or slabs shall be made smooth with a trowel to provide an even support base:

1. Irregular protrusions on the top surface shall be removed or have a wood footing block placed over them to absorb the irregularities;

2. Cracks exceeding 1/8 inch (3.2 mm) in width shall be bridged with wood footing blocks; and

3. Holes in the top surface greater than 3/4-inch (19 mm) shall be filled with mortar or bridged with wood footing blocks.

(e) Precast concrete footings with cracks or other substantial defects shall be replaced.

(f) The top surface of all footings shall be level so that the piers are vertically aligned with no more than a 1-inch (25.4 mm) difference between the top and bottom of the pier when checked with a plumb bob;

(g) Individual wood footings shall not exceed 28 inches (71 cm) in length except when used under the marriage line at a column support post location;

(h) Continuous concrete footings or slabs poured too short or narrow may be replaced or corrected by adding another continuous footing or slab along side secured with 12 inch (30 cm) long #4 concrete reinforcing bar located at 18 inches (46 cm) on center and imbedded a minimum of 3" into the existing



adjoining footing or slab (**see Figure 3-8.3**);

(i) Poured-in-place continuous concrete footings and slabs located under a manufactured dwelling containing a factory-built porch, deck, or landing whose floor allows the free flow of air and moisture through to the under-floor area (crawl space) below shall be constructed to prevent the migration of moisture according to one of the following:

1. The footing(s) shall be stepped down a minimum of 1-1/2 inches (38 mm) vertically under the recessed perimeter walls of the manufactured dwelling;
2. The footing(s) shall have a masonry dam 1-1/2 inch (38 mm) high above the footing(s) located under the recessed perimeter walls of the manufactured dwelling; or
3. The space shall be separated by an under-floor enclosure located under the recessed perimeter wall that is capable of stopping the migration of moisture to the underside of the manufactured dwelling.

**3-8.4.1 Prefabricated Foundation Piers.** Approved prefabricated foundation piers (also known as PFP's) shall be (**see Figure 3-5.12.2A**);

(a) Supported on approved footings if a footing is not included as part of the pier design;

(b) Installed according to the manufacturer's installation instructions;

(c) Adjusted to form a tight fit between the top of the pier and the bottom of the floor joist or main frame;

(d) PFP's shall not be:

(1) Installed in a manner or location where it would exceed the design load of the pier;

(2) Installed in a manner that exceeds the maximum height limitation of the piers;

(3) Shimmed except as specifically permitted by the listing of the device; and

(g) Where PFP's are required to be positive connection piers (PCP's), they

shall be manufactured to be structurally secured to both the mainframe and the footing (**see Figure 3-8.4.1**).

**3-8.4.2 Concrete Masonry Unit Foundation Piers.** Concrete masonry unit (also known as CMU piers) foundation piers shall be made of approved materials and installed according to the following (**see Figure 3-5.12.2B**):

(a) CMU piers shall be supported on approved footings;

(b) CMU piers shall not span two or more concrete footing blocks;

(c) CMU piers shall be installed in a single stack, except where otherwise required for over height piers;

(d) CMU piers shall not be cracked, split, or significantly damaged. Damaged CMU's shall be replaced;

(e) CMU piers shall be installed with the open cells placed vertically upon the footing or other block;

(f) CMU pier blocks may have wood placed between each block if the wood is at least equal to the area of the block;

(g) Wood placed between the footing and the first block must be pressure treated;

(h) Wood separating the blocks may be any of the following materials:

(1) 1 inch (25 mm) thick group 2 or 3 parallel laminated veneer wood plate;

(2) 1/4 inch (19 mm) or greater plywood;

(3) 1-1/2 inch (38 mm) thick #2 or better grade board lumber;

(4) 3/4 inch (19 mm) thick #2 or better grade hardwood board lumber;

(5) 1-1/4 inch (32 mm) minimum thick wood polymer composite;

(6) Listed and approved shimming material.

(i) A minimum of 75 percent of the CMU piers under the main frame shall be installed with the 16 inch (41 cm) dimension perpendicular to the main frame;

(j) CMU piers under the marriage line or perimeter walls may be installed either parallel or perpendicular to the main frame.

**(k)** CMU piers shall be capped and shimmed with approved materials;

**(l)** CMU piers and shims shall provide a tight fit between the top of the pier and the bottom of the floor joist or main frame. When necessary, approved wedges shall be driven tight between the top of the pier and the bottom of the floor joists or main frame to eliminate any gaps. Shims and wedges are limited to a maximum combined height of 9 inches (23 cm). Wedges shall provide a bearing surface equal in area to the bottom of the joists or mainframe being supported **(see Figure 3-5.12.3)**;

**(m)** Where 100% of CMU piers are used in an over height condition, they shall be single stacked or double interlocked, depending on the desired height, and shall be supported by a continuous concrete footing or slab **(see Figures 3-8.4.2A and C)**;

**(n)** Where CMU piers are required to be positive connection piers, they shall be constructed to be structurally secured to both the mainframe and the footing according to the following **(see Figures 3-8.4.2B and D)**:

1. The CMU piers shall be single stacked or double interlocked depending on the desired height;

2. The CMU piers shall be laid in mortar and supported by a continuous concrete footing or slab;

3. Each cell of the CMU pier shall be filled with cement with a maximum aggregate of 3/8-inch (10 mm) pea gravel with a 6-inch (15 cm) slump;

4. A 1/2-inch (13 mm) by 7-inch (18 cm) foundation anchor bolt shall be inserted into the concrete mix into the top of each cell with 3 inches (76 mm) of thread exposed above the top CMU pier;

5. The top CMU pier shall have a wood pier cap with holes drilled so the foundation bolts can protrude; and

6. After the concrete and mortar has cured and the manufactured dwelling is installed, secure the main frame to the pier's foundation bolts with a minimum 1/4-inch (6 mm) by 3-inch (76 mm) by 6-

inch (15 cm) steel plate held in place with a washer and nut at each bolt.

### **3-8.4.3 Recessed Perimeter Piers.**

Perimeter piers shall be recessed under the perimeter sidewalls to allow room for skirting to be constructed or installed. When foundation walls, basement walls, or structural skirting walls are used, recessed perimeter piers are not required.

**(a)** Recessed perimeter piers shall be listed or approved prefabricated foundation piers or rated concrete masonry unit (CMU) piers;

**(b)** On manufactured dwellings with transverse floor systems (floor joists perpendicular to the main frame), the recessed perimeter piers shall support a single 4 inch (10 cm) by 6 inch (15 cm), horizontal wood beam or equal spanning a minimum of two transverse floor joists **(see Figures 3-8.4.3A and B)**;

**(c)** On manufactured dwellings with longitudinal floor systems (floor joists parallel with the main frame), the recessed perimeter piers shall support the floor joists outside the main frame. A 4 inch (10 cm) by 6 inch (15 cm), horizontal wood beam or equal spanning each floor joist may be located on the outer side of the main frame. The beam shall be notched at the main frame and shall fit tight against the bottom of the top flange of the main frame **(see Figures 3-8.4.3C and D)**;

**(d)** Recessed perimeter piers shall be recessed so the outside edge of the concrete block or the base of the prefabricated pier is no more than 10 inches (25 cm) from the perimeter walls of the manufactured dwelling;

**(e)** Recessed perimeter piers shall be centered beneath the horizontal beams;

**(f)** The 4-inch (10 cm) by 6-inch (15 cm), horizontal wood beam or equal spanning each floor joist shall be placed so the 4-inch side is against the floor joists and the supporting pier and the 6-inch side is in a vertical position;

**(g)** Recessed perimeter piers shall support the horizontal beams in a level position so that the beam is tight against the bottom of each floor joist; and

**(h)** Recessed perimeter piers shall provide a tight fit between the top of the pier and the bottom of the horizontal beams in a manner that does not allow rocking or other movement.

**1.** CMU piers may be shimmed and wedged below the bottom of the horizontal beam to provide for a tight fit. Wedges may be installed parallel or perpendicular to the beam. When installed in the perpendicular position, two sets of wedges must be used. The horizontal beam shall be counted within the 9-inch (23 cm) maximum height limitations for shimming materials;

**2.** PFP's shall be adjusted below the bottom of the horizontal beam according to the manufacturer's installation instructions to provide a tight fit. PFP's shall not be shimmed except where specifically permitted by the pier's listing;

**3-8.4.4 Column Support Piers.** Multi-section manufactured dwellings shall be supported under the marriage line to carry the weight of the concentrated loads transferred from the roof through the column support posts.

**(a)** Where the concentrated load of a column support post exceeds the capacity of an individual footing, multiple footings of the same material may be used to distribute the load evenly according to the following:

**1.** Footings shall be layered and placed in a pyramid shape to distribute the loads evenly from the pier to the ground **(see Figures 3-8.4.4A and B)**;

**2.** The bottom layer of a pyramid footing material shall be equal in area to the footing size required in **Table 3-C** of this code;

**3.** The top layer of a pyramid footing shall be equal to or greater in size to the bottom of the pier it supports;

**4.** Each layer of a pyramid footing material shall span at least 25 percent of the footings below;

**5.** Piers shall be supported by the top layer of footing material only and if concrete, shall not bridge multiple footing blocks;

**6.** Pyramided footings are not necessary under column support posts when the column support piers are supported by a continuous concrete footing or slab constructed according to this code.

**(b)** Where the concentrated load of a column support post exceeds the capacity of a single pier, multiple piers of the same type and rating may be used to distribute the load according to the following:

**1.** Where two or more piers are used, each pier may be supported by individual footings having a combined size and rating equivalent to the applied load identified in **Table 3-C** of this code;

**2.** Multiple piers located along the marriage line shall be centered on the column support post **(see Figure 3-8.4.4C)**; and

**3.** Multiple piers located perpendicular to the marriage line shall be bridged with a 4 inch (10 cm) by 6 inch (15 cm) wood beam or equal and centered on the column support post **(see Figure 3-8.4.4D)**.

**(c)** Marriage line support piers may be replaced with a full-length marriage line pony wall constructed according to Section 3-9.4.5 of this chapter **(see Figure 3-8.4.5A)**.

**3-8.4.5 Marriage Line Pony Wall.** A full length pony wall under the marriage line may be used to take the place of the marriage line piers and column support piers when constructed according to the following **(see Figure 3-8.4.5A)**:

**(a)** The pony wall shall be constructed of 2 inch (50.8 mm) by 6 inch (15.2 cm) nominal lumber with a single top and bottom plate and studs at 24 inches (61 cm) on center;

**(b)** The bottom plate shall be pressure treated, and supported by a continuous

concrete footing or concrete slab, and attached to the concrete with foundation bolts or power driven concrete penetrating nails;

(c) The top plate shall be centered on the marriage line floor junction, and secured to the bottom of each floor rim joist with 16d nails at 24 inches (261 cm) on center. If shimming is utilized, the shimming material must be secured to the top plate in the same manner.

(see Figure 3-8.4.5B);

(d) The top and bottom plates shall be secured to each stud with three 16d nails;

(e) The pony wall shall be sheathed on one side with 8 foot (213 cm) long by full height pressure treated CDX plywood located at each end of the pony wall. The sheathing shall be fastened to the framework with 8d nails at 8 inches (20 cm) on center. Up to four 12-inch (30 cm) by 12 inch (30 cm) access holes may cut in the sheathing to accommodate utility connections. Access holes shall not be closer than 12 inch (30 cm) edge to edge; and

(f) The pony wall shall have additional studs under each column support post equal in area to the studs in the column support post(s) located in the manufactured dwelling. Studs shall be secured together with 10d nails staggered at 6 inches (15 cm) on center.

#### **3-8.4.6 Adjustable Outriggers.**

Adjustable outriggers may be used to transfer some or all of the loads from the perimeter and marriage lines of a manufactured dwelling to the main frame (I-beams or channel beams) when DAPIA approved or designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction. An adjustable outrigger design and installation shall include the following:

(a) Adjustable outriggers shall be engineered for the specific manufactured dwelling with which they are to be used;

(b) Adjustable outriggers shall be located in line with existing chassis cross members, or cross members shall be added between the main frame beams at each adjustable outrigger location to prevent damage or weakening of the main frame beams from the increased horizontal pressures;

(c) The main frame foundation pier supports shall be increased in capacity or spaced closer to support the additional loads transferred from the perimeter or marriage line to the main frame by the adjustable outriggers;

(d) Adjustable outriggers shall be installed according to the manufacturer's installation instructions and the approved engineering; and

(e) A set of the installation instructions and approved engineering documents shall be left on site for the inspector's use.

**3-8.4.7 Foundation Walls.** Foundation walls may be used in place of recessed perimeter piers, skirting, marriage line column support piers under the end walls, anchoring, and to support the horizontal pressures of backfill around the manufactured dwelling. Foundation walls, when used, shall be constructed according to the following (see Figures 3-8.4.7A, B, C, D, E, and F and Figure 3-9.2):

(a) Foundation walls shall be constructed of poured-in-place concrete, concrete masonry units (CMU's), foundation grade lumber, insulated concrete forms (ICF's), or an approved or listed prefabricated perimeter foundation wall system;

(b) A minimum 5½-inch (14 cm) thick, continuous concrete footing, not less than 12 inches (30.4 cm) wide reinforced with two continuous minimum #4 reinforcement rods. Rods shall be lapped 12 inches (30 cm), connected with wire ties or equal, be 2 inches (5 cm) from the bottom of the footing, and not closer than 3 inches (76 mm) from the edge of the footing.

(c) Foundation walls shall provide a tight fit to the bottom of the manufactured dwelling floor framing. Shimming may be permitted between outriggers and other permanent obstructions (see **Figure 3-8.4.5B**);

(d) Foundation walls or footings shall be secured to the manufactured dwelling;

(e) Foundation walls shall provide the required amount of under-floor ventilation;

(f) Foundation walls shall provide the required under-floor access;

(g) Foundation walls shall be constructed according to this code, and where not specific, to the **Oregon One and Two Family Dwelling Specialty Code (See Figures 3-8.4.7B, C, D, E, or F and Figure 3-9.2;**

(h) The stand shall be a minimum of one foot (30.4 cm) above the BFE according to the FIRM unless the foundation wall is opened on one side or end so that flood water cannot be trapped;

(i) Foundation walls shall only be installed where the ground water level will not flood or be detrimental to the stand. Where ground water may present a detrimental condition, the authority having jurisdiction may require any or all of the following;

(1) Foundation walls to be water proofed around the perimeter of the manufactured dwelling;

(2) A perimeter drain around perimeter of the foundation wall to divert water away from the manufactured dwelling;

(3) A gravity drain installed at the lowest part of the stand or an automatically controlled sump pump preventing the accumulation of water and terminating into the storm water drainage system or to a point above grade where erosion will not occur.

**3-8.4.8 Basement Walls.** Basement walls may be used to take the place of recessed perimeter piers, skirting, marriage line column support piers under the end walls, and to support the horizontal pressures of backfill around the home. Basement walls, when used,

shall conform to the following (see **Figure 3-8.4.8**):

(a) The basement floor shall be a minimum of one foot (30.4 cm) above the BFE according to the FIRM unless the foundation wall is opened on one side or end so that flood water cannot be trapped;

(b) Basements shall be permitted only where the ground water level will not flood, or be detrimental to, the basement;

(c) The exterior of the basement walls shall be water proofed below the finished grade;

(d) There shall be a perimeter drain around the basement wall to divert water away from the structure;

(e) The basement shall have a drain with an automatically controlled sump pump capable of preventing the accumulation of water, except daylight basements;

(f) Drains shall terminate into the storm water drainage system or to a termination point where erosion will not occur;

(g) Basement walls shall be constructed of poured-in-place concrete, concrete block, foundation grade lumber, or other materials approved by the authority having jurisdiction;

(h) Basement wall footings shall be at or below the frost line;

(i) Basement walls shall provide a tight fit to the bottom of the manufactured dwelling floor perimeter. Shimming may be permitted between outriggers and other permanent obstructions (see **Figure 3-8.4.5B**);

(j) Basement walls shall be structurally secured to the bottom side of the manufactured dwelling floor;

(k) Basement walls not enclosing a heated space shall provide the required amount of under-floor ventilation;

(l) Basements that create habitable space shall be provided with a means of ventilation capable of providing 0.35 air changes per hour;

(m) Basement walls enclosing the under-floor area of a manufactured

dwelling shall be provided with the minimum required access to the under-floor area;

**(n)** Basements that create living space or that have 6 feet (183 cm) of vertical head room or greater under more than 25 percent of the manufactured dwelling shall be accessible by a stairway or shall have a 36-inch by 80-inch (91 cm by 203 cm) unobstructed exit door through the basement wall opening directly to the outside;

**(o)** Basements shall be designed by an Oregon professional engineer or architect and approved by the authority having jurisdiction; and

**(p)** Basements shall be constructed to Chapter 8, this section and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**.

### **3-9 Under-Floor Enclosures – (Skirting and Retaining Walls)**

**3-9.1 Minimum Requirements.** Except when located in a flood hazard area or where otherwise permitted by the authority having jurisdiction, all manufactured dwellings shall have the under-floor area (also known as the crawl space) enclosed. When the under-floor area is not enclosed with a perimeter foundation wall or basement wall, it shall be enclosed with skirting installed according to this section of the code (**see Figure 3-9.1**):

**(a)** Skirting shall be constructed of a durable rigid material such as painted woods, exterior grade wood composites, exterior grade plywood, vinyl, aluminum, steel, foam, masonry, cement board, or concrete;

**(b)** Skirting materials shall be manufactured and intended for exterior use;

**(c)** Skirting materials that will deteriorate when exposed to the elements shall not be used;

**(d)** Non-structural skirting shall not be used to support any loads except as necessary to carry its own weight and to resist the elements;

**(e)** Skirting shall be self-supporting but may be attached to the bottom of the manufactured dwelling floor for stability;

**(f)** Skirting shall be adequately secured to assure stability and to minimize vibration and susceptibility to wind damage;

**(g)** Skirting shall be installed to compensate for possible frost heave and settling but is not required to have a footing located at or below the frost line;

**(h)** Holes or gaps below the skirting shall be sealed to resist air and water infiltration;

**(i)** Skirting shall be designed to resist the entrance of moisture into the under-floor area; and

**(j)** Skirting shall not be attached to a manufactured dwelling in a manner that traps water between the skirting and the home's siding or trim.

**3-9.2 Structural Skirting.** Structural skirting may be used to anchor a manufactured dwelling and to replace recessed perimeter piers. Structural skirting shall fit tight to the footing and to the bottom of the manufactured dwelling floor. Structural skirting may be constructed on site or prefabricated according to the following (**see Figure 3-9.2**):

**(a)** The skirting shall be supported by a concrete foundation footing or slab.

**(b)** The framework shall be made of wood or metal and have top and bottom plates and vertical studs spaced at 16 inches (41 cm) on center;

**(c)** The bottom plate shall be foundation grade pressure treated lumber attached to a concrete footing with ½-inch by 7-inch (13 mm by 178 mm) foundation bolts or other approved anchoring devices at 6 feet (183 cm) on center and beginning within 12 inches (30.5 cm) from each end.

**(d)** The top plate shall be attached to the under side of the manufactured dwelling floor joists. Shimming may be permitted between outriggers and other permanent obstructions (**see Figure 3-8.4.5B**);

- (e) The framework shall be covered on the outside with a minimum of ½ inch (13 mm) CDX plywood sheathing rated for ground contact or equal material;
- (f) Up to 8" of unbalanced fill may be supported by this type skirting;
- (g) Skirting shall not be braced horizontally against the manufactured dwelling chassis or any part of the manufactured dwelling foundation system;
- (h) Sheathing or siding shall be secured to the framework according to the sheathing or siding manufacturer's installation instructions; and
- (i) Skirting shall be provided with the required amount of under-floor ventilation.

### **3-9.3 Nonstructural Wood Skirting.**

Skirting constructed on site with sheathing or siding material shall be supported by a wood or metal framework constructed according to the following (**see Figure 3-9.3**):

- (a) The framework shall have top and bottom horizontal rails or plates and shall have vertical members at 16 inches (41 cm) on center;
- (b) Wood framing material shall not be located within 5-1/2 inches (14 cm) of the ground except when separated and protected from the earth with 3 inches (76 mm) of metal, concrete, or wood polymer composite and a layer of 15 pound (68 kg) felt roofing underlayment, or when the wood is pressure treated foundation grade lumber;
- (c) Top horizontal rails may be fastened to the bottom of the manufactured dwelling floor for support;
- (d) Bottom horizontal rails may be eliminated when steel or fiberglass stakes are fastened to each vertical member and driven into the ground with a minimum penetration of 6 inches (15 cm) into firm soil, 18 inches (45 cm) into soft soil, or as necessary to secure the frame work and skirting in place;
- (e) Up to 8 inches (20.3 cm) of unbalanced fill may be supported by this type skirting;

(f) Skirting made of cement board, untreated plywood, and wood composite materials shall not be located within 5-1/2 inches (14 cm) of the ground except when separated from the earth by 3 inches (76 mm) of metal, concrete, or wood polymer composite and a layer of 15 pound (68 kg) felt roofing underlayment;

- (g) Skirting shall not be braced horizontally against the manufactured dwelling chassis or any part of the manufactured dwelling foundation system;
- (h) Sheathing or siding shall be secured to the framework according to the sheathing or siding manufacturer's installation instructions;
- (i) Skirting shall be provided with the required amount of under-floor ventilation; and
- (j) Recessed perimeter support piers are required according to **Table 3-B** with this type of skirting.
- (k) Materials making ground contact shall be tested and approved for ground contact.

### **3-9.4 Nonstructural Skirting (Vinyl or Metal).**

Skirting constructed on site with light weight aluminum or vinyl panels shall be supported by a top and bottom channel and constructed according to the following (**see Figure 3-9.4**):

- (a) Shall be secured to the bottom of the perimeter floor joists;
- (b) Shall be secured to the ground or to a footing with approved materials;
- (c) Skirting panels shall be placed into the top and bottom channels and secured or interlocked together around the perimeter of the manufactured dwelling;
- (d) Skirting shall not be braced horizontally against the manufactured dwelling chassis or any part of the foundation system;
- (e) There shall not be any unbalanced fill supported by this type skirting;
- (f) Skirting shall be provided with the required amount of under-floor ventilation,

- (g) Skirting shall be installed according to the manufacturer's installation instructions, where applicable; and
- (h) Recessed perimeter support piers are required according to **Table 3-B** with this type of skirting.

**3-9.5 Prefabricated Structural Skirting.** A prefabricated skirting system shall be (see **Figure 3-9-5**):

- (a) Capable of resisting the entrance of wind and moisture to the underside of the manufactured dwelling;
- (b) Acceptable to the authority having jurisdiction, but is not required to be tested, listed, or engineered;
- (c) Installed according to the skirting manufacturer's installation instructions;
- (d) The installer shall place the installation instructions with the permit in the information packet for use by the inspector;
- (e) Sheathing or siding attached to a prefabricated skirting support shall be supported and attached according to the sheathing or siding manufacturer's installation instructions;
- (f) There shall not be unbalanced fill in excess of eight (8) inches supported by prefabricated skirting unless specifically allowed by design in the skirting manufacturer's installation instructions; and
- (g) Such designed backfill provision may not transfer any horizontal loading to the manufactured home, and must be supported solely by the skirting structure;
- (h) Prefabricated skirting may take the place of recessed perimeter pier supports if rated for a 4,000 pound (1800 kg) design load, supported on a minimum 256 square inch (1652 cm<sup>2</sup>) footing, and spaced according with **Table 3-B** of this code; and
- (i) Prefabricated skirting shall provide the required amount of under-floor ventilation.

**3-9.6 Masonry Block Skirting.** Masonry block skirting shall be

assembled according to the following (see **Figure 3-9.6**):

- (a) Masonry block skirting, not used for perimeter support, shall be made with concrete masonry units, cinder block, pumice block, brick, block, or stone and shall be a minimum of 4 inches (10 cm) thick and is not required to be rated for structural strength;
- (b) Masonry block skirting shall be supported by and mortared to a concrete footing a minimum of 12 inches (30 cm) wide by 5-1/2 inches (14 cm) deep, or on a footing described in **Section 3-5.12.1** of this code;
- (c) Masonry block skirting shall be mortared at each joint or dry stacked and filled with concrete, or dry stacked and interlocked when manufactured with an interlocking system;
- (d) Masonry block skirting may support up to 8 inches (20 cm) of unbalanced fill without having to be constructed as a foundation wall or retaining wall;
- (e) Masonry block skirting may take the place of the recessed perimeter pier supports if constructed with **ASTM rated** concrete block and capped with a pier cap and shimmed up to the bottom of the floor at each location required in **Table 3-B** of this code; and
- (f) Masonry block skirting shall provide the required amount of under-floor ventilation.

**3-9.7 Insulated Concrete Form (ICF) Skirting.** Skirting constructed with insulated concrete forms (ICF's) shall be assembled according to the following (see **Figure 3-9.7**):

- (a) ICF skirting shall be a minimum of 7 inches (18 cm) thick;
- (b) ICF skirting shall be supported by a 12 inch (30 cm) wide by 5-1/2 inch (14 cm) deep concrete footing, or on a footing described in **Section 3-5.12.1** of this code;
- (c) ICF's shall be filled with concrete;
- (d) ICF skirting may support up to 8 inches (20 cm) of unbalanced fill without having to be constructed as a foundation wall or retaining wall;



(e) ICF skirting may take the place of the recessed perimeter pier supports if capped with a pier cap and shimmed up to the bottom of the floor at each location required in **Table 3-B** of this code; and

(f) ICF skirting shall be provided with the required amount of under-floor ventilation.

### **3-9.8 CMU Retaining Wall Skirting.**

Concrete masonry unit (CMU) perimeter retaining walls may be used to take the place of skirting and to support the horizontal pressures of backfill around the manufactured dwelling. CMU perimeter retaining walls, when used, shall conform to the following (**see Figure 3-9.8**):

(a) CMU retaining walls shall be constructed with ASTM rated concrete block;

(b) CMU retaining wall footings shall be at or below the frost line;

(c) CMU retaining wall footings shall be supported by 12" (30 cm) wide x 8" (20 cm) deep concrete with #4 horizontal rebar centered vertically and not closer than 3" to the side.

(d) CMU retaining walls shall be self supporting;

(e) CMU blocks shall be mortared at each joint;

(f) CMU blocks a minimum of 8-inches (20 cm) by 8-inches (20 cm) by 16-inches (40 cm), are not required to be grout or concrete filled. CMU blocks less than 8 inches (20 cm) in width must be grout or concrete filled and vertical #4 rebar must be installed from within the footing to the top of the foundation every 48" and a continuous #4 horizontal rebar within 8" (20 cm) of the top of the foundation;

(g) CMU retaining walls shall provide the required amount of under-floor ventilation;

(h) CMU retaining walls shall provide the required access to the under-floor area;

(i) CMU retaining walls shall be constructed according to this code; or

the **Oregon One and Two Family Dwelling Specialty Code**;

(j) CMU retaining walls may support up to 28 inches (71 cm) of unbalanced fill; and

(k) CMU retaining walls may take the place of the recessed perimeter pier supports if capped with a pier cap and shimmed up to the bottom of the floor at each location required in **Table 3-B** of this code.

(l) CMU retaining walls shall not be braced off of any part of the manufactured dwelling or manufactured dwelling foundation except during the pouring of cement.

### **3-9.9 Insulated Concrete Form (ICF) Retaining Wall Skirting.**

Insulated concrete form (ICF) perimeter retaining walls may be used to take the place of skirting and to support the horizontal pressures of backfill around the manufactured dwelling. ICF perimeter retaining walls, when used, shall conform to the following (**see Figure 3-9.9**):

(a) ICF retaining walls shall be constructed of ICBO listed insulated concrete forms block;

(b) ICF retaining wall footings shall be at or below the frost line;

(c) ICF retaining wall footings shall be supported by 12" (30 cm) wide x 8" (20 cm) deep concrete with #4 horizontal rebar centered vertically and not closer than 3 inches (7.6 cm) to the side.

(d) Within the foundation wall, vertical #4 rebar must be installed from within the footing to the top of the foundation every 48" and a continuous #4 horizontal rebar within 8" (20 cm) of the top of the foundation;

(e) ICF retaining walls shall be self supporting;

(f) ICF retaining walls shall provide the required amount of under-floor ventilation;

(g) ICF retaining walls shall provide the required access to the under-floor area;

(h) ICF retaining walls shall be constructed according to this code and

the manufacturer's installation instructions or the **Oregon One and Two Family Dwelling Specialty Code**;

(i) ICF retaining walls may take the place of the recessed perimeter pier supports if capped with a pier cap and shimmed up to the bottom of the floor at each location required in **Table 3-B** of this code.

(j) ICF retaining walls shall not be braced off of any part of the manufactured dwelling or manufactured dwelling foundation except during the pouring of cement.

### **3-9.10 Under-Floor Separations.**

When factory-built porches (includes factory-built decks, landings, and similar areas) do not have a solid waterproof floor surface and allow air and moisture to pass through to the under-floor area (also known as crawl space), there shall be a separation between the under-floor area of the porch and dwelling to prevent the migration of moisture to the underside of the home. The separation shall be made according to one of the following:

(a) The under-floor enclosure shall be placed below the recessed exterior walls of the manufactured dwelling (**see figure 3-9.10A**); or

(b) The under-floor enclosure shall be placed below the outside perimeter of the factory-built porch and a durable, rigid or flexible, curtain wall material (i.e. sheet vinyl, plexiglas, fiberglass, rubber membrane, ABS, pressure treated wood, or EPDM) is placed below the recessed exterior walls of the manufactured dwelling (**see figure 3-9.10B**).

## **3-10 Under-Floor Ventilation and Access**

### **3-10.1.1 Under-Floor Ventilation.**

Foundation walls, perimeter retaining walls, skirting, and some basement walls used to enclose the under-floor area (also known as the crawl space) of a manufactured dwelling shall be vented

according to the following (**see Figures 3-10.2.1 and 3-10.2.2**):

(a) Each manufactured dwelling shall have cross ventilation on at least two sides of the dwelling;

(b) There shall be a minimum of four ventilation openings provided through the under-floor enclosure;

(c) Ventilation openings shall begin at or within 3 feet (91 cm) of a corner and then be evenly spaced;

(d) Ventilation openings shall not be located at the marriage lines, or where the free flow of air would be restricted or obstructed;

(e) Ventilation openings shall be placed as high as possible except in a flood hazard area where the vents shall be located within 12 inches (30cm) of the interior grade;

(f) Under-floor vents may be omitted when the manufactured dwelling is placed over a basement containing a living area;

(g) Ventilation openings may be of a closable type for seasonal climatic conditions unless the stand is located at or below the BFE in which case closable vents are prohibited;

(h) Ventilation openings shall be provided with maximum ¼-inch (6 mm) corrosion-resistant wire mesh or with louvered openings with not less than 1/8-inch (3 mm) screen to retard the entry of vegetation, waste materials, and rodents; and

(i) Ground level installations shall have vent wells installed where backfill or pavement would otherwise block the vent opening. Vent wells shall be constructed according to **Figure 3-10.1.1A & B**.

### **3-10.1.2 Ventilation Sizing** The under-floor net free ventilation area will:

(a) Be equivalent to 1 square foot (930 cm<sup>2</sup>) for every 150 square feet (14 square meters) of under-floor area, as shown in **Table 3-D** of this code;

(b) When a vent does not include a rating of the net free area, deduct 25 percent of the gross ventilation area for

vent hardware such as screens or louvers; and

(c) Under-floor vents may be omitted when continuously operated mechanical ventilation is provided at a rate of 1.0 cfm for each 50 square feet (1.02 L/s for each 10 m<sup>2</sup>) of under-floor area.

**3-10.1.3 Under-Floor Equipment Venting.** Equipment and appliances that vent through the floor or under the floor of the manufactured dwelling shall conform to the following:

(a) Combustion air for fuel burning appliances may be taken from the manufactured dwelling's under-floor area, except when the manufactured dwelling is installed over a habitable basement. Manufactured dwellings placed over a habitable basement shall have the combustion air for heat-producing appliances ducted in from outside the basement area;

(b) Combustion air for fuel burning appliances may be taken from the under-floor area without increasing the size or number of the under-floor vents;

(c) Except for combustion air, intake air for indoor ventilation purposes shall not be drawn from the under-floor area;

(d) Appliance exhaust ducts shall not terminate in the under-floor area but shall be routed to the outside according to the manufacturer's installation instructions; and

(e) Vents and ducts may be run through under-floor vent or access openings providing that the total under-floor ventilation requirement is met and that any penetrations are properly sealed or screened.

**3-10.2 Under-Floor Access.** Access to the under-floor area for the purpose of maintenance and repair of the manufactured dwelling shall comply with this section.

**3-10.2.1 Skirting Access.** Access through the skirting shall meet the following requirements (see Figure 3-10.2.1):

(a) Access opening shall provide a minimum clear opening of 18 inches (46 cm) by 24 inches (61 cm);

(b) There shall be at least 30 inches (76 cm) of unencumbered area directly in front and behind each access door or panel;

(c) The skirting access shall not be obstructed by pier supports, structural members, plumbing, electrical, gas, or mechanical equipment, or by any other material or method;

(d) There shall be no more than four operating devices required to open or remove the access door or panel.

(e) No operating device shall require special tools or more than 5 pounds (2 kg) of force to open or remove the access door or panel;

(f) Access doors or panels shall be easily identifiable or be permanently labeled "ACCESS" in ¾-inch (19 mm) high bold letters; and

(g) There shall be a minimum 6-inch by 6-inch (15 cm by 15 cm) covered hand hole access opening through the under-floor enclosure (foundation wall or skirting) within reach and not more than 12 inches (30 cm) from the main water inlet shutoff valve and the main drain cleanout if either is located under the manufactured dwelling.

**3-10.2.2 Ground Level Access (Pit Sets).** Foundation walls, retaining walls, and some basement walls shall be provided with an under-floor ground level access well constructed according to the following (see Figure 3-10.2.2):

(a) The access well shall be constructed of the same materials as approved for foundation wall, retaining wall, or basement wall;

(b) The access well shall have a minimum inside horizontal dimension of 24 inches (61 cm) by 36 inches (91 cm), and a vertical dimension of 24 inches (61 cm);

(c) The access shall provide a minimum clear opening of 18 inches (46 cm) by 24 inches (61 cm) through the foundation wall, retaining wall, or

basement wall to the underside of the home;

**(d)** The access well shall have a removable water resistive cover weighing not more than 50 pounds (23 kg), made to resist the entrance of rodents and animals, without a locking device, and have handles or a method of opening without the use of special tools.

### **3-10.2.3 Through the Floor Access.**

Access to the under-floor area through the floor of a manufactured dwelling shall **(see Figure 3-10.2.3)**:

**(a)** Be constructed according to the manufacturer's approved DAPIA plans;

**(b)** Have a minimum clear opening of 24 inches (61 cm) by 30 inches (76 cm);

**(c)** Have an access panel that is tight fitting, capable of resisting rodents, insulated with an R-value equivalent to the insulation within the floor cavity;

**(d)** Have an access panel weighing not more than 50 pounds (23 kg) with a handle or method of opening that does not require the use of tools;

**(e)** Have a minimum 24 inch (61 cm) by 30 inch (76 cm) wide by 48 inch (122 cm) high space directly above the access panel without any permanent obstructions; and

**(f)** Be made available for inspectors and service personnel.

**3-10.2.4 Stairway Access Through the Floor.** Stairways within a manufactured dwelling shall comply with the following:

**(a)** Access openings through the manufactured dwelling floor or ceiling for stairways shall be constructed according to the manufacturer's approved DAPIA plans;

**(b)** Stairways, landings, guardrails, handrails, and headroom used for access to a basement, second floor, or between multi level floors shall be constructed and installed according to **Sections 312, 313, 314, and 315** of the **Oregon One and Two Family Dwelling Specialty Code** whether constructed on site or in the factory.

## **3-11 Marriage Line Connection and Seal**

**3-11.1 Preparation.** Prior to joining the sections of a multi-section manufactured dwelling:

**(a)** Remove all shipping and close-up materials from the marriage line floor, wall, and roof areas between the sections so there are no exposed or protruding fasteners, material scraps, or other protrusions on either side of the marriage line.

**(b)** Install a durable, non-porous caulking, closed cell foam, urethane, or sill seal on the floor, wall, and roof areas of the marriage line between each section **(see Figure 3-11.1)**.

**1.** Caulking, when used, shall be capable of compressing and stretching; and

**2.** Sill seal, if used, shall be a minimum of 5-1/2 inches (13.97 cm) wide, double over, and attached with fasteners staggered at 6 inches (15 cm) on center.

**(c)** Move the sections together and shim any gaps with wood shims and expansive foam or other air infiltration barrier listed in this section. Gaps larger than 1" must be shimmed with full depth wood at the bolt locations. Gaps larger than 1½ inches (3.81 cm) shall be referred to the manufacturer for correction.

**3-11.2 Marriage Line Attachments.** Secure each section of the manufactured dwelling according to this section of the code.

**3-11.2.1 Ridge Beam Connections.** Multi-section manufactured dwellings shall be secured together:

**(a)** With ½-inch (13 mm) diameter bolts installed with washers, spaced equally along the length of the ridge beam, and at a maximum of 32 inches (81 cm) on center. Bolts shall be long enough to penetrate through both beams, washers, and all shimming material, and have 1-inch of exposed thread for installing the nut. Bolts shall be installed 2 inches (5

cm) below the top of the ridge beam, at a 90 degree angle to the beam, through 5/8-inch (18 mm) diameter pre-drilled holes **(See Figure 3-11.2.1A)**;

**(b)** With 3/8 inch (10 mm) diameter lag screws installed with washers, spaced equally and staggered side to side the length of the ridge beam and at a maximum of 16 inches (41 cm) on center. Lag screws shall be long enough to penetrate through both ridge beams. Lag screws shall be installed through pre-drilled pilot holes with a diameter equal to half the diameter of the lag screw. Lag screws shall be installed at a 45 to 90 degree angle. **(see Figure 3-11.2.1B)**;

**(c)** With #10 wood screws, spaced equally and staggered side to side the length of the ridge beam and at a maximum of 12 inches (30 cm) on center. Wood screws shall be installed at a 45 to 90 degree angle and require no pre-drilling. Wood screws shall be long enough to penetrate through both ridge beams. **(see Figure 3-11.2.1C)**; or

**(d)** When permitted by the manufacturers installation instructions, with 1-1/2 inch (38 mm) wide, by 10 inch (25 cm) long, by 30 gauge galvanized steel straps spaced equally along the length of the ridge beam at a maximum of 32 inches (81 cm) on center and fastened into the top chords of the rafters or trusses on each side of the ridge beam with three #8 by 1 inch (25 mm) wood screws at each end of each strap **(see Figure 3-11.2.1D)**; and

**(e)** When a ridge beam column support post is located on one side only of a marriage line, install eight 1/2 inch (13 mm) diameter bolts with washers or ten 3/8 inch (10 cm) lag screws through both ridge beams, spaced at 2 to 4 inches (5 to 10 cm) on center horizontally and centered over each applicable column support post **(see Figure 3-11.2.1E)**. Use the same fastening specifications identified in (a) or (b) of this subsection;

**(f)** To reduce tape and texture cracking, in addition to the ridge beam

securement in (a) through (d) of this subsection, you may also secure the ridge beams from the ceiling side;

**(g)** Marriage line fasteners (i.e. bolts, lag screws, and wood screws) shall only be installed in areas where there is solid ridge beam material or equal between the sections; and

**(h)** Where it is not possible to secure the beams according to these instructions, secure according to the manufacturer's installation instructions.

**3-11.2.2 Wall Connections.** Marriage line walls of multi-section manufactured dwellings shall be secured together according to the following:

**(a)** End walls shall be secured with #10 wood screws, spaced equally at 12 inches (30 cm) on center on one side or staggered from side to side of the mating studs to 6 inches (15 cm) of the floor and ceiling **(see Figure 3-11.2.2A)**; or

**(b)** End walls shall be secured with 3/8 inch (10 mm) diameter lag screws installed with washers, spaced equally and staggered from side to side of the mating studs at a maximum of 24 inches (61 cm) on center. Lag screws shall be sized long enough to penetrate through the studs on both sides of the marriage line walls. Lag screws shall be installed through pre-drilled pilot holes with a diameter equal to half the diameter of the lag screw **(see Figure 3-11.2.2B)**.

**(c)** Interior marriage line walls shall be secured with # 8 wood screws, spaced equally at 16 inches (41 cm) on center on one side or staggered from side to side of the mating studs to 8 inches (20 cm) of the floor and ceiling **(see Figure 3-11.2.2C)**.

**(d)** Marriage line fasteners (i.e. lag screws and wood screws) shall be installed only in areas where there are solid studs on both sides of the marriage line and are long enough to penetrate through the studs on both sides of the marriage line walls.

**3-11.2.3 Floor Connections.** Floors of multi-section manufactured dwellings shall be secured together according to the following:

(a) With ½ inch (13 mm) bolts and washers installed through each marriage clip under the floor and drawn tight with a nut (**see Figure 3-11.2.3A**). If the marriage clips are welded to the chassis outriggers, they may also be used to provide an electrical bond between the two steel chassis when star washers are used in contact with the chassis paint (see Chapter 4 of this code); or

(b) With 3/8-inch (10 mm) diameter lag screws installed with washers, spaced equally and staggered from side to side of the mating joists 24 inches (61 cm) on center. Lag screws shall be installed into the rim joists at a 45 to 90 degree angle. Lag screws shall be sized long enough to penetrate through both rim joists. Lag screws shall be installed through pre-drilled pilot holes with a diameter equal to half the diameter of the lag screw; (**see Figure 3-11.2.3B**); or

(c) With #10 wood screws, spaced equally, staggered from side to side of the mating joists 12 inches (30.5 cm) on center. Wood screws shall be installed into the floor rim joists at a 45 to 90 degree angle. Wood screws shall be sized long enough to penetrate through both rim joists. (**see Figure 3-11.2.3C**).

**3-11.3 Weather Seal.** All joints between the manufactured dwelling sections shall be sealed and weather-stripped to limit heat loss and prevent air, moisture, and other damaging infiltration.

**3-11.3.1 Roof Seal.** Manufactured dwelling roofs of multi-section manufactured dwellings shall be sealed according to the following (**see Figure 3-11.3.1A & B**):

(a) Roofing at the marriage line seam shall be sealed with 10 inch (25 cm) wide roofing underlayment centered over the seam the entire length of the roof;

(b) The roof cap shall be attached according to the roofing manufacturer's installation instructions. Field installed shingled roof caps (hip and ridge shingles) shall be oriented with respect to the prevailing winds;

(c) Ceilings at the marriage line seam shall be sealed with material of the same type and thickness as the ceiling material or covered with wood or foam molding attached with appropriate fasteners;

(d) Holes from shipping material fasteners in the roofing material shall be sealed with approved roofing cement. Sealant shall be placed under the shingles or if exposed shall be of the same color as the roofing material;

(e) All damaged roofing shall be replaced with a like material;

(f) All roofing material shall be installed according to the roofing manufacturer's installation instructions; and

(g) All roof penetrations for site installed plumbing vents, mechanical vents, or chimneys shall be sealed according to this code and the product manufacturer's installation instructions (**see Figure 3-11.3.1C**).

**3-11.3.2 Wall Seal.** Manufactured dwelling walls of multi-section manufactured dwellings shall be sealed according to the following (**see Figure 3-11.1**):

(a) Exterior wall seams at the marriage line shall be closed up with siding material of the same type, grade, and color as used on the manufactured dwelling;

(b) Interior wall seams at the marriage line shall be sealed with material of the same type and thickness as the wall material or covered with wood or foam molding attached with the appropriate fasteners;

(c) All damaged siding shall be repaired to the manufacturer's instructions or replaced with the same type, grade, thickness, and color as the manufactured dwelling siding;

**(d)** All wall penetrations for mechanical, electrical or plumbing fixtures or devices shall be sealed;

**(e)** All insulation removed or displaced during the installation and testing of the manufactured dwelling shall be put back in place to limit heat loss;

**(f)** All access panels shall be attached in place to prevent the entrance of rodents and to minimize air leakage, water infiltration, and limit heat loss;

**(g)** Doors and windows shall be adjusted, squared, secured in place, sealed, and made operational to provide security, egress and minimize air leakage and water infiltration; and

**(h)** Damaged to doors or windows affecting their safety, operation, or thermal performance shall be repaired or replaced.

**3-11.3.3 Floor Seal.** Manufactured dwelling floors of multi-section manufactured dwellings shall be sealed according to the following (**see Figure 3-11.1**):

**(a)** The bottom side of the floor's marriage line seam shall be sealed to prevent the entrance of rodents;

**(b)** Floor surfaces shall be made smooth and level before finish-flooring material is installed;

**(c)** All floor decking penetrations for mechanical, electrical, gas, or plumbing equipment or devices shall be sealed;

**(d)** All insulation removed or displaced during the installation and testing of the manufactured dwelling shall be put back in place to limit heat loss;

**(e)** All access panels shall be attached in place to prevent the entrance of rodents, to minimize air leakage and water infiltration, and to limit heat loss;

**(f)** All cuts, holes or tears in the bottom board or floor insulation including but not limited to areas around structural connections and plumbing, mechanical, electrical, gas, and heating equipment penetrations shall be adequately repaired to prevent the entrance of rodents and to limit heat loss; and

**(g)** All access panels shall be attached in place to prevent the entrance of rodents and to limit heat loss and air infiltration.

### **3-12 Access and Egress**

**3-12.1 Access and Egress.** All manufactured dwellings shall be provided with access to and egress from the home according to this section of the code. Upon completion of the installation, each manufactured dwelling shall conform to the following requirements:

**(a)** Each manufactured dwelling shall have a minimum of two egress doors;

**1.** These egress doors may exit into a cabana or garage if the cabana or garage also has equally sized egress doors exiting directly to the exterior; and

**2.** These egress doors shall not exit into a basement, a second story, or an area with no exit.

**(b)** Each of the two required egress doors on a manufactured dwelling shall be accessible by steps or ramps unless the door threshold(s) or factory-built landing is within 8 inches (20 cm) of grade;

**(c)** Manufactured dwelling egress doors shall have landings according to the following:

**1.** A 3 foot by 3 foot (91 cm by 91 cm) landing is required on the exterior of the main egress door (usually located in or near the living room) unless the manufactured dwelling was manufactured with an equivalent landing or the door threshold is within 8 inches (20 cm) of grade or a sidewalk, deck, or patio;

**2.** A 3 foot by 3 foot (91 cm by 91 cm) landing is required on the exterior of the secondary egress door (usually located in or near the laundry room or kitchen) unless the manufactured dwelling was manufactured with an equivalent landing or the door threshold is within 8 inches (20 cm) of grade or a sidewalk, deck, or patio. A landing is not required on the secondary egress door if the door is an in-swing door, excluding screen or storm

doors, and the top step approaching the door is within 8 inches (20 cm) vertically of the door threshold.

**(d)** All factory-built or site constructed ramps, steps, stairways, porches, decks, and landings used to provide egress from the manufactured dwelling or any accessory building or structure shall be constructed according to this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**;

**(e)** Factory-built or site constructed porches, decks, landings and stairways shall have handrails and guardrails constructed and installed according to **Section 315** of the **Oregon One and Two Family Dwelling Specialty Code**;

**(f)** Temporary steps and stairways, landings, guardrails, and handrails not in compliance with this code shall be replaced prior to the final inspection;

**(g)** Footings for exterior steps, ramps, landings, porches, or decks are not required to be placed below the frost line;

**(h)** Each egress door and window shall be adjusted as necessary and made operable so they are capable of opening and closing as designed and able to be locked from the inside of the manufactured dwelling; and

**(i)** Bars, grills, covers, screens, or other obstructions placed over required egress windows or doors shall be releasable or removable from the inside without the use of a key, tool, or special knowledge.

**3-12.2 Temporary Steps.** Temporary steps are intended for use during the installation of a manufactured dwelling only and are not designed or intended for continuous use by the occupants. Temporary steps shall be designed for the applicable loads and be constructed according to the following (**see Figure 3-12.2A & B**)

**(a)** Temporary steps shall be a minimum of 30 inch (91 cm) wide, a maximum of 48 inch (122 cm) high, with a maximum 8 inch (20 cm) tread rise, and a

minimum 9 inch (23 cm) tread run. There shall not be more than a 3/8 inch (10 mm) difference in height of any tread rise or the depth of any tread run within the same flight of stairs. (After January 1, 2004, all temporary steps shall be a minimum of 36 inches (91 cm) wide and have a maximum 8 inch (20 cm) tread rise and a minimum 10 inch (25 cm) tread run)

**(b)** Temporary steps shall be constructed of metal, fiberglass, or with Number 2 or better grade board lumber. (After January 1, 2004, all temporary steps shall have a non-slip surface (i.e. grip tape, granulated shingles, or equal) on each tread run);

**(c)** Temporary steps shall be provided with a handrail on one side 30 inches (76 cm) to 34 inches (86 cm) above the stair tread when there are three or more risers. (After January 1, 2004, all temporary steps having a top step at 30 inches (76 cm) or higher shall have handrails and intermediate rails on both sides);

**(d)** Temporary steps shall be supported in a manner that provides safe, level, and stable stairs;

**(e)** Temporary steps shall be identified "temporary" in 2 inch (5 cm) high letters by paint, label, decal or stencil. (After January 1, 2004, all temporary steps shall be marked "temporary" in red);

**(f)** Temporary steps shall be provided with a top step not more than 8 inches (20 cm) below the door threshold (no landing is required) and placed parallel with the door opening;

**(g)** Temporary steps shall be replaced with permanent steps or ramps prior to the final inspection unless modified to meet the requirements for permanent steps; and

**(h)** Temporary steps, which have become structurally unstable or in disrepair shall not be sold, rented, or loaned until adequately repaired.

**3-12.3 Inspection Approval.** The final inspection shall not be approved until temporary steps are removed and a



permanent means of access has been provided to each of the two required exit doors on the manufactured dwelling.

**TABLE 3-A**  
**GEOGRAPHICAL REQUIREMENT SCHEDULE**

COUNTIES	SNOW ELEVATION <sup>(1)</sup>	SEISMIC ZONES <sup>(2)</sup>	FROST DEPTH <sup>(3)</sup>	WIND AREAS <sup>(4)</sup>
BAKER	3,200 feet	2b	24	Standard
BENTON	400 feet	3	12	Standard
CLACKAMAS	500 feet	3	12	Standard
CLATSOP	400 feet	3	12	High
COLUMBIA	400 feet	3	12	Standard
COOS	400 feet	4	12	High
CROOK	4,100 feet	2b	18	Standard
CURRY	400 feet	4	12	High
DESCHUTES	4,000 feet	2b	18	Standard
DOUGLAS	1,500 feet	3 & 4 <sup>(2-a)</sup>	18	Standard & High <sup>(4-a)</sup>
GILLIAM	3,000 feet	2b	24	High
GRANT	4,100 feet	2b	24	Standard
HARNEY	4,100 feet	2b	24	Standard
HOOD RIVER	(see note 1-b&c)	3	24	High
JACKSON	2,000 feet	3	18 <sup>(3-a)</sup>	Standard
JEFFERSON	4,100 feet	2b	18	High
JOSEPHINE	4,100 feet	3	18 <sup>(3-a)</sup>	Standard
KLAMATH	4,000 feet	3	24	Standard
LAKE	4,200 feet	2b	24	Standard
LANE	500 feet	3 & 4 <sup>(2-a)</sup>	12	Standard & High <sup>(4-a)</sup>
LINCOLN	400 feet	3 & 4 <sup>(2-a)</sup>	12	High
LINN	700 feet	3	12	Standard
MALHEUR	3,400 feet	2b	24	Standard
MARION	500 feet	3	12	Standard
MORROW	3,000 feet	2b	24	High
MULTNOMAH	500 feet <sup>(1-b)</sup>	3	18	High
POLK	400 feet	3	12	Standard
SHERMAN	2,000 feet	2b	24	High
TILLAMOOK	400 feet	3	12	High
UMATILLA	3,000 feet	2b	24	High
UNION	3,000 feet	2b	24	Standard
WALLOWA	3,000 feet	2b	24	Standard
WASCO	2,000 feet	2b	24	Standard & High <sup>(4-b)</sup>
WASHINGTON	400 feet	3	12	Standard
WHEELER	4,100 feet	2b	24	Standard
YAMHILL	400 feet	3	12	Standard
<b>NOTE</b>				
1: (a) Roof snow loads are 25 pounds per square foot or more above the elevations shown unless otherwise noted.				
(b) For areas in Multnomah and Hood River County with full exposure to the Columbia River Gorge winds shall be designed for 28 pounds per square foot.				
(c) For elevations below 500 feet in Hood River County, the snow load is 50 pounds per square foot				
(d) Pursuant to 24 CFR 3282.11, the authority having jurisdiction may not require manufactured dwellings to be built or installed to a higher snow load.				
(e) Manufactured dwellings may be constructed with a minimum 20-pound per square foot roof load. If the manufactured dwelling is going to be sited in a heavier snow load area than what it is designed for, the home owner may wish to order a stronger roof from the manufacturer, build a protective ramada over the home, or manually remove the snow after each snow fall.				
(f) For elevations above those shown in this table, see Snow Load Analysis for Oregon, published by the Structural Engineers Association of Oregon, Revised 2/78.				
<b>NOTE 2:</b> (a) Seismic Zone 4 includes all that land which lies Westerly of Range 10 West of the Willamette Meridian from the North side of Coos County to the Northerly line of Township 10 South (just South of Otter Rock), and all of Coos and Curry Counties.				
(b) Seismic zones are based on Seismic Zone Map 3-C of this code and the Oregon Structural Specialty Code.				
<b>NOTE 3:</b> (a) The frost depth below 2,500 feet in Jackson and Josephine Counties is 12 inches.				
(b) Frost depths shown are based on those published in the Oregon One and Two Family Dwelling Specialty Code.				
<b>NOTE 4:</b> (a) Douglas and Lane Counties are primarily in the Standard Wind Area except for the areas within 20 miles of the coast which are designated in the High Wind Area.				
(b) Wasco County is primarily in the Standard Wind Area except for the area within 30 miles of the Columbia River.				
(c) Wind Areas are based on Wind Area Map 3-A of this code.				

**TABLE 3-B**  
**PIER SPACING TABLE**

PIER SPACING TABLE	1,000 PSF SOIL CAPACITY	1,250 PSF SOIL CAPACITY	1,500 PSF SOIL CAPACITY	CONCRETE RUNNER OR SLAB
<b>MAIN FRAME PIERS</b>	4' - 5"	5' - 6"	6' - 2"	8' - 0"
<b>PERIMETER SIDEWALL PIERS</b>	4' - 6"	5' - 8"	6' - 5"	8' - 0"
<b>MARRIAGE LINE WALL PIERS</b>	4' - 6"	5' - 8"	6' - 5"	8' - 0"
<b>MARRIAGE LINE FLOOR PIERS</b>	8' - 0"	8' - 0"	8' - 0"	8' - 0"

**NOTES:** PIER SPACING IS BASED ON 256 SQUARE INCH FOOTINGS.

1,000 PSF SOIL CAPACITY CONSISTS OF BARE UNDISTURBED SOIL WITH NO VEGETATION.

1,250 PSF SOIL CAPACITY CONSISTS OF SIX INCHES OF NON COMPACTED ¾" MINUS ROCK. \*

1,500 PSF SOIL CAPACITY CONSISTS OF SIX INCHES OF COMPACTED ¾" MINUS ROCK. \*

CONCRETE RUNNER OR SLAB CONSISTS OF CONTINUOUS CONCRETE FOOTINGS OR A SLAB. \*

\* IF THE SOIL HAS BEEN TESTED OR CAN OTHERWISE BE VERIFIED TO BE EQUAL TO OR BETTER THAN THE SOIL CAPACITIES ABOVE, THE ¾" MINUS ROCK OR COMPACTION, MAY BE OMITTED WHILE STILL USING THE INCREASED SPACING SHOWN IN THE TABLE.

## TABLE 3-C

### RIDGE BEAM SPAN AND FOOTING CAPACITY TABLE

FOOTING SIZE	1,000 PSF SOIL SPAN/CAPACITY	1,250 PSF SOIL SPAN/CAPACITY	1,500 PSF SOIL SPAN/CAPACITY	CONCRETE RUNNER OR SLAB
256 SQ IN 1-16"X16" FOOTINGS	5' - 6" 1,780 #	6' - 11" 2,225 #	7' - 9" 2,500 #	12' - 9" 4,094 #
512 SQ IN 2-16"X16" FOOTINGS	11' - 1" 3,560 #	13' - 10" 4,450 #	15' - 7" 5,000 #	25' - 7" 8,188 #
768 SQ IN 3-16"X16" FOOTINGS	16' - 8" 5,340 #	20' - 10" 6,675 #	23' - 2" 7,500 #	38' - 4" 12,282 #
1,024 SQ IN 4-16"X16" FOOTINGS	22' - 3" 7,120 #	27' - 9" 8,900 #	31' - 3" 10,000 #	51' - 2" 16,376
1,536 SQ IN 6-16"X16" FOOTINGS	33' - 4" 10,680 #	41' - 8" 13,350 #	46' - 10" 15,000 #	
2,048 SQ IN 8-16"X16" FOOTINGS	44' - 6" 14,240 #	55' - 7" 17,800 #	62' - 6" 20,000 #	

**NOTES:**

1. PIERS MAY BE PLACED DIRECTLY ON CONCRETE RUNNERS OR SLABS AND DO NOT REQUIRE ADDITIONAL FOOTING MATERIALS TO BE PLACED.
2. OTHER PIER SPACING IS BASED ON 256 SQUARE INCH FOOTINGS.

1,000 PSF SOIL CAPACITY CONSISTS OF BARE UNDISTURBED SOIL WITH NO VEGETATION.

1,250 PSF SOIL CAPACITY CONSISTS OF SIX INCHES OF NON COMPACTED ¾" MINUS ROCK. \*

1,500 PSF SOIL CAPACITY CONSISTS OF SIX INCHES OF COMPACTED ¾" MINUS ROCK. \*

CONCRETE RUNNER OR SLAB CONSISTS OF CONTINUOUS CONCRETE FOOTINGS OR A SLAB. \*

\* FOR COMBINED SPANS, ADD THE TWO INTERMEDIATE SPANS TOGETHER AND ROUND UP THE RESULTING TOTAL TO THE NEXT HIGHEST SPAN SHOWN ON THE TABLE 3-C ABOVE AND USE THESE FIGURES FOR THE MIDDLE COLUMN SUPPORT (REFER TO FIGURE 3-6.3A and B)

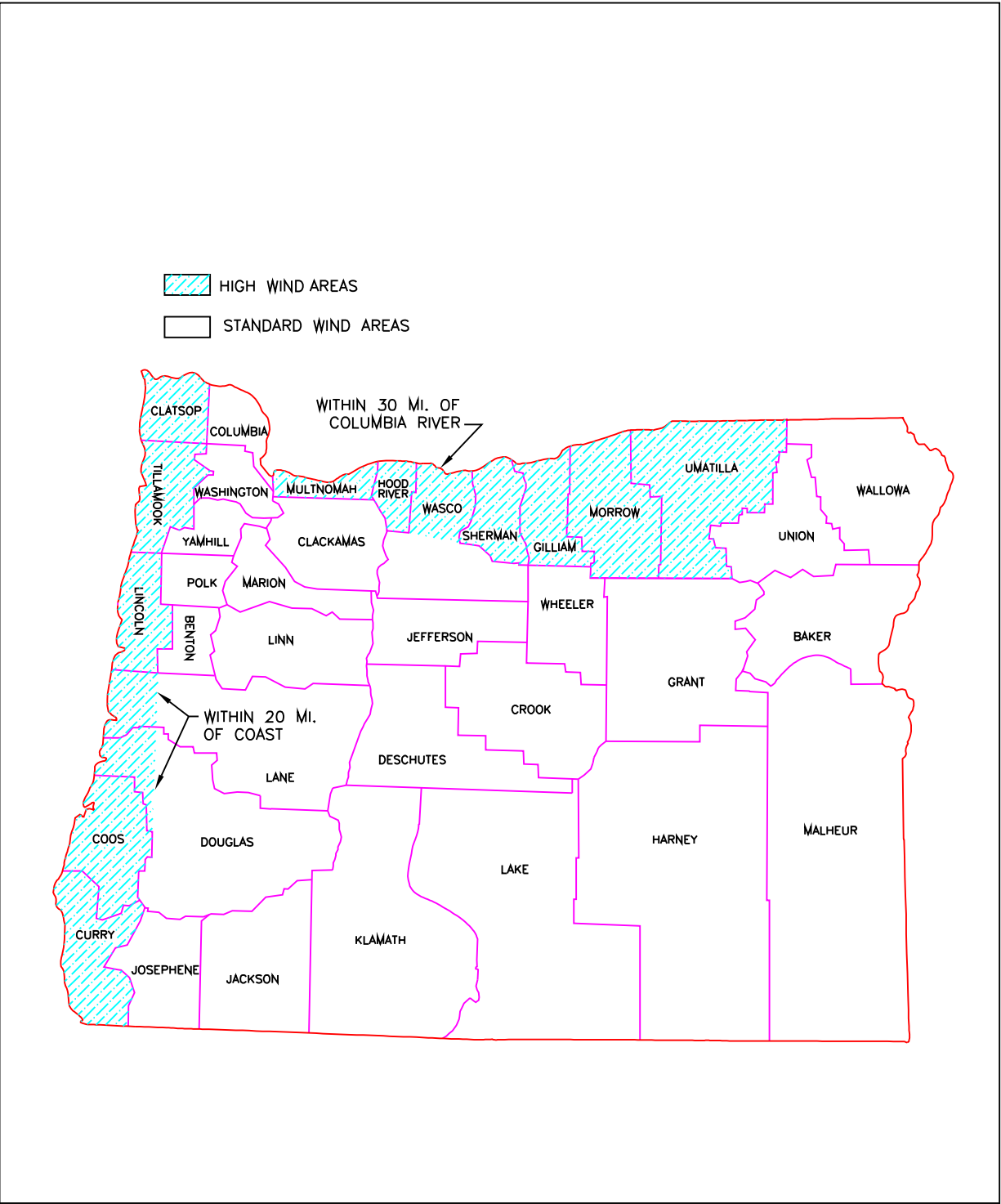
\*\* IF THE SOIL HAS BEEN TESTED OR CAN OTHERWISE BE VERIFIED TO BE EQUAL TO OR BETTER THAN THE SOIL CAPACITIES ABOVE, THE ¾" MINUS ROCK OR COMPACTION MAY BE OMITTED WHILE STILL USING THE INCREASED SPACING SHOWN IN THE TABLE.

**TABLE 3-D**  
**VENTILATION SIZING TABLE @ 1/150**

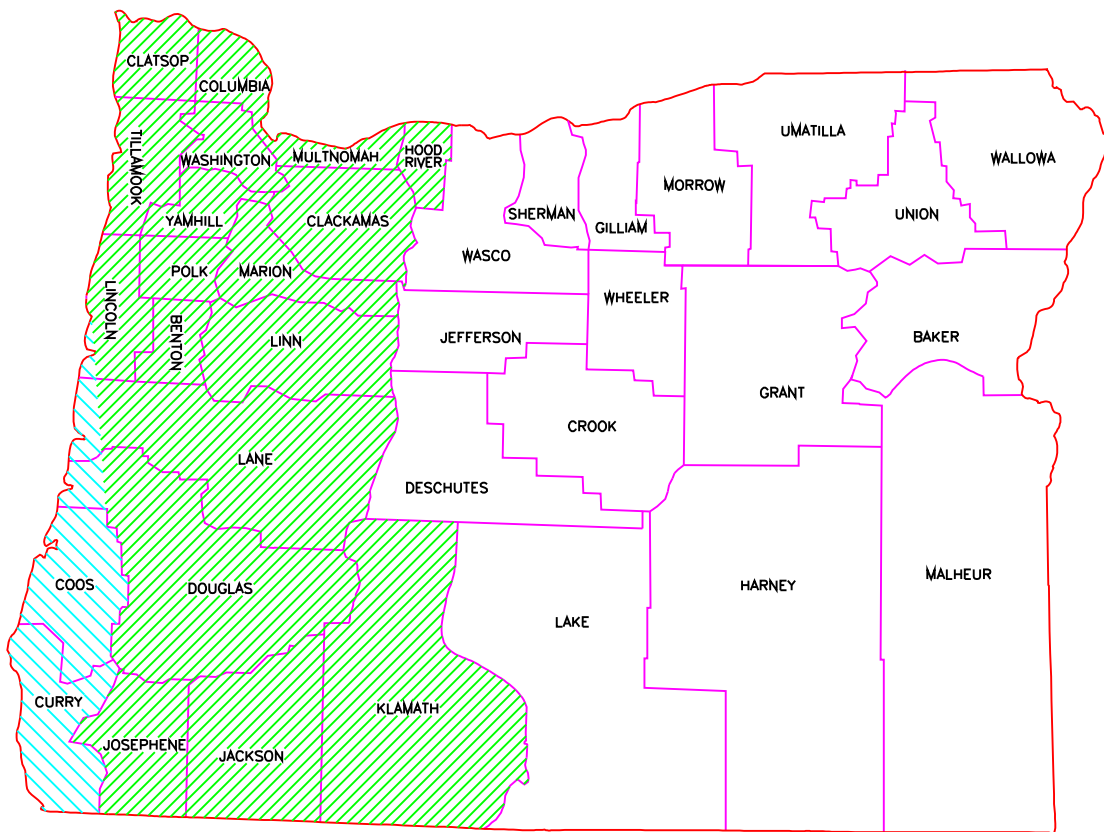
<b>LENGTH</b>	<b>8 FEET WIDE</b>	<b>10 FEET WIDE</b>	<b>12 FEET WIDE</b>	<b>14 FEET WIDE</b>	<b>16 FEET WIDE</b>
<b>40 FEET LONG</b>	307 Sq. Inches	384 Sq. Inches	461 Sq. Inches	538 Sq. Inches	614 Sq. Inches
<b>44 FEET LONG</b>	338 Sq. Inches	422 Sq. Inches	507 Sq. Inches	591 Sq. Inches	675 Sq. Inches
<b>48 FEET LONG</b>	369 Sq. Inches	461 Sq. Inches	553 Sq. Inches	645 Sq. Inches	737 Sq. Inches
<b>52 FEET LONG</b>	399 Sq. Inches	499 Sq. Inches	599 Sq. Inches	699 Sq. Inches	799 Sq. Inches
<b>56 FEET LONG</b>	430 Sq. Inches	538 Sq. Inches	645 Sq. Inches	753 Sq. Inches	860 Sq. Inches
<b>60 FEET LONG</b>	461 Sq. Inches	576 Sq. Inches	691 Sq. Inches	806 Sq. Inches	922 Sq. Inches
<b>64 FEET LONG</b>	492 Sq. Inches	614 Sq. Inches	737 Sq. Inches	860 Sq. Inches	983 Sq. Inches
<b>68 FEET LONG</b>	522 Sq. Inches	653 Sq. Inches	783 Sq. Inches	914 Sq. Inches	1,044 Sq. In.

**NOTE: (1)** To determine the proper amount of manufactured dwelling ventilation, use the following steps:

- (a)** Determine the width and length of each section by measuring the manufactured dwelling floor(s).
- (b)** Using this table, go to the intersecting column and row corresponding with the length and width of the manufactured dwelling section and repeat for each section.
- (c)** Write down the total square inches of net free area of ventilation required for each section and add to find out the total amount of required ventilation for the entire manufactured dwelling.
- (d)** To determine the number of vents needed, divide the total amount of net free area of ventilation required for the manufactured dwelling by the vent capacity of the individual vents.
- (e)** As an alternate to this table, take the total area of the manufactured dwelling in square feet, divide by 150, multiply by 144, and repeat step (d) above.



OREGON WIND AREA MAP		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		MAP 3-A



- SEISMIC ZONE 2B
- SEISMIC ZONE 3
- SEISMIC ZONE 4 \*

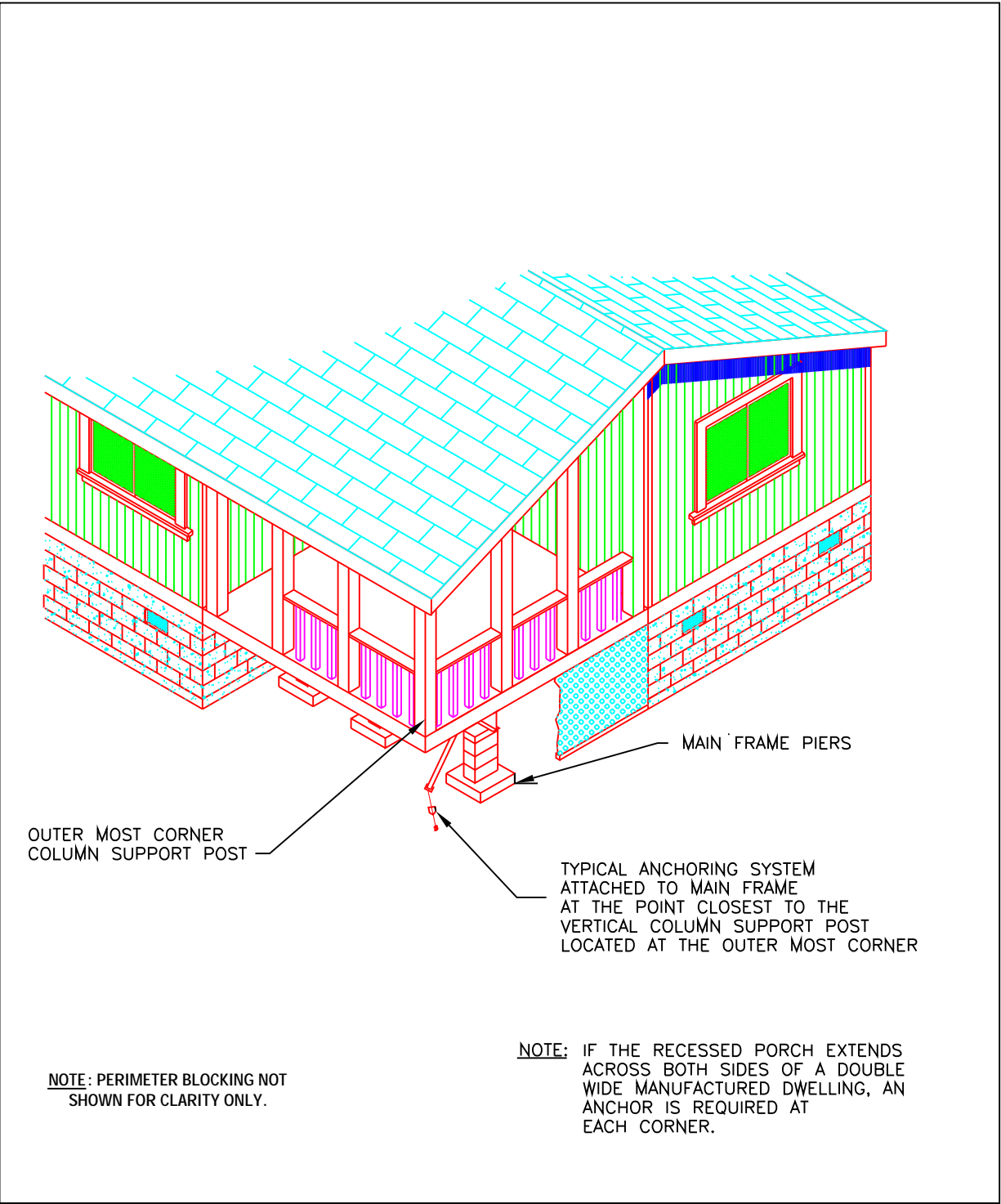
\*ALL THAT LAND WHICH LIES WESTERLY OF RANGE 10 WEST OF THE WILLAMETTE MERIDIAN FROM THE NORTH SIDE OF COOS COUNTY TO THE NORTHERLY LINE OF TOWNSHIP 10 SOUTH (JUST SOUTH OF OTTER ROCK), AND ALL OF COOS AND CURRY COUNTIES.

OREGON SEISMIC ZONE MAP

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

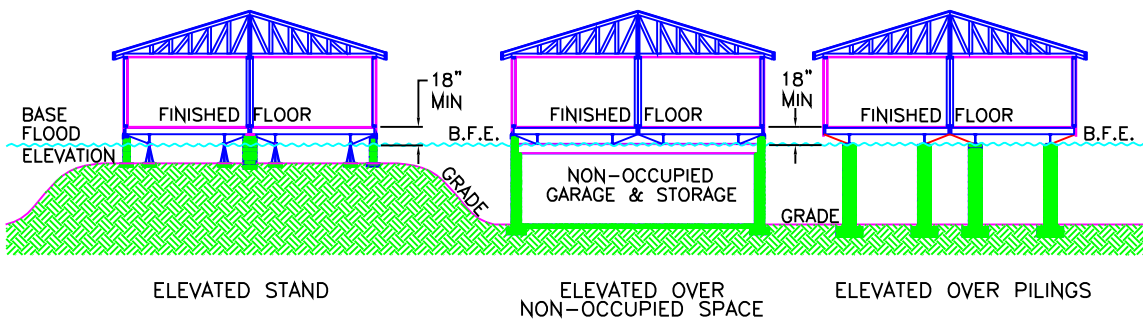
CHAPTER 3  
MAP 3-C



TYPICAL RECESSED PORCH ANCHORING

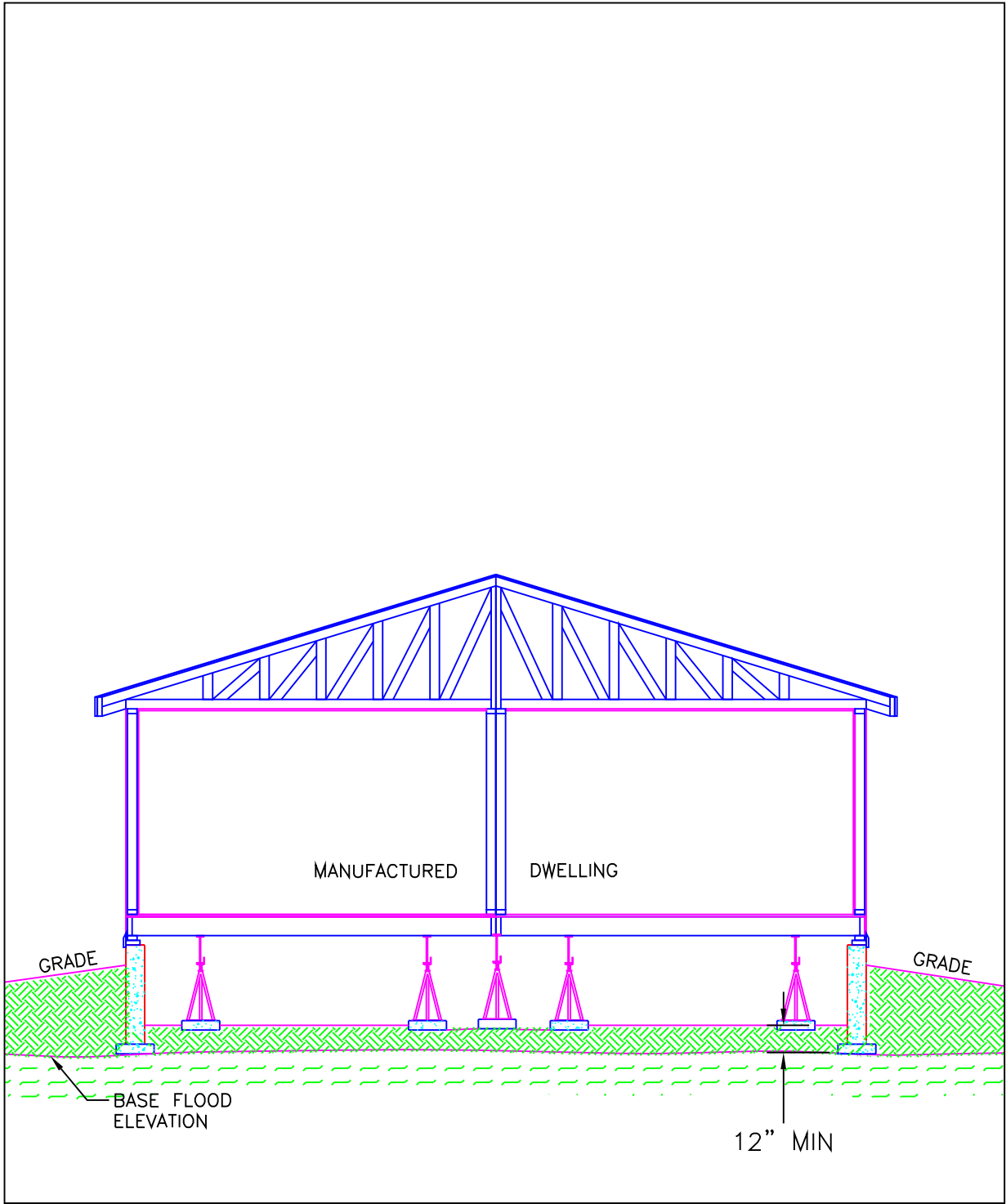
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-2.3.3





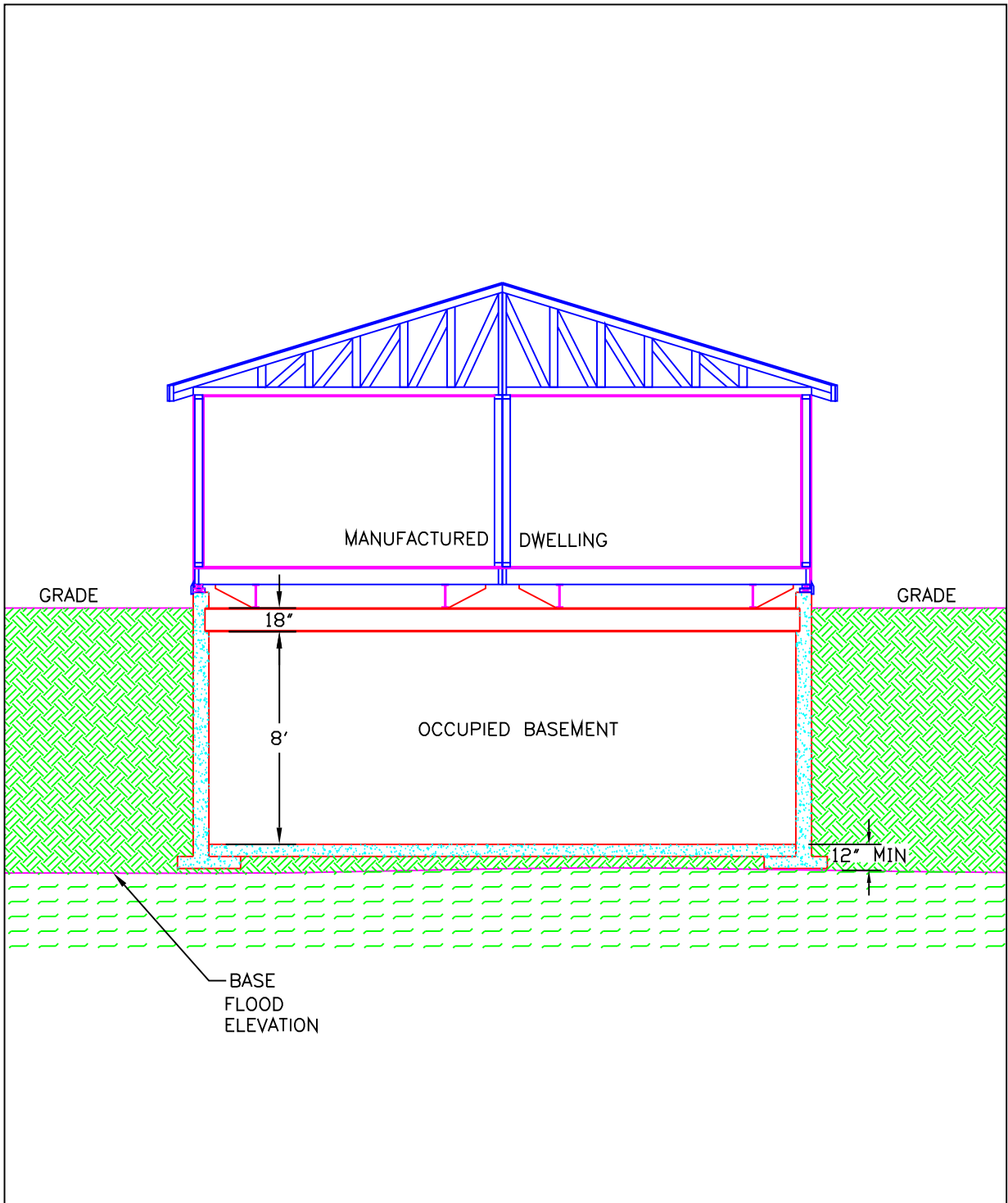
TYPICAL METHODS OF ELEVATING HOMES ABOVE B.F.E.

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-2.4.1A



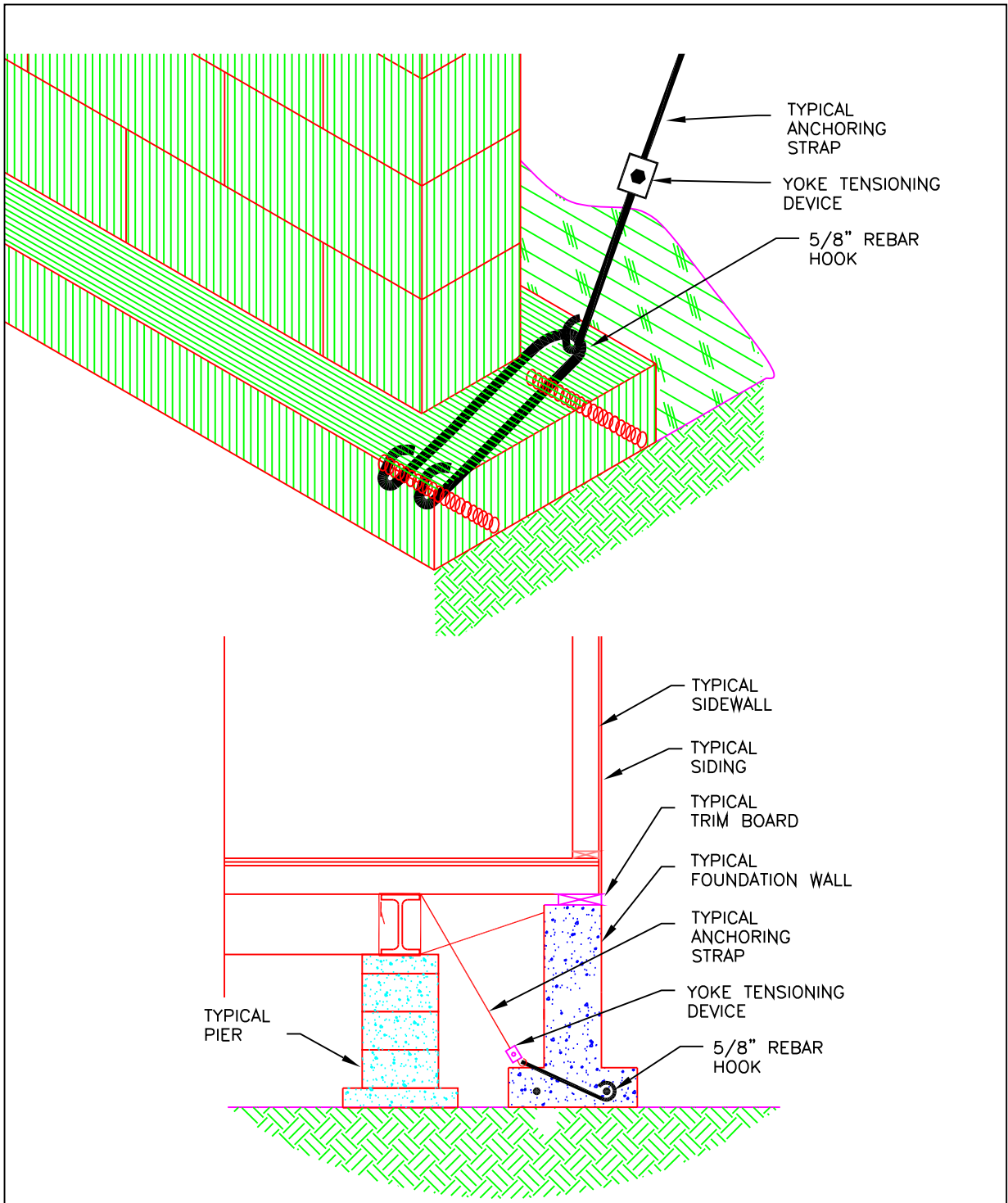
TYPICAL GROUND LEVEL OR PIT SET INSTALLATION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-2.4.1B



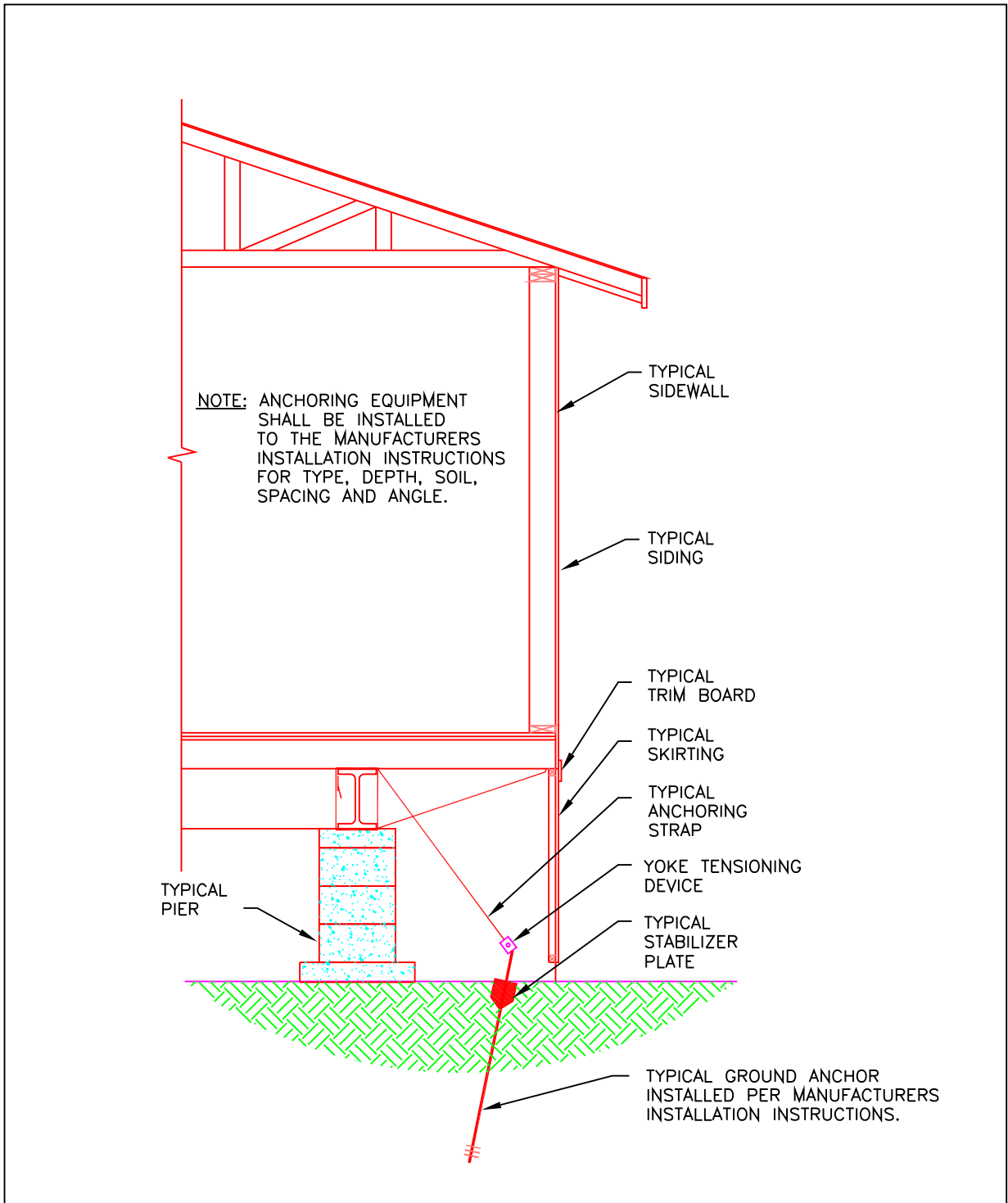
TYPICAL BASEMENT ELEVATED ABOVE BFE

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 3</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 3-2.4.1C</p>



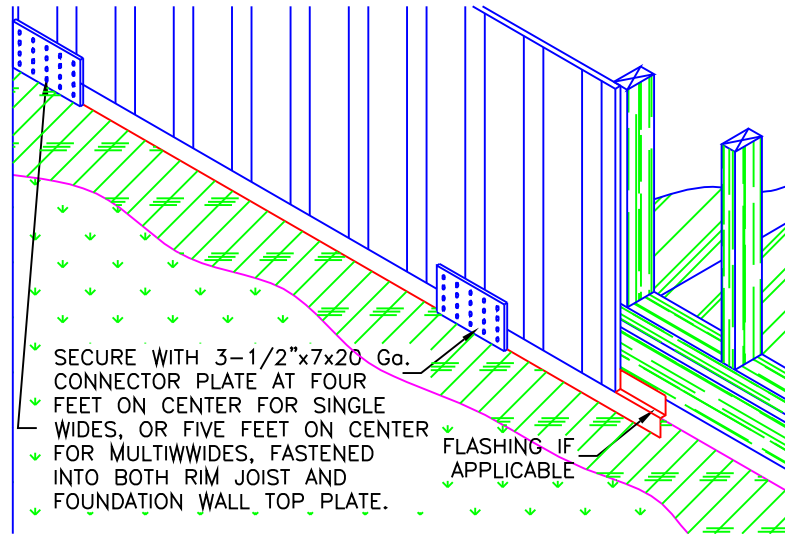
FOUNDATION FOOTING U-BAR ANCHOR

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-2.6.2A

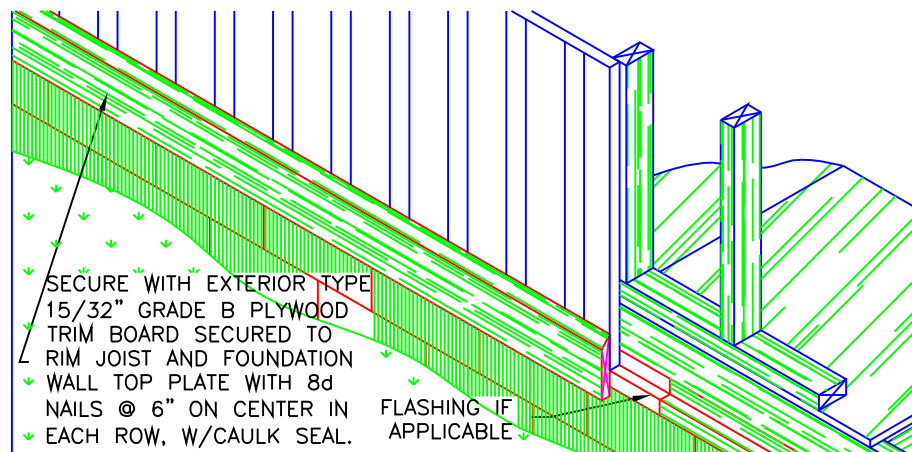


TYPICAL FRAME GROUND ANCHOR TIE-DOWN DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3.2.6.2B



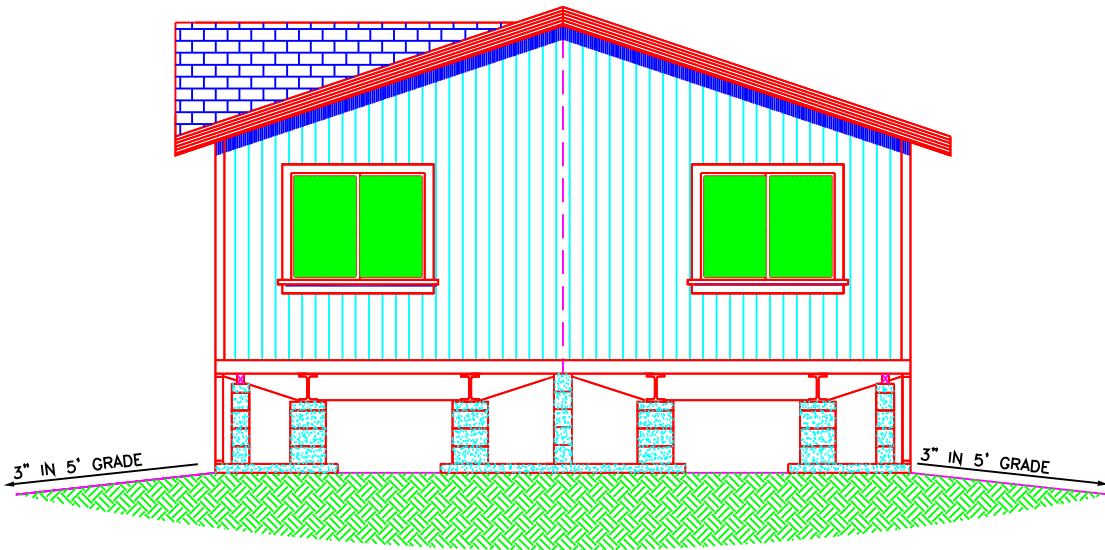
CONNECTOR PLATE ANCHOR



PLYWOOD TRIM BOARD ANCHOR

FOUNDATION WALL SECUREMENT DETAILS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-2.6.2C



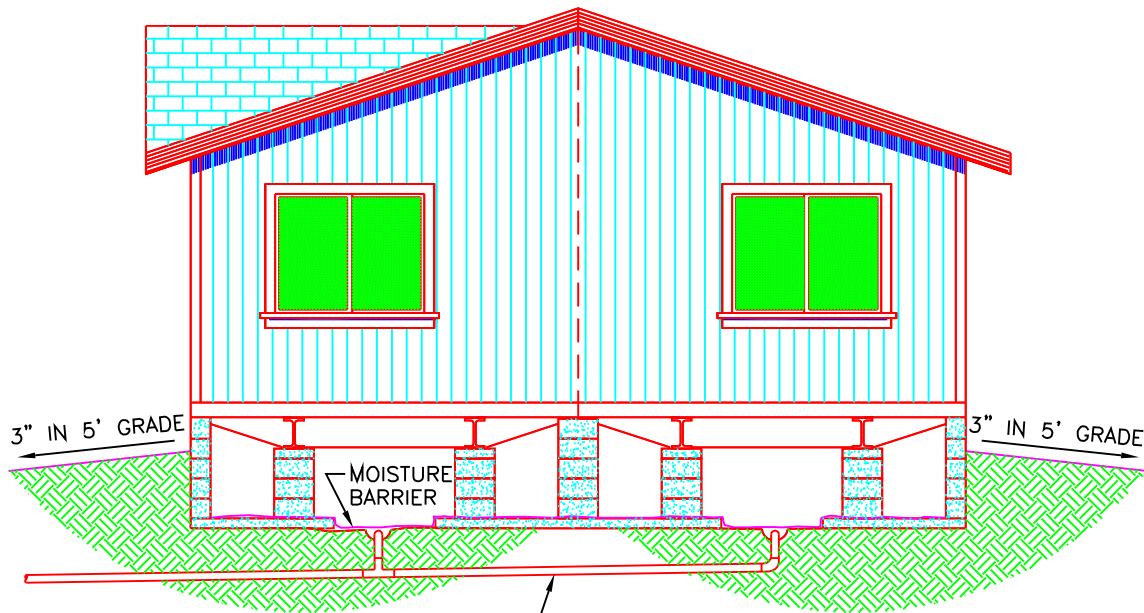
NOTE: GRADE SHALL BE SLOPED AWAY FROM THE STAND 5' HORIZONTALLY AROUND THE PERIMETER OF MANUFACTURED DWELLING OR CABANA AT 3 INCHES MINIMUM FALL IN 5 FEET.

TYPICAL GRADING AND DRAINAGE AROUND STAND

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-4.3A



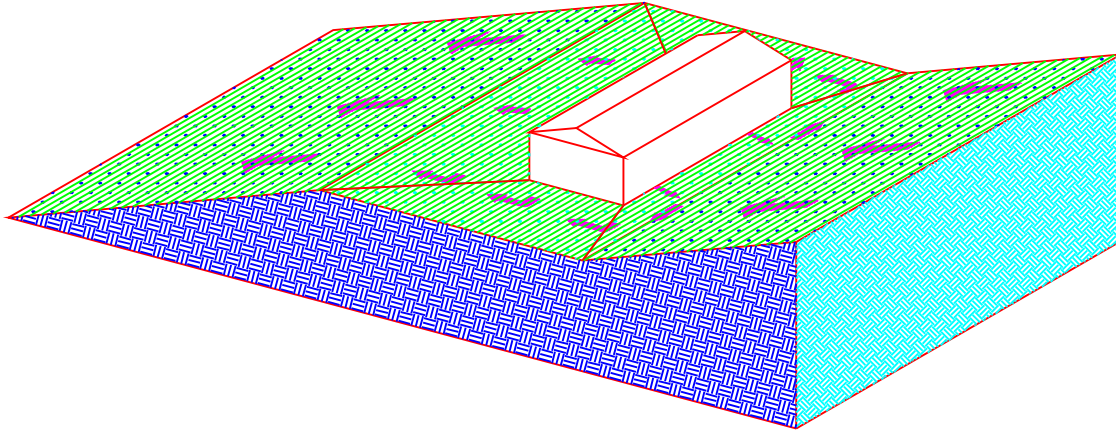
SUBSURFACE DRAINAGE SYSTEM COLLECTS WATER BELOW HOME AND MOVES IT OUT AWAY FROM STRUCTURE

NOTE: GRADE SHALL BE SLOPED AWAY FROM THE STAND AT 3 INCHES MINIMUM FALL IN 5 HORIZONTAL FEET.

TYPICAL GRADING & DRAINAGE AROUND FOUNDATION WALL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-4.3B





NOTE: IF THE PROPOSED SITE IS ON A HILLSIDE, FLATTEN THE HOME SITE AREA, AND CREATE ENOUGH LOWER GROUND, A DRAINAGE SWALE, FOR RUNOFF BETWEEN WHERE THE HOME WILL BE AND THE SLOPE.

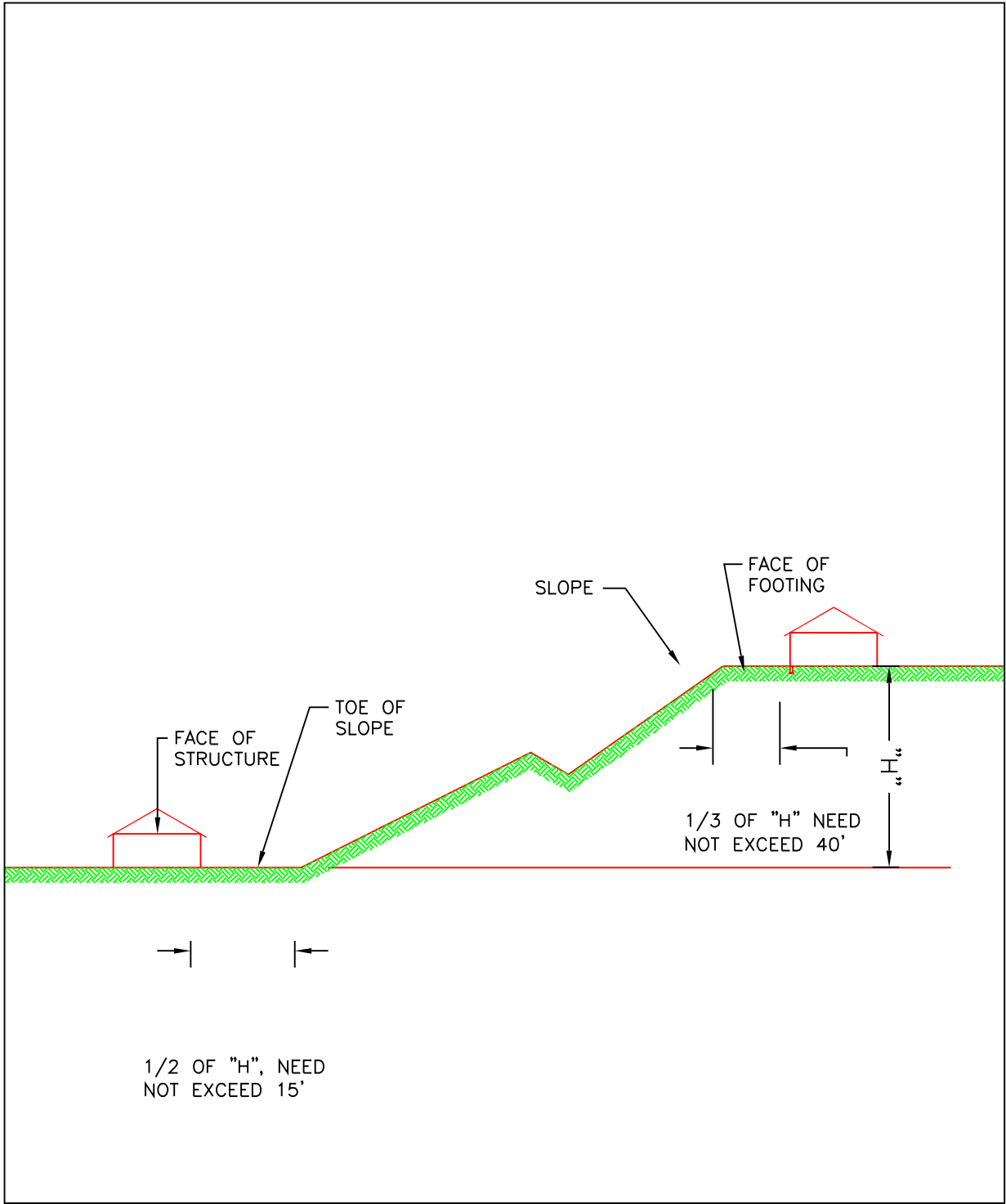
NOTE: IN SOME LEVEL OR SLOPED LOCATIONS, DITCHES, DRAIN TILE, AND CULVERTS MAY BE NECESSARY.

TYPICAL SITE GRADING AND DRAINAGE

REV. 12/01/01 RHW

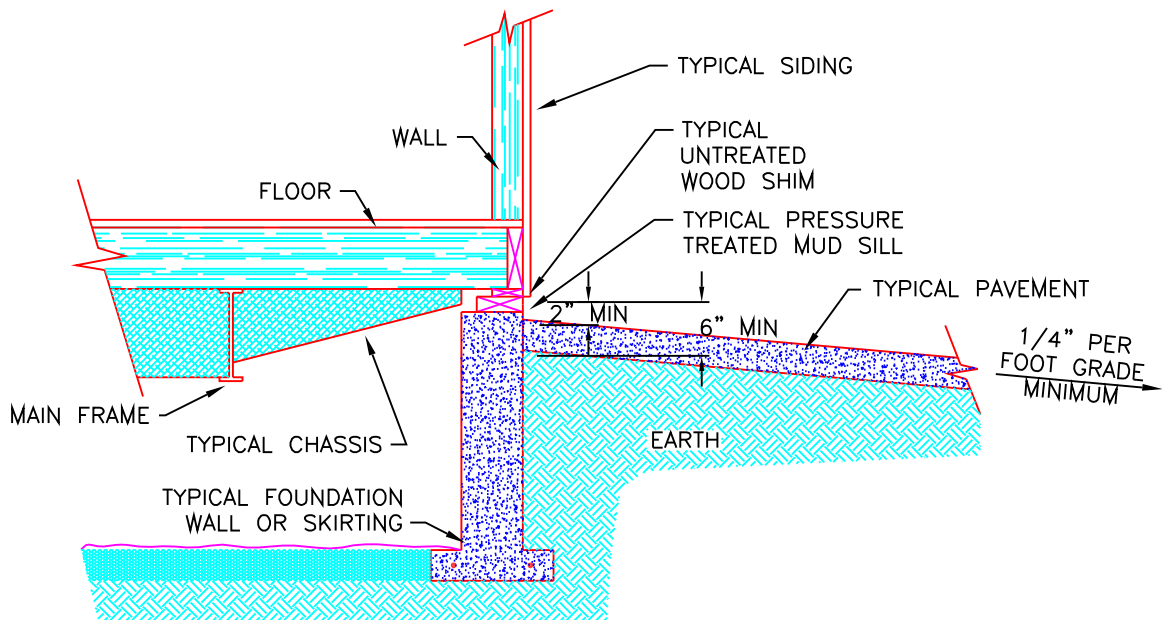
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-4.3C



TYPICAL ASCENDING AND DECENDING SLOPE SETBACKS

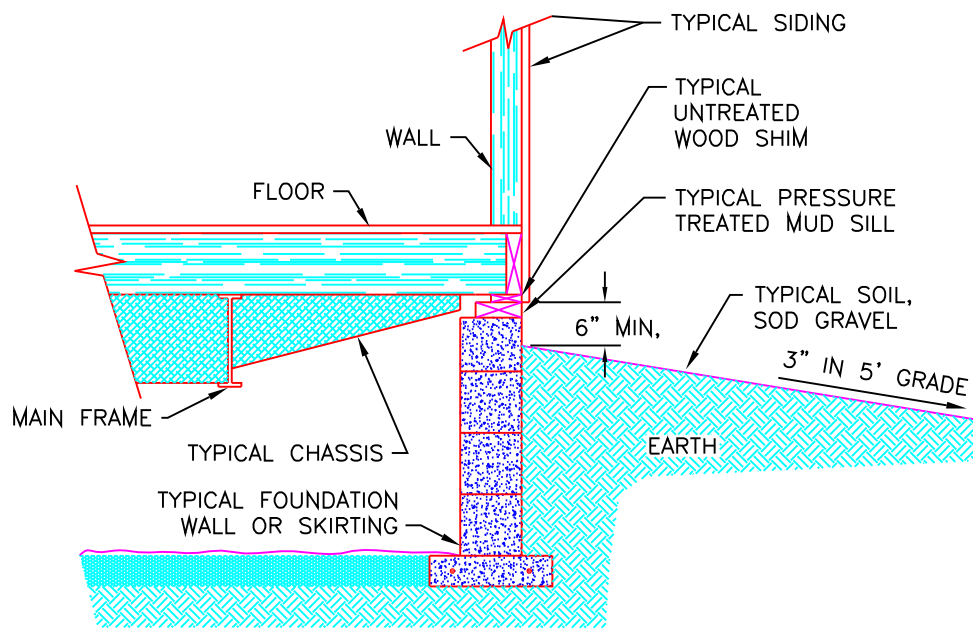
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-4.3D



NOTE: THE MINIMUM CLEARANCES SHOWN DO NOT SUPERCEDE OTHER REQUIRED CLEARANCES FOR THE CONSTRUCTION OF FOUNDATION WALLS, RETAINING WALLS, OR SKIRTING.

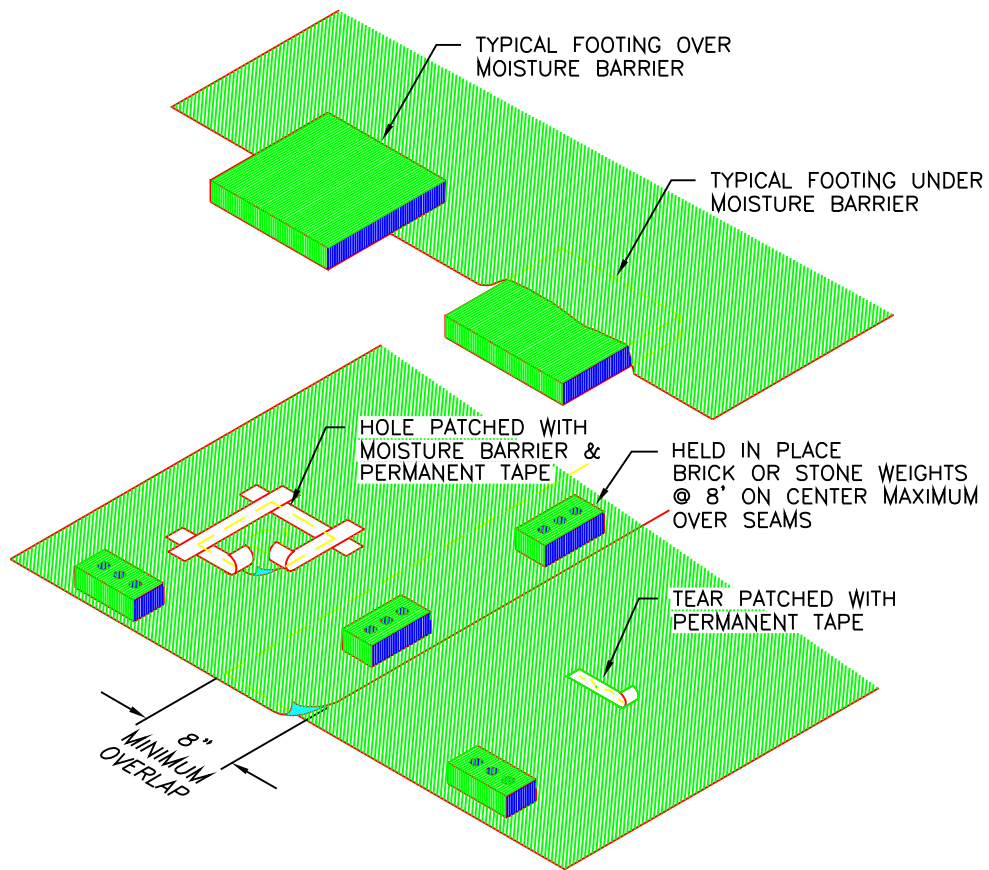
TYPICAL CLEARANCES BETWEEN UNTREATED WOOD OR SIDING AND PAVEMENT I

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-4.3E



**NOTE:** THE MINIMUM CLEARANCES SHOWN DO NOT SUPERCEDE OTHER REQUIRED CLEARANCES FOR THE CONSTRUCTION OF FOUNDATION WALLS, RETAINING WALLS, OR SKIRTING.

CLEARANCES BETWEEN UNTREATED WOOD OR SIDING AND PAVEMENT II		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-4.3F

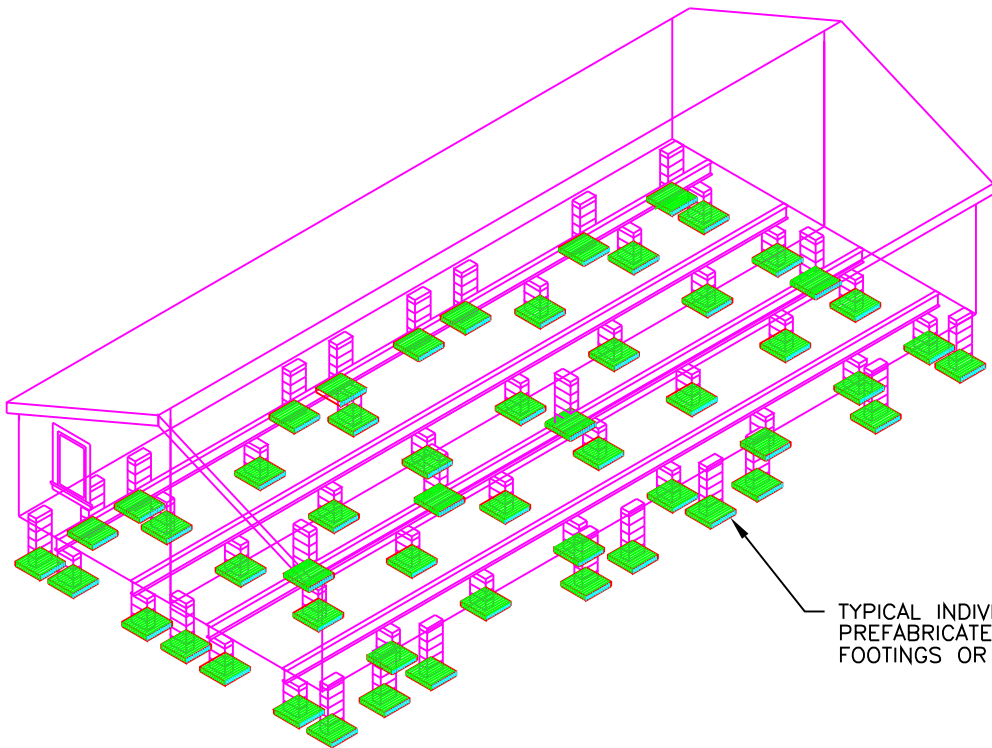


TYPICAL MOISTURE BARRIER INSTALLATION

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-4.7



TYPICAL INDIVIDUAL  
 PREFABRICATED CONCRETE  
 FOOTINGS OR OTHER LISTED.

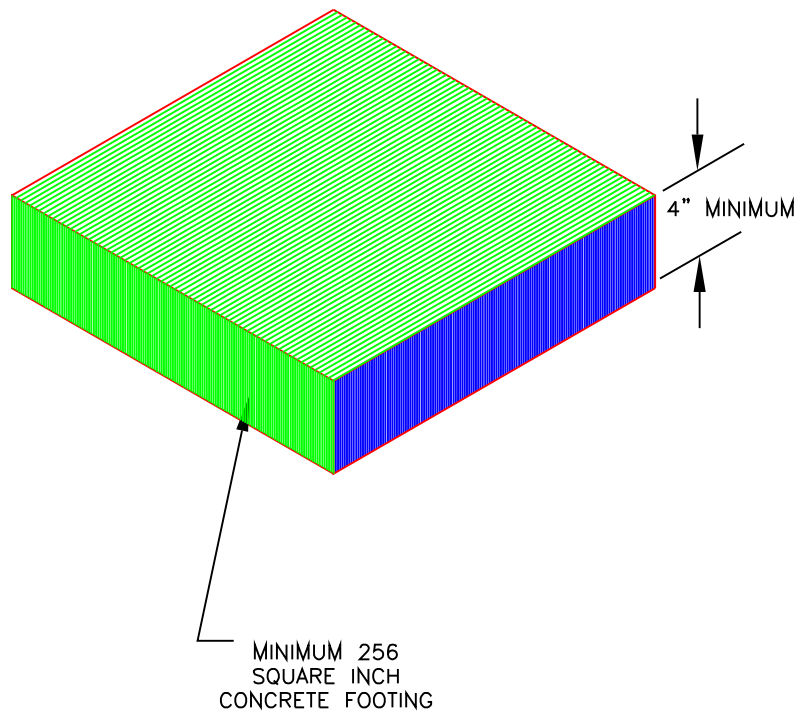
NOTE: POURED-IN-PLACE  
 CONCRETE SHALL HAVE  
 2500 PSI IN 28 DAYS  
 AND HAVE 7 DAYS OF  
 CURE TIME BEFORE USE.

TYPICAL INDIVIDUAL FOOTINGS

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
 AND PARK SPECIALTY CODES

CHAPTER 3  
 FIGURE 3-5.12.1A

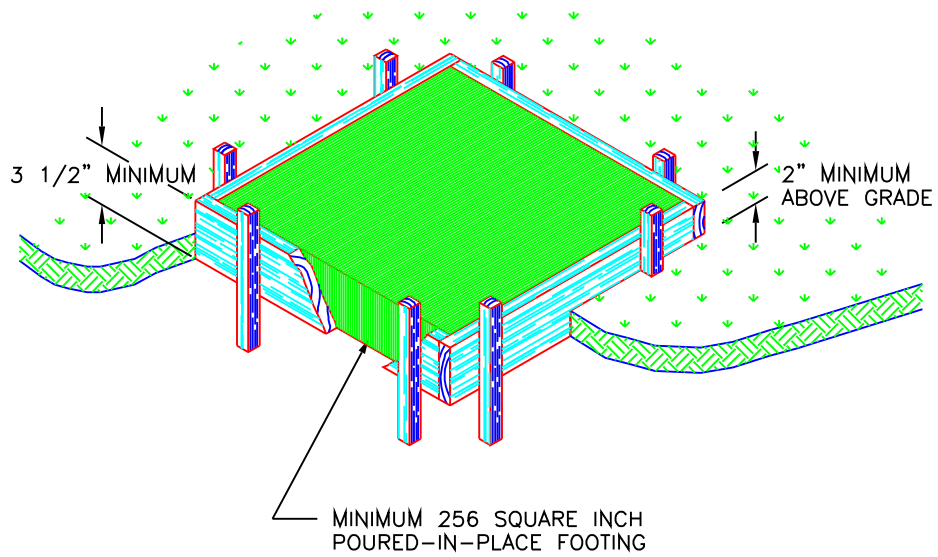


PRE-CAST CONCRETE FOOTING

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-5.12.1B



NOTE: 7 DAYS OF CURE TIME  
REQUIRED BEFORE USE  
MINIMUM 2500 PSI IN  
28 DAYS.

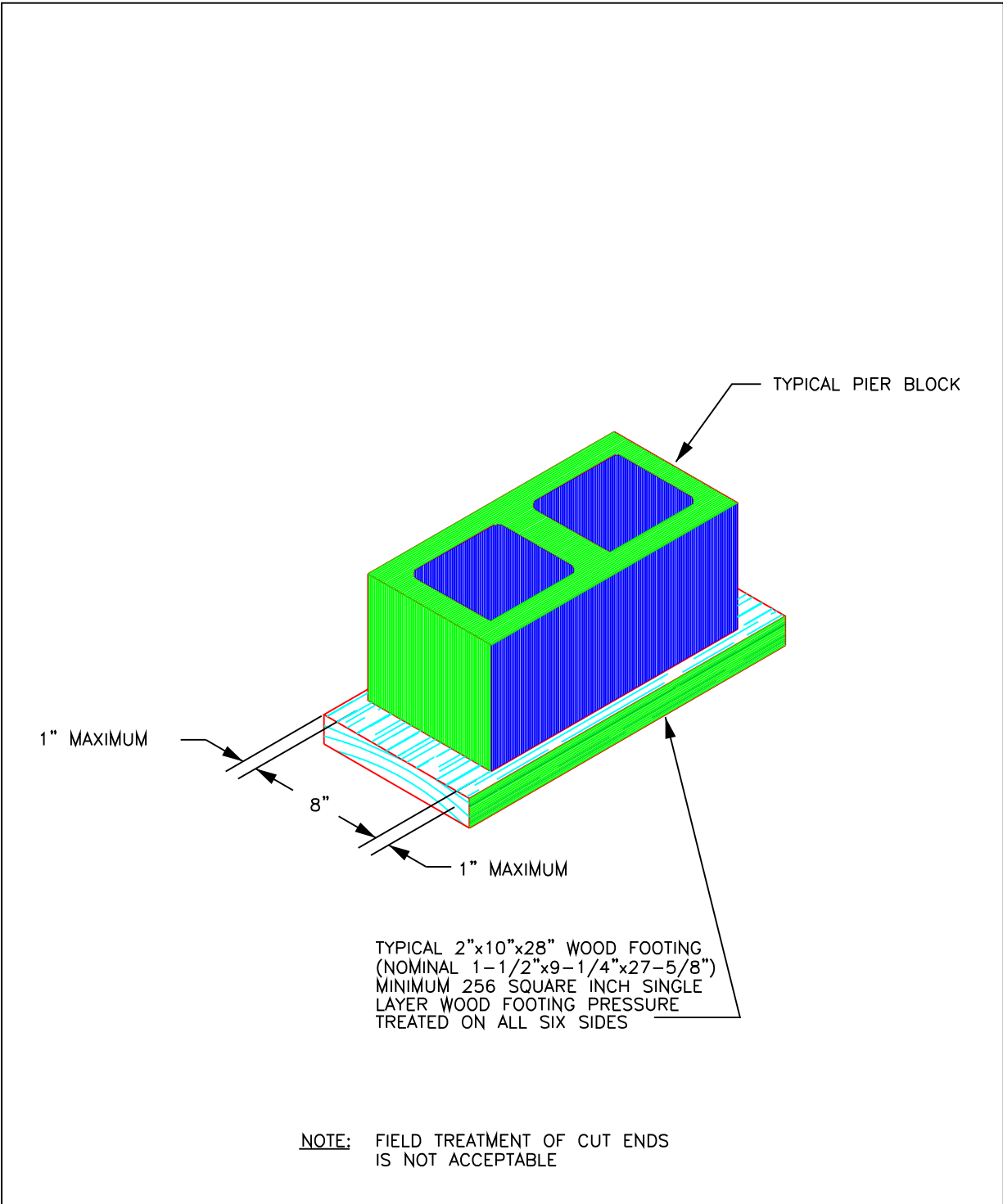
POURED-IN-PLACE CONCRETE PAD

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

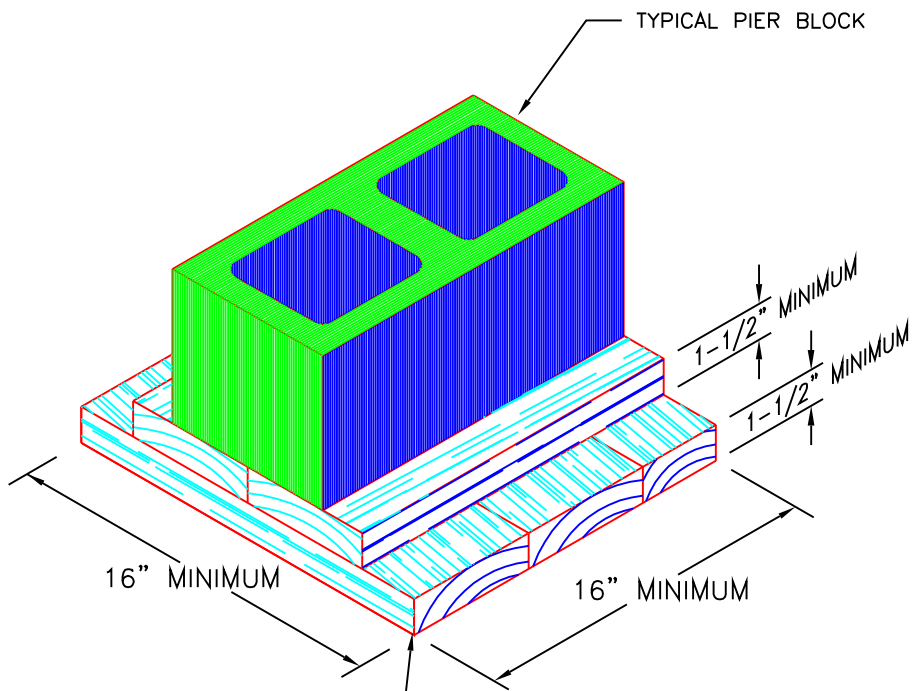
CHAPTER 3  
FIG. 3-5.12.1C





TYPICAL SINGLE LAYER WOOD FOOTING

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
		FIGURE 3-5.12.1D



**NOTE:** FIELD TREATMENT OF CUT ENDS IS NOT ACCEPTABLE

**NOTE:** WOOD MAY BE SUBSTITUTED WITH WOOD-POLYMER COMPOSITE

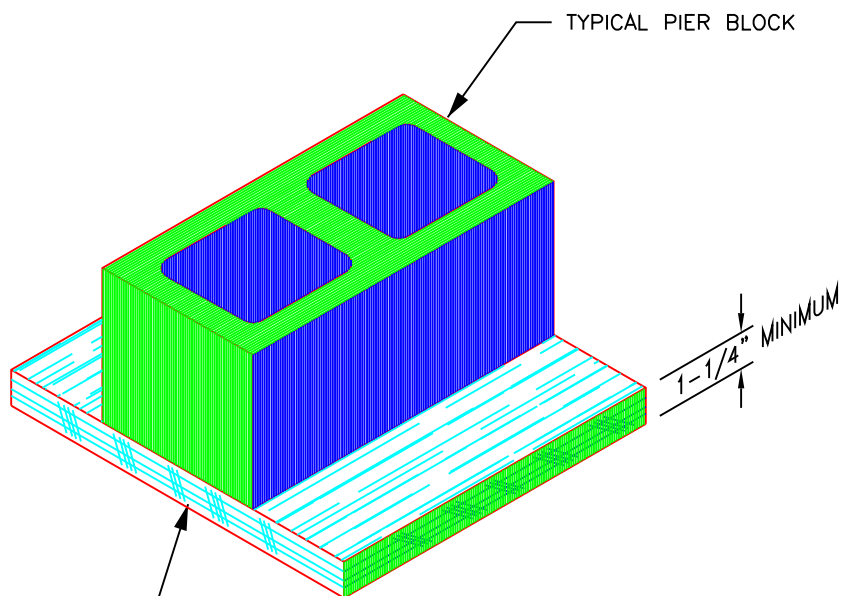
MINIMUM 256 SQUARE INCH TWO-LAYER WOOD FOOTING W/ LAYERS PERPENDICULAR TO EACH OTHER AND PRESSURE TREATED ON ALL SIX SIDES

TYPICAL DOUBLE LAYER WOOD FOOTING

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES

CHAPTER 3  
FIG. 3-5.12.1E



MINIMUM 256 SQUARE INCH PLYWOOD FOOTING  
PRESSURE TREATED ON ALL SIX SIDES

NOTE: FIELD TREATMENT OF CUT EDGES  
IS NOT PERMITTED BY THIS CODE.

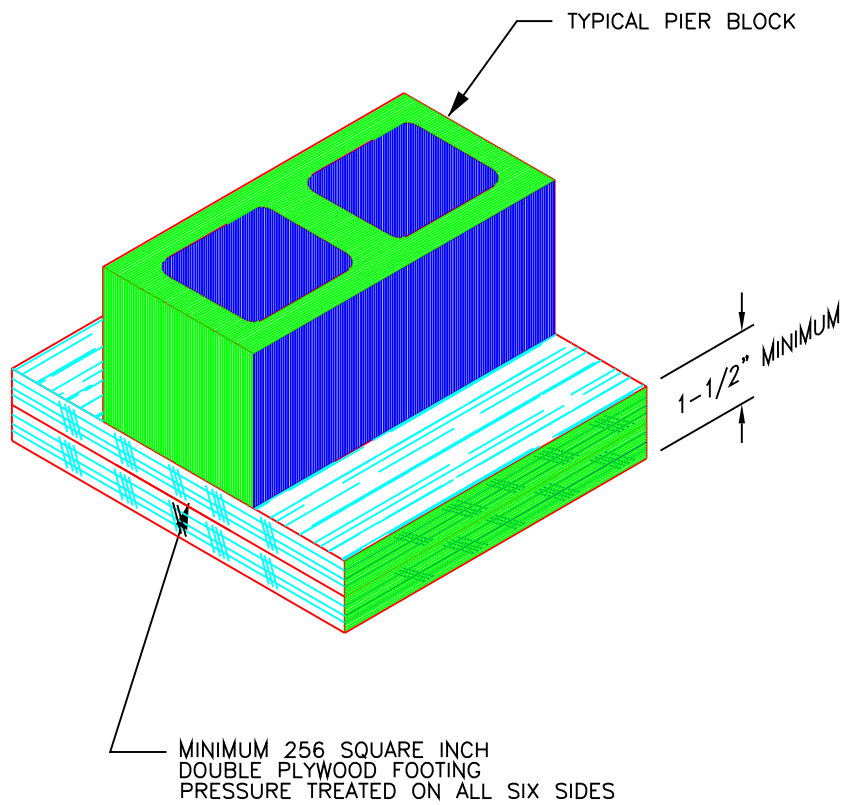
TYPICAL SINGLE PLYWOOD FOOTING

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

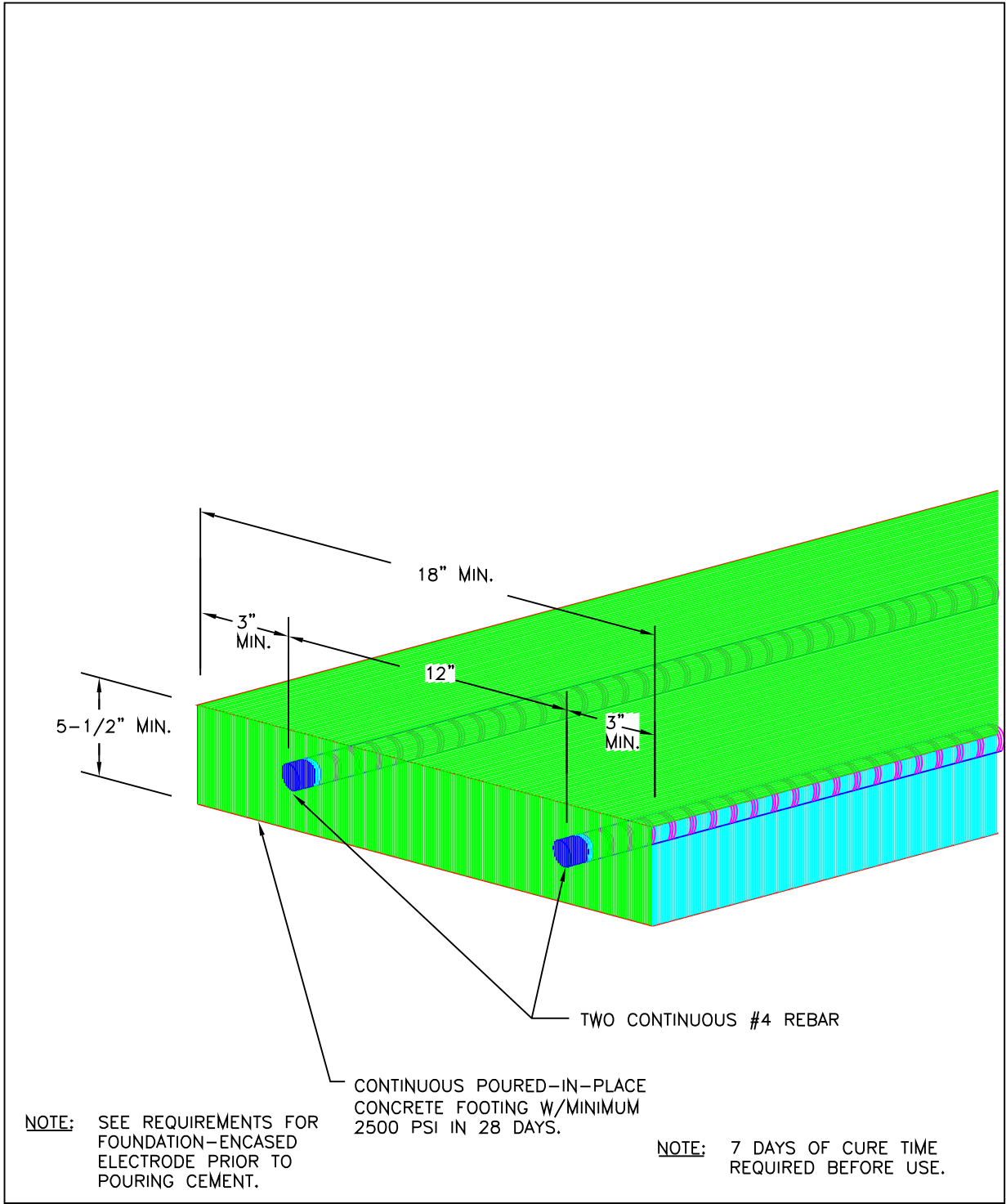
CHAPTER 3

FIGURE 3-5.12.1F



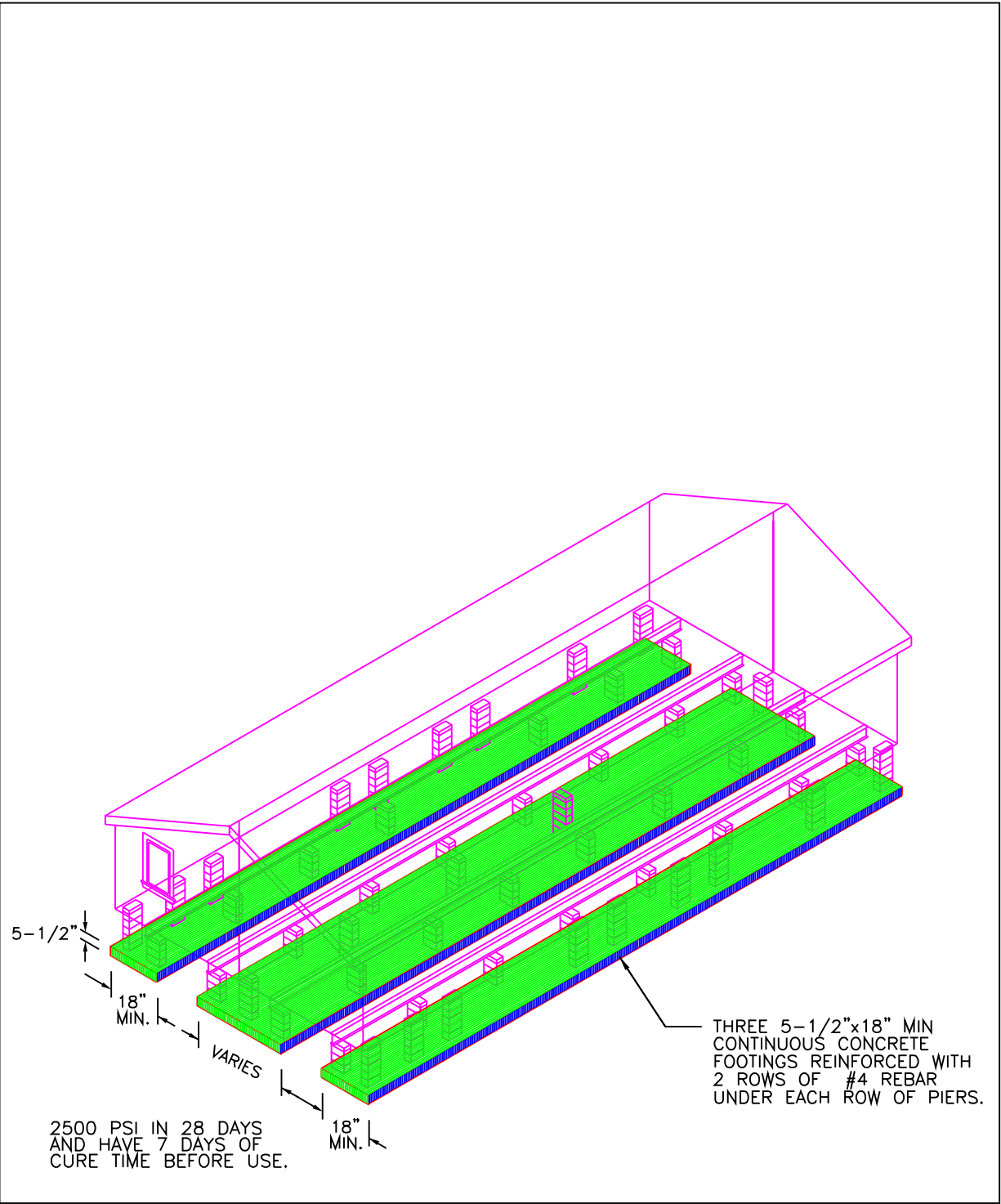
NOTE: FIELD TREATMENT OF CUT EDGES  
IS NOT PERMITTED BY THIS CODE.

DOUBLE PLYWOOD FOOTING		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.1G

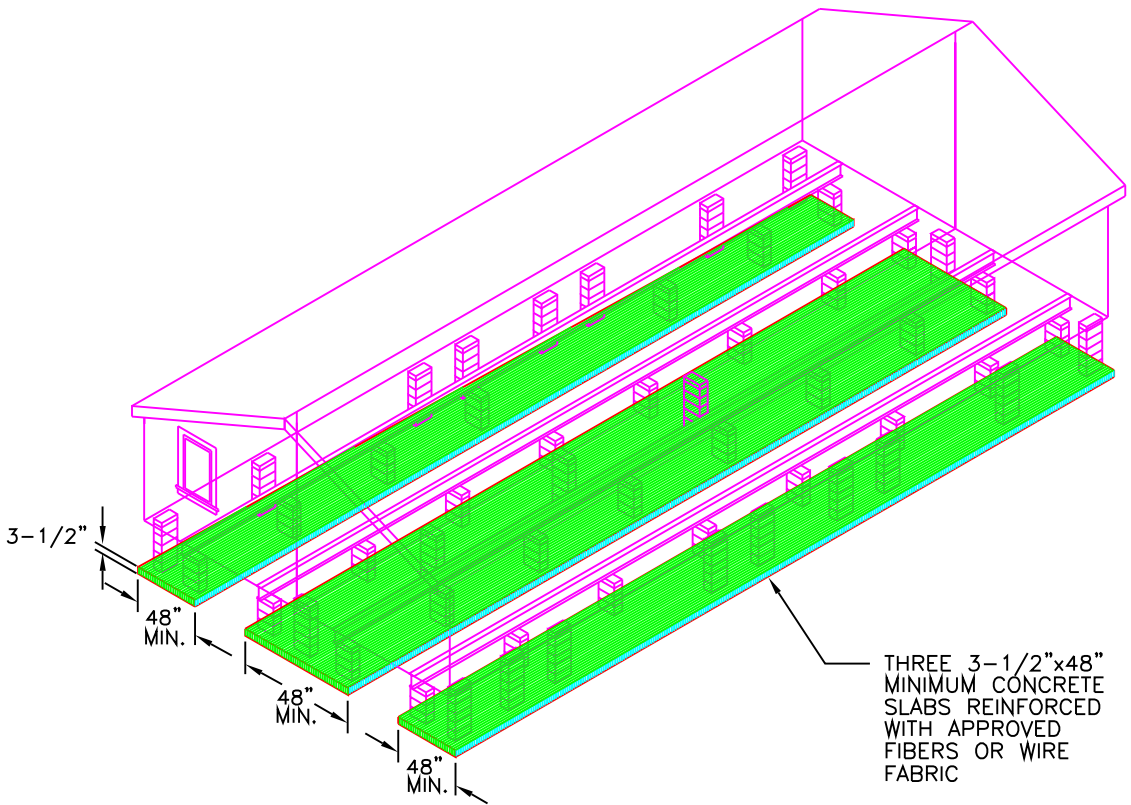


TYPICAL INDIVIDUAL CONTINUOUS CONCRETE FOOTING

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-5.12.1H



TYPICAL COMBINED CONTINUOUS CONCRETE FOOTINGS (THREE-PAD-POUR)		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.1J



NOTE: CONCRETE SHALL HAVE  
2500 PSI IN 28 DAYS  
AND HAVE 7 DAYS OF  
CURE TIME BEFORE USE.

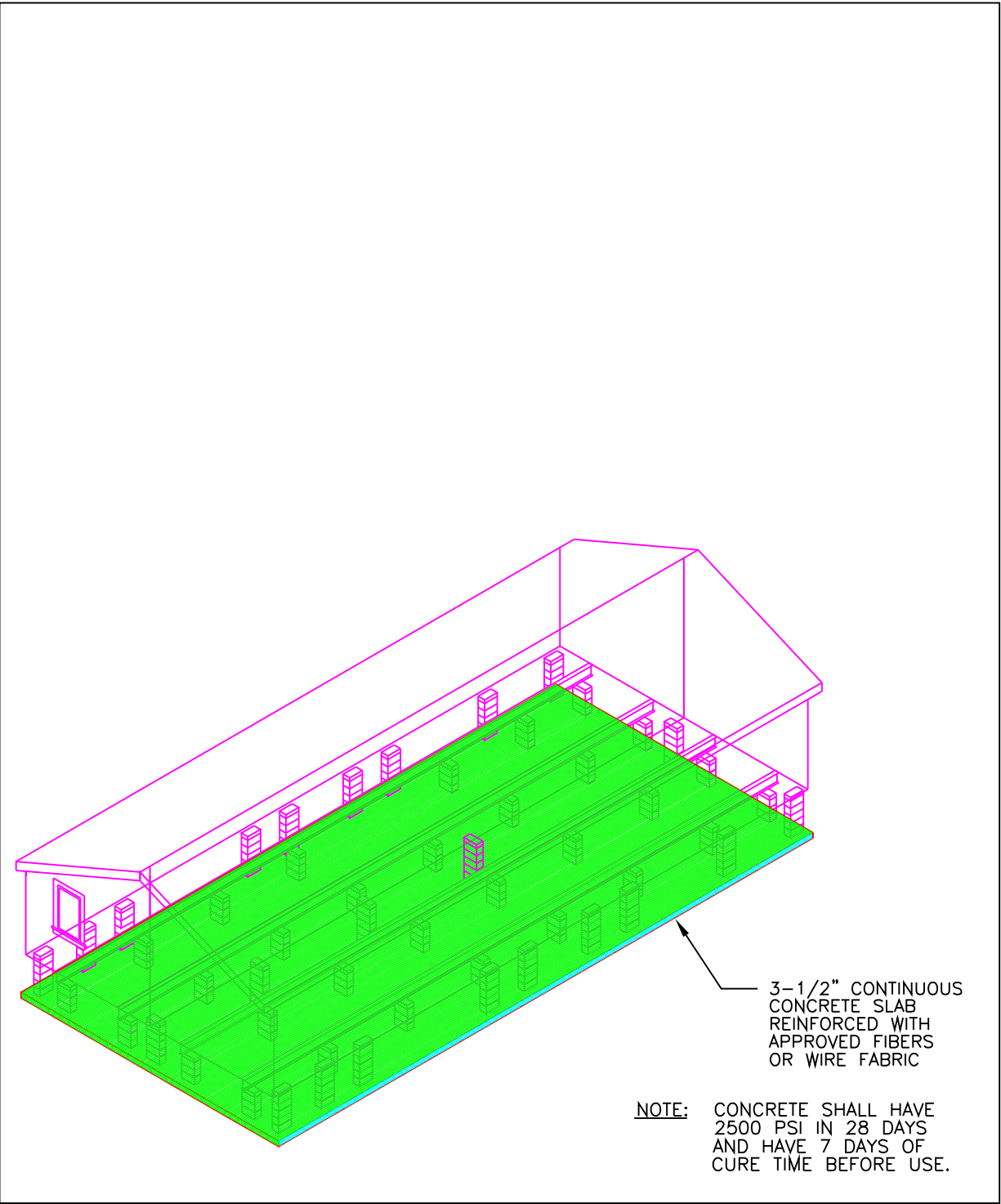
TYPICAL INDIVIDUAL CONCRETE FOOTINGS (THREE-PAD-POUR)

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3

FIG. 3-5.12.1K



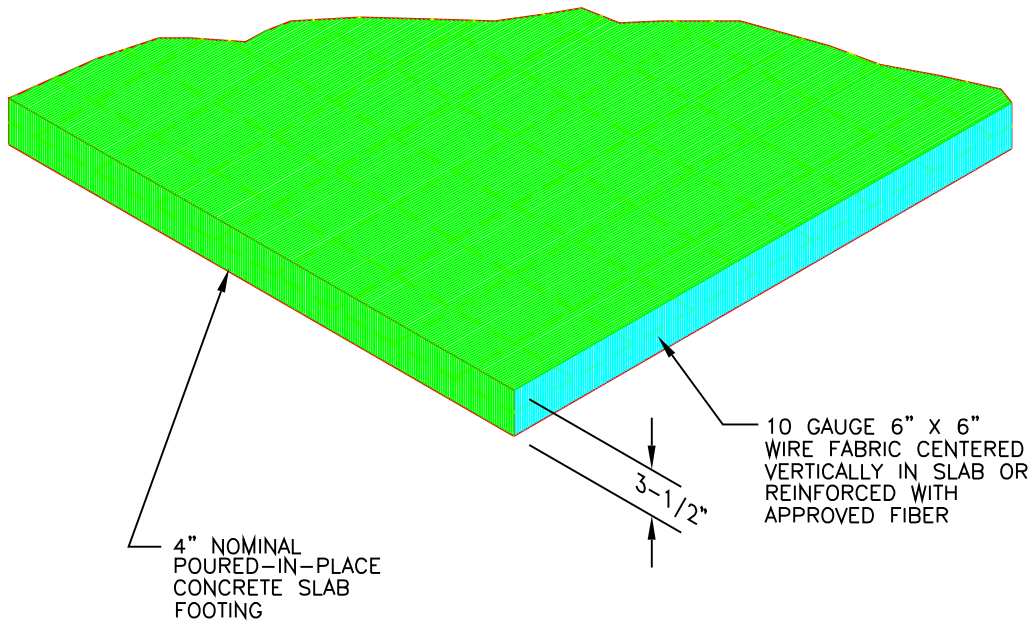
3-1/2" CONTINUOUS  
 CONCRETE SLAB  
 REINFORCED WITH  
 APPROVED FIBERS  
 OR WIRE FABRIC

NOTE: CONCRETE SHALL HAVE  
 2500 PSI IN 28 DAYS  
 AND HAVE 7 DAYS OF  
 CURE TIME BEFORE USE.

TYPICAL CONCRETE SLAB FOOTING

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.1L



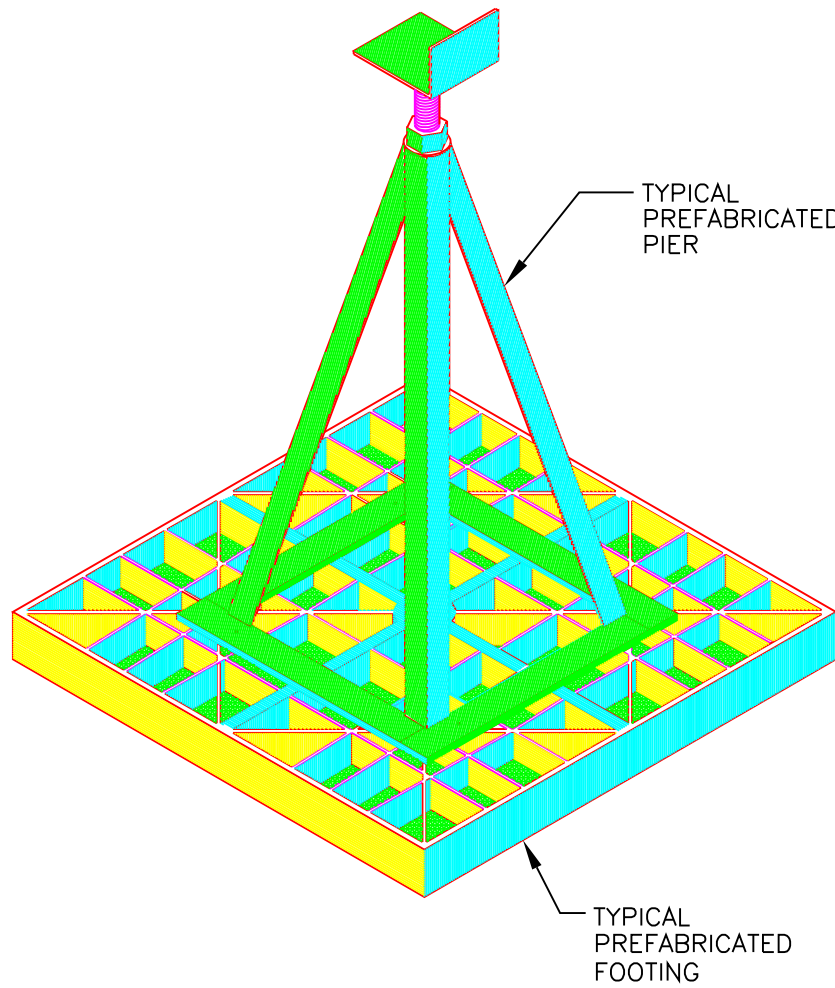


NOTE: SEE REQUIREMENT FOR  
FOUNDATION-ENCASED  
ELECTRODE PRIOR  
TO PLACING CONCRETE.

NOTE: 2500 PSI IN 28 DAYS.  
7 DAYS OF CURE TIME  
REQUIRED BEFORE USE.

TYPICAL REINFORCED CONCRETE SLAB FOOTING

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.1M

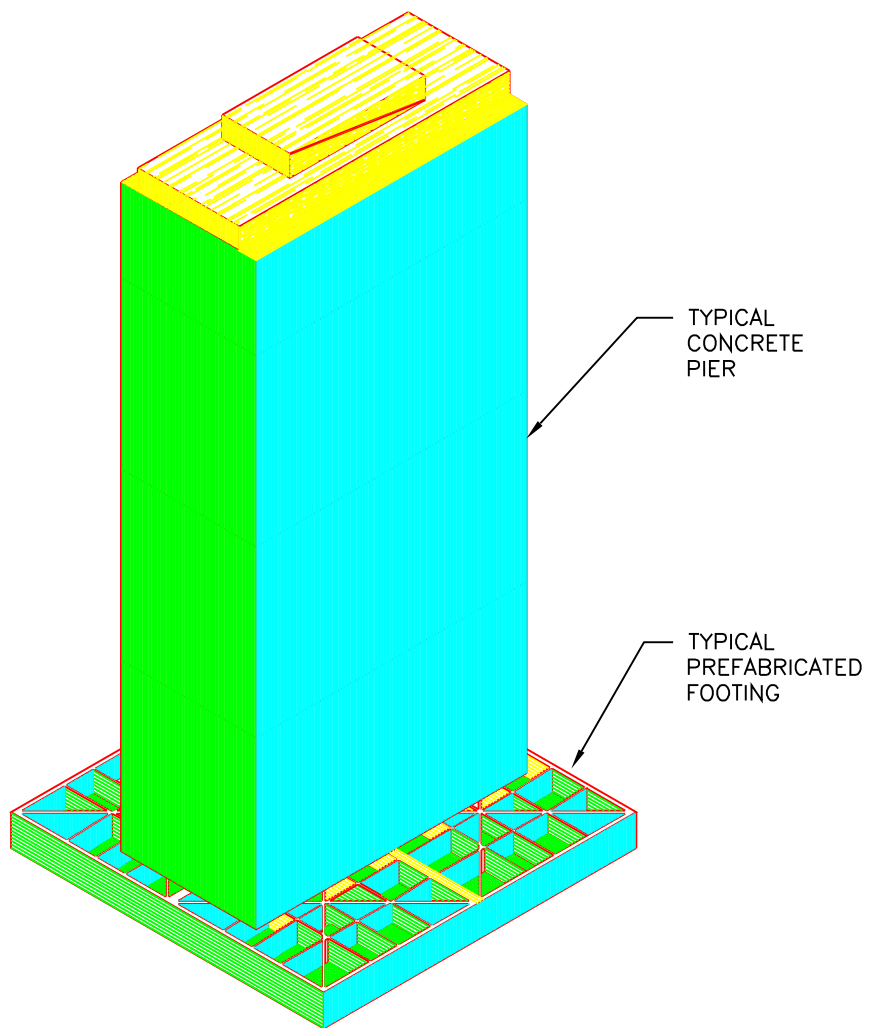


TYPICAL PREFABRICATED FOOTING WITH TYPICAL PREFABRICATED PIER

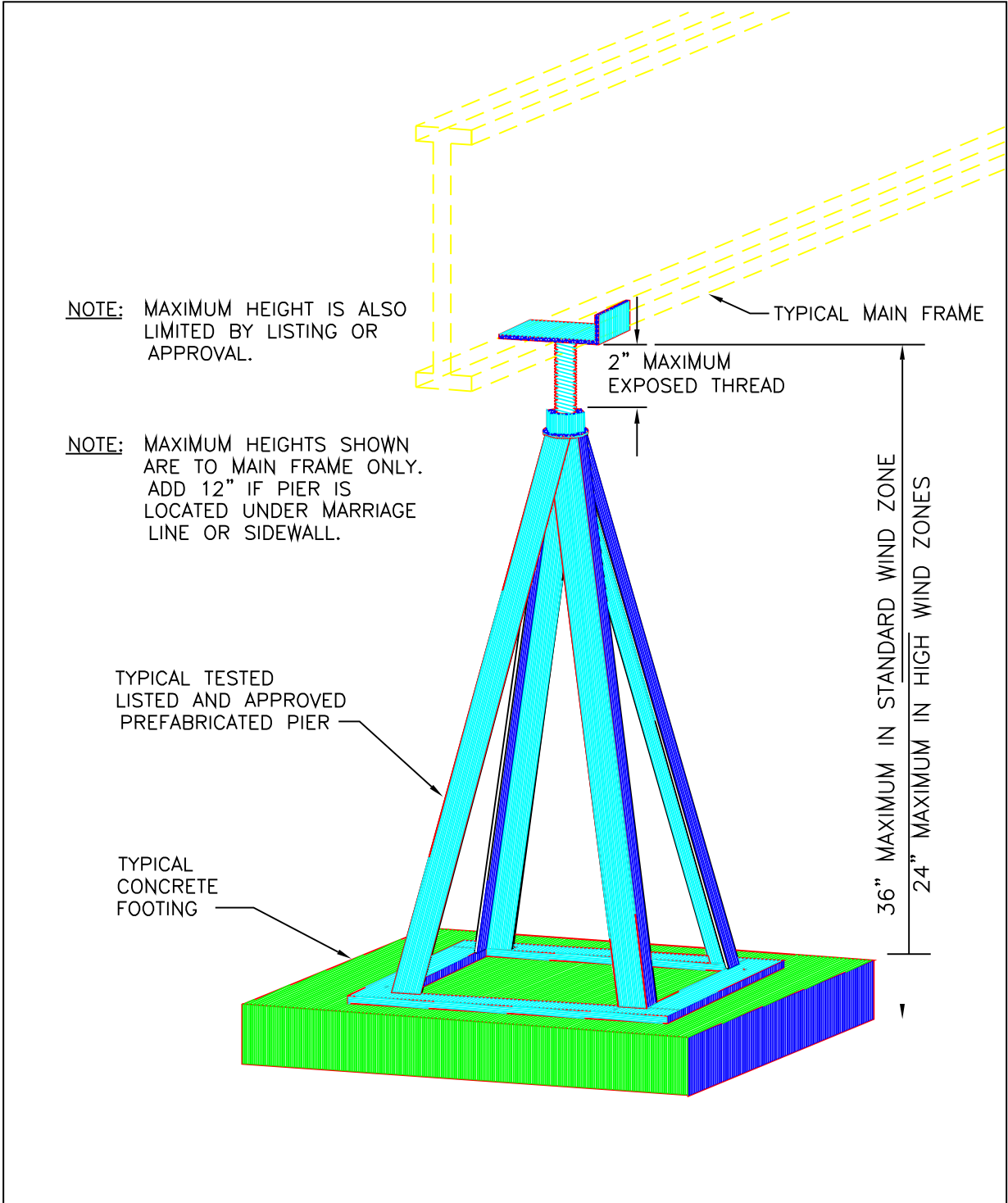
REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIG. 3-5.12.1N

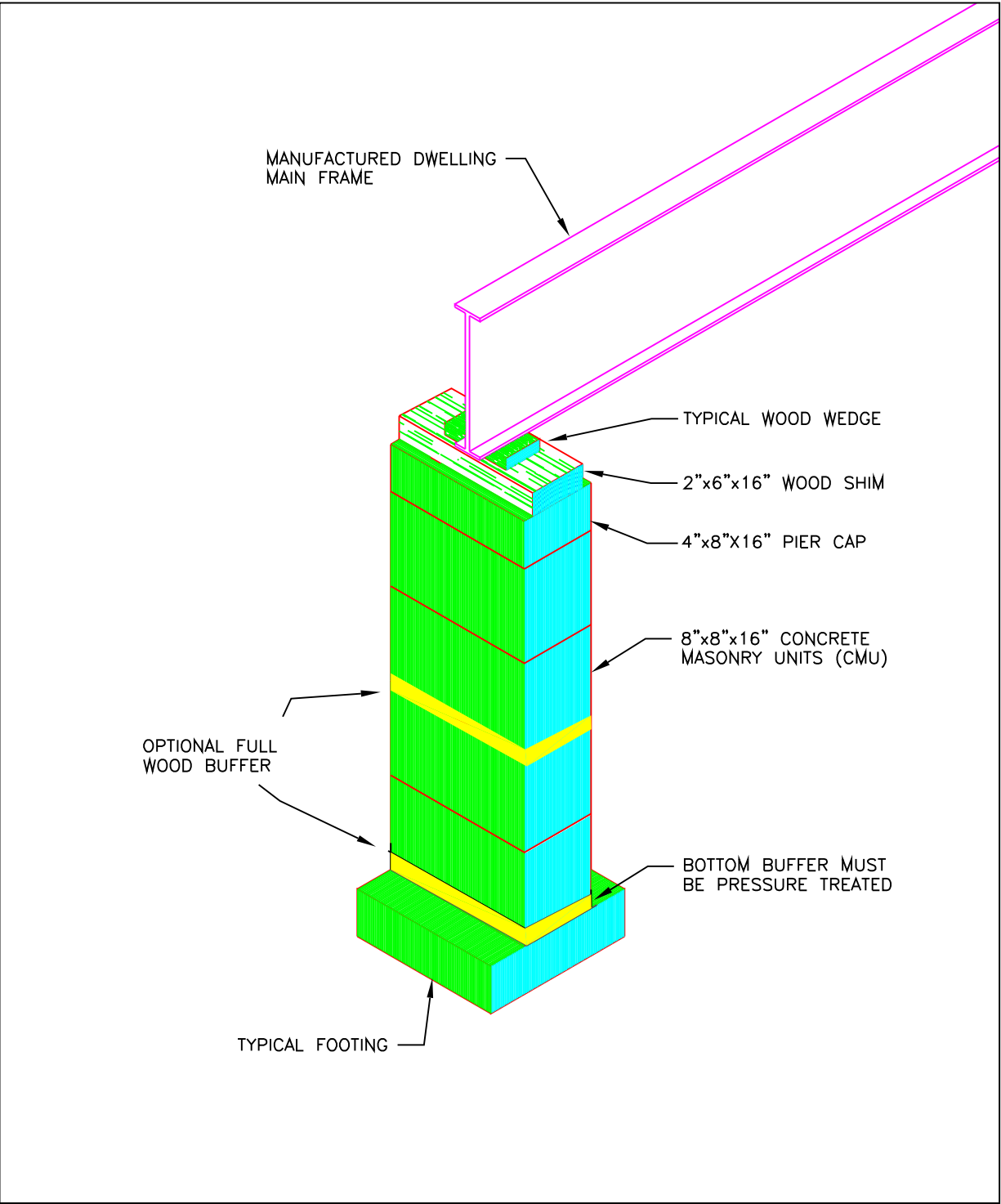


TYPICAL PREFABRICATED FOOTING WITH CONCRETE BLOCK (CMU) PIER		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.10



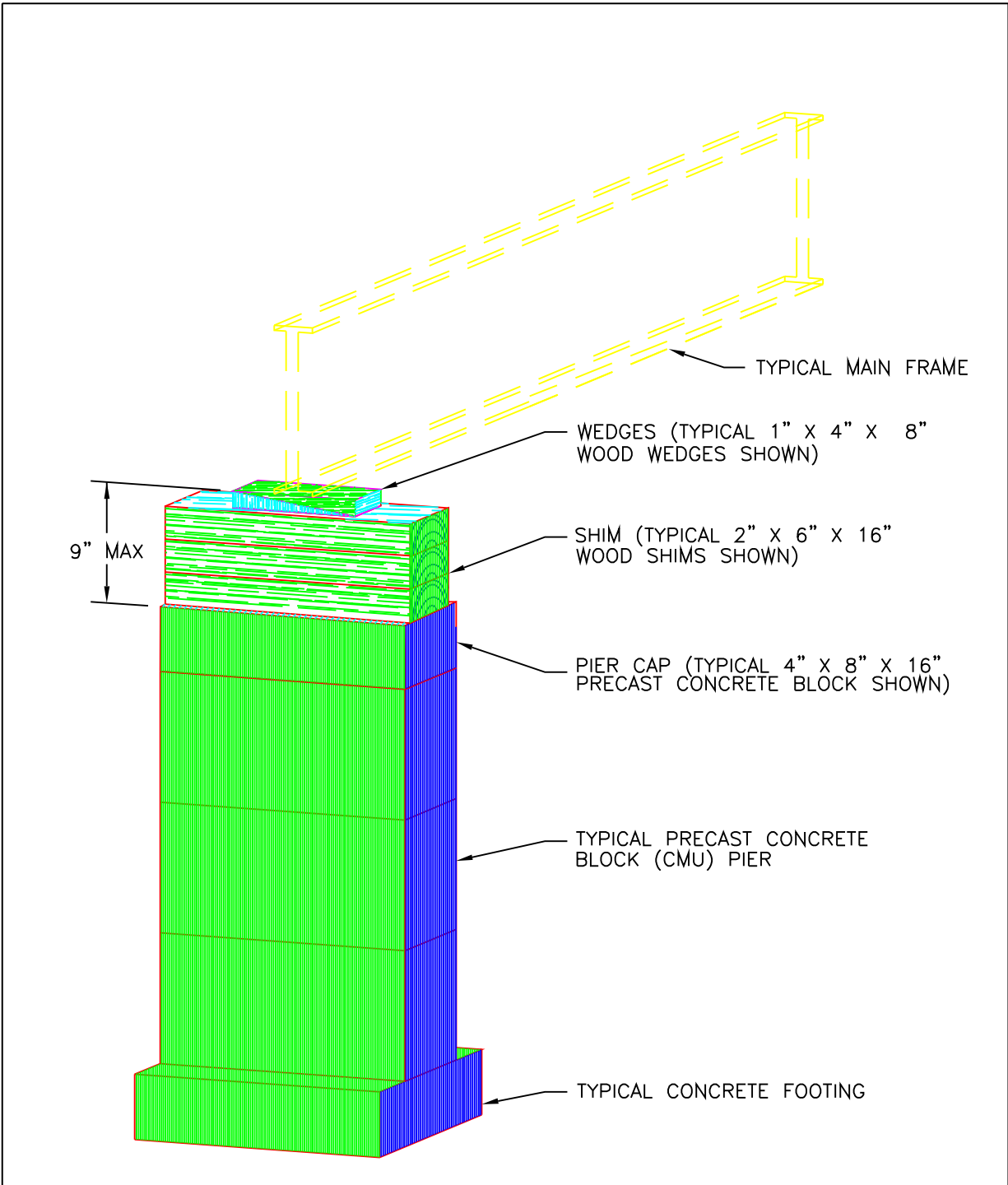
TYPICAL PREFABRICATED PIER

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.2A



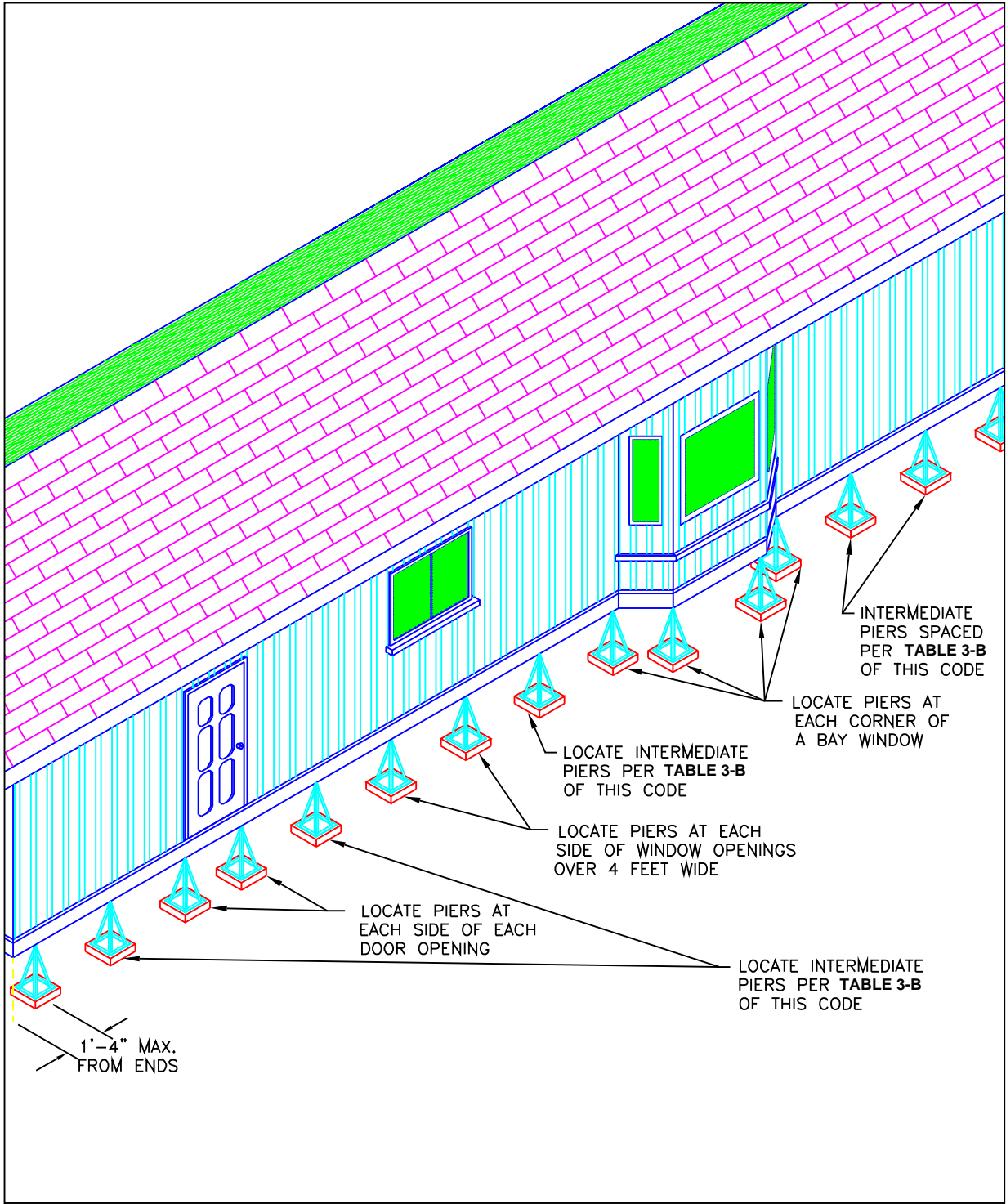
TYPICAL CONCRETE BLOCK (CMU) PIER

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 3</p>
<p>REV. 12/01/01 RHW</p>		<p>FIG. 3-5.12.2B</p>



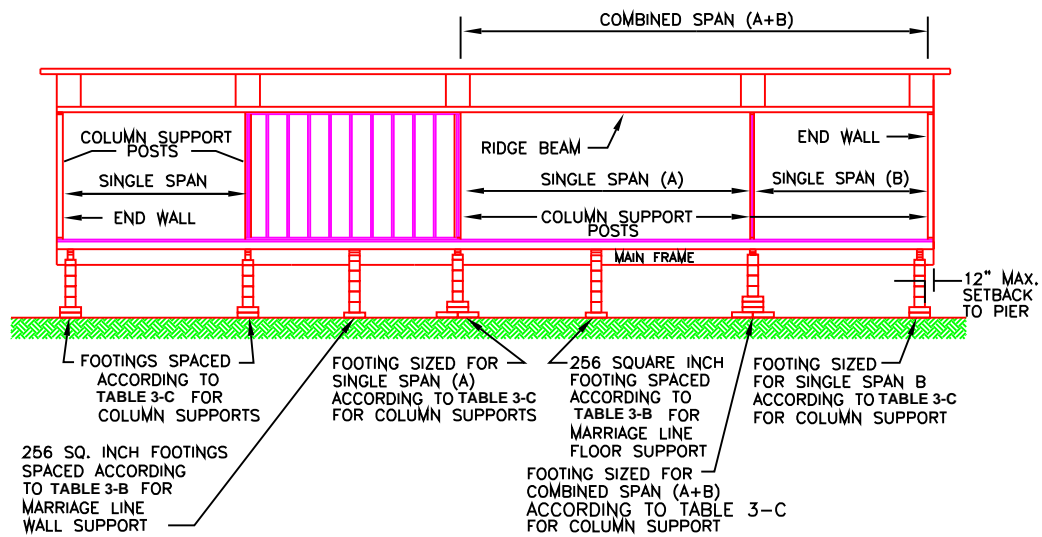
TYPICAL PIER CAP, SHIM & WEDGE DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-5.12.3



TYPICAL SIDEWALL PERIMETER PIER SUPPORTS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-6.2



**NOTE:** PIERS MAY BE OFFSET UP TO 12" TO ALLOW FOR ELECTRICAL, PLUMBING, AND MECHANICAL EQUIPMENT OR DEVICES.

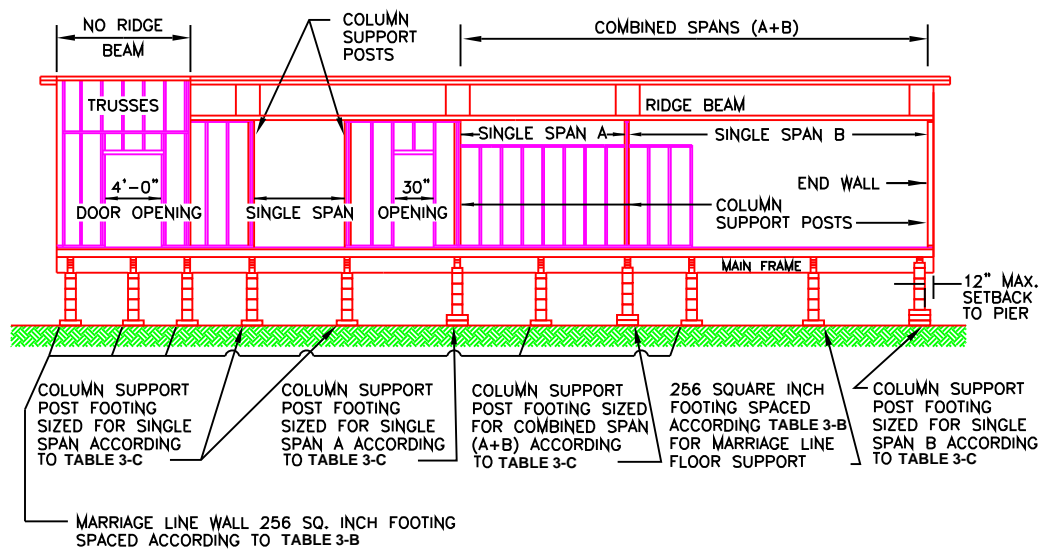
**NOTE:** ONLY SINGLE STACK CONCRETE BLOCKS ARE REQUIRED AT COLUMN SUPPORTS REGARDLESS OF SPAN OR LOADING.

**NOTE:** PREFABRICATED PIERS SHALL NOT EXCEED THEIR APPROVED OR LISTED MINIMUM DESIGN LOADS.

TYPICAL MARRIAGE LINE PIER SUPPORT LAYOUT A

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-6.3A





**NOTE** MARRIAGE LINE COLUMN SUPPORT PIERS ARE NOT REQUIRED AT EACH SIDE OF DOOR OPENING IN A MARRIAGE LINE WALL.

**NOTE:** PIERS MAY BE OFFSET UP TO 12" TO ALLOW FOR ELECTRICAL, PLUMBING, AND MECHANICAL EQUIPMENT OR DEVICES.

**NOTE:** PREFABRICATED PIERS SHALL NOT EXCEED THEIR APPROVED OR LISTED MAXIMUM DESIGN LOADS.

**NOTE:** ONLY SINGLE STACK CONCRETE BLOCKS ARE REQUIRED AT COLUMN SUPPORTS REGARDLESS OF SPAN OR LOADING.

**NOTE** WHERE A MARRIAGE LINE WALL DOES NOT EXTEND FULL HEIGHT TO SUPPORT THE BOTTOM OF THE RIDGE BEAM, THE RIDGE BEAM ABOVE THAT WALL SHALL BE TREATED AS ANOTHER SPAN.

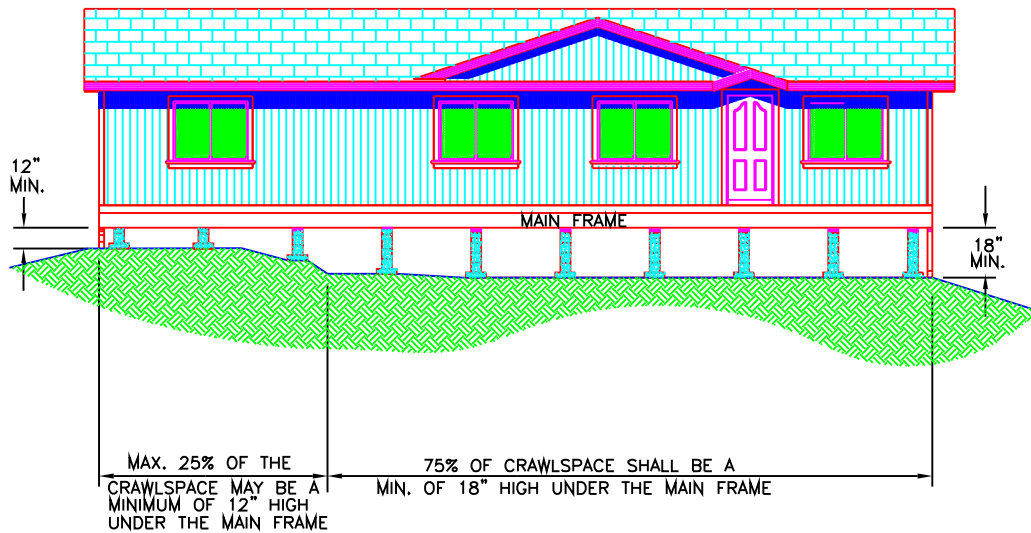
TYPICAL MARRIAGE LINE PIER SUPPORT LAYOUT B

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-6.3B

**NOTE:** CRAWLSPACE SHALL BE A MINIMUM OF 18" HIGH UNDER THE MAINFRAME AT ALL MECHANICAL, ELECTRICAL, AND PLUMBING CONNECTIONS AND AT ACCESS LOCATIONS.



**NOTE:** PIERS SHOWN ARE MAIN FRAME SUPPORT PIERS. PERIMETER AND MARRIAGE LINE PIERS ARE NOT SHOWN FOR CLARITY OF THE ILLUSTRATION.

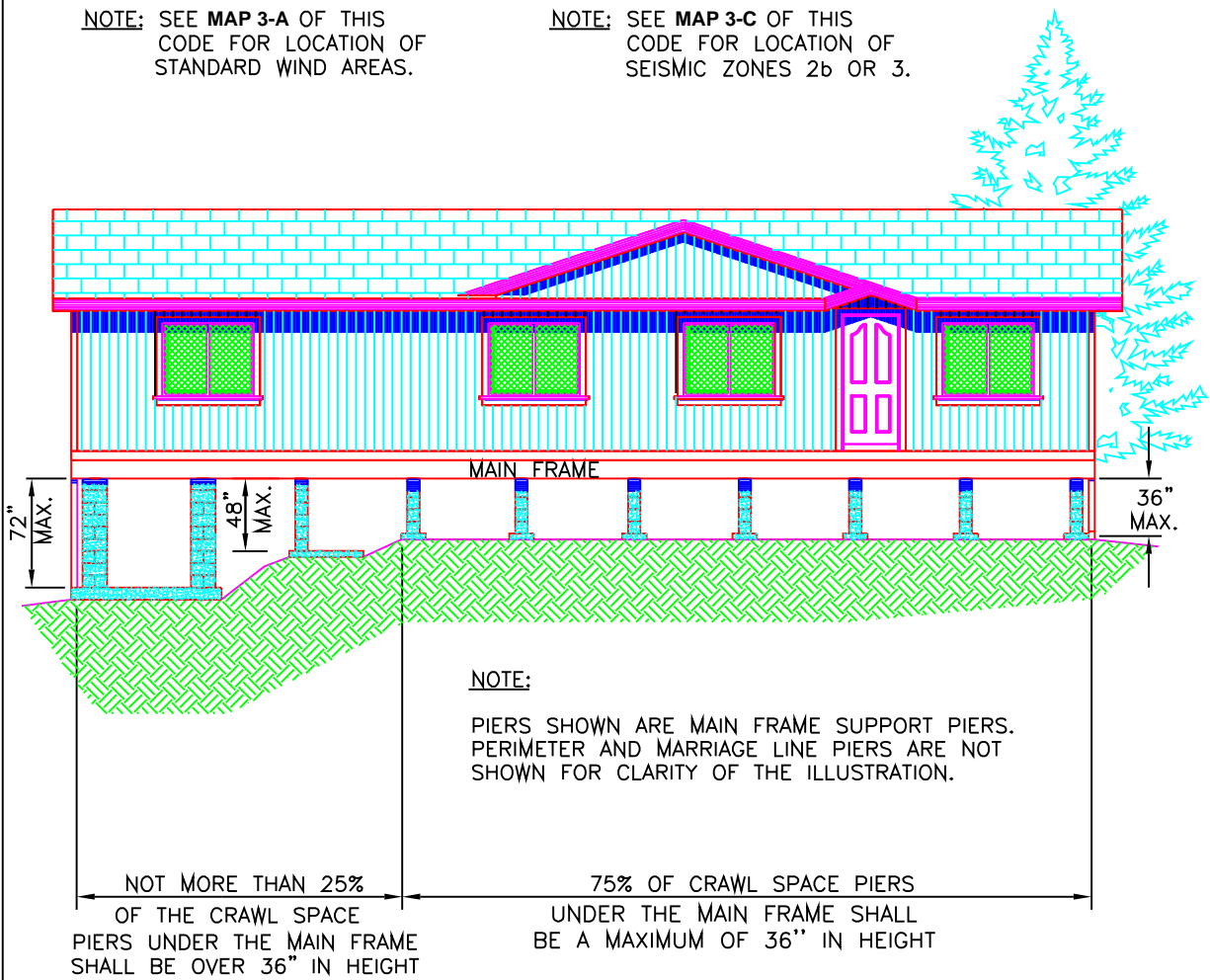
**NOTE:** DIMENSIONS SHOWN ARE TO THE GROUND IN BETWEEN THE INDIVIDUAL FOOTINGS. WHEN FOOTINGS ARE CONTINUOUS CONCRETE FOOTINGS OR SLAB, THE DIMENSION SHALL BE FROM THE TOP OF THE FOOTING.

### MINIMUM UNDER FLOOR CLEARANCES

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-7.1

NOTE: SEE MAP 3-A OF THIS CODE FOR LOCATION OF STANDARD WIND AREAS.

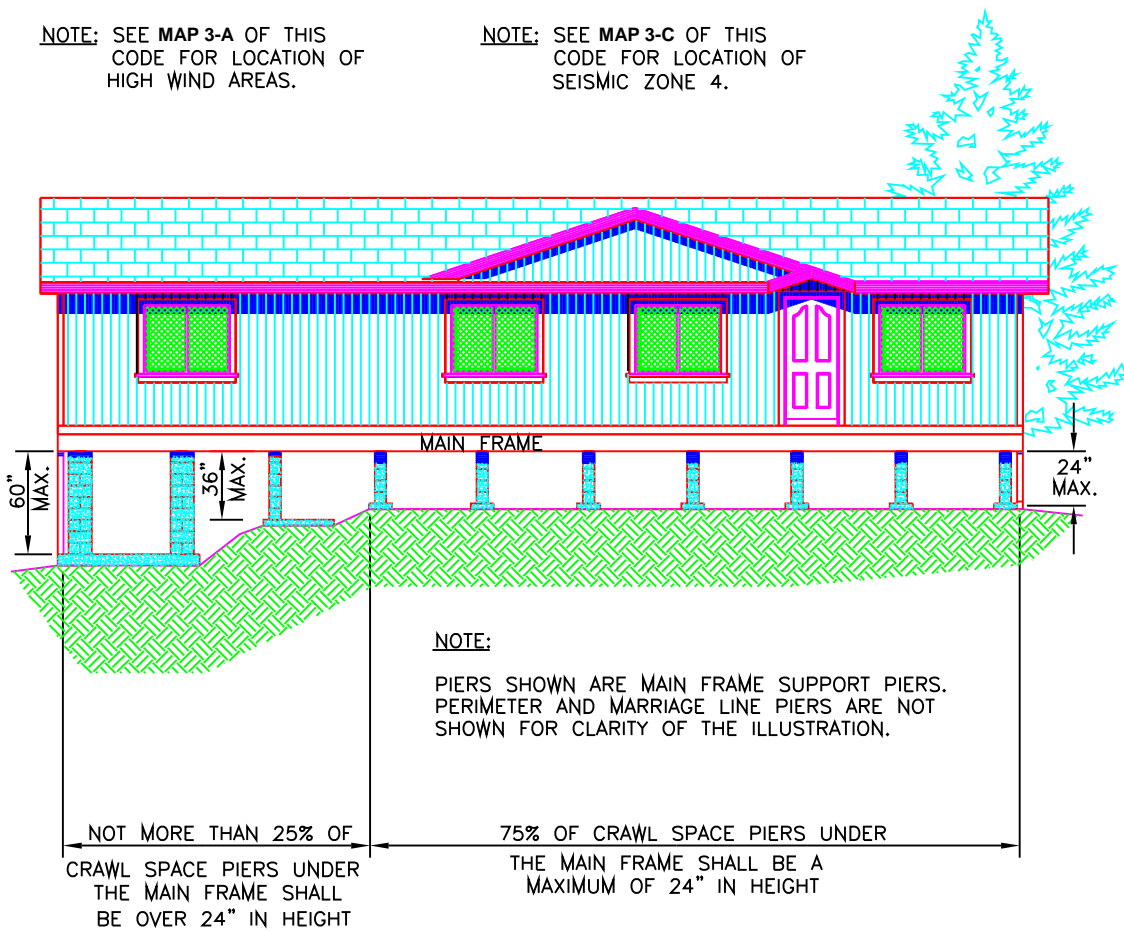
NOTE: SEE MAP 3-C OF THIS CODE FOR LOCATION OF SEISMIC ZONES 2b OR 3.



MAXIMUM PIER HEIGHT IN STANDARD WIND ZONE OR SEISMIC ZONES 2b & 3		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-7.2A

NOTE: SEE MAP 3-A OF THIS CODE FOR LOCATION OF HIGH WIND AREAS.

NOTE: SEE MAP 3-C OF THIS CODE FOR LOCATION OF SEISMIC ZONE 4.



MAXIMUM PIER HEIGHT IN HIGH WIND ZONE OR SEISMIC ZONE 4

REV. 12/01/01 RHW

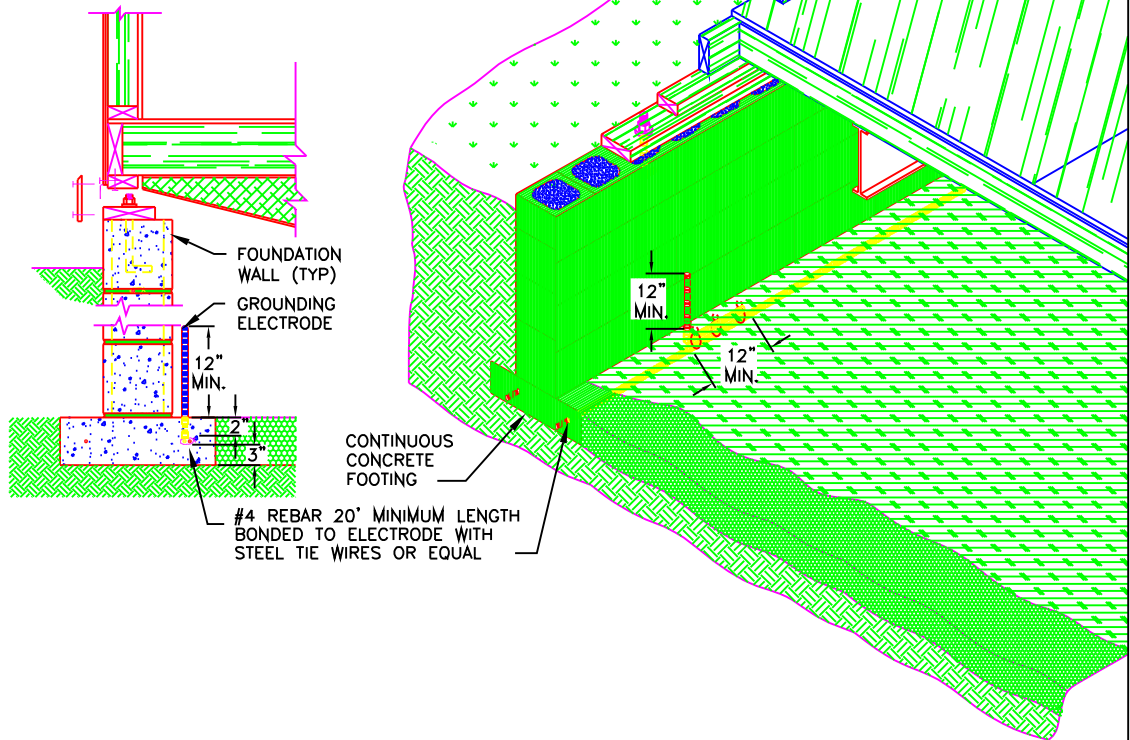
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-7.2B

**NOTE:** DO NOT INSTALL MOISTURE BARRIER BELOW CONCRETE FOOTING.

**NOTE:** LOCATE GROUNDING ELECTRODE NEAR ELECTRICAL MAIN DISTRIBUTION PANEL OR SERVICE DISCONNECT.

**NOTE:** WHERE THERE ARE MULTIPLE CONCRETE FOOTINGS, ONLY ONE IS REQUIRED TO HAVE A GROUNDING ELECTRODE.



FOUNDATION ENCASED ELECTRODE IN CONTINUOUS FOOTING

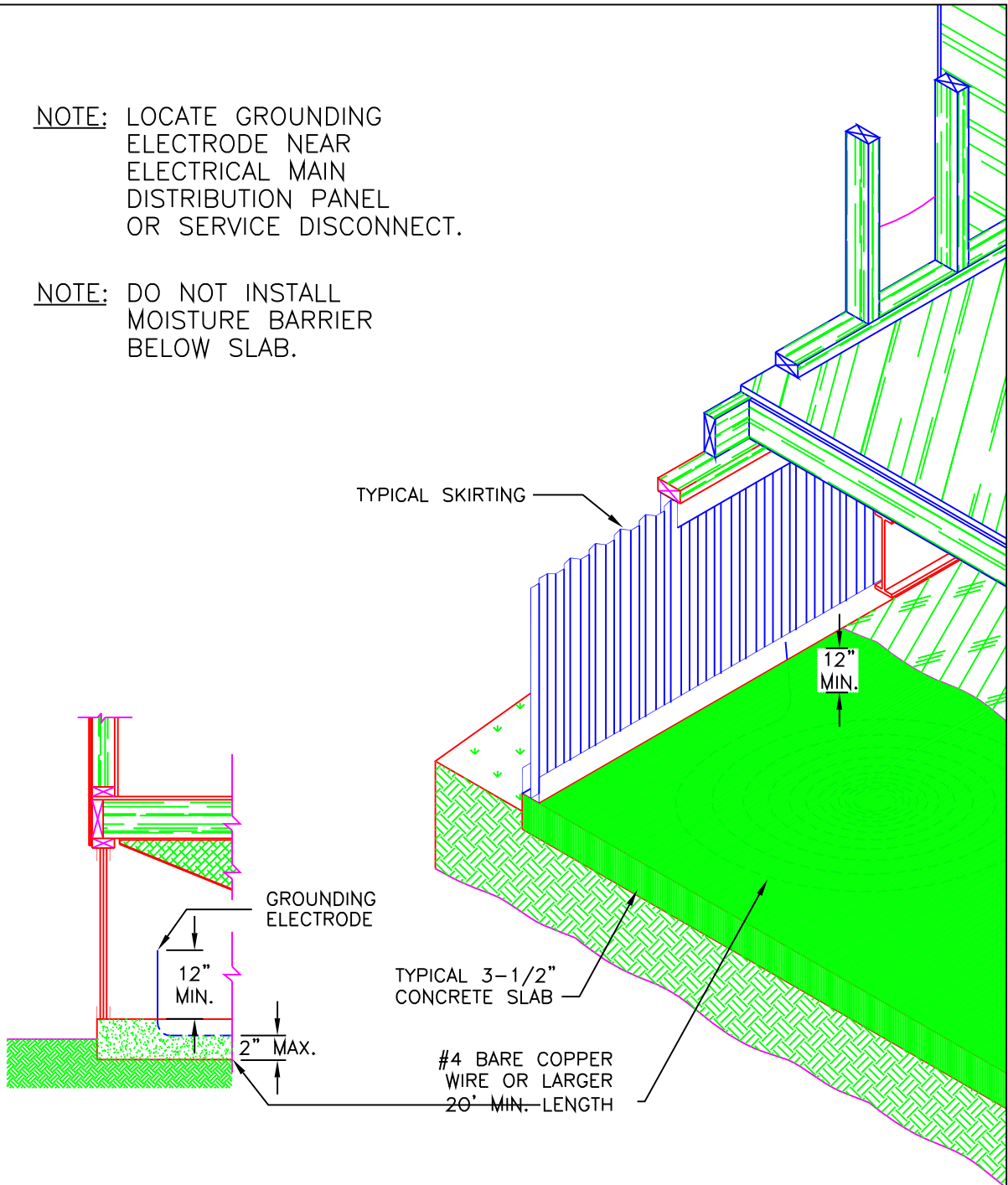
REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-8.2.1

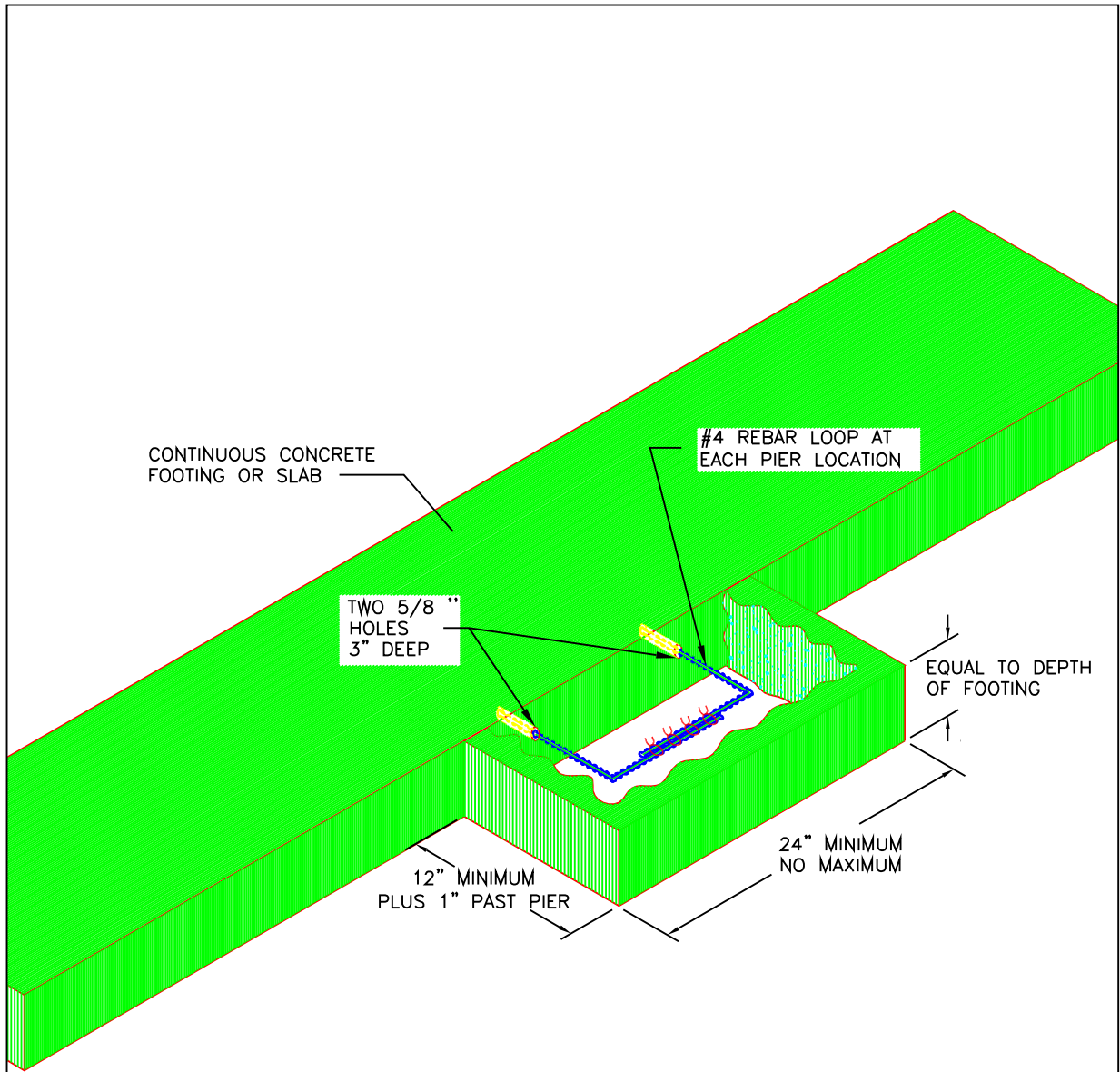
NOTE: LOCATE GROUNDING ELECTRODE NEAR ELECTRICAL MAIN DISTRIBUTION PANEL OR SERVICE DISCONNECT.

NOTE: DO NOT INSTALL MOISTURE BARRIER BELOW SLAB.



FOUNDATION ENCASED ELECTRODE IN SLAB FOOTING

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.2.2



**NOTE:** WHEN A CONTINUOUS CONCRETE FOOTING IS SHORT OR MISLOCATED SO THAT THE PIERS OR SLAB ARE NOT FULLY SUPPORTED BY THE FOOTING, THE FOOTING SHALL BE REPLACED OR REPAIRED SO THAT THE PIER HAS 100% SUPPORT ACCORDING TO THIS DETAIL.

**NOTE:** DRILL TWO, 5/8" HOLES IN THE SIDE OF THE FOOTING 3" DEEP, INSERT #4 REBAR INTO THE FULL DEPTH OF THE HOLES & SECURE IN PLACE WITH ANCHOR CEMENT. REPEAT THE ABOVE PROCEDURE FOR EACH PIER LOCATION. THE CONCRETE REPAIR MAY ALSO BE CONTINUOUS TO INCORPORATE MULTIPLE REBAR LOOPS AND FOOTING LOCATIONS.

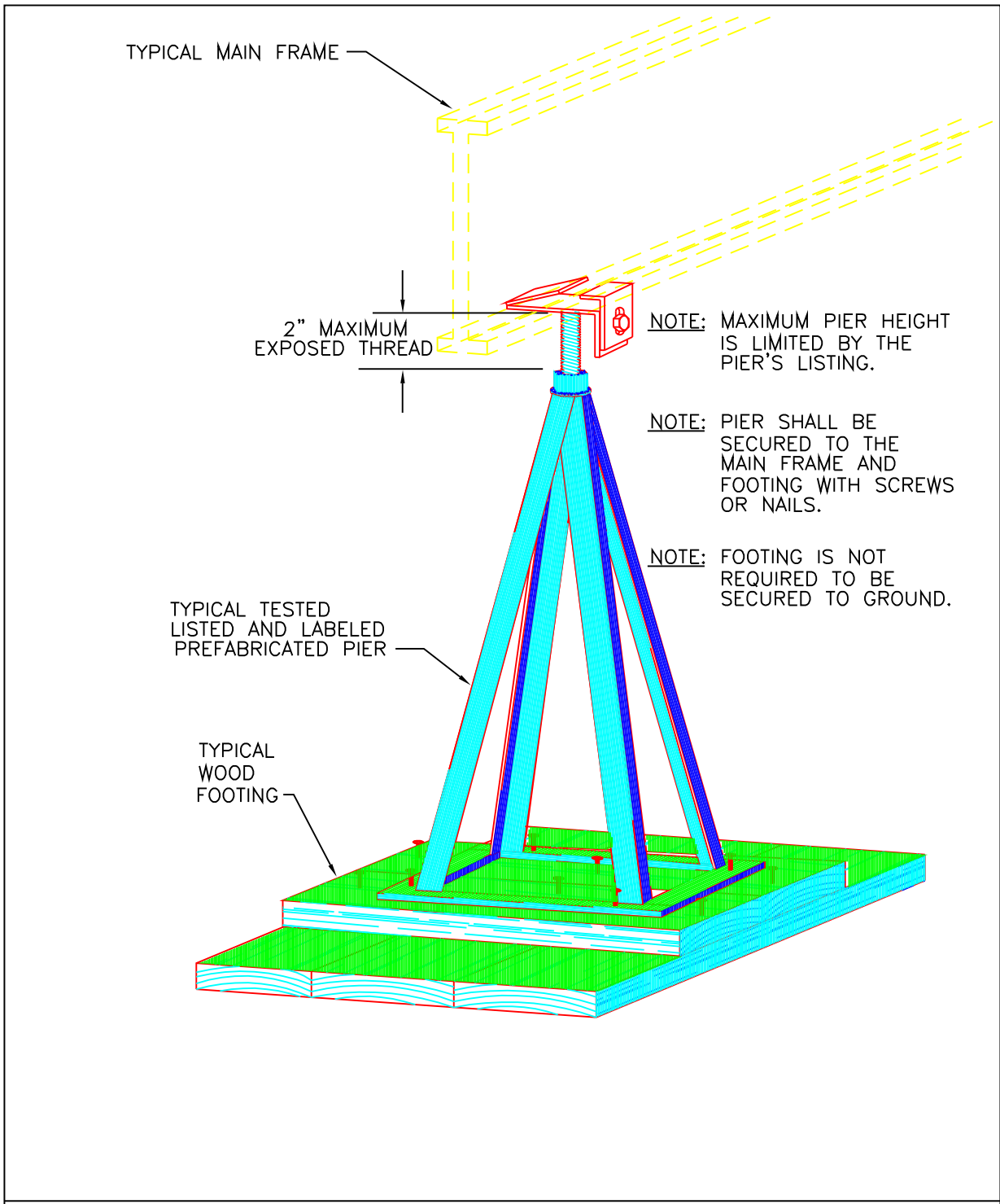
CONTINUOUS CONCRETE FOOTING OR SLAB REPAIR DETAIL

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3

FIGURE 3-8.3



**NOTE:** MAXIMUM PIER HEIGHT IS LIMITED BY THE PIER'S LISTING.

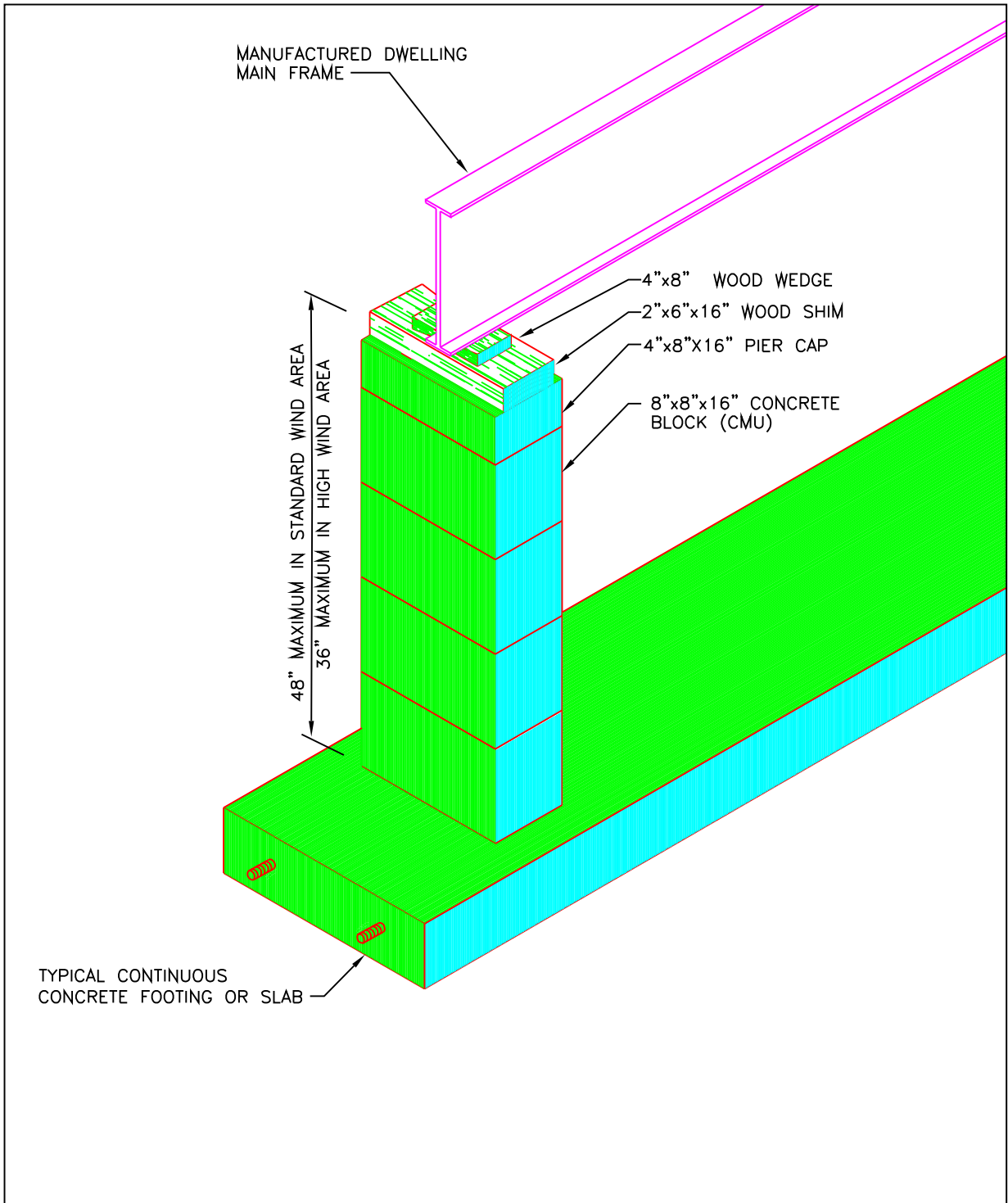
**NOTE:** PIER SHALL BE SECURED TO THE MAIN FRAME AND FOOTING WITH SCREWS OR NAILS.

**NOTE:** FOOTING IS NOT REQUIRED TO BE SECURED TO GROUND.

TYPICAL PREFABRICATED POSITIVE CONNECTION PIER

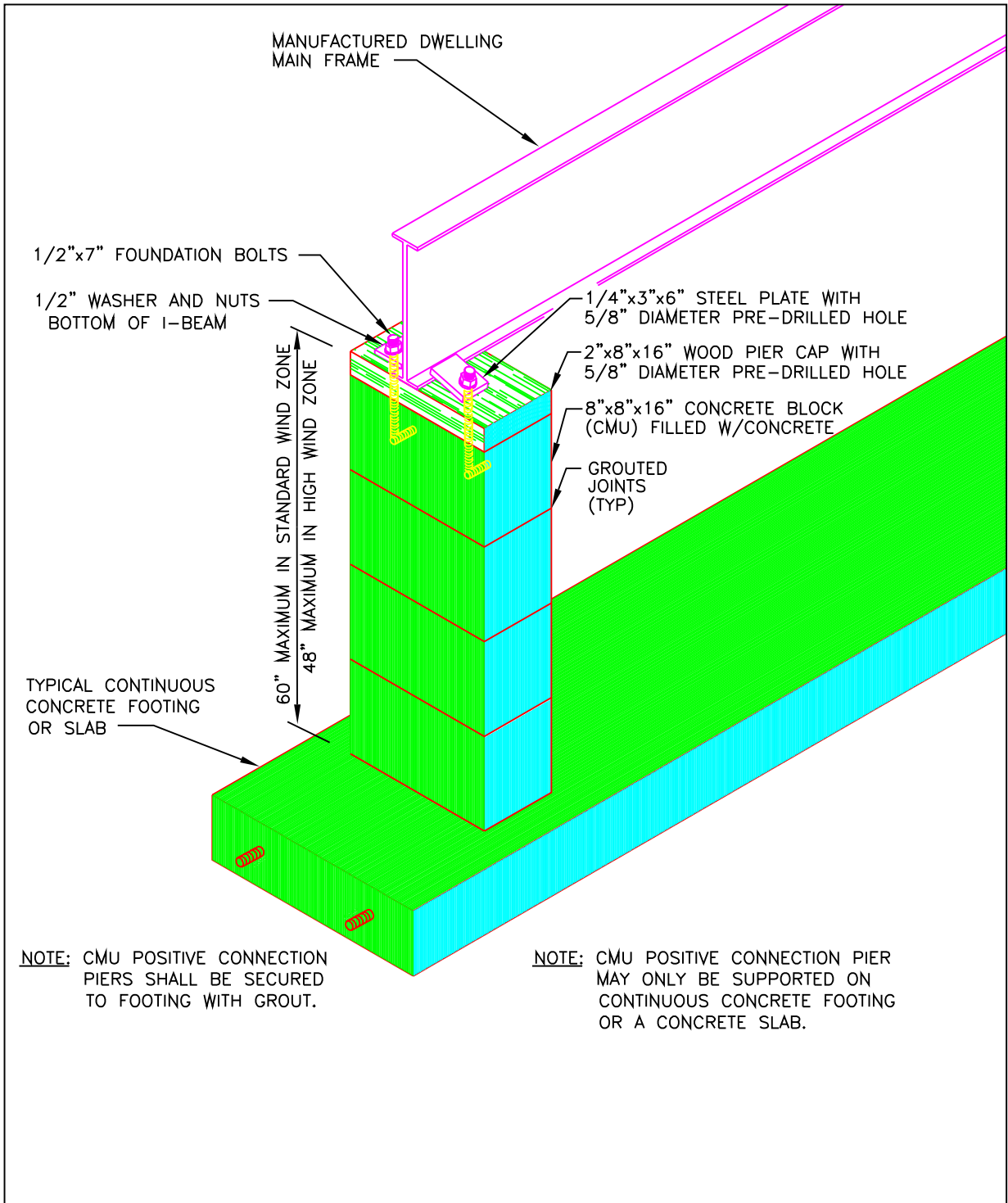
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.1





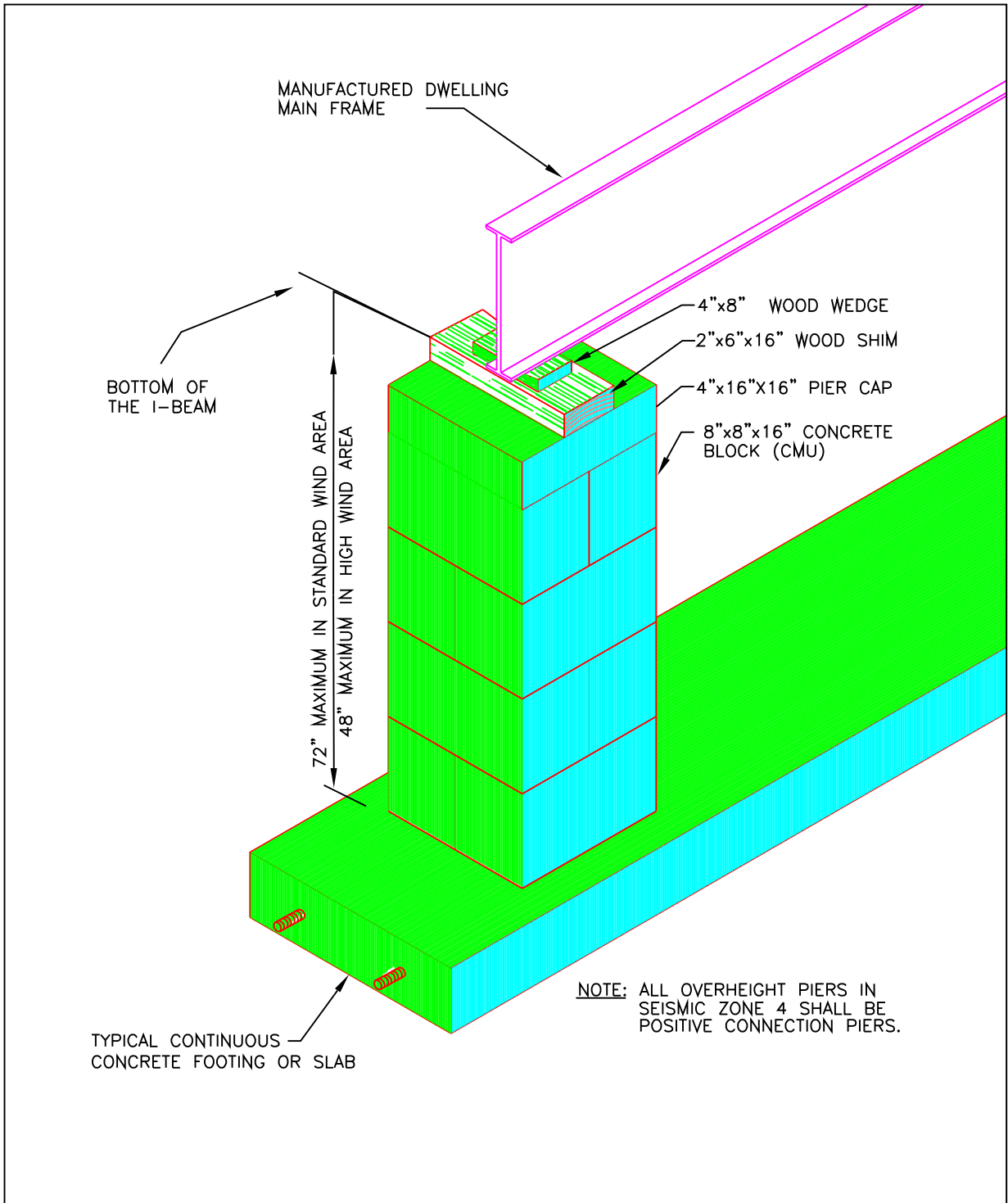
SINGLE CMU OVERHEIGHT PIER DETAIL A

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.2A



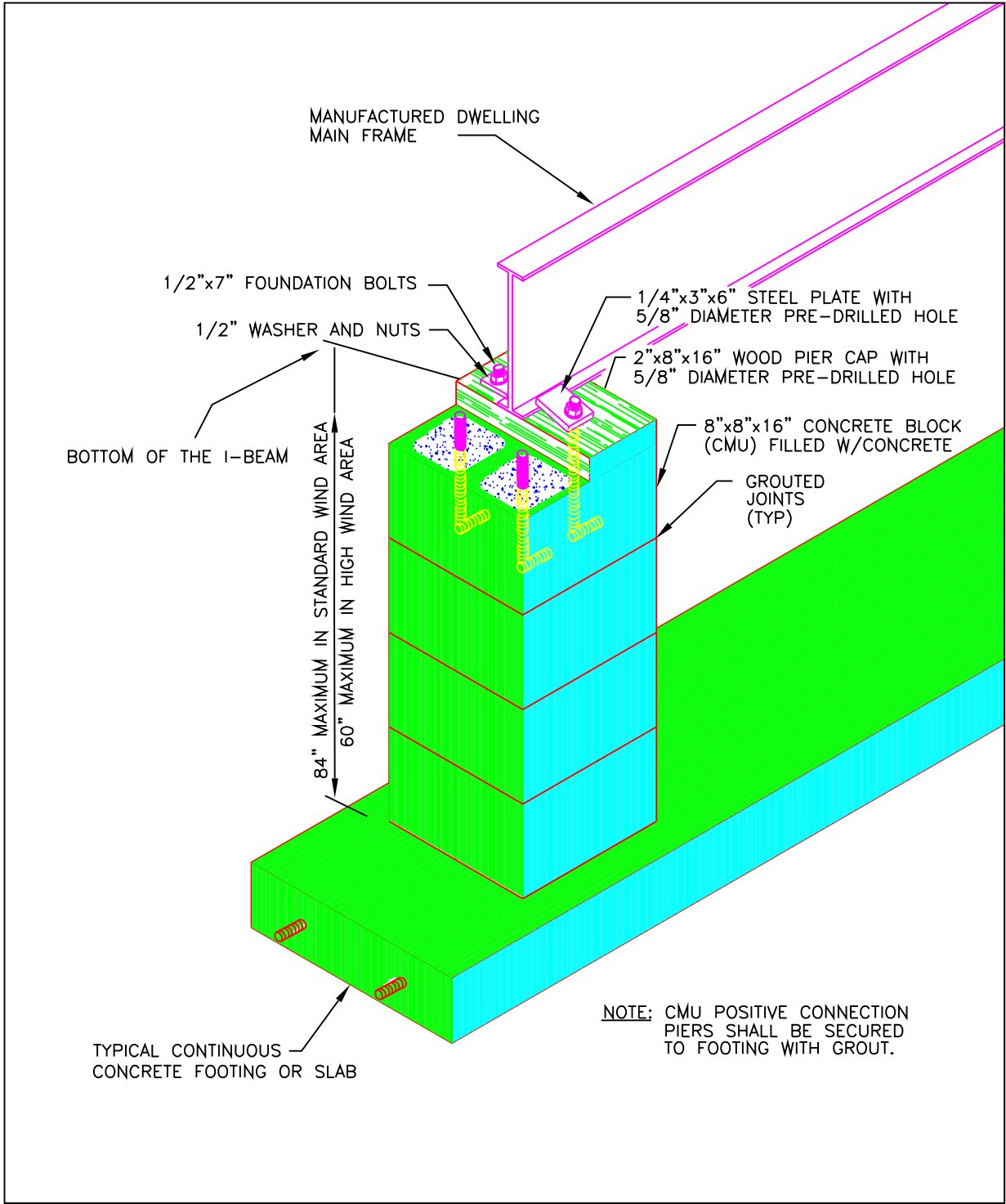
SINGLE CMU POSITIVE CONNECTION PIER DETAIL A

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.2B



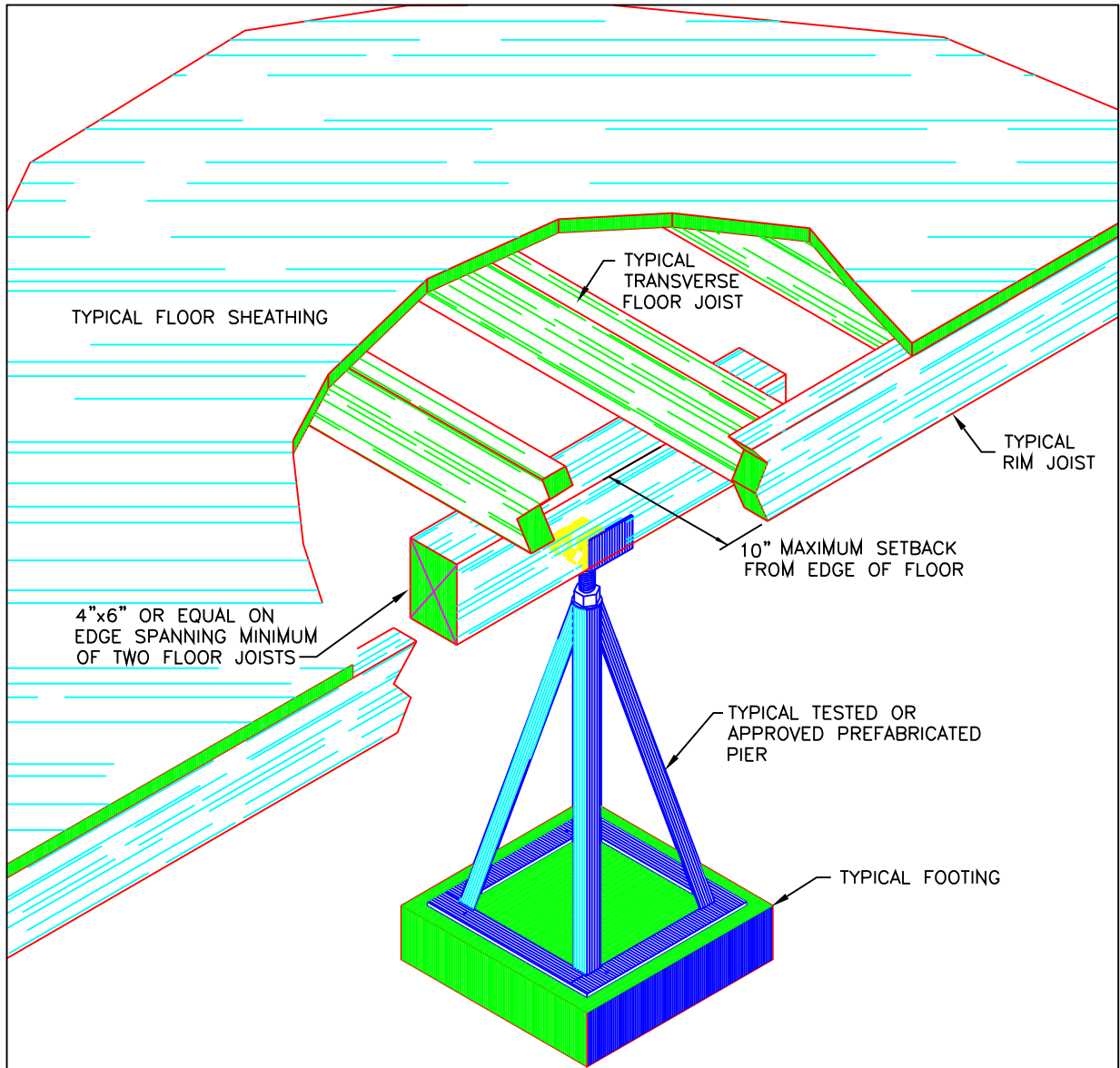
DOUBLE INTERLOCKED CMU OVERHEIGHT PIER DETAIL B

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.2C



DOUBLE CMU POSITIVE CONNECTION PIER DETAIL B

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.2D



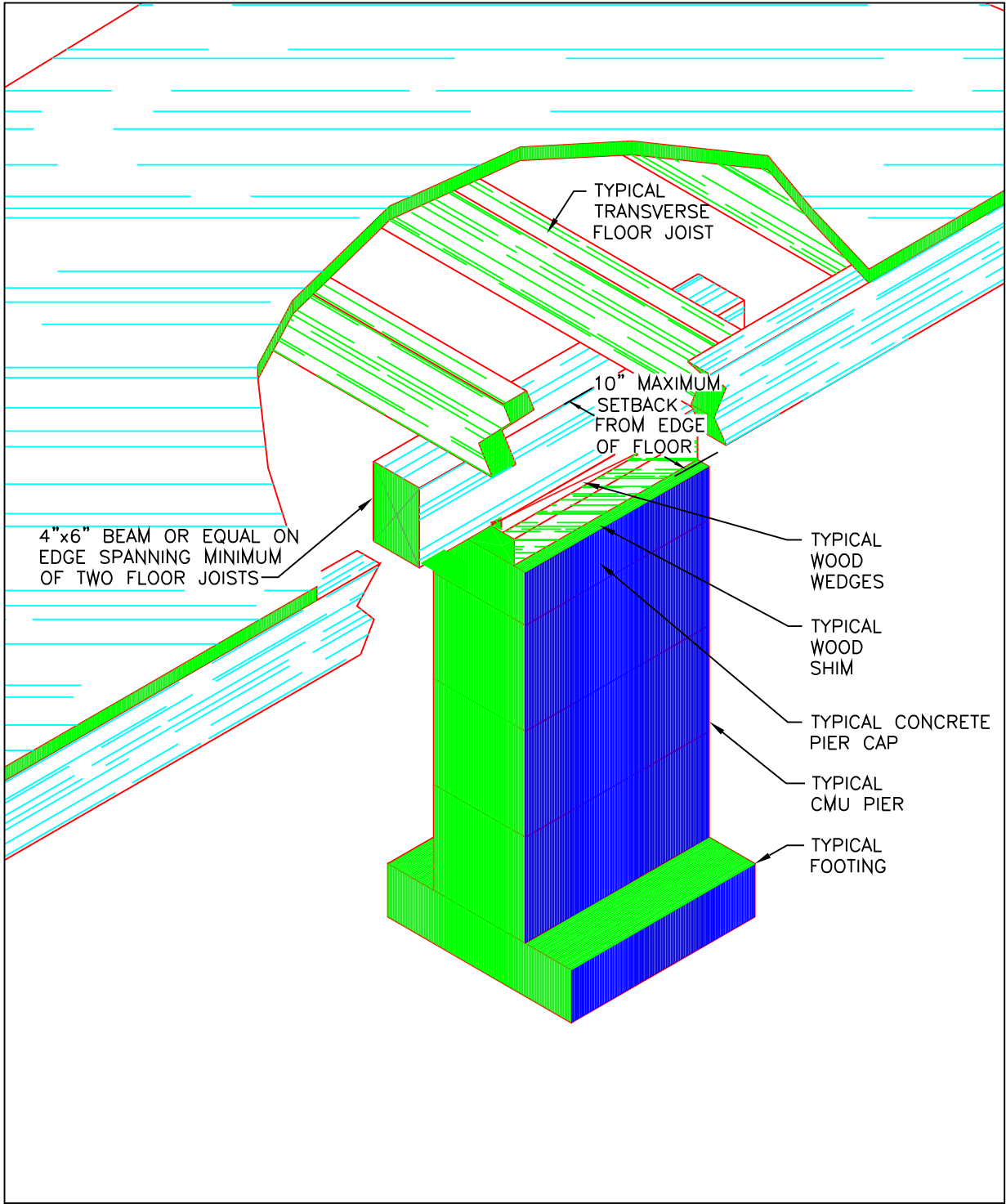
**NOTE:** PREFABRICATED PIERS SHALL NOT BE SHIMMED. ANY ADJUSTMENT IN HEIGHT SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURED INSTALLATION INSTRUCTIONS.

TYPICAL RECESSED PREFAB PIER DETAIL FOR TRANSVERSE FLOORS

REV. 12/01/01 RHW

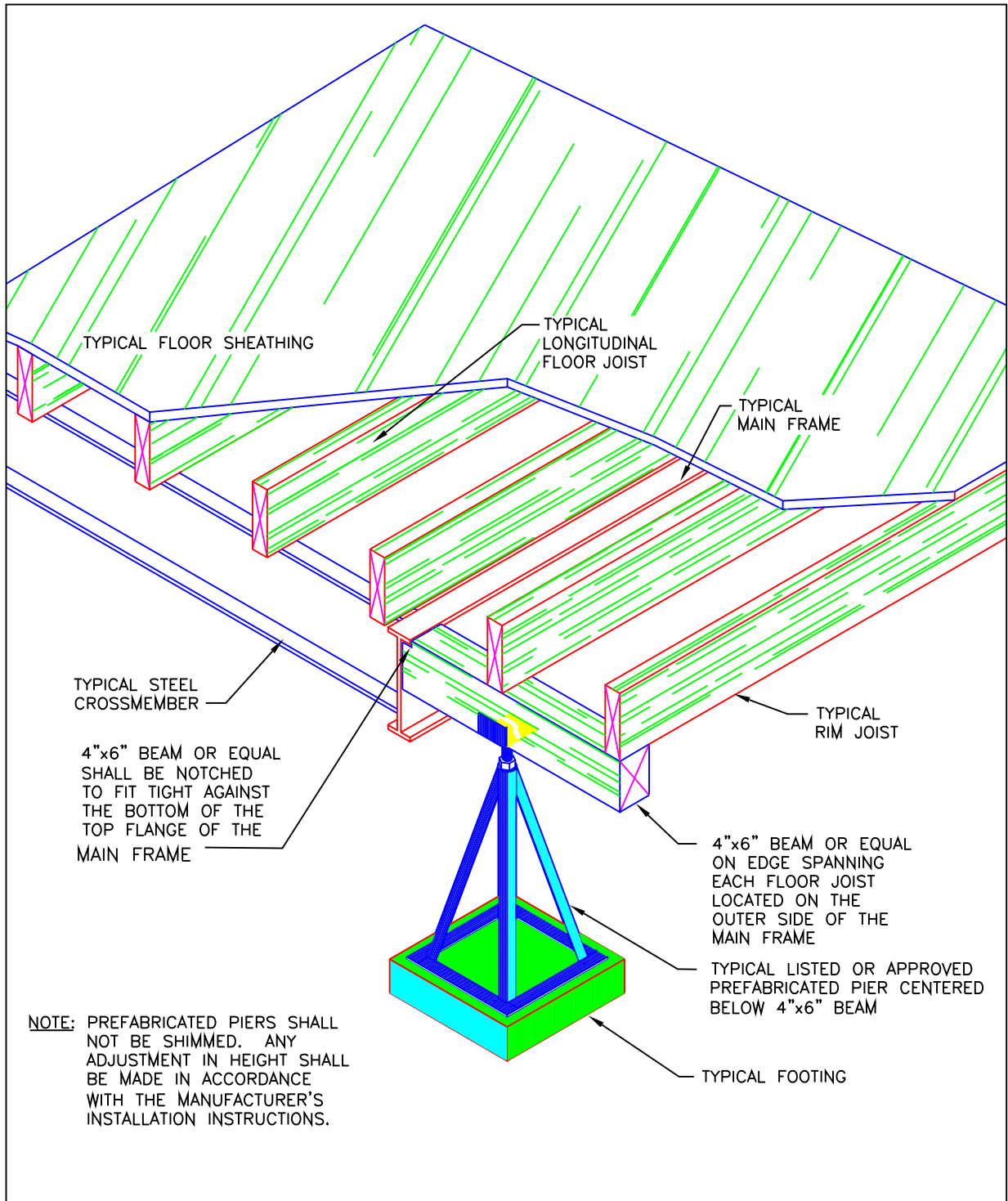
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-8.4.3A



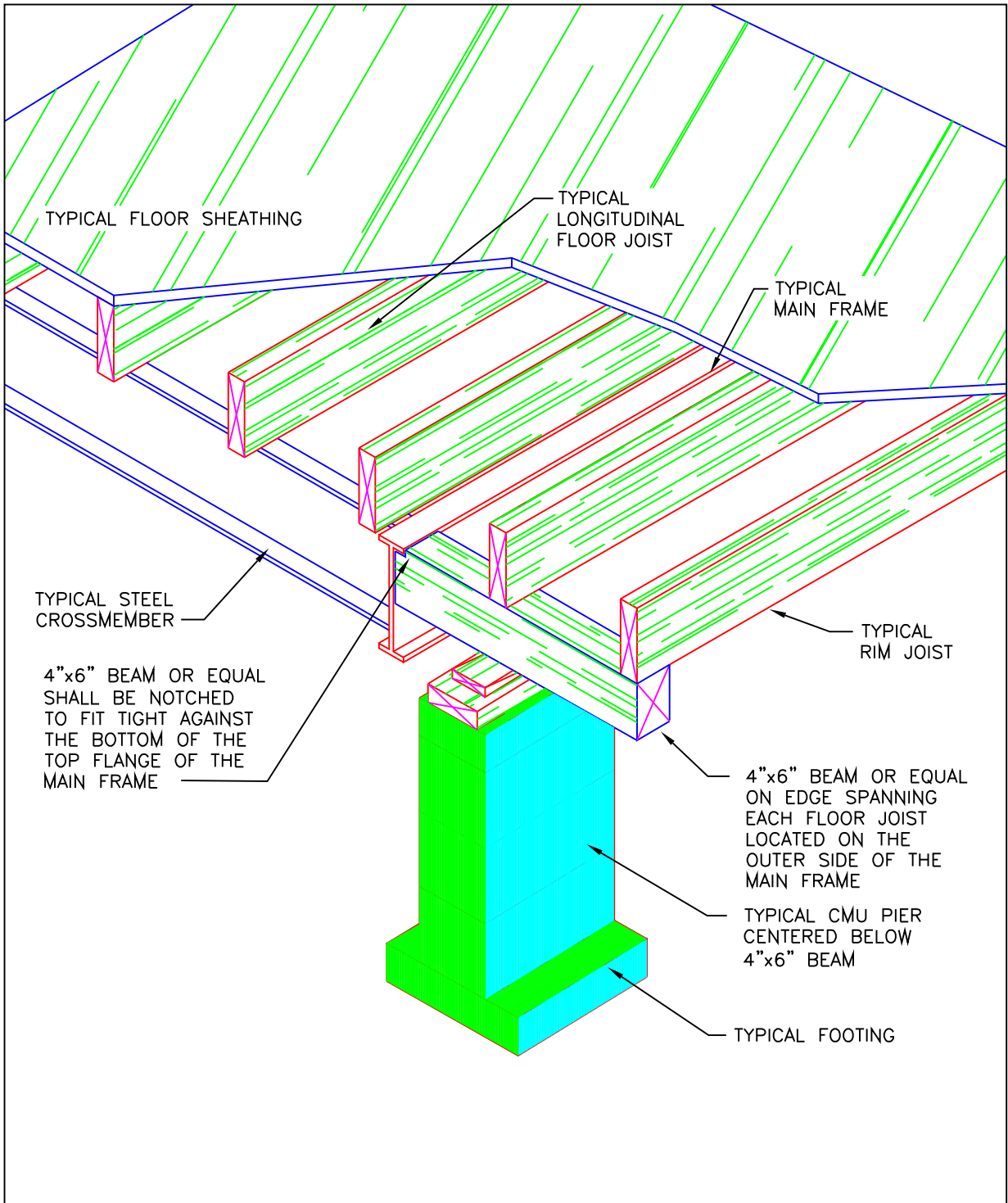
TYPICAL RECESSED CMU PIER DETAIL FOR TRANSVERSE FLOORS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.3B



TYPICAL RECESSED PREFAB PIER DETAIL FOR LONGITUDINAL FLOORS

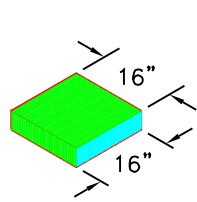
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.3C



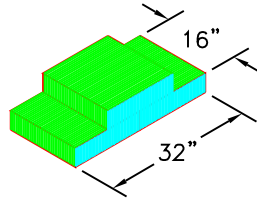
TYPICAL RECESSED CMU PIER DETAIL FOR LONGITUDINAL FLOORS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.3D

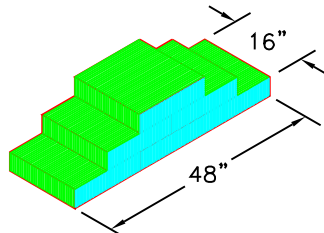




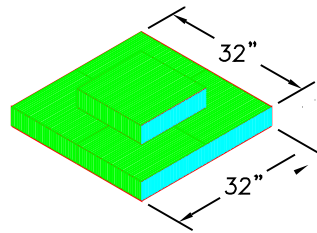
1-16"x16" FOOTINGS  
256 SQ. INCH FOOTING



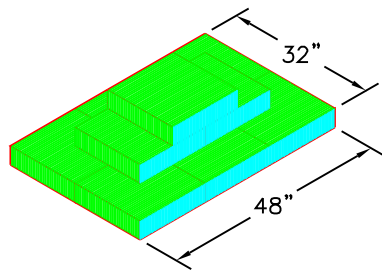
3-16"x16" FOOTINGS  
512 SQ. INCH FOOTING



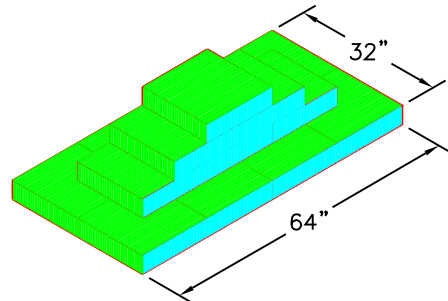
6-16"x16" FOOTINGS  
768 SQ. INCH FOOTING



5-16"x16" FOOTINGS  
1024 SQ. INCH FOOTING



9-16"x16" FOOTINGS  
1536 SQ. INCH FOOTING



14-16"x16" FOOTINGS  
2048 SQ. INCH FOOTING

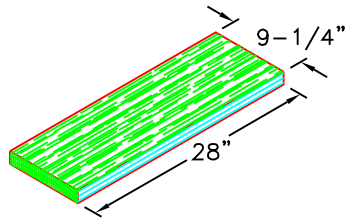
NOTE: PYRAMIDED 16"x16" FOOTINGS MAY BE CONCRETE, PREFABRICATED, OR PRESSURE TREATED PLYWOOD.

TYPICAL 16" x 16" CONCRETE FOOTING PYRAMIDS

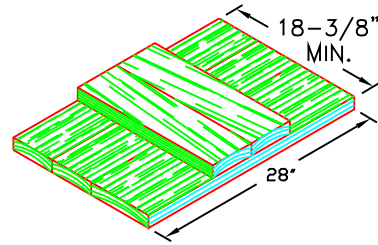
REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

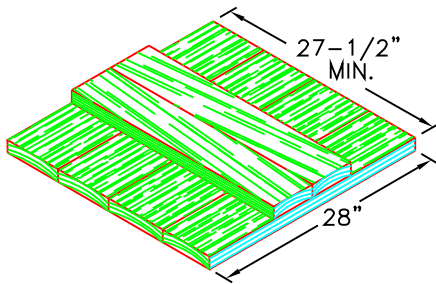
CHAPTER 3  
FIGURE 3-8.4.4A



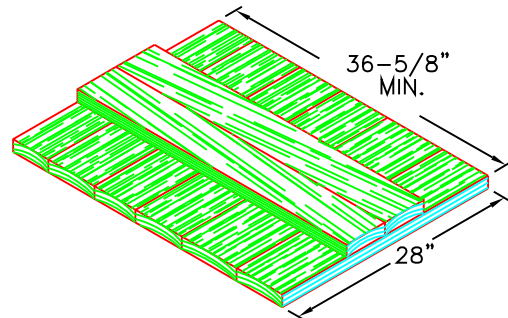
1-2"x10"x28" BASE  
**256 SQ. INCH FOOTING**



4-2"x6"x28"  
 3-2"x8"x28", OR  
 2-2"x10"x28"  
 BASE LAYER  
**512 SQ. INCH FOOTING**



5-2"x6"x28"  
 4-2"x8"x28", OR  
 3-2"x10"x28"  
 BASE LAYER  
**768 SQ. INCH FOOTING**



6-2"x6"x28"  
 5-2"x8"x28", OR  
 4-2"x10"x28"  
 BASE LAYER  
**1024 SQ. INCH FOOTING**

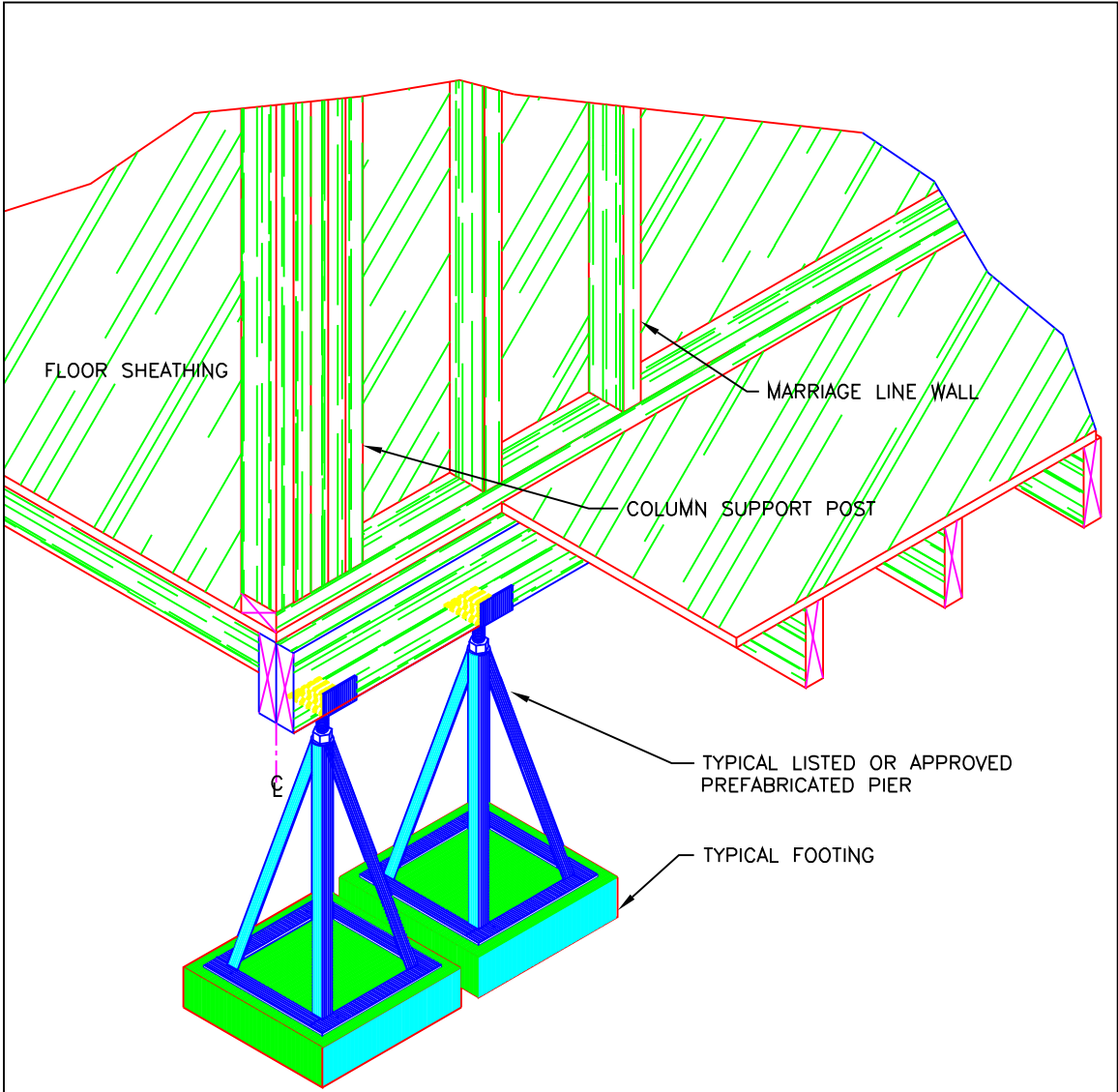
**NOTE:** TOP LAYER SHALL  
 BE EQUAL TO THE  
 SIZE OF THE PIER  
 BEING SUPPORTED.

TYPICAL WOOD FOOTING PYRAMIDS

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
 AND PARK SPECIALTY CODES

CHAPTER 3  
 FIGURE 3-8.4.4B

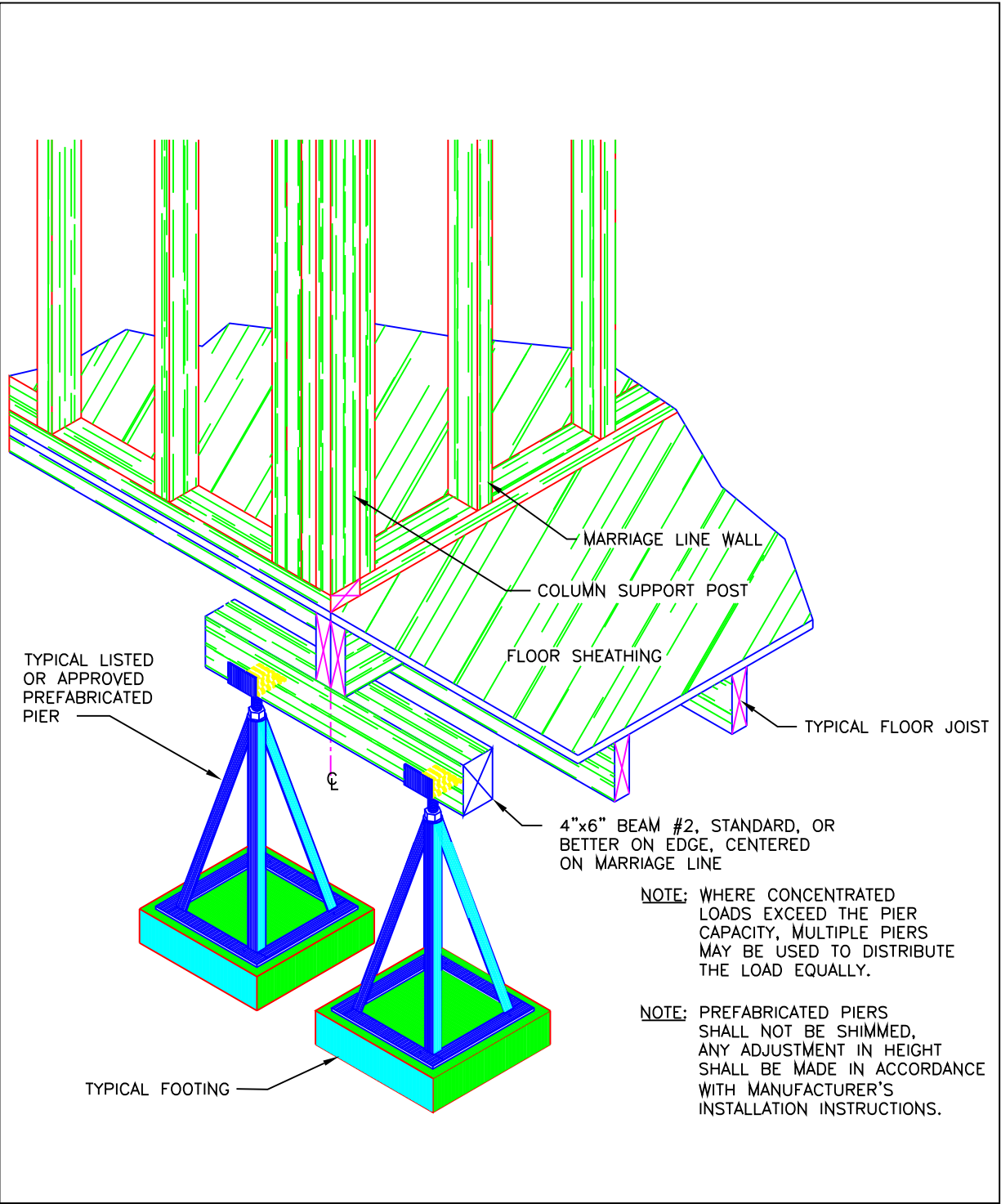


**NOTE:** WHERE CONCENTRATED LOADS EXCEED THE PIER CAPACITY, MULTIPLE PIERS MAY BE USED TO DISTRIBUTE THE LOAD EQUALLY.

**NOTE:** PREFABRICATED PIERS SHALL NOT BE SHIMMED, ANY ADJUSTMENT IN HEIGHT SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

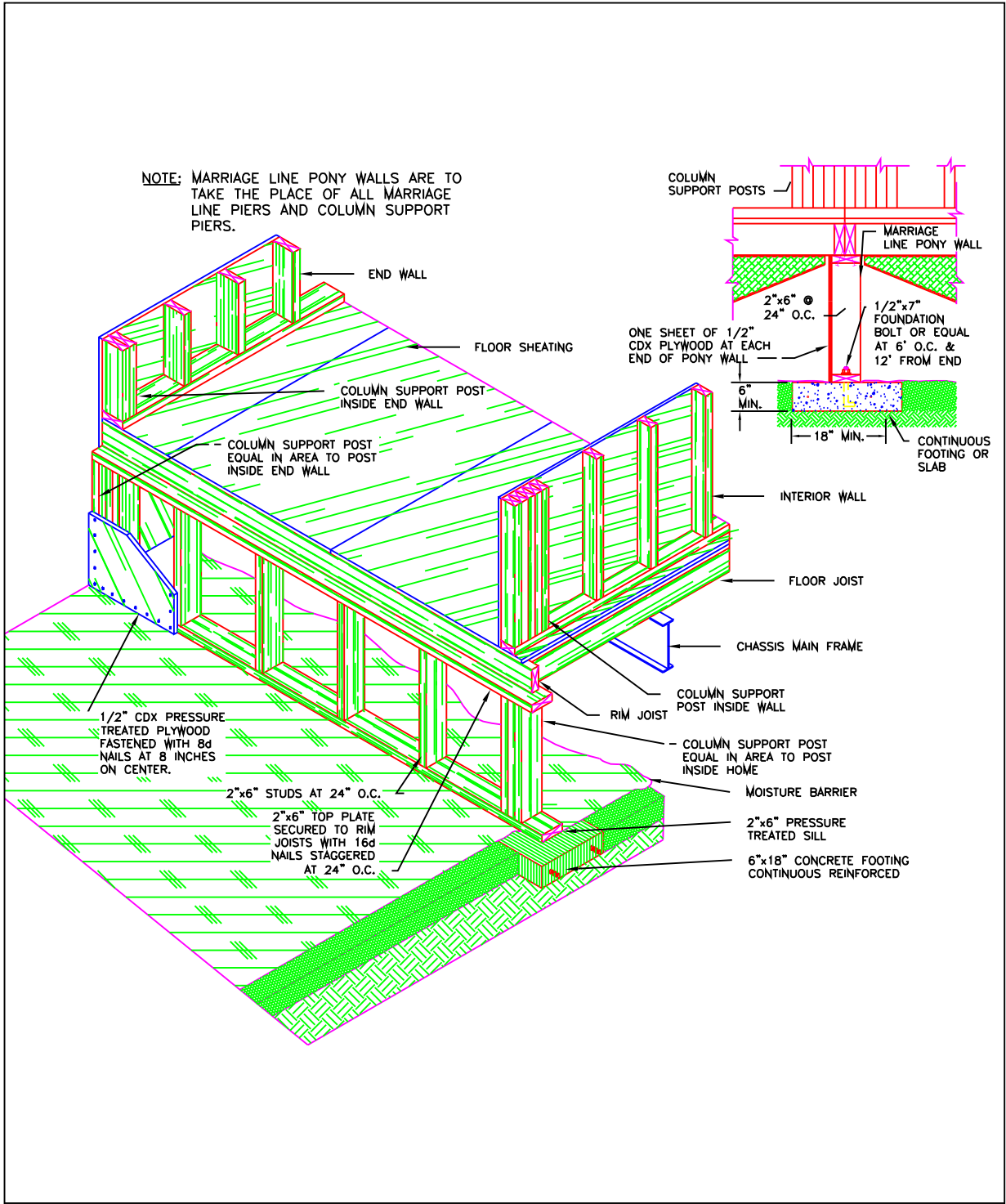
TYPICAL COLUMN SUPPORT WITH MULTIPLE PREFAB PIERS A

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3 FIGURE 3-8.4.4C
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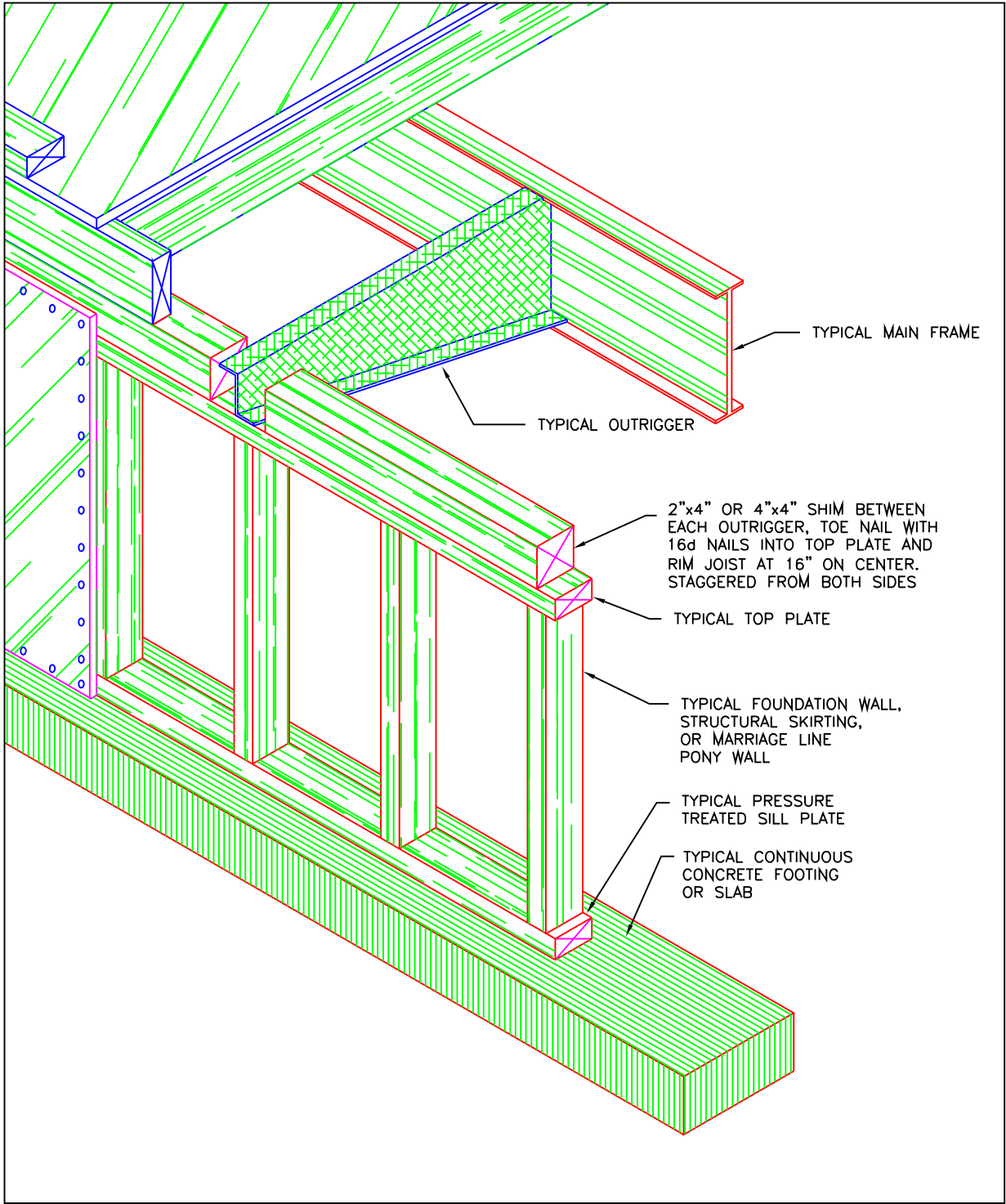
TYPICAL COLUMN SUPPORT WITH BRIDGED PREFAB PIERS B

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.4D



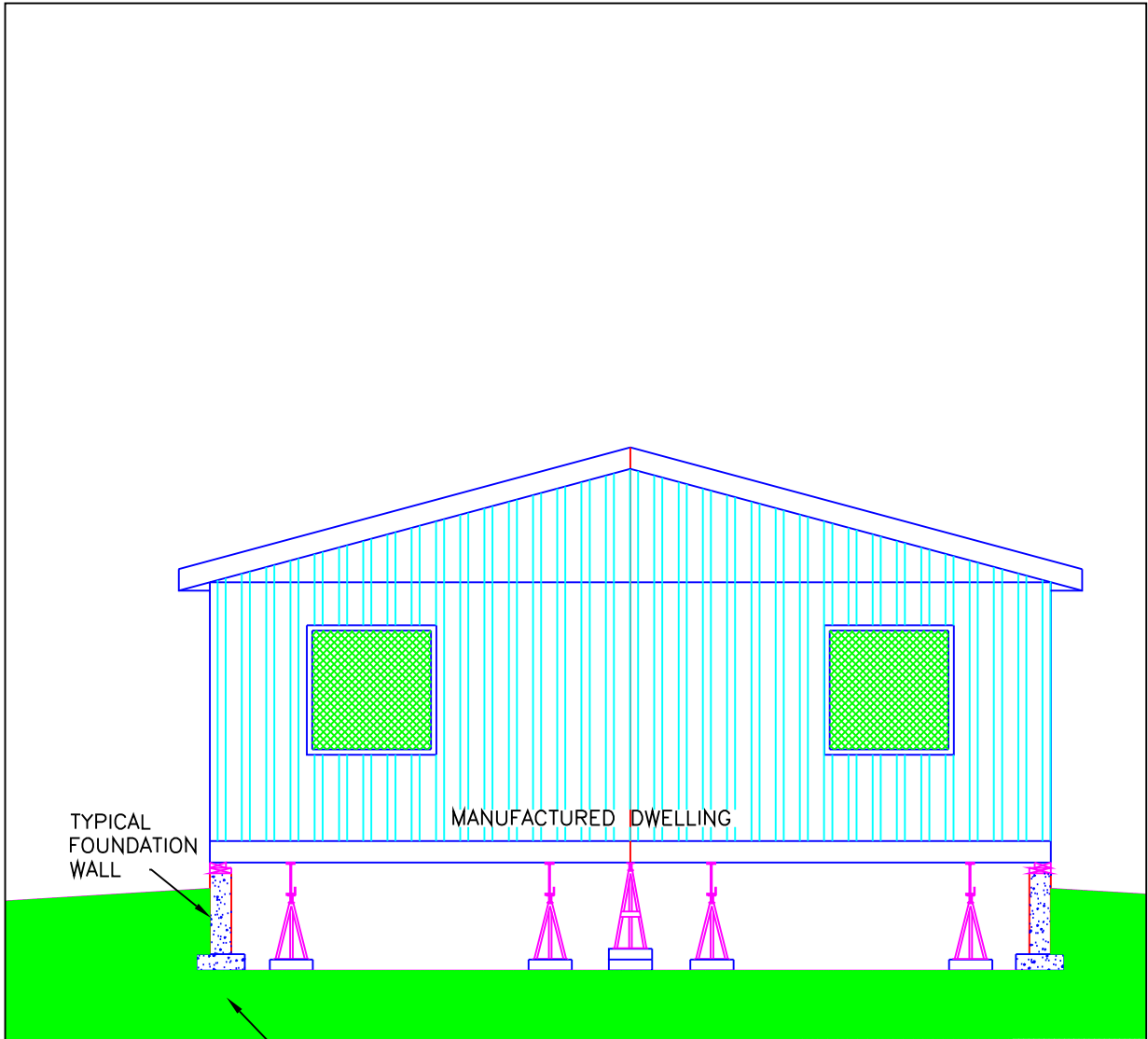
TYPICAL MARRIAGE LINE PONY WALL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.5A



TYPICAL SHIMMING AT OUTRIGGERS

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 3</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 3-8.4.5B</p>



TYPICAL FOUNDATION WALL

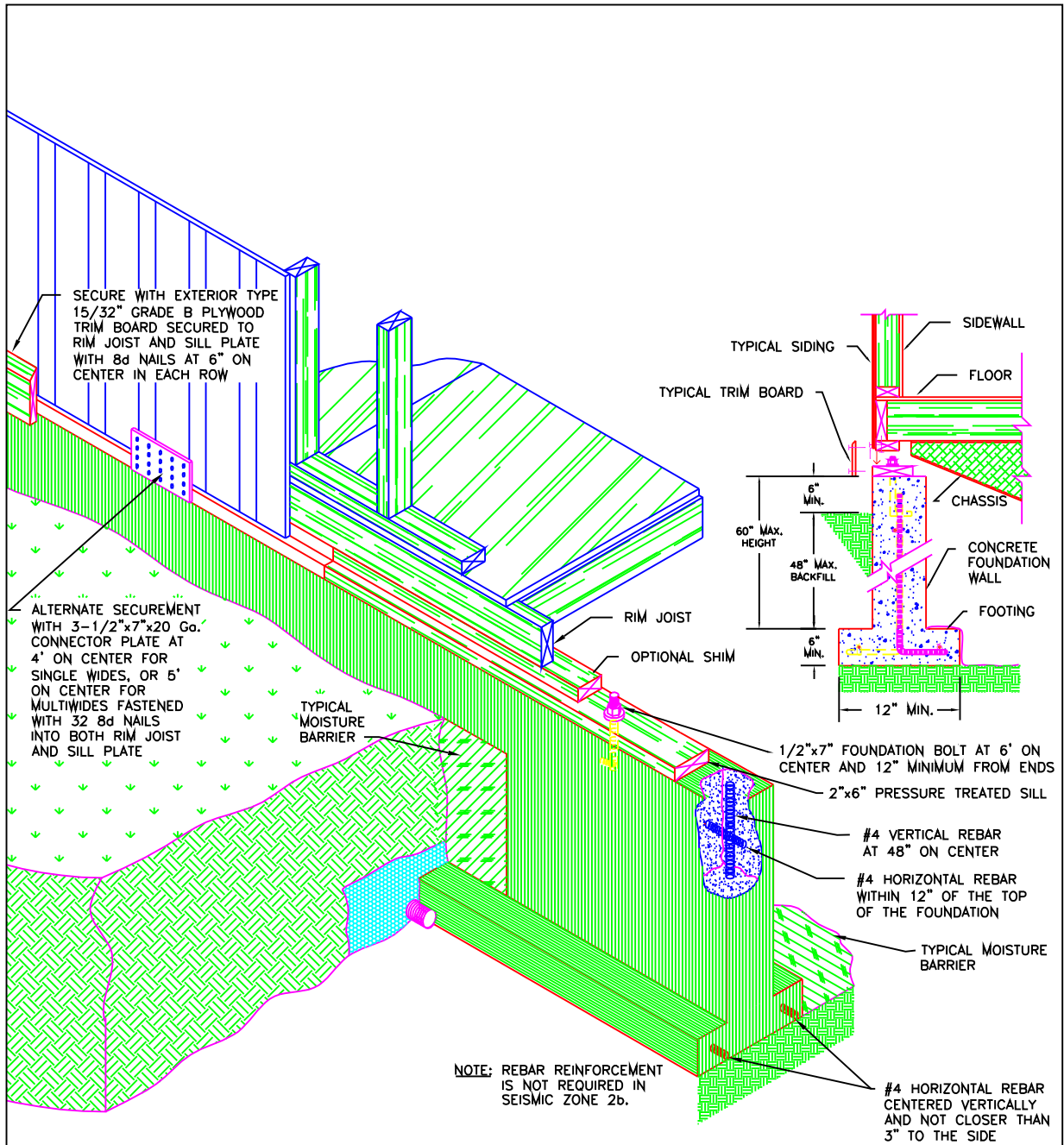
MANUFACTURED DWELLING

TYPICAL FOOTING

**NOTE:** FOUNDATION WALLS MAY BE USED TO TAKE THE PLACE OF RECESSED PERIMETER PIERS AND SKIRTING.

TYPICAL FOUNDATION WALL CONSTRUCTION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.7A



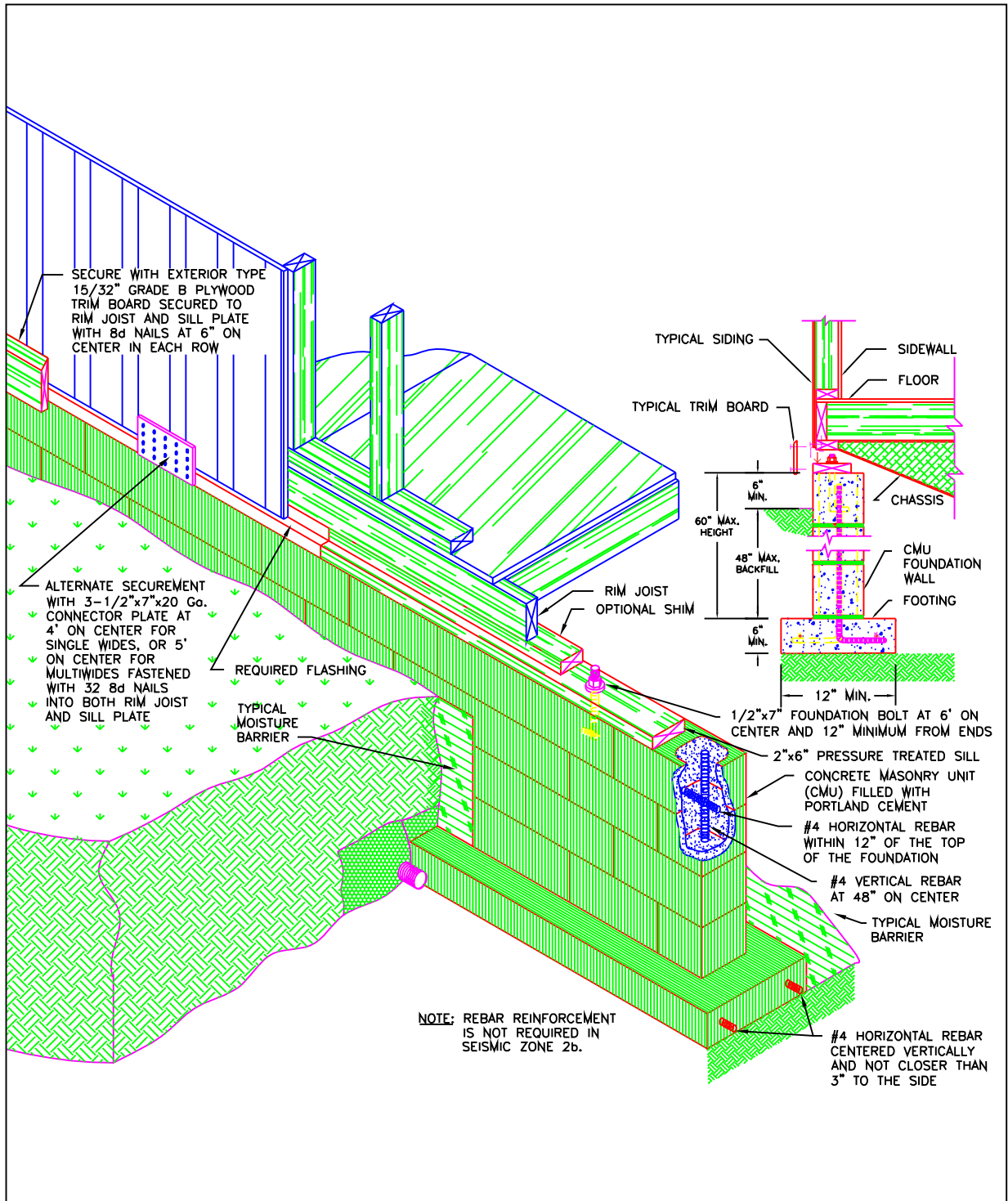
CONCRETE FOUNDATION WALL DETAIL

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

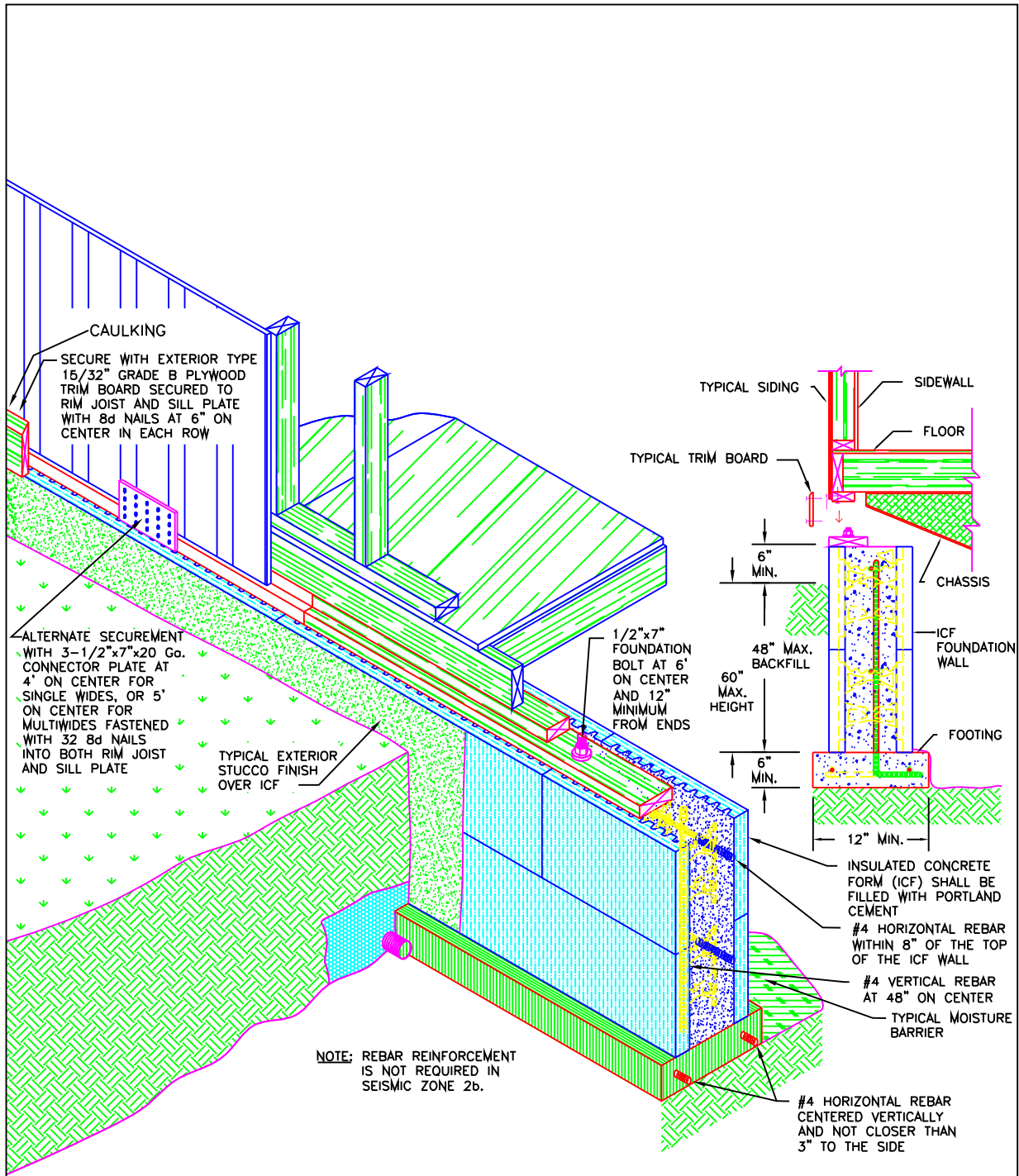
CHAPTER 3  
FIGURE 3-8.4.7B





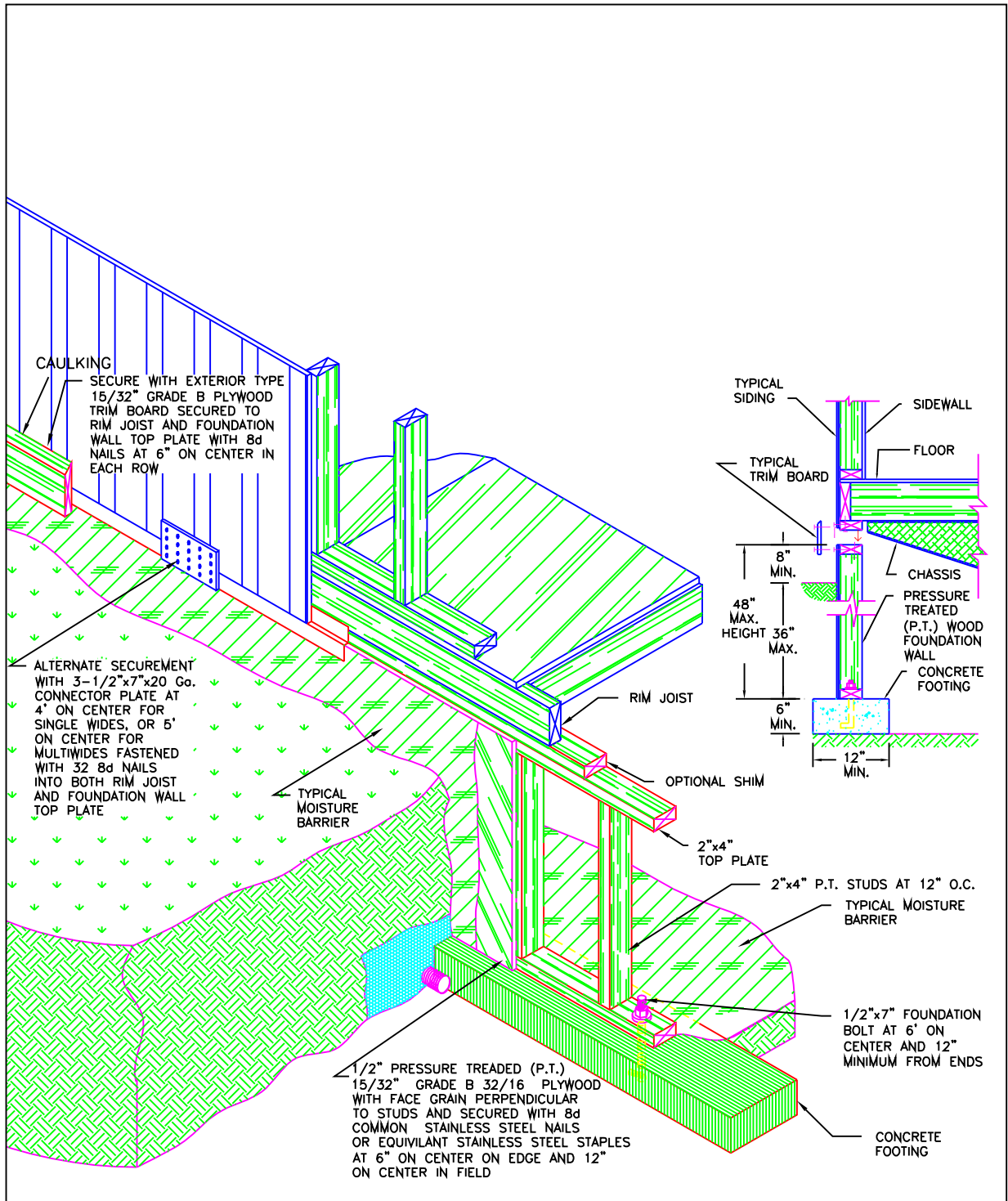
CMU FOUNDATION WALL DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.7C



ICF FOUNDATION WALL DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-8.4.7D



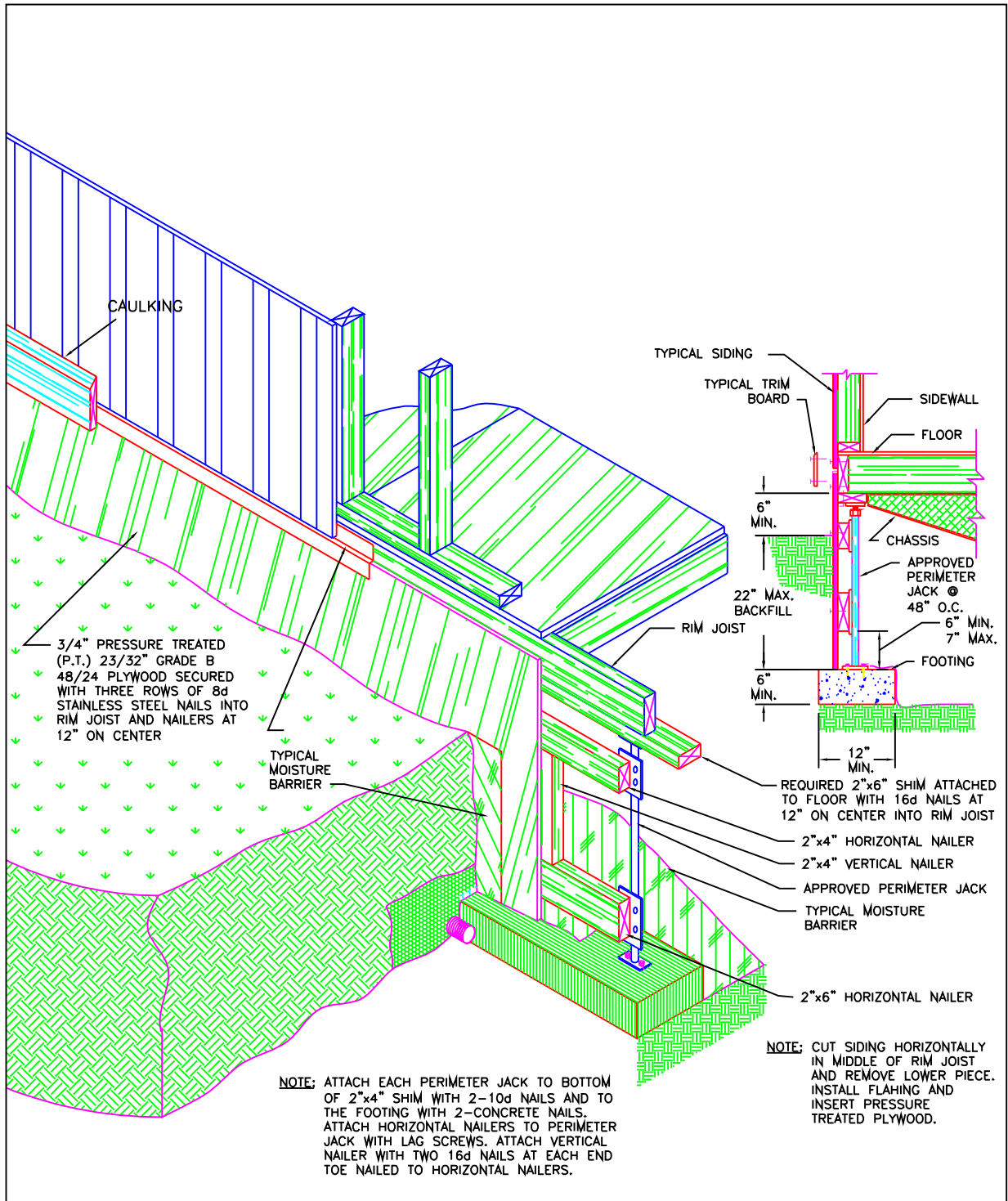
PRESSURE TREATED LUMBER FOUNDATION WALL DETAIL

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3

FIGURE 3-8.4.7E

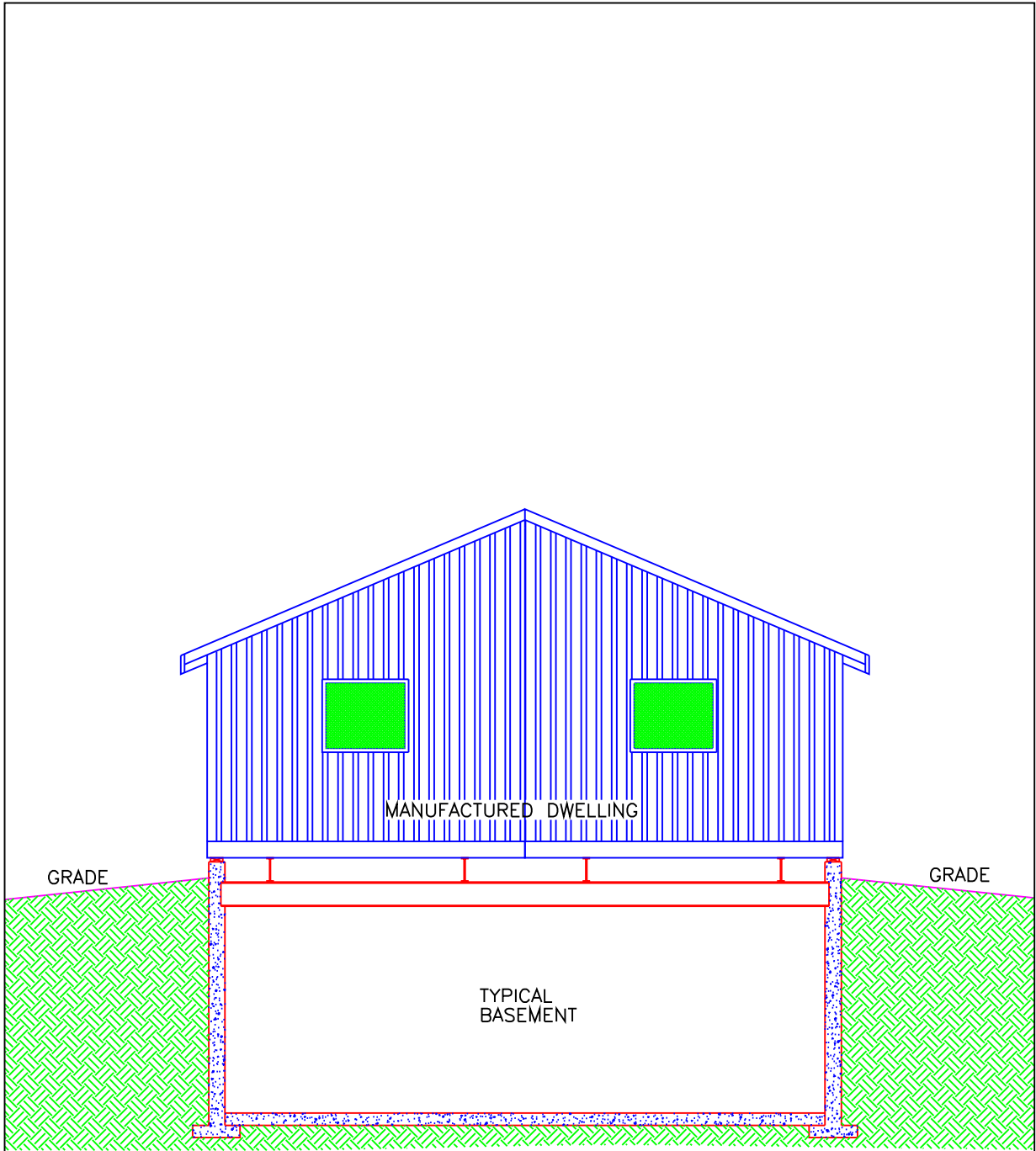


PREFABRICATED FOUNDATION WALL DETAIL

REV. 12/01/01 RHW

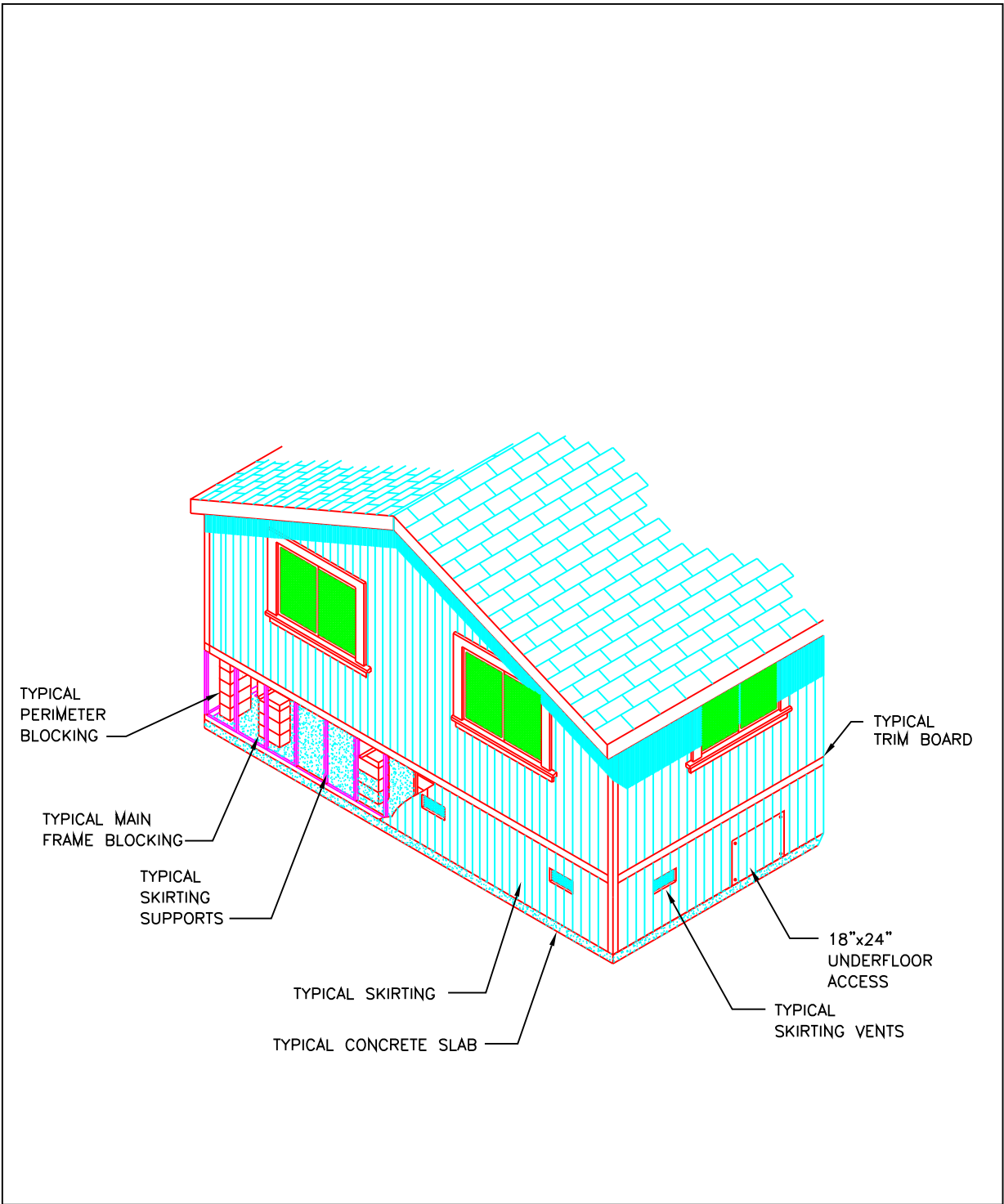
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-8.4.7F



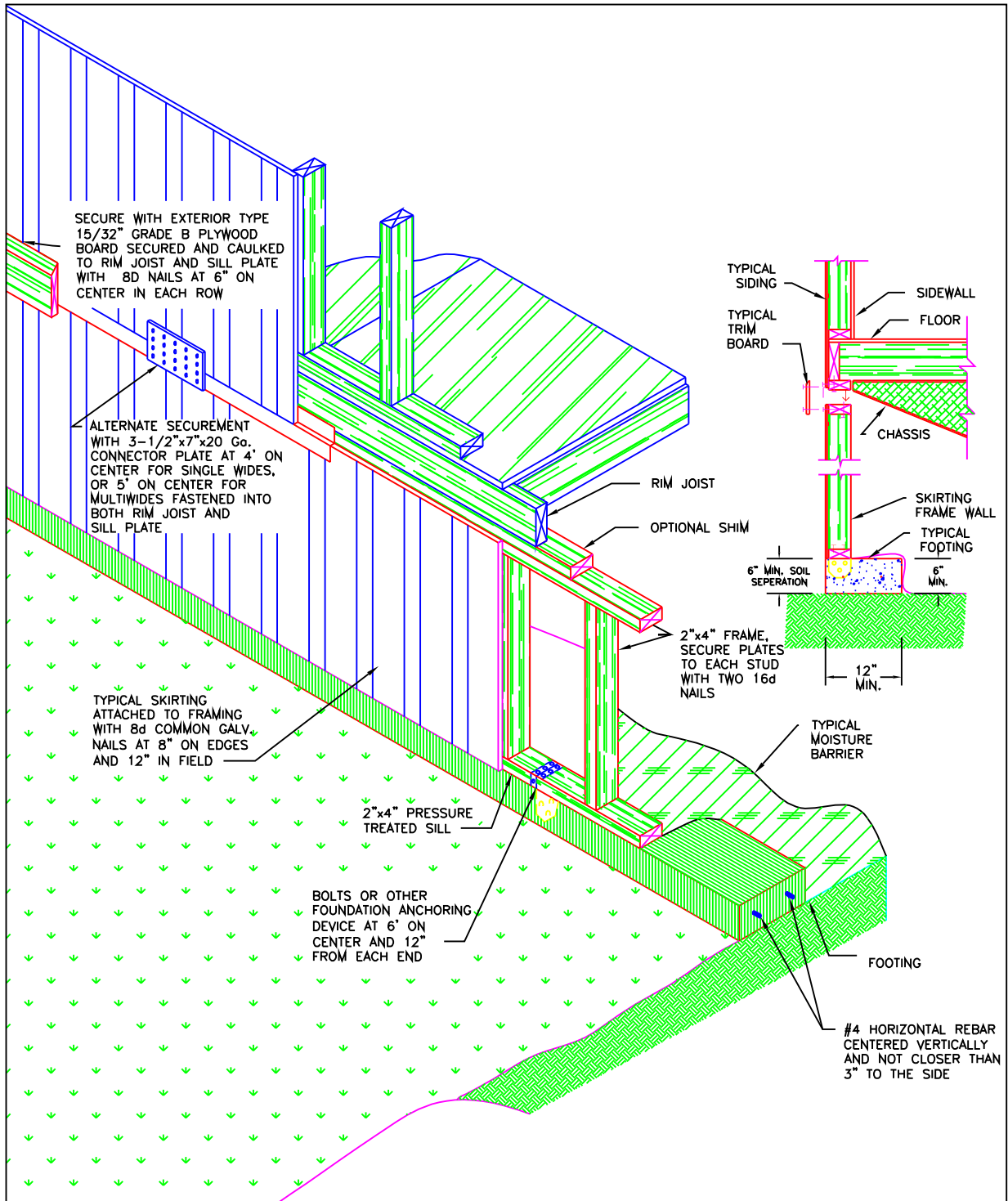
TYPICAL BASEMENT CONSTRUCTION

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 3</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 3-8.4.8</p>



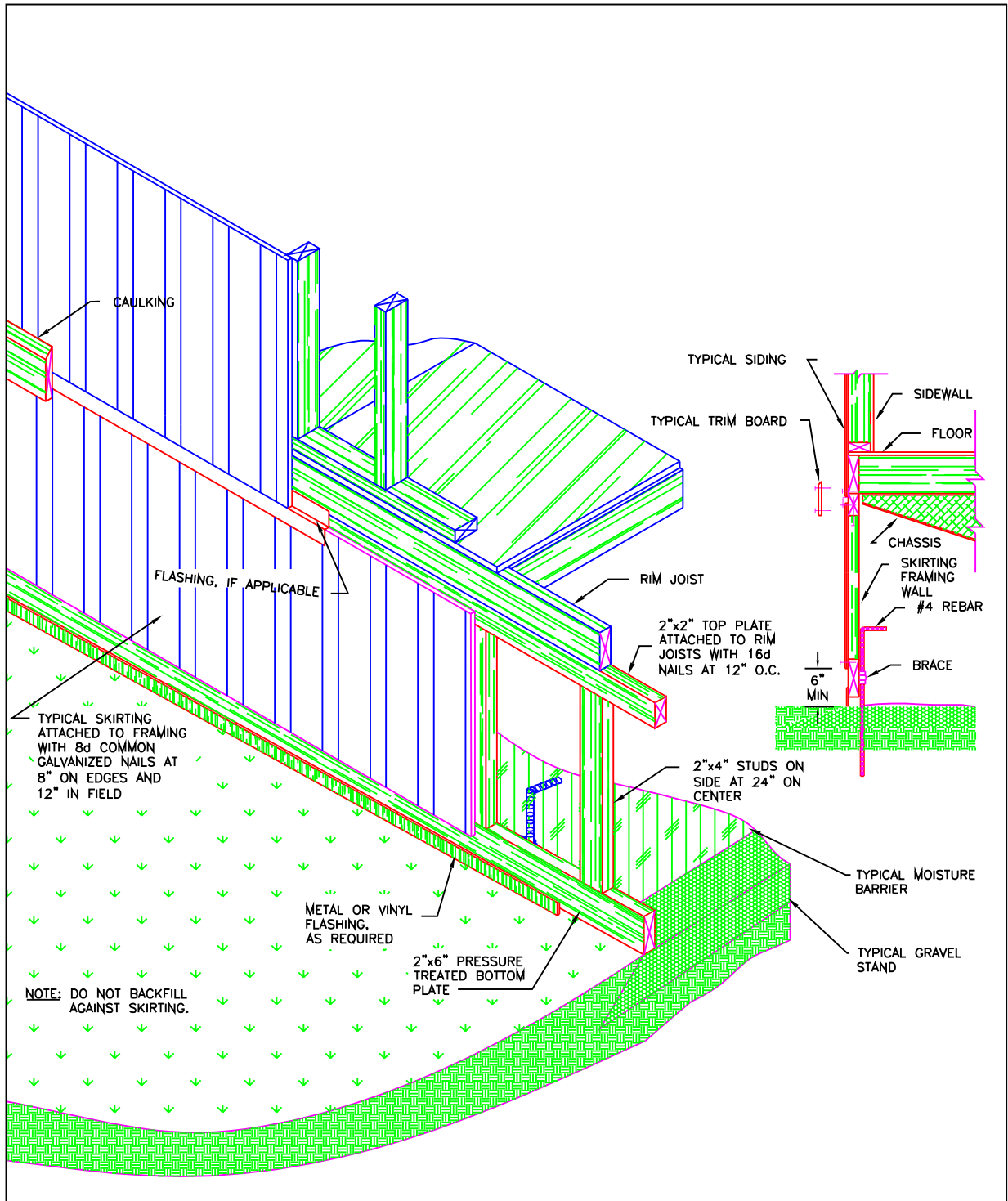
TYPICAL UNDER FLOOR ENCLOSURE

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 8
REV. 12/01/01 RHW		FIGURE 3-9.1



STRUCTURAL SKIRTING DETAIL

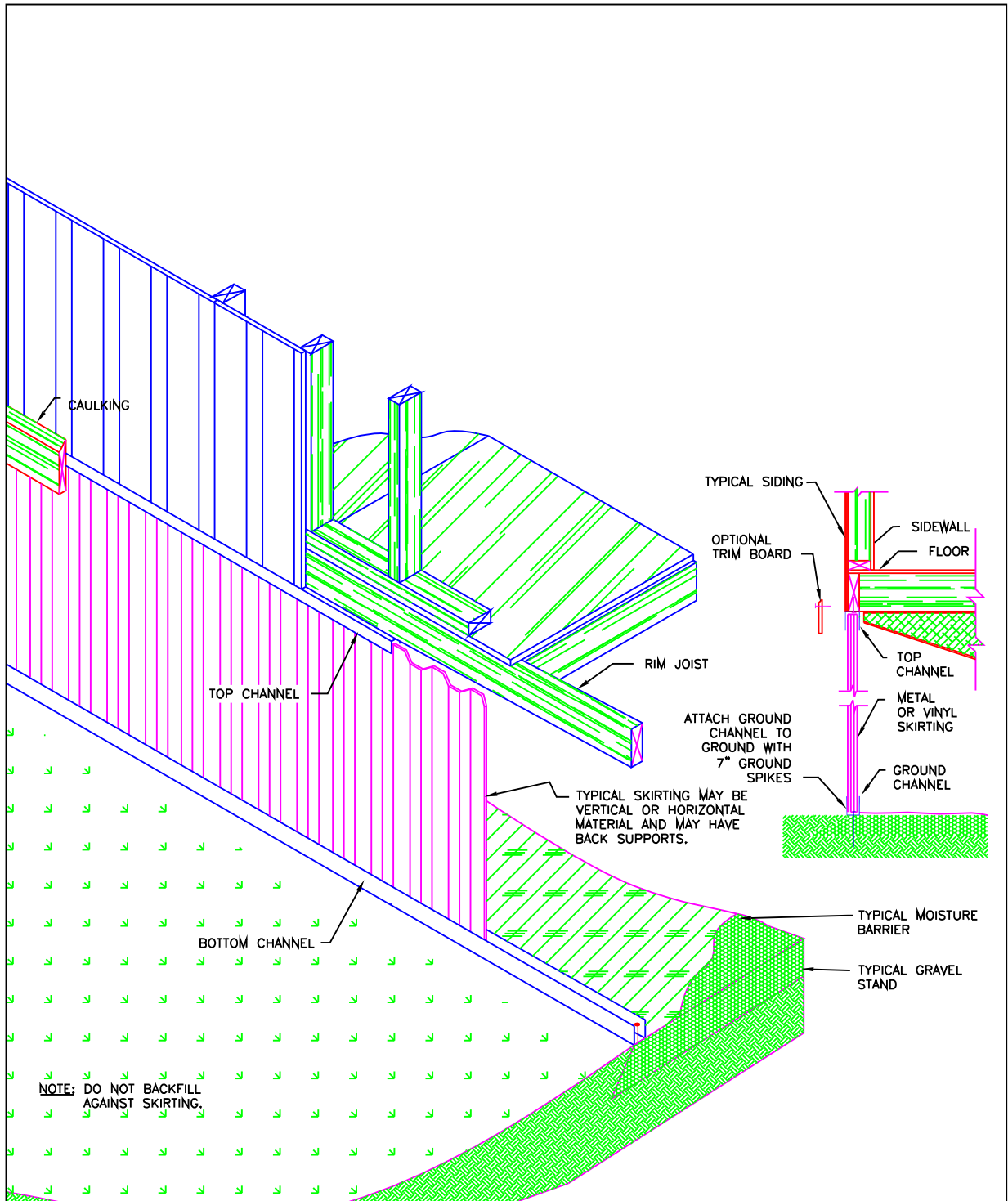
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.2



NON-STRUCTURAL WOOD FRAMED SKIRTING DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.3

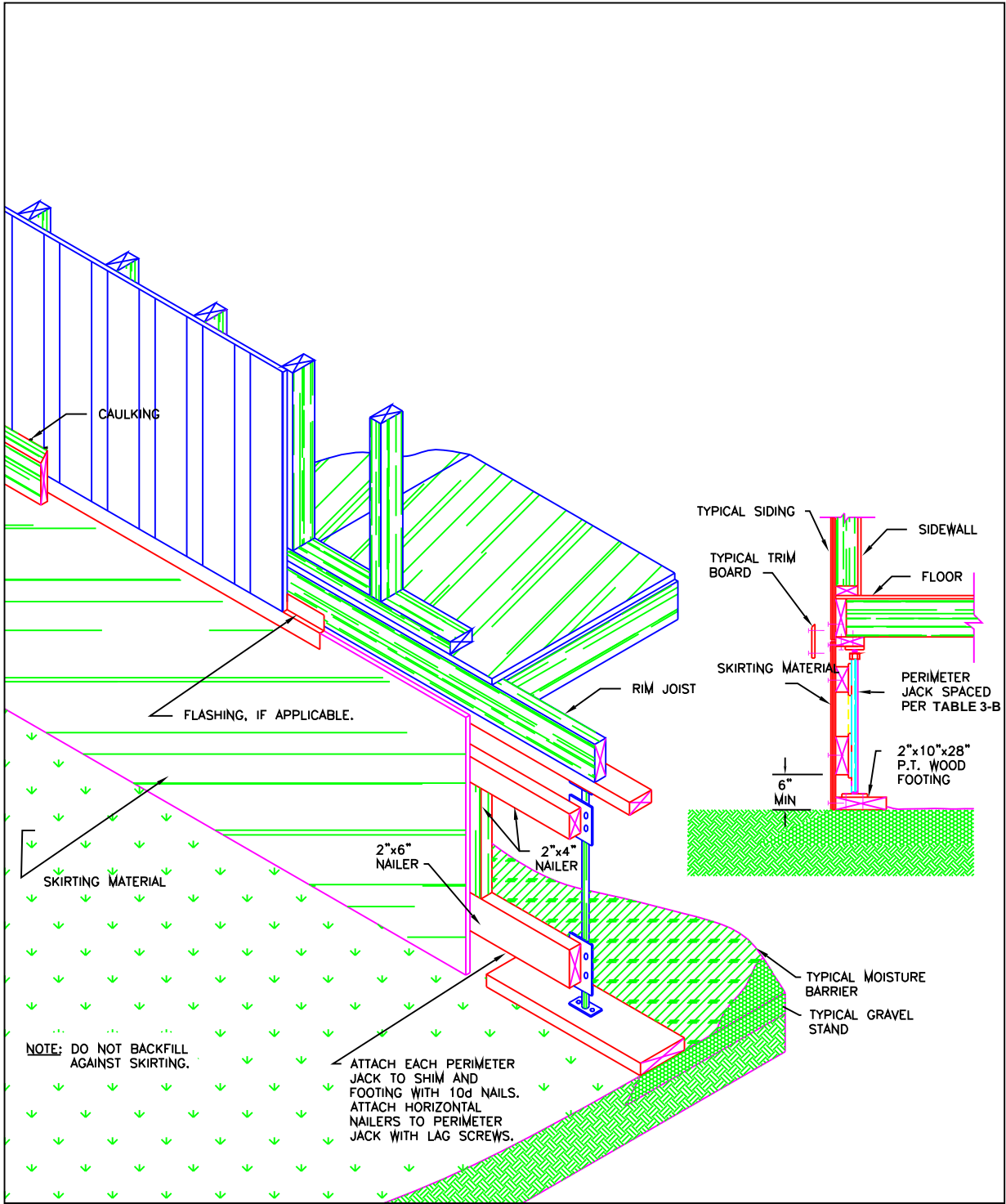




NOTE: DO NOT BACKFILL AGAINST SKIRTING.

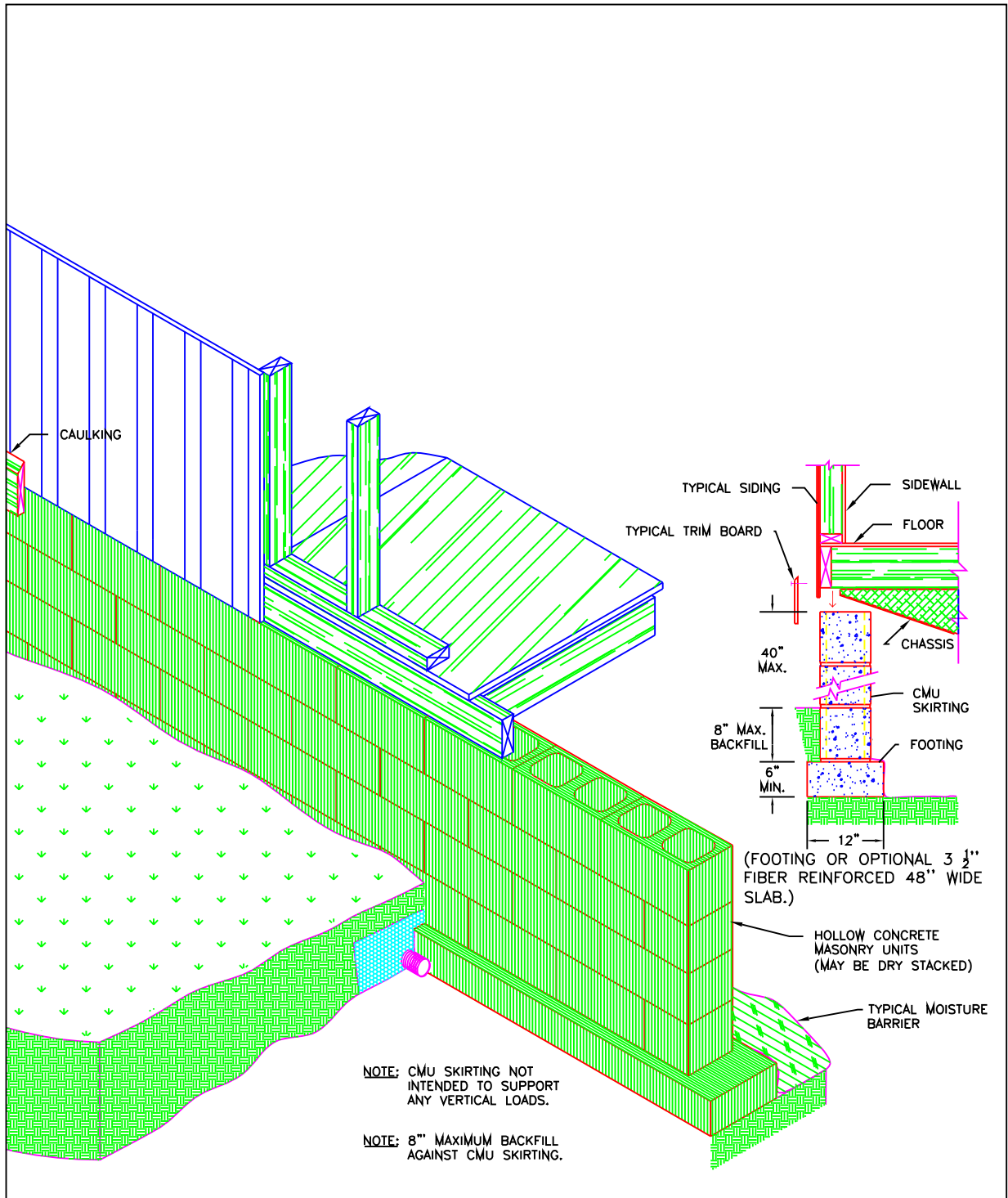
TYPICAL NON-STRUCTURAL VINYL/METAL SKIRTING DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.4



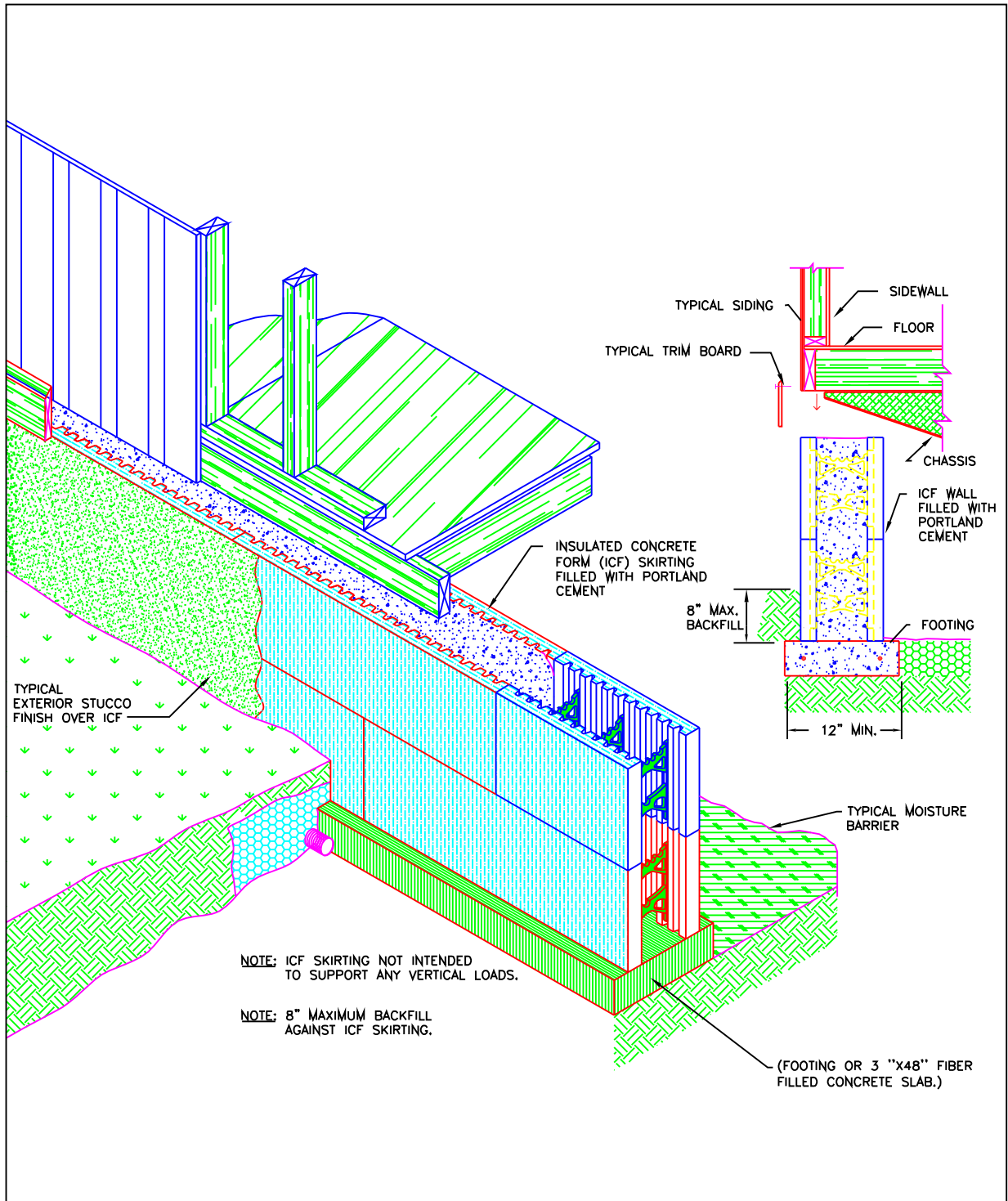
TYPICAL PREFABRICATED SKIRTING

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.5



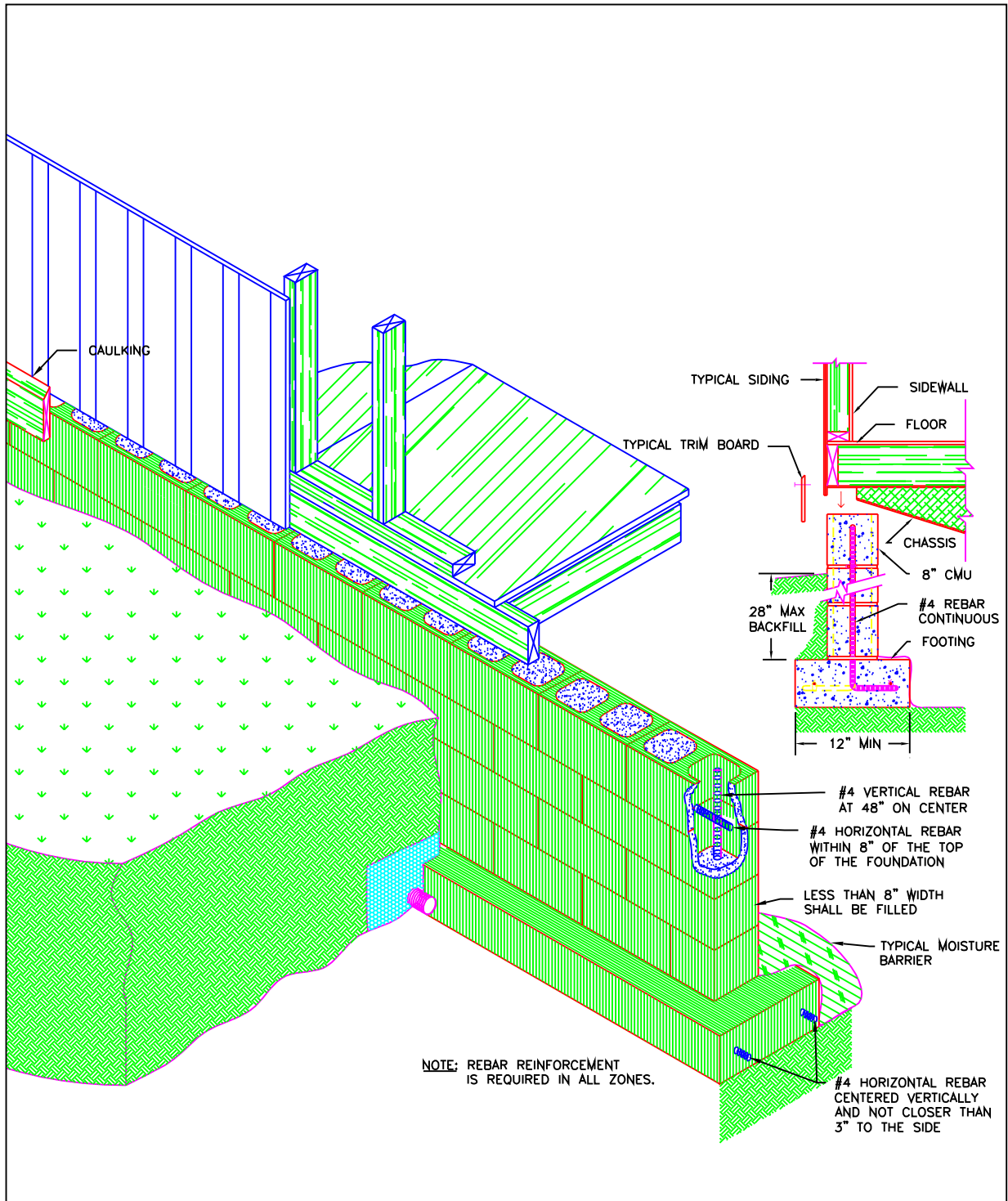
CONCRETE MASONRY UNIT (CMU) SKIRTING DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.6



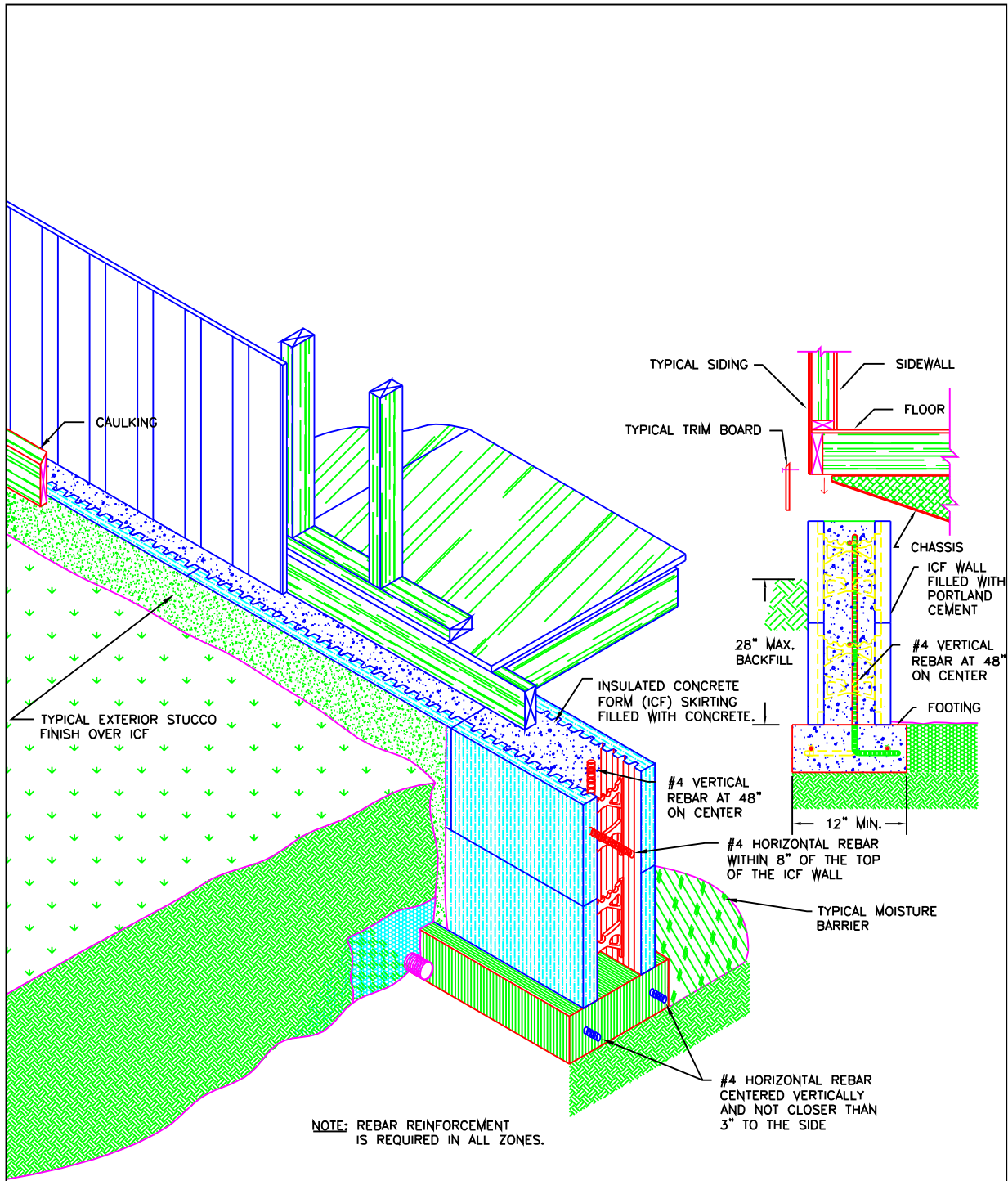
INSULATED CONCRETE FORM (ICF) SKIRTING DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.7



CONCRETE MASONRY UNIT (CMU) RETAINING WALL SKIRTING DETAIL

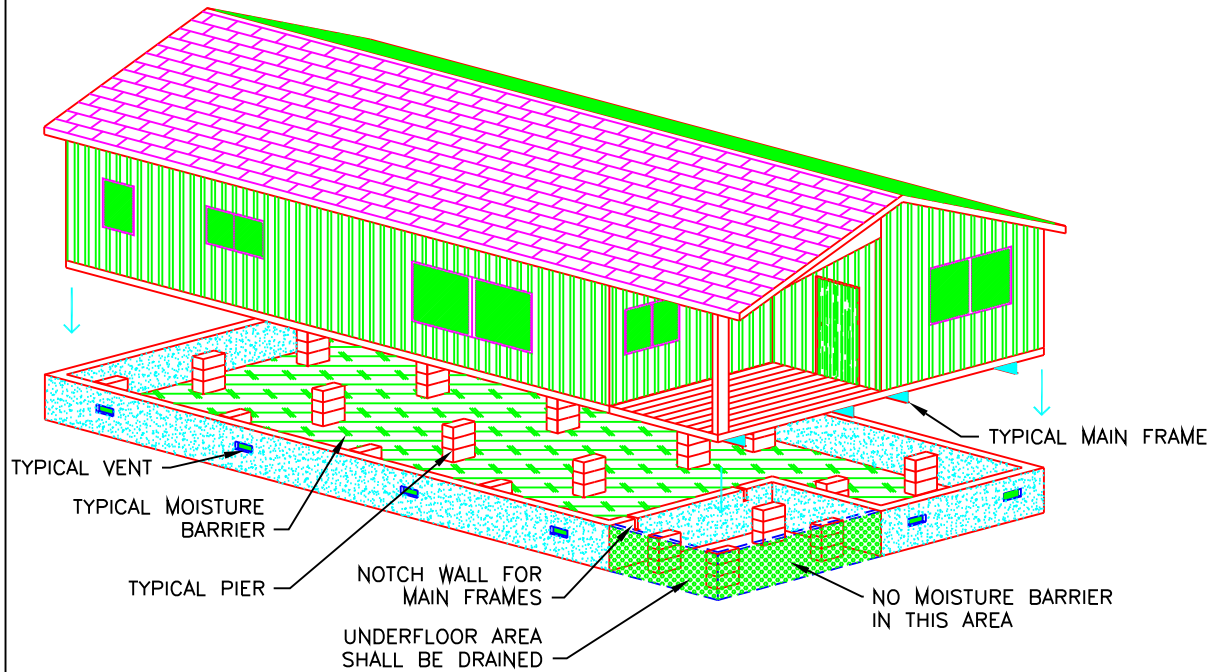
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.8



NOTE: REBAR REINFORCEMENT IS REQUIRED IN ALL ZONES.

INSULATED CONCRETE FORM (ICF) RETAINING WALL SKIRTING DETAIL		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.9

**NOTE:** FOUNDATION WALLS SEPERATING THE PORCH AREA AND THE LIVING AREA SHALL BE INSTALLED UNDER THE HOME.

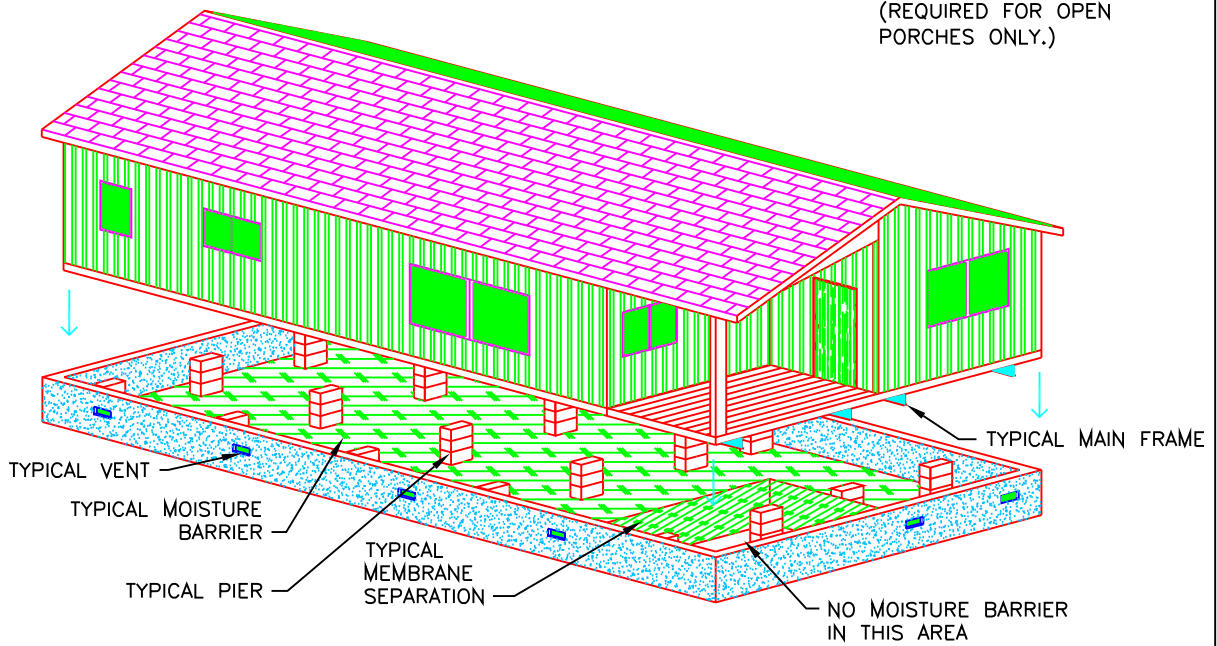


**NOTE:** PIER BLOCKS MUST BE INSTALLED UNDER EACH PORCH SUPPORT POST.

TYPICAL RECESSED CONCRETE FOUNDATION WALL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-9.10A

**NOTE:** MEMBRANE SEPARATING THE PORCH AREA AND THE LIVING AREA SHALL BE INSTALLED UNDER THE HOME. (REQUIRED FOR OPEN PORCHES ONLY.)



**NOTE:** UNDERFLOOR AREA BELOW FACTORY BUILT PORCH SHALL BE DRAINED.

**NOTE:** PIER BLOCKS MUST BE INSTALLED UNDER EACH PORCH SUPPORT POST.

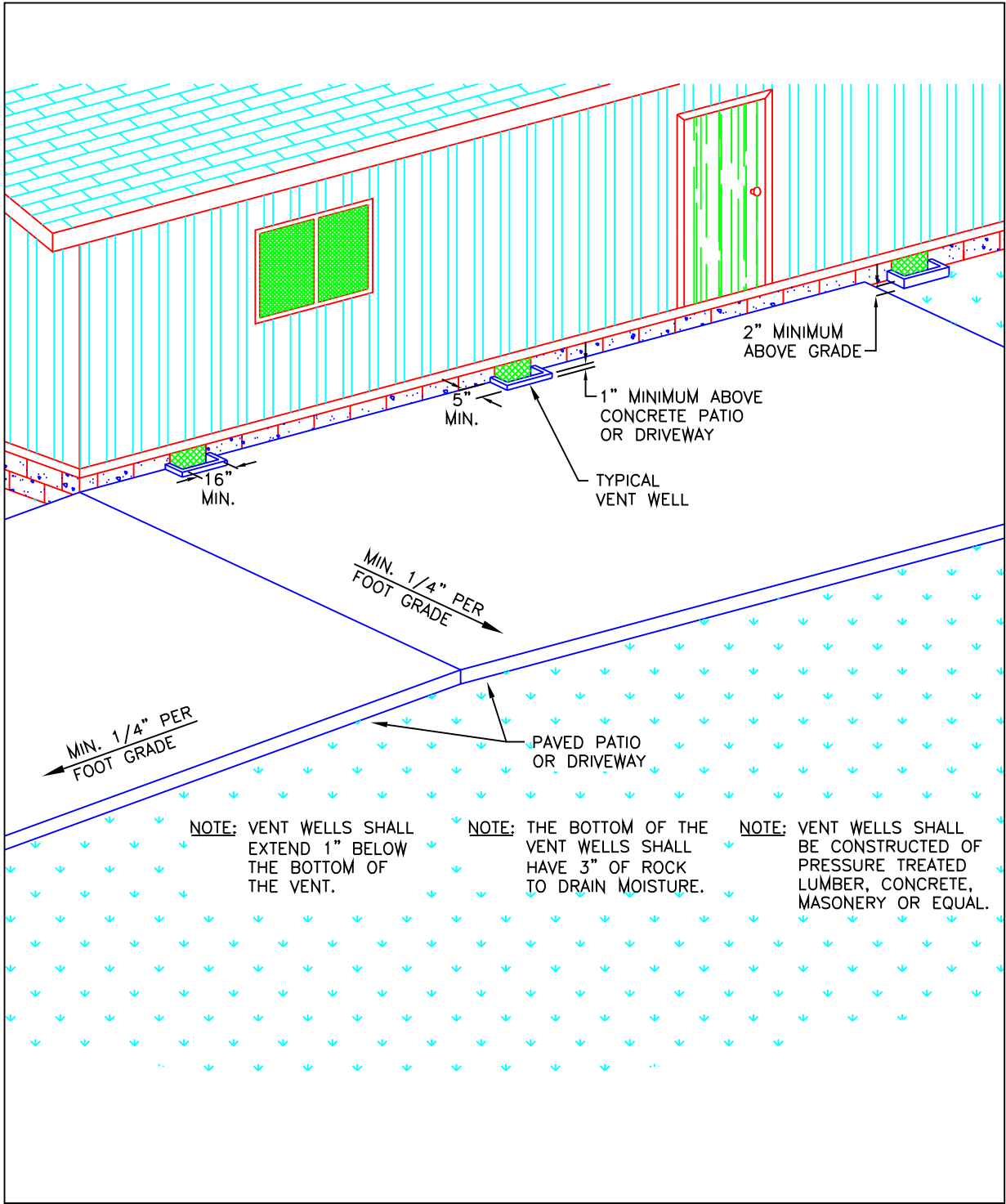
TYPICAL RECESSED MEMBRANE UNDER FLOOR ENCLOSURE

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-9.10B





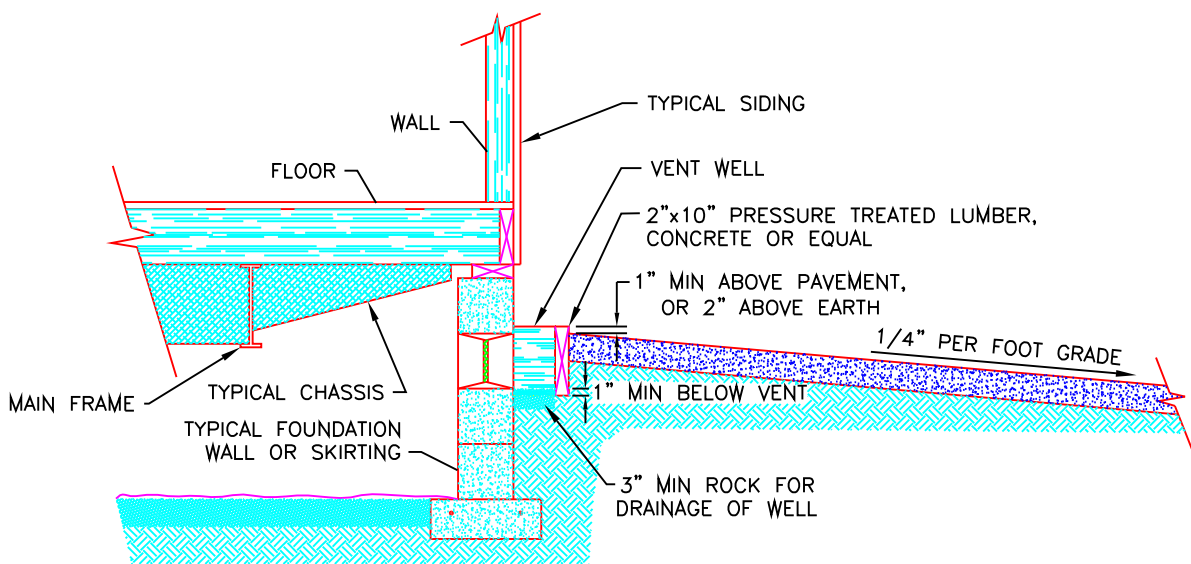
NOTE: VENT WELLS SHALL EXTEND 1" BELOW THE BOTTOM OF THE VENT.

NOTE: THE BOTTOM OF THE VENT WELLS SHALL HAVE 3" OF ROCK TO DRAIN MOISTURE.

NOTE: VENT WELLS SHALL BE CONSTRUCTED OF PRESSURE TREATED LUMBER, CONCRETE, MASONRY OR EQUAL.

TYPICAL VENT WELLS FOR GROUND LEVEL INSTALLATIONS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-10.1.1A

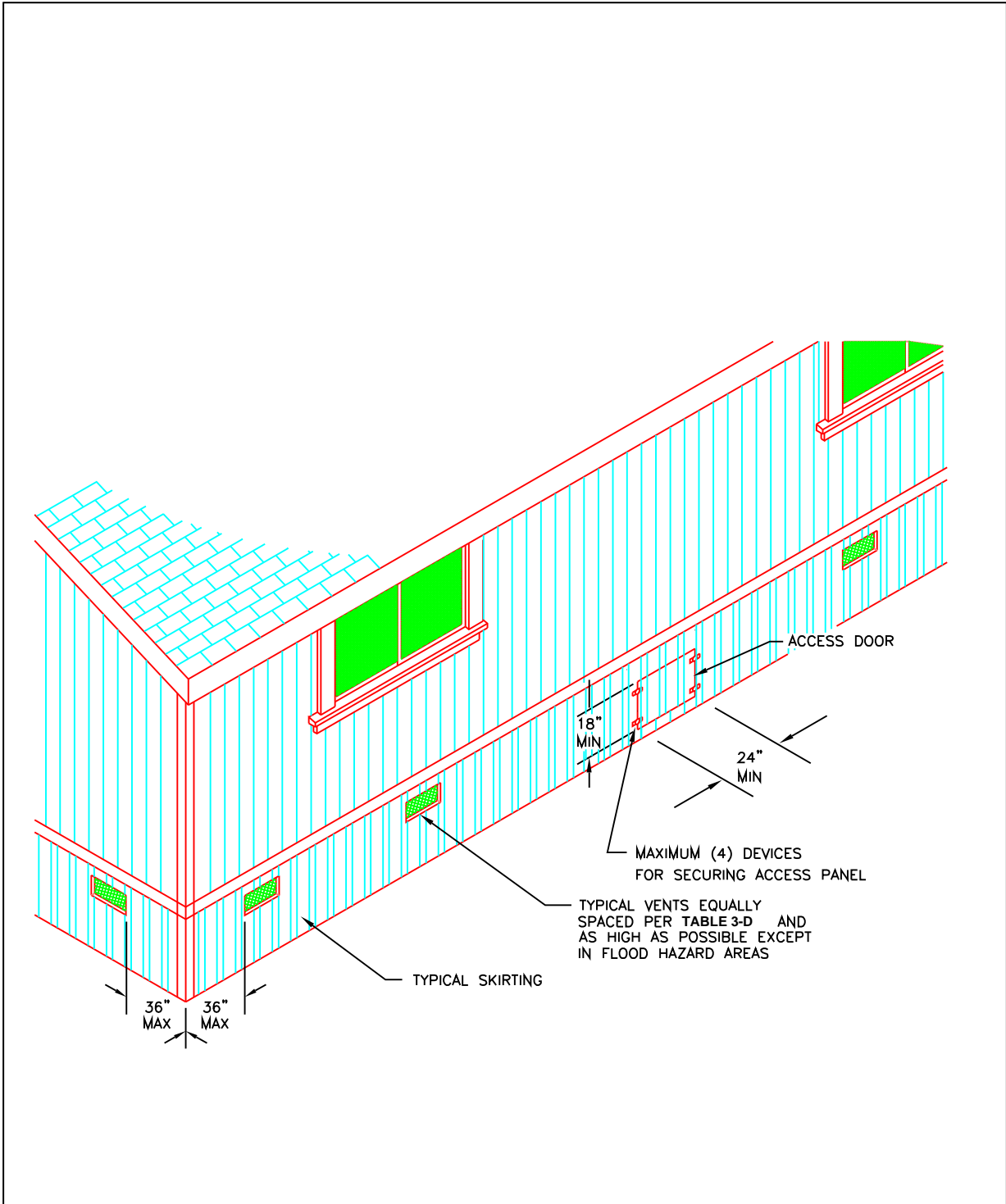


TYPICAL VENT WELLS FOR GROUND LEVEL INSTALLATIONS

REV. 12/01/01 RHW

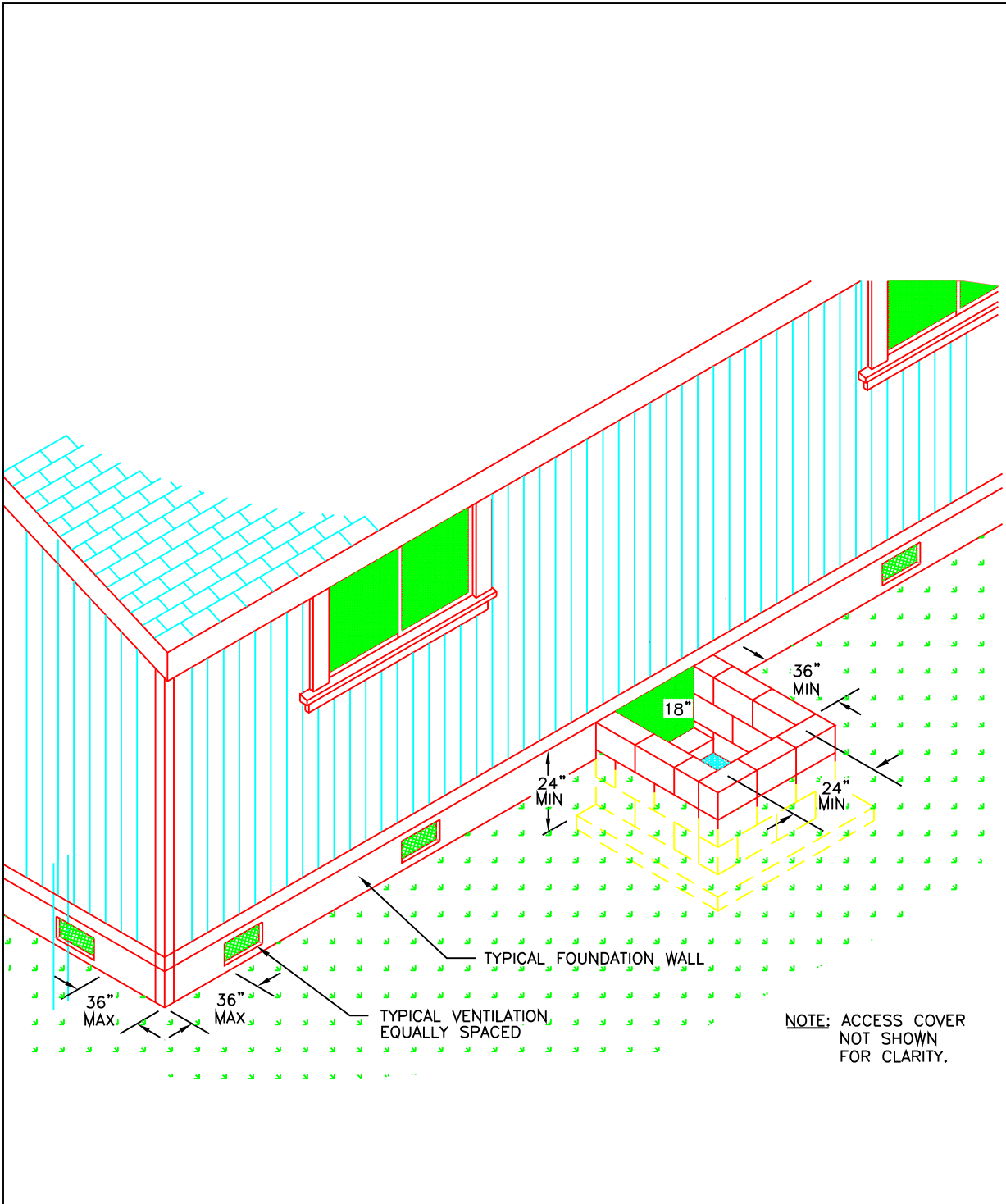
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIG. 3-10.1.1B



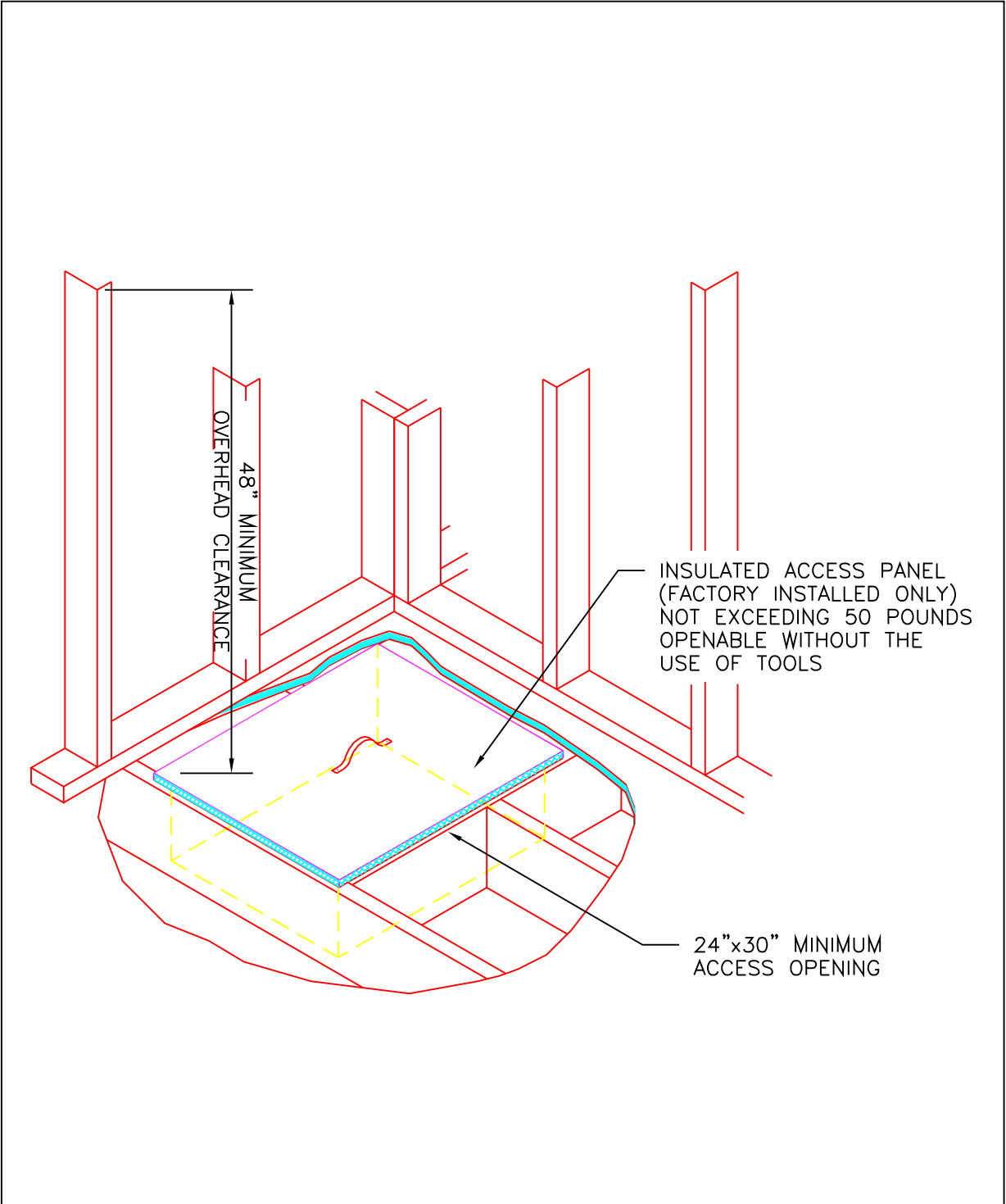
TYPICAL UNDERFLOOR VENTILATION AND SKIRTING ACCESS DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-10.2.1



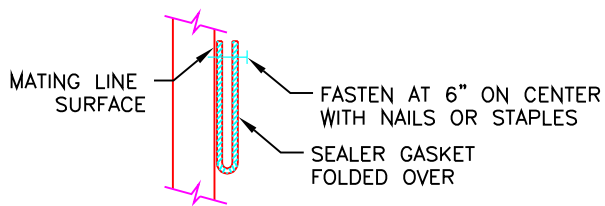
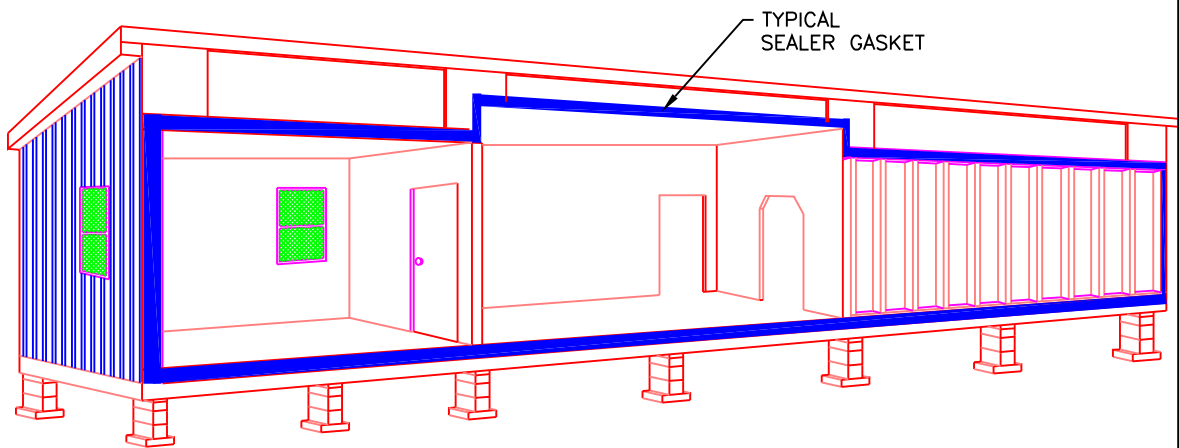
TYPICAL GROUND LEVEL VENTILATION AND UNDERFLOOR ACCESS DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-10.2.2



TYPICAL THROUGH THE FLOOR UNDERFLOOR ACCESS DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-10.2.3



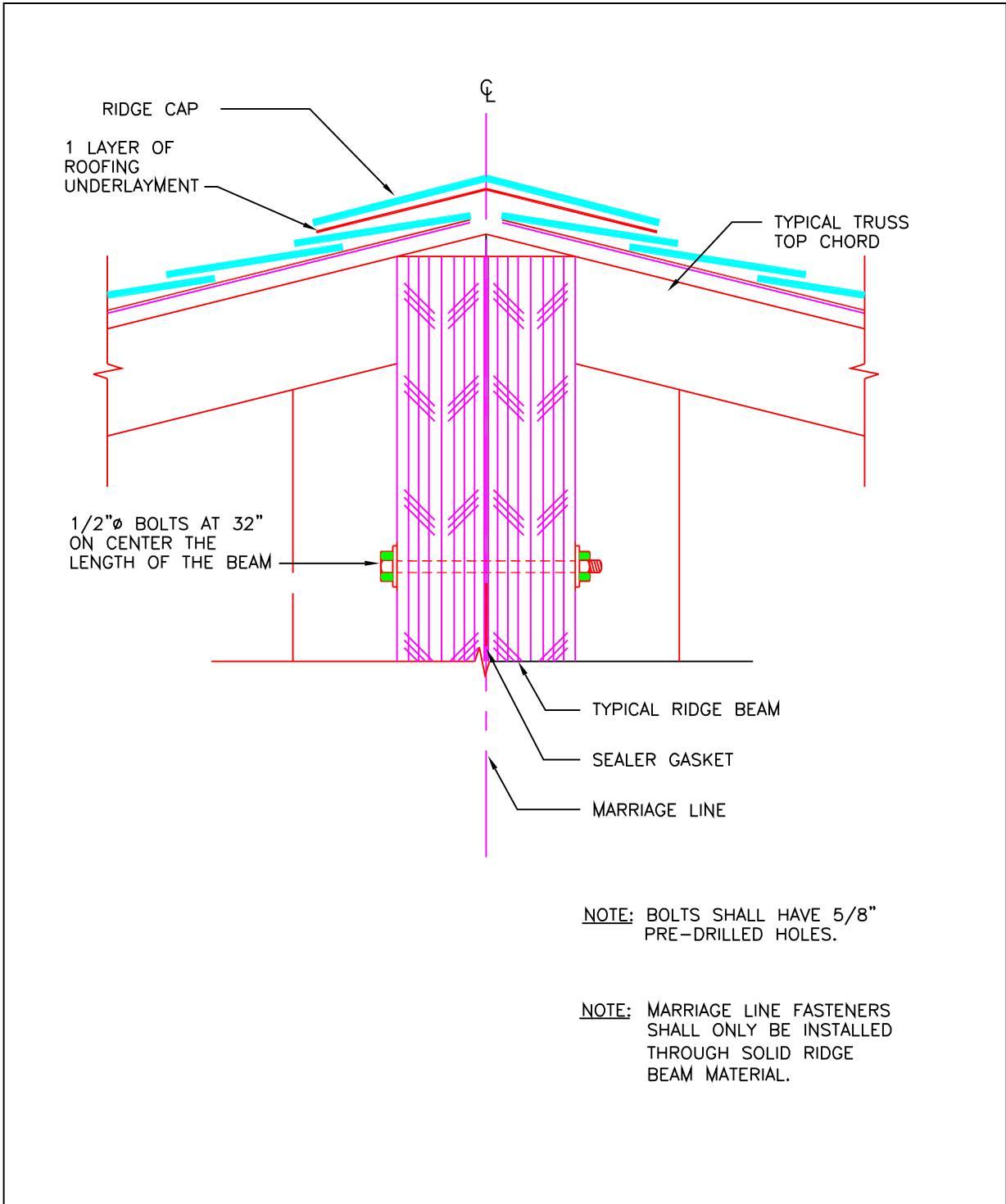
**NOTE:** ON MULTI-SECTION MANUFACTURED DWELLING, INSTALL SEALER GASKET ON THE CEILING, ENDWALLS, AND FLOOR MATING LINE PRIOR TO JOINING THE SECTIONS TOGETHER.

TYPICAL MARRIAGE LINE SEAL

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-11.1

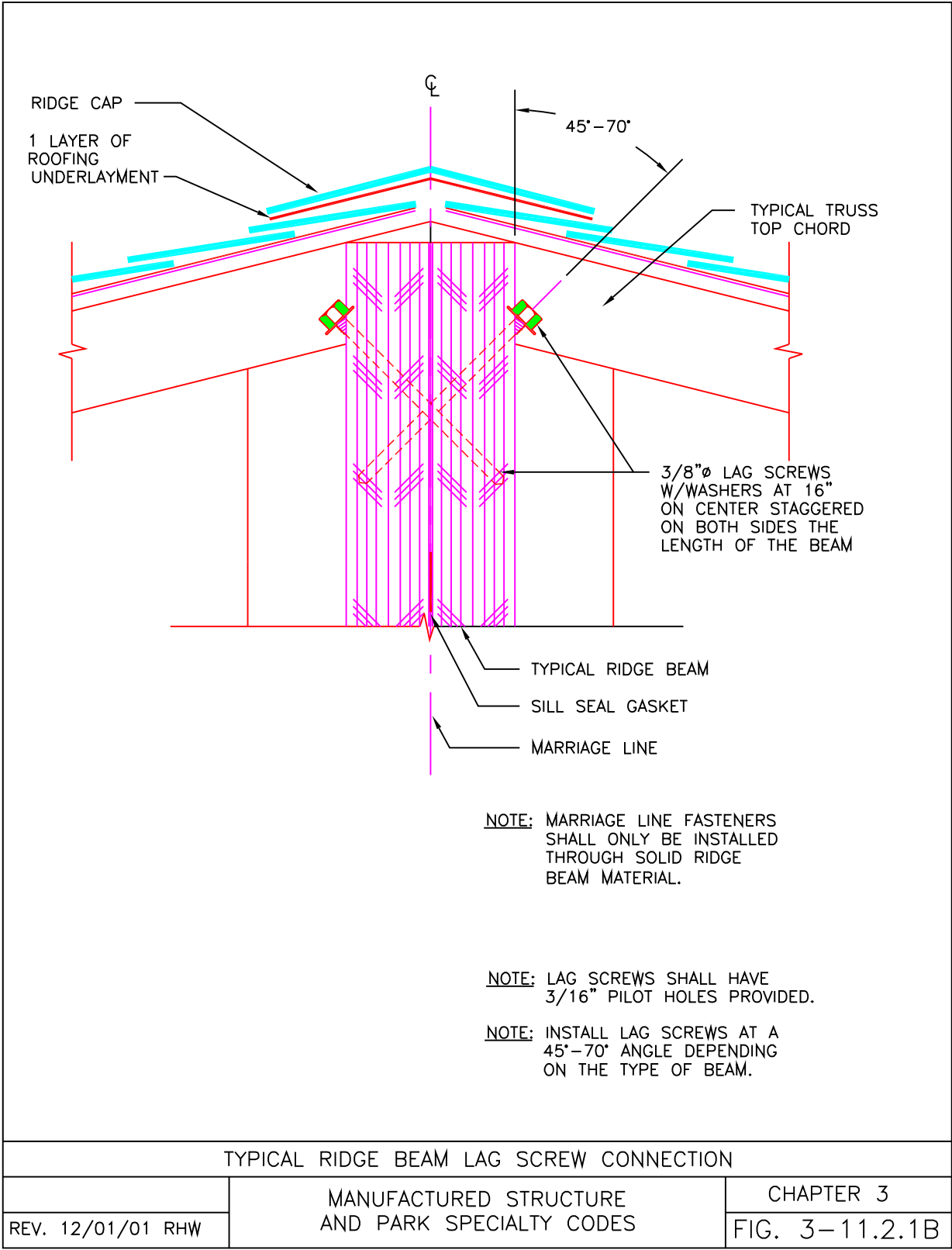


**NOTE:** BOLTS SHALL HAVE 5/8" PRE-DRILLED HOLES.

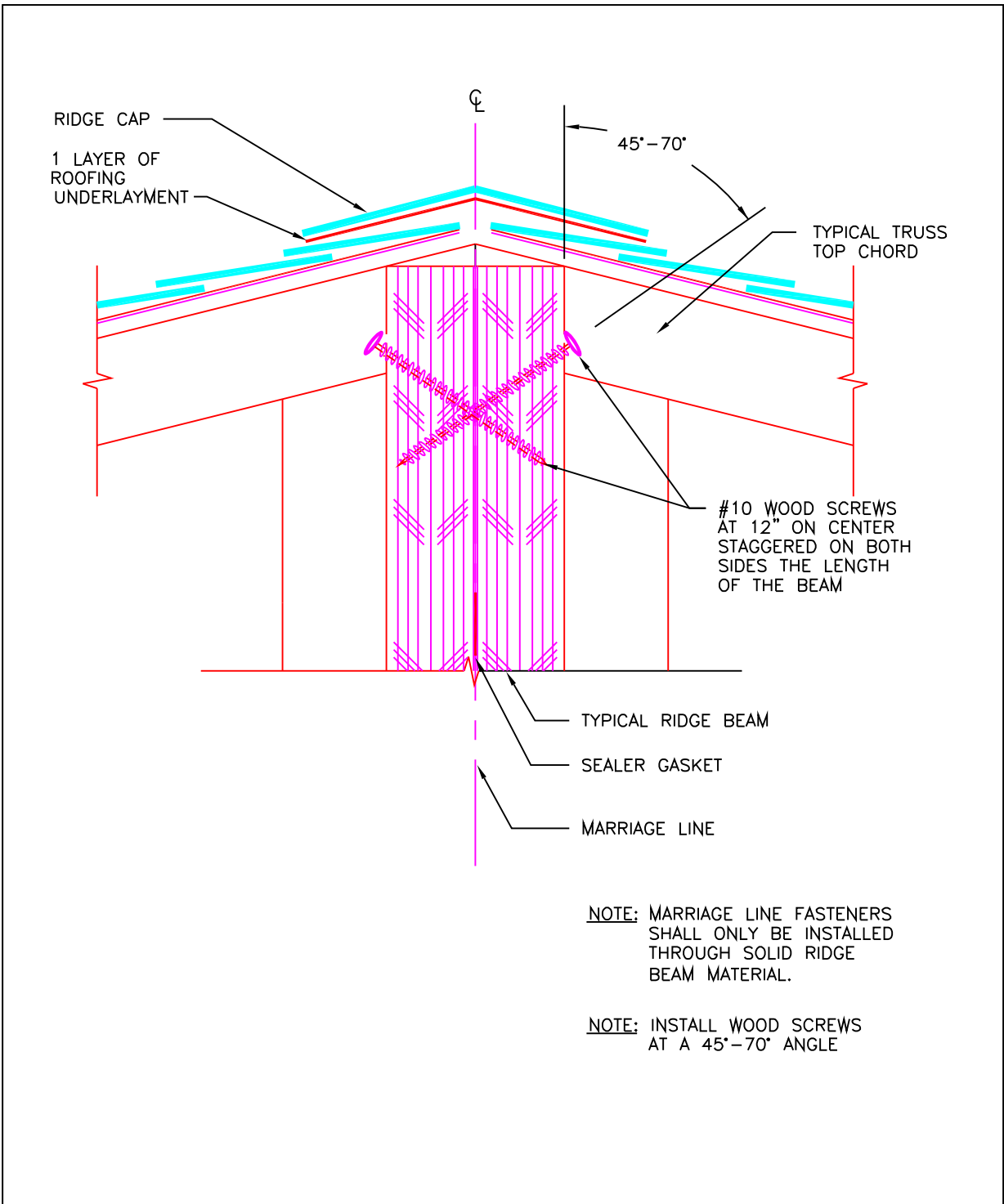
**NOTE:** MARRIAGE LINE FASTENERS SHALL ONLY BE INSTALLED THROUGH SOLID RIDGE BEAM MATERIAL.

TYPICAL RIDGE BEAM BOLT CONNECTION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
		FIG. 3-11.2.1A





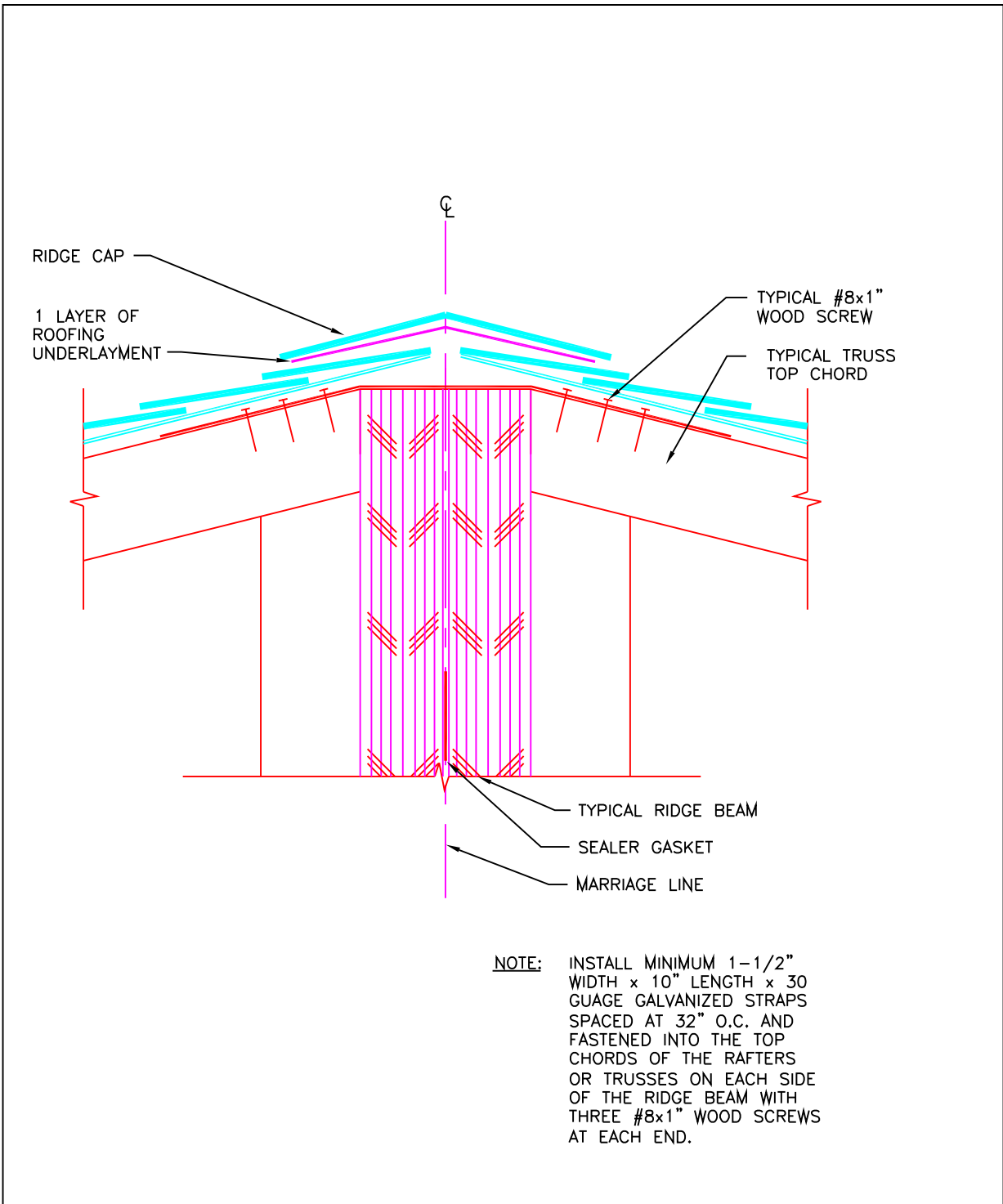


NOTE: MARRIAGE LINE FASTENERS SHALL ONLY BE INSTALLED THROUGH SOLID RIDGE BEAM MATERIAL.

NOTE: INSTALL WOOD SCREWS AT A 45°-70° ANGLE

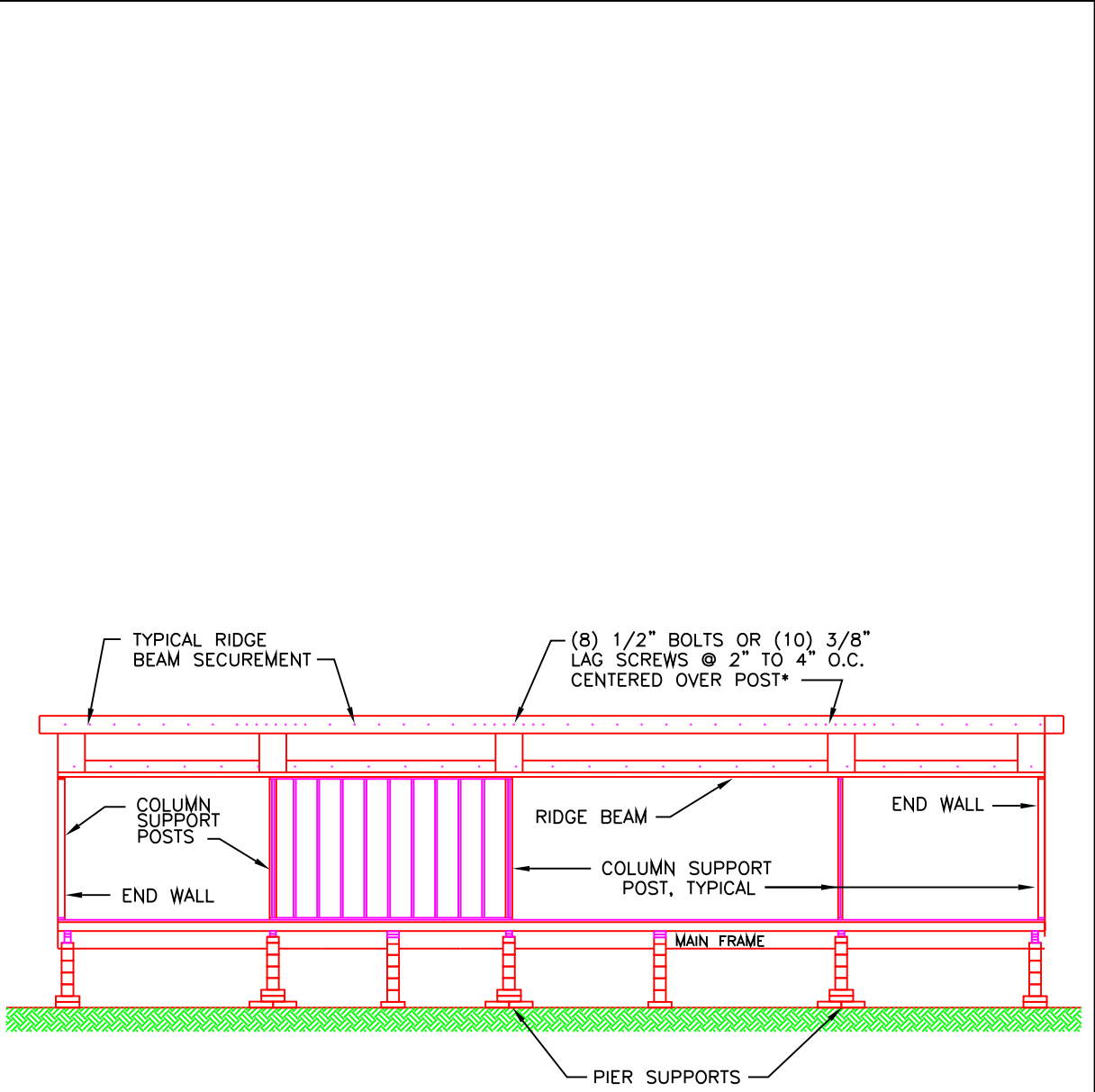
TYPICAL RIDGE BEAM WOOD SCREW CONNECTION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-11.2.1C



TYPICAL RIDGE BEAM STRAP CONNECTION

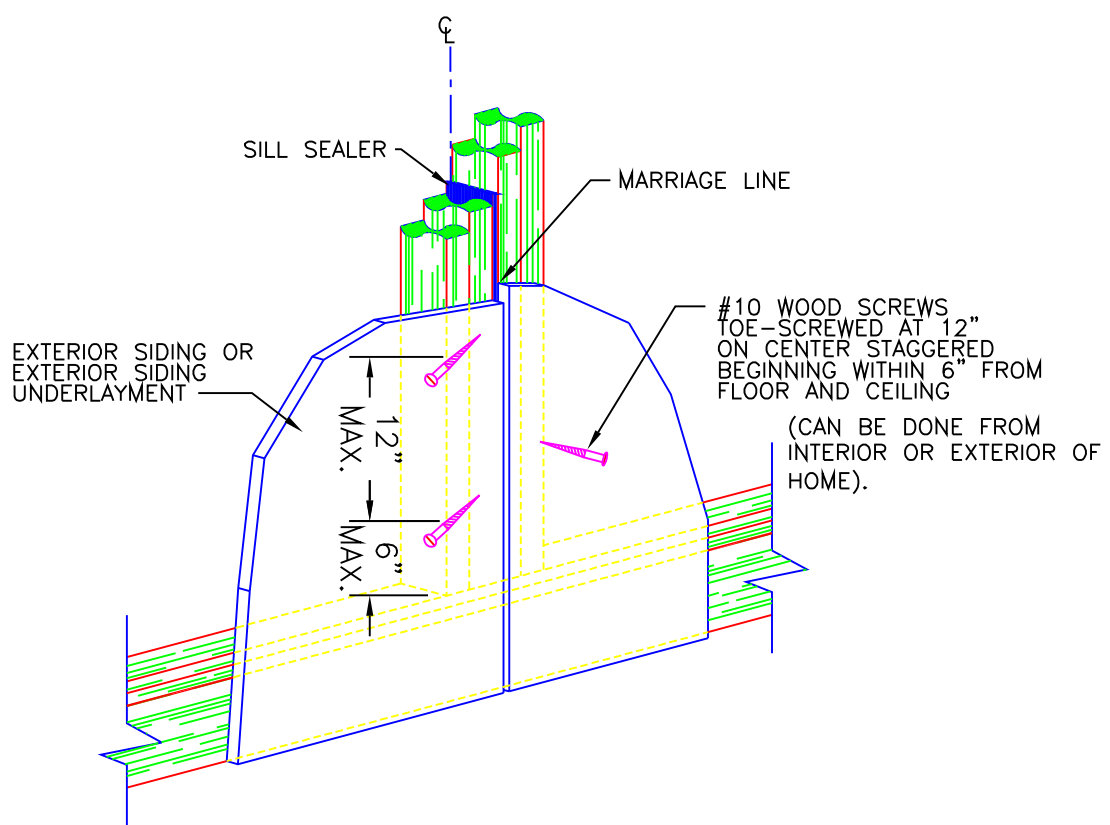
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.2.1D



**\*NOTE:** BOLTS OR LAG SCREWS AT 2" TO 4" O/C ONLY REQUIRED WHEN LOADS ARE TRANSFERRED FROM ONE SIDE TO ANOTHER. NOT NECESSARY WHEN COLUMN SUPPORT POSTS OR WALLS ARE LOCATED ON BOTH SIDES OF MARRIAGE LINE.

TYPICAL ROOF LOAD TRANSFER CONNECTION

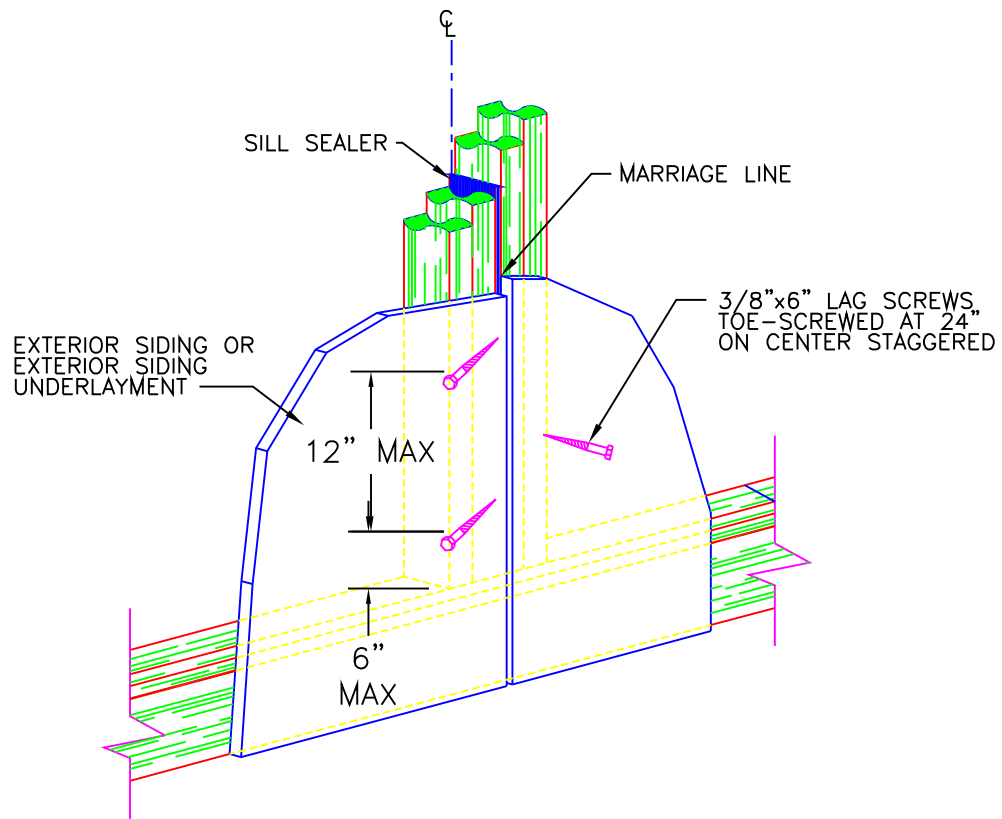
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-11.2.1E



NOTE: MARRIAGE LINE FASTENERS SHALL ONLY BE INSTALLED IN AREAS WHERE THERE ARE SOLID STUDS OR EQUAL.

TYPICAL END WALL MARRIAGE LINE WOOD SCREW CONNECTION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.2.2A



NOTE: SCREWS SHALL PENETRATE THROUGH 85% OF SECOND STUD.

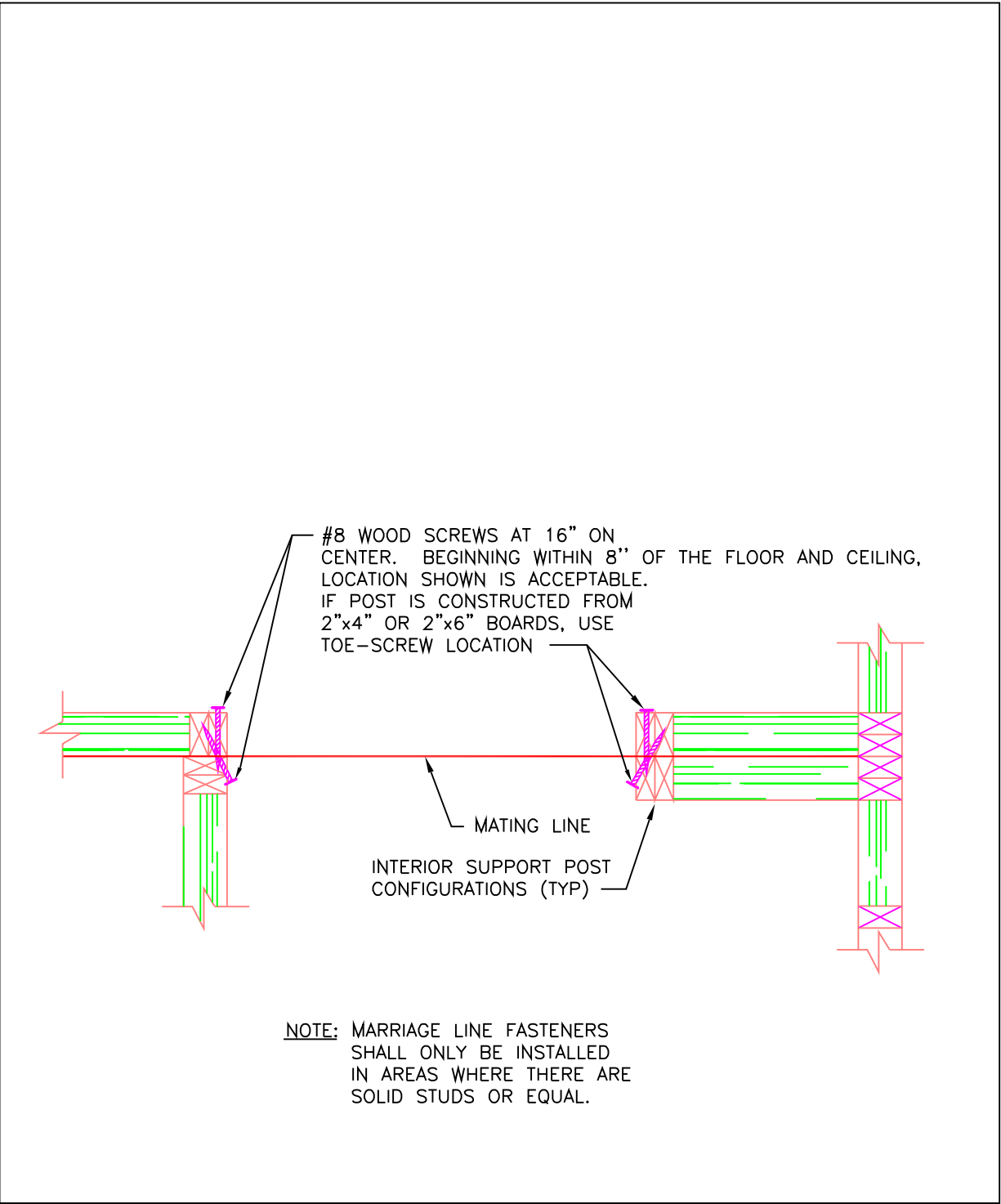
NOTE: MARRIAGE LINE FASTENERS SHALL ONLY BE INSTALLED IN AREAS WHERE THERE ARE SOLID STUDS OR EQUAL.

TYPICAL END WALL MARRIAGE LINE LAG SCREW CONNECTION

REV. 12/01/01 RHW

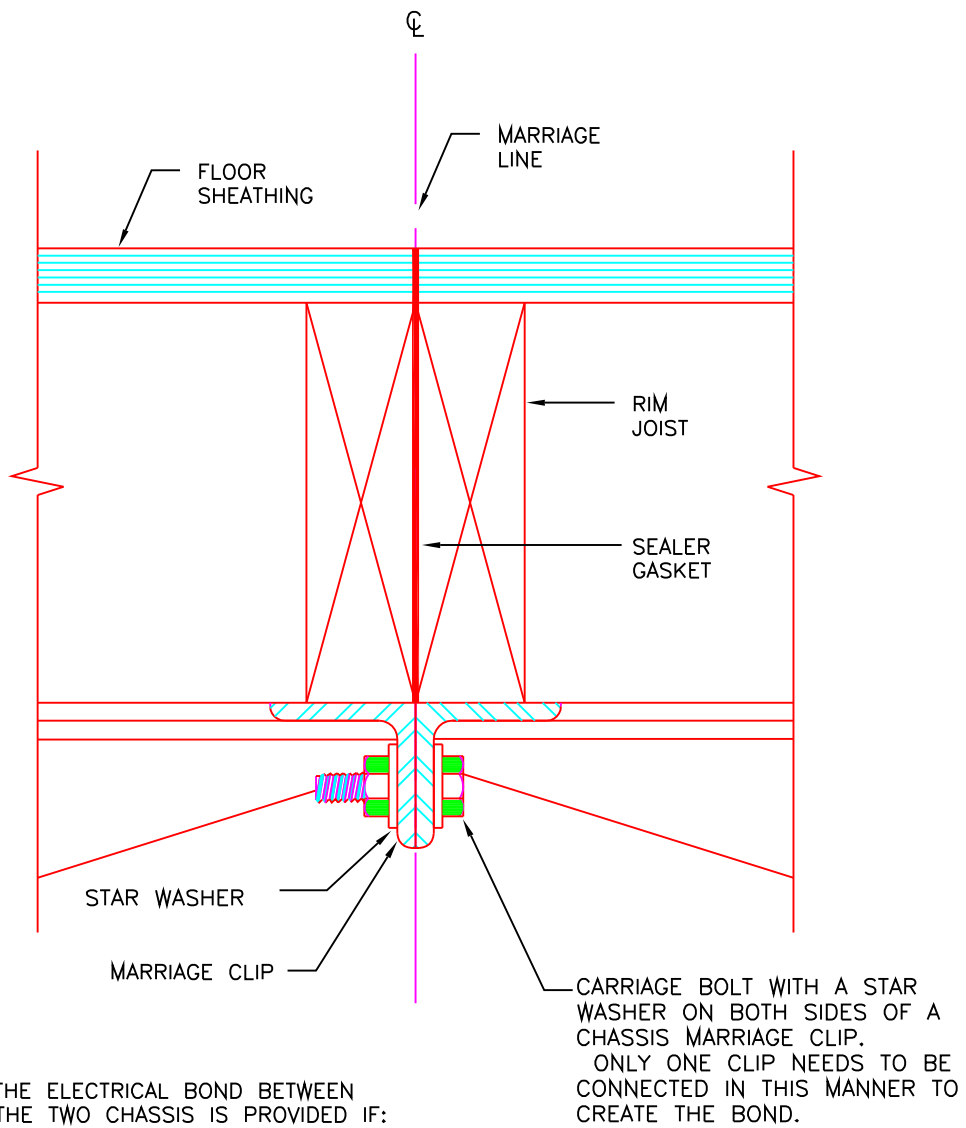
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 3  
FIGURE 3-11.2.2B



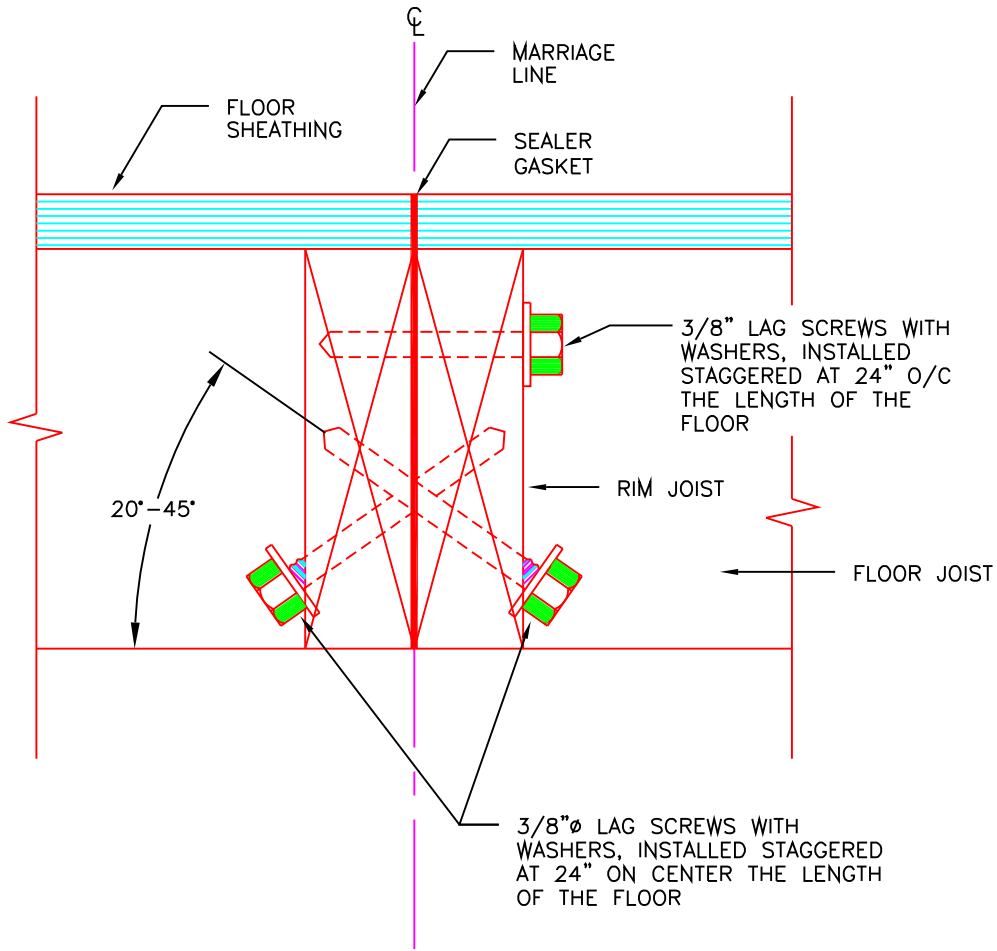
NOTE: MARRIAGE LINE FASTENERS SHALL ONLY BE INSTALLED IN AREAS WHERE THERE ARE SOLID STUDS OR EQUAL.

TYPICAL INTERIOR WALL MARRIAGE LINE CONNECTION		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIG. 3-11.2.2C



TYPICAL FLOOR CONNECTION WITH MARRIAGE CLIPS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.2.3A

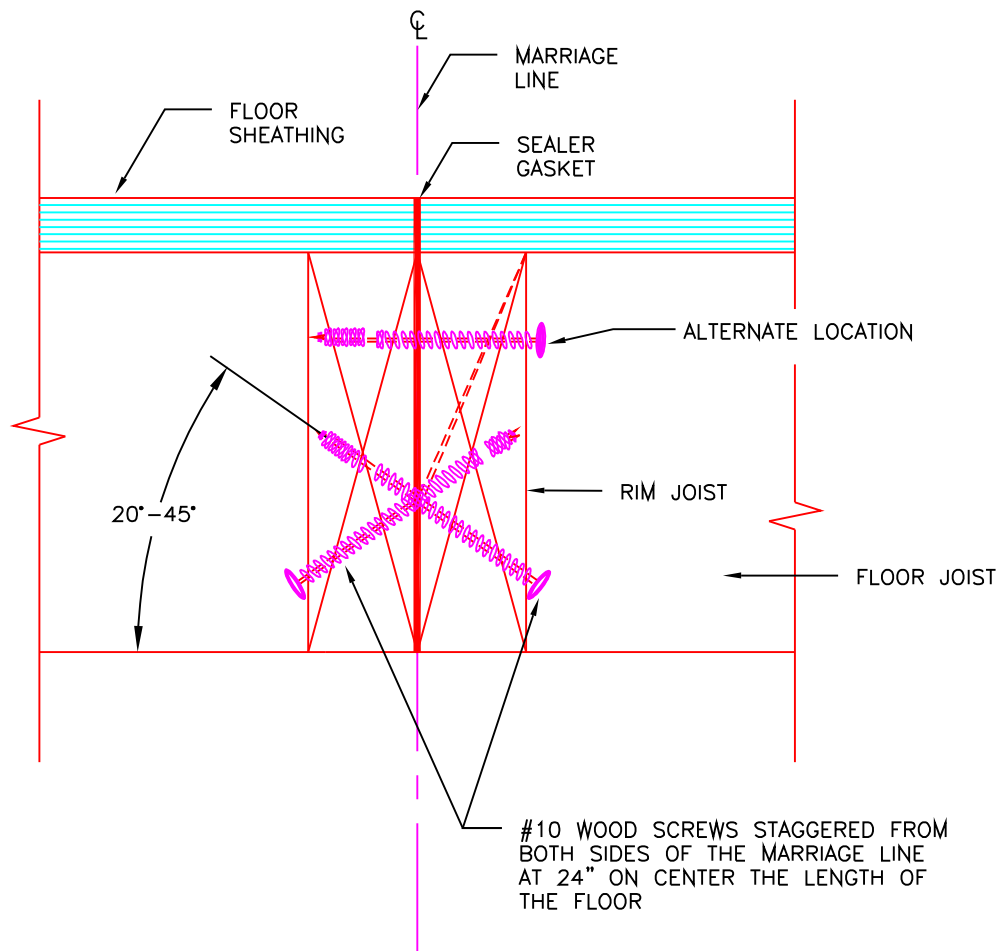


**NOTE:** LAG SCREWS SHALL HAVE 3/16" PILOT HOLES PROVIDED.

TYPICAL FLOOR CONNECTION USING LAG SCREWS

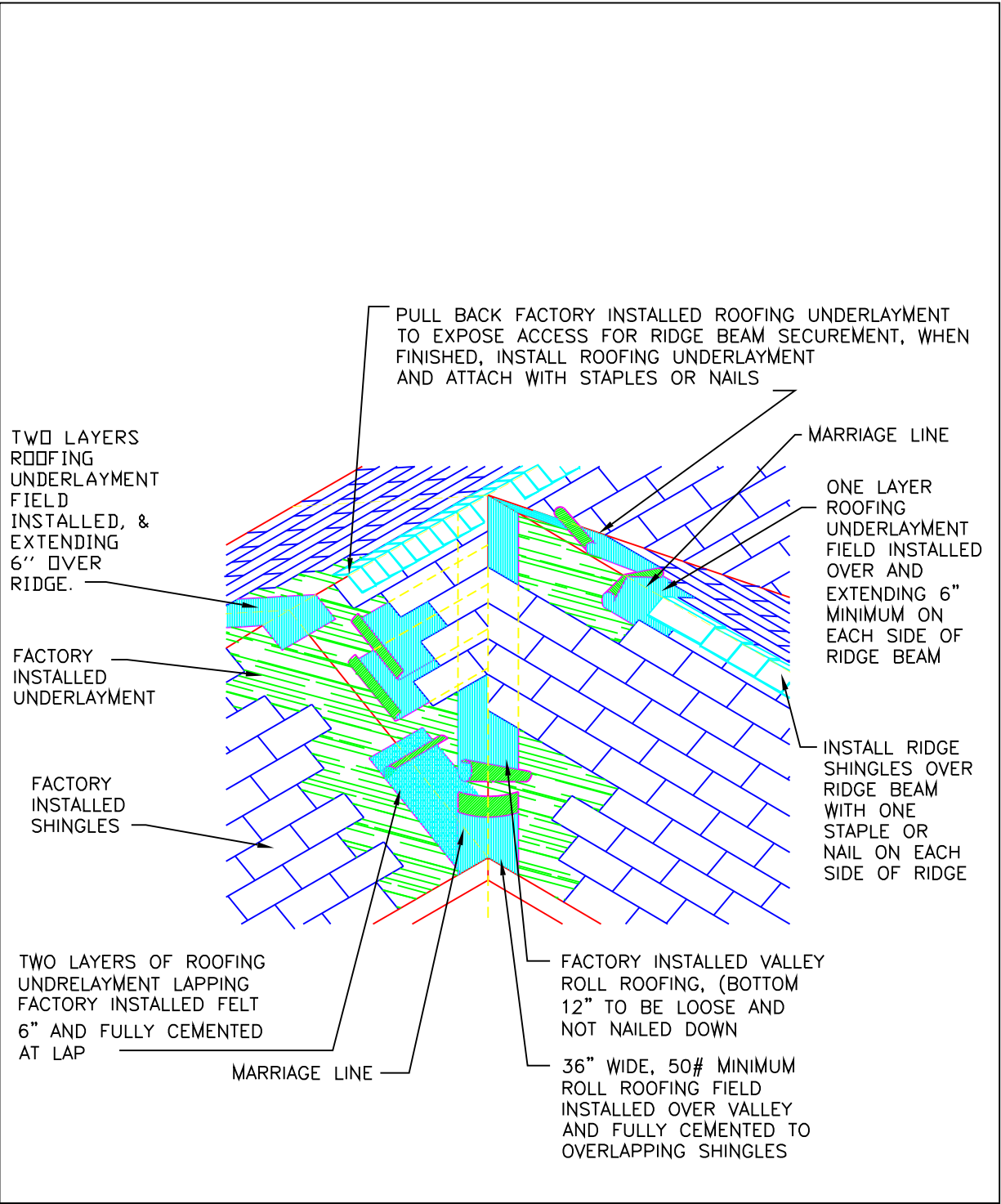
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.2.3B





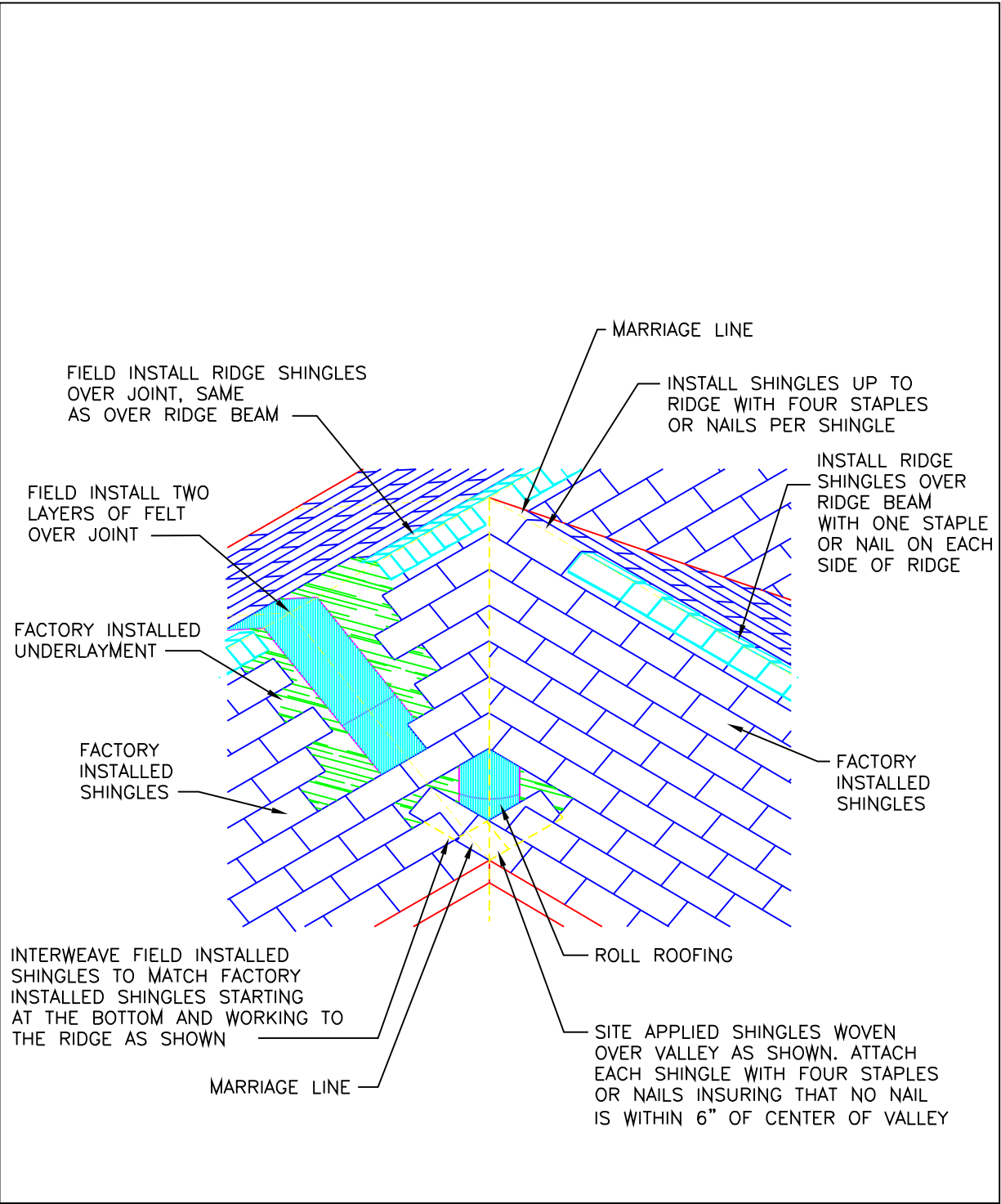
TYPICAL FLOOR CONNECTION USING WOOD SCREWS

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
		FIGURE 3-11.2.3C



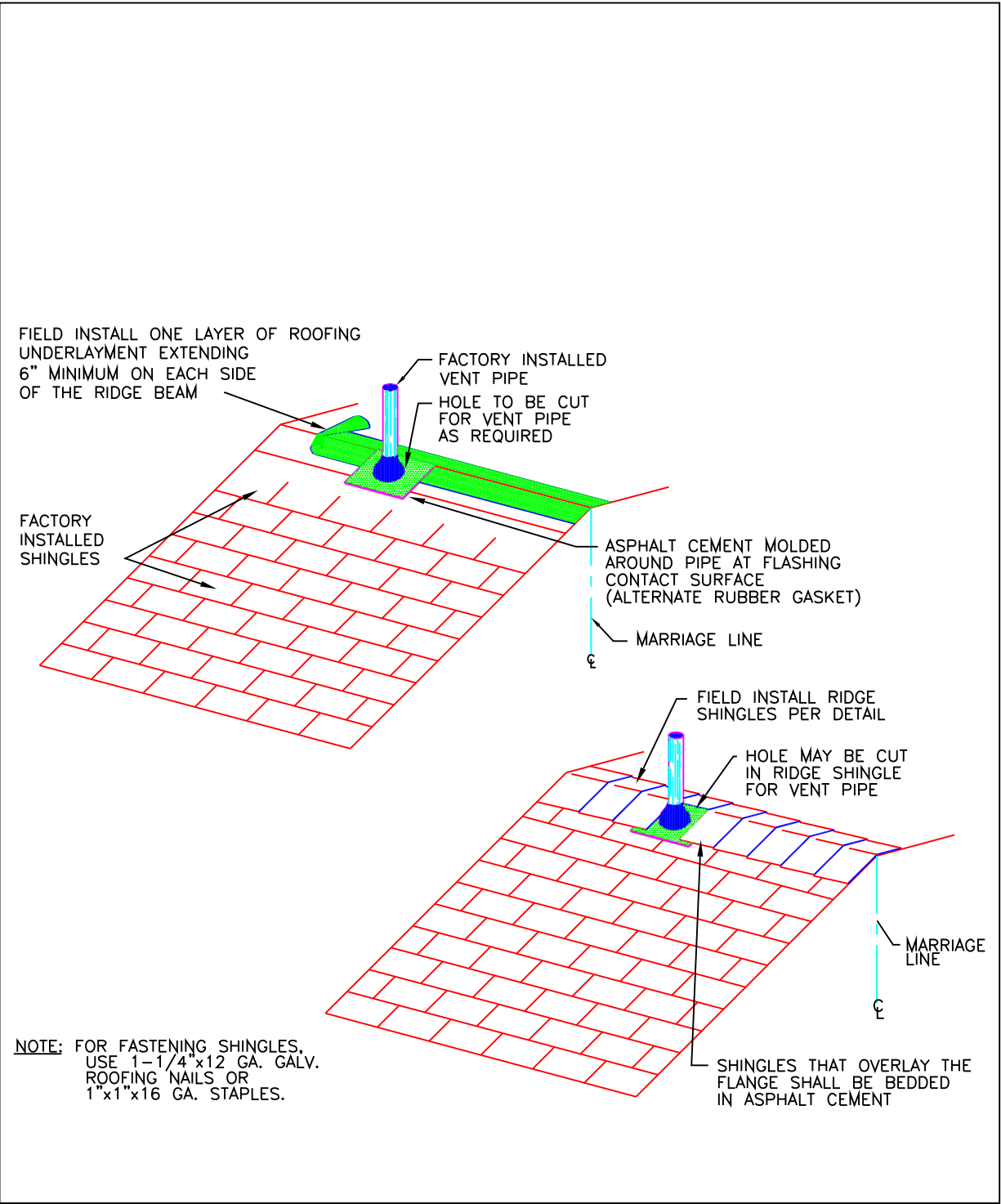
TYPICAL MARRIAGE LINE VALLEY DETAIL PART I

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.3.1A



TYPICAL MARRIAGE LINE VALLEY DETAIL PART II

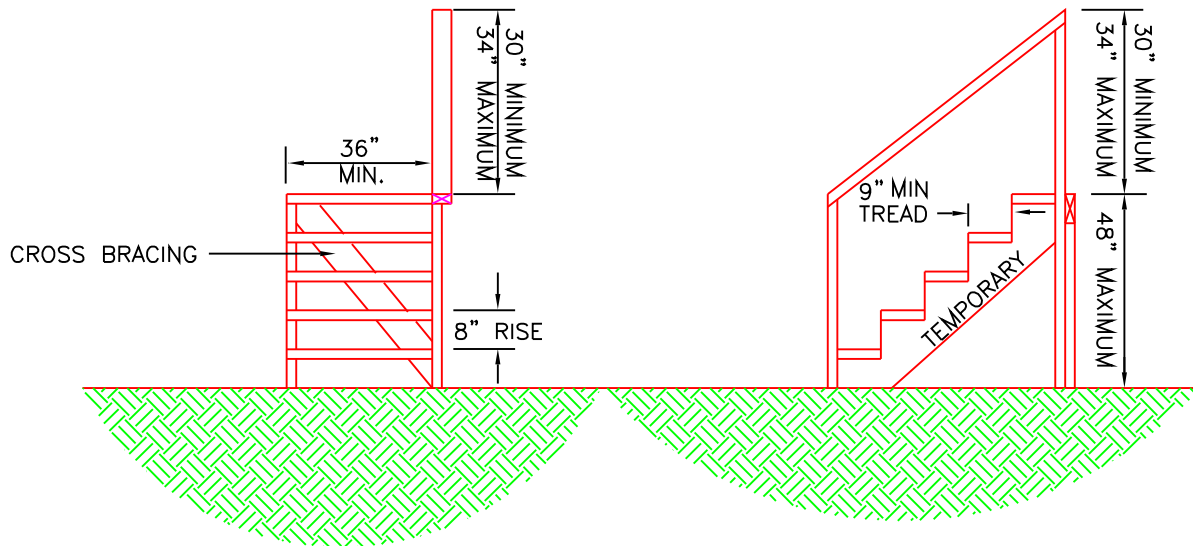
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.3.1B



TYPICAL ROOF VENT AT MARRIAGE LINE DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-11.3.1C

# NOT APPLICABLE AFTER DECEMBER 31, 2003



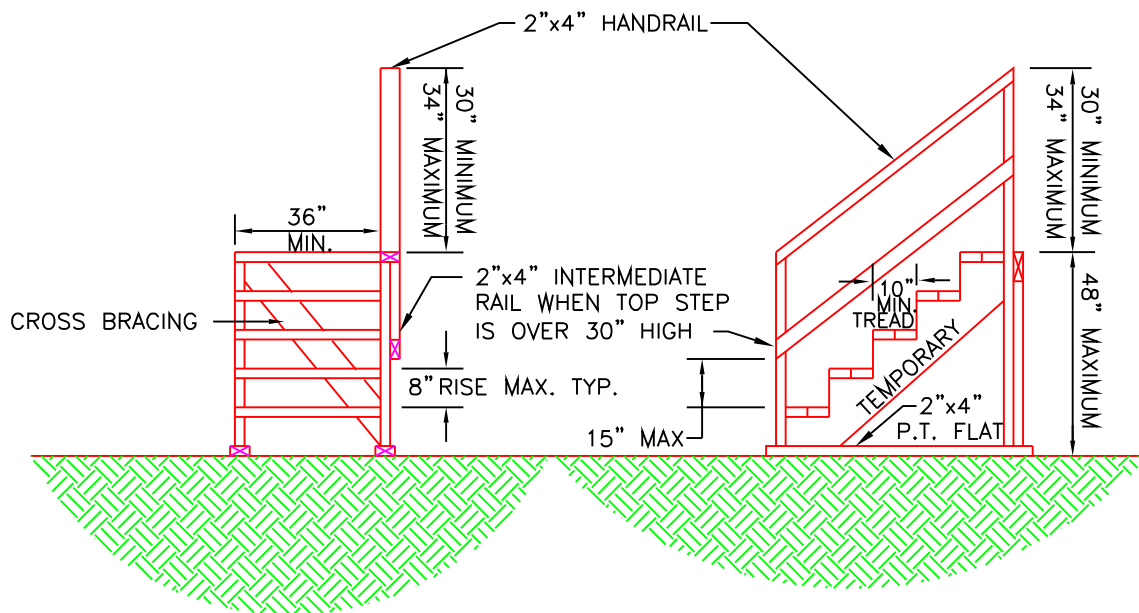
**NOTE:** EACH TEMPORARY STEP SHALL BE IDENTIFIED "TEMPORARY" IN 2" HIGH LETTERS BY PAINT, LABEL, DECAL, OR STENCIL.

**NOTE:** ALL TEMPORARY STEPS SHALL BE CONSTRUCTED OF #2 OR BETTER LUMBER.

**NOTE:** HANDRAIL IS ONLY REQUIRED WHEN THERE ARE THREE OR MORE STEPS.

TYPICAL TEMPORARY STEP & RAIL DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-12.2A



NOTE: HANDRAILS REQUIRED ON BOTH SIDES WHEN THE TOP STEP IS AT 30" OR MORE.

NOTE: ALL TEMPORARY STEPS SHALL BE CONSTRUCTED OF #2 LUMBER OR BETTER.

NOTE: EACH TEMPORARY STEP SHALL BE IDENTIFIED "TEMPORARY" IN 2" HIGH LETTERS BY PAINT, LABEL, DECAL, OR STENCIL IN RED.

NOTE: INTERMEDIATE RAILS ARE ONLY REQUIRED WHEN THE TOP STEP IS OVER 30" HIGH.

TYPICAL TEMPORARY STEP & RAIL DETAIL AFTER JANUARY 01, 2004

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3
REV. 12/01/01 RHW		FIGURE 3-12.2B

## CHAPTER FOUR ELECTRICAL INSTALLATIONS/CONNECTIONS

- 4-1 General
- 4-2 Electrical Feeders
- 4-3 Service Equipment
- 4-4 Crossover Connections
- 4-5 Electrical Equipment
- 4-6 Electrical Testing

### 4-1 General.

**4-1.1 Electrical Installations.** This chapter of the code is intended to supplement the **National Electrical Code (NEC)** concerning manufactured dwellings and manufactured dwelling parks, but is not intended to take the place of the **NEC** or the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280**.

(a) Wherever the requirements of this code differ from the **NEC**, this code shall apply;

(b) Alternate methods permitted in the **NEC** but not mentioned in this code may be permitted if acceptable to the authority having jurisdiction;

(c) All electrical equipment shall be without defect; damaged materials or equipment cannot be used. Used electrical equipment shall be examined for defect prior to installation, and all damaged electrical materials or equipment shall be repaired with approved component parts, or replaced;

(d) All electrical equipment, materials, devices, appliances, and fittings shall be listed and labeled for its intended use, and installed according to this code and where not specific, to the **NEC**.

**4-1.2 Manufactured Dwellings.** All electrical installations in connection with a manufactured dwelling installation, alteration, repair, conversion, or addition to a manufactured dwelling shall be made according to this code and, where not specific, to the **NEC**.

(a) See Chapter 9 for smoke alarm and smoke detector locations.

(b) When a manufactured dwelling is located in a flood hazard area, all electrical connections on the lot shall be a minimum of 12 inches (30 cm) above the base flood level.

**4-1.3 Accessories.** All electrical installations to external equipment, alterations, repairs, conversions, or additions in connection with a manufactured home shall be made according to this code and, where not specific, to the **NEC**. External accessories (i.e., accessory buildings, structures, air handling equipment, and water and sewer pumps) may be connected directly to the manufactured dwelling's main distribution panel if there is adequate space and amperage to supply the added loads. Except where otherwise required by Chapter 6 for fuel burning equipment, replacement appliances are not required to be listed for manufactured home use. See Section 4-5 for additional requirements for onsite installed equipment.

**4-1.4 Underground Installations.** Direct buried cables shall be installed in trenches and protected from damage according to **Table 4-D**. Backfill shall be free of large rocks, paving materials, cinders, large or sharply angular substances, or corrosive material. Backfill around cables with sand or clean soil (**see Figures 4-1.4A and B**). Direct buried cables shall maintain the minimum clearances shown in **Table 4-D**.

Do not install direct burial cables in a common trench with non-electrical utilities unless specifically approved by the electrical utility company or the authority having jurisdiction.

**4-1.5 Communication Equipment.** Communication cables (i.e. telephone, television, and computer cables) may be installed by the manufacturer, however, if the purchaser did not order the home to be pre-wired, cables will need to be installed on site. Manufactured dwelling floor, wall, and ceiling cavities contain

electrical circuits, plumbing, and ducting. Extreme care should be exercised during drilling through and placing communication cables within these cavities. Communication cables installed in trenches with other electrical conductors shall be separated by a minimum of 12 inches (30 cm) (see **Figure 4-1.4B**).

**4-1.6 Clearances.** Maintain all clearances to electrical equipment according to the listing of the equipment, the **NEC, Tables 4-C and 4-D**. Electrical equipment or materials shall not obstruct the access to the under-floor area. Homes may not be sited less than eight (8) feet (243.8 cm) from a transformer.

**4-1.7 Repairs and Maintenance.** All repairs and maintenance of a manufactured dwelling electrical system shall be made according to this code, and where not specific, to the **24 CFR 3280** or to the **NEC**.

**4-1.8 Alterations and Additions.** All alterations and additions to a manufactured dwelling electrical system shall be made according to this code, and where not specific, to the **24 CFR 3280** or to the **NEC**.

**4-1.9 Inspections.** All electrical connections shall be accessible for inspections. All excavations containing electrical equipment shall be left open for inspection by the authority having jurisdiction.

## **4-2 Electrical Feeders.**

**4-2.1 Approved Feeders.** Manufactured dwelling feeder conductors shall consist of one of the following:

- (a) A listed factory installed or provided cord, properly connected. (see **figure 4-2.1A**);
- (b) A permanently installed overhead feeder containing four insulated conductors listed as sunlight resistant and

installed in compliance with **Table 4-A**. (see **figure 4-2.1B**);

(c) A permanently installed overhead feeder containing three insulated conductors listed as sunlight resistant with an “uninsulated” messenger of a factory assembled quadplex cable installed in compliance with the applicable provisions of **NEC Articles 230-24, 321, and 550-5** (see **figure 4-2.1B**);

(d) A permanently installed underground feeder containing four insulated conductors as per **Table 4-B**;

(e) A permanently installed feeder installed by the manufacturer according to DAPIA approved plans when the service equipment is mounted on the manufactured dwelling by the manufacturer at the manufacturing plant; or

(f) A permanently installed feeder containing four insulated conductors, and protected in an approved raceway in or through the floor, wall, or roof or under the chassis when the service equipment is mounted on the manufactured dwelling on site.

**4-2.2 Feeder Sizing.** Feeders shall be sized according to the following:

(a) The feeder size shall be based on the amperage of the main circuit breaker inside the manufactured dwelling’s main distribution panel which is also indicated on an exterior label located near the feeder and on the manufacturer’s data plate located inside the home.

(b) Feeders shall be sized adequately to carry the combined loads of the manufactured dwelling and all external accessories receiving power from the main distribution panel (i.e. air conditioner, heat pump, accessory buildings, accessory structures, or water and sewer pumps).

(c) Overhead feeders shall be sized according to **Table 4-A**.

(d) Underground feeders and conduit shall be sized according to **Table 4-B**.

**4-2.3 Feeder Installations.** Feeder conductors shall be installed according to



the following and, where not specific, to the **NEC**:

**(a)** Cord connected feeders shall consist of one listed 50 ampere power-supply cord attached to the main distribution panel or a junction box. **(see Figure 4-2.1A)**;

**(b)** Overhead feeders shall be provided with the clearances required in **Table 4-C**. **(see figure 4.2.1B)**;

1. When roof additions are installed on a manufactured dwelling, the height of the overhead feeder shall be extended to provide the required clearances above the roof addition; and

**(c)** Underground feeders shall be provided with the clearances required in **Table 4-D**, and where not specific, to **NEC Table 300-5**;

**(d)** Conduit shall be sized according to **Table 4-B**;

**(e)** Conduit shall be installed and secured at the intervals required in **Table 4-E**;

**(f)** The feeder shall be connected to the electrical service disconnect within view of the manufactured dwelling and within 30 feet (914 cm) of the manufactured dwelling exterior wall. The 30 foot (914 cm) measurement applies to the service disconnect only. If the meter is not part of the service disconnect, the meter is not required to be within 30 feet (914 cm) or within view of the manufactured dwelling.

**4-2.4 Grounding.** The green colored insulated conductor of the feeder shall be connected to the grounding bus inside the main electrical distribution panel and to the grounding bus inside the service entrance equipment located on or adjacent to the manufactured dwelling. The neutral bar shall be isolated from the ground bar inside the main distribution panel or inside any junction boxes used in conjunction with the manufactured dwelling branch circuit or feeder.

#### **4-2.5 Temporary Feeder Installations.**

When a manufactured dwelling is installed for display purposes only on a manufacturer's, dealer's or distributor's lot or facility, or at a show the electrical

feeders may be installed according to the following:

**(a)** Temporary feeders may be reduced in size and amperage adequate to supply only the equipment being used during the display;

**(b)** Temporary feeder disconnects are exempt from requirements to be within view and within 30 feet (914 cm) of the manufactured dwelling exterior wall;

**(c)** Temporary feeders supplying only 120 volt circuits may be made up of three insulated conductors and may use service entrance (SE) cable;

**(d)** Temporary feeders shall provide a means of grounding the manufactured dwelling to an approved electrical ground; and

### **4-3 Electrical Service Equipment.**

**4-3.1 Service Equipment.** A manufactured dwelling shall be provided power through electrical service equipment installed according to this code and, where not specific, to **NEC Article 230** and **550-23** of the **National Electrical Code (NEC)**.

#### **4-3.2 Service Equipment Installations.**

Service equipment shall be provided for a manufactured dwelling by one of the following methods:

**(a)** Service equipment may be installed on the manufactured dwelling by the manufacturer at the manufacturing plant during the initial construction **(see Figure 4-3.2A)**;

**(b)** The service equipment may be field installed on the manufactured dwelling at its final installation site **(see Figures 4-3.2A)**;

**(c)** The service equipment may be installed on a pole or as an approved pedestal adjacent to the manufactured dwelling; or

**(d)** When service equipment is installed on a permanent detached structure (i.e. garage, cabana, or accessory building) on the same site it must be within 30 feet (914 cm) and in sight of the manufactured dwelling, or a disconnect means may be

provided within 30 feet (914 cm) and in sight of the manufactured dwelling.

**4-3.2.1 Factory Installed Service Equipment.** Service equipment installed on a manufactured dwelling by the manufacturer in the factory shall comply with the following:

(a) Service equipment may be installed by the manufacturer at the manufacturing plant during the initial construction;

(b) The neutral conductor shall be connected to the system grounding conductor on the supply side of the main disconnect; and

(c) Service equipment shall be site specific and sized adequately to carry the combined loads of the manufactured dwelling.

**4-3.2.2 Field Installed Service Equipment.** Service equipment installed on a manufactured dwelling at the manufactured dwelling site shall comply with the following:

(a) Service equipment shall be installed in a manner acceptable to the authority having jurisdiction;

(c) Service equipment and conductors shall be sized adequately to carry the combined loads of the manufactured dwelling.

(d) The neutral conductor shall be connected to the system grounding conductor on the supply side of the main disconnect; and

(e) Location of the service metering equipment shall be site specific according to the requirements of the local utility company.

**4-3.2.3 Detached Service Equipment.** Service equipment installed on a manufactured dwelling site and not attached to the manufactured dwelling shall comply with the following:

(a) Service equipment shall be installed on a pole or as an approved pedestal or installed on a permanent structure adjacent to the manufactured dwelling (i.e. garage, cabana, or accessory building);

(b) Service equipment and conductors shall be sized adequately to carry the combined loads of the manufactured dwelling and all external accessories on the manufactured dwelling.

**4-3.3 Service Location and Clearances.** All service equipment shall be located according to the following:

(a) Service equipment shall be located according to the site's electrical service as designated by the applicable electrical utility company or if in a park, according to the electrical service designed for the park;

(b) Overhead service conductors shall maintain the clearances required in **Table 4-C; (See Figure 4-2.1B)**

1. When roof additions and ramadas are installed on a manufactured dwelling, the height of the overhead service shall be extended to provide the required clearances above the roof addition.

(c) Underground service conductors shall maintain the clearances required by the serving utility;

(d) The electrical service disconnect shall be within view of the manufactured dwelling and within 30 feet (914 cm) of the manufactured dwelling exterior wall;

(e) Service disconnect shall be located so the bottom of the enclosure containing the disconnecting means is not less than 2 feet (61 cm) above finished grade or the base flood elevation when the manufactured dwelling is located in a flood hazard area;

(f) The center of the meter shall be located a minimum of 4 feet (122 cm) and a maximum of 6 feet (183 cm) above grade or a working platform;

(g) Service disconnect shall be located so the center of the grip of the operating handle, in its highest position, is not more than 79 inches (201 cm) above the finished grade or a working platform; and

(h) The front of the service equipment shall be provided with a working clearance of 30 inches (76 cm) wide by 36 inches (91 cm) deep.

**4-3.4 Service Equipment Requirements.** All service equipment shall be installed according to the following:

(a) All service equipment shall be installed according to this code and, where not specific, to **NEC Article 230 and 550-23**;

(b) All electrical service equipment connections shall be accessible;

(c) All service equipment shall contain a means for connecting accessory buildings, accessory structures, or additional electrical equipment located outside a manufactured dwelling by a fixed wiring method; and

(d) When there is multiple electrical service equipment on the same lot, space, or site, each service disconnect shall be identified with a permanent, prominently displayed identification label indicating what structure or accessory the service disconnect controls (i.e. manufactured dwelling, accessory building, air handling equipment, and water and sewer pumps)

**4-3.5 Grounding.** Where service equipment is mounted on the manufactured dwelling and the manufactured dwelling is supported by a poured-in-place concrete footing or slab, the service equipment may be grounded to a concrete encased electrode according to **NEC Article 250-50 (see Figure 3-8.2.1 and 3-8.2.2)**. Where a poured-in-place concrete footing or slab ground is not available, the manufactured dwelling service equipment shall be grounded to ground rod(s) or other methods according to **NEC Article 250-50 or 250-52**.

#### **4-4 Electrical Crossover Connections.**

**4-4.1 Crossover Connection.** Multiple sections (i.e. side by side or stacked sections) of manufactured dwellings shall have the electrical circuits connected at the marriage line according the following:

(a) All electrical crossover connections shall be a minimum of 12 inches (30 cm) above the base flood level;

(b) All electrical crossover connections shall be made with approved connectors and contained within junction boxes or within wall or floor cavities;

(c) All electrical crossover connections shall remain accessible; and

(d) Electrical crossover connections at the marriage line shall be made according to Section 4-4.2 or 4-4.3 of this chapter.

#### **4-4.2 Component Interconnection Devices.**

When provided by the manufactured dwelling manufacturer, multiple sections of a manufactured dwelling may be connected through listed and approved component interconnection devices (i.e. AMP®, Molex®, or equal connectors) according to the following (see **Figures 4-4.2A**):

(a) Each component interconnection device shall be matched with a similar connector identified by the manufacturer with corresponding colors, numbers, letters, or other marks;

(b) Each pair of component interconnection devices shall be connected and locked according to the device manufacturer's installation instructions;

(c) The connected pair of component interconnection devices shall be pushed back inside the floor or wall cavity; and

(d) The access panel on the wall or floor shall be replaced and secured in place.

**4-4.3 Hard Wire Connections.** When provided by the manufacturer of the manufactured dwelling, multiple sections of a manufactured dwelling may be connected through junction boxes according to the following:

(a) The cables shall be inserted into the junction boxes and secured with approved clamps where required;

(b) Each cable shall have the sheathing stripped back exposing the conductors and each conductor shall have the insulation stripped back exposing the bare wire;

(c) Each cable, containing three to four conductors, shall be matched with another cable identified by the

manufacturer with corresponding colors, numbers, letters, or other marks;

**(d)** The conductors of each matched circuit shall be joined together according to their identification with appropriately sized wire nuts. There shall not be any exposed bare conductors showing outside the wire nuts except for the grounding conductor **(see Figure 4-4.3A and 3B)**;

**(e)** The bare conductors and green conductors (grounding conductors) of all circuits shall be joined together with a wire nut or other approved device;

**(f)** Where the junction box is metal, it shall be bonded to the grounding conductors inside the box;

**(g)** Wire nut connections shall be checked to make sure there are no loose conductors;

**(h)** The conductors shall be pushed into the box and the junction box cover secured in place.

**(i)** All exposed cables shall be inside the wall or floor or shall be protected in an approved conduit; and

**(j)** Split circuits provided by the manufacturer shall be connected according to the color-coding or other coding provided by the manufacturer **(see Figure 4-4.3B)**.

**4-4.4 Bonding Crossover.** Multiple sections of manufactured dwellings shall be bonded at each marriage line according to one of the following methods:

**(a)** Each steel chassis shall be bonded to the adjacent chassis with a solid or stranded, green insulated or bare number 8 copper conductor secured to connectors supplied by the manufacturer **(see figure 4-4.4A)**; or

**(b)** Each steel chassis shall be bonded to the adjacent chassis with bolts or rods capable of conducting current from one chassis to another. Star washers or similar paint penetrating devices shall be used to provide an effective bonding path between each chassis **(see figure 4-4.4B)**.

## **4-5 Electrical Equipment.**

**4-5.1 Site Connections.** All site installed or connected electrical equipment shall be installed according to this code and, where not specific, to the **National Electrical Code (NEC)**.

**4-5.2 Shipped-Loose Fixtures.** Electrical equipment and fixtures (i.e. ceiling fans, chandeliers, exterior lights, and mechanical equipment) that are shipped-loose with the manufactured dwelling shall be installed on site according to the equipment manufacturer's installation instructions.

Wiring connections of shipped-loose electrical equipment or fixtures shall be properly connected to the corresponding color coded or marked conductors of the manufactured dwelling branch circuit conductors. When fixtures are located on a combustible surface (i.e. hardboard, wood, logs, vinyl, etc.) install a flash ring between the electrical device and the combustible surface.

**4-5.3 Site Installed Electrical Equipment.** All site installed electrical equipment and the electrical connections shall comply with the following:

**(a)** Outdoor fixtures and equipment shall be listed for use in wet locations, except they may be listed for use in damp locations if located on the underside of the home or located under roof extensions or similarly protected locations;

**(b)** Exterior air handling equipment (i.e. air conditioners, heat pumps, and evaporative coolers) installed on the outside of the manufactured dwelling shall be connected to an adequately sized circuit;

**(c)** Connections from the branch circuit junction box to exterior air handling equipment shall be made through liquid tight flexible conduit with the proper termination fittings;

**(d)** Added accessories (i.e. accessory buildings, accessory structures, air handling equipment, and water and sewer pumps) not provided for by the manufacturer may be connected to the

manufactured dwelling's main distribution panel if there is adequate space and amperage to supply the additional branch circuit loads;

**(e)** Circuit breakers and conductors for added accessories or appliances shall be sized adequately according to the load imposed;

**(f)** Additional 120 volt, 15 or 20 ampere receptacles shall be permitted for connection of electrical equipment located outside the manufactured dwelling if protected by a listed ground fault circuit interrupter;

**(g)** When a manufactured dwelling is located in a flood hazard area, all electrical appliances and connections shall be a minimum of 12 inches (30 cm) above the base flood level;

**(h)** Under-floor or under-chassis line-voltage (120 volts, nominal or higher) wiring shall be protected from damage in an approved conduit closely routed against and secured to the floor or chassis;

**(i)** Electrical raceways shall be supported according to **Table 4-E**; and

**(j)** All electrical appliances, equipment, and connections shall be accessible and removable.

**4-5.4 Electrical Ground.** All site installed or connected electrical equipment shall be grounded according to the following:

**(a)** All 240 volt cooking ranges and clothes dryers shipped-loose or purchased separately by the homeowner, shall have the bonding strap, if any, between the ground and neutral conductors removed before installation.

**(b)** Cord sets used on 240-volt appliances (i.e. cooking ranges and clothes dryers) shall have four conductors and four prongs when connected to a manufactured dwelling.

**(c)** Cord sets for permanently installed 110-volt appliances (i.e. built in microwave ovens, pellet-fired appliances, window air conditioners, etc.) shall have three conductors and three prongs when connected to a manufactured dwelling.

**4-5.5 Heat Tape Installation.** Heat tape, when used, shall be connected to the heat tape receptacle outlet under the manufactured dwelling near the main water inlet. Heat tape shall be listed for manufactured home use and installed according to the heat tape manufacturer's installation instructions.

#### **4-6 Electrical Testing.**

**4-6.1 Required Tests.** Each manufactured dwelling shall be tested by the person making the electrical feeder connection. When tests indicate faults, correct or report such failures to the manufacturer's service department immediately.

**4-6.2 Polarity Tests.** After all electrical connections have been made; the manufactured dwelling shall be tested according to the following:

**(a)** All 120 volt electrical receptacle outlets shall be subjected to a polarity test to determine that connections have been properly made;

**(b)** All shipped-loose electrical fixtures shall be subjected to a polarity test to determine that connections have been made properly; and

**(c)** All shipped-loose 240-volt electrical appliances shall be visually checked or tested to assure the ground and neutral conductors have been isolated.

**4-6.3 Continuity Test.** After all electrical connections have been made; the manufactured dwelling shall be tested with the power off according to the following:

**(a)** All applicable metal parts in or on a manufactured dwelling shall be tested for continuity to ensure they are properly bonded; and

**(b)** All grounding and bonding conductors installed or connected during the manufactured dwelling installation shall be tested for continuity.

**4-6.4 Functional Tests.** After all electrical connections have been made; the manufactured dwelling shall be tested

with the power on according to the following.

**(a)** Each ground fault circuit interrupter (GFCI) shall be tested by pushing the test button and then reset by pushing the reset button. All receptacles protected by a GFCI shall be tested with a GFCI receptacle tester to assure it is connected and in working order; and

**(b)** Each smoke detector shall be tested to assure it is connected and in working order.

**4-6.5 Test Failures.** Upon failure of any of the above tests, check all applicable field connections, correct any faults, and re-test. If tests continue to fail, notify factory authorized service personnel immediately and report failures. Other than during testing, do not energize the manufactured dwelling until all faults in the electrical system have been corrected.

**TABLE 4-A**  
**OVERHEAD FEEDER CONDUCTOR SIZING**

<b>AMPERAGE OF HOME</b>	<b>CONDUCTOR USE</b>	<b>NUMBER OF CONDUCTORS</b>	<b>WIRE SIZE (COPPER)</b>	<b>WIRE SIZE (ALUMINUM)</b>
50 AMPS	UNGROUND	2	# 8	# 8
	GROUND	1	# 10	# 10
	GROUNDING	1	# 10	# 8
100 AMPS	UNGROUND	2	# 4	# 3
	GROUND	1	# 6	# 4
	GROUNDING	1	# 8	# 6
150 AMPS	UNGROUND	2	#2	# 1/0
	GROUND	1	# 3	# 1
	GROUNDING	1	# 6	# 4
200 AMPS	UNGROUND	2	# 1/0	# 3/0
	GROUND	1	# 1	# 1/0
	GROUNDING	1	# 6	# 4
225 AMPS	UNGROUND	2	# 2/0	# 4/0
	GROUND	1	# 1/0	# 3/0
	GROUNDING	1	# 4	# 2

**NOTES:** Insulation type shall be limited to type THW, THWN, and THHN only.

2. This table is not all-inclusive, see Section 4-5 of this chapter and the **National Electrical Code** for further information.

# TABLE 4-B

## UNDERGROUND FEEDER CONDUCTOR AND CONDUIT SIZING

<b>AMPERAGE OF HOME</b>	<b>CONDUCTOR USE</b>	<b>NUMBER OF CONDUCT- ORS</b>	<b>WIRE SIZE (COPPER)</b>	<b>WIRE SIZE (ALUMINUM)</b>	<b>CONDUIT SIZE (COPPER)</b>	<b>CONDUIT SIZE (ALUMINUM)</b>
50 AMPS	UNGROUND	2	# 6	# 4	1 INCH INSIDE DIAMETER	1 INCH INSIDE DIAMETER
	GROUND	1	# 8	# 6		
	GROUNDING	1	# 10	# 8		
100 AMPS	UNGROUND	2	# 4	# 2	1 INCH INSIDE DIAMETER	1-1/4 INCH INSIDE DIAMETER
	GROUND	1	# 6	# 3		
	GROUNDING	1	# 8	# 6		
150 AMPS	UNGROUND	2	#1	# 2/0	1-1/4 INCH INSIDE DIAMETER	1-1/2 INCH INSIDE DIAMETER
	GROUND	1	# 2	# 1/0		
	GROUNDING	1	# 6	# 4		
200 AMPS	UNGROUND	2	# 2/0	# 4/0	1-1/2 INCH INSIDE DIAMETER	2 INCH INSIDE DIAMETER
	GROUND	1	# 1/0	# 3/0		
	GROUNDING	1	# 6	# 4		
225 AMPS	UNGROUND	2	# 3/0	250 MCM	2 INCH INSIDE DIAMETER	2 INCH INSIDE DIAMETER
	GROUND	1	# 2/0	# 4/0		
	GROUNDING	1	# 4	# 2		

**NOTES:**

1. Insulation type shall be limited to type USE, UF, THW, THWN, and THHN only.
2. Conduit sizes are based on Schedule 40 PVC only.
3. This table is not all-inclusive, see Section 4-5 of this chapter and the **National Electrical Code** for further information.



# TABLE 4-C

## ABOVE GROUND FEEDER CONDUCTOR CLEARANCES

LOCATION	MINIMUM HEIGHT
Above Roof Surface	8 Feet
Above Roof Ridge	3 Feet
Above Pedestrian Access	10 Feet
Above Private Driveways	12 Feet
Above Public Driveways	18 Feet
Above Alleys and Streets	18 Feet

**NOTES:**

**1. Exceptions to Article 230-24 of the National Electrical Code.**

- a.) The area above a roof surface subject to pedestrian or vehicular traffic shall have a vertical clearance from the roof surface in accordance with the clearance requirements of Section 230-24(b).
- b.) Where the voltage between conductors does not exceed 300 and the roof has a slope of 4 in. (102 mm) in 12 in. (305 mm), or greater, a reduction in clearance to 3 feet (914 mm) shall be permitted.
- c.) Where to voltage between conductors does not exceed 300, a reduction in clearance above only the overhanging portion of the roof not less than 18 in. (457 mm) shall be permitted if (1) not more than 6 ft. (1.83 m) of service-drop conductors, 4 ft. (1.22 m) horizontally, pass above the roof overhang, and (2) they are terminated at a through-the-roof raceway or approved support.
- d.) The requirement for maintaining the vertical clearance 3 ft. (914 mm) from the edge of the roof shall not apply to the final conductor span where the service drop is attached to the side of the building.

**2. This table may be not all-inclusive, see Section 4-5 of this chapter and the National Electrical Code for further information.**

## TABLE 4-D

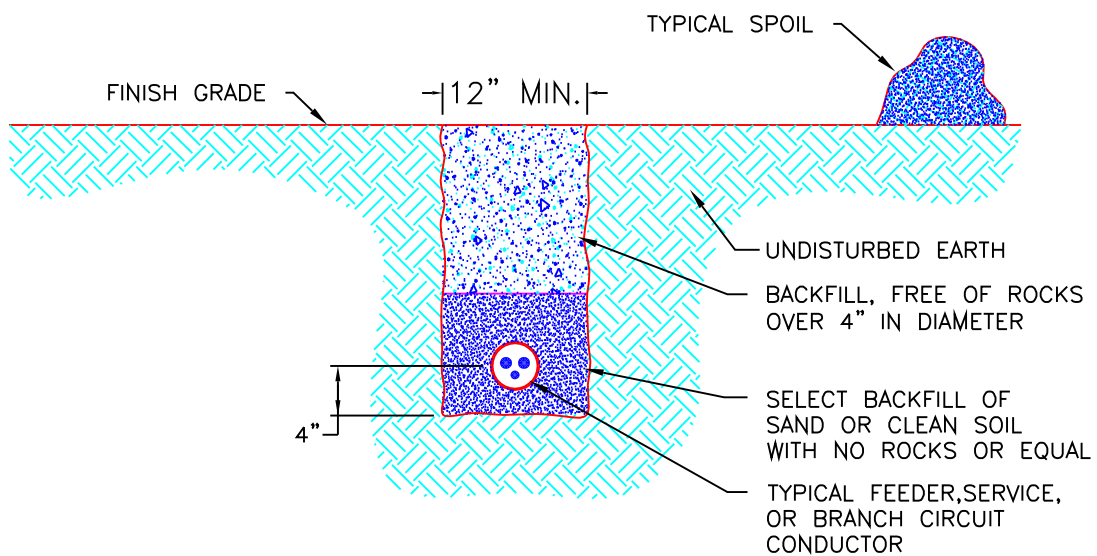
### UNDERGROUND FEEDER CONDUCTOR CLEARANCES

<b>LOCATION OF WIRING METHOD</b>	<b>DIRECT BURIAL CABLE</b>	<b>RIGID METAL CONDUIT</b>	<b>RIGID NON- METAL CONDUIT</b>	<b>BRANCH CIRCUITS MAX 20 AMP</b>
All Locations not Specified Below	24"	6"	18"	12"
Trench with 2" thick concrete cover	18"	6"	12"	6"
Under 4" concrete slab extending 6" over wiring	18"	4"	4"	6"
Under Streets & Driveways and Parking Lots	24"	24"	24"	24"
1 & 2 Family Driveways and Parking Areas	18"	18"	18"	12"
<p><b>NOTES:</b></p> <p>This table may be not all-inclusive, see the <b>National Electrical Code</b> for further information.</p>				

## TABLE 4-E

### ELECTRICAL RACEWAY SECUREMENT SCHEDULE

CONDUIT TYPE	FROM TERMINATION POINT (J-BOX)	INTERMEDIATE SUPPORT
Electrical Metallic Tubing	3 Feet	10 Feet
Electrical Nonmetallic Tubing	3 Feet	3 Feet
Flexible Metal Conduit	12 Inches	54 Inches
Intermediate Metal Conduit	3 Feet	10 Feet
Liquidtight Flexible Metal Conduit	12 Inches	54 Inches
Liquidtight Flexible Nonmetallic Conduit	12 Inches	3 Feet
Rigid Metal Conduit	3 Feet	16 Feet <sup>(1)</sup>
Rigid Nonmetallic Conduit	3 Feet	5 Feet <sup>(1)</sup>
<p><b>NOTES:</b></p> <p>1. Spacing of supports is based on 2 inch diameter conduit only and will vary for smaller or larger sizes according to the <b>National Electrical Code</b>.</p> <p>2. Raceways shall have hangars, slings, clamps or brackets which do not compress, distort, cut, or abrade the raceway.</p> <p>3. This table is not all-inclusive, see the <b>National Electrical Code</b> for further information.</p>		



**NOTE: SEE TABLE 4.D**

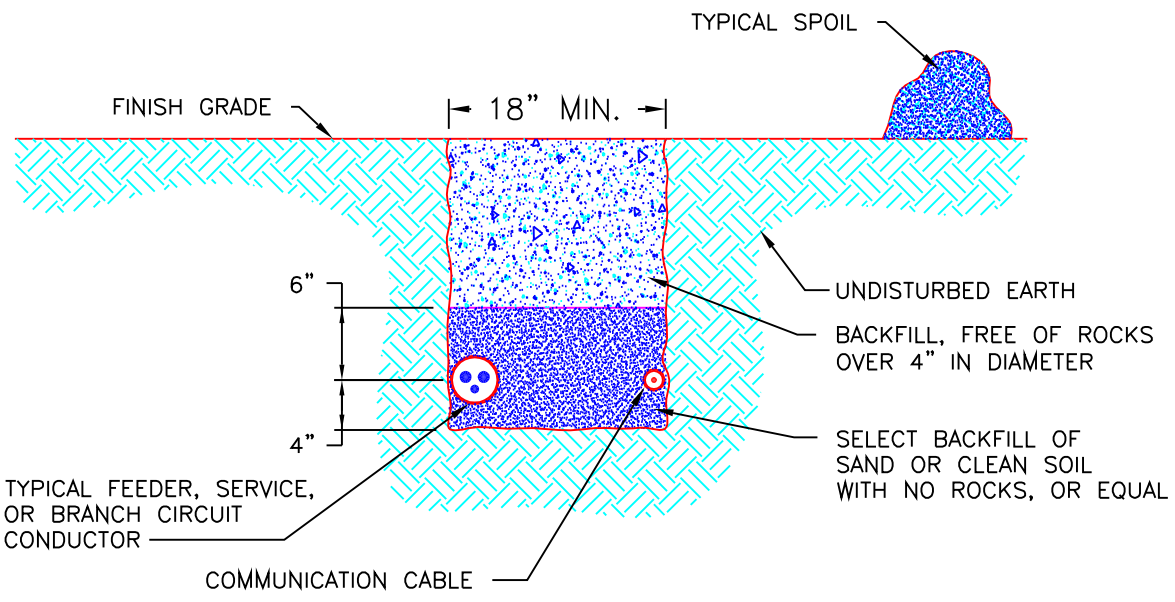
**NOTE:** DO NOT INSTALL ELECTRICAL CONDUCTORS IN A COMMON TRENCH WITH NON-ELECTRIC UTILITIES SUCH AS WATER, GAS, AND SEWER, UNLESS APPROVED BY THE UTILITY COMPANIES.

TYPICAL ELECTRICAL BURIAL TRENCH

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 4  
FIGURE 4-1.4A

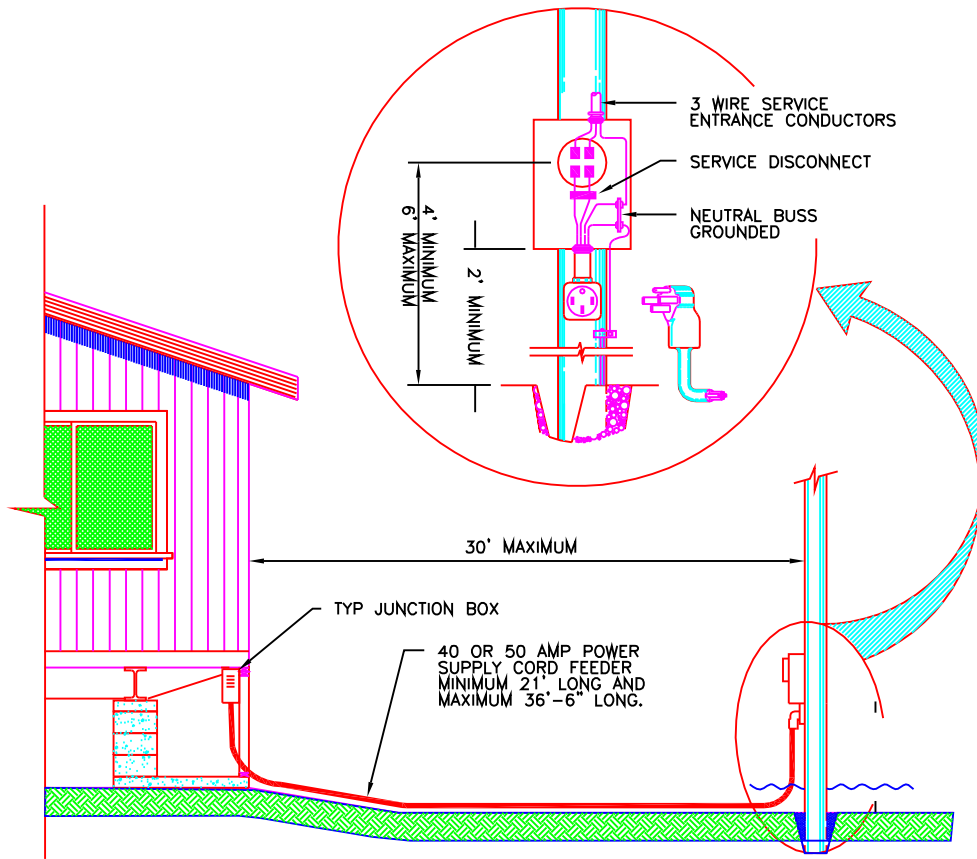


**NOTE: SEE TABLE 4.D**

**NOTE:** DO NOT INSTALL ELECTRICAL CONDUCTORS IN A COMMON TRENCH WITH NON-ELECTRIC UTILITIES SUCH AS WATER, GAS, AND SEWER, UNLESS APPROVED BY THE UTILITY COMPANIES.

TYPICAL JOINT USE ELECTRICAL BURIAL TRENCH

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4
REV. 12/01/01 RHW		FIGURE 4-1.4B

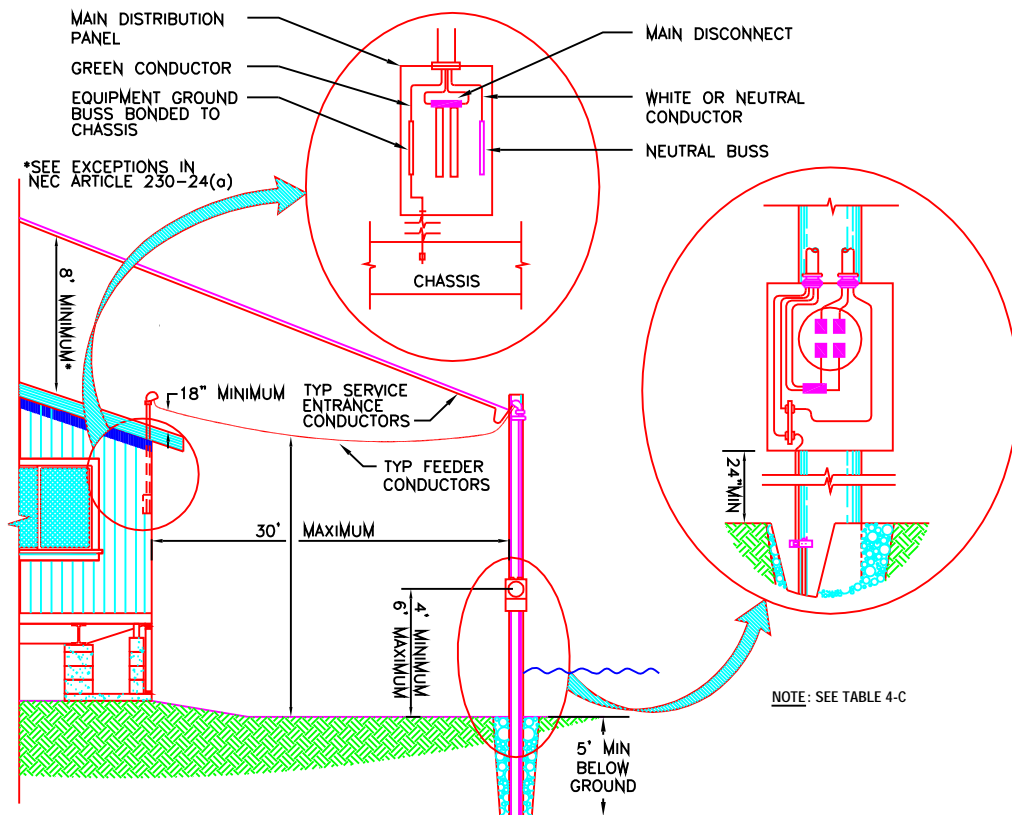


TYPICAL CORD CONNECTED FEEDER INSTALLATION

REV. 12/01/01 RHW

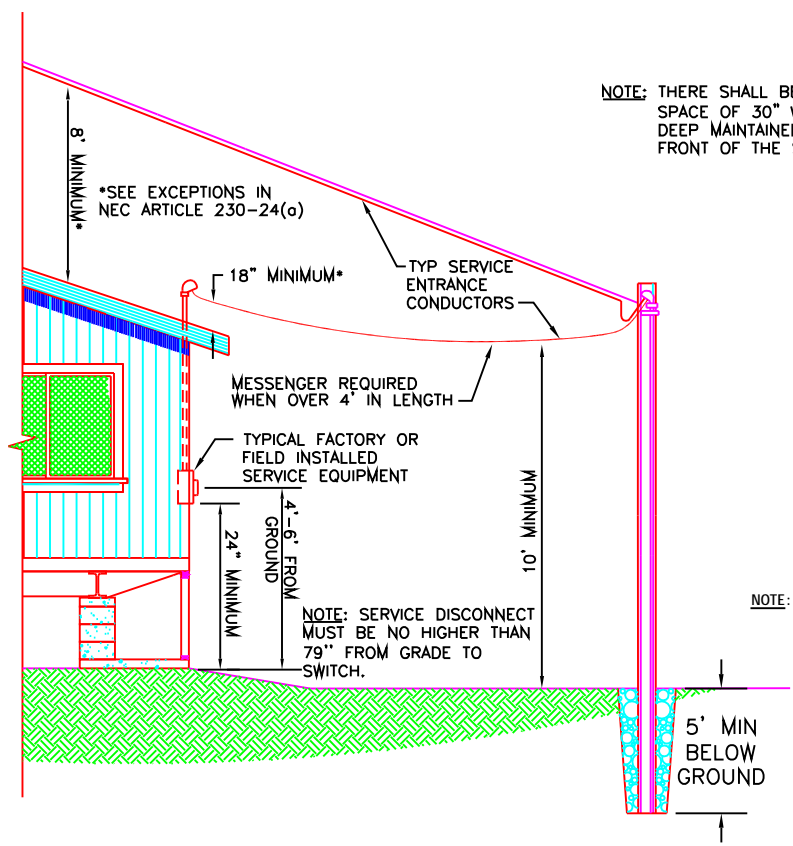
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 4  
FIGURE 4-2.1A



TYPICAL OVERHEAD FEEDER INSTALLATION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4 FIGURE 4-2.1B
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**NOTE:** THERE SHALL BE A WORKING SPACE OF 30" WIDE & 36" DEEP MAINTAINED DIRECTLY IN FRONT OF THE SERVICE EQUIPMENT.

\*SEE EXCEPTIONS IN NEC ARTICLE 230-24(a)

18" MINIMUM\*

TYP SERVICE ENTRANCE CONDUCTORS

MESSENGER REQUIRED WHEN OVER 4' IN LENGTH

TYPICAL FACTORY OR FIELD INSTALLED SERVICE EQUIPMENT

4'-6" FROM GROUND

24" MINIMUM

10' MINIMUM

NOTE: SERVICE DISCONNECT MUST BE NO HIGHER THAN 79" FROM GRADE TO SWITCH.

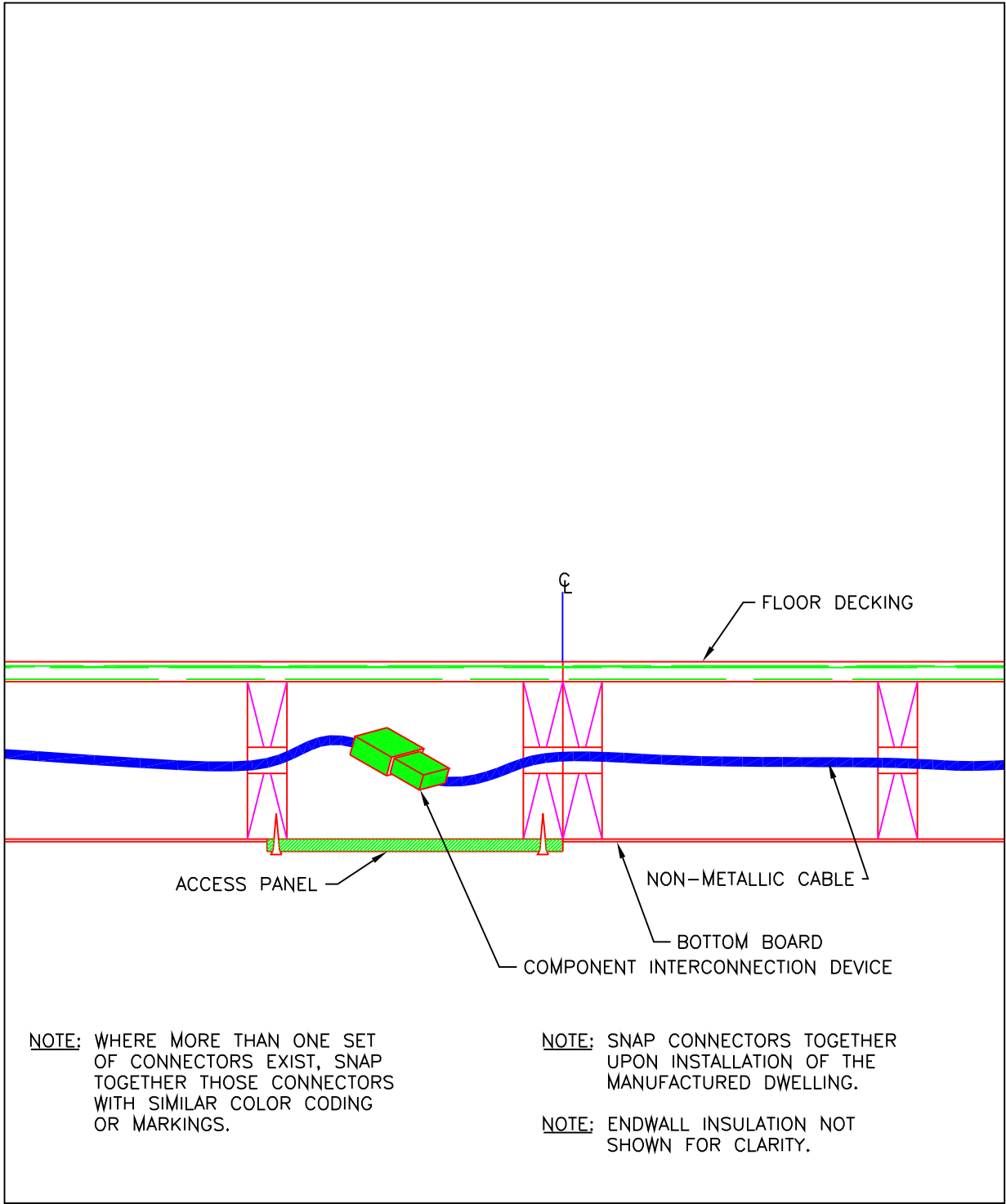
NOTE: SEE TABLE 4-C

5' MIN BELOW GROUND

TYPICAL OVERHEAD SERVICE EQUIPMENT INSTALLATION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4
REV. 12/01/01 RHW		FIGURE 4-3.2A



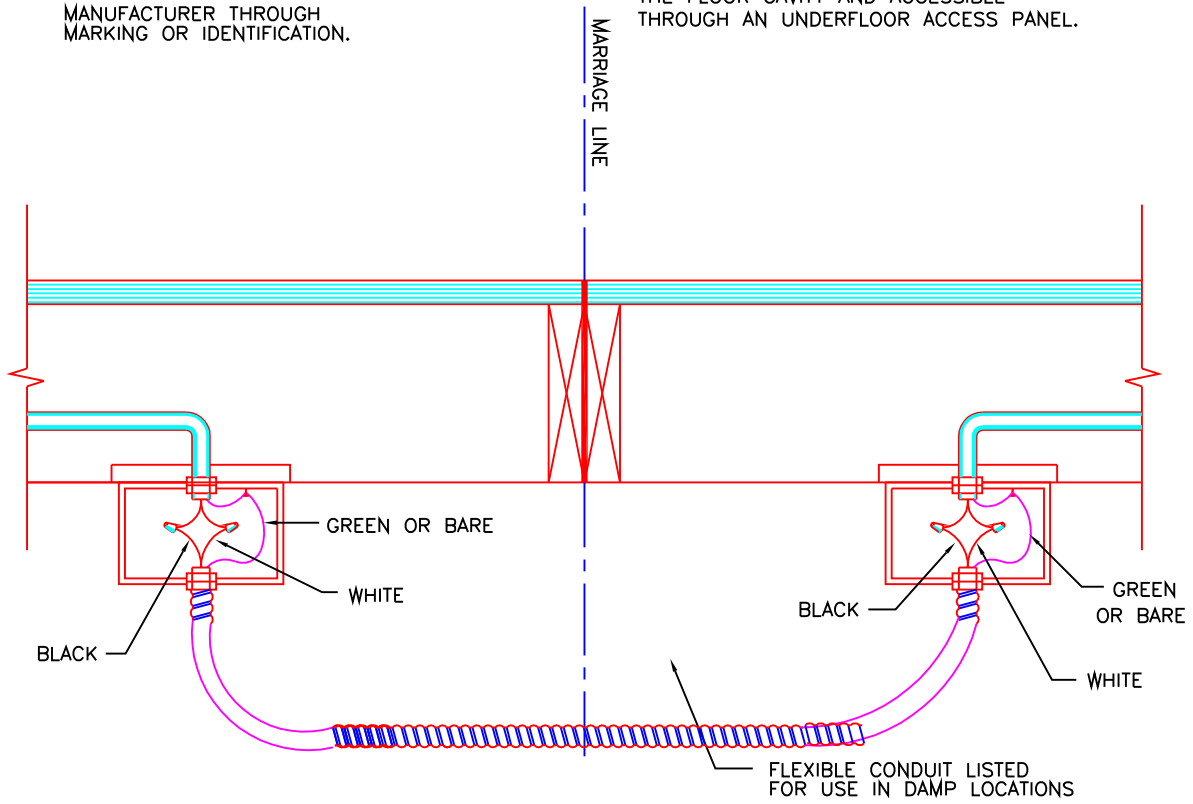


TYPICAL COMPONENT INTERCONNECTION CROSSOVER IN FLOOR

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4
REV. 12/01/01 RHW		FIGURE 4-4.2A

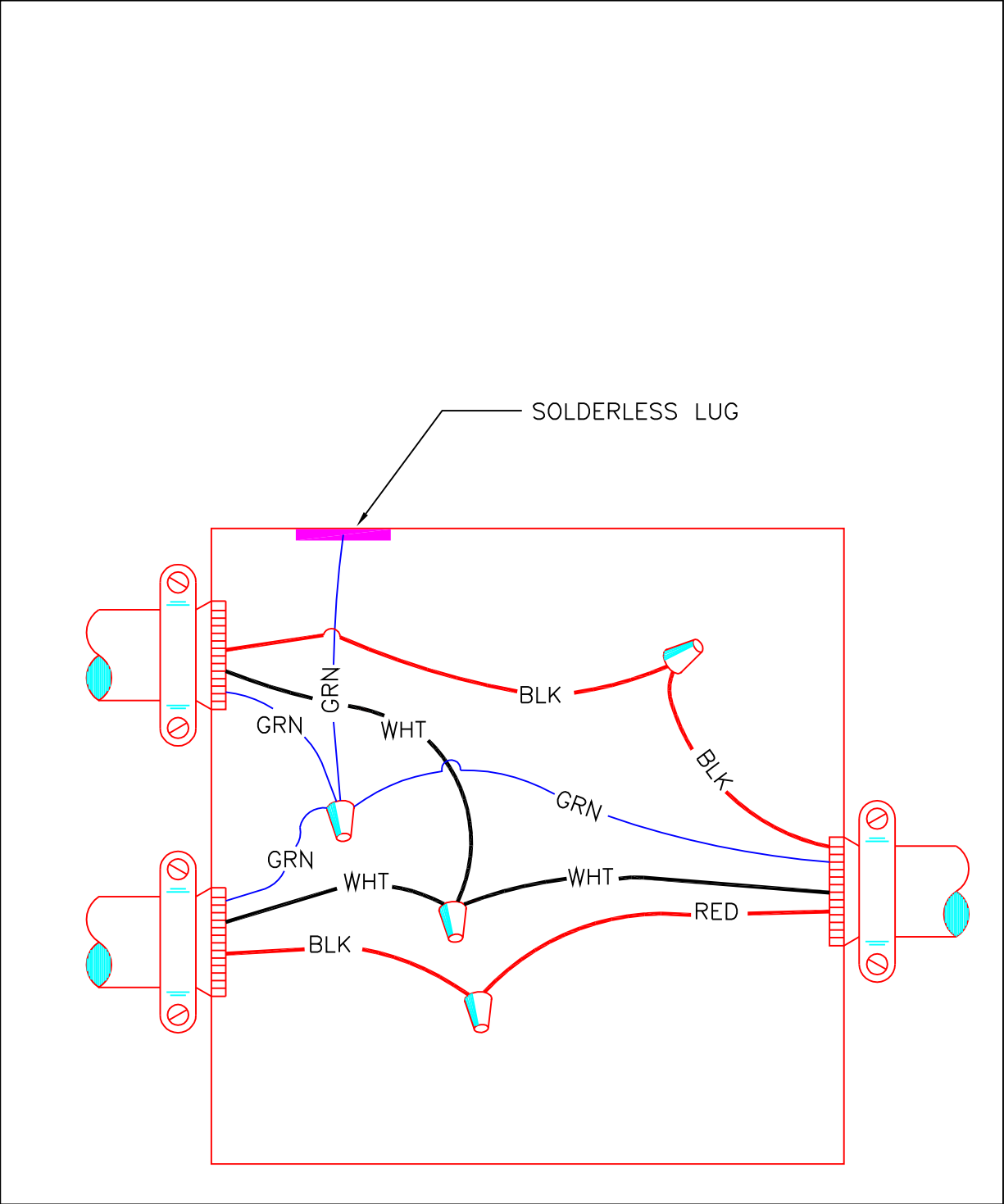
**NOTE:** ALL ELECTRICAL CROSSOVER CONNECTIONS SHOULD BE IDENTIFIED BY THE MANUFACTURER THROUGH MARKING OR IDENTIFICATION.

**NOTE:** SOME ELECTRICAL CROSSOVER CONNECTIONS ARE CONTAINED WITHIN THE FLOOR CAVITY AND ACCESSIBLE THROUGH AN UNDERFLOOR ACCESS PANEL.



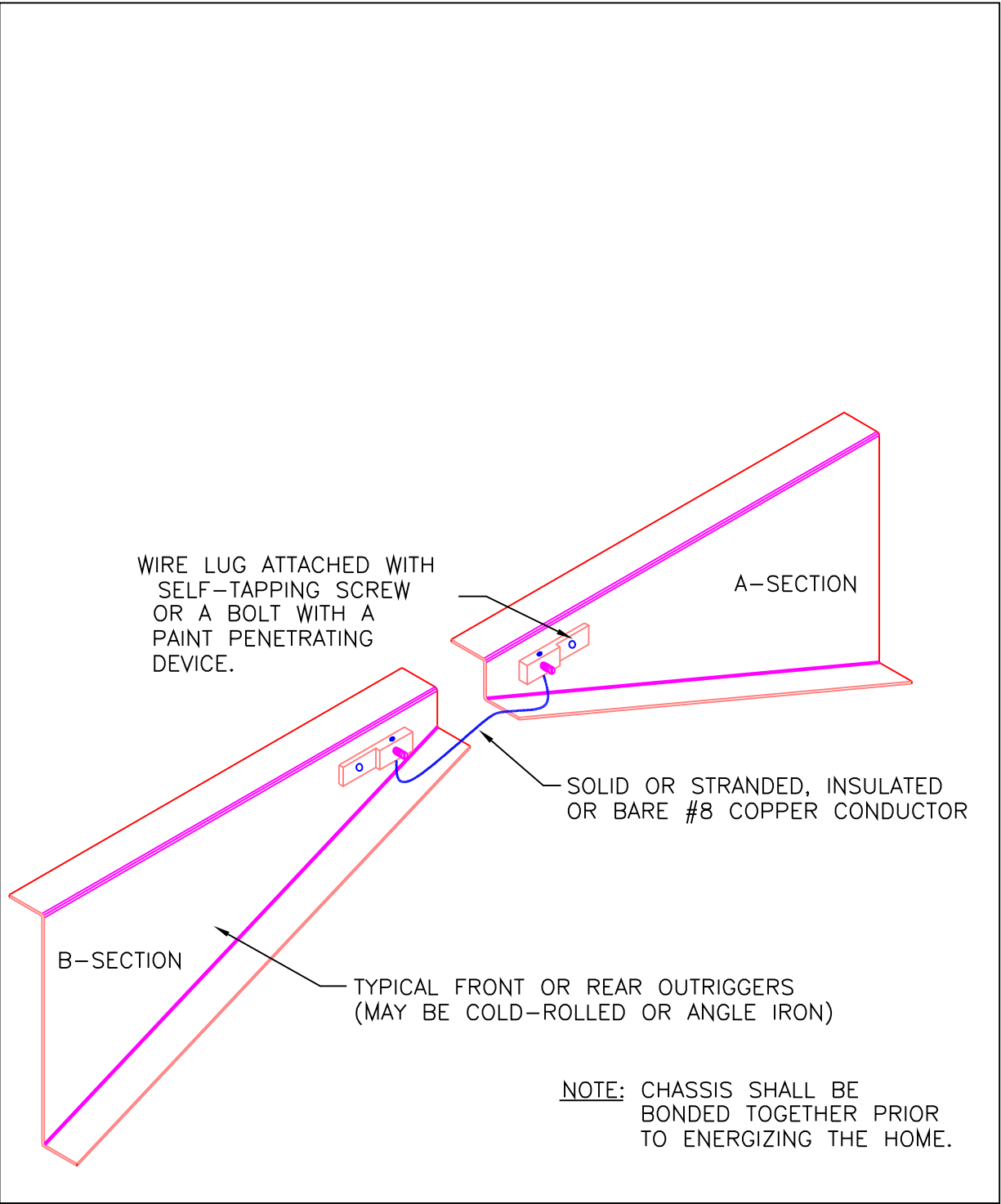
TYPICAL HARDWIRED ELECTRICAL CROSSOVER CONNECTION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4 FIGURE 4-4.3A
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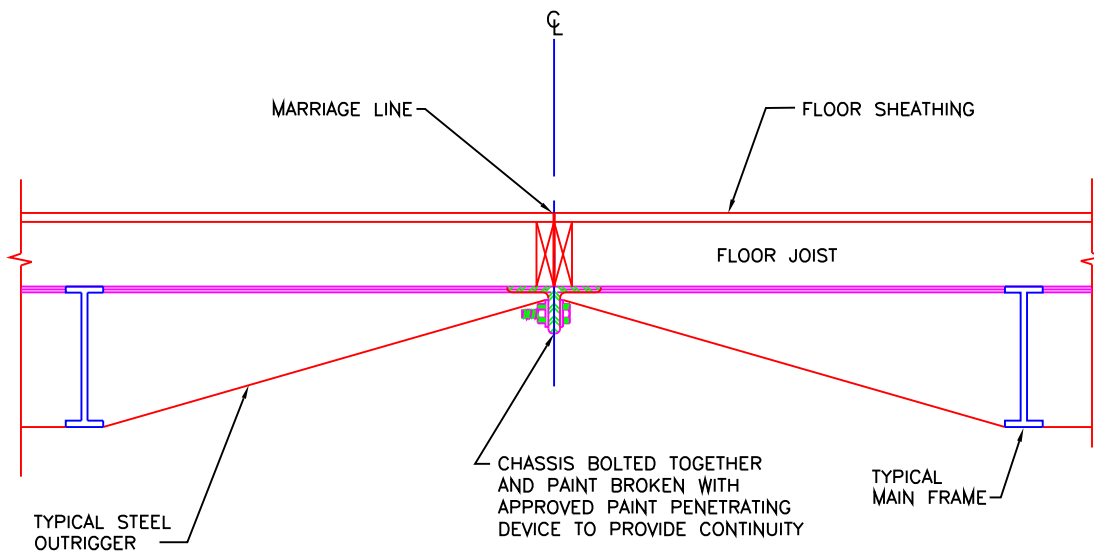
TYPICAL SPLIT CIRCUIT ELECTRICAL CROSSOVER CONNECTIONS

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4 FIGURE 4-4.3B
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TYPICAL BONDING CROSSOVER CONDUCTOR CONNECTION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4
REV. 12/01/01 RHW		FIGURE 4-4.4A



TYPICAL CHASSIS BONDING CROSSOVER CONNECTION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 4
REV. 12/01/01 RHW		FIGURE 4-4.4B

## CHAPTER FIVE PLUMBING CONNECTIONS

### 5-1 General

#### 5-2 Water Installation Requirements

#### 5-3 Drain Installation Requirements

#### 5-4 Plumbing Tests

### 5-1 General

**5-1.1 Plumbing Installations.** This chapter of the code is intended to supplement the plumbing requirements of the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280**, the **Oregon One and Two Family Dwelling Specialty Code**, and the **Oregon Plumbing Specialty Code**, but is not intended to take the place of these codes.

(a) Wherever the requirements of this code differ from the **Oregon One and Two Family Dwelling Specialty Code**, or the **Oregon Plumbing Specialty Code**, this code shall apply;

(b) Alternate methods permitted in the **Oregon One and Two Family Dwelling Specialty Code**, or the **Oregon Plumbing Specialty Code** but not mentioned in this code may be permitted if acceptable to the authority having jurisdiction;

(c) All plumbing fixtures, piping, and fittings shall be without defect. All damaged materials shall be discarded and replaced;

(d) All plumbing installations under the manufactured dwelling shall be made according to the **Manufactured Home Construction and Safety Standards 24 CFR 3280**, and, where not specific, to this code or to the material manufacturer's installation instructions;

(e) All plumbing installation methods outside the manufactured dwelling under-floor area shall be according to the material manufacturer's installation instructions, this chapter, and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**;

(f) All plumbing fixtures and equipment used in conjunction with the installation, alteration, or conversion of a manufactured dwelling shall be approved according to **Table 5-A** of this code, or, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**; and

(g) All plumbing materials (i.e. pipe, fittings, fixtures, equipment, and devices) shall be approved and marked or labeled for the intended use according to this code or, where not specific, to either the **Manufactured Home Construction and Safety Standards 24 CFR 3280**, the **Oregon One and Two Family Dwelling Specialty Code**, or the **Oregon Plumbing Specialty Code**.

**5-1.2 Manufactured Dwelling Installations.** Plumbing installations and connections made during the installation of a manufactured dwelling shall comply with the following:

(a) Plumbing located under the manufactured dwelling shall be plumbed according to the federal **Manufactured Home Construction and Safety Standards, 24 CFR Subpart G**, and, where not specific, to this code; or

(b) Plumbing located outside the manufactured dwelling under-floor enclosure shall be plumbed according to this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**; and

(c) When a manufactured dwelling is located in a flood hazard area, all plumbing openings shall be located a minimum of 12 inches (30 cm) above the base flood elevation or be equipped with approved backwater valves.

**5-1.3 Underground Installations.** Piping installed deeper than and parallel to footings shall be set away from the footing at a minimum of 45 degrees (**see Figure 5-1.4A**). Piping shall be installed in trenches so that it rests on a solid and continuous bearing surface. When over excavated, the trench shall be back filled

to the proper grade with compacted earth, sand, fine gravel, or equal. Piping shall not be supported on rocks or blocks at any point. Where the building drain or building sewer is made of the approved materials shown in **Table 5-E** or **Table 5-F** of this code, the water and sewer piping may be laid in the same trench. If the building drain or building sewer is not made of the approved materials shown in **Table 5-E** or **Table 5-F** of this code, the water piping shall be placed on a solid ledge a minimum of 12 inches (30 cm) above the building drain or building sewer (**see Figure 5-1.4B**). Rocky or unstable soil shall be excavated to a depth greater by two or more pipe diameters and brought to the proper grade with suitable compacted granular material. Backfill trenches with clean soil free from rocks, broken concrete, and other rubble.

**5-1.4 Alterations, Additions and Repairs.** All plumbing installations in connection with alterations, additions, repairs, re-manufacturing, or refurbishing of a manufactured dwelling before or at the time of sale to the first consumer shall comply with the **Manufactured Home Construction and Safety Standards 24 CFR 3280**, and, where not specific, with this code and the **Oregon One and Two Family Dwelling Specialty Code**.

**5-1.5 Manufactured Dwelling Conversions.** All plumbing installations in connection with a manufactured dwelling conversion or change of occupancy to a non-residential use shall be made according to the **Oregon Plumbing Specialty Code**.

**5-1.6 Basements and Cabanas.** All plumbing installations in basements and cabanas shall be made according to the **Oregon One and Two Family Dwelling Specialty Code**. Cabana plumbing may be connected directly to the manufactured dwelling's water and drain lines, provided they are sized to adequately handle the additional demand.

**5-1.7 Plumbing Assembly.** All plumbing shall be assembled according to the following:

(a) Plumbing assemblies shall be free from defect, demonstrate acceptable workmanship, and be installed in conformance with acceptable engineering practices and this code;

(b) Piping shall be installed according to the manufacturer's installation instructions using approved component parts;

(c) Threaded pipe ends shall be reamed out to the size of the bore and all burrs, chips, cutting oil and foreign matter removed;

(d) Pipe threads and slip joints shall not be wrapped with string, paper, putty, or similar fillers;

(e) Pipe joint compound used on water pipes shall be nontoxic and shall be applied to male threads only;

(f) Pipe threads shall be fully engaged into the threads of the fitting;

(g) Pipe joint cement shall be of approved type and applied to both pipe and fitting of slip joint connections;

(h) Plastic pipe shall be inserted to the full depth of the welding sockets of each fitting;

(i) Joints and connections in the plumbing system shall be gas-tight and watertight under normal operating pressures;

(j) All joints and connections shall be correctly assembled for tightness;

(k) Piping shall be installed without undue strains and stresses;

(l) Piping shall have provisions for expansion, contraction, and structural settlement;

(m) Piping shall have supports of sufficient strength to keep the piping in alignment and carry the weight of the piping and its contents. Supports may hang down from the bottom of the manufactured dwelling floor or may consist of blocking from the ground up;

(n) All horizontal piping shall be supported according to **Table 5-B**; piping support does not require upward vertical rigid support.

(o) Piping shall have hangers, clamps, brackets, blocking, or anchors that do not compress, distort, cut or abrade the water pipe;

1. Sheet metal or plastic plumbers tape may be used to support metallic water lines; or

2. Plastic plumbers tape or equal may be used to support plastic water lines.

(p) Piping penetrations through concrete slabs or footings shall be sleeved so there is ½" clearance around the pipe. The piping shall not be subject to any load from the building construction. Each penetration shall be caulked around the pipe (see Figures 5-2.1B and 5-3.1); and

(q) Plumbing shall not obstruct the under-floor access area.

**5-1.8 Inspection.** All plumbing work shall be accessible for inspections. All excavations containing plumbing shall be left open for inspection by the authority having jurisdiction.

## **5-2 Water Installation Requirements**

**5-2.1 Water Connections.** The installation and connection of manufactured dwelling water distribution system (utility connection) to the building water supply (utility termination) shall comply with the following:

(a) The building water supply piping shall be new and made of approved materials listed in Table 5-C of this code;

(b) The building water supply shall be a minimum ¾ inches (2 cm) inside diameter based on 12 fixture units as identified in Table 6-5 of the Oregon Plumbing Specialty Code. Where the building water supply exceeds 100 lineal feet, the building water supply shall be sized according to Table 5-D of this code. Where plumbing fixtures are added on site, see Section 5-2.5 of this chapter for the correct sizing;

(c) The installation and connection by the MDI (Licensed Manufactured Dwelling Installer) of the manufactured dwelling water distribution system to the building water supply provided on a lot shall consist of not more than 30 lineal feet

(914 cm) of pipe and fittings starting from the exterior of the manufactured dwelling;

(d) When a backflow device (check valve) is installed in the building water supply, an approved thermal expansion tank or other device designed for intermittent operation for thermal expansion control shall be installed according to the manufacturer's installation instructions;

(e) Expansion tanks shall be adequately supported to carry twice the weight of the tank filled with water without placing any strain on the connecting piping;

(f) An accessible full way shutoff valve shall be installed under or within 5 feet (152 cm) of the manufactured dwelling on the building water supply serving the manufactured dwelling (see Figure 5-2.1B). The valve on the water meter may not serve as the shutoff valve for the manufactured dwelling;

(g) The water distribution system shall be connected to the building water supply under the manufactured dwelling with an approved connector as listed in Table 5-C. The piping connections shall not be subjected to any loads from the building structure;

(h) Where static water pressure exceeds 80 pounds per square inch (552 KPa) at the building water supply connection to the manufactured dwelling water distribution system, an approved pressure regulator shall be installed;

(i) There shall be no cross connection between potable and non-potable water;

**5-2.2 Protection.** Water fixtures, piping, and devices shall be protected according to the following requirements:

(a) Water heaters shall be equipped with pressure relief valves and drain pipes that terminate and discharge beneath manufactured dwellings;

(b) Pressure relief valve drain pipes shall not be trapped, tapped, threaded, capped, plugged, altered, diverted, or extended;

(c) The building water supply piping, water distribution system inlet, expansion tank, when required, and main shut off valve located under the manufactured



dwelling shall be protected from freezing with pipe insulation or with the installation of a electric heat tape listed and approved for manufactured home use;

**5-2.3 Marriage Line Water Connections.** The water line crossovers on multi-section manufactured dwellings shall be connected according to the following (see **Figure 5-2.3A and 5-2.3B**):

- (a) With the connectors supplied by the manufacturer; or
- (b) With an approved flexible water connector sized no less than the water lines being connected or with other approved materials listed in **Table 5-C** of this code; and
- (c) Exposed water line crossover connections shall be protected from freezing with pipe insulation or with the installation of an approved electric heat tape listed for use with manufactured homes.

**5-2.4 Underground Installations.** In addition to those requirements in Section 5-1.4 of this chapter, building water supply piping shall be installed in trenches according to the following:

- (a) No portion of the building water supply pipe shall be installed above ground outside the manufactured dwelling's under-floor enclosure except as approved by the local jurisdiction;
- (b) Piping in a trench must be supported on a continuous bed of approved material (see **Figures 5-1.4A and 5-1.4B**);
- (c) Building water supply piping shall be buried a minimum of 18 inches (46 cm) below grade and at least 12 inches (30 cm) below the frost line (see **Figure 5-2.1B**); and
- (d) All non-metallic water piping laid in a trench to be covered shall have a tracer wire installed to the following requirements (see **Figure 5-2.1B**):
  1. Tracer wire shall be blue 18 gauge insulated copper electrically conductive wire or greater;

2. Tracer wire shall be installed in the trench along the entire length of the pipe; and

3. Each end of the tracer wire shall be left above the finished grade and be clearly marked, one end shall be at the manufactured dwelling connection and the other terminated in the meter box, well head, or reservoir tank.

**5-2.5 Accessories.** All plumbing installations in connection with an accessory building, accessory structure, or other external systems (i.e. basement, cabana, shed, garage, hose bibbs, patio sinks, and sprinkler systems) shall be made according to this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**:

- (a) External plumbing systems may be connected directly to the manufactured dwelling's water supply inlet provided the diameter of the water supply piping to the manufactured dwelling is increased when necessary to adequately handle the additional demand according to **Table 6-4** and **Table 6-5** of the **Oregon Plumbing Specialty Code**;
- (b) When external water systems (i.e. hose bibbs, sprinkler systems, or accessory building fixtures) are added at the water inlet of the manufactured dwelling, an approved back flow prevention device shall be installed between the building supply connection and the external fixtures or system;
- (c) Hose bibbs installed through an uninsulated under-floor enclosure shall be equipped with an accessible stop-and-waste-type valve inside the under-floor area (crawl space) of the manufactured dwelling so that they are capable of being controlled and/or drained during freezing weather;
- (d) Hose bibbs installed into an insulated floor or wall cavity shall be frost proof but are not required to have the stop-and-waste-type valves installed.

**5-2.6 Main Water Valve Access.** The main water valve shall be accessible from the exterior of the manufactured dwelling

according to the following (see **Figure 5-2.1B**):

**(a)** Water valves located under the manufactured dwelling shall be accessible through a minimum 6 inch by 6 inch (15 cm by 15 cm) hand hole through the under-floor enclosure (foundation wall or skirting) within reach and not more than 12 inches (30 cm) from the access opening; or

**(b)** Water valves located outside the manufactured dwelling under-floor enclosure, shall be below ground and inside a vault having a minimum 7 inches (18 cm) diameter opening or equal at or above ground level.

**5-2.7 Access.** The following access shall be provided to the manufactured dwelling water distribution system piping and connections:

**(a)** Water crossover connections shall be accessible, but may be covered with insulation and/or an access panel; and

**(b)** All access panels in walls and floors shall be insulated and secured in place after all plumbing tests are complete (see **Figure 5-2.3B**).

### **5-3 Drain Installation Requirements**

**5-3.1 Sewer/Drain Connection.** The installation and connection of the manufactured dwelling drain outlet, to the building drain (utility connection), building sewer (utility termination) shall comply with the following:

**(a)** The building drain piping shall be made of approved materials as listed in **Table 5-E** of this code;

**(b)** The building sewer piping shall be made of approved materials as listed in **Table 5-F** of this code;

**(c)** The building drain and building sewer shall be a minimum of 3 inches (76 mm) inside diameter based on 12 fixture units as identified in **Table 7-3** of the **Oregon Plumbing Specialty Code**;

**(d)** The installation and connection by the MDI (Licensed Manufactured Dwelling Installer) of the manufactured dwelling building drain to the building sewer provided on a lot shall consist of not more

than 30 lineal feet (914 cm) of pipe and fittings from the exterior of the manufactured dwelling;

**(e)** Each manufactured dwelling shall have only one drain outlet; and

**(f)** Each manufactured dwelling shall be connected to the building sewer by means of a building drain connector consisting of approved piping not less than schedule 40, no smaller than the manufactured dwelling drain outlet or a minimum of 3 inches (8 cm) in diameter. Listed and approved shielded flexible connectors may be used to join the drainpipe to the sewer inlet (see **Figure 5.3.1**).

**5-3.2 Drainage Piping.** Building drain and building sewer piping shall comply with the following:

**(a)** Piping shall be semi-rigid, durable, corrosion resistant, non-absorbent, and have a smooth interior surface;

**(b)** Piping shall be installed according to the manufacturer's installation instructions using the component parts supplied or required by the manufacturer;

**(c)** Piping shall be installed to provide a 1/4 inch (6 mm) per foot (305 meters) grade in all horizontal drain piping. When a full size cleanout is installed at the upper end, the grade may be reduced to 1/8 inch (3 mm) per foot (305 mm);

**(d)** Piping shall use appropriate approved fittings for all changes in direction:

**1.** For all horizontal to vertical drain pipe connections, 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; and

**2.** For all horizontal to horizontal and vertical to horizontal drainpipe connections, use 45 degree "Y" branches, long-turn "TY" branches, or other approved fittings or combination of fittings having equivalent sweep.

**(e)** Piping shall be installed without undue strains and stresses;

**(f)** Piping shall have provisions for expansion, contraction, and structural settlement;

**(g)** Piping shall be supported and secured according to **Table 5-B (see Figures 5-3.2 and 5-3.4)**. Piping support does not require upward vertical rigid support;

**(h)** Piping shall have supports sufficient to keep the pipe in alignment and carry the weight of the pipe and its contents. Supports may hang down from the bottom of the manufactured dwelling floor or may consist of blocking from the ground up attached in place with brackets or plumbers tape (**see Figures 5-3.2 and 5-3.4**);

**(i)** Piping shall have hangers, slings, blocking, clamps, or brackets which do not compress, distort, cut or abrade the drainpipe. Sheet metal straps or plumbers tape may be used for support of plastic drain lines as long as the strap is flat against the drain pipe (**see Figures 5-3.2 and 5-3.4**); and

**(j)** Piping shall have cleanouts provided according to the following:

1. Cleanouts shall be located so a cleaning tool does not have to pass through more than 360 degrees of fittings, excluding removable "P" traps;

2. Cleanout fittings shall be installed so they allow for cleaning in the direction of the flow or at right angles to the pipe; and

3. Cleanouts shall not be less in diameter than the pipes they are being connected to.

**5-3.3 Sewer Cleanout Access.** A main drain cleanout fitting shall be installed in the building drain under or within 5 feet (152 cm) of the manufactured dwelling according to the following requirements (**see Figure 5-3.1**):

**(a)** The main drain cleanout shall be made with a directional fitting above ground or a two-way cleanout fitting if underground;

**(b)** The main drain cleanout shall have 18 inch (46 cm) of clearance directly in front of the cleanout opening without removing any permanent construction;

**(c)** The main drain cleanout shall have the same diameter as the largest drain pipe contained in the building drain; and

**(d)** The main drain cleanout shall be accessible from the exterior of the manufactured dwelling according to the following (**see Figure 5-3.1**):

1. Main drain cleanouts located under the manufactured dwelling shall be accessible through a minimum 6 inch by 6 inch (15 cm by 15 cm) hand hole through the under-floor enclosure (foundation wall or skirting) within reach and not more than 12 inches (30 cm) from the access opening; or

2. Main drain cleanouts located outside the manufactured dwelling under-floor enclosure, shall be below ground and inside a vault having a minimum 11 inch (28 cm) diameter opening or equal, at or above ground level.

#### **5-3.4 Marriage Line Drain Connections.**

The drain line crossovers on multi-section manufactured dwellings shall be connected according to one the following (**see Figure 5-3.4**):

**(a)** With the connectors supplied by the manufacturer;

**(b)** With approved pipe and fittings (**see Table 5-E**) not less than schedule 40 and of the same diameter as the pipes being connected; or

**(c)** With approved shielded flexible connectors.

**5-3.5 Underground Installations.** In addition to those requirements in Section 5-1.4 of this chapter, building drain and building sewer piping installed in trenches shall conform to the following:

**(a)** No portion of the building drain or building sewer pipe shall be installed above ground outside the manufactured dwelling's under-floor enclosure;

**(b)** Building drain and building sewer piping in a trench must be supported on a continuous bed of approved material (**see Figures 5-1.4A and 5-1.4B**);

**(c)** All building drain and building sewer pipe shall be graded at 1/4 inch (6 mm) per foot (30 cm) except as otherwise permitted by the authority having jurisdiction; and

**(d)** All nonmetallic building drain and building sewer pipe laid in a trench to be covered shall have a tracer wire installed to the following requirements (**see Figure 5-3.1**):

1. It shall be green, 18 gauge, insulated, electrically conductive wire or greater;
2. It shall be installed in the trench along the entire length of the pipe; and
3. One end of the tracer wire shall be left above the finished grade at the cleanout next to the manufactured dwelling.

### **5-3.6 Ship-Loose Drain Lines.**

Manufactured dwelling under-floor drainage systems may be shipped by the manufacturer by one of the following methods:

- (a)** Complete and ready to be connected to the site building drain;
- (b)** Loose in one or more pre-assembled sections to be attached with unions and then connected to the site building drain;
- (c)** Loose sections intended for site assembly as approved by the DAPIA and provided with all pipe, fittings, cement, supports and DAPIA approved manufacturer's instructions necessary for proper site installation; or
- (d)** Loose with no pre-assembled sections, supports, or instructions, requiring extensive plumbing design and work on site.

**5-3.7 Accessories.** All plumbing installations in connection with an accessory building, accessory structure, or other external systems (i.e. basement, cabana, shed, garage, hose bibbs, patio sinks, and sprinkler systems) shall be made according to this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**:

- (a)** External systems may be connected directly to the manufactured dwelling's building drain provided the diameter of the building drain is increased when necessary to adequately handle the additional demand according to **Table 7-3** of the **Oregon Plumbing Specialty Code**;

**(b)** When external water systems are added, an approved backflow prevention device shall be installed between the building supply connection and the external fixture or system; and

**(c)** When roof additions or ramadas are installed on or over a manufactured dwelling, the manufactured dwelling's plumbing vents shall be extended at least 6 inches (15 cm) above the new roof and properly flashed.

**5-3.8 Access and Clearances.** The following accesses and clearances shall be provided for manufactured dwelling drainage system:

- (a)** There shall be an unobstructed minimum clearance of 18 inches (46 cm) directly in front of each cleanout opening;
- (b)** Concealed cleanouts inside a floor or wall shall be accessible through access panels;
- (c)** Traps with mechanical joints located inside a floor or wall shall be accessible through an access panel;
- (d)** Drain cross-over connections shall be accessible; and
- (e)** All access panels in walls and floors shall be insulated and secured in place after all plumbing tests are complete.

### **5-4 Plumbing Tests**

**5-4.1 Water Test.** Upon completion of the building water supply connection, marriage line crossover connections, and all additional accessory plumbing connections, the person making the water supply connection shall test the manufactured dwelling water distribution system to assure there is no evidence of leakage under normal operating pressure according to the following:

- (a)** Pressurize all water lines from the site's water supply;
  1. If water under normal operating pressure is not available, the manufactured dwelling water distribution system shall be pressurized with a minimum of 80 pounds per square inch (552 KPa) of air pressure. If the water lines are made of CPVC, reduce pressure

test to 30 pounds per square inch (206.7 KPa);

**2.** Record the pressure at the beginning of the test and hold at that pressure for 15 minutes; and

**3.** After 15 minutes of pressure testing, check the pressure gauge to assure there has been no drop in pressure.

**(b)** After the water lines are full of water, check the building water supply connection, marriage line crossover connections, and each fixture connection for leaks.

**5-4.2 Drain Test.** Upon completion of the building drain connection to the building sewer, the marriage line crossover connections, and any additional accessory drainage connections, the person making the drain connection shall test the manufactured dwelling drainage system to assure there is no evidence of leakage under normal operating conditions according to the following:

**(a).** Remove all access panels to all P-traps, cleanout, and fixture drain connections inside the walls and floor;

**(b)** Test each fixture or receptor, including the clothes washer standpipe, for a minimum of 3 minutes by letting water flow at the normal operating pressure. If water under pressure is not available, test each fixture and receptor by pouring at least 3 gallons (11 liters) of water into each fixture and receptor;

**(c)** Visually check each P-trap, cleanout, and fixture or receptor connection for leaks during the test; and

**(d)** After the test has been successfully completed, replace all insulation and access panels in floors and walls.

**NOTE:** Inspectors have the authority to witness each test but are not obligated to do so.

**5-4.3 Test Failures.** Upon failure of any of the above tests, check all applicable field connections, correct any leaks, and repeat the applicable test. If tests continue to fail, notify factory authorized service personnel immediately and report

failures. Other than during testing, do not turn on the water supply to the manufactured dwelling until all leaks have been repaired.

**TABLE 5-A**  
**APPROVED PLUMBING FIXTURES AND DEVICES**

APPROVED MATERIALS	REFERENCE STANDARDS
AIR GAPS	ANSI A 112.1.2 or IAPMO PS 23
BACKWATER PREVENTION ASSEMBLIES	IAPMO P5 31
BACKWATER VALVES	ASME A 112.14.1
CLOTHES WASHER	ASSE 1007 or ANSI/AHAM HLW-2PR
CONTROL VALVES (SHOWER)	ASSE 1016
DIVERTERS (W/ HOSE SPRAY)	ASSE 1025
DISHWASHERS	ASSE 1006 and UL 749
DISPOSALS	ASSE 1008
ENAMELED CAST-IRON FIXTURES	ASME A 112.19.1
GATE VALVES	ASME B 16.34, AWWA C500, MSS-SP-70, or MSS-SP-42
HANDHELD SHOWERS	ASSE 1014
HOSE BIBBS	ASSE 1019
HOT WATER DISPENSERS	ASSE 1023
MIXING VALVES	ASSE 1017
NONVITREOUS CERAMIC FIXTURES	ANSI A112.19.9
PLASTIC FIXTURES	ANSI Z 124.1, ANSI Z 124.2, ANSI Z 124.3, ANSI Z 124.4, or ANSI Z 124.6
PLUMBING SYSTEM COMPONENTS (MH)	NSF 24
PORCELAIN ENAMELED STEEL FIXTURES	ASME A 112.19.4M
PRESSURE REDUCING VALVE	ASSE 1003
PRESSURIZED FLUSHING DEVICES	ASSE 1037
STAINLESS STEEL FIXTURES	ASME A 112.19.3M
THERMAL EXPANSION TANK	IAPMO PS 88
VITREOUS CHINA FIXTURES	ASME A112.19.2M
WATER COOLERS	ANSI/ARI 1010 and UL 399
WATER HEATER (ELECTRIC)	UL 174
WATER HEATER (GAS)	ANSI Z 21.10.1
WATER HEATER (OIL)	ANSI Z 21.10.1, UL 174, and UL 732
WATER HEATER RELEAF VALVES	ANSI Z 21.22a or ASSE 1003
WHIRLPOOL BATHTUBS	ASME A 112.19.7M
<b>NOTES:</b>	
<p>1. The materials shown in this table are the most common used in manufactured dwellings, see the <b>Oregon Plumbing Specialty Code</b> for a more comprehensive list of approved plumbing fixtures and devices.</p> <p>2. In order to be approved, a plumbing fixture or device must be labeled or marked by the manufacturer with one of the corresponding numbers in the right column of this table to indicate that it conforms to that specific reference standard.</p>	

# TABLE 5-B

## *HORIZONTAL PIPING SUPPORT*

<b>PIPING MATERIAL</b>	<b>MAXIMUM SUPPORT</b>
<b>CAST-IRON SOIL PIPE</b>	5 Feet o/c for lengths less than 10 feet 10 Feet o/c where 10 foot lengths of pipe are used
<b>THREADED STEEL PIPE</b>	10 Feet o/c for ¾ inch diameter or smaller 12 Feet o/c for 1 inch diameter or larger
<b>COPPER TUBE AND PIPE</b>	6 Feet o/c for 1-¼ inch diameter or smaller 10 Feet o/c for 1-½ inch diameter or larger
<b>LEAD PIPE</b>	Continuous Support
<b>PLASTIC PIPING</b>	4 Feet o/c for rigid drain piping (ABS or PVC) 3 Feet o/c for rigid water piping (PVC or CPVC) 32 Inches o/c for flexible water tubing (PB or PEX)

**TABLE 5-C**  
**APPROVED WATER PIPING**

<b>APPROVED MATERIALS</b>	<b>REFERENCE STANDARDS</b>
<b>ACRYLONITE BUTADIENE STYRENE (ABS)</b>	<b>ASTM D 2282 or ASTM D 1527</b>
<b>CHLORINATED POLYVINYL CHLORIDE (CPVC)</b>	<b>ASTM D 2846, ASTM F 441, or ASTM F 442</b>
<b>CROSS-LINKED POLYETHYLENE (PEX)</b>	<b>ASTM F 877 or ASTM F876</b>
<b>FLEXIBLE CONNECTOR</b>	<b>ASME A 112.18.6 or IAPMO PS 74</b>
<b>POLYBUTYLENE (PB)</b>	<b>ASTM D 3309, ASTM D 3000, ASTM D 2662, or ASTM D 2666</b>
<b>POLYETHYLENE (PE)</b>	<b>ASTM D 2447, ASTM D 2104, ASTM D 2239, or ASTM D 2737</b>
<b>POLYVINYL CHLORIDE (PVC)</b>	<b>ASTM D 1785 or ASTM D 2241</b>
<b>SEAMLESS BRASS</b>	<b>ASTM B 135 or ASTM B43</b>
<b>SEAMLESS COPPER</b>	<b>ASTM B 75 or ASTM B 88</b>
<b>STEEL HOT DIPPED ZINC COATED</b>	<b>ASTM A 53</b>
<b>WELDED COPPER</b>	<b>ASTM B 447</b>
<b>NOTES:</b>	
<ol style="list-style-type: none"> <li>1. The materials shown in this table are the most common used, see the <b>Oregon Plumbing Specialty Code</b> for a more comprehensive list of approved piping material.</li> <li>2. In order to be approved, piping must be labeled or marked by the manufacturer with one of the corresponding numbers in the right column to indicate that it conforms to that specific reference standard.</li> </ol>	



**TABLE 5-D**  
**BUILDING WATER SUPPLY SIZING**

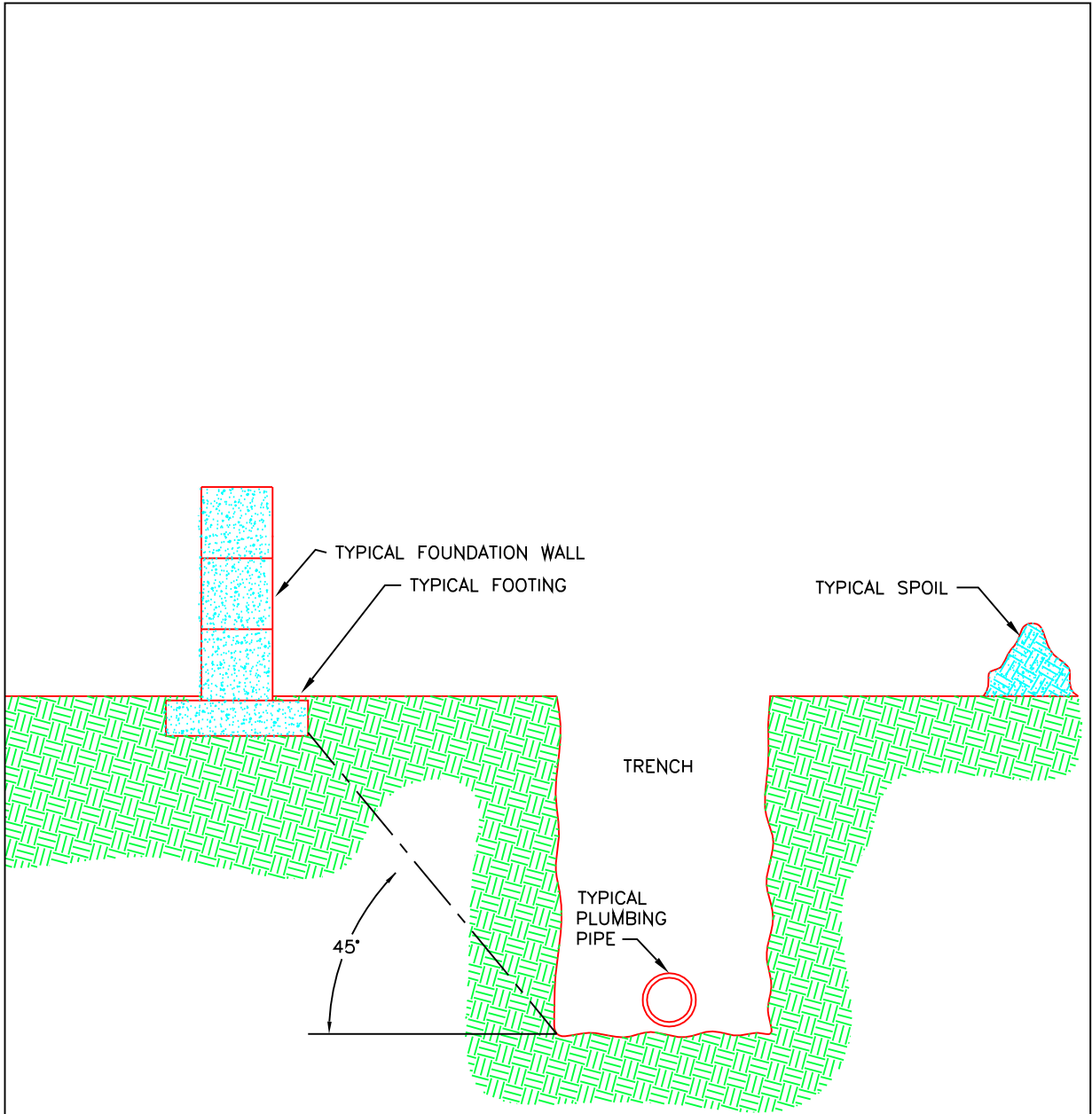
<b>METER/ SERVICE</b>	<b>BUILDING SUPPLY</b>	<b>30 – 45 PSI</b>	<b>46 – 60 PSI</b>	<b>61 – 80 PSI</b>
¾ INCH	¾ INCH	100 FEET	150 FEET	200 FEET
¾ INCH	1 INCH	300 FEET	600 FEET	800 FEET
1 INCH	1 INCH	400 FEET	600 FEET	800 FEET
¾ INCH	1-¼ INCH	800 FEET	1000 FEET	1000 FEET
1 INCH	1-¼ INCH	800 FEET	1000 FEET	1000 FEET
1-½ INCH	1-¼ INCH	800 FEET	1000 FEET	1000 FEET
<b>NOTES:</b>				
<ol style="list-style-type: none"> <li>1. This table indicates the minimum inside diameter of the building water supply size for a manufactured dwelling based maximum length necessary to reach the manufactured dwelling from the meter or service.</li> <li>2. This table is based on 12 fixture units from <b>Table 6-5</b> of the <b>Oregon Plumbing Specialty Code</b>.</li> </ol>				

**TABLE 5-E**  
**APPROVED BUILDING DRAIN (DWV) PIPING**

<b>APPROVED MATERIALS</b>	<b>REFERENCE STANDARDS</b>
<b>ACRYLONITE BUTADIENE STYRENE (ABS)</b>	<b>ASTM D 2661 or ASTM F 628</b>
<b>CAST-IRON/MALLEABLE IRON</b>	<b>CISPI HS74, CISPI 301, ASTM A 888, ASTM 126, or ASTM A 197</b>
<b>CAST-COPPER-ALLOY</b>	<b>ASME B 16.23</b>
<b>COPPER</b>	<b>ASTM B 306</b>
<b>POLYVINYL CHLORIDE (PVC)</b>	<b>ASTM D 2665, ASTM D 2949, or ASTM F 891</b>
<b>SEAMLESS BRASS</b>	<b>ASTM B 43</b>
<b>SEAMLESS COPPER</b>	<b>ASTM B 42, ASTM B 75, or ASTM B 88</b>
<b>WELDED OR SEAMLESS CAST-IRON</b>	<b>ASTM A 74</b>
<b>WELDED OR SEAMLESS STEEL</b>	<b>ASTM A 53</b>
<b>NOTES:</b>	
<ol style="list-style-type: none"> <li>1. The materials shown in this table are the most common used, see the <b>Oregon Plumbing Specialty Code</b> for a more comprehensive list of approved piping material.</li> <li>1. 2. In order to be approved, piping must be labeled or marked by the manufacturer with one of the corresponding numbers in the right column to indicate that it conforms to that specific reference standard.</li> </ol>	

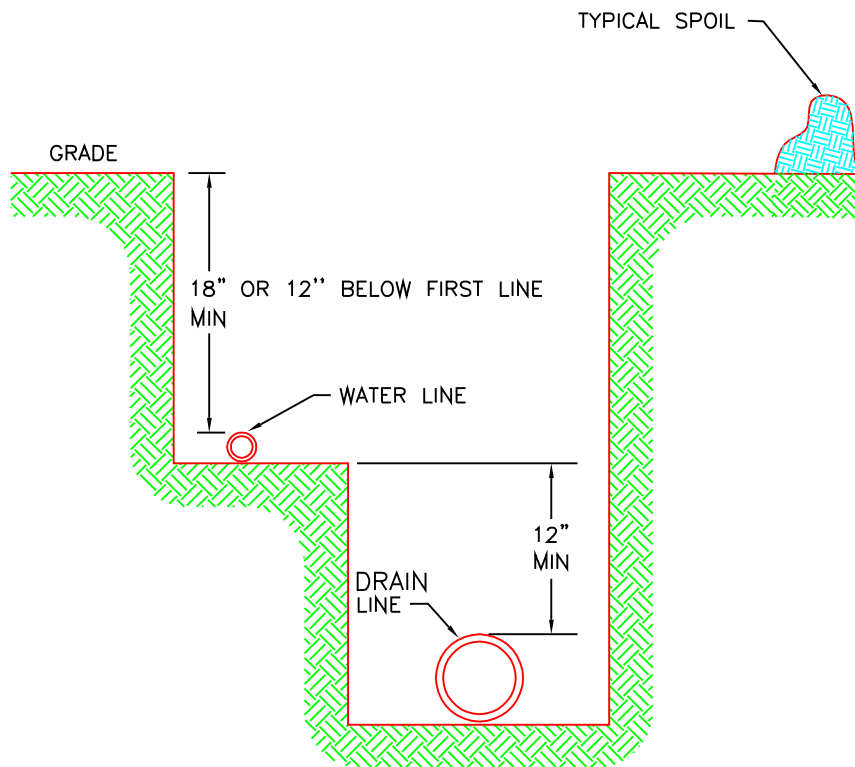
**TABLE 5-F**  
**APPROVED BUILDING SEWER PIPING**

<b>APPROVED MATERIALS</b>	<b>REFERENCE STANDARDS</b>
<b>ACRYLONITE BUTADIENE STYRENE (ABS)</b>	<b>ASTM D 2661, ASTM D 2751, ASTM D 2949, or ASTM F 628</b>
<b>CAST-IRON</b>	<b>CISPI HS74, CISPI 301, ASTM A 74, or ASTM A 888</b>
<b>CONCRETE</b>	<b>ASME C 14</b>
<b>COPPER</b>	<b>ASTM B 88 or ASTM B 306</b>
<b>POLYVINYL CHLORIDE (PVC)</b>	<b>ASTM D 2665, ASTM D 2949, ASTM D 3034, or ASTM F 891</b>
<b>SEAMLESS COPPER</b>	<b>ASTM B 75</b>
<b>WELDED OR SEAMLESS CAST-IRON</b>	<b>ASTM A 74</b>
<b>WELDED OR SEAMLESS STEEL</b>	<b>ASTM A 53</b>
<b>VITRIFIED CLAY</b>	<b>ASTM C 700</b>
<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li><b>1.</b> The materials shown in this table are the most common used, see the <b>Oregon Plumbing Specialty Code</b> for a more comprehensive list of approved piping material.</li> <li><b>1. 2.</b> In order to be approved, piping must be labeled or marked by the manufacturer with one of the corresponding numbers in the right column to indicate that it conforms to that specific reference standard.</li> </ol>	



**NOTE:** ALL TRENCHES DEEPER THAN THE FOOTING OF THE MANUFACTURED DWELLING AND RUNNING PARALLEL TO IT MUST BE AT LEAST AT AN ANGLE OF 45° UNLESS OTHERWISE PERMITTED BY THE AUTHORITY HAVING JURISDICTION.

TYPICAL FOOTING SETBACK FROM TRENCH		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 5
REV. 12/01/01 RHW		FIGURE 5-1.4A



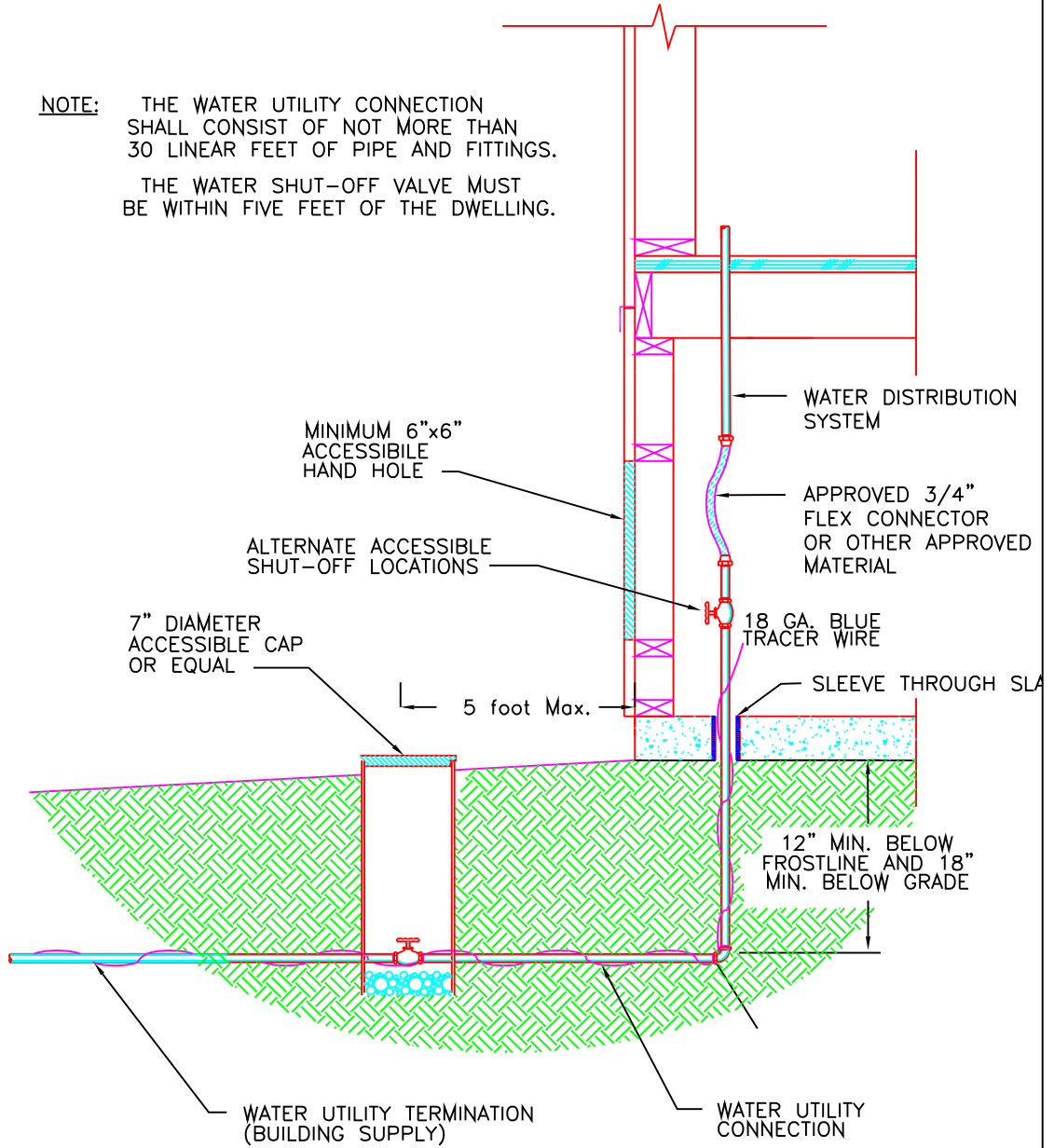
TYPICAL DRAIN & WATER SEPARATION IN TRENCH

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 5  
FIGURE 5-1.4B

**NOTE:** THE WATER UTILITY CONNECTION SHALL CONSIST OF NOT MORE THAN 30 LINEAR FEET OF PIPE AND FITTINGS.  
 THE WATER SHUT-OFF VALVE MUST BE WITHIN FIVE FEET OF THE DWELLING.

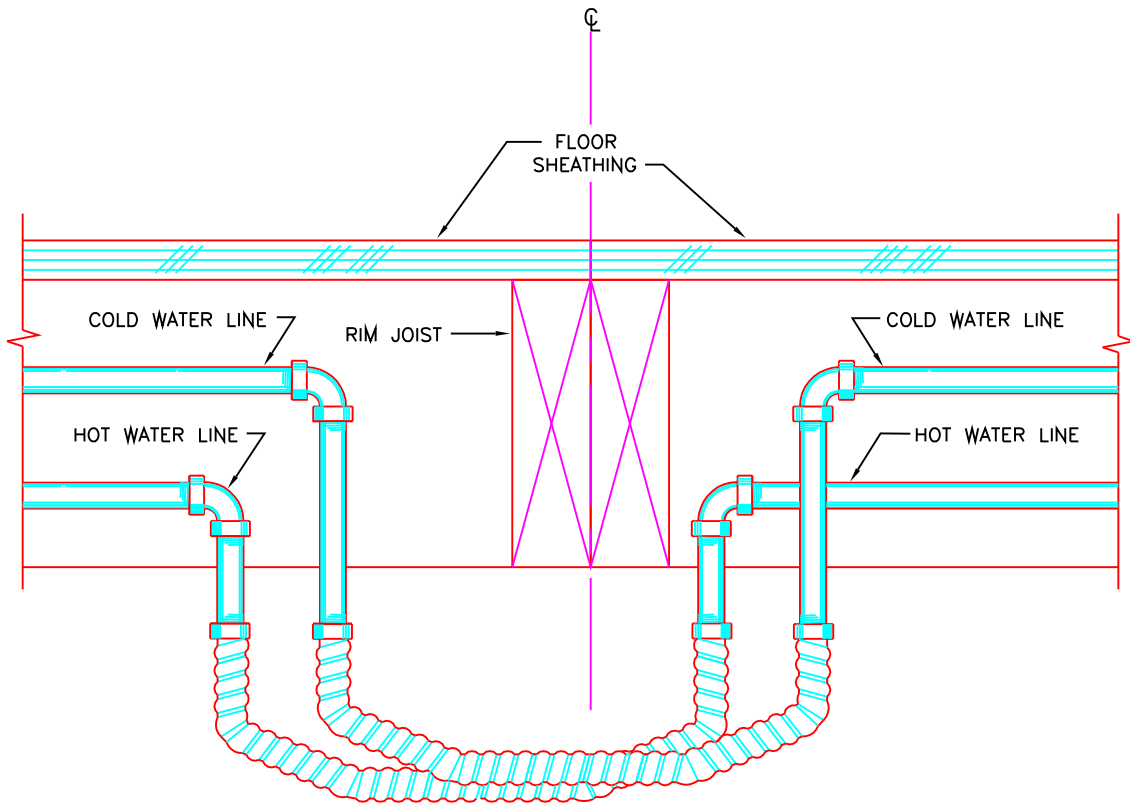


TYPICAL MAIN WATER SUPPLY CONNECTION

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
 AND PARK SPECIALTY CODES

CHAPTER 5  
 FIGURE 5-2.1B



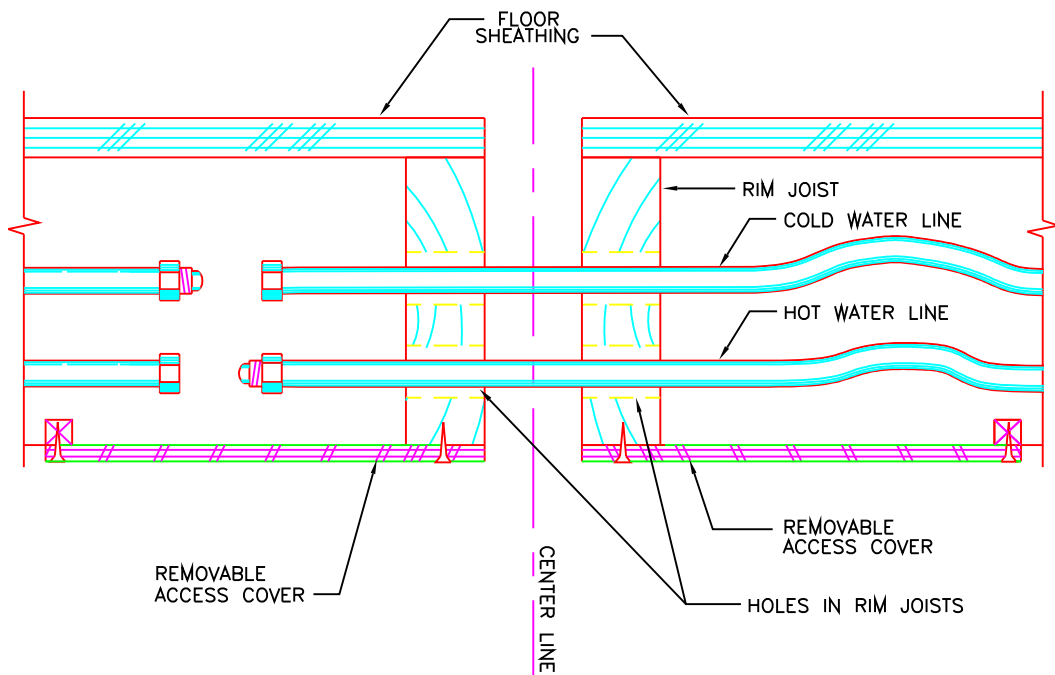
**NOTE:** EXPOSED WATER LINE CROSSOVER CONNECTIONS SHALL BE PROTECTED FROM FREEZING WITH INSULATION OR A HEAT TAPE.

TYPICAL EXPOSED WATER CROSSOVER CONNECTION

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 5  
FIGURE 5-2.3A

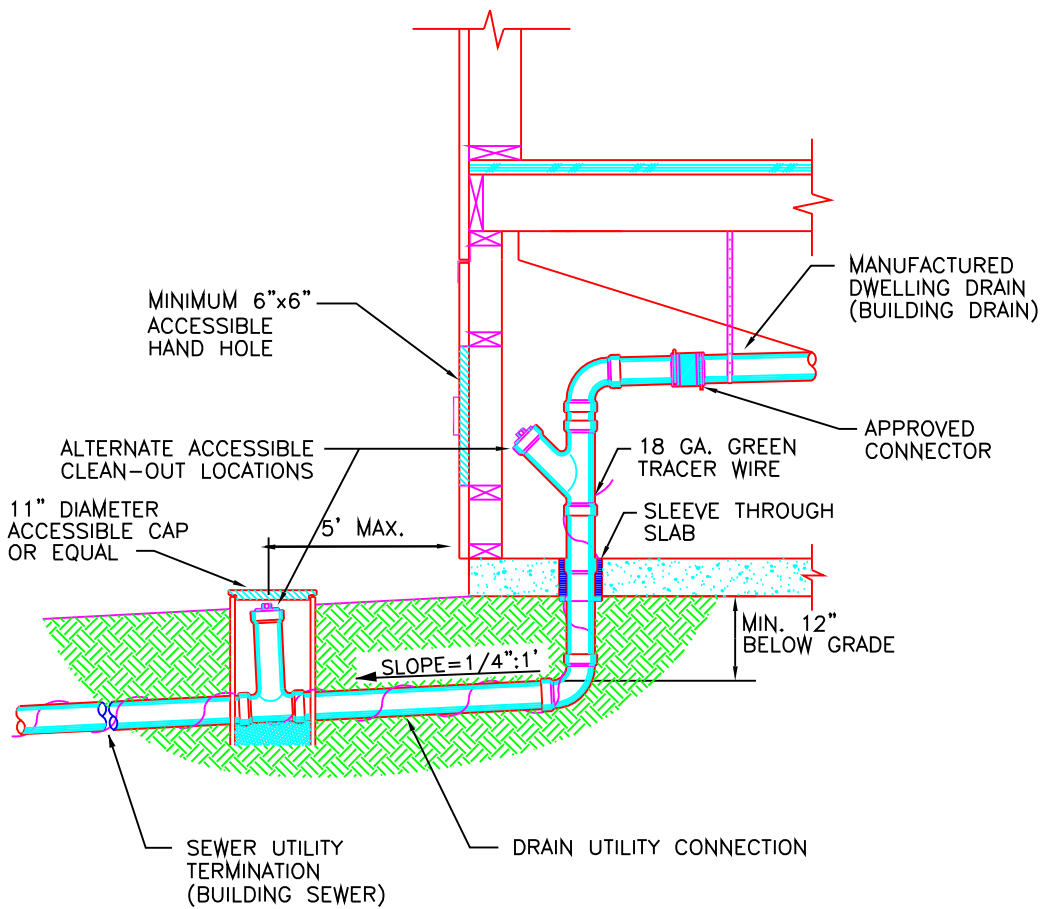


**NOTE:** CONCEALED PLUMBING CONNECTIONS SHALL BE VISIBLE DURING TESTS. ACCESS PANELS AND INSULATION SHALL BE REPLACED AND SECURED AFTER ALL PLUMBING TESTS ARE COMPLETED.

TYPICAL PLASTIC WATERLINE CROSSOVER

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 5
REV. 12/01/01 RHW		FIGURE 5-2.3B





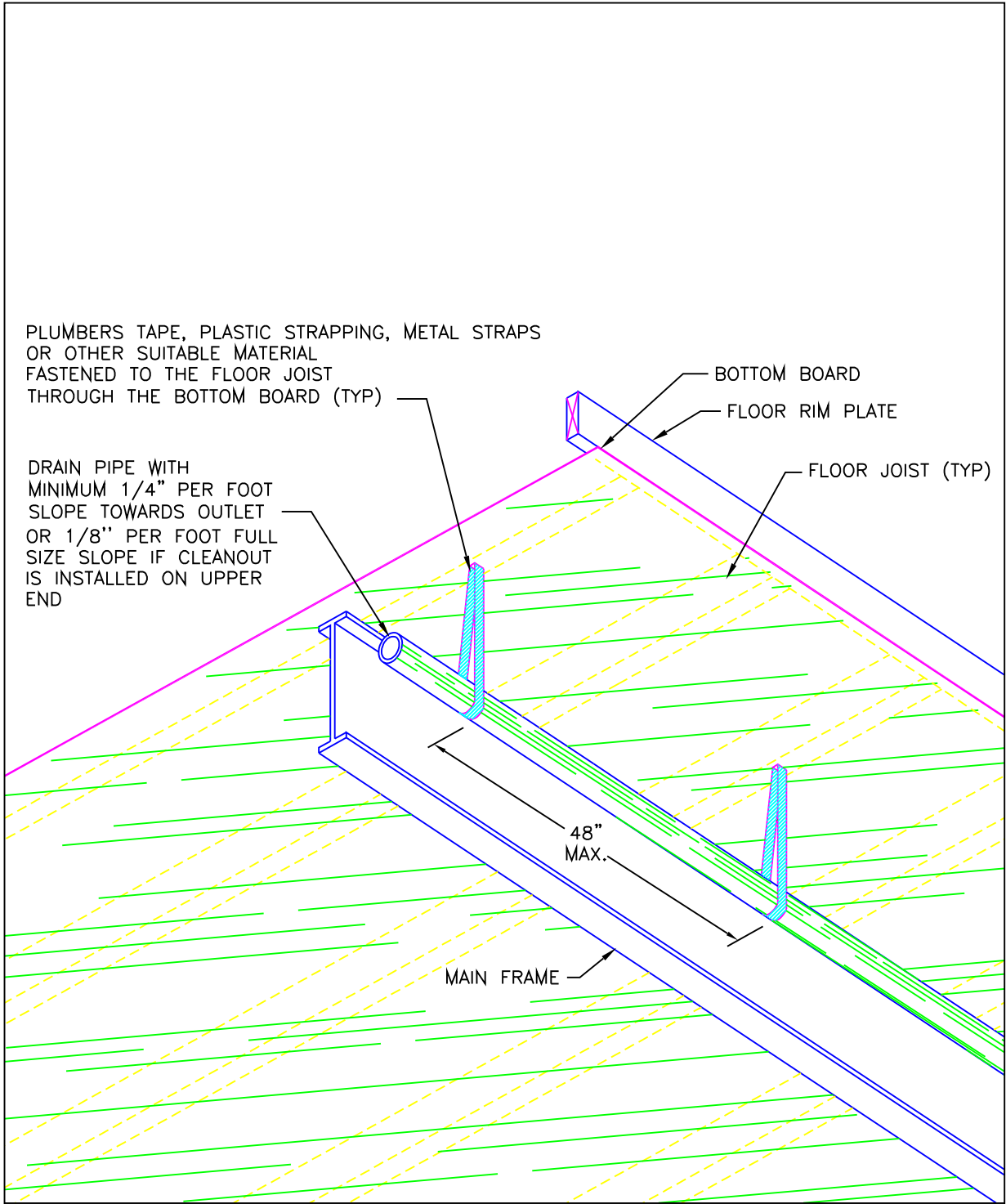
TYPICAL DRAIN LINE CONNECTION

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

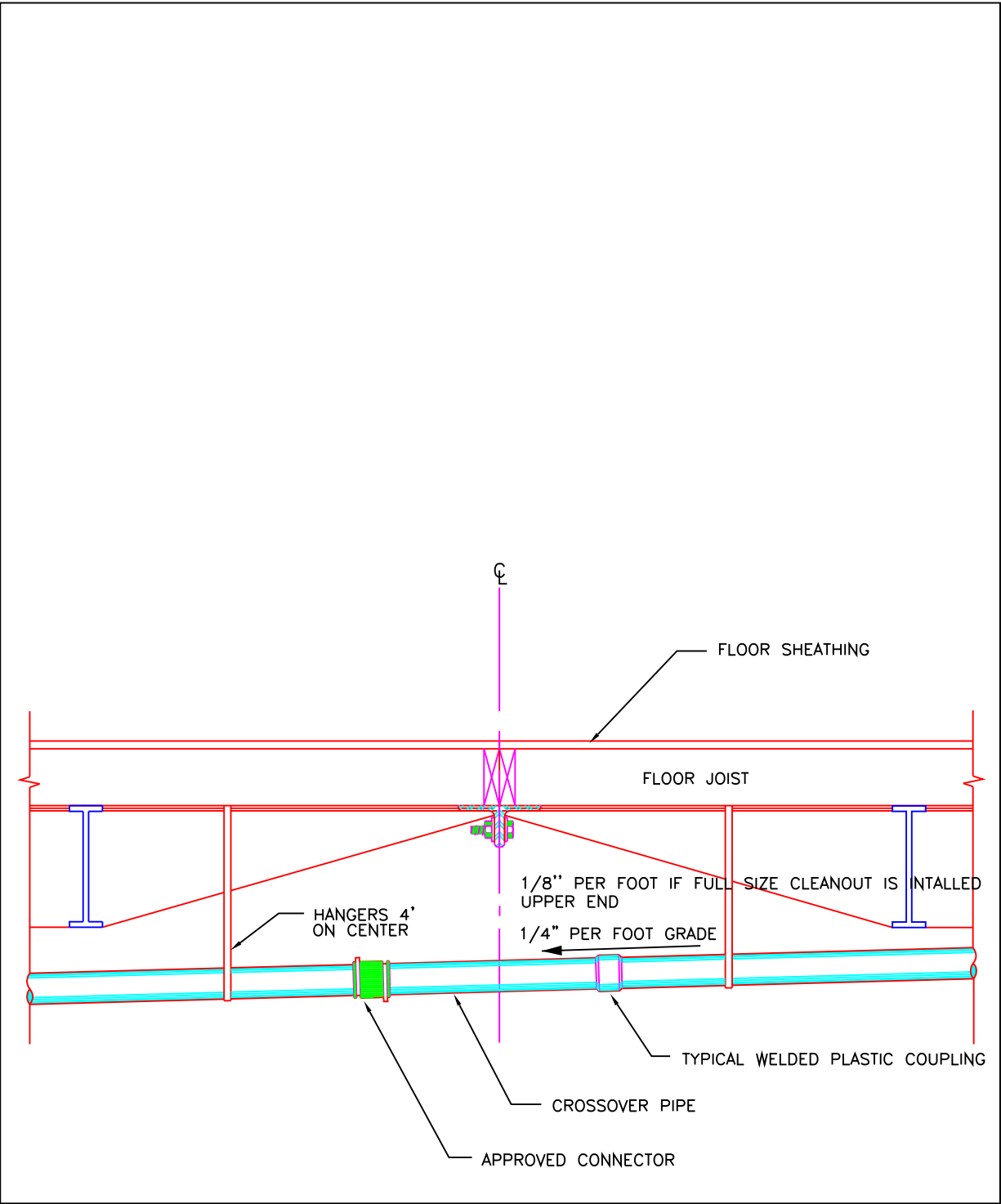
CHAPTER 5

FIGURE 5-3.1



TYPICAL DRAIN LINE SUPPORT

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 5
REV. 12/01/01 RHW		FIGURE 5-3.2



TYPICAL DRAIN LINE CROSSOVER CONNECTION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6
REV. 12/01/01 RHW		FIGURE 5-3.4

## CHAPTER 6 MECHANICAL INSTALLATIONS

- 6-1 General
- 6-2 Appliance Installations
- 6-3 Specific Appliances
- 6-4 Fuel Gas Connections
- 6-5 Gas Tests
- 6-6 Oil Fired Appliances

### 6-1 General

**6-1.1 Mechanical Installations.** This chapter of the code is intended to supplement the mechanical requirements of the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280**, the **Oregon One and Two Family Specialty Code**, and the **Oregon Mechanical Specialty Code**, but is not intended to take the place of these codes entirely.

(a) Where ever the requirements of this code differ from the **Oregon One and Two Family Specialty Code**, or the **Oregon Mechanical Specialty Code**, this code shall apply;

(b) Alternate methods and materials permitted in the **Oregon One and Two Family Specialty Code**, or the **Oregon Mechanical Specialty Code** but not mentioned in this code may be approved if acceptable to the authority having jurisdiction;

(c) All equipment and material shall be without defect. All damaged equipment and materials shall be discarded and replaced with approved component parts;

(d) All mechanical installation methods shall be according to the equipment manufacturer's installation instructions, the **Manufactured Home Construction and Safety Standards 24 CFR 3280**, this code, and where not specific, to the **Oregon One and Two Family Specialty Code**, or the **Oregon Mechanical Specialty code**; and

(e) All mechanical equipment (i.e. appliances, flues, vents, and ducts) shall be listed and labeled for the intended use

according to this code or, where not specific, to the **Manufactured Home Construction and Safety Standards 24 CFR 3280**, the **Oregon One and Two Family Dwelling Specialty Code**, or the **Oregon Mechanical Specialty Code**.

**6-1.2 Manufactured Dwelling Equipment Installations.** Installations, alterations, repairs or additions of mechanical equipment shall comply with the following:

(a) Installations, alterations, repairs or additions of mechanical equipment prior to or in conjunction with the initial sale of a manufactured dwelling shall comply with the federal **Manufactured Home Construction and Safety Standards, 24 CFR 3280**;

(b) Installations, alterations, repairs or additions of mechanical equipment during factory authorized service work on the manufactured dwelling shall comply with the federal **Manufactured Home Construction and Safety Standards, 24 CFR 3280**;

(c) Installations, alterations, repairs or additions of mechanical equipment in connection with the re-manufacturing or refurbishing of a manufactured dwelling shall comply with this code and, where not specific, with the federal **Manufactured Home Construction and Safety Standards, 24 CFR 3280**;

(d) Installations, alterations, repairs or additions of fuel-burning heat-producing appliances (i.e. fireplaces, fireplace stoves, pellet fired appliances, room heaters, furnaces, and water heaters) shall comply with this code and, where not specific, with the federal **Manufactured Home Construction and Safety Standards, 24 CFR 3280**; and

(e) Installations, alterations, repairs or additions of mechanical equipment after the initial sale of a manufactured dwelling, not covered by subsections (a), (b), (c), or (d) of this section, shall comply with this code and, where not specific, with the **Oregon One and Two Family Dwelling Specialty Code**.

## **6-2 Appliance Installations.**

### **6-2.1 Appliance Installations.**

Appliances used in conjunction with manufactured dwellings shall be installed according to this Chapter. Appliances with electrical components are also required to meet the installation requirements in Chapter 4 of this code.

### **6-2.2 Listing Requirement.**

All appliances and associated equipment shall be listed for their intended use. Where an appliance listing label or manufacturer's installation instructions state "**Do Not Install or Use In Manufactured Homes**" or similar language, the appliance shall not be installed in a manufactured dwelling.

### **6-2.3 Installations.**

All appliances shall be installed according to their listing, the manufacturer's Installation instructions, and this code. The manufacturer's installation instructions and operating instructions shall be left with the appliance and made available to the homeowner and the authority having jurisdiction during inspections.

### **6-2.4 Access.**

All appliances and appliance components shall be accessible for inspection, service, repair, and replacement without removing permanent construction.

### **6-2.5 Shipped-Loose Flues and Vents.**

Appliance chimneys, flues, and vents are often shipped loose when they exceed the maximum heights permitted for highway travel or when they may be subject to damage from road hazards. Shipped loose portions of chimneys, flues, or vents shall be installed according to the appliance manufacturer's installation instructions.

### **6-2.6 Roof Additions and Ramadas.**

Chimney, flue, or vent sections shall be installed through roof additions or ramadas according to the appliance's listing and the manufacturer's installation

instructions. All required thimbles, flashings, and termination devices shall be installed through the roof addition or ramada according to the appliance manufacturer's installation instructions. Chimney, flue, or vent pipe extensions shall be of the same type, brand, and specification as the original pipes used in the manufactured dwelling.

**6-2.7 Clearances.** Install all appliances not less than the minimum clearances shown in the manufacturer's installation instructions.

(a) Mechanical installations shall not obstruct the under-floor access to the manufactured dwelling crawl space;

(b) Flue gas vents and exhaust vents shall not terminate less than 3 feet (0.91 meters) from any motor driven air intake discharging into a manufactured dwelling or other habitable areas;

(c) Heat pump, air conditioning, evaporative coolers, fans and similar equipment shall not be installed in window or door openings which are part of an egress system or in a manner that will obstruct sidewalks or egress paths;

(d) When a manufactured dwelling is located in a flood hazard area, all mechanical equipment shall be elevated 12 inches (305 mm) above the base flood elevation excepting crossover heat ducts.

### **6-2.8 Atmospheric Separations.**

There shall be a complete separation of exhaust air, flue gases, combustion air, and drains from the interior of a manufactured dwelling and other enclosed structures.

(a) Inlets or outlets of a manufactured dwelling exhaust vent, combustion air vent, return air vent, or any other flue or vent opening shall not be located in an area where a garage, cabana, basement, or any other confined space is to be attached to a manufactured dwelling;

(b) Condensation drains from air conditioning, heat pumps, evaporative coolers, dehumidifiers, refrigeration equipment or any other appliance or fixture shall not terminate in or under a manufactured dwelling, cabana, garage,

basement, or any other confined space;  
and

(c) Flue gas vents or exhaust vents from any appliance or structure located outside a manufactured dwelling shall not terminate less than 3 feet (0.91 meters) from a manufactured dwelling window or motor driven air intake.

**6-2.9 Unvented Fuel Burning Appliances.** Unvented fuel burning heat producing appliances are restricted to cooking ranges and clothes dryers only. No other unvented fuel burning heat producing appliances are permitted to be installed in manufactured dwellings.

**6-2.10 Additional Equipment.** Additional mechanical equipment added to a manufactured dwelling on site shall comply with the following:

(a) Roof mounted equipment (i.e. air conditioners, evaporative coolers, and solar panels) add extra weight to the roof of a manufactured dwelling. Unless the manufactured dwelling has been prepared for these additions by the manufacturer, the roof structure shall be reinforced according to Chapter 7 of this code;

(b) Wall mounted equipment (i.e. air conditioners, evaporative coolers, and heat pumps) may add substantial loads to the wall of a manufactured dwelling. If the equipment is more than 100 pounds ( ) the exterior wall shall be reinforced according to Chapter 7 unless the manufactured dwelling has been prepared for these additions by the manufacturer.

### **6-3 Specific Appliances.**

**6-3.1 Appliance Requirements.** Manufactured dwelling appliances shall be listed according to **Table 6-A** of this chapter and installed according to this section. Appliances not specifically mentioned in this section shall be listed for manufactured home or mobile home use and shall be installed according to the listing and the appliance manufacturer's installation instructions.

**6-3.2 Air Conditioners and Heat Pumps.** Air conditioners and heat pumps used with manufactured dwellings shall be installed according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

(a) Heat pumps or air conditioners added to a manufactured dwelling during or prior to the initial sale to the first consumer shall be listed for manufactured home or mobile home use and shall be specifically listed for use with the manufactured dwelling's heating or air handling equipment;

(b) Heat pumps or air conditioners added to a manufactured dwelling after the completion of the initial sales contract shall be listed but do not have to be specifically listed for use with the manufactured dwelling's heating or air handling equipment or listed for manufactured home or mobile home use. This equipment may be used in conjunction with existing manufactured dwelling heating or air handling equipment if the authority having jurisdiction determines the equipment is compatible;

(c) Heat pump or air conditioning equipment, installed on the exterior of a manufactured dwelling and not supported by the manufactured dwelling, shall be supported on a minimum 4 inch (10 cm) thick level concrete slab, a minimum 4 inch (10 cm) thick precast concrete slab, a listed mounting base, or according to the equipment manufacturer's installation instructions. The top surface of the slab or base shall be a minimum of 3 inches (8 cm) above the finished grade. The equipment support slab shall be made in such a manner as to permit the drainage of condensate;

(d) When installing an air conditioning coil or box above the furnace, reconnect the fresh air inlet to the furnace as required by the appliance manufacturer's installation instructions;

(e) External air conditioning or heat pump ducts shall have R-8 insulation and shall

be installed and conform to the requirements for heat ducts specified in Section 6-3.5(m) of this chapter.

**6-3.3 Clothes Dryers.** Clothes dryers shall be installed in manufactured dwellings according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

**(a)** Clothes dryers installed in manufactured dwelling during or prior to the initial sale to the first consumer shall be listed for manufactured home or mobile home use;

**(b)** Clothes dryers installed in a manufactured dwelling after the completion of the initial sales contract shall be listed but do not have to be listed for manufactured home or mobile home use; and

**(c)** Except for listed non-venting type clothes dryers, all clothes dryers shall have moisture/lint exhaust ducts to remove moisture-laden air from the interior atmosphere of the manufactured dwelling. Exhaust ducts shall be installed according to the following, or where not specific, to manufacturer's installation instructions:

**1.** Exhaust ducts shall be a minimum of 4 inches (10 cm) in diameter;

**2.** Exhaust ducts shall be routed through the wall, floor, skirting, foundation, or retaining wall to the exterior of the manufactured dwelling or under-floor enclosure;

**3.** Exhaust ducts shall not terminate in or under a manufactured dwelling, cabana, garage, or any other confined space;

**4.** Exhaust duct material shall be 30 gauge rigid sheet metal or flexible metal conforming to **UL 181-96**;

**5.** Flexible foil, vinyl, or PVC exhaust duct is not permitted to be used with clothes dryers unless specifically permitted by the appliance manufacturer's installation instructions;

**6.** Exhaust ducts shall have no dips or traps in the duct run unless a ¼" (6.35 mm) hole is made at the lowest point of the exhaust duct;

**7.** Exhaust ducts shall have no screws, mechanical fasteners, screens or any other obstructions extending into any interior portion of the duct;

**8.** Exhaust ducts shall be maximum of 25 feet (7.62 meters), but shall be reduced in length by 2.5 feet (0.76 meters) for each 45 degree bend and 5.0 feet (1.52 meters) for each 90 degree bend; and

**9.** The exhaust duct termination shall be equipped with back draft damper providing full opening by design.

### **6-3.4 Cooking Ranges and Ovens.**

Cooking ranges and ovens shall be installed in manufactured dwellings according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

**(a)** Solid-fuel-burning cooking ranges and ovens installed in manufactured dwellings shall be approved and listed for use in manufactured homes;

**(b)** Pellet fired cooking ranges and ovens shall be approved and listed for use in manufactured homes;

**(c)** Antique cooking ranges and ovens are not permitted in manufactured dwellings unless specifically listed for manufactured home or mobile home use; and

**(d)** Ranges and ovens equipped with integral down-draft exhaust vents passing through the floor or exterior wall of a manufactured dwelling shall be installed according to the following:

**1.** Exhaust ducts shall be specifically installed according to the appliance manufacturer's installation instructions;

**2.** Exhaust ducts shall be sized according to the appliance manufacturer's installation instructions;

**3.** Exhaust ducts shall be routed through the wall, floor, skirting, foundation wall, or retaining wall to the exterior according to the appliance manufacturer's installation instructions;

**4.** Exhaust ducts shall have no dips or traps unless specifically permitted in the appliance manufacturer's installation instructions;

5. Exhaust ducts shall not terminate in or under a manufactured dwelling, cabana, garage, or any other confined space;
6. Exhaust duct material shall meet the minimum specifications in the manufacturer's installation instructions;
7. Non-metallic or flexible exhaust duct shall not be used for exhaust duct systems;
8. Exhaust ducts shall have no screws, mechanical fasteners, screens or any other obstructions extending into any interior portion of the duct;
9. Exhaust ducts shall be limited in length according to the appliance manufacturer's installation instructions;
10. Exhaust ducts shall terminate with proper termination device and a back draft damper.

**6-3.5 Furnaces.** Furnaces shall be installed in manufactured dwellings according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

- (a) Furnaces installed in a manufactured dwelling during or prior to the initial sale to the first consumer shall be listed for manufactured home or mobile home use;
- (b) Furnaces installed in a manufactured dwelling after the completion of the initial sales contract shall be listed but do not have to be listed for manufactured home or mobile home use;
- (c) Fuel-burning furnaces shall be installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured dwelling by:
  1. The installation of a listed direct vent (sealed combustion system) appliance; or
  2. The installation of the appliance within an enclosure accessible only from outside the manufactured dwelling so as to separate the appliance combustion and venting systems from the interior atmosphere of the manufactured dwelling. There shall not be any door, removable access panel, or other opening into the enclosure from the inside of the manufactured dwelling. Any

- openings or penetrations for ducts return air inlets, piping or wiring shall be sealed with non-combustible caulking or equal.
- (d) Fuel-burning furnaces shall be equipped with a direct vent combustion air inlet designed to conduct air directly into the fire chamber. Combustion air shall not be taken from within any manufactured dwelling wall, floor, or ceiling cavity or from a garage, cabana, basement, or other confined area. Combustion air may be taken from a ventilated crawl space below the manufactured dwelling. Combustion air inlets shall be listed or certified as components of the appliance;
  - (e) Flue gas vents shall be installed according to the listing and the appliance manufacturer's installation instructions. Flue gas vents shall be listed or certified as components of the appliance;
  - (f) Clearances surrounding furnaces shall not be less than those clearances specified in the terms of the listing and the appliance manufacturer's installation instructions;
  - (g) Pellet-fired furnaces shall be installed according to section 6-3.9 of this chapter;
  - (h) Solid-fuel-burning furnaces shall be installed according to section 6-3.10 of this chapter;
  - (i) Kerosene and oil-fired furnaces shall be listed according to **UL 826** and installed according to the **Standard for the Installation of Oil-Burning Equipment (NFPA 31)** and this section of the code; and
  - (j) Under-floor manufactured dwelling heating and air conditioning ducts shall be installed according to the following:
    1. Under-floor duct material shall be listed to **UL 181-96**;
    2. Under-floor duct material shall have a minimum of R-8 insulation, a vapor retarder rated at 1.0 perm or less, an inner liner of spring steel wire helix banded within two layers of 57 gauge mylar polyester film or equal, and an interior diameter not less than the diameter of the plenum collars on the manufactured dwelling;



3. Where extensions, splices or sharp turns (when the inside radius is less than the inside diameter of the duct) are used, they shall be made with 28 gauge sheet metal extensions, elbows, tees, wyes, or collars secured with proper mechanical fasteners with each seam and joint sealed with foil tape or other approved duct sealer. The insulation and a vapor required above shall be installed on all sheet metal extensions, elbows, tees, wyes, and collars;

4. Inner liner shall be secured to the extension, elbow, tee, wye, or collar with proper mechanical fasteners and installed so the insulation and vapor retarder extends up into the floor insulation and bottom board;

5. Outer liner, insulation, and vapor retarder shall be secured to the extension, elbow or collar with stainless steel worm drive clamps or nylon straps. Stainless steel worm drive clamps, nylon straps, and all duct vapor retarder joints shall be sealed with approved foil tape or other approved duct sealer;

6. Adequate clearances shall be maintained under the manufactured dwelling for the under-floor heat and air conditioning ducts. Ducts shall be elevated above the ground, footing, or slab a minimum of 1 inch (25 mm) with masonry or pressure treated blocks or straps; and

7. Under-floor heat and air conditioning ducts shall be installed with a minimum of bends and excess length so not to restrict airflow. Ducts shall be supported and connected according to the duct and appliance manufacturer's instructions, shall have a minimum of bends, shall not have sharp bends, shall not have excessive length, shall not have stress at the connections, and shall not be crushed, dented, or compressed. All tears, holes, and penetrations shall be sealed with approved foil tape or other approved duct sealer.

**6-3.6 Gas-Fired Fireplaces.** Gas-fired fireplaces, fireplace stoves, and room heaters shall be installed in manufactured

dwellings according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions. In addition they shall meet the following:

(a) Be listed and labeled for manufactured home or mobile home use;

(b) Have a shut off valves installed on the supply side of the appliance;

(c) Be equipped with a safeguard device to automatically shut off the fuel supply when the means of ignition of such burners become inoperable;

(d) Have clearances not be less than those clearances specified in the terms of the listing and the manufacturer's installation instructions;

(e) Not be installed in alcoves unless specifically allowed in the appliance manufacturer's installation instructions and product listing;

(f) Be located in a manufactured dwelling so no doors, drapes or other such material can be placed or swing closer to the appliance than the clearances specified on the labeled equipment. Sufficient room shall be available to enable the operator to observe the burner, control, and means of ignition while starting the appliance;

(g) Have a hearth extension installed when required by the appliance listing or manufacturer's installation instructions;

(h) Have a 1-inch (25.4 mm) air space between the heat shield and any vertical wall surface. Heat shields shall not reduce the clearances of gas-fired fireplaces, fireplace stoves, and room heaters unless specifically permitted in the appliance manufacturer's installation instructions and product listing.

(i) Be secured to the manufactured dwelling floor to avoid displacement during transportation;

(j) Be sealed combustion appliances equipped with a direct vent combustion air inlet designed to conduct air directly into the fire chamber and installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured dwelling;

**(k)** Not have combustion air taken from within any manufactured dwelling wall, floor, or ceiling cavity or from a garage, cabana, basement, or other confined area. Combustion air may be taken from a ventilated crawl space below the manufactured dwelling. Combustion air inlets shall be listed or certified as components of the appliance;

**(l)** Have exhaust vents installed according to the terms of their listings and the appliance manufacturer's installation instructions;

**(m)** Gas-fired fireplaces, fireplace stoves, and room heaters may be placed within a bedroom if they are sealed combustion/direct vent

**6-3.7 Gas-Fired Log Lighters.** Gas-fired log lighters shall be installed in solid-fuel-burning or gas fired fireplaces according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

**(a)** Gas-fired log lighters shall be listed components of the manufactured home listed and approved fireplace;

**(b)** Gas-fired log lighters shall be listed, labeled, and installed according to the manufacturer's installation instructions;

**(c)** Gas-fired log lighters shall have a shut off valve installed on the supply side of the appliance;

**(d)** Gas-fired log lighters shall be equipped with a safeguard device to automatically shut off the fuel supply when the means of ignition of such burners become inoperable;

**(e)** Clearances surrounding gas-fired log lighters shall not be less than those clearances specified in the terms of the listing; and

**(f)** Gas-fired log lighters shall be located in a manufactured dwelling so no doors, drapes or other such material can be placed or swing closer to the appliance than the clearances specified on the labeled equipment.

**6-3.8 Pellet-Fired Appliances.** Pellet-fired appliances shall be installed in manufactured dwellings according to this

section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

**(a)** Pellet-fired appliances used in manufactured dwellings shall be listed for use manufactured homes and shall meet the requirements of **Oregon Administrative Rule (OAR) 918-520** and this chapter.

**(b)** The following statement, "**This pellet-fired appliance has been constructed, tested and listed for use in manufactured homes according to the State of Oregon Building Code**";

**(c)** Pellet-fired appliances shall not be installed in a manufactured dwelling sleeping room.

**6-3.9 Solid-Fuel-Burning Fireplaces and Fireplace Inserts.** Solid fuel burning factory-built fireplaces, fireplace stoves, and room heaters shall be installed in manufactured dwellings according to this section and the **Manufactured Home Construction and Safety Standards 24 CFR 3280.709**, and where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

**(a)** Solid-fuel-burning fireplaces, fireplace stoves, and room heaters used in manufactured dwellings shall be listed for use manufactured homes or mobile homes;

**(b)** Solid-fuel-burning fireplaces, fireplace stoves, and room heaters used in manufactured dwellings shall have a permanently attached label containing the following statements, "**For use with solid fuel only**" and "**Approved or Listed for manufactured home use**".

**(c)** Solid fuel burning fireplaces, fireplace stoves, and room heaters shall not be installed in a manufactured dwelling sleeping room unless approved by **HUD** through the alternate construction process prior to production;

**(d)** Solid-fuel-burning fireplaces, fireplace stoves, and room heaters shall not be installed in alcoves unless specifically allowed in the appliance manufacturer's installation instructions and product listing;

**(e)** Solid-fuel-burning fireplaces, fireplace stoves, and room heaters shall be secured to the manufactured dwelling floor to avoid displacement during transportation;

**(f)** Combustion air shall not be taken from within any manufactured dwelling wall, floor, or ceiling cavity or from a garage, cabana, basement, or other confined area. Combustion air may be taken from the ventilated crawl space below the manufactured dwelling. Combustion air inlets shall be listed or certified as components of the appliance;

**(g)** Antique solid-fuel-burning fireplace stoves, room heaters, or cooking stoves are not permitted in manufactured dwellings unless specifically listed for manufactured home or mobile home use; and

**(h)** Masonry fireplaces are not permitted in manufactured dwellings. A listed manufactured home or mobile home fireplace may be installed within a masonry enclosure according to terms of its listing and the manufacturer's installation instructions if the manufactured dwelling is placed on a foundation or basement according to Chapter 3 of this code.

**6-3.10 Water Heaters.** Water heaters shall be installed in manufactured dwellings according to this section and, where not specific, to the terms of their listing and the appliance manufacturer's installation instructions:

**(a)** Water heaters installed in a manufactured dwelling during or prior to the initial sale to the first consumer shall be listed for manufactured home or mobile home use;

**(b)** Water heaters installed in a manufactured dwelling after the completion of the initial sales contract shall be listed but do not have to be listed for manufactured home or mobile home use;

**(c)** Fuel-burning water heaters shall be installed to provide for the complete separation of the combustion system from

the interior atmosphere of the manufactured dwelling by:

**1.** The installation of a listed direct vent (sealed combustion system) appliance; or

**2.** The installation of the appliance within an enclosure accessible only from outside the manufactured dwelling so as to separate the appliance combustion and venting systems from the interior atmosphere of the manufactured dwelling. There shall not be any door, removable access panel, or other opening into the enclosure from the inside of the manufactured dwelling. Any openings or penetrations for ducts return air inlets, piping, or wiring shall be sealed with non-combustible caulking or equal.

**(d)** Fuel-burning water heaters shall be equipped with a direct vent combustion air inlet designed to conduct air directly into the fire chamber. Combustion air shall not be taken from within any manufactured dwelling wall, floor, or ceiling cavity or from a garage, cabana, basement, or other confined area. Combustion air may be taken from a ventilated crawl space below the manufactured dwelling;

**(e)** Flue gas vents shall be installed according to the listing and the appliance manufacturer's installation instructions. Flue gas vents shall be listed or certified as components of the appliance;

**(f)** Clearances surrounding water heaters shall not be less than those clearances specified in the terms of the listing and the appliance manufacturer's installation instructions;

**(g)** All water heater appliances shall be secured in place to prevent movement during transportation;

**(h)** Tankless water heaters shall be installed according to the product listing and the manufacturer's installation instructions.

## **6-4 Fuel Gas Connections.**

**6-4.1 General.** All fuel gas piping connections to a manufactured dwelling shall be made according to the minimum requirements of this code and, where not specific, to the federal **Manufactured**

## Home Construction and Safety Standards 24 CFR 3280.

**6-4.2 Fuel Gas Pipe Assembly.** Fuel gas piping between the manufactured dwelling gas supply inlet and the gas supply outlet shall comply with the **Oregon One and Two Family Dwelling Specialty Code**:

**6-4.3 Crossover Connections.** Fuel gas pipe running from one section of a manufactured dwelling to another section of the same manufactured dwelling shall be connected at the marriage line(s) according to the following:

- (a) Crossover piping shall be accessible;
- (b) Crossover piping shall have an inside diameter equivalent to the piping being connected;
- (c) Crossover piping shall be made of connectors supplied by the manufacturer, with flexible connectors listed for exterior use and a listed quick disconnect device, or with other materials listed in **Table 6-B** (see **Figure 6-5.6**);
- (d) If a quick disconnect device is not used, an approved shutoff valve is required at each crossover point upstream of the connection; and
- (e) Crossover piping shall be supported according to **Table 6-D** of this code.

**6-4.4 Gas Pipe Extensions.** Where it is necessary to extend the manufactured dwelling gas supply inlet under the manufactured dwelling to reach the point of connection to the gas supply outlet, the extension shall be installed according to the following:

- (a) All pipe extensions shall be sized according to **Table 6-C** of this chapter based on the length of the piping and the total demand of all appliances. Where the demand of an appliance is not known use **Table 6-E** of this chapter; and
- (b) All pipe extensions shall be closely routed against the manufactured dwelling main frame, secured, protected from physical damage, and supported according to **Table 6-D** of this code.

**6-4.5 Gas Shutoff Valve.** Where fuel gas is provided, each manufactured dwelling site shall have a listed gas shutoff valve installed upstream from the manufactured dwelling site gas outlet riser at a height of not less than 6 inches (152 mm) above grade. Such valve shall not be located under any manufactured dwelling or accessory building. The required shutoff valve shall be within 5 feet (157 cm) of the manufactured dwelling exterior wall. Gas valves shall conform to **ANSI Z21.15** or **ASME B16.33**. This gas valve may be eliminated when there is a shutoff valve or cock provided with the gas meter serving the same manufactured dwelling on the same lot. Unused gas supply outlets shall be equipped with a cap or plug to prevent discharge of gas whenever the outlet is not connected to a manufactured dwelling or cabana (see **Figures 6-4.5 and 6-4.5A**).

**6-4.6 Gas Supply Connections.** Each gas supply shall be connected to the manufactured dwelling according to the following:

- (a) Manufactured dwellings supported by and secured to foundation walls or basement walls shall be connected to the gas supply with a 2 foot (61 cm) flexible gas connector or with steel ferrous pipe and fittings;
- (b) Manufactured dwellings supported on piers and having perimeter skirting shall be connected to the gas supply according to the following:
  1. In seismic zone 2b, the gas supply connector shall be an approved 2 foot (61 cm) flexible gas connector (**See Map 3-C**);
  2. In seismic zones 3 and 4, the gas supply connector shall be an approved 6 foot (183 cm) flexible gas connector (**See Map 3-C**);
  4. In the Standard Wind Area, the gas supply connector shall be an approved 2 foot (61 cm) flexible gas connector (**See Map 3-A**);
  5. In the High Wind Area, the gas supply connector shall be an approved 6 foot

(183 cm) flexible gas connector (**See Map 3-A**); and

**6.** Where the connector size is different between the applicable wind zone and seismic zone, use the longer of the two flexible gas connectors.

**(c)** 6 foot (183 cm) flexible gas connectors shall be installed between the gas supply connector and the manufactured dwelling gas supply inlet in a "U" shape to allow for movement of the home during high winds or a seismic event;

**(d)** Required flexible gas connectors shall be listed in **Table 6-B** of this chapter;

**(e)** Flexible gas connectors shall be sized and have a capacity rating adequate to supply the connected load according to **Table 6-F** of this code;

**(f)** Required flexible gas connectors may be replaced with swing joint connections if provided with listed automatic earthquake shutoff devices;

**(g)** Connectors shall be sized equivalent to the inside diameter of the manufactured dwelling's gas supply inlet pipe. Where the manufactured dwelling is being converted to gas or where gas appliances are being added, the supply piping shall be sized according to **Table 6-C** of this chapter based on the length of the piping and the total demand of all appliances. Where the demand of an appliance is not known use **Table 6-E** of this code; and

**(h)** Where cathodic protection is provided on the gas supply system, a dielectric fitting shall be used in the manufactured dwelling gas connection to insulate the manufactured dwelling.

## 6-5 Gas Tests

**6-5.1 Gas Tests.** Gas tests are required by the person making the gas connections to the manufactured dwelling whether the homeowner, installer, or gas utility company. The gas system in a manufactured dwelling has been designed to operate within ½ PSI to ¼ PSI. A tag may have been attached to the gas inlet indicating the size and BTU of

the listed gas supply connector to be used.

**6-5.2 Test Preparation.** Prior to beginning the gas test, make the following preparations:

**(a)** Verify the orifices of all fuel burning appliances are correct for the type of fuel used;

**(b)** If the manufactured dwelling is located at or above 3,000 feet above sea level, special orifices and regulators may be required, see appliance manufacturer's installation instructions;

**(c)** Verify the temperature of the ambient air and the piping are approximately the same and conduct the test at such a time during the day when the air temperatures will remain constant;

**(d)** If the gas supply from any source exceeds ½ PSI or 8 ounces install a pressure reducing valve; and

**(e)** Verify each gas appliance flue pipe, vent, roof jack has been properly installed and secured to the appliance.

**6-5.3 Gas Line Test.** After installation of the manufactured dwelling, the fuel gas piping system shall be subjected to pressure testing according to both of the two following methods:

**(a)** The gas lines and connections shall be subjected to a test with the system pressurized with air according to the following steps:

**1.** With all appliance shut off valves closed, subject the piping system to three (3) PSI for a period of not less than ten minutes without showing any drop in pressure.

**2.** If there is a drop in pressure, located the source of the leak and correct as necessary.

**3.** If a leak has been repaired, then retest the system again with the appliance shut off valves closed and subjecting the piping system to three (3) PSI for a period of not less than ten minutes without showing any drop in pressure.

**(b)** After completing a successful piping test, release the air pressure, open all the appliance shut off valves and pressurize

the system with a continual pressure between 6 to 8 ounces.

1. Test each connection from the shut off valve to the appliance with a suitable soapy water or bubble solution.
2. Make appropriate corrections if there is any evidence of leakage at those connections.
3. Repeat testing until all leaks have been eliminated.
4. When the testing is completed, the soap or bubble solution must be washed from the connection with water to prevent corrosion of the fitting.

## **6-6 Oil Fired Appliances**

**6.6.1 General.** Fuel oil appliances in manufactured dwellings shall have the fuel oil supply line connected to the appliance on site. All fuel oil piping systems serving a manufactured dwelling shall be installed according to the minimum requirements of **Chapter 14 the Oregon Mechanical Specialty Code**, and, where not specific, to the **Oregon One and Two Family Specialty Code**.

**6-6.2 Appliances** Kerosene and oil-fired room heaters and water heaters shall be listed according to **UL 826** and installed according to the **Standard for the Installation of Oil-Burning Equipment (NFPA 31-97)** and this section of the code.

**6-6.3 Storage Systems.** Fuel oil storage systems shall comply with the following:  
**(a)** Fuel oil storage tanks and supply piping systems shall be installed according to the requirements of the **current Oregon Uniform Fire Code** and the **Oregon Department of Environmental Quality**.

**TABLE 6-A**  
**APPROVED APPLIANCES AND EQUIPMENT**

APPROVED REPLACEMENT APPLIANCES AND EQUIPMENT	MATERIAL IDENTIFICATION	MANUFACTURED HOME APPROVAL REQUIRED
Central Cooling Air Conditioners	UL 465	NO
Liquid Fuel-Burning Heating Appliance	UL 307A	YES
Electric Air Heaters	UL 1025	NO
Electric Baseboard Heating Equipment	UL 1042	NO
Electric Central Air Heating Equipment	UL 1096	NO
Gas-Burning Heating Appliance	UL 307B	YES
Gas Clothes Dryers	ANSI Z 21.5.1	NO
Gas-Fired Absorption Summer Air Conditioning Equip.	ANSI Z 21.40.1	NO <sup>(2)</sup>
Gas-Fired Central Furnaces (for exterior use only)	ANSI Z 21.47	NO <sup>(2)</sup>
Direct Vent Central Furnaces (for interior use)	ANSI Z 21.64	NO <sup>(2)</sup>
Household Cooking-Gas Appliances	ANSI Z 21.1	NO
Refrigerators Using Gas Fuel	ANSI Z 21.19	YES
Gas Storage Tank Water Heaters (75,000 BTUH or less)	ANSI Z 21.10.1	NO <sup>(2)</sup>
Heat Pumps	UL 559	NO
Electric Storage Tank Water Heaters	UL 174	NO
Factory-Built Fireplaces (solid-fuel burning type)	UL 127	YES <sup>(3)</sup>
Factory-Built Fireplaces (kerosene or oil-fired type)	UL 826	YES <sup>(4)</sup>
Fireplace Stoves (solid-fuel burning type)	UL 737	YES <sup>(3)</sup>
Fireplace Stoves (kerosene or oil-fired type)	UL 826	YES <sup>(4)</sup>
Pellet-Fired Appliance (solid-fuel burning type)	OAR 918-540	YES <sup>(3)</sup>
Room Heaters (solid-fuel burning type)	UL 1482	YES <sup>(3)</sup>
Room Heaters (kerosene or oil-fired type)	UL 826	YES <sup>(4)</sup>
Unitary Air-Conditioning and Air-Source Heat Pump	ANSI/ARI 210/240	NO <sup>(2)</sup>
Tankless Electric Instant Water Heater		NO
Tankless Gas-Fired Instant Water Heater		NO <sup>(2)</sup>
Factory-Made Air Ducts	UL 181	NO
Roof Jacks	UL 311	NO
Automatic Gas Ignition System and Components	ANSI Z 21.20	NO
Automatic Gas Shutoff Devices (for hot water systems)	ANSI Z 21.22	NO
Automatic Valves for Gas Appliances	ANSI Z 21.21	NO
Gas Hose End Valves	ANSI Z 21.15	NO
Gas Valves for Appliance Connections	ANSI Z 21.15	NO
Gas Appliance Thermostats	ANSI Z 21.23	NO
Gas Vents	UL 441	NO
Chimneys for solid-fuel burning appliances	UL 103	YES
Metal Connectors for Gas Appliances	ANSI Z 21.24	NO

**NOTES:**

1. Heat-producing appliances and equipment used in manufactured dwellings shall be identified with the listing marks indicated in this table, and shall be installed according to this chapter, the terms of their listing, and the manufacturer's installation instructions.
2. The fuel-burning appliances indicated shall be direct vent/sealed combustion appliances listed for mobile home or manufactured home use if they are to be installed within the interior atmosphere of the manufactured dwelling.
3. Solid-fuel-burning equipment used within the interior atmosphere of the manufactured dwelling shall have a combustion air inlet installed that is a listed component of the appliance.
4. Kerosene and oil-fired appliances shall be installed according to the terms of their listing, the manufacturer's installation instructions, and **NFPA 31**.
5. Each product must be marked with the appropriate listing identification shown in this table.
6. All materials and devices shall be installed according to the terms of their listing and the manufacturer's installation instructions.
7. The materials shown in this table are the most common used, see the **Oregon Mechanical Specialty Code** for a more comprehensive list of approved material.

# TABLE 6-B

## APPROVED GAS AND OIL PIPING AND FITTINGS

APPROVED PIPE, TUBING, AND FITTINGS	APPROVED JOINTS	MATERIAL IDENTIFICATION
Black Steel Pipe (schedule 40)	Threaded or Flanged	ASTM A 53 or A 106
Galvanized Steel Pipe (schedule 40)	Threaded or Flanged	ASTM A 53
Electric-Resistance-Welded Coiled Steel Tubing for Gas and Fuel Oil Lines	Threaded or Flanged	ASTM A 539-90a
Soft Copper Tubing, Type K or L	Flared or Brazed	ASTM B 68, B 75, B 88, or B 280
Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	Flared or Brazed	ASTM B 280
Wrought Seamless Copper and Copper –Alloy Tube	Threaded or Flared	ASTM B 251
Seamless Copper Pipe (standard sizes)	Threaded or Flared	ASTM B 42, B 43, or B 302
Tube Fittings for Flammable/Combustible Fluids	Flared or Brazed	UL 109
Plastic Pipe (restricted to use underground and outside manufactured dwelling only) <sup>(3)</sup>	Solvent Cement, adhesive, compression	ASTM D 2513
Corrugated Stainless Steel Tubing (CSST) (restricted to underfloor and in manufactured dwelling only)	Proprietary mechanical fittings	ANSI/AGA LC 1
Pigtails and Flexible Hose Connectors for LP-Gas <sup>(3)</sup>	Threaded	UL 569 and AGA 3
Gas Supply Connectors (CSST and Plastic not permitted for gas supply connections to the house) <sup>(3)</sup>	Threaded	UL 569 and AGA 3
<b>NOTES:</b> 1. Piping and tubing must be marked with the appropriate identification shown in this table. 2. The materials shown in this table are the most common used, see the <b>Oregon Mechanical Specialty Code</b> for a more comprehensive list of approved materials. 3. The noted materials are not approved for use under or in a manufactured dwelling.		



**TABLE 6-C**  
**GAS PIPE SIZING PER THOUSAND BTUH**

DIAMETER	10 FT.	20 FT.	30 FT.	40 FT.	50 FT.	60 FT.	70 FT.	80 FT.	90 FT.	100 FT.
¼-Inch I.D. Pipe	43	29	24	20	18	16	15	14	13	12
3/8-Inch I.D. Pipe	95	65	52	45	40	36	33	31	29	27
½-Inch I.D. Pipe	175	120	97	82	73	66	61	57	53	50
¾-Inch I.D. Pipe	360	250	200	170	151	138	125	118	110	103
1-Inch I.D. Pipe	680	465	375	320	285	260	240	220	215	195
¼-Inch O.D. Tubing	27	18	15	13	11	10	9	9	8	8
3/8-Inch O.D. Tubing	56	38	31	26	23	21	19	18	17	16
½-Inch O.D. Tubing	113	78	62	53	47	43	39	37	34	33
¾-Inch O.D. Tubing	197	136	109	93	83	75	69	64	60	57
1-inch O.D. Tubing	280	193	155	132	117	106	98	91	85	81

**NOTES:**

1. This table provides the maximum capacity for the Inside Diameter (I.D.) of pipe and the Outside Diameter (O.D.) of tubing in thousands of British Thermal Units per hour (BTUH) of natural gas.
2. This table is based on gas pressures of 0.5 pounds per square inch of gas (psig) or less, and a maximum pressure drop of ½-inch water column.
3. To determine proper BTUH demand of an appliance, see the BTUH input rating on the appliance name plate, if the input rating or appliance is not available, use **Table 6-F** of this chapter for estimated demand.
4. To convert these measurements to metric units of measurement or International Systems of Units (SI), use the following equations:
  - (a) 1000 BTU = 0.293 kW.
  - (b) 1-foot = 0.305 meters.
  - (c) 1 pound per square inch (psi) = 6.894 kPa.
  - (d) 1-inch water column = 0.249 kPa.

**TABLE 6-D**  
**MAXIMUM PIPING SUPPORT SPACING**

<b>PIPING MATERIAL</b>	<b>HORIZONTAL SPACING</b>	<b>VERTICAL SPACING</b>
Aluminum Pipe and Tubing	10 Feet	15 Feet
Brass Pipe	10 Feet	10 Feet
Brass Tubing	6 Feet	10 Feet
Copper or Copper Alloy Pipe	12 Feet	10 Feet
Copper or Copper Alloy Tubing	10 Feet	10 Feet
Corrugated Stainless Steel Tubing (CSST)	See ANSI LC-1	See ANSI LC-1
Chlorinated Polyvinyl Chloride (CPVC) Pipe or Tubing	3 Feet	5 Feet
Steel Pipe	12 Feet	15 Feet
Steel Tubing	8 Feet	10 Feet
Lead Pipe	Continuous	4 Feet
Polyvinyl Chloride (PVC) Pipe or Tubing	4 Feet	4 Feet
<b>NOTES:</b>		
<ol style="list-style-type: none"> <li>1. Pipe hangers and supports shall have sufficient strength to withstand all anticipated static and dynamic loading conditions and shall be spaced at the intervals in this table for the applicable piping materials used.</li> <li>2. Pipe hangers and anchors shall be adequately attached to the structure.</li> <li>3. To convert these measurements to metric units of measurement or International Systems of Units (SI), use the following equations:               <ol style="list-style-type: none"> <li>(a) 1-Inch = 25.4 mm.</li> <li>(b) 1-foot = 0.305 meters.</li> </ol> </li> </ol>		

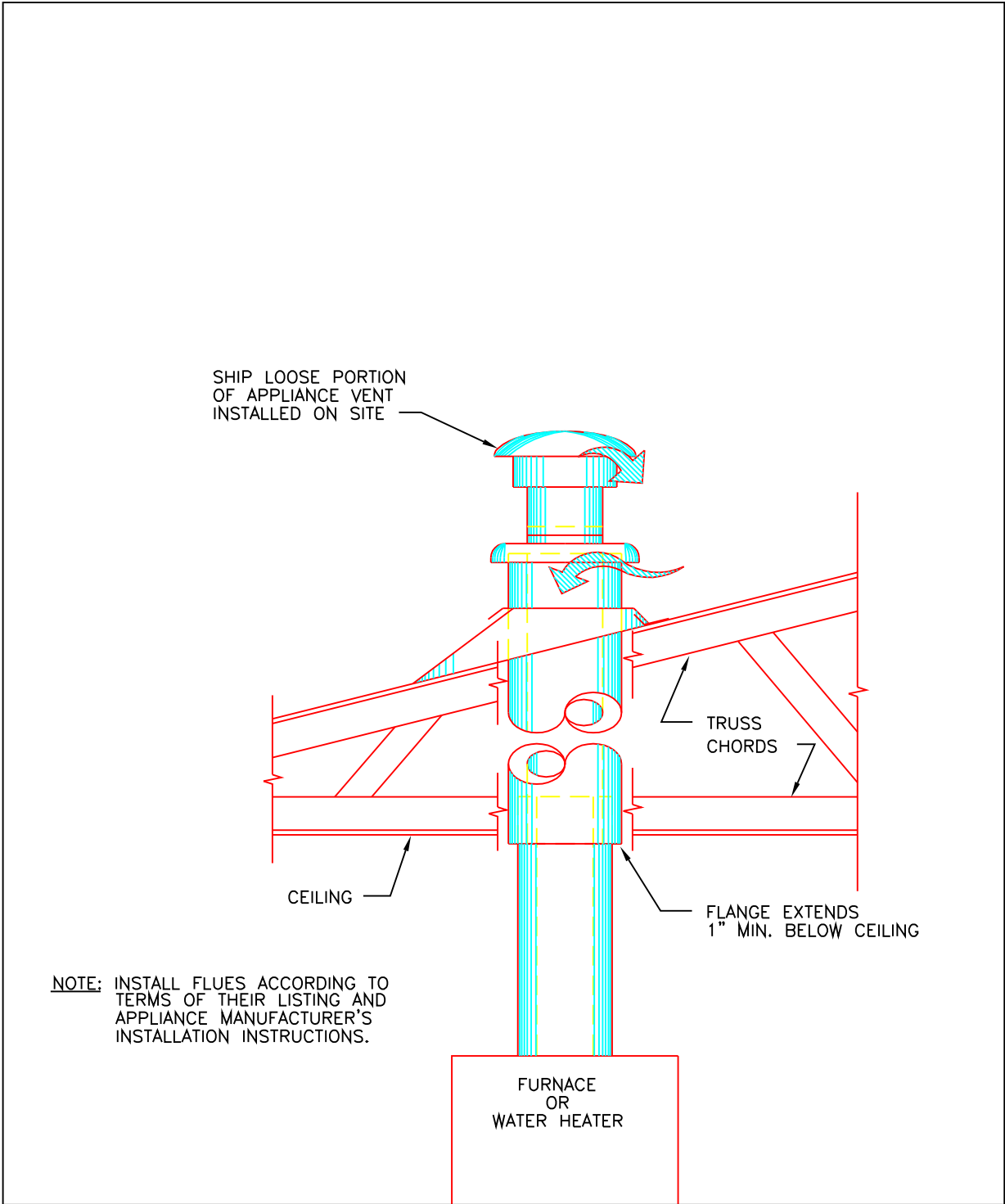
**TABLE 6-E**  
**TYPICAL DEMAND OF GAS APPLIANCE**

APPLIANCE	DEMAND (BTUH)
Range with oven	65,000
Built-in Top Burner	40,000
Built-in Oven	25,000
Storage Water Heater (up to 30 gallons)	30,000
Storage Water Heater (40 to 50 gallons)	50,000
Clothes Dryer	35,000
Fireplace Log Lighter	5,000
Gas Light	2,000
Gas Refrigerator	3,000
Barbecue	50,000
<b>NOTES:</b>	
<ol style="list-style-type: none"> <li>1. This table provides the estimated British Thermal Units per hour (BTUH) demand for typical appliances, actual demands for a given appliance may be different.</li> <li>2. Use this table to estimate pipe sizing when the nameplate BTUH input rating of an appliance is not yet known.</li> <li>3. To convert these measurements to metric units of measurement or International Systems of Units (SI), use the following equations:               <ol style="list-style-type: none"> <li>(a) 1000 BTU = 0.293 kW.</li> <li>(b) 1 Gallon = 3.785 Liters.</li> </ol> </li> </ol>	

## TABLE 6-F

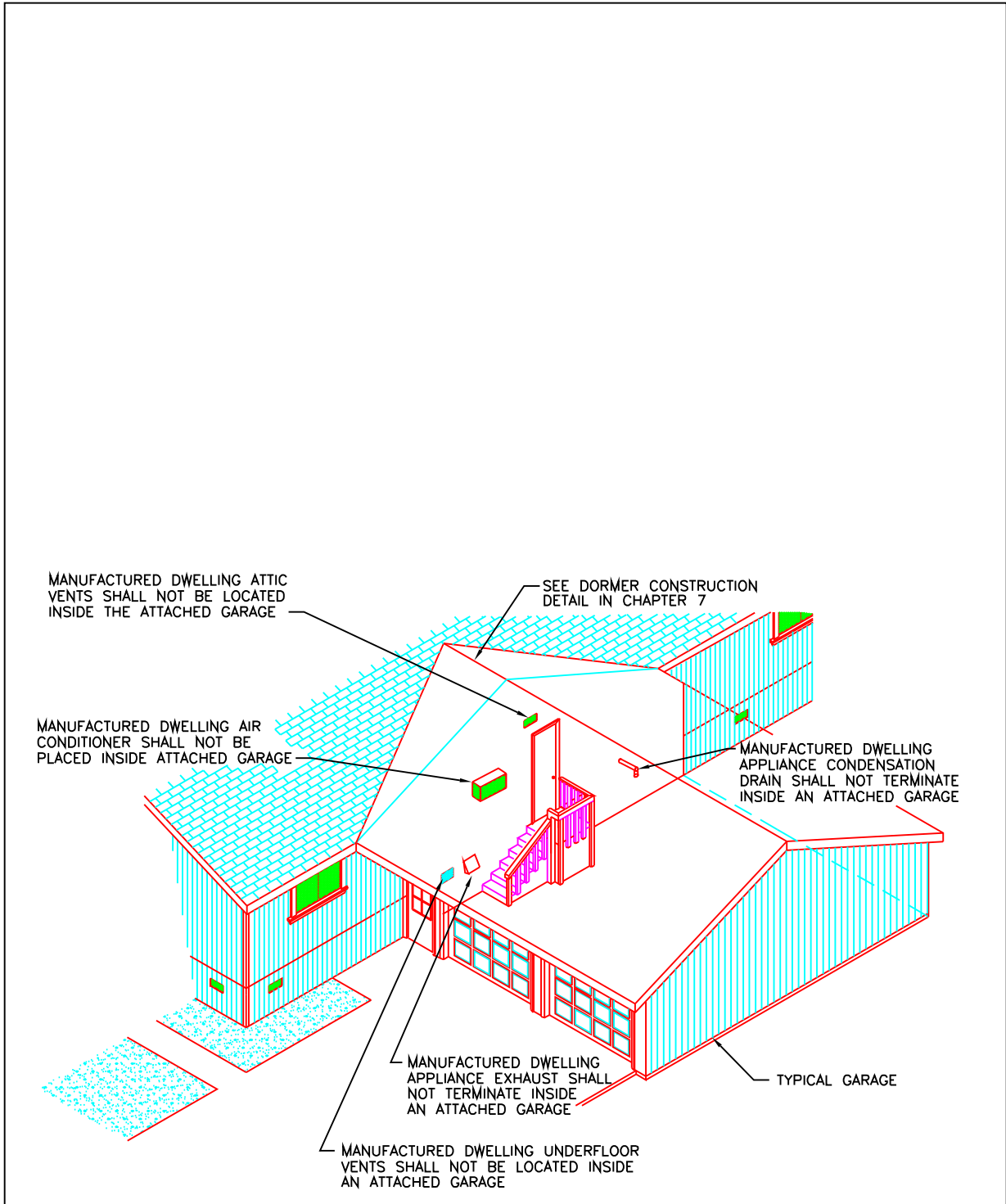
### FLEXIBLE CONNECTOR BTUH CAPACITY

<b>NOMINAL O.D. CONNECTOR</b>	<b>NOMINAL I.D. CONNECTOR</b>	<b>2-FOOT LONG</b>	<b>4-FOOR LONG</b>	<b>6-FOOT LONG</b>
3/8 INCH O.D.	1/4 INCH I.D.	40,000	28,300	23,100
1/2 INCH O.D.	3/8 INCH I.D.	85,000	60,500	49,100
7/8 INCH O.D.	1/2 INCH I.D.	150,000	106,000	86,000
1 INCH O.D.	3/4 INCH I.D.	290,900	215,000	173,900
1-1/4 INCH O.D.	1 INCH I.D.	581,800	442,700	347,800



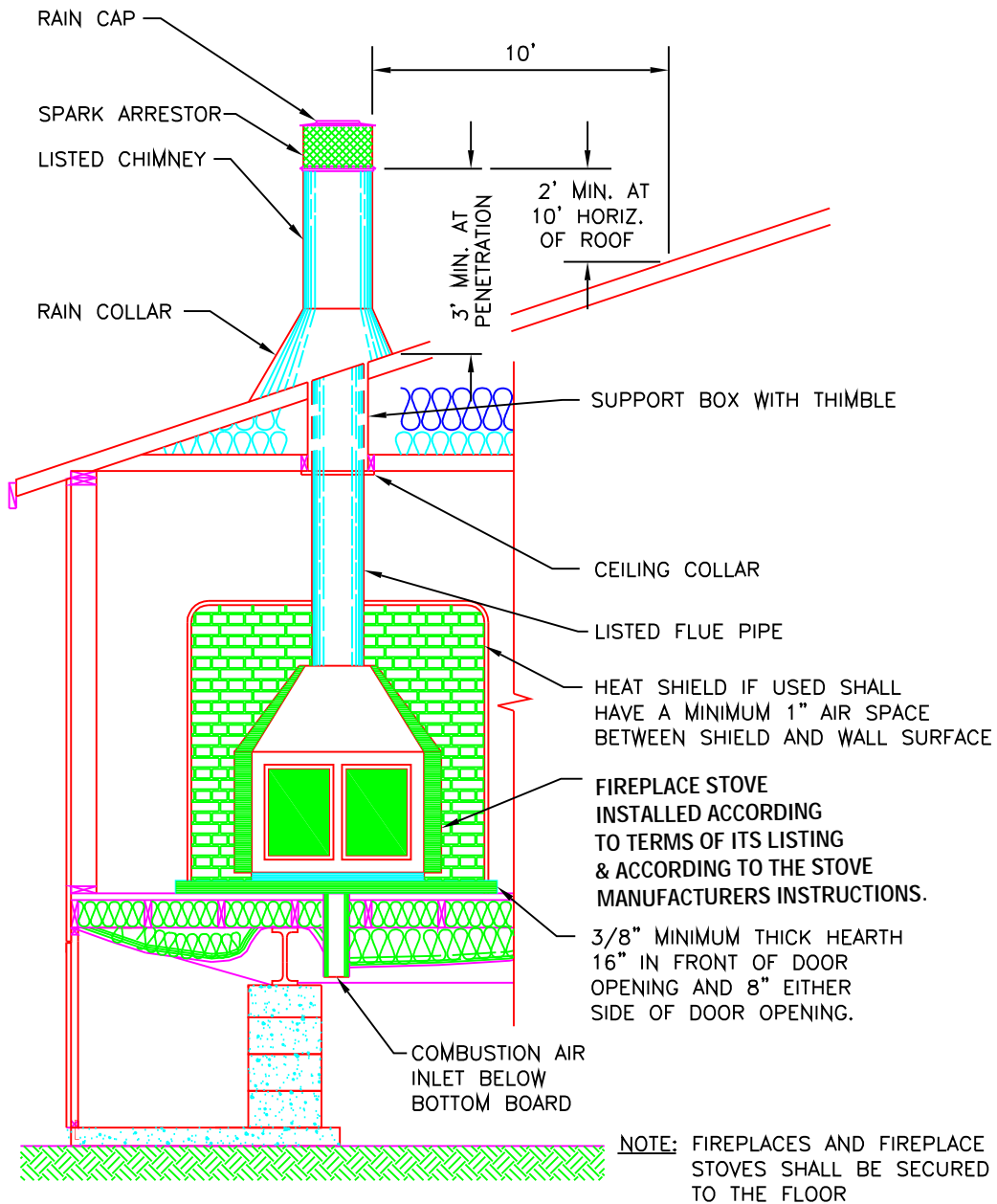
TYPICAL SHIP LOOSE APPLIANCE VENTS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6
REV. 12/01/01 RHW		FIGURE 6-2.5



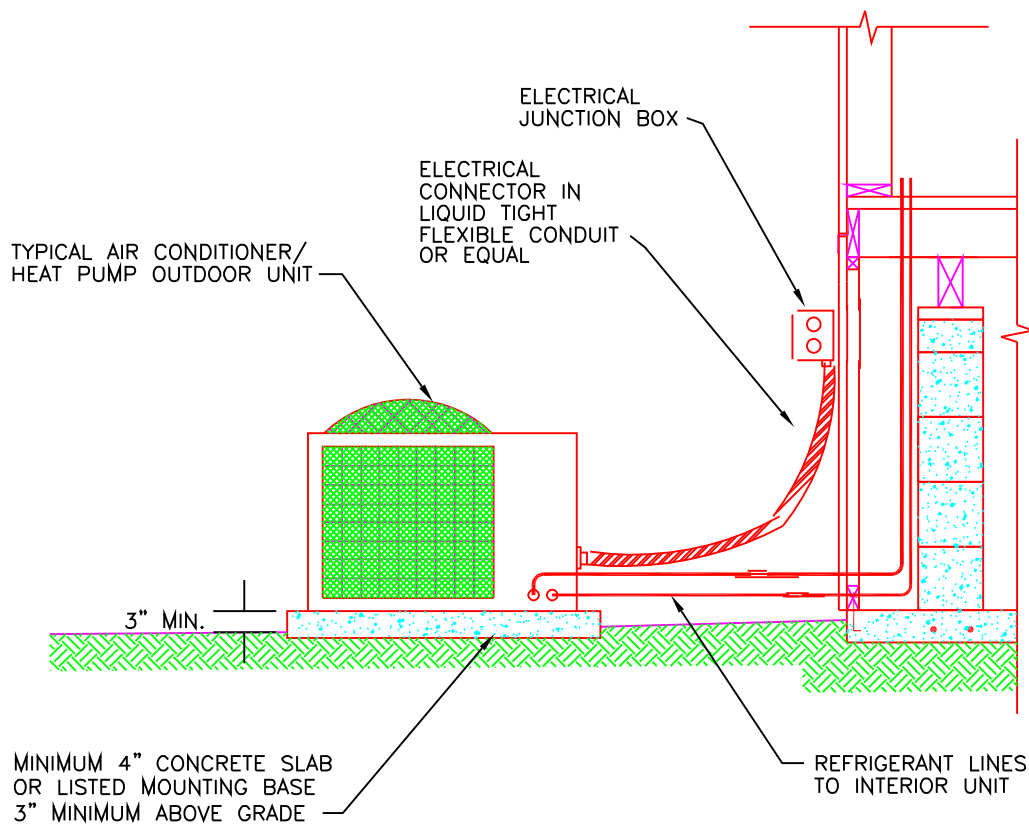
TYPICAL ATMOSPHERIC SEPARATION DETAILS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6
REV. 12/01/01 RHW		FIGURE 6-2.8



TYPICAL FIREPLACE STOVE INSTALLATION

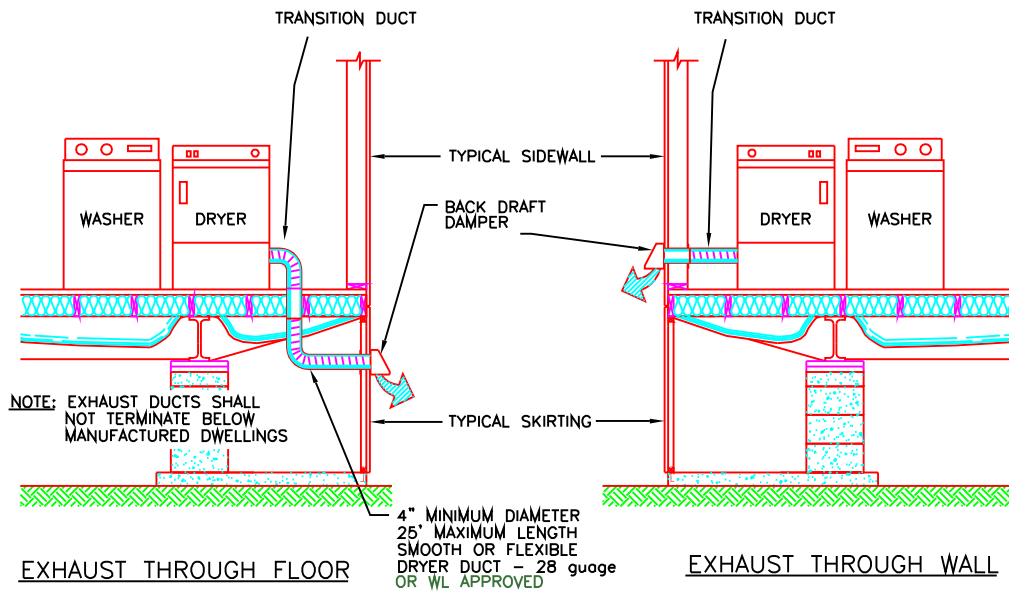
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6
REV. 12/01/01 RHW		FIGURE 6-3.10



TYPICAL AIR CONDITIONER/HEAT PUMP INSTALLATION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6
REV. 12/01/01 RHW		FIGURE 6-3.2





NOTE: DIPS OR TRAP IN THE DUCT RUN SHALL HAVE A 1/4" HOLE DRILLED AT THE LOWEST POINT. NO SCREWS OR FASTENERS SHALL OBSTRUCT DUCT INTERIOR.

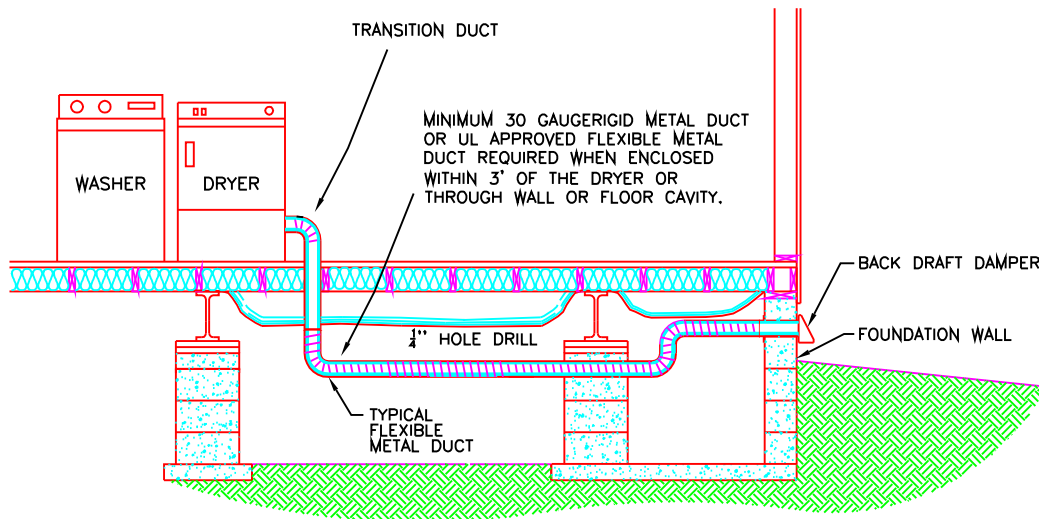
TYPICAL DRYER EXHAUST DUCT INSTALLATION

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 6  
FIGURE 6-3.3A

**NOTE:** DRYER DUCT SHALL BE A MINIMUM OF 4" IN DIAMETER AND NO LONGER THAN 25 FEET. THE DUCT RUN SHALL BE REDUCED IN LENGTH 2 1/2' FOR EACH 45° BEND AND 5' FOR EACH 90° BEND.

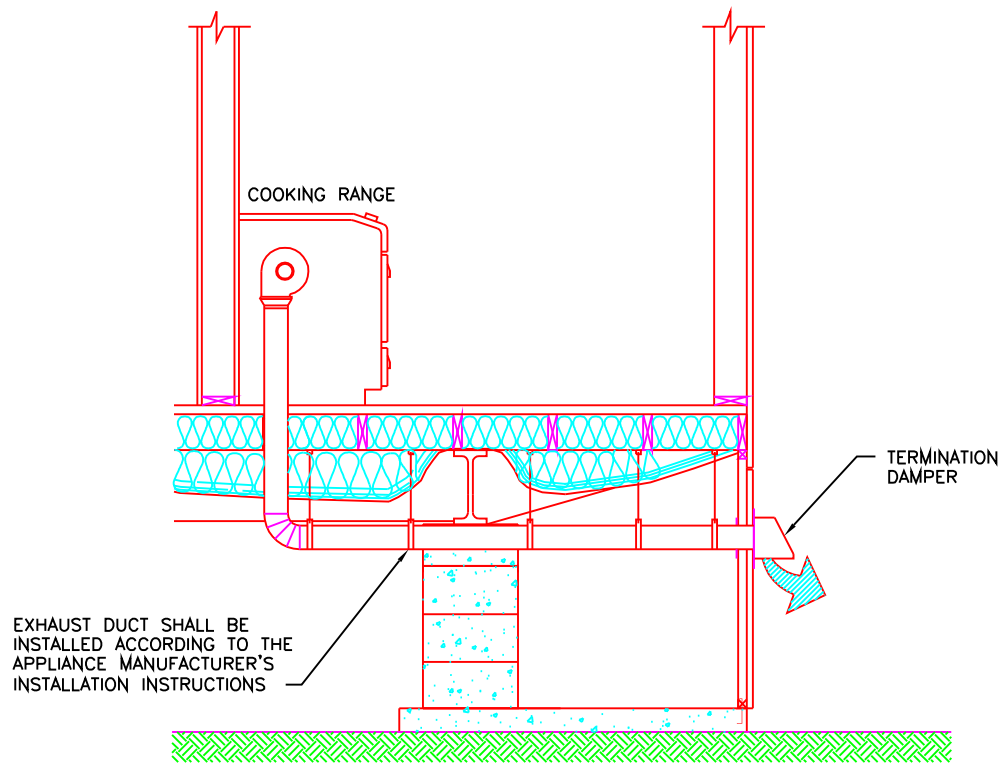


TYPICAL DRYER EXHAUST DUCT WITH TRAP

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 6  
FIGURE 6-3.3B



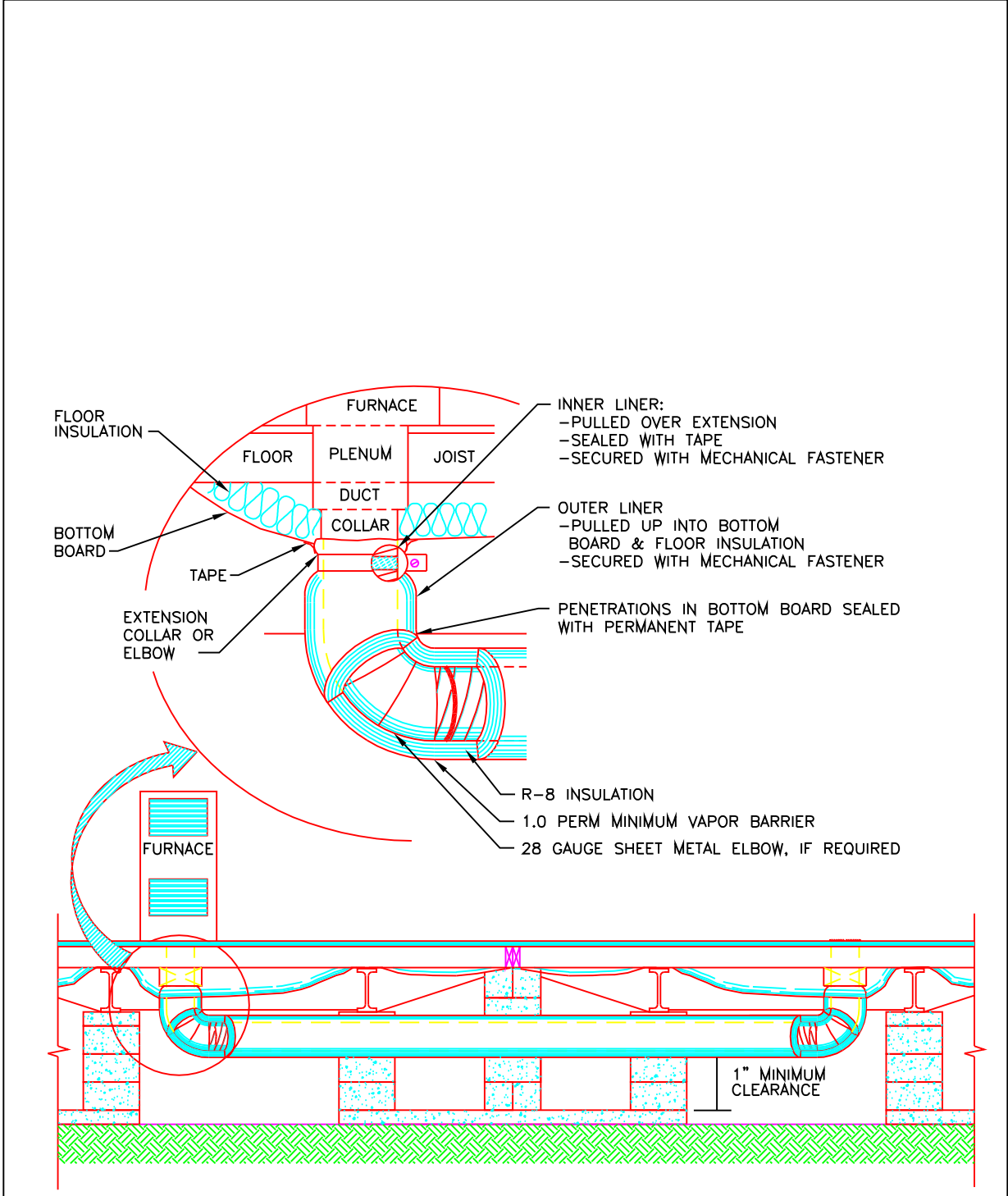
**NOTE:** EXHAUST DUCT SHALL NOT TERMINATE BELOW THE MANUFACTURED DWELLING.

TYPICAL RANGE EXHAUST DUCT INSTALLATION

REV. 12/01/01 RHW

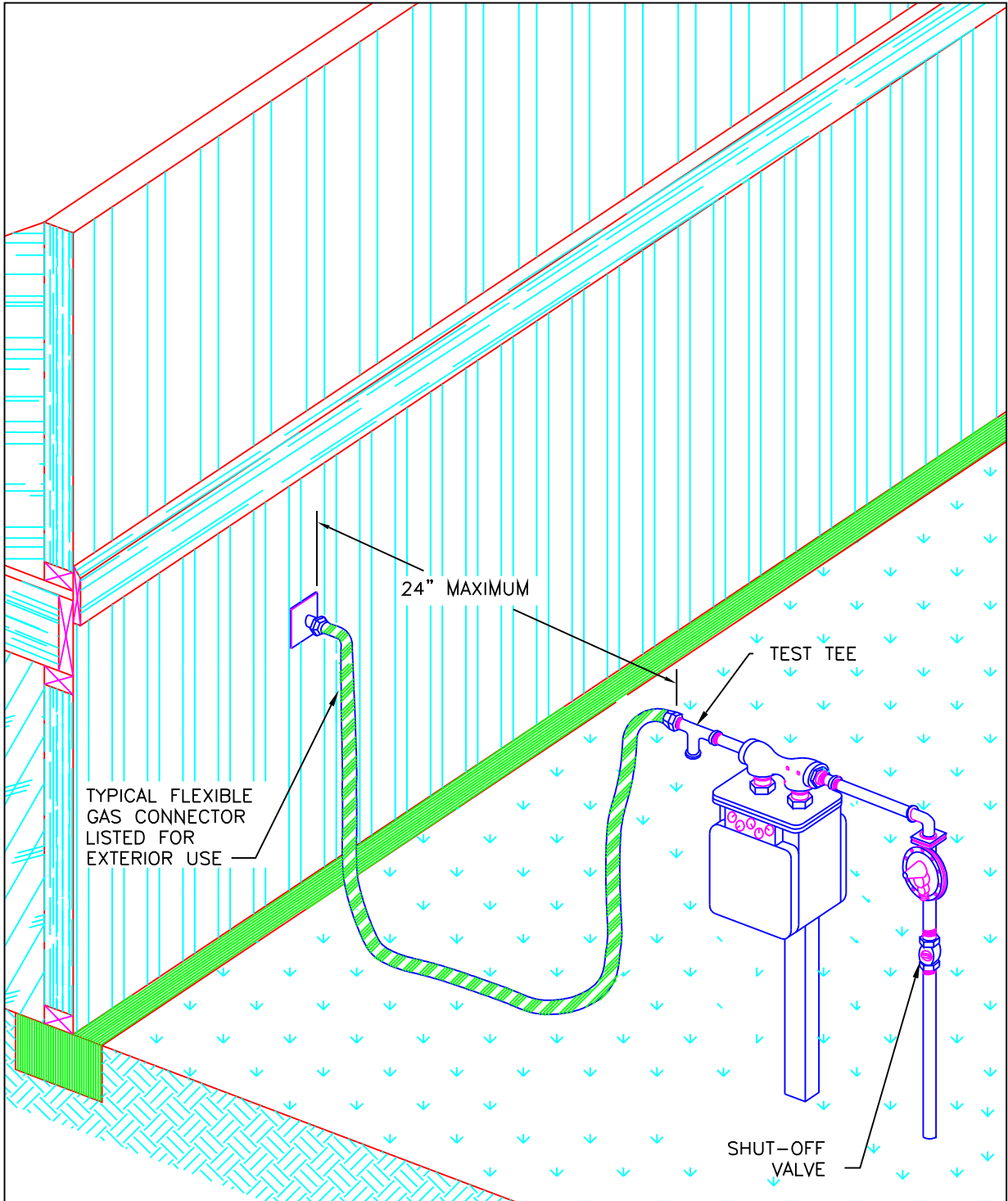
MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES

CHAPTER 6  
FIGURE 6-3.4



TYPICAL UNDER-FLOOR CROSSOVER DUCT CONNECTION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6 FIGURE 6-3.5
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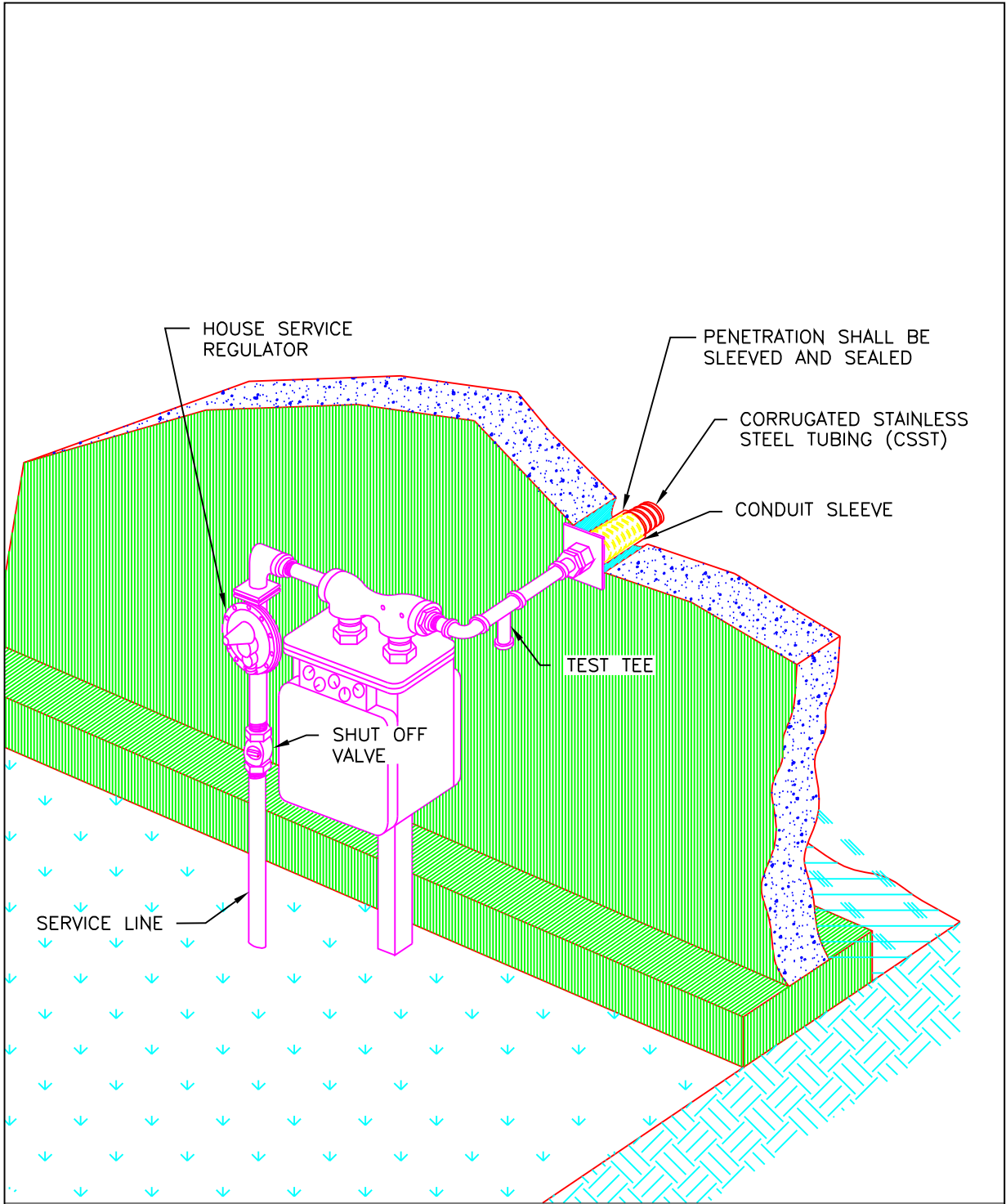


TYPICAL FUEL GAS METER CONNECTOR

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

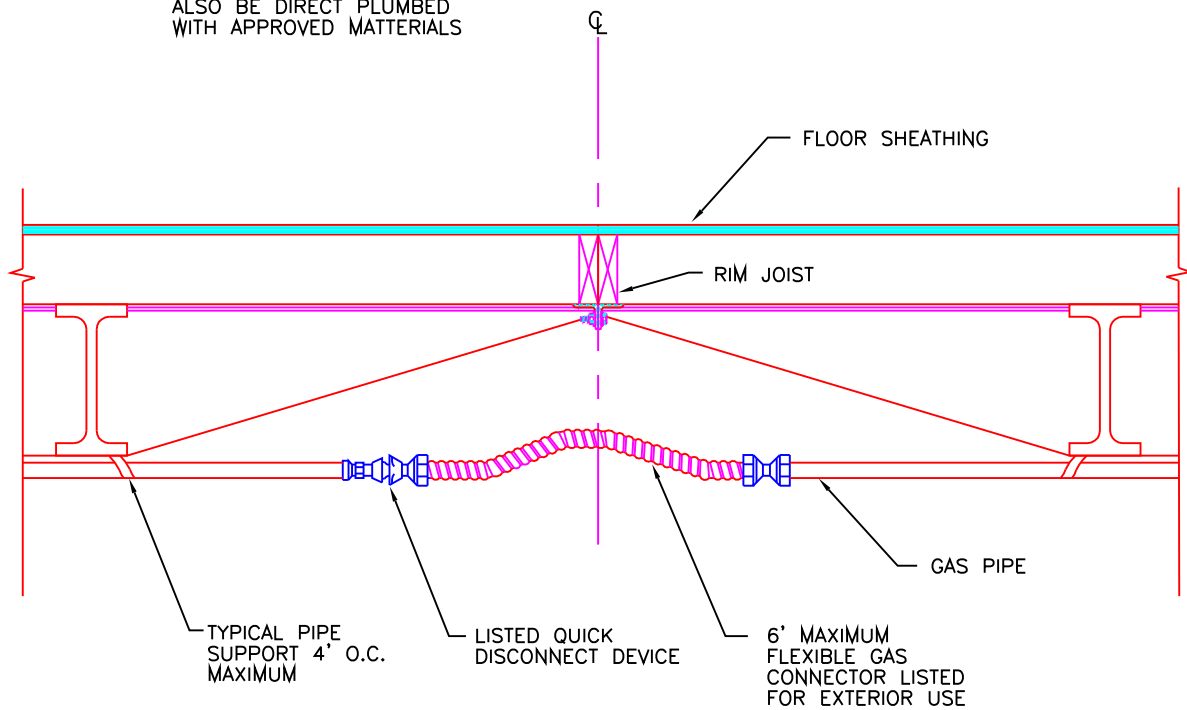
CHAPTER 6  
FIGURE 6-4.5



TYPICAL GAS SUPPLY CONNECTION THROUGH CONCRETE FOUNDATION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 6
REV. 12/01/01 RHW		FIGURE 6-4.5A

NOTE: FUEL GAS CROSSOVER MAY ALSO BE DIRECT PLUMBED WITH APPROVED MATERIALS



TYPICAL FUEL GAS PIPE CROSSOVER CONNECTION

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 6  
FIGURE 6-5.6

## CHAPTER SEVEN ALTERATIONS AND REPAIRS

- 7-1 General
- 7-2 Alterations
- 7-3 Repairs and Maintenance
- 7-4 Conversion
- 7-5 Re-Roofing
- 7-6 Roof Additions
- 7-7 Dormers and Gables
- 7-8 Re-Furbishing
- 7-9 Substantial Equivalence to HUD
- 7-10 Re-Manufacturing

### 7-1 General.

**7-1.1 Permits** Permits may be required for some work or some portions of the work outlined in this chapter. Refer to the specific sections of this code, Chapter One, and the authority having jurisdiction for more information.

**7-1.2 Alterations.** The term “alterations”, as used in this section of this code only, is meant to include any change, addition, alteration, repair, conversion, replacement, modification, refurbishing, re-manufacturing, or removal of any part of the manufactured dwelling or manufactured dwelling equipment. All other sections of the code address only a specific type of alteration (i.e. repair or conversion). This chapter of the code is intended to supplement the structural requirements of the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280**, and the **Oregon One and Two Family Dwelling Specialty Code**, but is not intended to take the place of these codes.

**(a)** Where ever the requirements of this code differ from the **Oregon One and Two Family Dwelling Specialty Code**, this code shall apply;

**(b)** Alternate methods permitted in the **Oregon One and Two Family Dwelling Specialty Code**, but not mentioned in this code may be permitted if acceptable to the authority having jurisdiction;

**(c)** All materials used in the alteration of a manufactured dwelling shall be without

defect. All damaged materials shall be discarded and replaced;

**(d)** All lumber used in the alteration of a manufactured dwelling shall be kiln dried or shall have a moisture content of 19 percent or less;

**(e)** Alterations shall not be made to a manufactured dwelling that would eliminate required windows, doors, or ventilation;

**(f)** Changes in use of a manufactured dwelling shall comply with Chapter 2 of this code;

**(g)** All electrical alterations shall comply with Chapter 4 of this code;

**(h)** All plumbing alterations shall comply with Chapter 5 of this code;

**(i)** All mechanical alterations shall comply with Chapter 6 of this code; and

**(j)** Fixtures and appliances shall not be altered or converted except where specifically permitted by the fixture or appliance listing and Chapters 4 and 6 of this code.

**7-1.3 Alternate Methods.** Where it is impractical for the manufactured dwelling to conform to the strict letter of the code, the inspector may accept methods or materials that are substantially equivalent to the code. Engineering may be required to substantiate equivalency if structural components of the manufactured dwelling have been altered or replaced.

**7-1.4 Exempt Alterations.** The following alterations are exempt from permits but are not exempt from the requirements of this code:

**(a)** Minor repairs with approved component parts;

**(b)** Conversion of listed fuel burning appliances in accordance with the terms of their listing;

**(c)** Adjustment and maintenance of equipment; and

**(d)** Replacement of equipment or accessories in kind.

**NOTE:** For a more complete description of what is included in exempt alterations,



see Appendix A for definitions of “minor repair”, “adjustment of equipment”, and “replacement in kind”. See Chapter 1 to determine when permits may be required.

**7-1.5 Smoke Detectors or Alarms.** Any alterations requiring a permit, made to a manufactured dwelling after the completion of the initial sale, shall have smoke detectors or alarms installed according to Chapter 9 of this code.

**7-1.6 Labels.** HUD certification labels or state insignias of compliance are not required to be removed from a manufactured dwelling as a result of alterations, as long as the alterations conform to the requirements of this code and have, when required, been permitted, inspected, and approved by the authority having jurisdiction. If replacing or over laying the exterior siding of a manufactured dwelling, carefully remove the label(s) or insignia(s) without damage and reinstall them on the new siding using rivets or screw nails.

**WARNING:** Do not remove or discard HUD label(s) or insignia(s) of compliance from the manufactured dwelling. HUD label(s) or insignia(s) of compliance certify that the manufactured dwelling has been inspected and found in compliance with the applicable code at the time of original construction. Selling a manufactured dwelling without the original HUD label(s) or insignia(s) of compliance may cause a substantial devaluation of the manufactured dwelling and the possible denial of an installation permit.

## **7-2 Alterations.**

**7-2.1 Initial Alterations.** Alterations to a manufactured dwelling before or at the time of sale to the first consumer performed or arranged by the manufacturer, dealer, or distributor shall conform to the federal **Manufactured Home Construction and Safety Standards**, the **National Electrical Code**, and the manufacturer’s DAPIA

approved plans. Initial alterations of manufactured dwellings shall be inspected by the Oregon Building Codes Division (IPIA) except for site installed mechanical equipment. Site installed mechanical equipment (i.e. solid fuel burning fireplaces, wood stoves, pellet-fired appliances, heat pumps, and air conditioners) shall be inspected by the local authority having jurisdiction to Chapter 4 and 6 of this code.

**NOTE:** Based on the federal preemption of **24 CFR 3282.203**, DAPIA approved plans are not subject to Oregon architects and engineers law and are acceptable when stamped by an out-of-state registered professional architect or engineer.

**7-2.2 Secondary Alterations.** Alterations to a manufactured dwelling after the initial sale to the first consumer shall be inspected by the authority having jurisdiction and shall conform to this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code** and the **National Electrical Code** except for the following:

- (a) Installation or alteration of fuel burning appliances in a manufactured dwelling shall conform with Chapter 6 and the federal **Manufactured Home Construction and Safety Standards 24 CFR 3280**;
- (b) Energy conservation standards are not required to be increased to the levels of the state energy code as a result of alterations being made to a manufactured dwelling; and
- (c) Roof live load capabilities are not required to be increased as a result of an alteration to a manufactured dwelling unless specifically required in this chapter.

## **7-3 Repairs and Maintenance.**

**7-3.1 Warranty Work.** Repairs or maintenance on a manufactured dwelling, performed by the manufacturer, dealer, or distributor, shall conform with the federal **Manufactured Home Construction and**

**Safety Standards, the National Electrical Code,** and the manufacturer's DAPIA approved plans.

**7-3.2 Non-Warranty Work.** Repairs and maintenance on a manufactured dwelling by the homeowner shall conform to the federal or state code in force at the time of original manufacture. Maintenance work which is not exempt from permits according to Section 7-1.4 of this chapter shall be inspected by the authority having jurisdiction.

#### **7-4 Conversion.**

**7-4.1 Change of Occupancy.** Manufactured dwellings converted to a different occupancy classification shall meet the minimum code requirements of the appropriate specialty codes for that specific occupancy. Refer to Chapter Two for more information.

#### **7-5 Re-Roofing.**

**7-5.1 General.** Re-roofing for the purpose of this chapter is considered maintenance work. If the existing roofing is being replaced with equivalent roofing, no permits are required. If the existing roofing is being replaced with a different roofing material a permit may be required from the authority having jurisdiction. All replacement roofing shall be installed according to this code and, where not specific, to the roofing manufacturer's installation instructions, and the **Oregon One and Two Family Dwelling Specialty Code**.

**7-5.2 Roofing Removal.** Existing roofing material and underlayment, shall be removed prior to installing new roofing material. Damaged or defective rafters, trusses, or sheathing shall be repaired or replaced before installing new roofing material. Replacement roofing shall not be added over existing roofing material.

**7-5.3 Roof Penetrations.** All plumbing vents, mechanical vents, chimneys, flue pipes, and the electrical masthead shall be flashed and extended through the

replacement roofing and with listed and compatible equipment or material according to the following:

**(a)** Appliance vent extensions shall be made according to the appliance listing and manufacturer's installation instructions;

**(b)** Plumbing vents shall extend at least 6 inches (15 cm) above the roof addition and shall not be located within 3 feet (0.91 meters) of any motor driven air intake that opens into habitable rooms;

**(c)** Fireplace and wood stove chimneys and flues shall extend through the roof a minimum of 3 feet (.91 meters) and a minimum of 2 feet (.61 meters) above the highest portion of the new roof within 10 horizontal feet (3.05 meters); and

**(d)** Electrical mastheads shall extend above the roof at least high enough to maintain the minimum clearances required in Chapter 4 of this code.

**7-5.4 Ventilation.** Ventilation shall be provided to the attic space when re-roofing a manufactured dwelling according to **Section 806 of the Oregon One and Two Family Dwelling Specialty Code**.

#### **7-6 Roof Additions.**

**7-6.1 Roof Loads.** The roof addition shall be designed and constructed for the roof snow loads and wind loads specific to the area the manufactured dwelling is sited according to the requirements of this code, and where not specific, to the **Oregon One and Two Family Dwelling Specialty Code** and the authority having jurisdiction. Manufactured dwelling roof additions added over an existing roof of a manufactured dwelling shall be supported through to the ground according to the following:

**(a)** Where a roof addition conveys weight on the manufactured dwelling ridge beam, the ridge beam shall be reinforced or the span reduced according to an acceptable design;

**(b)** Where a roof addition conveys weight on the exterior walls of the manufactured dwelling, the structural headers above

each opening shall be reinforced according to an acceptable design;

**(c)** Where a roof addition conveys weight on the existing manufactured dwelling roof trusses or rafters, the trusses or rafters shall be reinforced according to an acceptable design;

**(d)** Where a roof addition conveys weight on the perimeter and marriage line foundation, the foundation shall be increased in capacity or spacing according to an acceptable design;

**(e)** Roof additions shall be secured to the manufactured dwelling to prevent uplift according to an acceptable design;

### **7-7 Dormers and Gables.**

**7-7.1 General.** Roof dormers or gables are often added over an existing manufactured dwelling roof for the purpose of tying in a garage, cabana, or porch roof or for aesthetic purposes only.

**7-7.2 Minimum Requirements.** All dormer and gable roof additions shall be constructed according to the following:

**(a)** Dormer and gable roof additions shall be constructed according to this section of the code, and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code** and the roofing manufacturer's installation instructions; or

**(b)** Dormer and gable roof additions shall be constructed according to this section of the code, the manufacturer's DAPIA approved plans, and the roofing manufacturer's installation instructions; and

**(c)** To minimize the weight on the existing roof structure, dormers and gables shall only be constructed with kiln dried lumber or lumber having a moisture content of 19 percent or less. Alternate lightweight construction materials may also be used with prior approval from the authority having jurisdiction.

**7-7.3 Existing Roofing.** To minimize the weight on the existing roof structure, existing roofing material shall be removed prior to installing dormer or gable roof additions.

**7-7.4 Tie-Down.** Dormer and gable roof additions shall be secured to the manufactured dwelling in such a manner as to prevent uplift and sliding according to this code, the manufacturer's DAPIA approved plans, or **Oregon One and Two Family Dwelling Specialty**.

### **7-8 Re-Furbishing.**

**7-8.1 General.** Refurbished manufactured dwellings shall be inspected and be issued an insignia of compliance to verify it meets the code prior to occupancy, siting, or being offered for rent, lease, or sale. This section of the code is intended for individuals, families, or their contractors. This section of the code may be used by a government agency for the purpose of rehabilitating low cost housing. This section of the code is not intended for contractors or companies in the business of re-building or re-manufacturing manufactured dwellings for the purpose of rent, lease, or sale.

**7-8.2 Qualifications.** Manufactured dwellings may be refurbished under the following circumstances:

**(a)** The manufactured dwelling has been determined to be an unsafe structure according to the provisions in Section 1-3.1 of this code;

**(b)** The manufactured dwelling has been identified as damaged or out of compliance with the applicable codes;

**(c)** The manufactured dwelling has no insignia of compliance and needs verification of code compliance for an insurance carrier, government agency, or lending institution;

**(d)** The manufactured dwelling has been classified as salvage by an insurance company or a government agency;

**(e)** The manufactured dwelling has been sold "as-is" or "with-all-faults" and needs verification that it complies with the applicable codes according to the provisions in Section 1-3.2 of this code;

**(f)** The manufactured dwelling has been refurbished, restored, or remodeled and

needs verification that it complies with the applicable codes.

**7-8.3 Application.** Application for inspection and approval shall be made to the Building Codes Division by letter, phone, fax, or electronic mail. The application shall be made in conformance with current Building Codes Division procedures.

**7-8.4 Inspections.** One or more Inspections may be required to verify compliance with the codes in effect on the date of manufacturer. If a date is not known, the manufactured dwelling will be inspected to the 1972 edition of **ANSI A119.1 Standard for Mobile Homes** and the 1971 edition of the **National Electrical Code NFPA 70**. Where it is impractical for the manufactured dwelling to conform to the strict letter of the code, the inspector may accept methods or materials that are substantially equivalent to the code. Engineering may be required to substantiate equivalency if structural components of the manufactured dwelling have been altered or replaced. Required corrections, if any, will be identified in writing by the inspector. All corrections shall be completed and re-inspected prior to final approval.

**7-8.5 Approval.** Once the inspections are made and final approval is given, the inspector will attach an Oregon insignia of compliance to each section of the manufactured dwelling.

**7-9 Substantial Equivalence to HUD.**

**7-9.1 General.** A manufactured dwelling built between September 1, 1969 and June 14, 1976 may be upgraded to be substantially equivalent to a home produced in accordance with the June 1976 HUD standards for such dwellings. To receive a report indicating substantial equivalence and an Oregon Insignia of Compliance, all the following must occur:

**(a)** Application for inspection and approval shall be made to the Building

Codes Division in conformance with current Division procedures.

**(b)** The home must have been produced between September 1, 1969 and June 14, 1976.

**(c)** Battery powered or direct wired smoke detectors must be installed in each bedroom and each hallway adjoining bedroom areas.

**(d)** Ground fault interrupter devices must be installed on exterior receptacles and bathroom outlets. Kitchens and heat tape receptacles are exempt from this requirement.

**(e)** Each bedroom must have an egress window. The window must have a minimum of 5 square feet opening capacity with a horizontal opening a minimum of 20" and the vertical opening a minimum of 24". The window opening must be within 36" of the floor.

**(f)** All electrical systems and devices must operate properly and be installed properly.

**(g)** All plumbing systems and devices must operate properly and be installed properly.

**(h)** All mechanical systems must operate and be installed properly. Baths must have an exhaust fan or an openable window. Kitchens must have a mechanical exhaust fan.

**(i)** The structure of the home must be sound, with normal aging accepted. The roof, siding, windows, and doors must not leak. There must be two exit doors remote from each other. The home must be in original condition concerning the design.

**(j)** Unapproved wood stoves or fireplaces must be removed.

**(k)** All systems in the home must operate to include doors and windows.

**(l)** The home cannot have aluminum wiring on the individual branch circuits.

**(m)** The furnace and water heater compartment walls, ceiling, and all exposed wood must be fully lined with a minimum of 5/16" sheetrock, except for the floor.

**(n)** The bottom of the cabinets above the range and extending 6" on each side of

the range must be covered with a minimum of 5/16" sheetrock. This includes the space between the range hood and the bottom of the cabinet.

**(o)** The wall behind the range and extending 6" to each side of the range must be covered with a minimum of 5/16" sheetrock.

**7-9.2 Inspections.** One or more inspections may be required to verify compliance with the code in effect on the date of manufacturer as well as the required upgrades. Where it is impractical for the manufactured dwelling to conform to the strict letter of the code, the inspector may accept methods or materials that are substantially equivalent to the code. Engineering may be required to substantiate equivalency if structural components of the manufactured dwelling have been altered or replaced. Required corrections, if any, will be identified in writing by the inspector. All corrections shall be completed and reinspected prior to final approval.

**7-9.3 Approval.** Once the inspections are made and final approval is given, the inspector will attach an Oregon insignia of compliance, to each section of the manufactured dwelling and issue a report indicating the home has been upgraded to achieve substantial equivalence to the 1976 HUD Standard for such dwellings.

## **7-10 Re-Manufacturing.**

**7-10.1 General.** Re-manufactured manufactured dwellings shall be inspected and be issued an Oregon insignia of compliance to verify the manufactured dwelling meets the code prior to being sited or offered for rent, lease, or sale. This section of the code is intended for contractors or companies in the business of re-building or re-manufacturing manufactured dwellings for the purpose of renting, leasing, or selling manufactured dwellings. This section of the code is not intended for individuals or families for personal home improvements or repair.

**7-10.2 Qualifications.** Re-manufactured dwellings shall be inspected by the Division and issued an Oregon insignia of compliance under the following circumstances:

**(a)** The manufactured dwelling has been determined to be an unsafe structure according to the provisions in Section 1-3.1 of this code;

**(b)** The manufactured dwelling has been identified as damaged or out of compliance with the applicable codes;

**(c)** The manufactured dwelling has no insignia of compliance and has no way of proving it complies with the applicable codes;

**(d)** The manufactured dwelling has been classified as salvage by an insurance company or a government agency;

**(e)** The manufactured dwelling has been sold "as-is" or "with-all-faults" and needs verification that it complies with the applicable codes according to the provisions in Section 1-3.2 of this code;

**(f)** The manufactured dwelling has been refurbished, restored, or remodeled and needs verification that it complies with the applicable codes.

**7-10.3 Requirements.** Persons re-manufacturing manufactured dwellings shall comply with the following:

**(a)** Shall be licensed by the Construction Contractors Board;

**(b)** Shall be registered with the Building Codes Division as a manufacturer according to OAR 918-500-0300;

**(c)** Shall be in compliance with ORS 316, 656, 657, and 701.

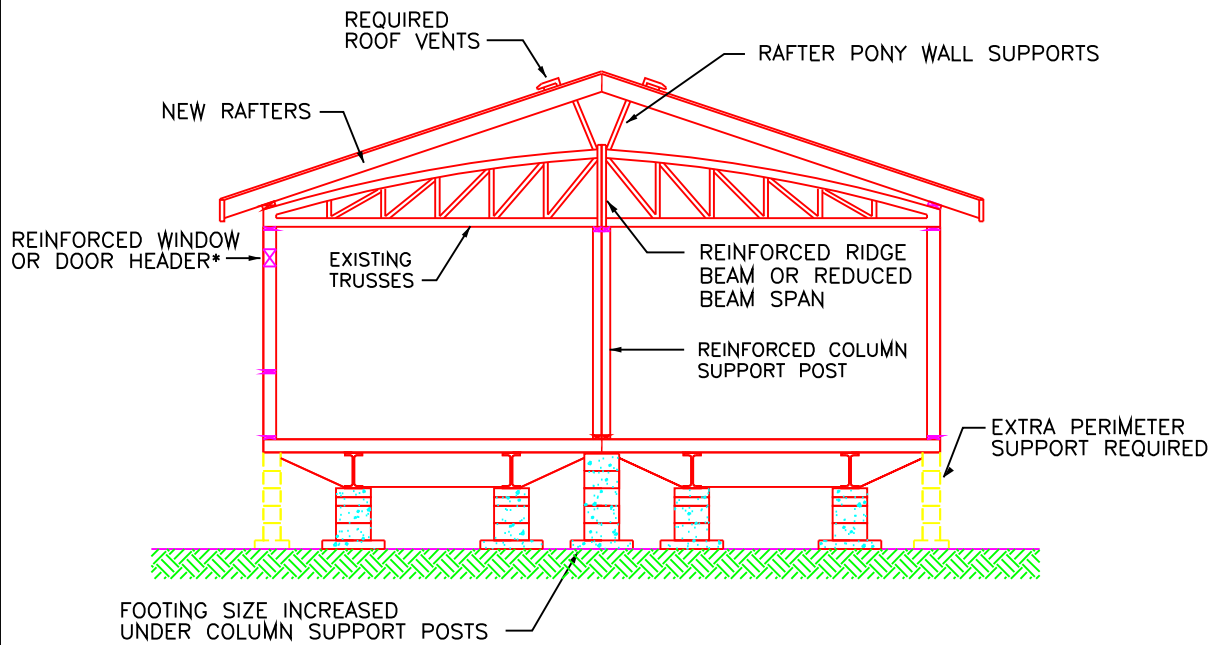
**7-10.4 Application.** After meeting the minimum requirements in Section 7-10.3 of this code, application for inspection and approval shall be made to the Building Codes Division by telephone, letter, fax, or electronic mail. Application shall be made in conformance with current Building Codes Division procedures.

**7-10.5 Inspections.** One or more Inspections may be required to verify compliance with the codes in effect on the date of manufacturer. If a date is not known, the manufactured dwelling will be inspected to the 1972 edition of **ANSI A119.1 Standard for Mobile Homes** and the 1971 edition of the **National Electrical Code NFPA 70**. Where it is impractical for the manufactured dwelling to conform to the strict letter of the code, the inspector may accept methods or materials that are substantially equivalent to the code. Engineering may be required to substantiate equivalency if structural components of the manufactured dwelling have been altered or replaced. Required corrections, if any, will be identified in writing by the inspector. All corrections shall be completed and re-inspected prior to final approval.

**7-10.6 Approval.** Once the inspections are made and final approval is given, the inspector will assure a valid insignia of compliance is affixed to each section of the manufactured dwelling.

\*NOTE: A CONTINUOUS HEADER CAN BE PLACED OVER EXISTING SIDEWALL AND/OR ROOF, RATHER THAN REINFORCING EACH INDIVIDUAL WINDOW AND DOOR SIDEWALL HEADER.

NOTE: ALL PLUMBING AND MECHANICAL VENTS SHALL BE EXTENDED THROUGH NEW ROOF ADDITION.

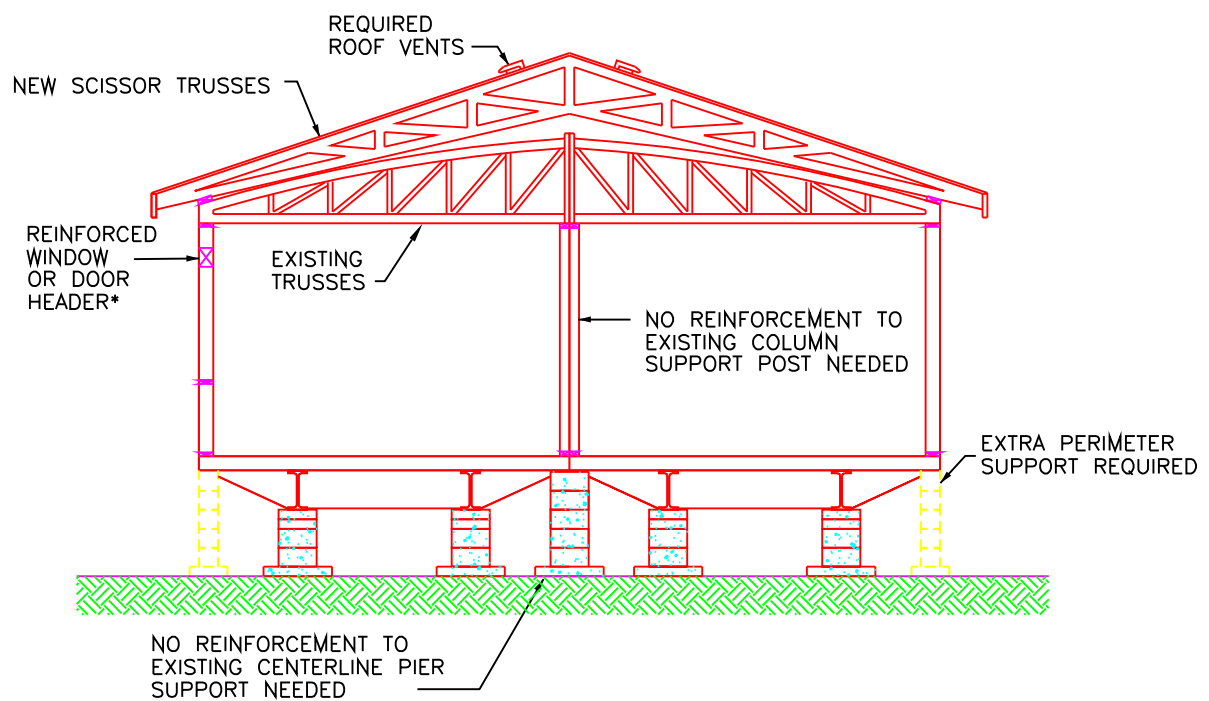


TYPICAL RAFTER ROOF ADDITION

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 7</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 7-6.3A</p>

\*NOTE: A CONTINUOUS HEADER CAN BE PLACED OVER EXISTING SIDEWALL AND/OR ROOF, RATHER THAN REINFORCING EACH INDIVIDUAL WINDOW AND DOOR SIDEWALL HEADER.

NOTE: ALL PLUMBING AND MECHANICAL VENTS SHALL BE EXTENDED THROUGH NEW ROOF ADDITION.

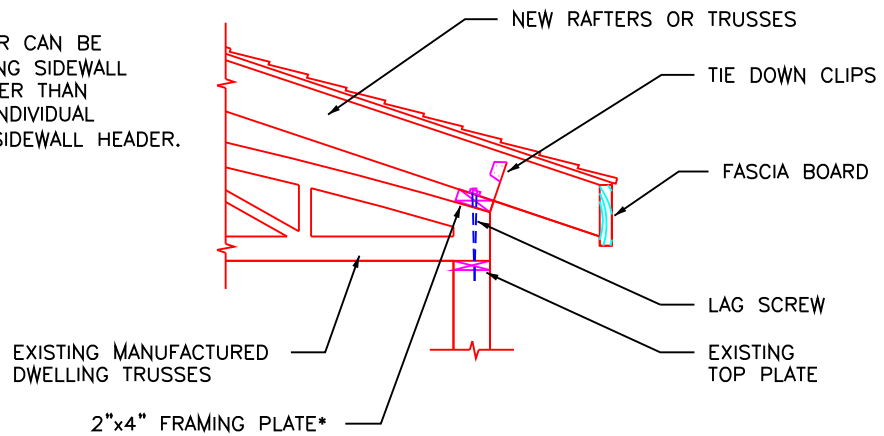


TYPICAL SCISSOR TRUSS ROOF ADDITION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 7
		FIGURE 7-6.3B



\*NOTE:  
 A CONTINUOUS HEADER CAN BE  
 PLACED OVER EXISTING SIDEWALL  
 AND/OR ROOF, RATHER THAN  
 REINFORCING EACH INDIVIDUAL  
 WINDOW AND DOOR SIDEWALL HEADER.



TYPICAL ROOF ADDITION TIE DOWN

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 7
REV. 12/01/01 RHW		FIGURE 7-6.3C

## CHAPTER EIGHT ACCESSORY BUILDINGS AND STRUCTURES

- 8-1 General
- 8-2 Awnings and Carports
- 8-3 Cabanas
- 8-4 Garages
- 8-5 Ramadas
- 8-6 Basements

### 8-1 General.

**8-1.1 Accessory Buildings and Structures.** This chapter of the code is intended to supplement the structural requirements of **Oregon One and Two Family Dwelling Specialty Code**, but is not intended to take its place.

(a) Wherever the requirements of this code differ from the **Oregon One and Two Family Dwelling Specialty Code**, this code shall apply;

(b) Alternate materials used in the construction of accessory buildings or structures permitted in the **Oregon One and Two Family Dwelling Specialty Code**, but not mentioned in this code may be permitted if acceptable to the authority having jurisdiction;

(c) Alterations made to a manufactured dwelling to accommodate an accessory building or structure shall conform with Chapter 7 of this code;

(d) The addition of an accessory building or structure shall not eliminate required windows, doors, or ventilation in a manufactured dwelling.

### 8-2 Awnings and Carports.

**8-2.1 General.** Carports and awnings shall be constructed as accessory structures to a manufactured dwelling located on the same lot according to this section.

(a) Awnings and carports shall be designed for the site specific vertical and horizontal loads according to the **Oregon One and Two Family Dwelling Specialty Code**;

(b) Awnings and carports shall be located on a lot according to the restrictions of Chapter 9 of this code;

(c) Awnings and carports shall not restrict the required egress openings in a manufactured dwelling;

(d) Awnings and carports shall not restrict the required egress path from a manufactured dwelling;

(e) Manufactured dwelling windows and doors may open directly into a space occupied by a permanent or rigid awning or carport;

(f) Awnings and carports may be built as prefabricated or site built according to this section of the code;

(g) Notwithstanding any other code, awnings may be used as carports;

(h) Notwithstanding any other code, exit doors and egress windows may open into the area covered by an awning or carport;

**8-2.2 Enclosures.** Awnings and carports enclosures shall comply with this section.

(a) Awnings and carports may only be enclosed on a maximum of two sides including the side adjoining the manufactured dwelling;

(b) Awnings and carports shall have two sides open to provide free flowing ventilation but may be enclosed with insect screening or other materials allowing the free passage of air;

(c) Manufactured dwelling windows and doors may open directly into a space occupied by a permanent or rigid awning or carport; and

(d) If an awning or carport is enclosed on more than 2 sides, it shall meet the requirements of an attached garage or a cabana according to this chapter.

### 8-2.3 Site Built Awnings and Carports.

Site built awnings and carports shall be constructed, anchored, and supported according to the requirements of this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code** for patio covers.

(a) Site built awnings and carports shall be self supported, free standing structures;

**(b)** Site built awnings and carports shall not be supported by or bear any weight on a manufactured dwelling;

**(c)** Site built awnings and carports may be attached to a manufactured dwelling only with flashing, roofing materials, or other sealing materials to provide a weather seal; and

**(d)** Site built awnings and carports shall be constructed according to plans approved by the authority having jurisdiction and this code.

**8-2.4.1 Prefabricated Awnings and Carports.** Prefabricated awning and carports shall be constructed, anchored, and supported according to the requirements of this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code** for patio covers.

**(a)** Prefabricated awnings and carports may be self supporting, free standing structures or may be supported in part by the manufactured dwelling;

**(b)** Prefabricated awnings and carports supported in part by a manufactured dwelling shall be attached according to this code;

**(c)** Prefabricated awnings and carports shall be constructed according to plans approved by the authority having jurisdiction and this code. Where the prefabricated awning or carport is a listed and labeled product, the manufacturer's installation instructions may be accepted.

**8-2.4.2 Wall Support.** Prefabricated awnings and carports, when supported by the manufactured dwelling exterior wall shall be attached according to this section.

**(a)** Prefabricated awnings and carports roofs shall be supported by a horizontal rail attached with a minimum ¼-inch (6 mm) lag screw or equal having a minimum 1-1/2-inch (3.75 cm) penetration into each exterior wall stud in the area of attachment;

**(b)** Prefabricated awnings and carport roofs shall be supported by the horizontal rail and attached according to the

approved plans or approved manufacturer's installation instructions; and

**(c)** Prefabricated awnings and carports shall not be supported by or secured to the top plate of the manufactured dwelling's exterior wall.

**8-2.4.3 Roof Support.** Prefabricated awnings and carports, when supported by the manufactured dwelling roof rafter, truss, fascia, or eave shall be attached according to this section.

**(a)** Prefabricated awnings and carports shall only be attached to a manufactured dwelling roof when specifically permitted by the engineered DAPIA approved plans;

**(b)** Prefabricated awnings and carports shall only be attached to a manufactured dwelling roof when the engineered DAPIA approved plans demonstrate the manufactured dwelling roof was engineered and constructed to carry the additional live loads, dead loads, and uplift loads imposed by an attached awning or carport;

**(c)** Prefabricated awnings and carports shall only be attached to a manufactured dwelling roof according to the approved details provided in the engineered DAPIA approved plans; and

**(d)** DAPIA approved plans shall be made available to the authority having jurisdiction prior to attaching any awning or carport to a manufactured dwelling roof rafter, truss, eave or fascia.

**8-2.4.4 Foundation Support.** Prefabricated awnings and carports shall be supported and anchored according to this section.

**(a)** Manufactured dwellings supporting prefabricated awnings and carports on the roof or exterior wall shall have extra perimeter foundation support in that area consisting of one-half spaced perimeter blocking unless the home is supported on and attached to a foundation wall or basement wall; and

**(b)** The free standing, self supporting portion of a prefabricated awning and

carport shall be supported and anchored to the ground, deck, or slab according to the approved plans or the manufacturer's installation instructions.

### **8-3 Cabanas.**

**8-3.1 Specifications.** Cabanas shall be constructed as accessory buildings for the purpose of increasing the gross floor area of a manufactured dwelling when located on the same lot. Cabanas shall be constructed according to this section:

(a) Site built cabanas shall be designed for the site specific vertical and horizontal loads according to the **Oregon One and Two Family Dwelling Specialty Code**;

(b) Cabanas shall be located on a lot according to the restrictions of Chapter 9 of this code;

(c) Cabanas shall be designed and constructed as freestanding, self supporting structures, supported and anchored according the **Oregon One and Two Family Dwelling Specialty Code** for single family dwellings;

(d) Cabanas shall not be supported by or transfer any vertical or horizontal loads to a manufactured dwelling;

(e) Cabanas shall be constructed according to the plans approved by the authority having jurisdiction;

(f) Cabanas may be site built or prefabricated according to this section of the code;

(g) Manufactured dwellings may be used as cabanas to other manufactured dwellings if not constructed to create a duplex;

(h) Alterations to a manufactured dwelling resulting from a cabana addition shall comply with Chapter 7 of this code.

**8-3.2 Attachments.** Cabanas shall be attached to manufactured dwellings according to the following:

(a) When a manufactured dwelling is supported only on piers the, cabana shall be attached to a manufactured dwelling only with flashing, roofing material, or other sealing materials to provide a weather seal; or

(b) When a manufactured dwelling and cabana are both supported and secured to a foundation wall or basement wall, the cabana may be permanently attached to the manufactured dwelling according to the requirements in Chapter 3 for marriage line connections.

**8-3.3 Access and Egress.** Manufactured dwelling access and egress shall be maintained when a cabana is attached to a manufactured dwelling according to the following:

(a) Cabanas shall not restrict the required path of egress on the exterior of a manufactured dwelling;

(b) Cabanas shall not restrict access to an appliance or utility connections;

(c) Cabanas shall not eliminate the path of egress within a manufactured dwelling;

(d) When a cabana is expanding the area of a bedroom an egress window or door shall be maintained;

(e) When a cabana encloses a required exit door, an additional exit door shall be installed in the cabana to provide a safe exit out of both structures;

(f) There shall not be any locks on interior doors within the egress path of the manufactured dwelling;

(g) Alternate egress windows or exit doors shall be subject to approval by the authority having jurisdiction; and

(h) One of the manufactured dwelling exit doors must open directly to the outside without passing through a cabana, garage, or any other accessory building.

**8-3.4 Site Built Cabanas.** Site built cabanas shall be constructed, attached, anchored, and supported according to plans approved by the authority having jurisdiction based on the requirements of the **Oregon One and Two Family Dwelling Specialty Code** for a single-family dwelling.

**8-3.5 Prefabricated Cabanas.** Cabanas constructed off site shall comply with the rules for construction of prefabricated structures as provided in **OAR 918-674-**

**0005** through **0155** and bear an Oregon Insignia of Compliance.

**(a)** Prefabricated cabanas shall be constructed and attached according to Division approved plans based on the requirements of the **Oregon One and Two Family Dwelling Specialty Code** for a single-family dwellings; and

**(b)** Prefabricated cabanas shall be supported and anchored according to plans approved by the authority having jurisdiction based on the requirements of the **Oregon One and Two Family Dwelling Specialty Code** for a single-family dwelling.

#### **8-4 Garages.**

**8-4.1 Specifications.** An attached garage shall be constructed as an accessory building to a manufactured dwelling located on the same lot. Garages shall be constructed according to this section:

**(a)** Garages shall be designed for the site specific vertical and horizontal loads according to the **Oregon One and Two Family Dwelling Specialty Code**;

**(b)** Garages shall be located on a lot according to the restrictions of Chapter 9 of this code;

**(c)** Garages shall be designed and constructed as freestanding, self supporting structures supported and anchored according the **Oregon One and Two Family Dwelling Specialty Code**;

**(d)** Garages shall not be supported by or transfer any vertical or horizontal loads to a manufactured dwelling or cabana;

**(e)** Garages shall be constructed according to the plans approved by the authority having jurisdiction; and

**(f)** Alterations to a manufactured dwelling resulting from the addition of an attached garage shall comply with Chapter 7 of this code.

**8-4.2 Attachments.** Garages shall be attached to a manufactured dwelling according to the following:

**(a)** When a manufactured dwelling is supported only on piers, the garage shall be attached to the manufactured dwelling

only with flashing, roofing material, or other sealing materials to provide a weather seal; or

**(b)** When a manufactured dwelling is supported and secured to a foundation wall or basement wall, the garage may be permanently attached to the manufactured dwelling according to the requirements in Chapter 3 for marriage line connections.

**8-4.3 Access and Egress.** Manufactured dwelling access and egress shall be maintained when a garage is attached to a manufactured dwelling according to this section:

**(a)** Garages shall not restrict the required path of egress on the exterior of a manufactured dwelling;

**(b)** Garages shall not restrict appliance or utility accesses;

**(c)** Garages shall not eliminate the path of egress within a manufactured dwelling;

**(d)** Garages shall not be placed where the bedroom egress window is blocked unless there is a second egress window available or installed in the same bedroom to provide a safe exit out of the affected bedroom in an approved manner;

**(e)** When a garage encloses a required exit door, an additional exit door (not vehicle door) shall be installed in the garage to provide a safe exit out of both structures;

**(f)** No hinged exterior egress door shall be prevented from opening at least 90 degrees;

**(g)** Alternate egress windows or exit doors shall be subject to approval by the authority having jurisdiction; and

**(h)** One of the manufactured dwelling exit doors must open directly to the outside without passing through a garage, cabana, or any other accessory building.

**8-4.4 Separation.** Attached garages shall be separated from the manufactured dwelling or cabana according to the following requirements:

(a) A manufactured dwelling or cabana shall not have any opening from a sleeping area into a garage;

(b) A manufactured dwelling or cabana shall not have any windows opening into a garage;

(c) A manufactured dwelling or cabana door entering a garage shall have no glass and be constructed of one of the following:

1. A solid wood door not less than 1-3/8 inches (3.49 cm) in thickness;

2. A 20 minute or higher fire rated door; or

3. An insulated metal exterior door.

(d) A garage shall be completely separated from the manufactured dwelling or cabana (including the attic and crawl space areas) with 1/2 inch (38 mm) gypsum board or equivalent fire resistive construction on the garage side. Mud and tape is not required at the joints.

## **8-5 Ramadas.**

**8-5.1 Accessory.** A ramada shall be constructed as an accessory structure to a manufactured dwelling located on the same lot. Ramadas shall be constructed according to this section:

(a) A ramada shall be designed and constructed as a freestanding, self supporting structure meeting the requirements of this code and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**;

(b) A ramada shall be designed for the site specific vertical and horizontal loads according to the **Oregon One and Two Family Dwelling Specialty Code**;

(c) Ramadas shall not be supported by or transfer any vertical or horizontal loads to a manufactured dwelling or cabana;

(d) A ramada shall not be wholly enclosed on the sides or ends;

(e) A ramada may be extended past the manufactured dwelling to provide an awning or carport area under the same roof;

(f) Ramadas built over a cabana shall be subject to the same requirements as if the structure was a manufactured dwelling;

(g) Ramadas shall provide a minimum clearance of not less than 18 inches (46 cm) vertically above the highest portion of a manufactured dwelling or cabana roof;

(h) Ramadas shall provide a minimum clearance of not less than 6 inches (15 cm) horizontally on either side of a manufactured dwelling or cabana; and

(i) Ramadas shall not have any permanent cross bracing, architectural appurtenances, or structural ties that would obstruct the installation or removal of any manufactured dwelling or cabana.

**8-5.2 Access and Egress.** Manufactured dwelling access and egress shall be maintained when a ramada is constructed over a manufactured dwelling according to this section, and ramadas:

(a) Shall not restrict the required path of egress on the interior or exterior of a manufactured dwelling or cabana;

(b) Shall not restrict appliance or utility accesses;

(c) Shall not restrict a hinged exit door from opening at least 90 degrees; and

(d) Shall not block a bedroom egress window opening.

**8-5.3 Roof Construction.** Ramada roofs shall be constructed according to the following:

(a) Each ramada roof shall be ventilated with a minimum of one 28 square inch (181 square centimeter) vent located along the ridge of the ramada roof at 10 feet (3.05 meters) on center;

(b) Chimneys or flues from solid fuel burning appliances shall extend at least 3 feet (0.91 meters) above the ramada roof penetration and at least 2 feet (0.61 meters) above the highest elevation of the ramada roof within 10 feet horizontal (3.05 meters) of the chimney;

(c) Vents for fuel burning appliances shall extend through the ramada roof according to the listing of the appliance;

(d) Plumbing vents shall extend through the ramada roof a minimum of 6 inches (15 cm) above the flashing and shall not be located within 3 feet (0.91 meters) of

any motor driven air intake that opens into habitable rooms;

**(e)** Appliance vent extensions shall be made according to the appliance listing and manufacturer's installation instructions;

**(f)** Overhead electrical mastheads shall not be permitted on a manufactured dwelling or cabana located under a ramada;

**(g)** All plumbing vents, mechanical vents, chimneys, and flue pipes shall be flashed and extended through the dormer or gable roof addition with listed and compatible equipment or material; and

**(h)** Appliance vent extensions shall be made according to the appliance listing and manufacturer's installation instructions.

## **8-6 Basements.**

**8-6.1 Specifications.** Basements shall be constructed as an accessory building to a manufactured dwelling located on the same lot according to this section:

**(a)** Basements shall be designed for the appropriate vertical and horizontal loads required for the site on which it is located;

**(b)** Basements shall be designed to support the live and dead loads of the manufactured dwelling;

**(c)** Basements shall be constructed according to Chapter 3 and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**;

**(d)** Basements may use the transverse floor joists of a manufactured dwelling to partially resist the horizontal pressures against the basement wall below the sidewalls;

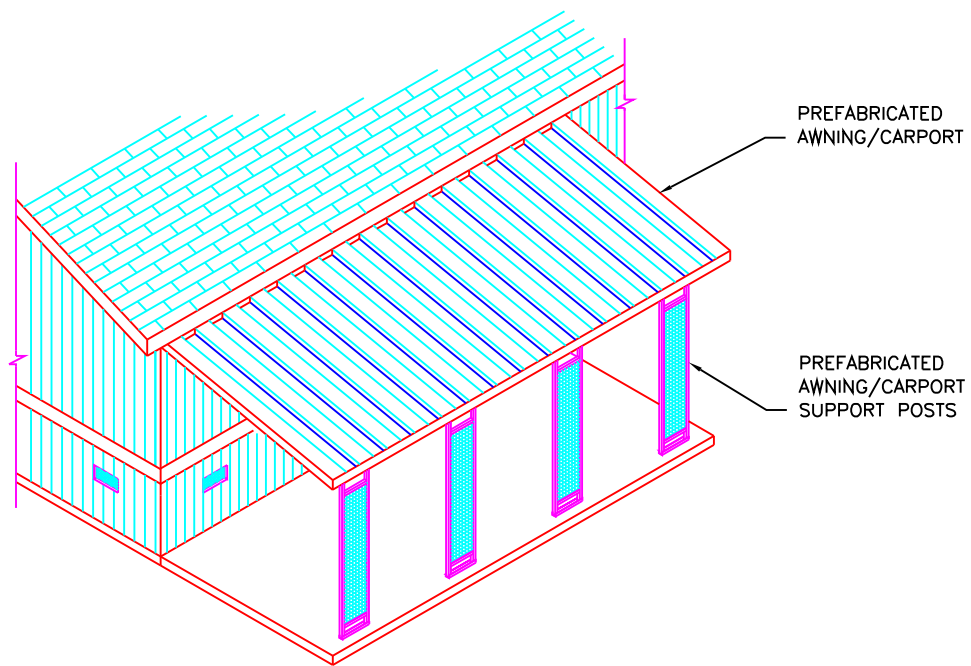
**(e)** Basements shall not use the longitudinal floor joists of a manufactured dwelling to resist any horizontal pressures against the basement walls below the endwalls;

**(f)** Basements shall be engineered by an Oregon licensed and registered engineer or architect;

**(g)** Basements shall be accessible from inside the manufactured dwelling or from the exterior;

**(h)** Basements shall have smoke alarms or detectors according to Chapter 9 of this code;

**(i)** Basements may include a garage, or storage area if the underside of the manufactured dwelling is protected with ½ inch (12.7 mm) gypsum board or equivalent fire resistive construction.



**NOTE:** AWNINGS AND CARPORTS SHALL BE ATTACHED TO SIDEWALL BELOW EAVES AND NOT CONNECTED TO ROOF TRUSSES, EAVES, OR FASCIA, UNLESS ENGINEERED TO SUPPORT THE ADDITIONAL LIVE AND DEAD LOADS IMPOSED.

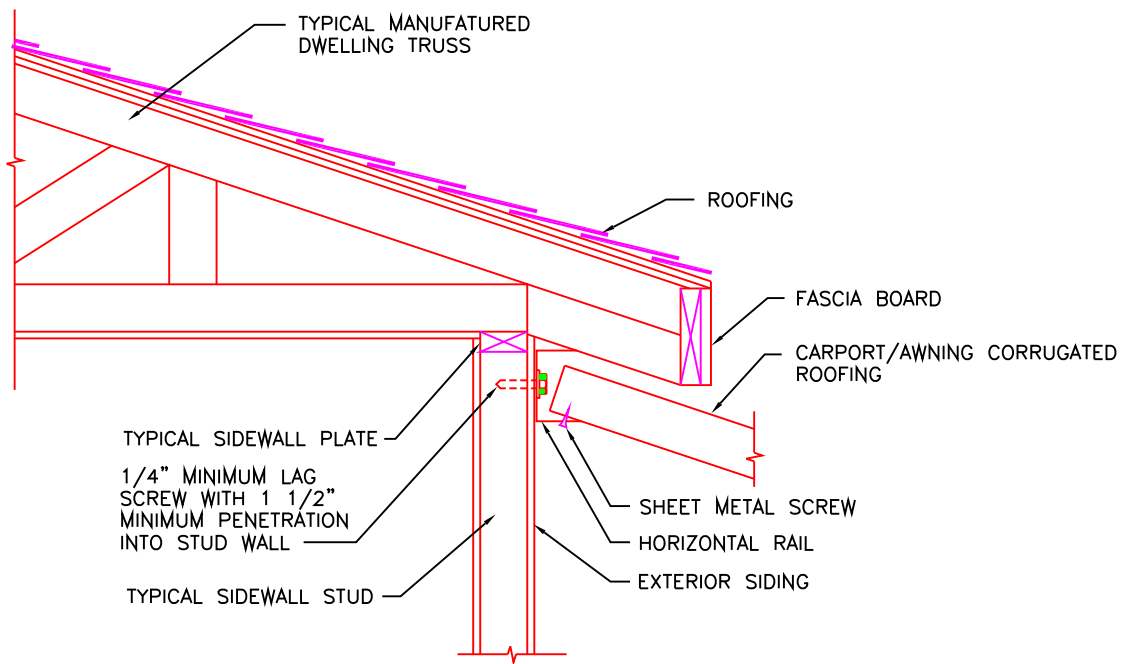
**NOTE:** PREFABRICATED AWNINGS MAY BE USED AS MANUFACTURED DWELLING CARPORTS.

**NOTE:** LISTED AND APPROVED PREFABRICATED AWNINGS AND CARPORTS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THE PRODUCT'S LISTING.

TYPICAL PREFABRICATED AWNING/CARPORT INSTALLATION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 8
REV. 12/01/01 RHW		FIGURE 8-2.4A



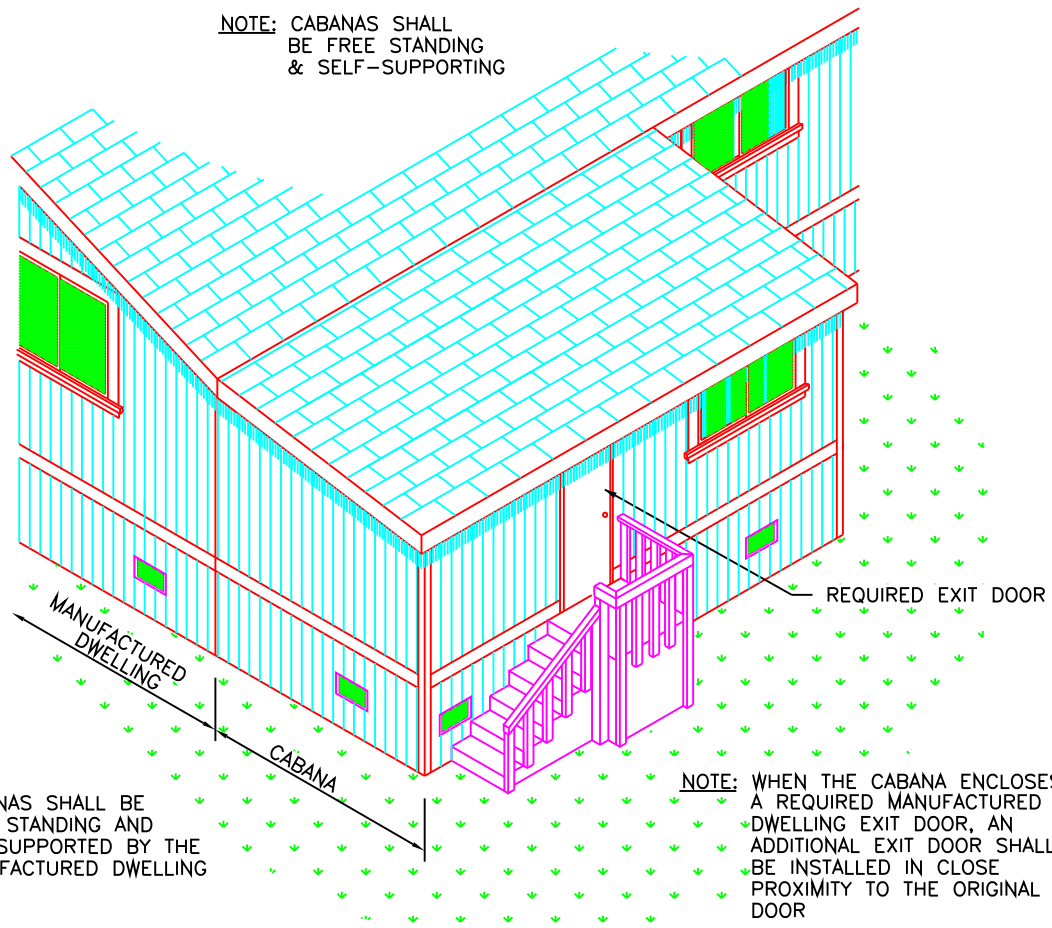


**NOTE:** STRUCTURAL CONNECTIONS FOR LISTED AND APPROVED PREFABRICATED AWNINGS SHALL BE MADE ACCORDING TO THE MANUFACTURERS INSTALLATION INSTRUCTIONS AND THE PRODUCTS LISTING.

TYPICAL PREFABRICATED AWNING/CARPORT WALL SUPPORT DETAIL

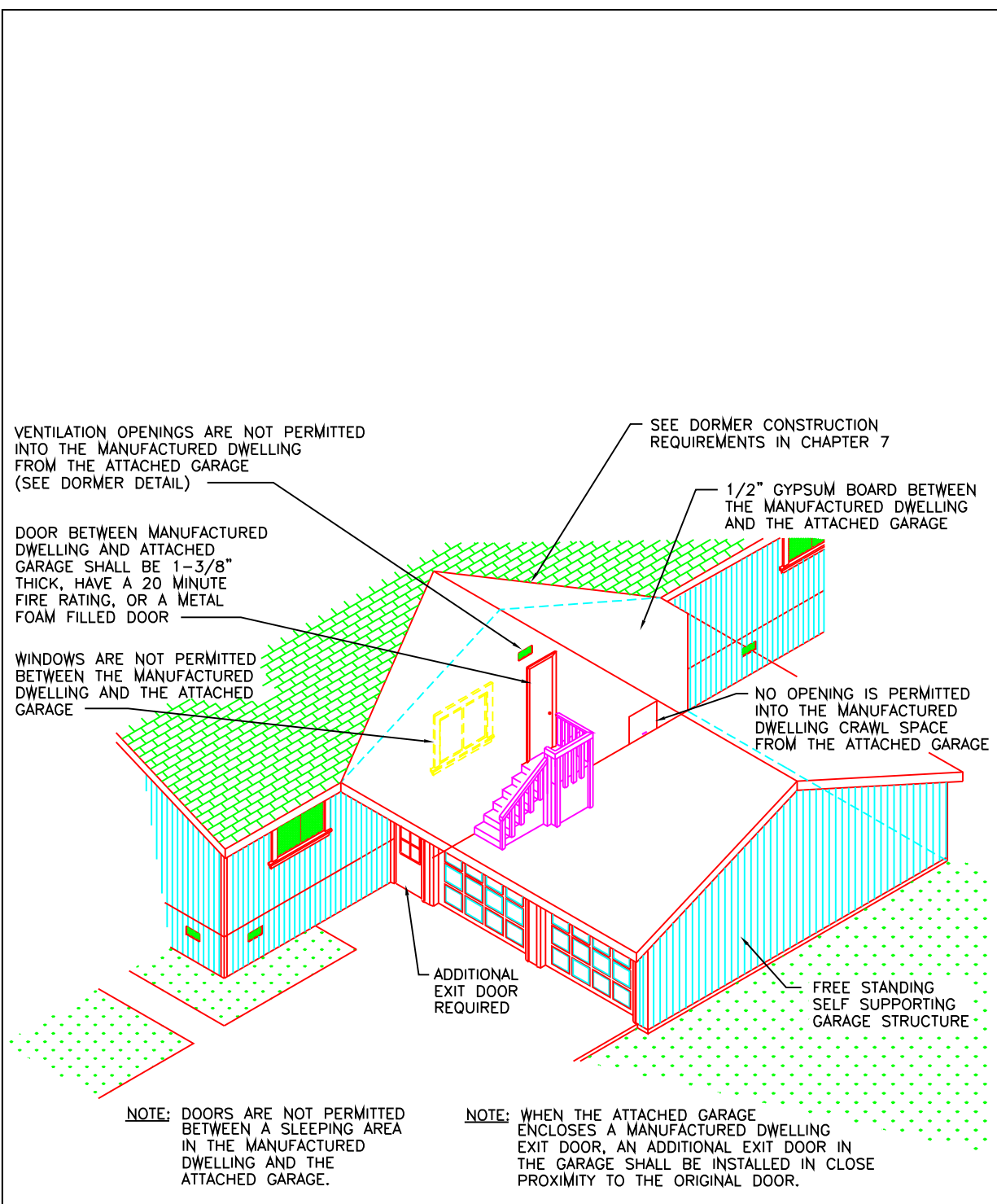
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 8
REV. 12/01/01 RHW		FIGURE 8-2.4B

NOTE: CABANAS SHALL BE FREE STANDING & SELF-SUPPORTING

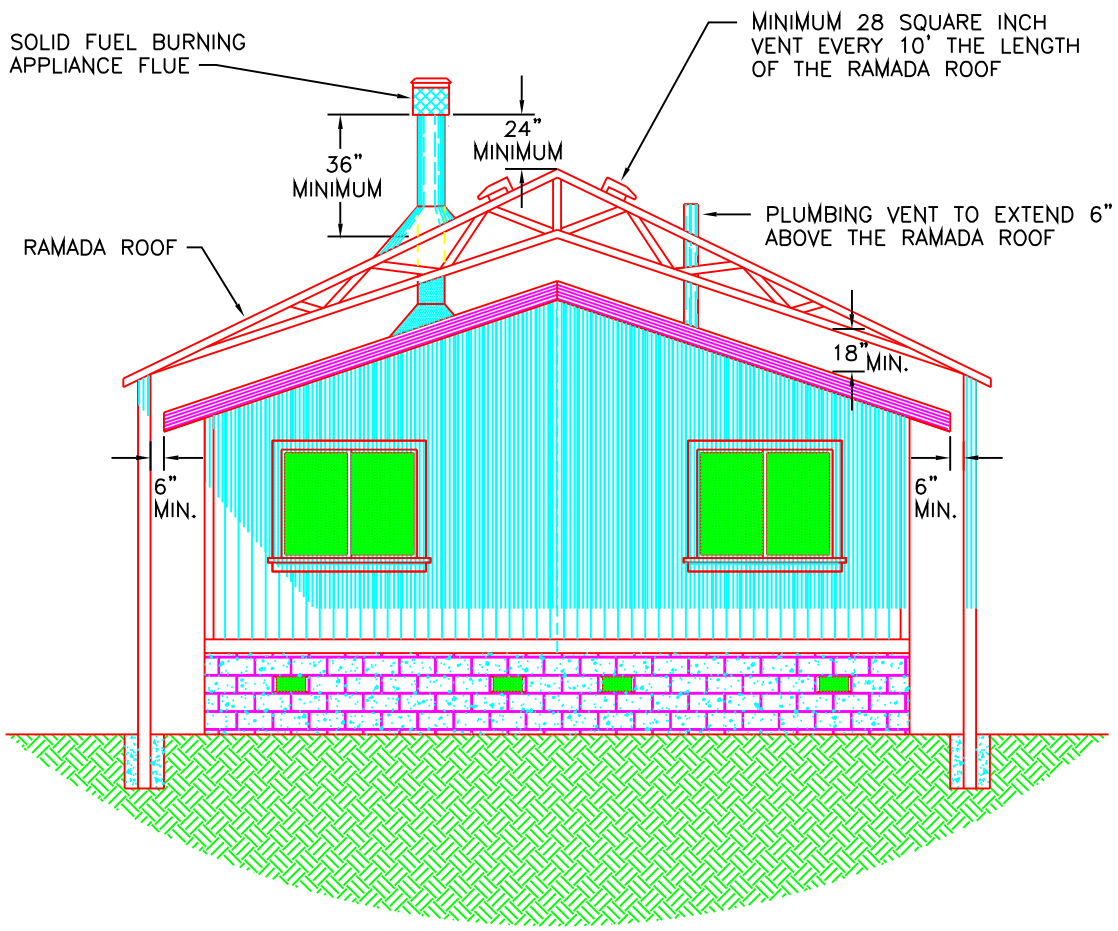


TYPICAL CABANA INSTALLATION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 8
		FIGURE 8-3.1



TYPICAL ATTACHED GARAGE		
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 8
REV. 12/01/01 RHW		FIGURE 8-4.1



NOTE: MECHANICAL AND PLUMBING VENTS SHALL BE EXTENDED FROM THE MANUFACTURED DWELLING THROUGH THE RAMADA ROOF.

NOTE: RAMADAS SHALL BE FREE STANDING & SELF-SUPPORTING

TYPICAL RAMADA INSTALLATION

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 8
REV. 12/01/01 RHW		FIGURE 8-5.1

## CHAPTER NINE FIRE AND LIFE SAFETY

### 9-1 General

### 9-2 Fire Warning Equipment

### 9-3 Extinguishing Systems

### 9-4 Emergency Egress Path

### 9-5 Fire Separation Inside Parks

### 9-6 Fire Separation Outside Parks

### 9-7 Fire Separation Requirements

### 9-8 Wildfire Hazard Mitigation

#### 9-1 General

**9-1.1 Application.** Each manufactured dwelling, accessory building, and accessory structure shall be sited and installed to the minimum fire, and life safety requirements of this chapter. This chapter applies to manufactured dwelling installers, contractors, homeowners, and park owners siting or installing manufactured dwellings, accessory buildings, or accessory structures.

#### 9-2 Fire Warning Equipment

**9-2.1 Initial Sale of New Homes.** At the time of initial sale and installation, a new manufactured dwelling shall have operating smoke alarms installed complying with the federal **Manufactured Home Construction and Safety Standards, 24 CFR 3280.208.**

#### 9-2.2 After Initial Sale of New Home.

After the initial sale or installation, a manufactured dwelling shall have approved operating smoke alarms installed according to this chapter if required by the following:

(a) When a manufactured dwelling is relocated to or within a manufactured dwelling park, mobile home park, or combination park, as required by **ORS 90.740(4)(d)**;

(b) When a manufactured dwelling is being altered or repaired to the degree that a permit is required;

(c) When a manufactured dwelling is being installed on a site as a secondary installation;

(d) When a manufactured dwelling is being sold or offered for sale, as required by **ORS 479.260(2)**;

(e) When a manufactured dwelling is being rented, leased, or offered for rent or lease, as required by **ORS 479.270**;

(f) When a manufactured dwelling is being re-manufactured or refurbished;

(g) When a visual inspection is being performed on a manufactured dwelling by the Division; and

(h) Prior to an Oregon insignia of compliance being issued by the Division.

**9-2.3 Standard.** Smoke alarms installed in manufactured dwellings, basements, or cabanas shall be listed and labeled as conforming with the requirements of **UL 217** or **ANSI/UL 268**. Visible signaling appliances installed in manufactured dwellings, basements, or cabanas shall be listed and labeled as conforming to the requirements of **ANSI/UL 1971**. Smoke alarms in manufactured dwellings, basements, or cabanas shall be installed in accordance with the manufacturer's listing, the manufacturer's installation instructions, and this chapter. As an alternate to the manufacturer's listing and installation instructions smoke alarms may be installed in accordance with **NFPA 72**.

**9-2.4 Smoke Alarm Locations.** Smoke alarms shall be located in areas where the ambient conditions are within the limits specified by the manufacturer of the device and according to the following:

(a) A single station smoke alarm shall be installed between the kitchen, living, or dining areas and each bedroom;

(b) A single station smoke alarm shall be installed outside each sleeping area;

(c) A single station smoke alarm shall be installed inside each bedroom;

(d) Smoke alarms shall be installed according to the listing;

(e) A multiple station smoke alarm shall be installed on each additional level (basement, loft, or second story) of a manufactured dwelling;

(f) A smoke alarm shall be located on the basement ceiling near the entry to a stairway leading up from a basement into a manufactured dwelling;

(g) A multiple station smoke alarm shall be installed in a manufactured dwelling basement and interconnected with at least one smoke alarm inside the manufactured dwelling;

(h) Smoke alarms shall not be installed within 3 feet (91 cm) horizontally from the supply or return air grill of a forced air heating or cooling system.

**9-2.5 Power Supply.** Smoke alarms shall receive their primary power from one of the following sources:

(a) An alternating current power source, along with a secondary battery source capable of operating the device when the primary power is interrupted; or

(b) Battery operated.

**9-2.6 Power Source.** Smoke alarms that receive primary power from a 120-volt electrical circuit shall be mounted on an electrical outlet box and connected by a permanent wiring method in accordance with **NFPA 70-99**. There shall be no switches in the circuit between smoke alarms and the over current protective device of that circuit. Smoke alarms shall not receive their power from a circuit that is protected by a ground-fault circuit-interrupter.

**9-2.7 Testing and Maintenance.** Smoke alarms shall be functionally tested by the installer in accordance with the manufacturer's instructions to assure proper operation.

### **9-3 Extinguishing Systems**

**9-3.1 When Needed.** Fire sprinkler systems are not required by this code but, if installed in a manufactured dwelling, shall be installed according to this chapter. The authority having jurisdiction may accept the installation of approved fire sprinkler systems as an alternative to the local fire flow requirements. The authority having jurisdiction shall not

require a manufactured dwelling to have any greater fire flow requirements than those required for all other single family detached homes in the same underlying zone.

**9-3.2 Standard.** If fire sprinkler systems are added to a manufactured dwelling, either at the place of manufacture or as an on site retrofit, the system shall be designed, installed, and tested according to **NFPA 13D-99**. Where the authority having jurisdiction approves an alternate system, it shall be designed, installed, and tested according to **NFPA 13-99**.

**9-3.3.1 Factory Installed.** Manufacturers installing fire sprinkler systems shall comply with the following minimum requirements:

(a) The fire sprinkler system shall be designed to operate at water pressures equivalent to that required to supply the potable water system within the manufactured dwelling;

(b) On multiple section manufactured dwelling, the fire sprinkler system shall be equipped with couplings at the marriage line(s).

(c) Upon completion of the installation, the manufacturer shall successfully complete a test of the fire sprinkler system at the plant according to **NFPA 13-D-99** and the DAPIA approved quality assurance manual; and

(d) Upon completion of the test, the manufacturer shall fill out all applicable information on the **NFPA Residential Fire Sprinkler System Certification and Information** form (**Figure 3-10.3 of NFPA 501-01**) or equivalent and permanently post the certificate inside the manufactured dwelling in a location where it will not likely be removed.

**9-3.3.2 Factory Information.** Home manufacturers installing fire sprinkler systems shall provide specific DAPIA approved instructions indicating the following:

(a) The minimum operating water pressure in pounds per square inch (psi)

and the minimum operating flow rate in gallons per minute (gpm) required to supply the system;

**(b)** Detailed instructions on all field connections required to make the system operable;

**(c)** Detailed instructions on how to test the fire sprinkler system after the manufactured dwelling is sited and all connections have been made; and

**(d)** Detailed instruction on the proper operation, maintenance, and periodic testing of the fire sprinkler system.

**9-3.4 Site Responsibilities.** When a manufactured dwelling is sited that contains a factory installed fire sprinkler system, the person making the fire sprinkler system connections shall be responsible for the following:

**(a)** Making all connections to the system according to the manufacturer's instructions;

**(b)** Having all connections inspected and the system tested for leaks by the person making the connection;

**(c)** Filling out the remaining portion of the **NFPA Residential Fire Sprinkler System Certification and Information** form (**Figure 3-10.3** of **NFPA 501-01**) or equivalent permanently posted inside the manufactured dwelling; and

**(d)** Leaving the manufacturer's operating, maintenance, and testing instructions for the homeowner.

**9-3.5 Field Installed.** When a contractor installs a fire sprinkler system in a manufactured dwelling on site, the contractor shall install it according to the following:

**(a)** The contractor shall obtain a permit from the authority having jurisdiction for the installation;

**(b)** The fire sprinkler system shall be designed to operate on available water pressure and supplies;

**(c)** On multiple section manufactured dwelling, the fire sprinkler system shall have couplings installed at the marriage line(s) to enable future relocations;

**(d)** Upon completion of the installation, the contractor shall successfully complete a test of the fire sprinkler system according to **NFPA 13-D-99**;

**(e)** The contractor shall have the installation inspected and the test witnessed by the authority having jurisdiction;

**(f)** Upon completion of the test, the contractor shall leave detailed instructions for the consumer on the proper operation, maintenance, and periodic testing of the fire sprinkler system; and

**(g)** The contractor shall fill out an **NFPA Residential Fire Sprinkler System Certification and Information** form (**Figure 3-10.3** of **NFPA 501-01**) or equivalent and permanently post the certificate inside the manufactured dwelling in a location where it will not likely be removed.

## **9-4 Emergency Egress Path**

**9-4.1 When Required.** Each manufactured dwelling installed in a park, subdivision, on private or public lands, used for residential or non-residential purposes, shall have a clear path of egress from each exit door and each bedroom egress window.

**9-4.2 Size.** Each path of egress shall be a minimum of 3 feet (0.91 meters) in width and exit without obstruction to a street, alley, yard, or area that can provide a safe sanctuary during an evacuation. Gates and doors in the path of egress may be locked if they can be readily opened from the direction of egress without the use of a key, device, or special effort or knowledge.

**9-4.3 Obstructions.** All egress doors and windows shall be readily openable from the side from which egress is to be made, without the use of a key or special effort or knowledge. No dealer, installer, or contractor shall alter the manufacturer's egress provisions except where specifically permitted in this code. Bars, grill, screens, or other obstructions placed over egress doors or windows shall be

releasable or removable from the inside without the use of a key or tool.

## **9-5 Fire Separation in Parks**

**9-5.1 Setbacks and Clearances.** This section establishes the minimum setbacks and clearances for all structures within a manufactured dwelling park, mobile home park, or combination park (see **Table 9-A**). No municipality shall establish more or less restrictive setbacks or clearances within manufactured dwelling parks, mobile home parks, or combination parks except as specifically permitted in Section 9-5.3 of this chapter. The local planning department may have certain other restrictions as permitted in Section 10-2 of this code.

**9-5.2 Minimum Fire Separation.** Each structure within a manufactured dwelling park, mobile home park, or combination park shall maintain the minimum distances to other structures specified in **Table 9-A** of this Chapter. See **Figure 9-5.1A**)

**9-5.3 Alternate Setbacks and Clearances.** The minimum clearances and setbacks specified in **Table 9-A** of this Chapter may be further reduced according to the following:

**(a)** Accessory buildings under 120 square feet ( square meters) may be built integral to a carport or awning;

**(b)** Accessory buildings under 120 square feet ( square meters) may have a zero clearance to the manufactured dwelling or cabana served if a one-hour fire separation wall is provided between the accessory building and the manufactured dwelling;

**(c)** Porches, decks, steps, and landings may be built integral to a carport or awning;

**(d)** A double carport serving two manufactured dwellings shall have a minimum clearance of 3 feet (0.91 meters) from each manufactured dwelling or cabana served (see **Figure 9-5.3A**) or a 0 foot clearance to each manufactured dwelling or cabana served if a one-hour

fire separation wall is provided through the center of the double carport (see **Figure 9-5.3B**);

**(e)** A double garage serving two manufactured dwellings shall have a minimum clearance of 6 feet (1.83 meters) from each manufactured dwelling or cabana served (see **Figure 9-5.3C**) or a 3 foot (0.91 meters) clearance to each manufactured dwelling or cabana served if a one-hour fire separation wall is provided through the center of the double garage (see **Figure 9-5.3D**);

**(f)** A double garage serving two manufactured dwellings may have a zero clearance to each manufactured dwelling or cabana served if a one-hour fire separation wall is provided between the garage and each manufactured dwelling or cabana served (see **Figure 9-5.3E**) or if a one-hour fire separation wall is provided through the center of the double garage and a fire separation wall is provided between the garage and manufactured dwelling or cabana according to the minimum requirements set forth in Chapter 8 (see **Figure 9-5.3F**);

**(g)** A garage serving only one manufactured dwelling may have a zero clearance to the manufactured dwelling or cabana if a fire separation wall is provided between the garage and the manufactured dwelling or cabana according to the minimum requirements set forth in Chapter 8 (see **Figure 8-4.1**);

**(h)** No more than two manufactured dwellings shall be adjoined through a common garage or carport; and

**(i)** Manufactured dwellings shall not be adjoined through a common cabana, storage shed, barn, awning, ramada, or any other structure not specifically permitted in this code.

**(j)** Two or more manufactured dwellings may be joined together to enlarge the total gross floor area of a manufactured dwelling if it remains a single family dwelling and is attached according to Chapter 7 of this code;

**(k)** The authority having jurisdiction may approve the further reduction of required



setbacks and clearances when fire resistive construction is provided between the structures according to the prescriptive requirements in the **Oregon One and Two Family Dwelling Specialty Code**. This does not include the clearances between manufactured dwellings on adjacent lots or between manufactured dwellings and property lines.

**9-5.4 Measuring Setbacks and Clearances.** The setbacks and clearances required in this chapter shall be measured to the exterior walls of the structures and do not include eave overhangs except for awnings and carports.

#### **9-6 Fire Separation Outside Parks.**

**9-6.1 Setbacks and Clearances.** This section establishes the minimum setbacks and clearances for manufactured dwellings and associated accessory structures and accessory buildings outside a manufactured dwelling park, mobile home park, or combination park. A municipality may establish their own setbacks and clearances or may adopt this section by reference for manufactured dwellings located outside manufactured dwelling parks, mobile home parks, or combination parks.

**9-6.2 Minimum Fire Separation.** Where a municipality does not have ordinances governing the setbacks and clearances of structures within a subdivision or on private or public land outside a manufactured dwelling park, mobile home park, or combination park, the minimum distances identified in **Table 9-B** of this Chapter shall be maintained:

**9-6.3 Alternate Setbacks and Clearances.** The minimum clearances and setbacks specified in **Table 9-B** of this Chapter may be further reduced according to the following:

**(a)** Accessory buildings under 120 square feet (11 square meters) may be built integral to a carport or awning;

**(b)** Accessory buildings under 120 square feet (11 square meters) may have a zero clearance to the manufactured dwelling or cabana served if a one-hour fire separation wall is provided between the accessory building and the manufactured dwelling;

**(c)** Porches, decks, steps, and landings may be built integral to a carport or awning;

**(d)** A double carport serving two manufactured dwellings shall have a minimum clearance of 3 feet (0.91 meters) from each manufactured dwelling or cabana served (**see Figure 9-5.3A**) or a 0 foot clearance to each manufactured dwelling or cabana served if a one-hour fire separation wall is provided through the center of the double carport (**see Figure 9-5.3B**);

**(e)** A double garage serving two manufactured dwellings shall have a minimum clearance of 6 feet (1.83 meters) from each manufactured dwelling or cabana served (**see Figure 9-5.3C**) or a 3 foot (0.91 meters) clearance to each manufactured dwelling or cabana served if a one-hour fire separation wall is provided through the center of the double garage (**see Figure 9-5.3D**);

**(f)** A double garage serving two manufactured dwellings may have a zero clearance to each manufactured dwelling or cabana served if a one-hour fire separation wall is provided between the garage and each manufactured dwelling or cabana served (**see Figure 9-5.3E**) or if a one-hour fire separation wall is provided through the center of the double garage and a fire separation wall is provided between the garage and manufactured dwelling or cabana according to the minimum requirements set forth in Chapter 8 (**see Figure 9-5.3F**);

**(g)** A garages serving only one manufactured dwelling may have a zero clearance to the manufactured dwelling or cabana if a fire separation wall is provided between the garage and the manufactured dwelling or cabana

according to the minimum requirements set forth in Chapter 8 (see **Figure 8-4.1**);

**(h)** A double carport serving two manufactured dwellings may have a zero clearance to each manufactured dwelling;

**(i)** No more than two manufactured dwellings shall be adjoined through a common garage, carport, or awning; and

**(j)** Manufactured dwellings shall not be adjoined through a common cabana, storage shed, barn, ramada, or any other structure not specifically permitted in this code.

**(k)** Two manufactured dwellings may be adjoined with a zero clearance if a one hour fire separation wall is provided between each dwelling according to the **Oregon One and Two Family Dwelling Specialty Code** and the dwellings meet the requirements of Chapter 2 of this code;

**(l)** Up to 6 manufactured dwellings may be adjoined with a zero clearance if a two-hour fire separation wall is provided between each dwelling according to the **Oregon Structural Specialty Code** and the dwellings meet the requirements of Chapter 2 (see **Figure 9-7.1**);

**(m)** Two or more manufactured dwellings may be joined together to enlarge the total gross floor area of a manufactured dwelling if it remains a single family dwelling and is attached according to Chapter 7 of this code;

**(n)** Manufactured dwellings may be installed on a zero lot line if an easement is filed with the authority having jurisdiction that assures a 10 foot (3.05 meters) separation will be maintained between the adjacent manufactured dwelling or building and the manufactured dwelling placed on the lot line;

**(o)** The authority having jurisdiction may approve the further reduction of required setbacks and clearances when fire resistive construction is provided between the structures according to the prescriptive requirements in the **Oregon One and Two Family Dwelling Specialty Code**.

## 9-7 Fire Separation Requirements

**9-7.1 When Required.** Fire separation walls substantially slow the spread of fire from one structure to another to provide time for evacuation and response by the local fire department. Fire separation walls are specifically required between certain manufactured dwellings and accessory buildings, when a reduced clearance or zero clearance is permitted (see **Figure 9-7.1**).

**9-7.2 Fire Separation Wall.** Fire separation walls shall be built according to the **Oregon One and Two Family Dwelling Specialty Code** or the **Oregon Structural Specialty Code**. Except where otherwise specified in this code, structures shall be separated from each other with fire resistive wall assemblies tested in accordance with **ASTM E 119**. Fire-resistant-rated wall assemblies shall extend from the ground to the underside of the roof sheathing and extend the full length of the common walls.

**9-7.3 Parapets.** Parapets shall be built according to this code or, where not specific, to the **Oregon Structural Specialty Code**. Parapets shall only be required when three or more manufactured dwellings are joined together and the roof surfaces of two or more manufactured dwellings or adjoining structures are at a different elevation. Parapets shall be constructed of a wall assembly of not less than a one-hour fire resistive rating tested in accordance with **ASTM E 119**. Fire-resistant-rated parapets shall extend the full length of the common wall and roof extension and shall not be less than 30 inches (762 mm) above the roof surface. Where the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

## 9-8 Wildfire Hazard Mitigation

**9-8.1 Purpose.** This section establishes minimum standards for manufactured dwellings, accessory buildings, and accessory structures located in or

adjacent to areas subject to wildfires for the purpose of reducing the hazards presented by such fires.

**9-8.2 Where Required.** The provisions of this section shall apply to all dwellings required to be protected against wildfire by a municipality that has adopted wildfire zoning regulations.

**9-8.3 Materials.** When located in a wildfire hazard zone, roofing material on manufactured dwellings, accessory building, and accessory structures shall be made of metal, slate, concrete shingles, or tile. Roofing may also be made of built up roofing or asphalt shingles if rated for flammability as a Class C roof covering according to **UL Standard 790**. Untreated wood shingles or shake roofs shall not be permitted in a wildfire hazard zone.

**TABLE 9-A**  
**MINIMUM FIRE SEPARATION INSIDE PARKS**

<b>MINIMUM SETBACKS AND CLEARANCES</b>	<b>MANUFACTURED DWELLINGS</b>	<b>ACCESSORY BUILDINGS</b>	<b>ACCESSORY STRUCTURES</b>	<b>GARAGES</b>	<b>CABANAS</b>
<b>Property Line<sup>(4)</sup></b>	5 feet <sup>(6)</sup>	5 feet	5 feet	5 feet	5 feet
<b>Public Street<sup>(4)</sup></b>	10 feet	10 feet	10 feet	10 feet	10 feet
<b>Park Street</b>	5 feet	5 feet	5 feet	5 feet	5 feet
<b>Park Sidewalk</b>	2 feet	2 feet	0 feet	2 feet	2 feet
<b>Manufactured Dwelling on Same Lot</b>	Not Permitted <sup>(6)</sup>	3 feet <sup>(3)</sup>	0 feet	6 feet <sup>(3)</sup>	0 feet
<b>Manufactured Dwelling on Adjacent Lot</b>	10 feet <sup>(7)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet	10 feet
<b>Buildings On the Same Property Inside the Park</b>	10 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	10 feet <sup>(3)</sup>	10 feet <sup>(3)</sup>
<b>Buildings on Adjacent Properties Outside the Park</b>	10 feet <sup>(3)</sup>	10 feet <sup>(3)</sup>	3 feet <sup>(3)</sup>	10 feet <sup>(3)</sup>	10 feet <sup>(3)</sup>
<b>Accessory Buildings<sup>(1)</sup> on Same Lot</b>	3 feet <sup>(3)</sup>	3 feet <sup>(3)</sup>	0 feet	3 feet <sup>(3)</sup>	3 feet <sup>(3)</sup>
<b>Accessory Buildings<sup>(1)</sup> on Adjacent Lot</b>	6 feet	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>
<b>Accessory Structures<sup>(2),(5)</sup> on Same Lot</b>	0 feet	0 feet	0 feet	0 feet	0 feet
<b>Accessory Structures<sup>(2),(5)</sup> on Adjacent Lot</b>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>
<b>Garage<sup>(1)</sup> on Same Lot</b>	6 feet <sup>(3)</sup>	3 feet <sup>(3)</sup>	0 feet	0 feet	6 feet <sup>(3)</sup>
<b>Garage<sup>(1)</sup> on Adjacent Lot</b>	6 feet	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet
<b>Cabana<sup>(1)</sup> on Same Lot</b>	0 feet	3 feet <sup>(3)</sup>	0 feet	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>
<b>Cabana<sup>(1)</sup> on Adjacent Lot</b>	10 feet	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet	10 feet

**NOTES:**

- (1) Accessory buildings include storage sheds and similar structures used in conjunction with manufactured dwellings, but for the purpose of this table only, shall not include garages or cabanas since their fire separations are different.
- (2) Accessory structures include decks, landings, guard rails, hand rails, steps, ramps, awnings, carports, and similar structures used in conjunction with manufactured dwellings, but for the purpose of this table only, shall not include skirting or ramadas since their fire separation requirements are not applicable to this table.
- (3) See **Section 9-5.3** of this Chapter for alternate setbacks and clearances. With prior approval from the authority having jurisdiction, those fire separations noted in this table may be further reduced with the use of fire resistive construction according to the prescriptive requirements contained in the **Oregon One and Two Family Dwelling Specialty Code**.
- (4) Setbacks from perimeter property lines and public streets may be greater than those dimensions shown in this table. See the individual municipalities planning ordinances for further restrictions.
- (5) Setbacks and clearances addressed in this table shall be measured to the exterior wall of the structure and shall not include the eave overhangs except for awnings and carports.
- (6) These noted setbacks and clearances are established by **Oregon Revised Statute** and shall not be reduced and shall not be given a variance from the authority having jurisdiction.

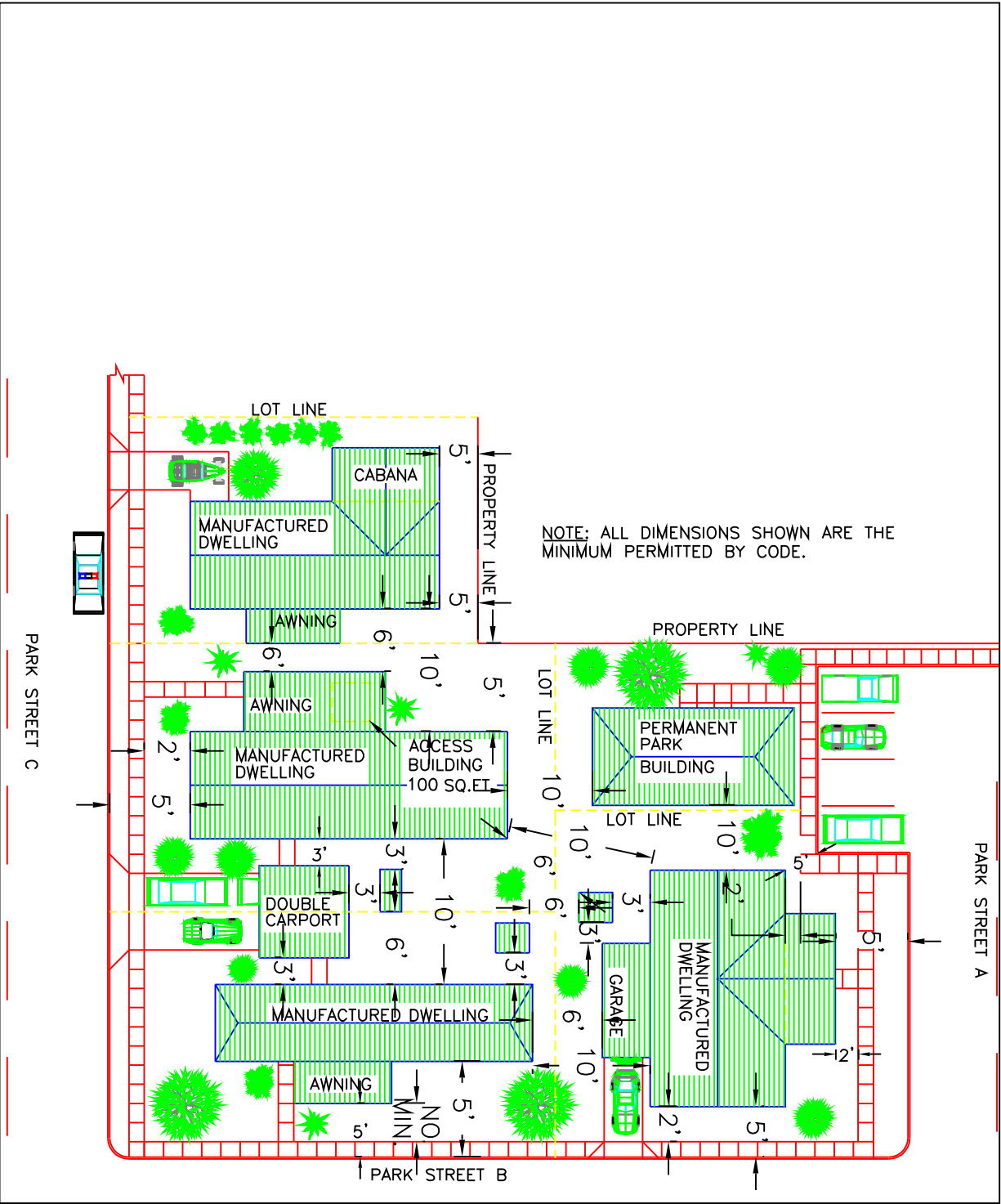
# TABLE 9-B

## MINIMUM FIRE SEPARATION OUTSIDE PARKS

MINIMUM SETBACKS AND CLEARANCES	MANUFACTURED DWELLINGS	ACCESSORY BUILDINGS	ACCESSORY STRUCTURES	GARAGES	CABANAS
Property Line <sup>(4)</sup>	3 feet <sup>(6)</sup>	3 feet	3 feet	3 feet	3 feet
Public Sidewalk <sup>(4)</sup>	5 feet	3 feet	3 feet	5 feet	5 feet
Manufactured dwelling or cabana on same lot	10 feet	3 feet	0 feet	6 feet	10 feet
Manufactured dwelling or cabana on adjacent lot	10 feet	6 feet	6 feet	6 feet	10 feet
Other buildings	10 feet	6 feet <sup>(3)</sup>	6 feet	10 feet <sup>(3)</sup>	10 feet
Accessory Buildings <sup>(1)</sup> on Same Lot	3 feet <sup>(7)</sup>	0 feet <sup>(3)</sup>	0 feet <sup>(3)</sup>	3 feet	3 feet
Accessory Buildings <sup>(1)</sup> on Adjacent Lot	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>
Decks, landings, steps, ramps, awnings & carports on same lot	0 feet <sup>(3)</sup>	0 feet <sup>(3)</sup>	0 feet <sup>(3)</sup>	0 feet <sup>(3)</sup>	0 feet <sup>(3)</sup>
Decks, landings, steps, ramps, awnings & carports on adjacent lot	6 feet	6 feet	6 feet	6 feet	6 feet
Garage on same lot	6 feet <sup>(3)</sup>	3 feet <sup>(3)</sup>	0 feet	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>
Garage on adjacent lot	6 feet	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>	6 feet <sup>(3)</sup>

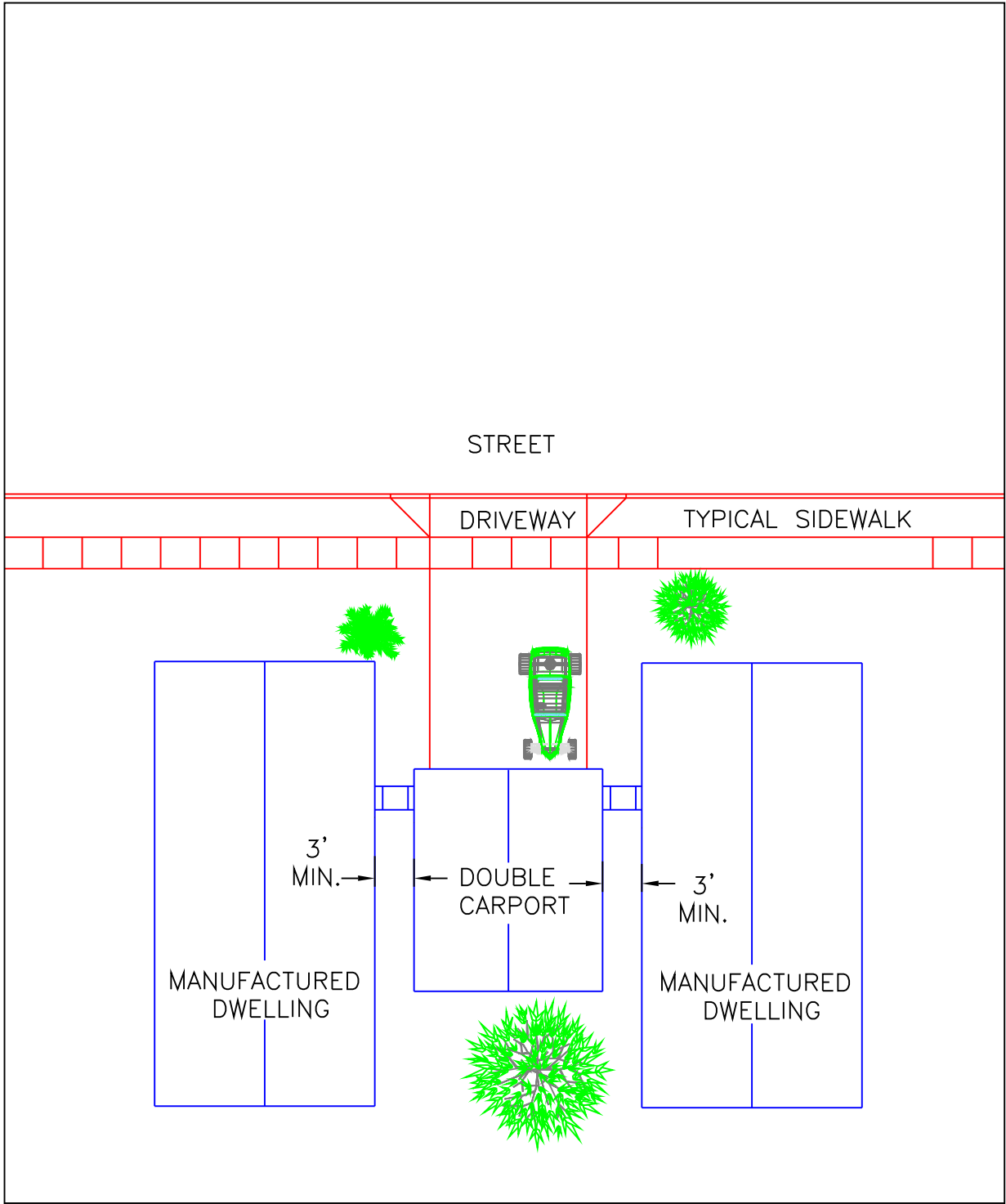
**NOTES:**

- (1) See section 904(e) of this Chapter for exceptions to this schedule.
- (2) Clearances shown in this schedule may be further reduced according to the **Oregon One and Two Family Dwelling Specialty Code** or the **Oregon Structural Specialty Code** with prior approval from the authority having jurisdiction.
- (3) This table is only applicable when a municipality does not have ordinances governing the setbacks and clearances for the structures mentioned above.
- (4) The set-backs and clearances required in this table shall be measured to the exterior walls of the structures and do not include eave overhangs except for awnings and carports.



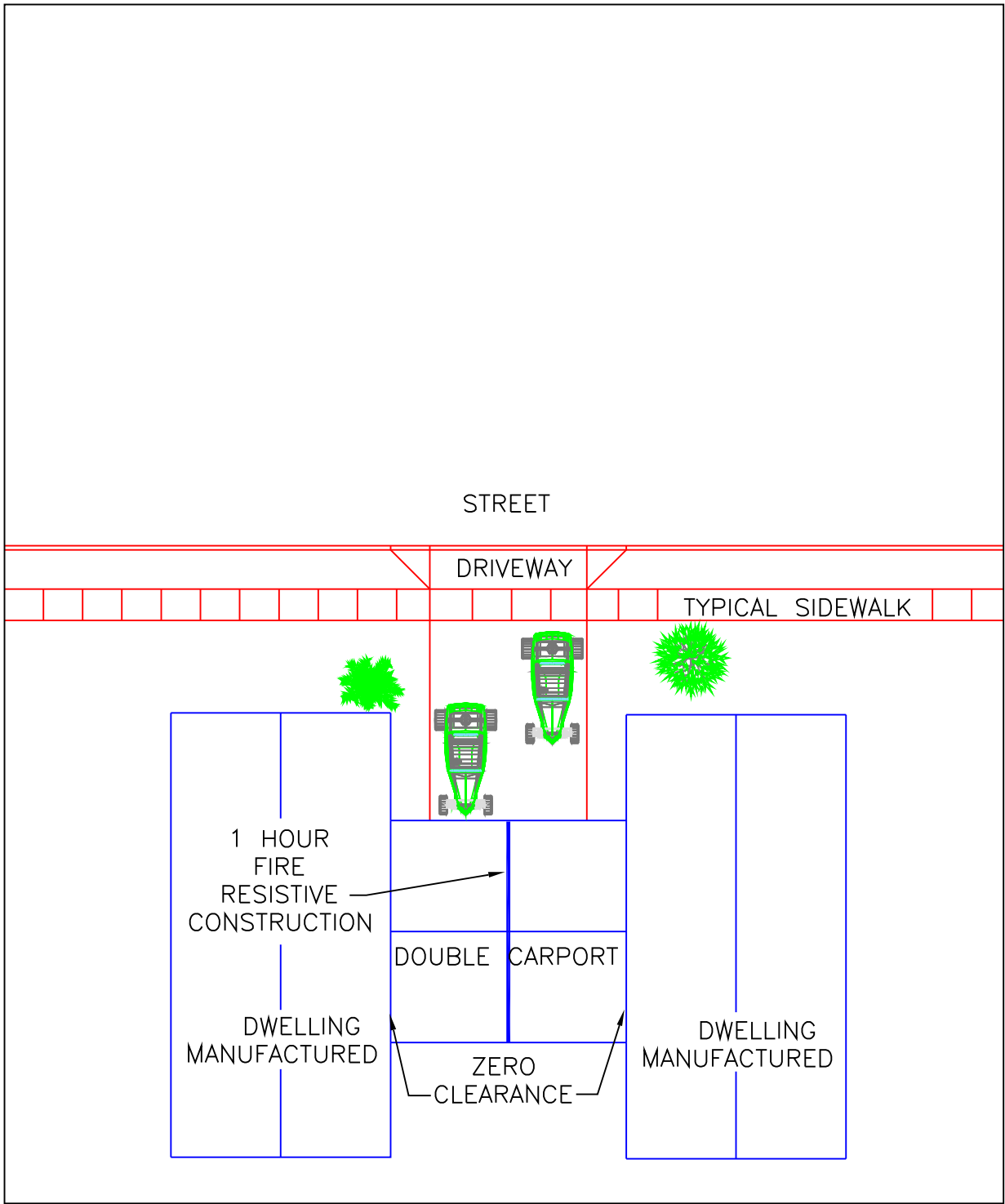
TYPICAL MANUFACTURED DWELLING PARK SETBACKS & CLEARANCES

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 9</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 9-5.1A</p>



TYPICAL DOUBLE CARPORT FIRE SEPARATION DETAIL

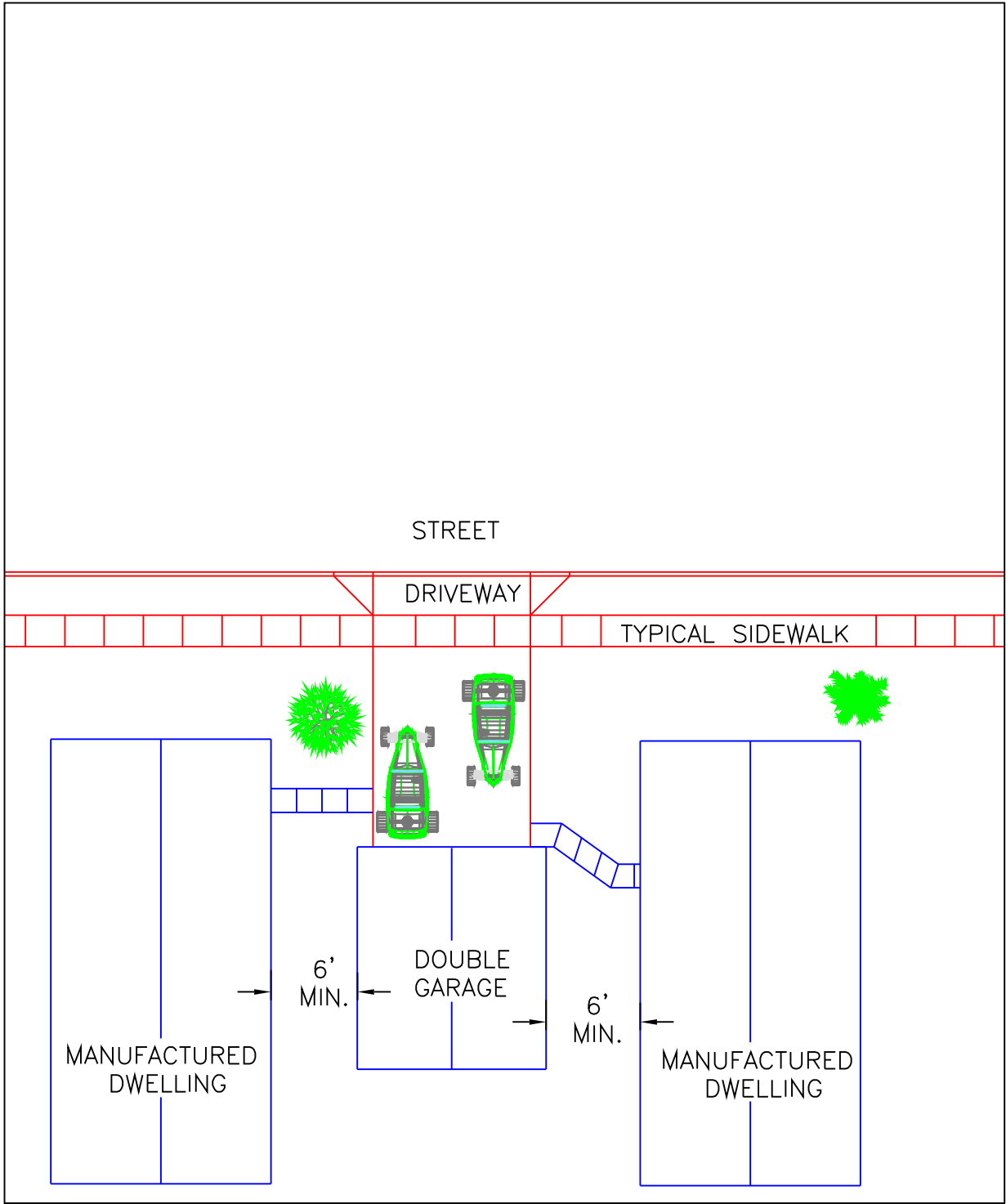
	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 9</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 9-5.3A</p>



TYPICAL DOUBLE CARPORT FIRE SEPARATION DETAIL

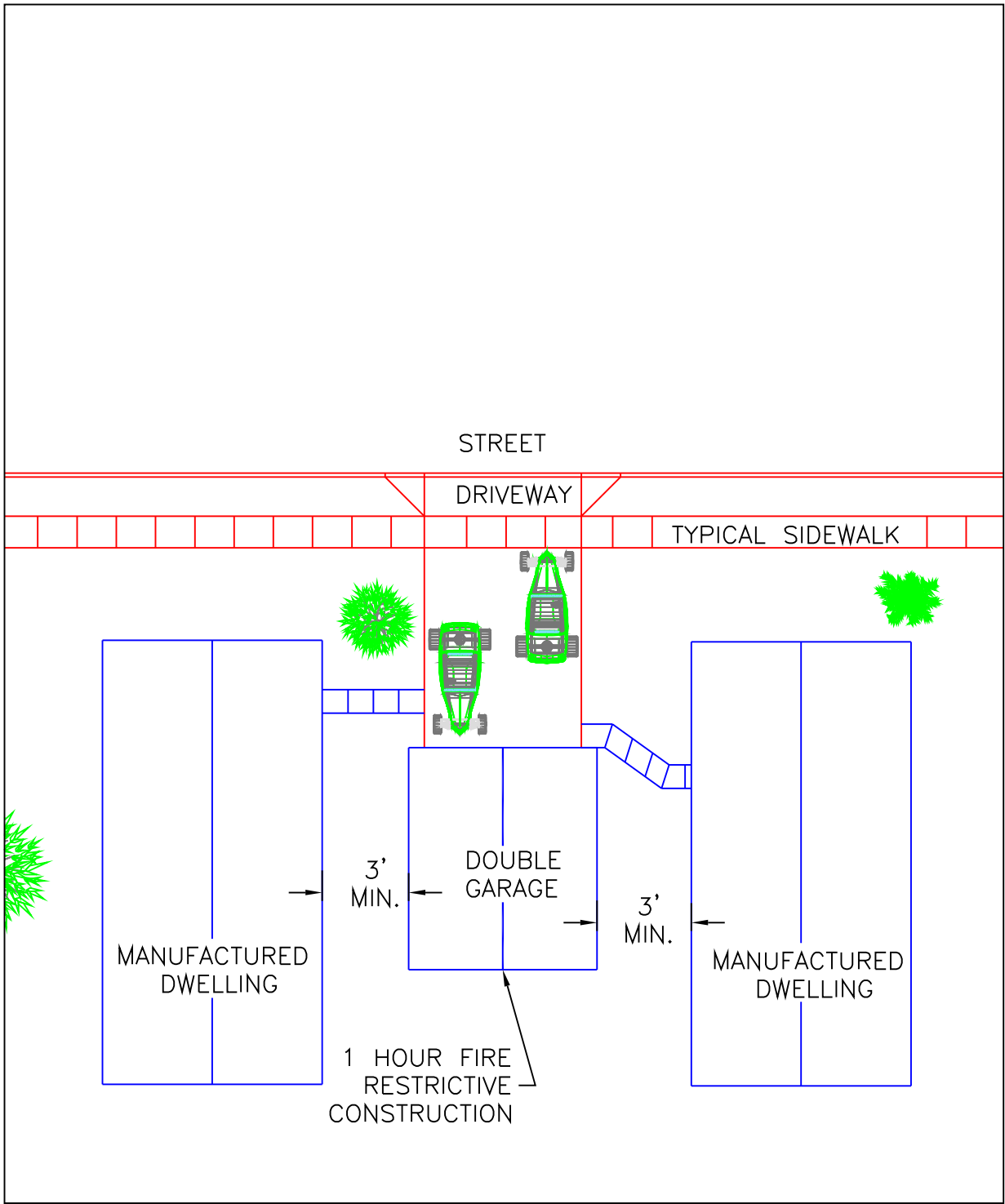
	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 9</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 9-5.3B</p>





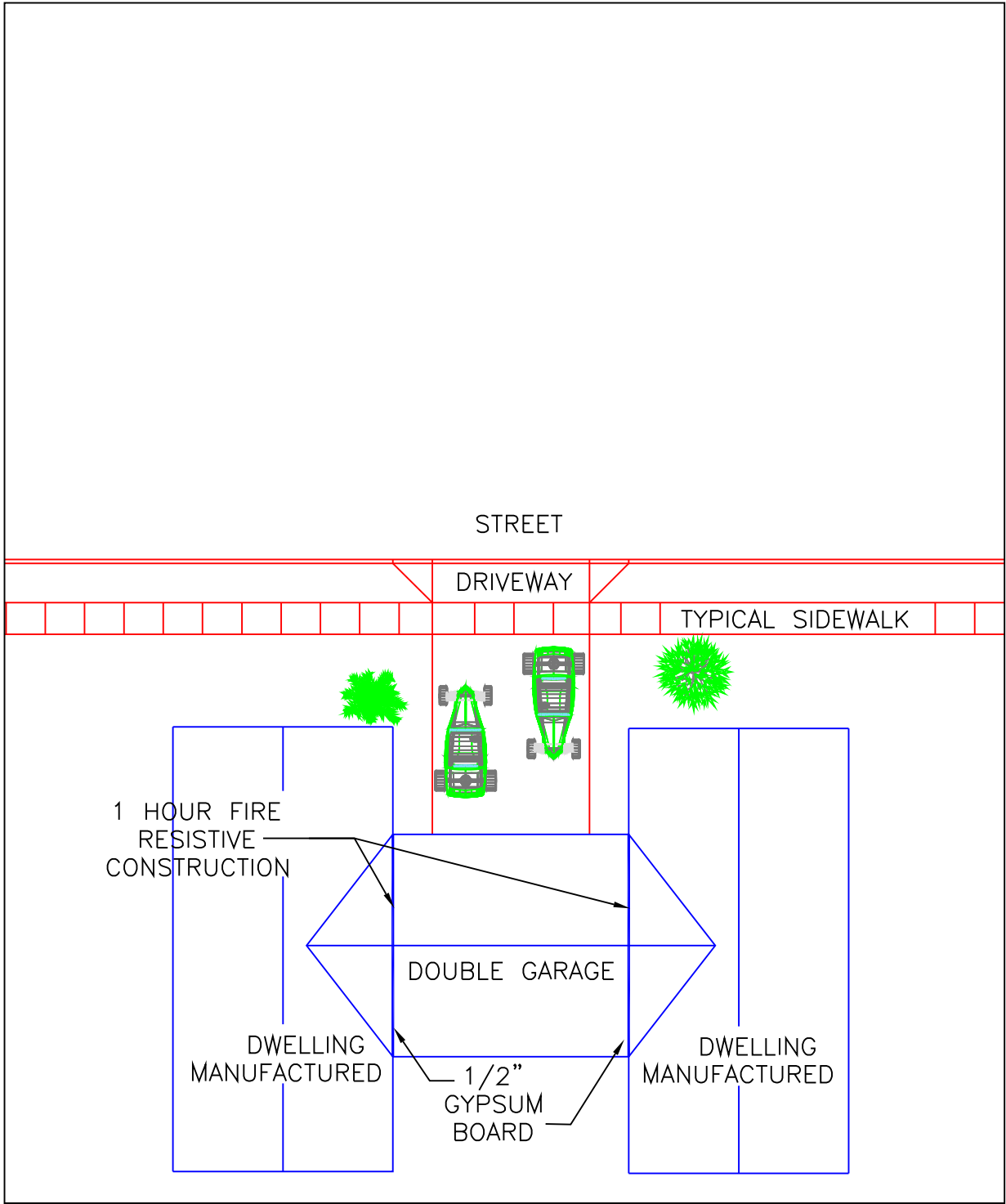
TYPICAL DOUBLE GARAGE FIRE SEPARATION DETAIL

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 9</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 9-5.3C</p>



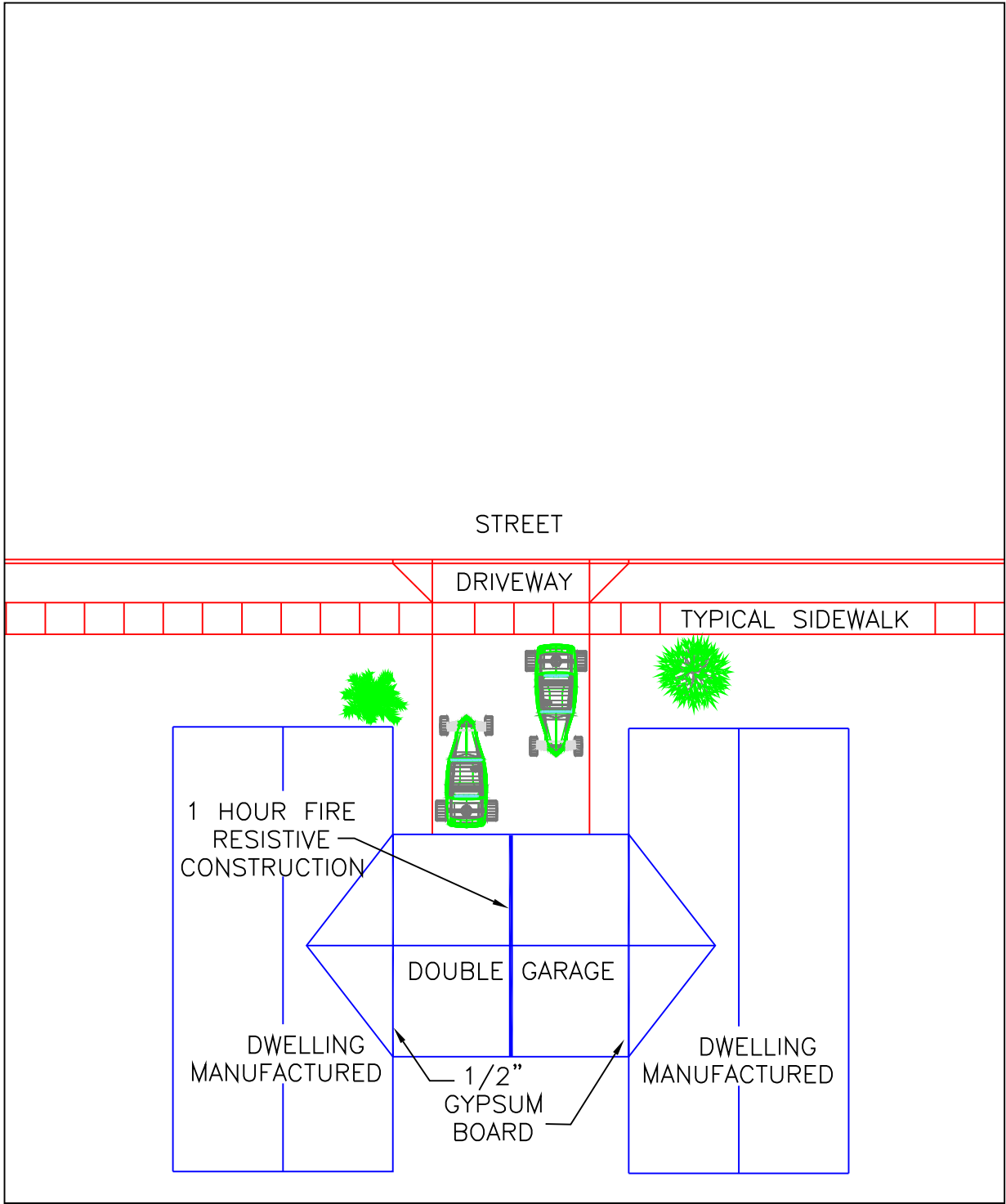
TYPICAL DOUBLE GARAGE FIRE SEPARATION DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 9
REV. 12/01/01 RHW		FIGURE 9-5.3D



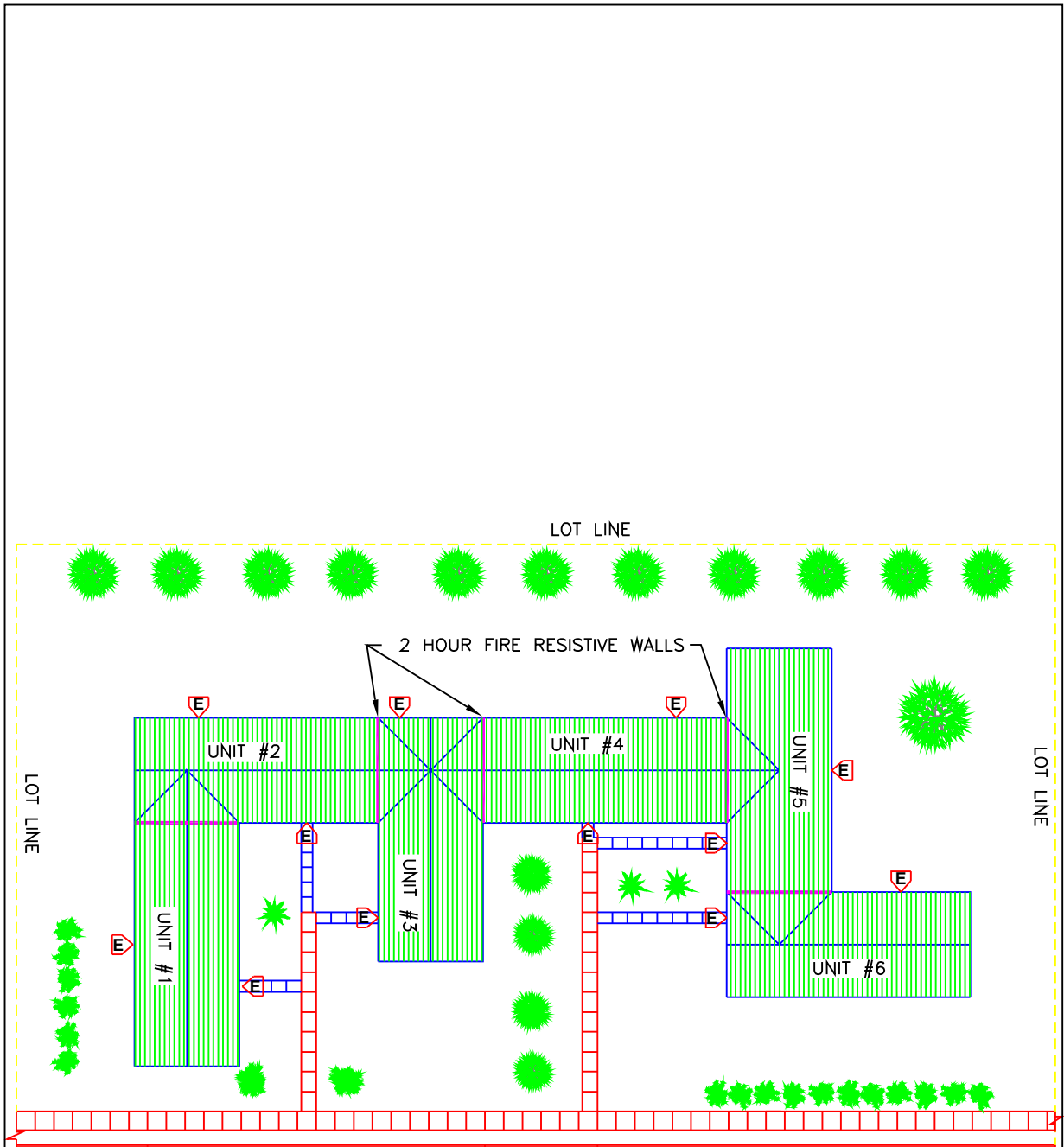
TYPICAL DOUBLE GARAGE FIRE SEPARATION DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 9
REV. 12/01/01 RHW		FIGURE 9-5.3E



TYPICAL DOUBLE GARAGE FIRE SEPARATION DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 9
REV. 12/01/01 RHW		FIGURE 9-5.3F



**NOTE:** EACH MANUFACTURED DWELLING SHALL HAVE TWO EGRESS DOORS REMOTE FROM EACH OTHER.

**NOTE:** TWO HOUR FIRE RESISTIVE CONSTRUCTION REQUIRED BETWEEN EACH MANUFACTURED DWELLING.

MANUFACTURED DWELLING MULTI-FAMILY UNITS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 9
REV. 12/01/01 RHW		FIGURE 9-7.1

## CHAPTER TEN MANUFACTURED DWELLING PARK CONSTRUCTION

- 10-1 General
- 10-2 Land Use and Park Location
- 10-3 Public Safety
- 10-4 Utilities and Storm Water Drainage
- 10-5 Vehicle and Pedestrian Access
- 10-6 Park Structures
- 10-7 Play Areas
- 10-8 Temporary Parks
- 10-9 Park Additions, Alterations and Conversions
- 10-10 Maintenance and Safety

### 10-1 General.

**10-1.1 Statewide Code.** This code establishes the minimum and maximum requirements for the design and construction of manufactured dwelling parks throughout the state of Oregon to provide uniformity and affordability and to keep construction costs predictable. Except where specifically permitted by this code, no jurisdiction may require a person to exceed the requirements of this code.

**NOTE:** See Chapter One for information on plans, permits, and inspections.

**10-1.2 Applicability of Code.** This chapter of the code is applicable to all mobile home parks and manufactured dwelling parks except where specifically exempted by one of the following:

- (a) Except where specifically excluded in **ORS 446.055**, four or more manufactured dwellings located on a single parcel of land constitutes a mobile home or manufactured dwelling park and shall be subject to this code;
- (b) Except where specifically excluded in **ORS 446.090** and **446.105**, mobile home and manufactured dwelling parks shall comply with all applicable provisions of this code; and
- (c) Parks existing at the time of the effective date of this code may continue

their use providing their use was legal at the time this code was adopted.

**10-1.3 Permitted Park Use.** Parks may only be used according to the following requirements:

- (a) Manufactured dwelling parks are intended for the siting of manufactured dwellings only to serve as single family dwellings on a temporary or full time basis;
- (b) Site built single or multi family dwellings existing before the construction of the park may remain in the park;
- (c) Only one new site built single family dwelling shall be constructed in a park for use by the park owner, manager, or caretaker;
- (d) Recreational vehicles (including park trailers) and recreational structures are not permitted in mobile home or manufactured dwelling parks except under the following conditions:
  1. Park trailer recreational vehicles (RV) may be permitted within a manufactured dwelling park if the park trailer RV is labeled as both a recreational vehicle and a manufactured home and bears both a HUD Label and a state recreational vehicle insignia of compliance. Park trailer RV's labeled as recreational vehicles only are not permitted in manufactured dwelling parks;
  2. Recreational vehicles are permitted in mobile home parks built prior to August 5, 1959;
  3. Recreational vehicles are permitted to be stored in a mobile home or manufactured dwelling park in an area designated by the park owner or operator for such storage; and
  4. Recreational vehicles are permitted in the recreation park area of a combination park.
- (e) Combination recreational vehicle parks and mobile home or manufactured dwelling parks, known as "combination parks", may be constructed on the same property under the following conditions:
  1. Combination parks shall be zoned for both uses;

2. Combination parks shall have prior approval from the authority having jurisdiction and the local planning department;

3. Combination parks shall have designated areas for recreational vehicles and for manufactured dwellings;

4. Where there are common amenities serving both parks (such as streets or play areas), the park shall meet the most restrictive requirements of both park codes; and

5. Existing mobile home, manufactured dwelling, or recreation parks may be converted to combination parks if the park can meet the conditions listed above.

**10-1.4 Park Approval.** No person shall construct, alter, convert, or expand a mobile home or manufactured dwelling park without first making application to the authority having jurisdiction, submitting plans, and obtaining permits according to Chapter One of this code.

(a) A certificate of occupancy shall be issued when the park is completed and approved by the authority having jurisdiction. When a park is built in phases, there shall be a new certificate of occupancy issued when each new phase is completed and approved by the authority having jurisdiction.

(b) The authority having jurisdiction may permit manufactured dwellings to be sited and installed in a manufactured dwelling park prior to issuing a certificate of occupancy, however, no manufactured dwelling shall be placed in a manufactured dwelling park without prior approval from the authority having jurisdiction.

**10-1.5 Unusual Construction.** This code is not intended to limit the appropriate use of materials, equipment, or methods of design or construction not specifically prescribed by this code. A person may design for unusual construction using alternate materials or methods not provided for in this code as long as the alternate method or material is at least equivalent to the requirements

of this code in suitability, quality, strength, effectiveness, fire resistance, durability, dimensional stability, safety, and sanitation. All alternate methods or materials shall have prior approval from the authority having jurisdiction.

## **10-2 Land Use Compatibility and Park Location.**

**10-2.1 Land Use.** No manufactured dwelling park or mobile home park shall be constructed, altered, converted, or expanded unless it is in accordance with comprehensive plan and local zoning ordinance and meets the requirements of this code.

(a) The local planning department is given specific authority to establish reasonable criteria related to the following as long as the criteria for a park is not less than the minimum requirements in this code and not greater than the requirements for single family uses in the underlying zone:

1. The location of the park within the municipality;
2. The density of the park;
3. The minimum setbacks around the perimeter of the park;
4. The minimum setbacks and buffer zones around existing wetlands within the park;
5. The minimum setbacks and buffer zones around a stream, creek, or river running through the park;
6. The landscaping, fencing, and buffer zones around the perimeter of the park;
7. The establishment of open areas and green ways within the park;
8. The orientation of those manufactured dwellings and accessory buildings and structures within the park adjacent to a public way;
9. The location of play areas within the park;
10. The size and construction of the park street, curbs, and sidewalks where they connect to the public way for the first 100 feet (30.5 m) of length or to the first intersecting street within the park, whichever is less;

11. The location, size, and construction of a public street(s) running through the park when the municipality can demonstrate the street(s) is needed as required for conductivity or when the street(s) is already designated in the municipalities acknowledged transportation system plan. All other streets within the park shall remain private and a part of the park property;

12. The street and address designations within the park;

13. The color and style of street signage within the park; and

14. The control of erosion and construction debris.

(b) The local planning department may prohibit the disturbance of certain aspects of the land having a redeeming value, such as land with mature trees, geological formations, waterways, or historical significance.

(c) A municipality is not permitted to establish or require construction standards for manufactured dwelling parks or manufactured dwelling installations that are more or less restrictive than this code except where specifically permitted in this code.

#### **10-2.2 Hazardous Locations.**

Manufactured dwelling parks shall be located according to the following:

(a) Manufactured dwelling parks shall not be located in a floodway. Existing mobile home or manufactured dwelling parks located in floodways shall not be permitted to expand within the floodway.

(b) Manufactured dwelling parks or park expansions shall not be located in a flood related erosion area without specific approval from the authority having jurisdiction.

(c) Manufactured dwelling parks or park expansions shall not be located in a geological hazard area (includes areas with landslide potential or other hazardous conditions) without specific approval from the authority having jurisdiction.

(d) Manufactured dwelling parks or park expansions shall not be permitted in a

flood hazard area unless the stands are elevated above the **Base Flood Elevation** (BFE) as identified on the **Flood Insurance Rate Map** (FIRM).

(e) Manufactured dwelling parks or park expansions shall not be permitted in a Coastal High Hazard Zone, as identified on the FIRM, unless the affected park, park buildings, manufactured dwellings, accessory buildings, and accessory structures within the zone meet the requirements of **Section 3108** of the **Oregon Structural Specialty Code** (OSSC).

**NOTE:** The information in subsection 10-2.2 is based on the **Federal Emergency Management Agency** (FEMA) regulation **44 CFR, Chapter 1** published October 1, 1990.

**10-2.3 Suitability of Site.** The site shall be suitable for its intended use to the authority having jurisdiction based on this code and local land use regulations according to the following:

(a) Manufactured dwelling parks or park expansions shall not be located on land that is unsuitable due to swampy terrain, lack of drainage, or proximity to the breeding places of rodents or vermin unless improvements have been made to the land to eliminate or control the hazards and such improvements are acceptable to the authority having jurisdiction;

(b) The authority having jurisdiction shall consider the condition of the soil, ground water level, drainage, and topography of the land prior to issuing construction permits for a manufactured dwelling park or the expansion of a mobile home park;

(c) The authority having jurisdiction shall consider the hazards of flood related erosion areas, coastal high hazard zones, slide hazard areas, and other unstable conditions prior to issuing construction permits for a manufactured dwelling park or the expansion of a mobile home park.

(d) Each manufactured dwelling stand shall have or be improved to have a



minimum capacity of 1,000 pounds per square foot (14,788 kg/m<sup>(2)</sup>);

**(e)** The ground supporting park streets, alleys, driveways, and common driveways shall have or be improved to have a minimum soil bearing capacity of 2,000 pounds per square foot (29,576 kg/m<sup>(2)</sup>);

**(f)** Each manufactured dwelling lot within a park shall be prepared according to chapter 3 prior to the installation of any manufactured dwelling;

**(g)** Fills over 12 inches (30 cm) in depth shall be placed in accordance with accepted engineering practice. A soil investigation report of satisfactory placement of fill, acceptable to the authority having jurisdiction, shall be submitted prior to final approval of the park;

**(h)** Cuts and fills in flood hazard areas shall be equal in area so that the fill material does not cause a rise in the water level; and

**(i)** The slope of cut or fill surfaces shall be no steeper than is safe for the intended use and shall be no steeper than 1 unit vertical in 2 units horizontal or 50 percent unless the permittee furnishes a soils engineering or engineering geology report, or both, stating that the site has been investigated, and given an opinion that a cut at a steeper slope will be stable and not create a hazard to public or private property.

### **10-3 Public Safety.**

**10-3.1 Park Design.** Manufactured dwelling parks shall be designed to provide reasonable safeguards against fire and other hazards according to the following:

**(a)** Manufactured dwellings, park buildings, accessory buildings, and accessory structures shall be arranged in a manner that does not prevent or restrict access by emergency equipment and personnel;

**(b)** Streets, alleys, common driveways, park buildings, and manufactured dwelling lots shall be identified according to the street naming and numbering

policies of the authority having jurisdiction;

**(c)** Fire apparatus shall be able to approach within 50 feet (15.2 m) of each manufactured dwelling or park building within a manufactured dwelling park; and

**(d)** Manufactured dwellings, park buildings, accessory buildings, and accessory structures shall be located in a manner that provides the minimum setbacks and clearances required in Chapter 9 of this code.

**10-3.2 Water Supplies.** Water supplies for fire department operations shall be as required by the local fire official.

**10-3.3 Identification.** Manufactured dwellings and park buildings shall be posted in a conspicuous and uniform manner that is clearly visible from the street or alley serving the site according to the following:

**(a)** Each park shall have a general directory located at each entrance to the park. The directory shall indicate street names, addresses and/or lot numbers and be easily legible from a vehicle entering the park;

**(b)** Each park street, alley or common driveway shall be posted with a sign identifying its name according to the requirements of the authority having jurisdiction;

**(c)** Each manufactured dwelling lot shall be clearly identified with 3 inch (76 mm) high numbers on the curb, mail box, home, or other location acceptable to the authority having jurisdiction;

**(d)** Each park building shall be clearly identified with 3 inch (76 mm) high characters giving the name or number;

**(e)** The park shall be identified by name and street address on the public way according the local municipality's requirements;

**(f)** Curbs or streets shall be painted with a 4 inch (10 cm) wide red stripe 10 feet (305 cm) either side of a fire hydrant;

**(g)** Applicable park streets, alleys, or common driveways serving as fire lanes shall be marked with red painted curbs,

striped pavement, or 12 inch by 18 inch (30 cm by 46 cm) white signs with red letters, to indicate where parking is prohibited. The marking shall state “**Fire Lane - No Parking**” and shall be in minimum 3 inch (76 mm) high block letters and posted every 25 feet;

**(h)** One way park streets shall be posted with a 18 inch by 24 inch (46 cm by 61 cm) white sign with black letters indicating “**ONE WAY**” with an arrow to indicate the correct direction of the traffic flow;

**(i)** Park streets shall be posted with a 24 inch by 24 inch (61 cm by 61 cm) red octagon shaped sign with white letters indicating “**STOP**” located at each intersection with the park and at the exit from the park onto the public way when required by the municipality. A stop sign is not necessary at the exit from the park when it exits into an intersection controlled by municipal traffic signal lighting;

**(j)** The approach to vehicle bridges within the park shall be posted at each end with an 18 inch by 18 inch (46 cm by 46 cm) white sign with black letters indicating “**\_\_\_ TON LIMIT**” showing the maximum capacity of the bridge according to the approved engineering;

**(k)** Parking for disabled persons shall be marked and posted according to **Chapter 11** of the **OSSC**;

**(l)** Signs required by this chapter shall be located not less than 80 inches (203 cm) from the center of the sign to the ground and shall be made of durable material acceptable to the authority having jurisdiction. Sign posts shall be made of hot rolled steel, 3-1/2 inch by 3-1/2 inch (89 mm by 89 mm) pressure treated wood, or fiberglass manufactured for such applications.

**10-3.4 Lighting.** Manufactured dwelling park streets, alleys, sidewalks, walkways, shall be illuminated to provide for the safety of all park residents and guests according to the following:

**(a)** Park luminaires (lighting fixtures) shall be located to provide the following levels of illumination:

**1.** Park streets, alleys, and abutting sidewalks or walkways shall have luminaires that provide an average of 4.0 lux maintained over the entire surface, with average to minimum uniformity ratio not to exceed 6 to 1;

**2.** Park sidewalks or walkways not abutting a street shall have luminaires that provide an average of 4.0 lux maintained over the entire surface, with average to minimum uniformity ratio not to exceed 6 to 1;

**3.** The park street connecting to the public way shall have luminaires that provide an average of 6.0 lux maintained over the entire surface, with average to minimum uniformity ratio not to exceed 4 to 1.

**(b)** Park luminaires shall be controlled by photocells set to turn on automatically at dusk and off at dawn;

**(c)** Park luminaires shall not be controlled by individual park residents;

**(d)** Park luminaires may be controlled for maintenance purposes only by the park owner or operator or by a contracting utility company;

**10-3.5 Density.** The total area of a lot occupied by a manufactured dwelling and all accessory structures and buildings shall not exceed 75 percent of the total lot area when located in a manufactured dwelling park, mobile home park, or combination park.

## **10-4 Utilities and Storm Water Drainage.**

**10-4.1 Utility Services.** The manufactured dwelling park owner shall provide the following to each manufactured dwelling lot as required:

**(a)** An adequate supply of potable water (not less than 20 psi (138 kPa) at the supply connection) shall be provided to each manufactured dwelling lot in a mobile home or manufactured dwelling park;

**1.** All plumbing installations in connection with mobile home or manufactured dwelling park construction, alteration, repair, conversion, or addition shall be

made according to this code and, where not specific, to the **Oregon Plumbing Specialty Code**;

**2.** Piping shall be accessible and can only be placed under the manufactured dwelling it is serving. Piping cannot be laid beneath a manufactured dwelling for the purpose of providing service to an adjacent manufactured dwelling or other structure on an adjacent lot; and

**3.** When a park is located in a flood hazard area, all plumbing openings shall be located a minimum of 12 inches (30 cm) above the base flood elevation or be equipped with approved backwater valves.

**(b)** Sewage disposal facilities shall be made available on each manufactured dwelling lot within a park to adequately dispose of all sewage. The sewage system within a park shall be installed and connected according to Chapter 5 and where not specific, to the **Oregon Plumbing Specialty Code** and the **Department of Environmental Quality (DEQ) rules, OAR 340-71**;

**(c)** An adequate amount of electric power shall be supplied to each manufactured dwelling lot and shall be equivalent to the amperage required for the manufactured dwelling.

**(d)** Where natural gas is provided, an adequate supply of natural gas shall be supplied to each manufactured dwelling using the product. Gas piping within the park shall be installed and connected according to Chapter 6 and where not specific, to the **Oregon Mechanical Specialty Code** and **NFPA 54**; and

**(e)** Where liquid petroleum gas (LPG) is provided, an adequate supply of LPG shall be supplied to each manufactured dwelling using the product. The LPG tank and piping shall be installed and connected according to Chapter 6 and where not specific, to the requirements of the **State Fire Marshal** and **NFPA 58**.

**(f)** The parks water, sewer, gas, electric, or storm water drainage lines shall not be located under a manufactured dwelling, accessory building, or accessory structure or located in an area where a

manufactured dwelling, accessory building, or accessory structure is likely to be placed. Individual water, sewer, and gas branch lines may terminate under the manufactured dwelling they serve.

**10-4.2 Manufactured Dwelling Park Electrical Installations.** All electrical installations in connection with park construction, alteration, repair, conversion, or addition shall be made according to this code and, where not specific, to the **NEC**.

**(a)** Each lot in a mobile home or manufactured dwelling park shall be supplied with electrical service of not less than 100 Amps and shall contain a means for connecting an accessory building or additional electrical equipment.

**(b)** When a manufactured dwelling park is located in a flood hazard area, all electrical connections in the park shall be a minimum of 12 inches (30 cm) above the base flood level.

**(c)** Newer manufactured dwellings installed in older parks that exceed the capacity of the existing park service equipment shall not be energized until the park's service equipment has been upgraded.

**10-4.3 Storm Water Drainage.** All manufactured dwelling lots, streets, and alleys shall be provided with adequate storm drainage according to the following:

**(a)** Storm water drainage systems shall be designed and sized by an Oregon professional engineer to the specifications provided by the authority having jurisdiction and **The Department of Environmental Quality (DEQ)**;

**(b)** When deemed necessary by the authority having jurisdiction, storm water drainage shall include suitable detention;

**(c)** Storm water shall not be directed into a sanitary sewer system. Combined sanitary sewers and storm drains are prohibited;

**(d)** Each manufactured dwelling lot shall be provided with at least one 4 inch (101 mm) or two 3 inch (76 mm) storm water

drain(s) to the street. Where curbs are used, the curbs shall be built with equivalently sized weepholes. If the slope of the land prevents lot surface and rain drain storm water from draining to the street, a storm water lateral shall be provided from the site to the park's storm water system;

**(e)** Dry wells or infiltrator systems shall only be used for storm water drains when soil tests have been performed by a qualified Oregon geological engineer or geotechnical engineer showing that soils are suitable for the subsurface disposal of storm water. Test results shall be submitted to the authority having jurisdiction for review and approval prior to constructing the system; and

**(f)** When a park is being built in phases, the park's storm water drainage plan shall take into consideration present and future water volumes based on 10 year storm data.

**10-4.4 Fuel Gas Pipe Installations.** All fuel gas piping systems serving a manufactured dwelling shall be constructed according to the minimum requirements of this code and, where not specific, to the **Oregon Mechanical Specialty Code (Section 1312)**, the **National Fuel Gas Code (NFPA 54-1999)**, and the **Liquefied Petroleum Gas Code (NFPA 58-1998)**. Gas supply systems, where provided on a manufactured dwelling lot from an underground gas supply piping system, shall be located and arranged to permit attachment to the manufactured dwelling according to this chapter.

**(a)** The gas supply to a manufactured dwelling shall be located within 2 feet (66 mm) of the manufactured dwelling stand.

**(b)** Privately owned or installed fuel gas supply lines in a manufactured dwelling park shall be sized and installed according to **Chapter 13 of the Oregon Mechanical Specialty Code**. Liquid petroleum gas storage tanks and supply piping systems in manufactured dwelling parks shall be installed according to the requirements of the **1998 Oregon**

**Uniform Fire Code**. There shall be a readily accessible and identified shutoff valve controlling the flow of gas to the entire gas-piping system installed near the point of connection to the utility service supply connection or to the main liquefied petroleum gas storage tank.

**(c)** A privately owned or installed gas supply to a manufactured dwelling, including the riser, regulator, meter, valves, and other exposed equipment shall be located where they are protected against accidental damage. All buried park owned or installed metallic gas piping shall be protected from corrosion by approved coatings or wrapping materials to a point at least 6 inches (152 mm) above ground. Where metallic gas piping has or is required to have cathodic protection, it shall be installed to conform to the provisions of **49 CFR 192**.

**(d)** Privately owned gas meters, where provided on a manufactured dwelling lot, shall be installed according to the following:

**(1)** Gas meters shall be adequately supported by an anodeless riser support stake to a depth adequate to bolster or support the meter set weight requirement or by other means acceptable to the authority having jurisdiction;

**2.** Gas meters shall not depend on the gas outlet riser for support, and shall not be supported by the manufactured dwelling;

**3.** Each gas meter shall be installed in an accessible location and shall be provided with unions or other fittings to permit servicing or replacement of the meter or meter parts;

**4.** Meters shall not be installed in unventilated or inaccessible locations or closer than 3 feet (91 cm) to sources of ignition;

**5.** All gas meter installations shall be provided with shutoff valves or cocks located adjacent to and on the inlet side of the meters. In the case of a single meter installation utilizing an LPG container, the container service valve shall be permitted to be used in lieu of the manufactured dwelling shutoff valve; and

6. All gas meter installations shall be provided with test tees located adjacent to and on the outlet side of the meters.

#### **10-4.5 Underground Gas Piping.**

Privately owned underground gas piping, when provided, shall be installed according to the following:

(a) All gas piping installed below ground level shall have a minimum earth covering of 18 inches (45 cm) and shall be installed with at least 12 inches (305 mm) clearance in any direction from any other underground utility system;

(b) Underground gas piping shall not be placed in contact with other metallic objects such as pipes or wires;

(c) Underground nonmetallic gas lines shall have a number 18 AWG yellow insulated copper tracer wire conductor installed adjacent to the gas line and shall be accessible or terminate above ground at each end;

(d) Underground gas piping shall not be installed beneath a manufactured dwelling, accessory building, or accessory structure unless installed according to the following conditions:

1. Underground gas piping located under a manufactured dwelling, accessory building, or accessory structure shall be encased in a conduit capable of withstanding superimposed loads;

2. The conduit shall extend to a point not less than 4 inches (102 mm) beyond the outside wall of the manufactured dwelling, accessory building, or accessory structure, and be vented above grade to the outside; and

3. Where the conduit terminates within a manufactured dwelling, accessory building, or accessory structure, it shall be readily accessible and the space between the conduit and the gas piping shall be sealed to prevent leakage of gas into the manufactured dwelling, accessory building, or accessory structure.

#### **10-5 Vehicle and Pedestrian Access.**

**10-5.1.1 Streets and Alley Design.** Each area of a manufactured dwelling park

shall be accessible from the public way through a system of streets, alleys, and common driveways designed according to the following:

(a) Park streets and alleys shall be sized according to **Table 10-C** (see **Figure 10-5.1A**) and (see **Figure 10-5.1B**);

(b) Park streets may have center dividers with one way traffic on each side. Each lane on either side of a center divider shall be sized according to **Table 10-C** of this code. Center dividers shall be designed according to the following criteria (see **Figure 10-5.1C**):

1. Center dividers shall always be located on the left side (driver's side) of the vehicles;

2. Center dividers shall have a minimum 60 foot (18.3 m) long break located a maximum of every 200 feet (61 m) of street length;

3. Center dividers may be paved or landscaped;

4. Center dividers may be occupied by bus shelters, gazebos, pump houses, or guardhouses not exceeding 120 square feet (1114.8 m<sup>2</sup>) each in floor area.

5. Center dividers may contain an open storm drain or water detention facilities where permitted by the authority having jurisdiction;

6. Center dividers may contain the required play area if adequately protected from the traffic area;

7. Center dividers may contain off street parking;

8. Center dividers shall not exceed 50 feet (15.2 m) in width between the two lanes of the street; and

9. Center dividers shall not contain manufactured dwellings, accessory buildings, accessory structures, or other park buildings except for those mentioned in this section.

(c) Park streets connecting to the public way shall be sized according to **Table 10-C** and shall extend undiminished in size from the public way 100 feet (30.5 m) or to the first cross street within the park, which ever is less. (see **Figure 10-5.1D**);

(d) Alleys shall be sized according to **Table 10-C**.

(e) Park streets and alleys shall be appropriately marked indicating where on-street parking is prohibited;

(f) All park streets, alleys, driveways, sidewalks, and walkways shall remain the property of the park except when:

1. The street is a public street running through the park when permitted by Section 10-2.1(a)(12) of this chapter;

2. The street is a public street in existence prior to the construction of the park.

(g) Streets and alleys shall be limited in length according to the following:

1. Streets with both an inlet and outlet at opposite ends are not restricted to a maximum length (see **Figure 10-5.1C**);

2. Alleys with both an inlet and outlet are restricted to a maximum length of 400 feet (121.9 m);

3. Streets or alleys with dead ends shall be limited to a maximum of 150 feet (45.7 m) in length when there is no approved turnaround provided (see **Figures 10-5.1A, B, and C**);

4. Streets or alleys with approved turnarounds shall be limited in length to a maximum of 300 feet (91.4 m) excluding the turnaround (see **Figures 10-5.1A and C**); and

5. Streets or alleys with dead ends may branch off any street or approved turnaround (see **Figures 10-5.1A and C**).

(h) Curved park streets and alleys shall have a minimum 29 foot (8.8 m) radius on the inside edge and a minimum 55 foot (16.7 m) radius on the outside edge (see **Figure 10-5.1C**);

(i) Park street or alley intersections shall have a minimum inside radius of 15 feet (4.6 m) (see **Figure 10-5.1C**);

(j) Park streets or alleys providing access to the public way shall have a minimum inside radius of 35 feet (10.6 m);

(k) Park street or alley intersections shall have a minimum angle of 70 degrees (see **Figure 10-5.1C**);

(l) Park streets and alleys shall have a minimum vertical clearance of 16 feet (4.9 m);

(m) Dead-end streets or alleys in excess of 150 feet (45.7 m) in length shall have

approved turnarounds. Turnarounds shall have a wearing surface equivalent to that of the streets being served by the turnaround. Turnarounds shall be constructed according to the following:

1. Cul-de-sacs with parallel parking permitted shall have a minimum 38-foot (11.5 m) radius excluding curbs, sidewalks, walkways, or shoulders. Cul-de-sacs with parking prohibited shall have a minimum 30-foot (9.1 m) radius excluding any curbs, sidewalks, walkways, or shoulders and shall be appropriately marked to indicate parking is prohibited. Street connections to cul-de-sacs shall have a minimum inside radius of 20 feet (6.1 m) (see **Figure 10-5.1A**); or

2. Hammerhead turnarounds shall be a minimum of 20 feet (6.1 m) wide excluding any curbs, sidewalks, walkways, or shoulders, shall have a minimum back up length of 30 feet (9.1 m), and shall be appropriately marked to indicate parking is prohibited. Street connections to hammerhead turnarounds shall have a minimum inside radius of 20 feet (6.1 m) (see **Figure 10-5.1B**).

(n) Streets and alleys shall not have fences, walls, hedges, or other obstructions at corners or intersections blocking the driver's view of oncoming pedestrian or vehicle traffic. Fences or walls within 10 feet (3 m) of a street or alley corner or intersection shall be a maximum of 4 feet (122 cm) high with 75 percent of the area in the upper 2 feet (61 cm) open to permit vision through the fence or wall.

#### **10-5.1.2 Street and Alley Construction.**

Manufactured dwelling park streets and alleys shall be designed and constructed according to the following:

(a) Park streets and alleys shall not have a running grade exceeding 12 percent;

(b) Park streets and alleys shall have a minimum grade of 1 percent running the length of the streets;

(c) Park streets and alleys with curbs shall have a crown with a minimum 2 percent cross slope (see **Figure 10-5.1E**)

or an inverted crown with a minimum 1 percent cross slope (see **Figure 10-5.1G**), or a flat sheet street with a minimum single slope of 2%;

**(d)** Park streets and alleys without curbs shall have a crown with a minimum .5 percent cross slope (see **Figure 10-5.1F**) or an inverted crown with a minimum 1 percent grade (see **Figure 10-5.1G**), or a flat sheet street with a minimum single slope of 1%;

**(e)** Park streets and alleys without curbs shall have a 2 foot (61 cm) shoulder on each side (see **Figures 10-5.1F, G, and H**);

**(f)** Park streets with center dividers but without curbs shall have an inverted crown with a minimum 1 percent grade (see **Figure 10-5.1H**);

**(g)** Park streets with center dividers and curbs shall have each lane slope away from the center divider with a minimum 1 percent grade or shall have a crown on each lane with a minimum 2 percent grade to each side (see **Figure 10-5.1I**);

**(h)** Park streets shall be designed and constructed to prevent the accumulation of water and provide adequate drainage according to the following:

**(i)** Crowned streets with curbs shall be provided with inlets for proper drainage of surface water (see **Figure 10-5.1J**); and

**(j)** Inverted crowned streets shall have and drainage basins and gutters located down the center of the street (see **Figures 10-5.1K and 10-5.1L**);

**(k)** Park streets and alleys shall be engineered and designed for minimum of 5,000

(18-kip) single axle loads and shall be surfaced according to the following:

1. With a 2 inch (5 cm) wearing course of asphaltic-concrete over a 6 inch (15 cm) well-compacted and well-graded base consisting of 4 inches (10 cm) of 1-1/2 inch (38 mm) minus crushed rock topped with 2 inches (5 cm) of 3/4 inch (19 mm) minus crushed rock (see **Figures 10-5.1E through I**);

2. With a 4 inch (10 cm) wearing course of Portland cement concrete over a 6 inch (15 cm) well-compacted and well-graded

base consisting of 4 inches (10 cm) of 1-1/2 inch (38 mm) minus crushed rock topped with two inches of 3/4-inch (19 mm) minus crushed rock (see **Figures 10-5.1E through I**). Concrete shall have grid work of expansion/contraction joints placed in each direction at 10 feet (3.5 m) apart. Concrete shall have a compressive strength not less than 2,500 pounds (1,135 kg) per 1 square inch (6.45 square centimeters) in 28 days with 7 days of cure time; or

3. Parks located East of the Cascade summit may have streets with a wearing surface of well-graded crushed rock or clean well-graded quarry or pit-run material over a well-compacted base of 4 inches (10 cm) of 3/4 inch (19 mm) minus or 1-1/2 inch (38 mm) minus crushed rock, where permitted by the local planning department.

4. All base materials shall be clean and free from organic materials;

5. All surfaces and materials on which the base is to be constructed shall be thoroughly compacted before the pavement surface is placed;

6. Lime treatment of native soils with a pH greater than 10 may be substituted for base rock with an application of not less than 25 pounds (11 kg) of slacked lime per square yard mixed thoroughly (rototilled) to a minimum depth of 6 inches (15 cm); and

7. Cement treatment of native soils with a pH less than 10 may be substituted for base rock with an application of not less than 25 pounds (11 kg) of Portland cement per square yard mixed thoroughly (rototilled) to a minimum depth of 6 inches (15 cm).

**10-5.2 Driveways.** Each manufactured dwelling lot shall have a driveway connecting to a park street or alley to allow individuals access to and egress from their manufactured dwelling. Driveways shall be designed and constructed according to the following:

**(a)** Individual driveways to one manufactured dwelling shall have a

minimum 10-foot (3 m) wide wearing surface (**see Figure 10-5.2**);

**(b)** Double driveways serving two adjacent manufactured dwelling shall have a minimum 24 feet (7.3 m) wide wearing surface (**see Figure 10-5.2**);

**(c)** Driveways shall be constructed on ground having, or improved to have, a minimum soil bearing capacity of 1,000 pounds per square foot (4.883 kg/m<sup>2</sup>);

**(d)** Driveways shall be designed and constructed to prevent the accumulation of water and provide adequate drainage;

**(e)** Driveways shall have a wearing surface made of asphaltic-concrete, Portland concrete cement, or with other hard surfaced material approved by the authority having jurisdiction; and

**(f)** Driveways constructed of concrete cement shall have grid work of expansion/contraction joints placed in each direction at 10 feet (3.5 m) apart.

**(g)** Common driveways may serve individual or double driveways when manufactured dwellings are clustered in a single area such as on flag lots. Common driveways shall be constructed to the following (**see Figure 10-5.2**):

**1.** Common driveways may serve up to four individual manufactured dwellings but shall not exceed 100 feet (30.5 m) in length;

**2.** Common driveways shall have a minimum 20 foot (6.1 m) wide unobstructed right of way for emergency access;

**3.** Common driveways shall have a wearing surface constructed equivalent to that required for the streets or with other hard surfaced material approved by the authority having jurisdiction;

**4.** Common driveways shall have a minimum wearing surface area of 12 feet (3.6 m) in width excluding any curbs, sidewalks, walkways, or shoulders with one 4 foot (30 cm) shoulder on each side;

**5.** When parking is permitted, the common driveway shall be sized according to **Table 10-C** of this code;

**6.** Common driveways shall not be permitted to have parking within the minimum right of way area and shall be

appropriately marked to indicate where parking is not permitted;

**7.** Common driveways shall have a crown with a minimum .5 percent grade or an inverted crown with a minimum 1 percent grade (**see Figures 10-5.1F and G**);

**8.** Common driveways shall not exceed a 12 percent grade;

**9.** Common driveways shall have a minimum 14 foot (4.3 m) radius on the inside corners and a minimum 27 foot (8.3 m) radius on the outside corners; and

**10.** Common driveways shall have a minimum vertical clearance of 16 feet (5 m).

**10-5.3 Parking.** Automobile parking shall be provided in all mobile home and manufactured dwelling parks. Parking areas shall be designed and constructed according to the following:

**(a)** Each manufactured dwelling lot shall be provided with a minimum of two parking spaces that may be end to end, side to side, or with one on-street parking space and one off-street parking space. A usable garage or carport on a manufactured dwelling lot shall satisfy these parking requirements;

**(b)** One guest parking space shall be provided for every eight manufactured dwelling lots and shall be located within 400 feet (121.9 m) of each manufactured dwelling lot served. A separate guest parking area is not required where individual manufactured dwelling lots have a parking area for three or more vehicles or where streets are sized for on-street parking according to **Table 10-C** of this chapter;

**(c)** Play areas shall have a minimum of two parking spaces provided for every 2,500 square feet (2470.7 m<sup>(2)</sup>) of play area. Parking for a play area shall be located within 100 feet (30.5 m) of the play area it serves;

**(d)** Common facilities such as a clubhouse, recreation hall, tennis court, swimming pool, and similar facilities shall have a minimum of one parking space for every 30 manufactured dwelling lots within the park. If these facilities are open



to the public, the parking area shall be based on the occupant load of the facilities according to the **Oregon Structural Specialty Code (OSSC)** and the authority having jurisdiction;

**(e)** The park office shall have one parking space for every 50 manufactured dwelling lots within the park except when the park office is located inside a club house, recreation hall, or similar facility where parking is already provided;

**(f)** Combined parking areas serving more than one facility or area are permitted but shall not diminish total number of parking spaces required and shall stay within the maximum distances to each area served;

**(g)** At least 4 percent of the parking spaces intended for guest parking, office parking, play areas, recreation areas, club house, community facility, or similar facilities shall be made accessible according to **Chapter 11** of the **OSSC**;

**(h)** Parking areas, except in designated fenced and gated storage areas, shall have a wearing surface equivalent to that of the park streets, or of other hard surfaced material approved by the authority having jurisdiction;

**(i)** Parking areas shall not exceed a 1:20 or 5 percent slope;

**(j)** Parking areas shall be designed and constructed to prevent the accumulation of water and provide adequate drainage **(see Figure 10-5.1I and J)**;

**(k)** When a park is built in phases, parking shall be provided in each phase and sized appropriately for the number facilities and manufactured dwelling lots in that phase;

**(l)** When a park is built in phases and the common facilities are intended to serve more than one phase, the number of parking spaces at the common facilities shall be based on the total number of manufactured dwelling lots to be served in all phases;

**(m)** Street widths shall be increased based on the number, type, and location of the on-street parking according to **Table 10-C**;

**(n)** On-street parking spaces, other than for parallel parking, shall be marked on the pavement with a suitable paint;

**(o)** Off-street parking shall be sized according to **Table 10-D** or as otherwise approved by the authority having jurisdiction; and

**(p)** Areas in parking lots not designed for parking shall be identified as a no parking area.

**10-5.4 Pedestrian Access.** Each manufactured dwelling park shall be provided with an accessible route for pedestrians from each manufactured dwelling lot to each common area or facility and to the public way. Residents may be required to cross the park street in front of their manufactured dwelling lot to get to a sidewalk or walkway on the other side of the street. This section of the code does not require sidewalks or walkways on individual lots to individual manufactured dwellings.

**(a)** A sidewalk or walkway shall be required only on one side of each park street; located through green ways between the manufactured dwelling lots; or may be provided in other locations approved by the authority having jurisdiction;

**(b)** Park streets without sidewalks may have a designated walkway on one side of the street. The walkway shall be marked for pedestrian traffic on the pavement or divided from the traffic and parking area with curbing or similar barriers **(see Figure 10-5.4 and 10-5.4A)**. Required walkways shall not diminish the minimum required widths of streets or alleys established in **Table 10-C** of this code;

**(c)** Sidewalks and walkways shall be a minimum of 4 feet (122 cm) in width.

**(d)** Sidewalks and walkways shall provide a slip-resistant surface.

**(e)** Sidewalks, curbs, and walkways shall be accessible according to **Chapter 11** of the **OSSC (see Figures 10-5.4B, C, D, E, F, and H)**

**(f)** Sidewalks and walkways shall not be diminished in width by fire hydrants, light

poles, signs, curb cuts, or similar obstructions (see **Figure 10-5.4G**).

**(g)** Sidewalks and walkways shall not exceed a running slope of 1:20 or 5 percent and cross slope of 1:50 or 2 percent.

**(h)** Alleys and common driveways may serve as the pedestrian access without an increase in size if the slope does not exceed 1:50 or 2 percent (see **Figure 10-5.4H**).

**(i)** Park streets in temporary parks may serve as the pedestrian access without an increase in size if the slope does not exceed 1:50 or 2 percent.

**(j)** Stairways, ramps, landings, handrails, and guardrails, that are part of the sidewalk or walkway system, shall be constructed according to the **OSSC**.

**(k)** When sidewalks are provided in a manufactured dwelling park, they shall meet the requirements for an accessible route and be constructed according to one of the following:

1. 3-1/2 inch (9 cm) thick concrete, on an adequate base, with a compressive strength not less than 2,500 pounds per 1 square inch (176 kg/cm<sup>(2)</sup>) in 28 days with 7 days of cure time;

2. Asphaltic-concrete or other hard surfaced material approved by the authority having jurisdiction;

3. Pressure treated foundation grade lumber pressure preservatively treated according to **AWPA C22** and identified as in conformance with such standard by an approved agency; or

4. Wood-polymer composite complying with **ASTM 790**, **ASTM 2-1037**, **ASTM D1413**, and **AWPA EI-72**.

**(l)** When walkways are provided in a manufactured dwelling park, they shall meet the requirements for an accessible route and be constructed of hard packed, firm, stable, and slip resistant surface of rock or other material approved by the authority having jurisdiction meeting **ADA** guidelines. Walkways may be constructed from any of the materials approved for sidewalks according to Subsection (k) above.

**10-5.5 Curb Construction.** When curbs are provided by the park owner, they shall be constructed in a manner acceptable to the authority having jurisdiction:

**10-5.6 Speed Bumps.** Speed bumps, if provided in a park, shall be constructed and installed according to the following (see **Figure 10-5.6**):

**(a)** Speed bumps shall be spaced no closer than 300 feet (91.4 m);

**(b)** Speed bumps shall be no greater than 3 inches (76 mm) in height at the centerline, taper down to 0 inches over a 7 foot (2.1 m) distance in each direction, and taper down to 0 inches within 1 foot (30.5 cm) of each end;

**(c)** Speed bumps shall be striped with a highly visible reflective paint;

**(d)** Speed bumps shall be placed 3 feet (91 cm) away from the curb or the side of the street where no curb exists;

**(e)** Speed bumps shall not be placed in the same area occupied by a cross walk or walkway; and

**(f)** Speed bumps shall be made of asphaltic concrete and placed only when the ambient temperature is 55 degrees Fahrenheit (23 Celsius) or greater or made of prefabricated concrete, polymers, or other materials acceptable to the authority having jurisdiction.

## **10-6 Park Structures.**

**10-6.1 Park Buildings.** Park buildings shall comply with the following:

**(a)** Park buildings shall have permits from the authority having jurisdiction prior to any construction.

**(b)** Park buildings shall be constructed according to the **Oregon Structural Specialty Code (OSSC)**, the **Oregon Electrical Specialty Code (OESC)**, the **Oregon Plumbing Specialty Code (OPSC)**, and the **Oregon Mechanical Specialty Code (OMSC)**;

**(c)** Park buildings shall have the minimum required setbacks prescribed by **Chapter 9** or the **OSSC**, which ever is more restrictive;

**(d)** Park buildings that are considered an "affected building", shall be made

accessible according to **Chapter 11** of the **OSSC**; and

(e) A park building shall not be occupied until it has a certificate of occupancy issued by the authority having jurisdiction.

**10-6.2 Accessory Buildings and Structures.** Accessory buildings and accessory structures shall comply with the following:

(a) As required by **ORS 446.111**, accessory buildings or accessory structures may not be constructed on a manufactured dwelling lot within a park without the consent of the park owner or operator;

(b) As required by **ORS 446.111**, the park owner or operator giving consent to construct is responsible for advising the park resident of applicable laws, codes and regulations concerning the construction, use, and placement of accessory buildings and accessory structures on a manufactured dwelling lot; and

(c) Accessory buildings and accessory structures shall be built according to Chapter 8 and, where not specific, to the **Oregon One and Two Family Dwelling Specialty Code**.

**10-6.3 Pools and Spas.** Pools and spas intended or available for common use by the park residents shall be constructed according to the **Oregon Structural Specialty Code** and **OAR 333-60 and 333-62** administered by the **Health Division**.

**10-6.4 Retaining Walls and Fences.** Retaining walls and fences in mobile home or manufactured dwelling parks shall be constructed according to the **OSSC** and the following:

(a) Barbed wire fences and electrified fences are prohibited in mobile home or manufactured dwelling parks except where specifically permitted or required by the authority having jurisdiction;

(b) Fences, walls, hedges; or other obstructions shall not be constructed or located along driveways, streets, or

intersections where they can block a driver's view of oncoming pedestrian or vehicle traffic; and

(c) Fences or walls within 10 feet (3 m) of the intersection of any street, sidewalk, or walkway shall be a maximum of 4 feet (122 cm) high with 75 percent of the area in the upper 2 feet (61 cm) open to permit vision through the fence or wall.

#### **10-6.5 Bridges**

**10-6.5.1 Pedestrian and Vehicle Bridges.** Bridges and culverts shall be designed by an Oregon licensed professional engineer according to this chapter and where not specific, to the engineering requirements of the **OSSC** or **ASHTO-LRFD**.

**10-6.5.2 Vehicle Bridges and Culverts.** Except where otherwise required or permitted by the local authority having jurisdiction, vehicle bridges and culverts shall be designed to carry no less than the heaviest fire fighting equipment in the fire district serving the park. Vehicle bridges and culverts shall have the following minimum widths:

(a) Where the bridge or culvert is serving a standard street it shall be a minimum of 20 feet (6.1 m) wide if there is no parking, walkway, or sidewalk on the bridge or culvert;

(b) Where a bridge or culvert accommodates parking, it shall be sized according to **Table 10-C** of this code;

(c) Where a bridge or culvert accommodates sidewalks or walkways, add 4 feet (122 cm) to the bridge or culvert's width for each sidewalk or walkway added;

(d) Where a single bridge or culvert is serving a street with a center divider, the bridge or culvert shall be equivalent to the combined width of the street and the center divider;

(e) Where the bridge or culvert is serving a park street approaching a public way, it shall be sized according to **Table 10-C** of this code;

(f) Where the bridge or culvert is serving an alley or common driveway, it shall be

sized according to **Table 10-C** of this code; and

**(g)** Required street parking may be omitted where a street passes over a bridge or culvert;

**(h)** Where there is a sidewalk or walkway on one or both sides of a street approaching a bridge or culvert, the sidewalk(s) or walkways(s) shall be continued over the bridge or culvert unless a separate pedestrian bridge is provided and connected to the sidewalk(s) or walkway(s); and

**(i)** Bridges or culverts with sidewalks or walkways on one or both sides and have ramps, landing, guardrails, and handrails constructed according to the **OSSC**;

**10-6.5.3 Pedestrian Bridges and Culverts.** Pedestrian bridges and culverts shall be designed and constructed according to the following:

**(a)** Pedestrian bridges and culverts shall be designed for a minimum capacity of 100 pounds per square foot (488 kg/m<sup>(2)</sup>).

**(b)** Pedestrian bridges and culverts shall be a minimum of 4 feet (122 cm) wide;

**(c)** Pedestrian bridges over 200 feet (60.9 m) in length shall be 5 feet (152 cm) wide or shall have a passing space of 6 feet by 6 feet (183 cm by 183 cm) located every 200 feet or less;

**(d)** Pedestrian bridges shall be constructed according to the **OSSC**;

**(e)** Pedestrian bridges shall have ramps, landings, guardrails, and handrails constructed according to the **OSSC**;

**(f)** Pedestrian bridges and culverts shall not exceed a running slope of 1:20 or 5 percent and cross slope of 1:50 or 2 percent; and

**(g)** Pedestrian bridges shall be accessible according to this code and, where not specific, to **Chapter 11** of the **OSSC**.

## **10-7 Play Areas.**

**10-7.1 Play Area Basic Requirement.** Except as specifically permitted by **ORS 446.090** and **ORS 446.095**, all manufactured dwelling parks shall have play areas conforming to the requirements of this section.

**10-7.2 Play Area Construction Requirements.** Play areas in manufactured dwelling parks shall meet the following requirements:

**(a)** Size of play areas shall meet or exceed the following:

**1.** Each play area shall be a minimum of 2,500 square feet (2470.7 m<sup>(2)</sup>) of area;

**2.** Play areas shall have a minimum length to width aspect ratio of 3:1; and

**3.** When 5,000 square feet (4970.7 m<sup>(2)</sup>) or more of play area is required, the park may have one play area or multiple play areas, each with a minimum 2,500 square feet (2470.7 m<sup>(2)</sup>);

**(b)** Location of play areas shall meet or exceed the following:

**1.** The location of the play area(s) shall be subject to the approval of the local planning department;

**2.** When a park is built in phases, play areas shall be provided for each phase and sized appropriately for the number of manufactured dwelling lots in that phase;

**3.** One play area may serve all phases of the park providing its construction is completed prior to the opening of the first phase; and

**4.** Play areas shall be accessible from all parts of the park or where there are multiple play areas, each play area shall be accessible to the park area it serves.

**(c)** Reasonable safety shall be provided within the park's play area(s) according to the following:

**1.** Play areas shall be provided with a 4 foot (122 cm) high fence or other suitable safeguard, acceptable to the authority having jurisdiction, when a play area abuts or is near a railroad, public street, sharp declivity, water hazard, or other hazards identified by the authority having jurisdiction;

**2.** Play ground equipment, when provided, shall comply with **ASTM F1487-95**;

**3.** Play areas shall be located in a safe area and maintained in a safe and sanitary condition;

4. Covers over play or recreation areas, when provided, shall be constructed according to the **OSSC**; and

(d) Use of play areas shall conform with the following:

1. Required play areas shall be restricted to play or recreational use only and shall not include any other use. Where permitted by the local planning department, the play area may occupy the same space as an open area or green way;

2. Required play areas shall not occupy the same space as a storage lot, street, alley, driveway, pool, retention pond, club house, recreation hall, or any other similar area or facility;

3. Play areas are not required to have play ground or athletic equipment but if provided, it shall be accessible;

4. Required play areas shall be complete and usable prior to the first occupant moving into the park.

(e) Ground surfaces in play or recreation areas shall meet or exceed the following:

1. Play areas shall not have a surface grade exceeding 5 percent;

2. Ground surface located under and within 6 feet (183 cm) horizontally of playground equipment shall consist of loose fill or shock absorbing unitary material meeting the requirements of **ASTM F12-99** or **Table 10-E** of this chapter and be rated for the specific height of the equipment provided;

3. Ground surface for recreational uses, such as soccer, baseball, or football, shall be made of sod, artificial turf, and other suitable stable surfaces;

4. Ground surface for specialty recreational uses, such as jogging, volley ball, horse shoes, or tether ball, shall be made of sand, fine gravel, pavement, or other suitable surfaces; and

5. Ground surface in play or recreational areas shall not consist of dirt, mud, bark-dust, rock, hazardous materials, or other unsuitable surfaces.

#### **10-7.3 Play Areas In Parks for Families.**

Manufactured dwelling parks designated as “family parks” or parks that do not

qualify as “55 and older parks” under the federal **Fair Housing Act**, shall have a minimum of one 2,500 square foot (2470.7 m<sup>(2)</sup>) play area for every 30 manufactured dwelling lots in the park, and have an additional 80 square feet (50.7 m<sup>(2)</sup>) of play area added for every manufactured dwelling lot after the first 30 lots.

**(NOTE: Based on an 80% family occupancy).**

#### **10-7.4 Play Areas In Parks for Persons 55 and Older.**

Manufactured dwelling parks meeting the requirements of a “55 and older park” under the federal **Fair Housing Act**, shall have a minimum of one 2,500 square foot (2470.7 m<sup>(2)</sup>) play area, and have an additional 20 square feet (9.3 m<sup>(2)</sup>) of play area added for every manufactured dwelling lot after the first 125 lots.

**(NOTE: Based on an 80% 55 and older occupancy).**

#### **10-7.5 Play Areas In Park Conversions.**

A mobile home or manufactured dwelling park being converted from a 55 and older park to a family park shall meet the following:

(a) A mobile home or manufactured dwelling park built after March 13, 1989 and converted from a “55 and older park” to a “family park” shall have a play area(s) meeting the requirements of Subsection 10-7.3 of this code; and

(b) As permitted by **ORS 446.095**, a manufactured dwelling park in existence on or before March 13, 1989 as a “55 and older park” and later converted to a “family park” is not required to have additional play areas added. However, if a play area already exists in this park it shall be maintained during and after the conversion to a family park and shall not be eliminated or converted to any other use.

## **10-8 Temporary Parks.**

### **10-8.1 Temporary Park Limitations.**

The authority having jurisdiction and the local planning department may only permit the establishment of a temporary manufactured dwelling park within the restrictions of **ORS 446.105** and this code.

**(a)** Permits for temporary parks may only be issued when there is a severe housing shortage created by a large construction project, timber operation, military operation, natural disaster, declared emergency, or seasonal farm work.

**(b)** Permits for temporary parks issued by the authority having jurisdiction shall include an expiration date. After the expiration date, the authority having jurisdiction may renew the permit if the project or need still exists.

**(c)** All permits shall expire upon completion of the project or at end of the emergency need. Upon termination of the permit, a temporary park shall be dismantled and all manufactured dwellings removed within 30 days of the park closure, except where the authority having jurisdiction allows the park to be used for storage of the manufactured dwellings.

**(d)** A temporary manufactured dwelling park may be converted to a permanent manufactured dwelling park if approved by the authority having jurisdiction and the local planning department and the park is upgraded to meet all the requirements of this chapter for a permanent park.

### **10-8.2 Long Term Temporary Parks.**

Temporary manufactured dwelling parks permitted to be occupied for any period exceeding six consecutive months shall be constructed to the requirements of this chapter except for the following:

**(a)** With prior approval from the authority having jurisdiction, some or all of the play area requirements may be waived if there will be no families occupying the park;

**(b)** With prior approval from the authority having jurisdiction, accessibility

requirements may be waived where it can be shown that no immediate need exists;

**(c)** With prior approval from the authority having jurisdiction, walkways or sidewalks may be omitted; and

**(d)** With prior approval from the authority having jurisdiction, park streets, alleys, and driveways may be constructed with a 4 inch (10 cm) wearing surface of well-graded crushed rock or clean well graded quarry pit run material over a well-compacted base of 4 inches (10 cm) of  $\frac{3}{4}$  inch (19 mm) minus or 1-1/2 inch (38 mm) minus crushed rock. All base materials shall be clean and free from organic materials. Base materials may be substituted with the following:

**1.** Lime treatment of native soils with a pH greater than 10 may be substituted for base rock with an application of not less than 25 pounds (11.34 kg) of slacked lime per square yard mixed thoroughly (rototilled) to a minimum depth of 6 inches (15 cm); or

**2.** Cement treatment of native soils with a pH less than 10 may be substituted for base rock with an application of not less than 25 pounds (11.34 kg) of Portland cement per square yard mixed thoroughly (rototilled) to a minimum depth of 4 inches (10 cm).

### **10-8.3 Short-Term Temporary parks.**

Temporary manufactured dwelling parks permitted to be occupied for a period of six months or less in any one calendar year shall be constructed to the requirements of this chapter except for the following:

**(a)** With prior approval from the authority having jurisdiction, a temporary park may be permitted in a flood hazard area without requiring the manufactured dwellings to be elevated above the BFE if there is no anticipated threat of flooding within the time limitations stated in the permit;

**(b)** With prior approval from the authority having jurisdiction, some or all of the park lighting requirements may be waived;

**(c)** With prior approval from the authority having jurisdiction, some or all of the play

area requirements may be waived if there will be no families occupying the park;

**(d)** With prior approval from the authority having jurisdiction, walkways or sidewalks may be omitted;

**(e)** With prior approval from the authority having jurisdiction, accessibility requirements may be waived where it can be shown that no immediate need exists; and

**(f)** With prior approval from the authority having jurisdiction, park streets, alleys, and driveways may be constructed with a 2 inch (5 cm) wearing surface of well-graded crushed rock or clean well graded quarry pit run material over a well-compacted base of 4 inches (10 cm) of  $\frac{3}{4}$  inch (19 mm) minus or 1-1/2 inch (38 mm) minus crushed rock. All base materials shall be clean and free from organic materials. Base materials may be substituted with the following:

1. Lime treatment of native soils with a pH greater than ten may be substituted for base rock with an application of not less than 25 pounds (11.34 kg) of slacked lime per square yard mixed thoroughly (rototilled) to a minimum depth of 6 inches (15 cm); or

2. Cement treatment of native soils with a pH less than ten may be substituted for base rock with an application of not less than 25 pounds (11.34 kg) of Portland cement per square yard mixed thoroughly (rototilled) to a minimum depth of 4 inches (10 cm).

#### **10-8.4 Temporary Parks for Labor Camps and Employee Housing.**

Temporary manufactured dwelling parks used as labor camps shall also meet the following requirements:

**(a)** A temporary park and manufactured dwellings located within the park shall comply with the sanitation, health, and safety regulations contained in **Oregon Administrative Rule, Chapter 437**, of the **Oregon Occupational Safety and Health Division (OR-OSHA)** when the park is a labor camp; and

**(b)** Manufactured dwellings within a temporary park provided by an employer

to house employees and families of employees shall have an approved operating smoke detector located in each bedroom and outside each bedroom area in addition to any smoke detectors already provided by the manufacturer. Smoke detectors shall be installed according to chapter 9 of this code.

#### **10-9 Park Additions, Alterations, and Conversions.**

**10-9.1 Park Additions.** Mobile home and manufactured dwelling park additions shall comply with the following:

**(a)** Plans and permit applications shall be submitted to the authority having jurisdiction for park additions as required in Chapter 1 of this code;

**(b)** The applicant shall submit proof that the site is suitable for construction according to this code;

**(c)** Park additions shall be constructed in conformance with this chapter; and

**(d)** The existing portion of the park does not need to be upgraded to the requirements of this code provided the park was in compliance prior to the addition except for the following:

1. The existing portion of the park shall be upgraded to the maintenance requirements in this chapter of the code;

2. The existing portion of the park shall be upgraded when required by the authority having jurisdiction to provide additional electric, water, sewer, or gas service; and

3. The existing portion of the park shall be upgraded where the authority having jurisdiction has identified unsafe, life threatening, or unsanitary conditions needing correction.

**10-9.2 Park Alterations.** Mobile home and manufactured dwelling park alterations shall comply with the following:

**(a)** Manufactured dwelling lot lines may be moved or reconfigured to accommodate minor changes. Manufactured dwelling lots may be added, moved, combined, expanded, or eliminated within a park to accommodate a different size or shape manufactured dwelling, accessory building, or

accessory structure provided an amended park plan is submitted to and approved by the authority having jurisdiction prior to making any changes. The amended park plan shall show the location of the new lot lines, the new lot sizes, and the new numerical identification of the affected lots;

**(b)** Manufactured dwelling lots that have been amended shall have the replacement manufactured dwelling, accessory building, or accessory structure installed according to the minimum setbacks and clearances required in Chapter 9 of this code;

**(c)** The authority having jurisdiction may approve alterations to existing mobile home or manufactured dwelling parks as long as the alterations comply with the requirements of this chapter of the code; and

**(d)** The authority having jurisdiction may approve alternate methods and materials if they provide equivalent protection to those requirements contained in this code, except where the alternate method or material would be in direct conflict with statute.

**10-9.3 Conversion of Parks.** Mobile home and manufactured dwelling parks being converted to another use shall comply with the following:

**(a)** A mobile home or manufactured dwelling park shall only be converted to a subdivision with the prior approval of the authority having jurisdiction and the local planning department. The municipality may require all park streets, alleys, and common areas to be dedicated to the municipality. A municipality may deny approval of such a conversion;

**(b)** A mobile home or manufactured dwelling park may be converted from a “family park” to a “55 and older park” providing the park complies with the Housing For Older Persons Act of 1995;

**(c)** A mobile home or manufactured dwelling park may be converted from a “55 and older park” to a “family park” providing the park complies with the Housing For Older Persons Act of 1995;

**(d)** A mobile home or manufactured dwelling park may be converted to a recreational vehicle park or combination park if approved by the authority having jurisdiction and the local planning department and if it meets all state and local requirements for a recreational vehicle park; and

**(e)** A temporary manufactured dwelling park may be converted to a permanent manufactured dwelling park if approved by the authority having jurisdiction and the local planning department and is upgraded to meet all the requirements of this chapter.

## **10-10 Maintenance and Safety.**

**10-10.1 Park Responsibilities.** The owner or operator of a mobile home or manufactured dwelling park shall:

**(a)** Maintain the park’s common use areas such as trees, streets, alleys, all common luminaires, common driveways, sidewalks, walkways, bridges, culverts, pools, park buildings, and other similar areas or facilities in a safe and sanitary condition;

**(b)** Maintain the park’s common use areas such as green spaces, bike paths, buffer zones, open spaces, play and recreation areas, and other similar areas in a safe and sanitary condition;

**(c)** Maintain all required park signage, marking, striping, safety barriers, and other similar accessories to keep them functional and in good repair;

**(d)** Maintain all undeveloped grounds adjacent to the occupied portion of the park to prevent the spread of fire and infestation of rodents or vermin;

**(e)** Maintain the park’s sewer, water, fuel gas, and electrical service to the utility termination on each lot in a safe and sanitary condition;

**(f)** Maintain the park’s storm water drainage system to prevent standing water or water run off on to manufactured dwelling lots, common use areas, or adjacent properties;

**(g)** Maintain vegetation, including trees, in the park’s common use areas to prevent over growth, accumulation of



decomposing materials, fire hazards, and the attraction of rodents or vermin;

**(h)** Keep the park grounds free from accumulation of dry brush, leaves, weeds, debris, and refuse that are capable of promoting the spread of fire or attracting rodents or vermin;

**(i)** Require the residents to maintain their homes and lots according to this code;

**(j)** Maintain and provide an updated site plan of the park to the local fire official showing all street names, lot numbers, water supplies, and utility disconnects;

**(k)** Maintain the surfacing material under and around playground equipment;

**(l)** Keep fire lanes open at all times and enforce "no parking" areas within the park;

**(m)** Permit and assist the entry and access of all emergency vehicles within the park;

**(n)** Prevent any construction within the minimum clearances and setbacks required by this code and the authority having jurisdiction; and

**(o)** Burn debris only in designated areas at times permitted by the **Department of Environmental Quality** (DEQ) and the local fire official.

#### **10-10.2 Resident Responsibilities.**

Residents of a manufactured dwelling lot in a mobile home or manufactured dwelling park shall maintain their home, lot, and parking area and provide reasonable safeguards against fire and other hazards. A resident in a mobile home or manufactured dwelling park shall:

**(a)** Maintain the vegetation on the manufactured dwelling lot to prevent over growth, accumulation of decomposing of dry materials, and debris creating fire hazards, and the attraction of rodents or vermin, except as otherwise provided by the rental agreement;

**(b)** Maintain the manufactured dwelling roof gutters and down spout connections, when required, to the lot's storm water drainage systems to prevent standing water, erosion, and run off onto adjacent lots or properties;

**(c)** Maintain the grounds, walkways, driveways, patio slabs, accessory structures, and accessory buildings on the manufactured dwelling lot in a safe and sanitary condition;

**(d)** Maintain the sewage connections to the home to assure they are air and water tight, free from leaks and other defects;

**(e)** Maintain the water and fuel gas connections between the manufactured dwelling and utility termination on the lot in a safe condition free from leaks or other defects;

**(f)** Maintain the electrical utility connections between the manufactured dwelling and the service disconnect in a safe condition free from damage and degradation;

**(g)** No person shall allow their pet or animal to run at large or to create any health hazard within a mobile home or manufactured dwelling park;

**(h)** Keep the area directly under each manufactured dwelling, accessory structure, or accessory building free and clean of refuse or other objects that may create a fire hazard or harbor rodents or vermin;

**(i)** Prevent the storage of combustible materials, flammable liquids, gases, or fuel powered equipment under any manufactured dwellings, accessory building, or structure;

**(j)** Park only in designated parking areas and keep fire lanes within the park open and unobstructed at all times;

**(k)** Maintain approved smoke alarms in their manufactured dwelling;

**(l)** Burn debris only in designated areas at times as permitted by DEQ and the local fire official; and

**10-10.3 Contractual Services.** Where there is a written contract between a resident and the park owner to provide some or all of the resident's maintenance requirements described in Section 10-10-2 of this chapter, the resident shall not be held accountable for such maintenance provided the resident is acting in good faith and has fulfilled all the terms of the contract.

**10-10.4 Monitoring.** As permitted by **ORS 446.066** and **446.072**, the Division may perform continued monitoring inspections in mobile home and manufactured dwelling parks to assure continued compliance with state statutes and this code:

**(a)** The authority having jurisdiction may inspect mobile home or manufactured dwelling parks to assure the park continues to conform with the relevant state statutes and this code;

**(b)** Police officials may cite and remove vehicles parked in fire lanes, no parking areas, and in parking spaces reserved for disabled persons;

**(c)** Fire officials may inspect the common areas of the park and any park buildings to identify fire hazards and require corrective action; and

**(d)** Upon request by state, county, or city officials, acting on official business, the park owner or operator shall permit access to all parts of a mobile home or manufactured dwelling park, except for private residences.

**TABLE 10-C**  
**MINIMUM PAVEMENT WIDTHS**

DESCRIPTION	ONE OR TWO WAY STREET	ONE LANE OF A DEVIDED STREET	PARK STREET CONNECTING TO THE PUBLIC WAY	ONE WAY ALLEY	TWO WAY ALLEY	COMMONDRIVE -WAY
UNOBSTRUCTED TRAFFIC LANE WIDTH	16 Feet	12 Feet	20 Feet	12 Feet	16 Feet	9 Feet
NO PARKING ON EITHER SIDE	20 Feet	14 Feet	30 Feet	14 Feet	20 Feet	12 Feet
PARALLEL PARKING ON ONE SIDE	30 Feet	19 Feet	34 Feet	19 Feet	26 Feet	19 Feet
PARALLEL PARKING ON BOTH SIDES	30 Feet	28 Feet	34 Feet	28 Feet	30 Feet	28 Feet
30 DEGREE DIAGONAL PARKING ON ONE SIDE	33.3 Feet	29.3 Feet	37.3 Feet	29.3 Feet	33.3 Feet	29.3 Feet
30 DEGREE DIAGONAL PARKING ON BOTH SIDES	50.6 Feet	46.6 Feet	54.6 Feet	46.6 Feet	50.6 Feet	46.6 Feet
45 DEGREE DIAGONAL PARKING ON ONE SIDE	35.6 Feet	32.6 Feet	39.6 Feet	32.6 Feet	35.6 Feet	32.6 Feet
45 DEGREE DIAGONAL PARKING ON BOTH SIDES	55.2 Feet	52.2 Feet	59.2 Feet	52.2 Feet	55.2 Feet	52.2 feet
60 DEGREE DIAGONAL PARKING ON ONE SIDE	39 Feet	39 Feet	41 Feet	39 Feet	39 Feet	39 Feet
60 DEGREE DIAGONAL PARKING ON BOTH SIDES	60 Feet	60 Feet	62 Feet	60 Feet	60 Feet	60 Feet
90 DEGREE PERPINDICULAR PARKING ON ONE SIDE	43 Feet	43 Feet	43 Feet	43 Feet	43 Feet	43 Feet
90 DEGREE PERPINDICULAR PARKING ON BOTH SIDES	62 Feet	62 Feet	62 Feet	62 Feet	62 Feet	62 Feet

**NOTES:**

1. Use this table to size all streets, alleys, and common driveways with or without on-street parking.
2. The dimensions shown are measured curb to curb and includes all traffic lanes and on street parking but does not include curbs, sidewalks, or walkways.
3. Alternate street configurations may be used with prior approval from the authority having jurisdiction.
4. Alternate parking angles or configurations may be used with the prior approval from the authority having jurisdictions.
5. Where a street or alley is not designed for parking on one or both sides, it shall be identified as a “No Parking” area.
6. A two-foot wide bike lane may be added to one side of any street or alley without increasing the size of the street or alley.
7. This table does not include parking sized to meet the accessibility requirements of the **Americans with Disabilities Act (ADA)**. For more information, see **Chapter 11** of the **Oregon Structural Specialty Code**.
8. This table is based on information provided through the **American Institute of Architects (AIA)**.

**TABLE 10-D**  
**PARKING LOT LAYOUT**

DESCRIPTION	STALL WIDTH	CURB LENGTH	STALL DEPTH	ISLE WIDTH	ROW WIDTH
PARALLEL PARKING ON ONE SIDE	8 Feet	23 Feet	8 Feet	12 Feet	20 Feet
	9 Feet	23 Feet	9 Feet	12 Feet	21 Feet
PARALLEL PARKING ON BOTH SIDES	8 Feet	23 Feet	8 Feet	12 Feet	28 Feet
	9 Feet	23 Feet	9 Feet	12 Feet	30 Feet
30 DEGREE DIAGONAL PARKING ON ONE SIDE	9 Feet	18 Feet	17.33 Feet	11 Feet	28.33 Feet
	10 Feet	20 Feet	18.25 Feet	11 Feet	29.25 Feet
30 DEGREE DIAGONAL PARKING ON BOTH SIDES	9 Feet	18 Feet	17.33 Feet	11 Feet	45.66 Feet
	10 Feet	20 Feet	18.25 Feet	11 Feet	47.5 Feet
45 DEGREE DIAGONAL PARKING ON ONE SIDE	9 Feet	12.75 Feet	19.85 Feet	13 Feet	32.85 Feet
	10 Feet	14.15 Feet	20.5 Feet	13 Feet	33.5 Feet
45 DEGREE DIAGONAL PARKING ON BOTH SIDES	9 Feet	12.75 Feet	19.85 Feet	13 Feet	52.7 Feet
	10 Feet	14.15 Feet	20.5 Feet	13 Feet	54 Feet
60 DEGREE DIAGONAL PARKING ON ONE SIDE	9 Feet	10.4 Feet	21 Feet	18 Feet	39 Feet
	10 Feet	11.5 Feet	21.5 Feet	18 Feet	39.5 Feet
60 DEGREE DIAGONAL PARKING ON BOTH SIDES	9 Feet	10.4 Feet	21 Feet	18 Feet	60 Feet
	10 Feet	11.5 Feet	21.5 Feet	18 Feet	61 Feet
90 DEGREE PERPINDICULAR PARKING ON ONE SIDE	9 Feet	9 Feet	19 Feet	24 Feet	43 Feet
	10 Feet	10 Feet	19 Feet	24 Feet	43 Feet
90 DEGREE PERPINDICULAR PARKING ON BOTH SIDES	9 Feet	9 Feet	19 Feet	24 Feet	62 Feet
	10 Feet	10 Feet	19 Feet	24 Feet	62 Feet

**NOTES:**

1. Use this table to size all off-street parking areas in manufactured dwelling parks.
2. The dimensions shown are measured curb to curb and includes parking space and aisle widths but does not include curbs, sidewalks, or walkways.
3. Alternate parking angles or configurations may be used with prior approval from the authority having jurisdictions.
4. Areas in parking lots not designed for parking shall be identified as a “No Parking” area.
5. This table does not include parking sized to meet the accessibility requirements of the **Americans with Disabilities Act (ADA)**. For more information, see **Chapter 11** of the **Oregon Structural Specialty Code**.
6. This table is based on information provided through the **American Institute of Architects (AIA)**.

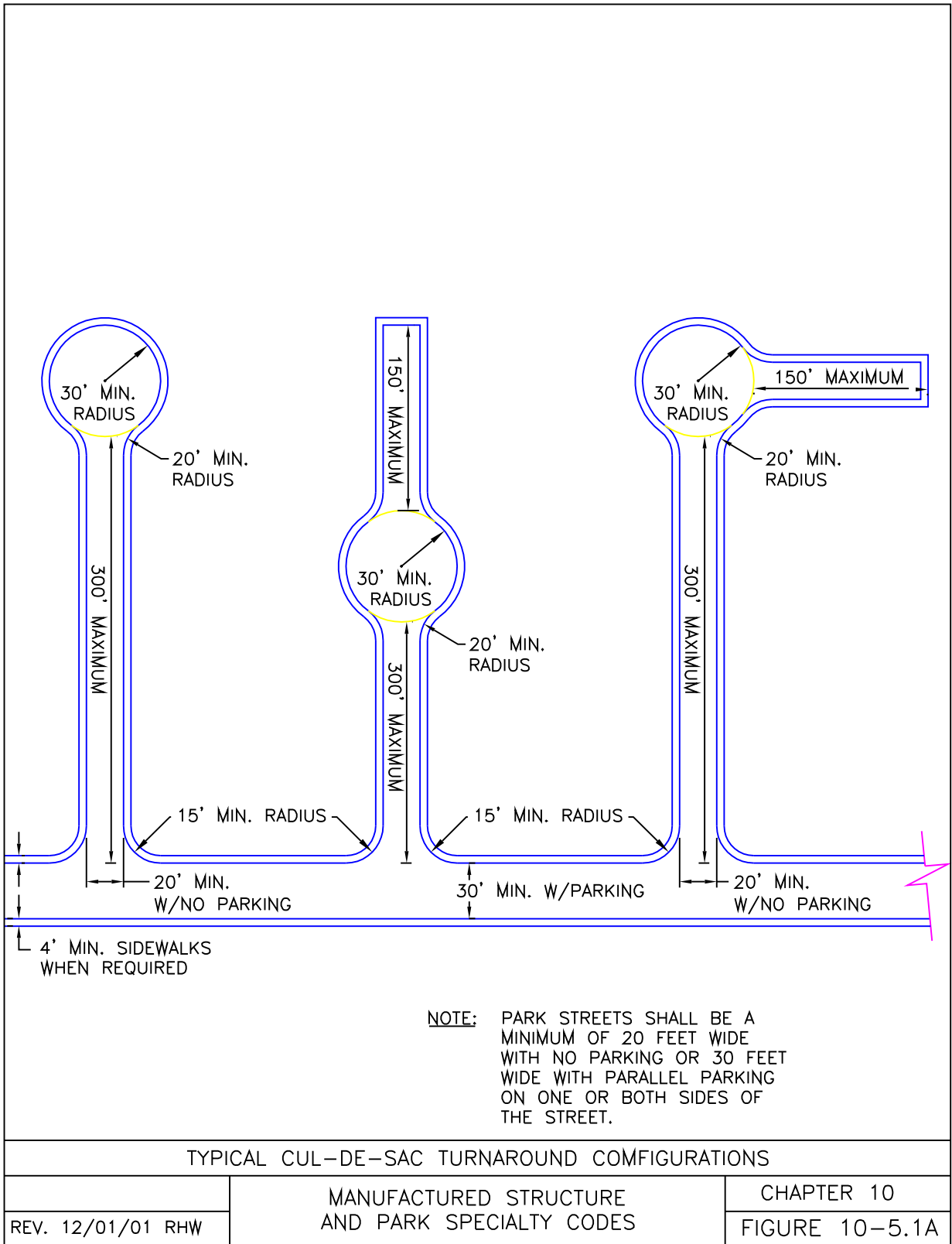
## TABLE 10-E

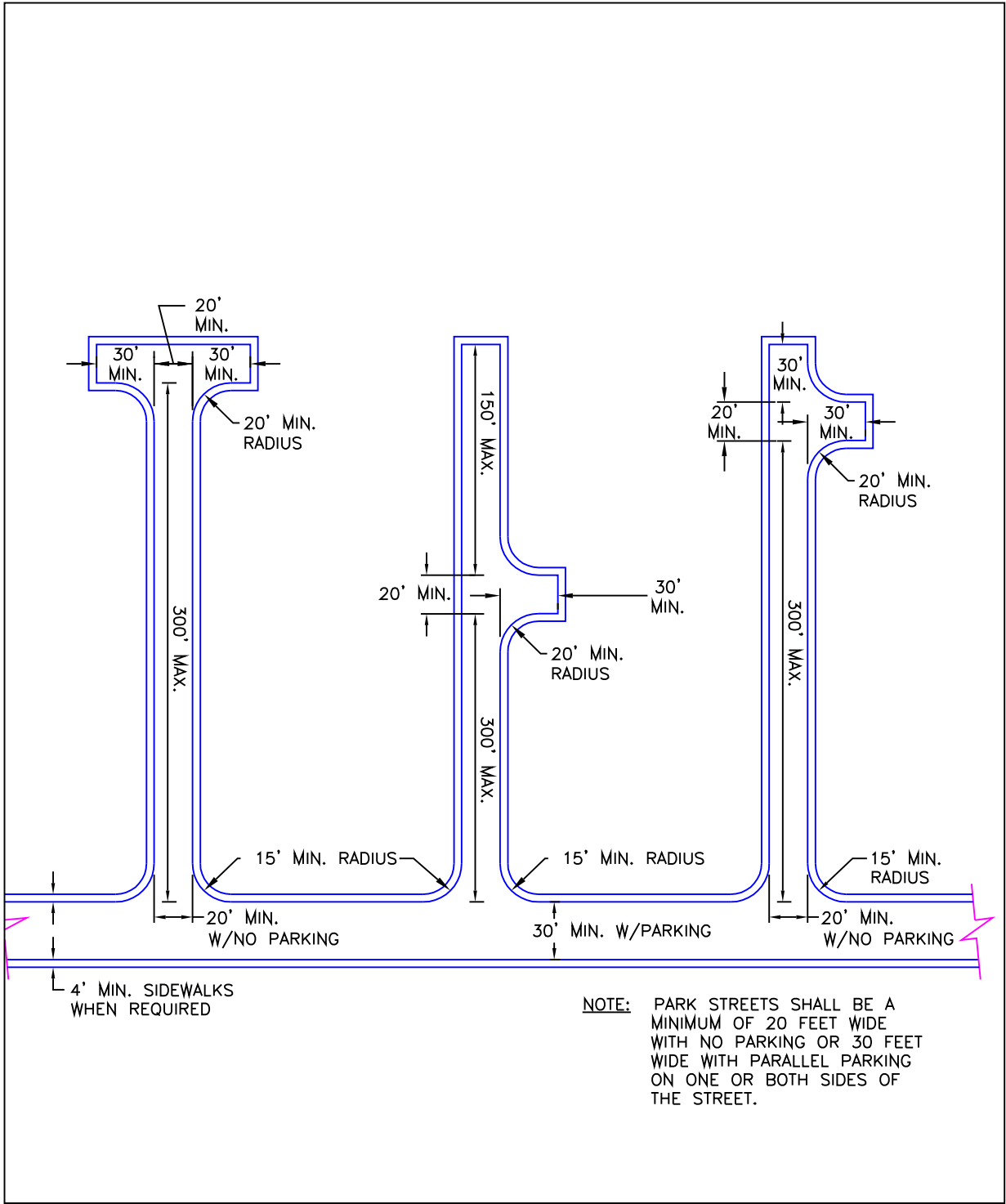
# PLAYGROUND SURFACING MATERIALS

MATERIAL	6 INCH DEPTH	9 INCH DEPTH	12 INCH DEPTH
WOOD MULCH	7 Feet	10 Feet	11 Feet
DOUBLE SHREDDED BARK MULCH	6 Feet	10 Feet	11 Feet
UNIFORM WOOD CHIPS	6 Feet	7 Feet	12 Feet
FINE SAND	5 Feet	5 Feet	9 Feet
COURSE SAND	5 Feet	5 Feet	6 Feet
FINE GRAVEL	6 Feet	7 Feet	10 Feet
MEDIUM GRAVEL	5 Feet	5 Feet	6 Feet
SHREDDED TIRES	Not Rated	Not Rated	Not Rated
BARK NUGGETS	Not Rated	Not Rated	Not Rated

**NOTES:**

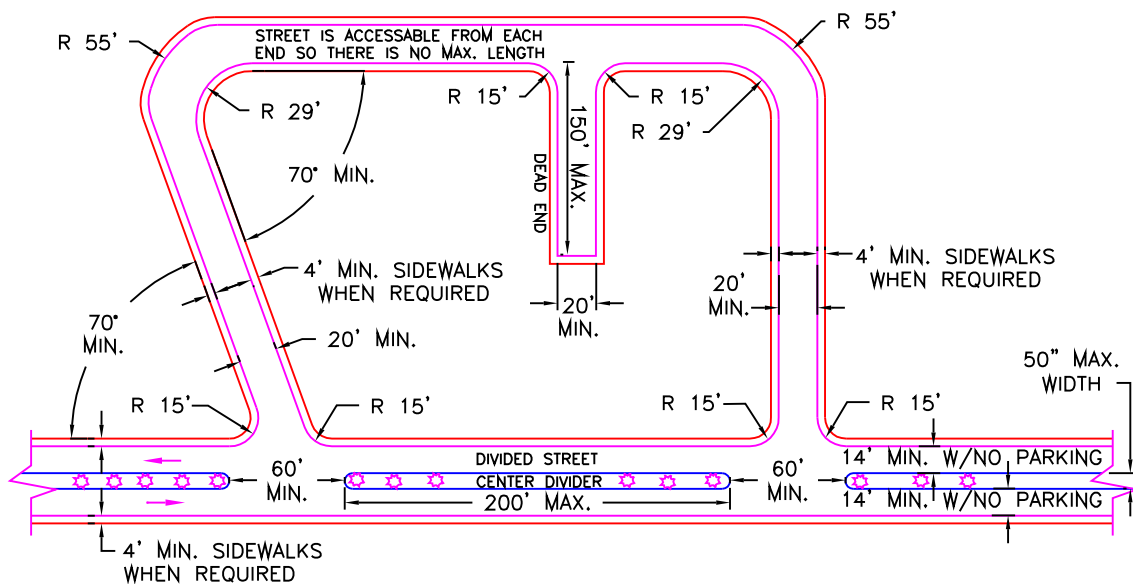
1. Surfacing material under and around playground equipment shall be made of one of the materials described in this table and placed at the depths shown based on the height of the playground equipment installed.
2. Shock absorbing unitary materials or alternate loose-fill materials may be used if tested to meet the requirements of **ASTM F12-99**, rated for protection against fall injuries, and installed according to the manufacturer's installation instructions. Concrete, asphalt, soil, and turf shall not be used for surfacing material under or around playground equipment.
3. Non-rated loose-fill materials may be used under playground equipment that is not elevated and presents no fall hazard injuries.
4. This table is based on research performed by **the U.S. Consumer Product Safety Commission** to identify the maximum fall height from which a life-threatening head injury would not be expected using various loose fill materials.
5. This table is provided to reduce the number and seriousness of injury accidents during the use of playground equipment, however, it can not prevent all injury accidents from happening. Children playing on playground equipment should be under constant adult supervision.
6. Surfacing materials under and around playground equipment shall be maintained and replaced as necessary to provide continued safety.





TYPICAL HAMMERHEAD TURNAROUND CONFIGURATIONS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1B



**NOTE:** THE LETTER "R" FOLLOWED BY A NUMBER STANDS FOR THE MINIMUM RADIUS PERMITTED ON A STREET CORNER OR A CURVED STREET.

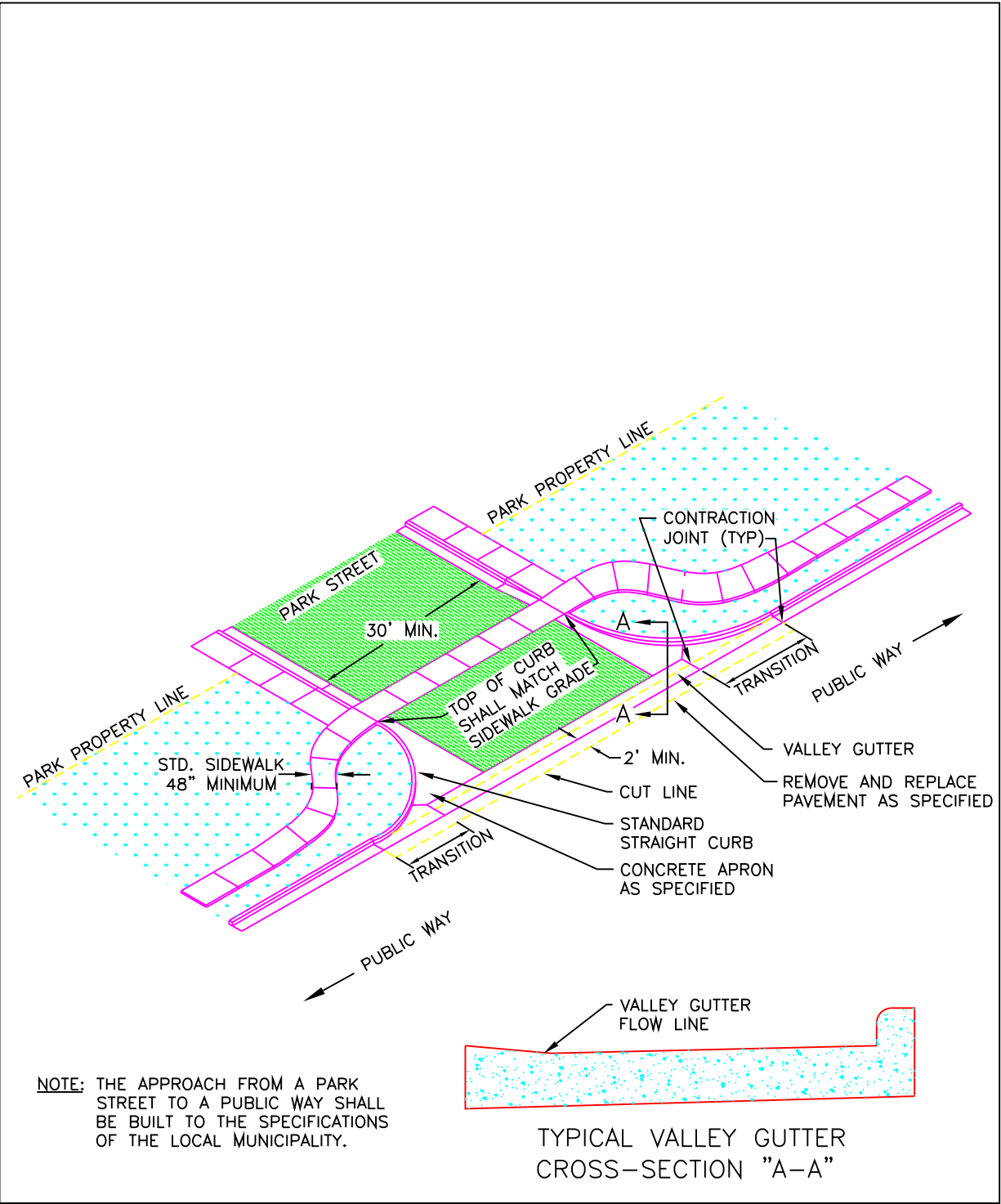
**NOTE:** EACH LANE ON A DIVIDED STREET SHALL BE A MIN. OF 14 FEET WIDE WITH NO PARKING, 19 FEET WIDE WITH PARALLEL PARKING ON ONE SIDE, AND 28 FEET WIDE WITH PARALLEL PARKING ON BOTH SIDES OF THE LANE.

**NOTE:** PARK STREETS SHALL BE A MINIMUM OF 20 FEET WIDE WITH NO PARKING OR 30 FEET WIDE WITH PARALLEL PARKING ON ONE OR BOTH SIDES OF THE STREET.

TYPICAL PARK STREET CONFIGURATIONS

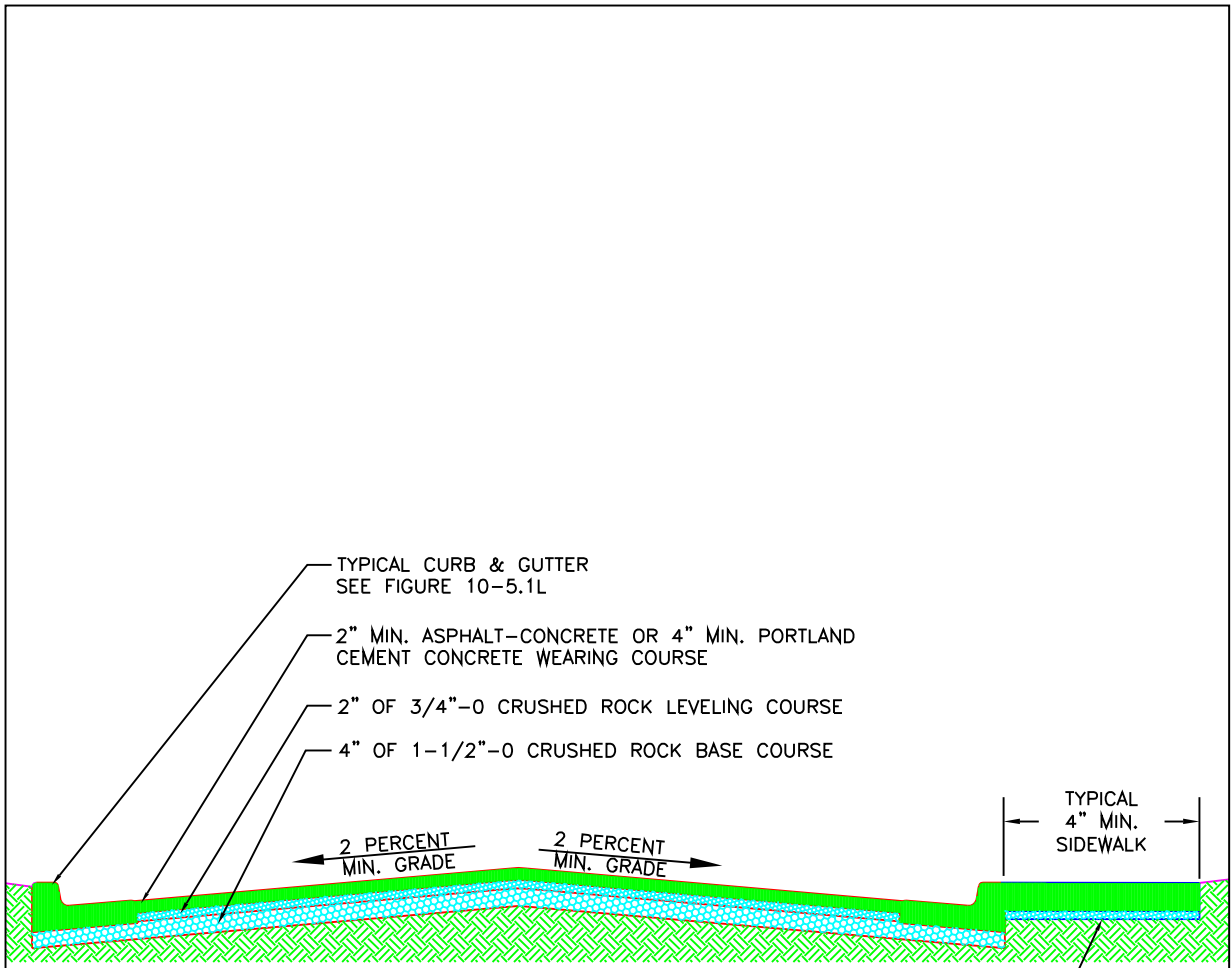
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1C





TYPICAL PARK STREET APPROACH TO THE PUBLIC WAY DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1D

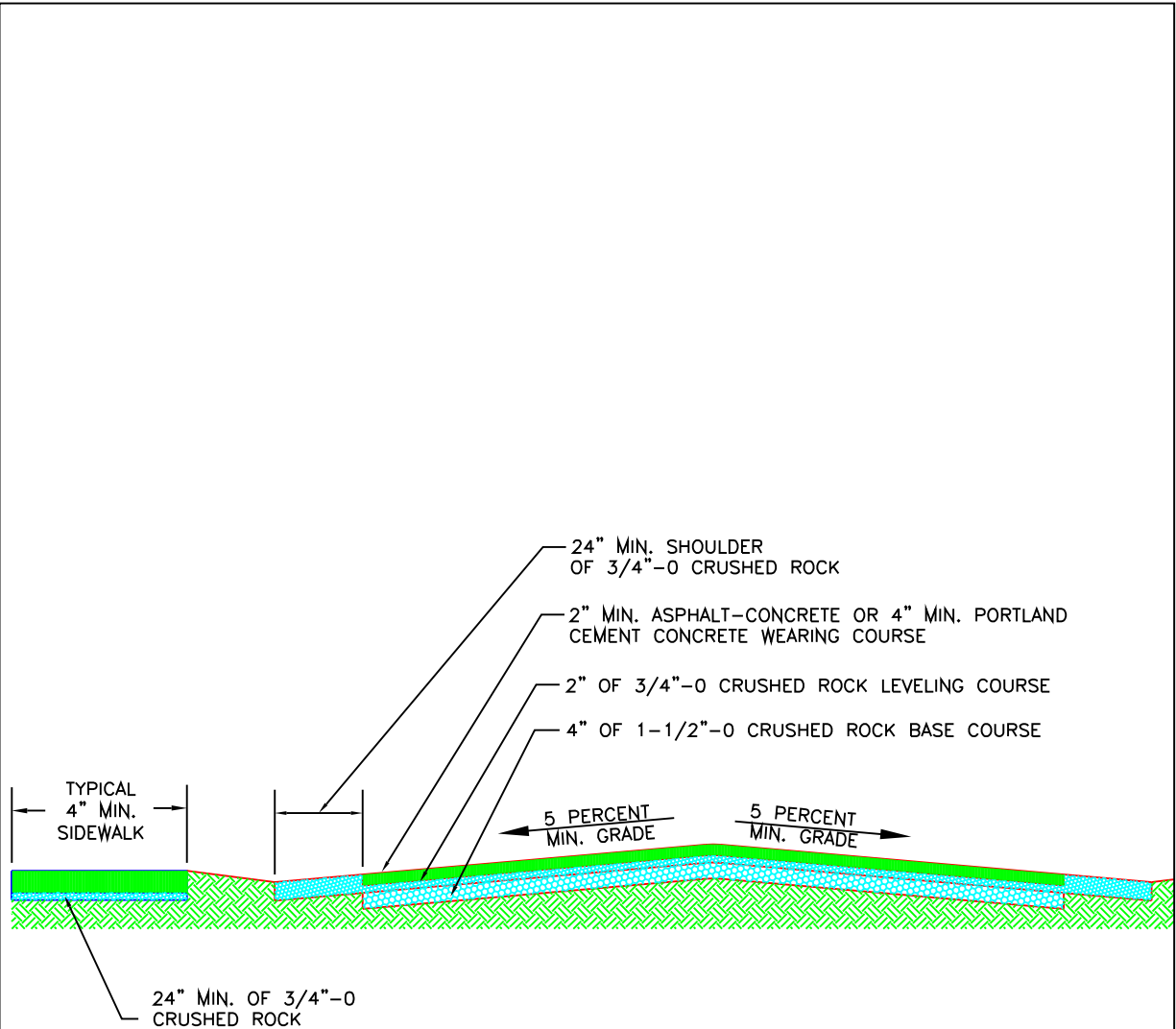


**NOTE:** SEE FIGURE 10-5.1J FOR TYPICAL DRAIN DETAIL.

**NOTE:** PARK STREETS SHALL BE CONSTRUCTED WITH A WELL-COMPACTED AND WELL-GRADED BASE OF 4" OF 1-1/2"-0 CRUSHED ROCK TOPPED WITH 2" OF 3/4"-0 CRUSHED ROCK AND FINISHED WITH A 2" WEARING COURSE OF ASPHALT-CONCRETE OVER OR A 4" WEARING COURSE OF PORTLAND CEMENT CONCRETE. STREETS MADE OF PORTLAND CEMENT CONCRETE SHALL HAVE CONTRACTION JOINTS SPACED 10 FEET APART. ALL TRANSVERSE CONTRACTION JOINTS SHALL MATCH AND ALIGN WITH CURBS AND/OR GUTTERS UNLESS PAVING AND CURBS ARE SEPARATED BY AN ISOLATION JOINT. MAXIMUM JOINT SPACING SHALL BE 10 FEET.

TYPICAL CROWNED STREET WITH CURB DETAIL

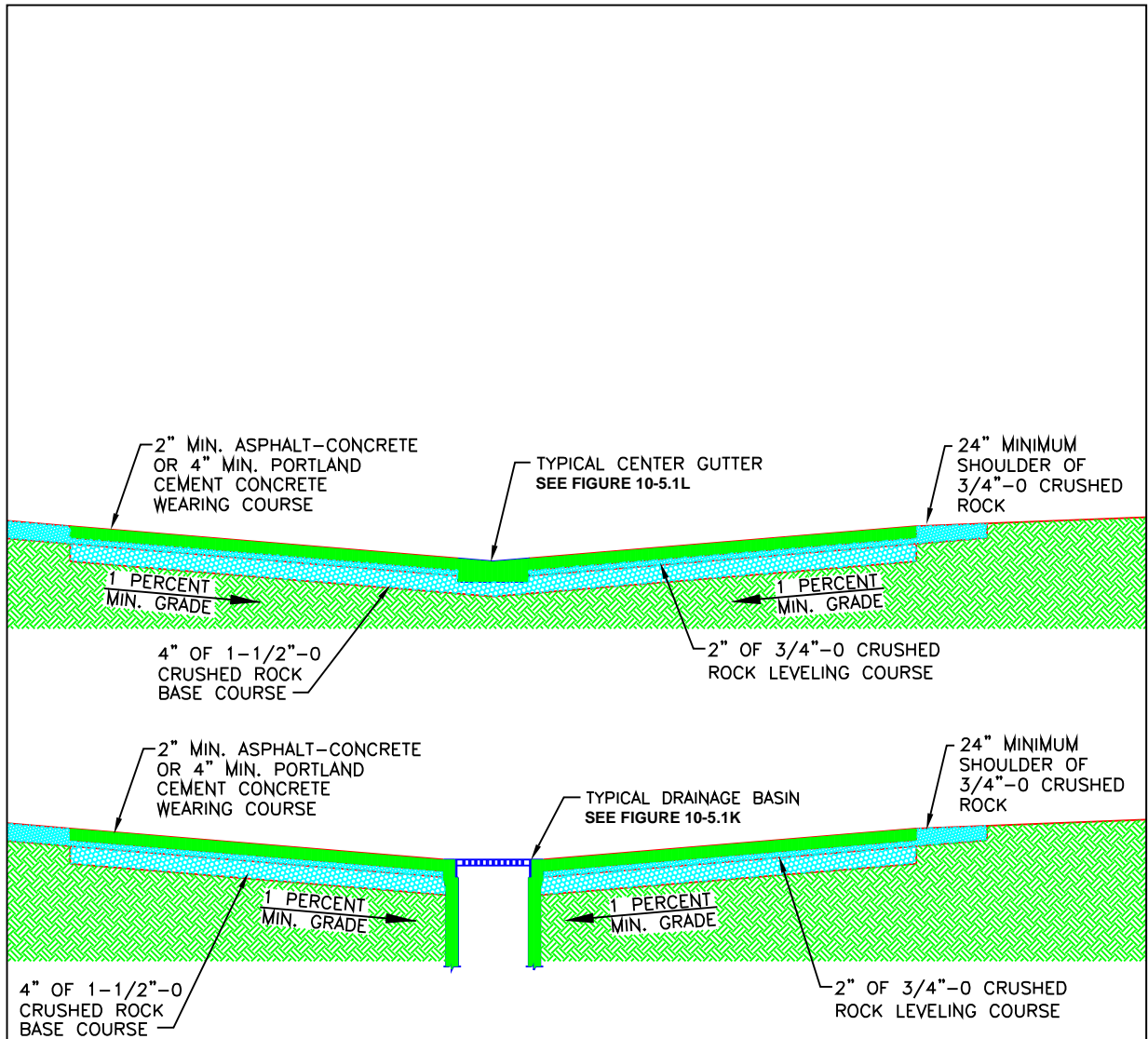
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1E



**NOTE:** PARK STREETS SHALL BE CONSTRUCTED WITH A WELL-COMPACTED AND WELL-GRADED BASE OF 4" OF 1-1/2"-0 CRUSHED ROCK TOPPED WITH 2" OF 3/4"-0 CRUSHED ROCK AND FINISHED WITH A 2" WEARING COURSE OF ASPHALT-CONCRETE OVER OR A 4" WEARING COURSE OF PORTLAND CEMENT CONCRETE. STREETS MADE OF PORTLAND CEMENT CONCRETE SHALL HAVE CONTRACTION JOINTS SPACED 10 FEET APART. ALL TRANSVERSE CONTRACTION JOINTS SHALL MATCH AND ALIGN WITH CURBS AND/OR GUTTERS UNLESS PAVING AND CURBS ARE SEPARATED BY AN ISOLATION JOINT. MAXIMUM JOINT SPACING SHALL BE 10 FEET.

TYPICAL CROWNED STREET WITHOUT CURB DETAIL

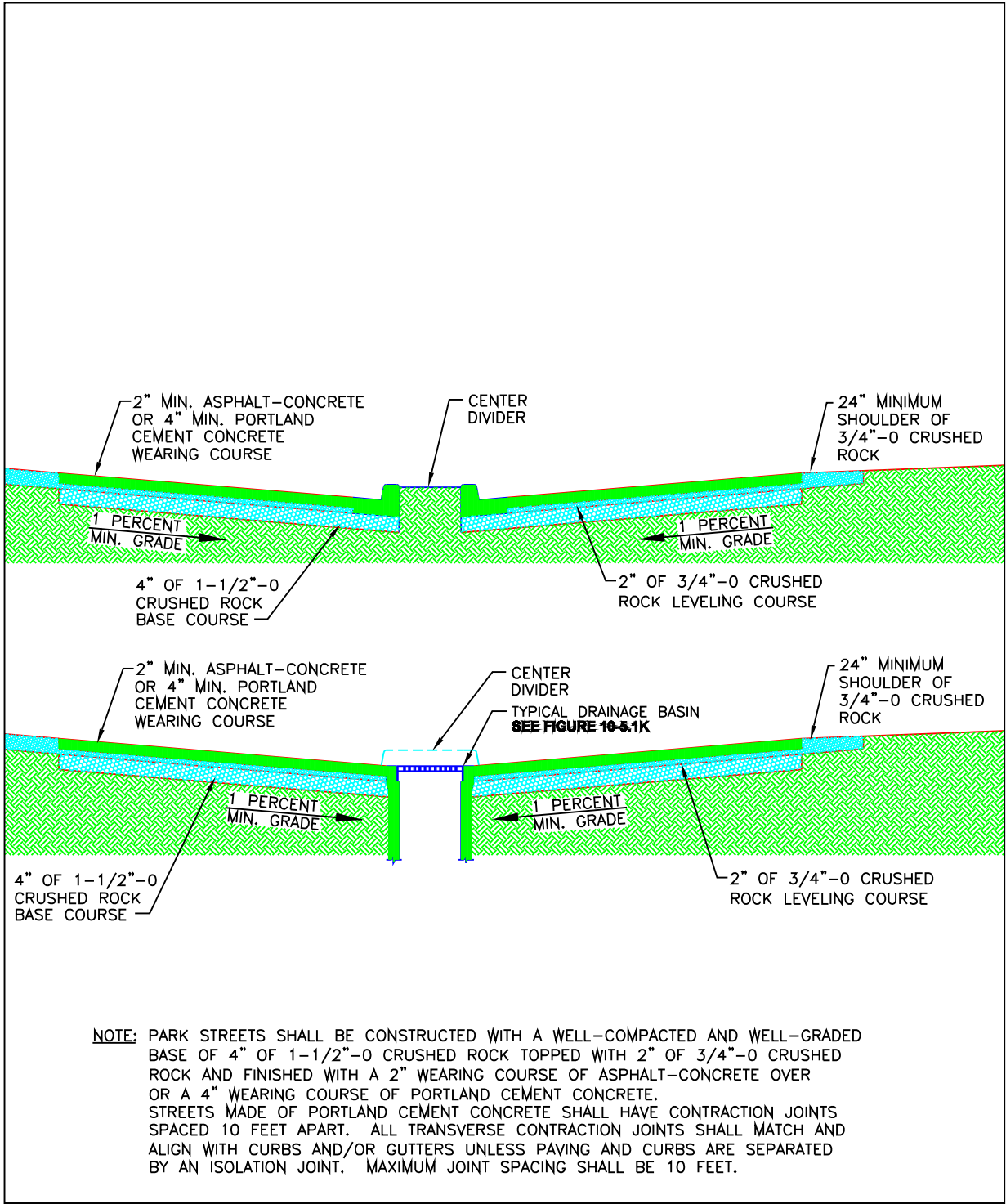
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1F



**NOTE:** PARK STREETS SHALL BE CONSTRUCTED WITH A WELL-COMPACTED AND WELL-GRADED BASE OF 4" OF 1-1/2"-0 CRUSHED ROCK TOPPED WITH 2" OF 3/4"-0 CRUSHED ROCK AND FINISHED WITH A 2" WEARING COURSE OF ASPHALT-CONCRETE OVER OR A 4" WEARING COURSE OF PORTLAND CEMENT CONCRETE. STREETS MADE OF PORTLAND CEMENT CONCRETE SHALL HAVE CONTRACTION JOINTS SPACED 10 FEET APART. ALL TRANSVERSE CONTRACTION JOINTS SHALL MATCH AND ALIGN WITH CURBS AND/OR GUTTERS UNLESS PAVING AND CURBS ARE SEPARATED BY AN ISOLATION JOINT. MAXIMUM JOINT SPACING SHALL BE 10 FEET.

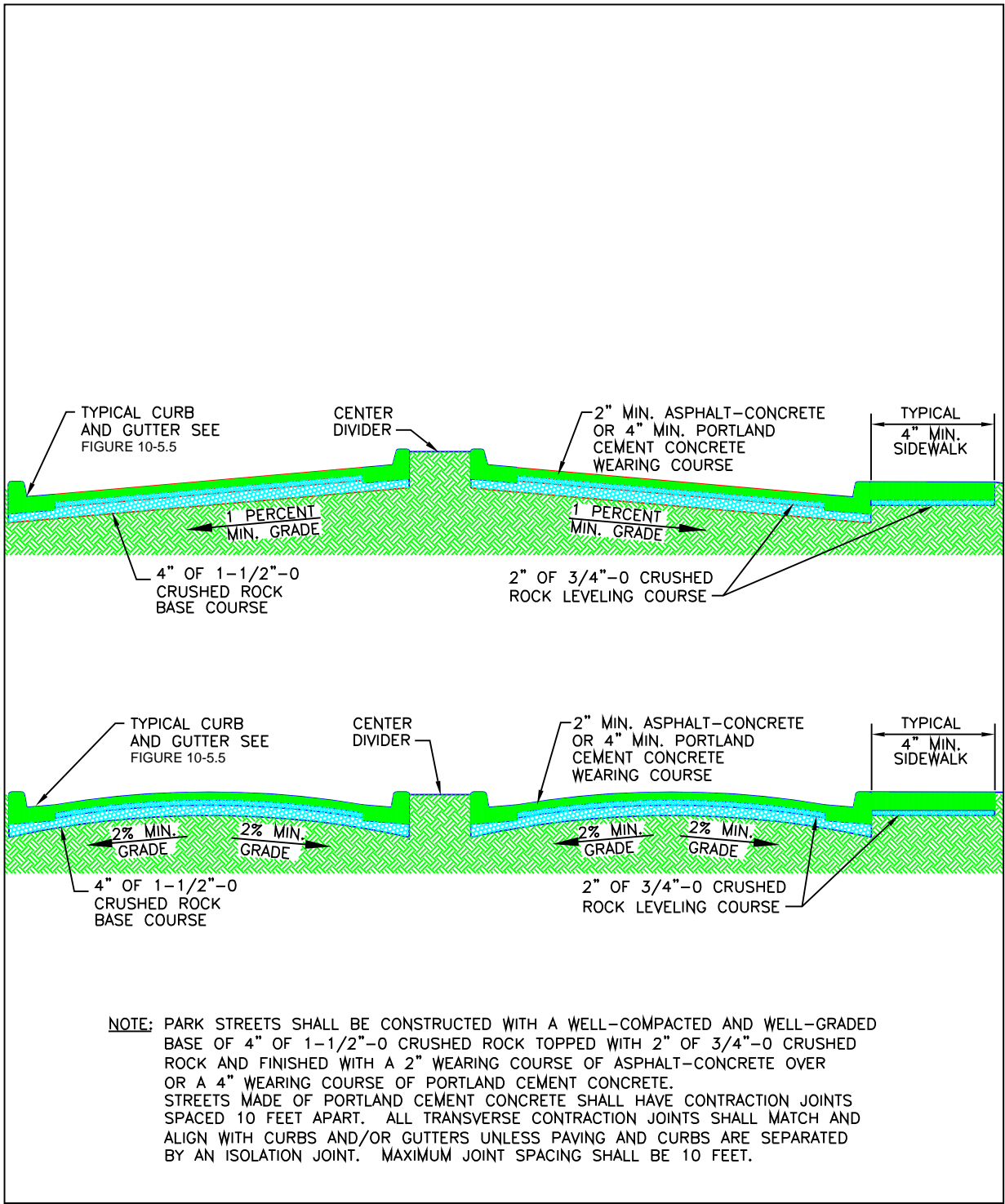
TYPICAL INVERTED CROWN STREET WITH CENTER GUTTER DETAILS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1G



TYPICAL DIVIDED STREET WITHOUT CURB DETAIL

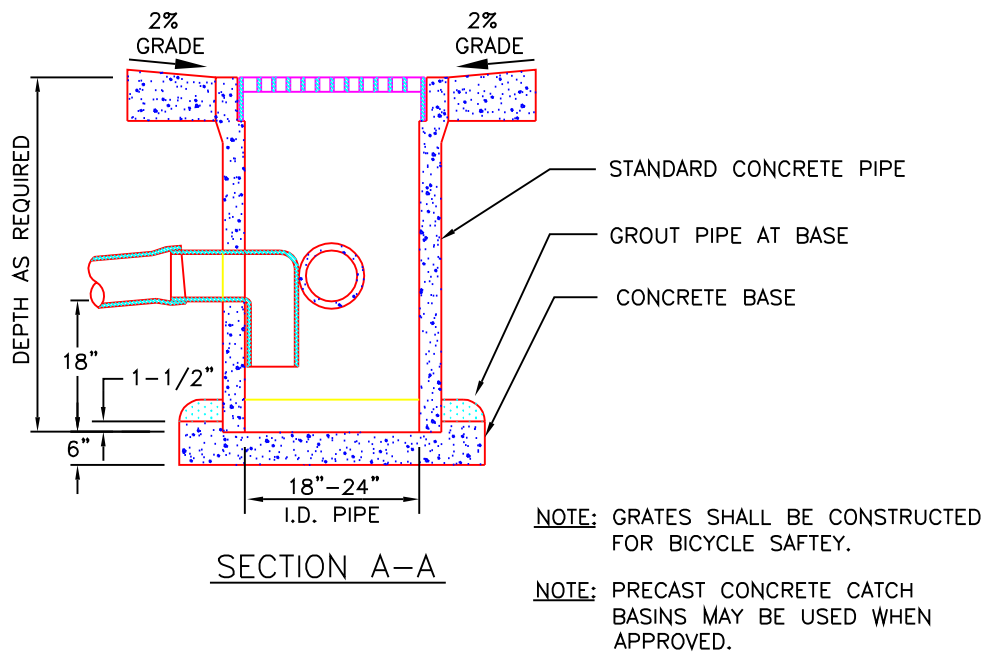
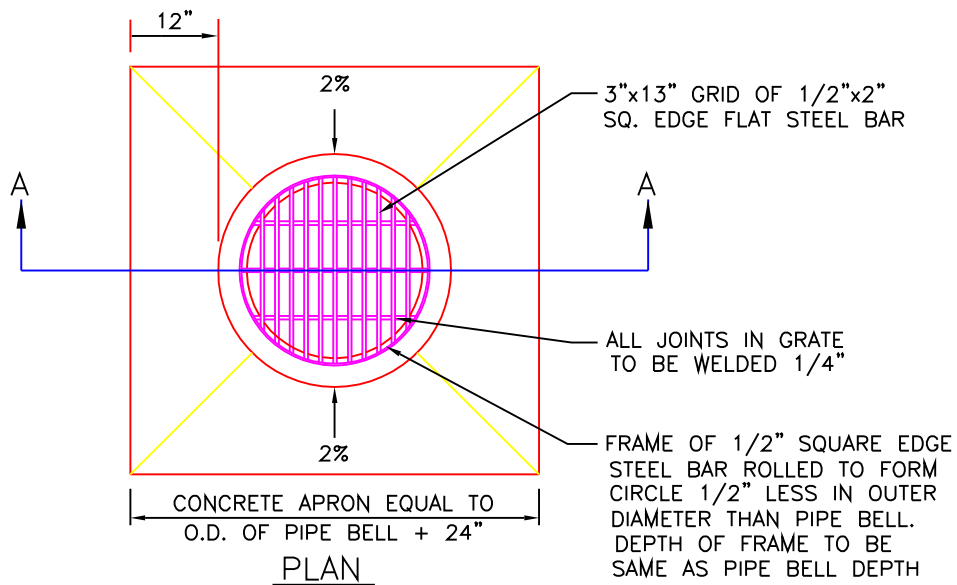
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1H



TYPICAL DIVIDED STREET WITH CURB DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.11

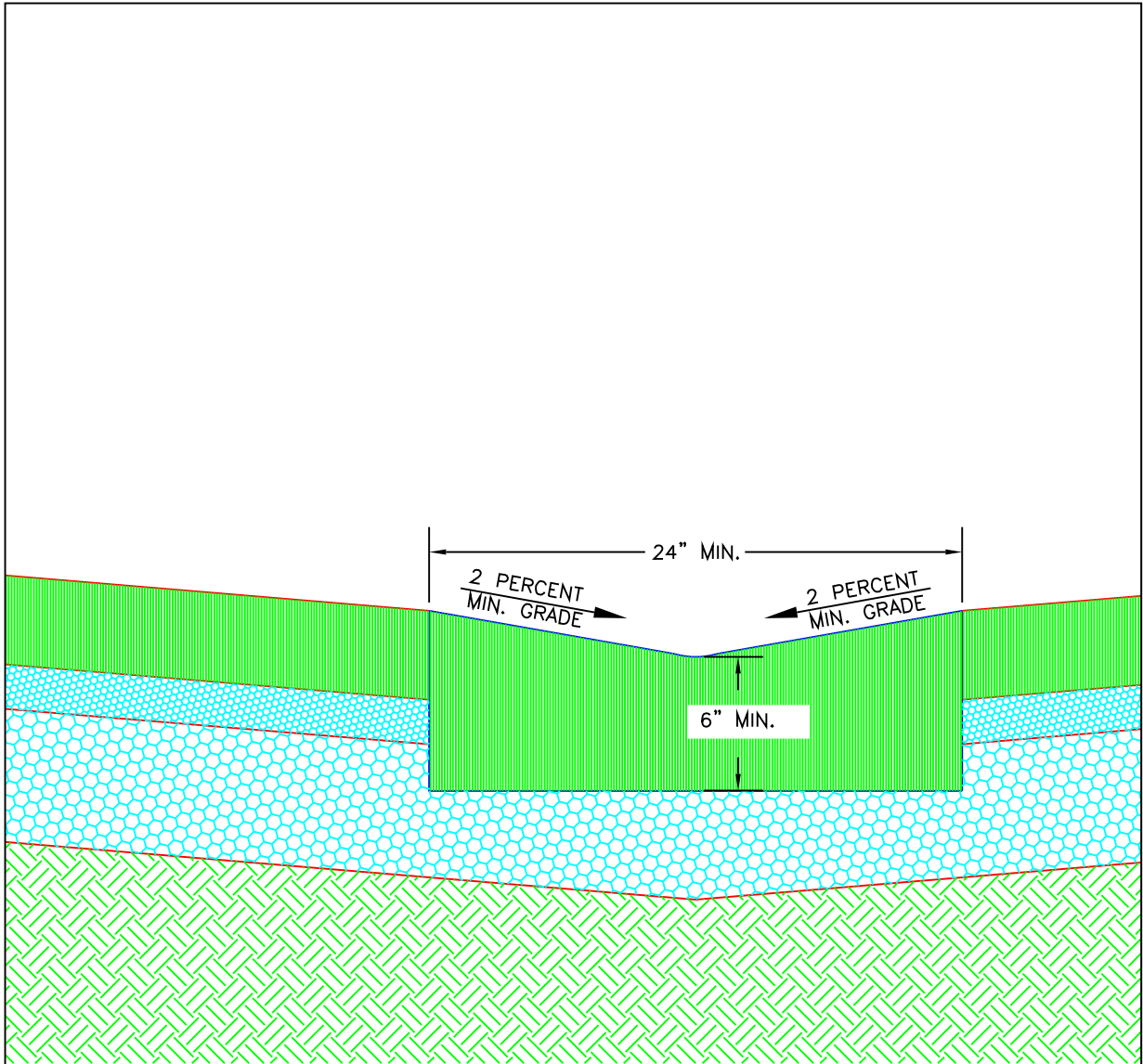




TYPICAL INVERTED CROWN STREET DRAINAGE BASIN DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1K





NOTE: ALL RADII SHALL BE 3/4" UNLESS OTHERWISE SPECIFIED.

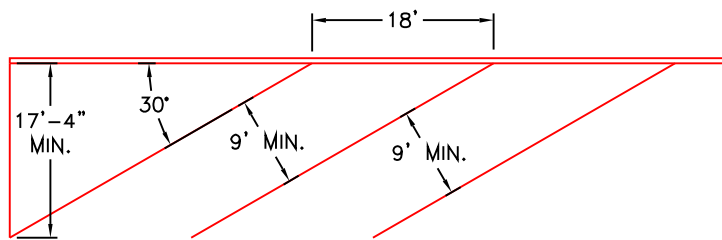
NOTE: ISOLATION JOINTS SHALL BE PLACED AS SPECIFIED.

NOTE: CONTRACTION JOINTS SHALL BE PLACED AT INTERVALS AND SHALL EXTEND AT LEAST 50% THROUGH THE GUTTER

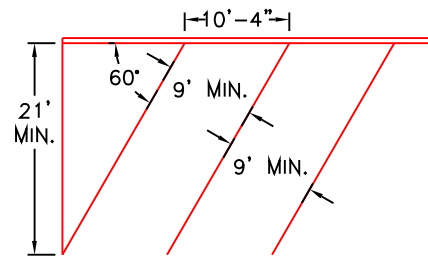
TYPICAL CENTER GUTTER DETAILS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.1L

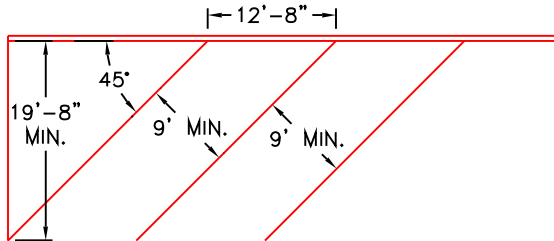




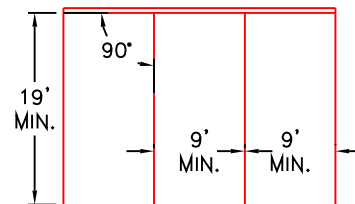
30 DEGREE DIAGONAL PARKING



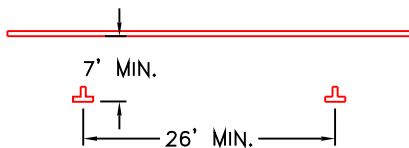
60 DEGREE DIAGONAL PARKING



45 DEGREE DIAGONAL PARKING



PERPENDICULAR PARKING



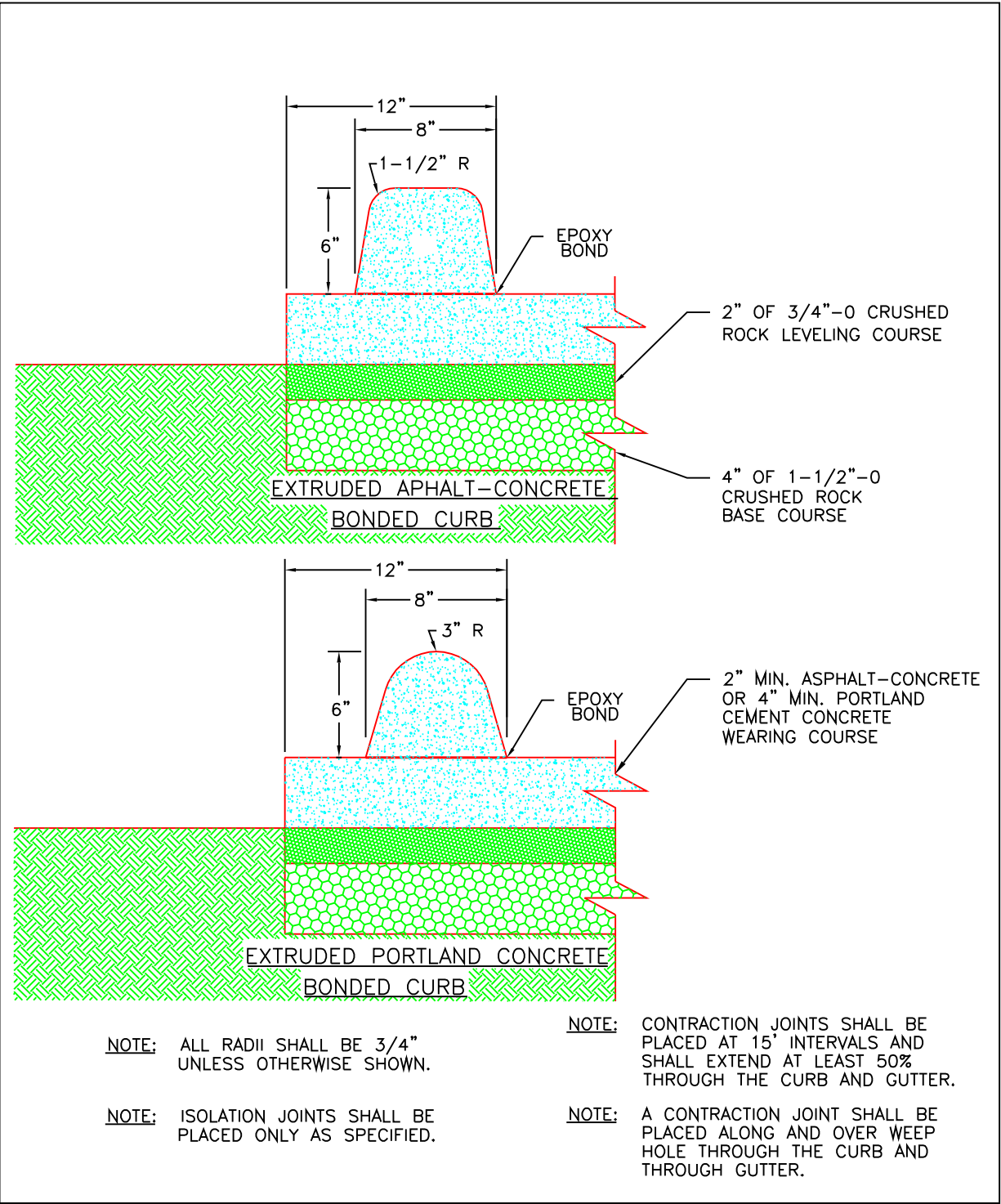
PARALLEL PARKING

**NOTE:** WHEN OTHER THAN PARALLEL STREET PARKING IS PROVIDED, USE THE DIMENSIONS SHOWN ON THESE ILLUSTRATIONS, LESS 7 FEET TO SIZE THE PARK STREETS.

**EXAMPLE:** IF 45 DEGREE DIAGONAL PARKING IS BEING USED ON ONE SIDE OF THE STREET, DEDUCT 7 FEET FROM 13 FEET AND ADD THE DIFFERENCE TO THE MINIMUM WIDTH OF THE STREET. ( $13' - 7' + 30' = 36'$ )

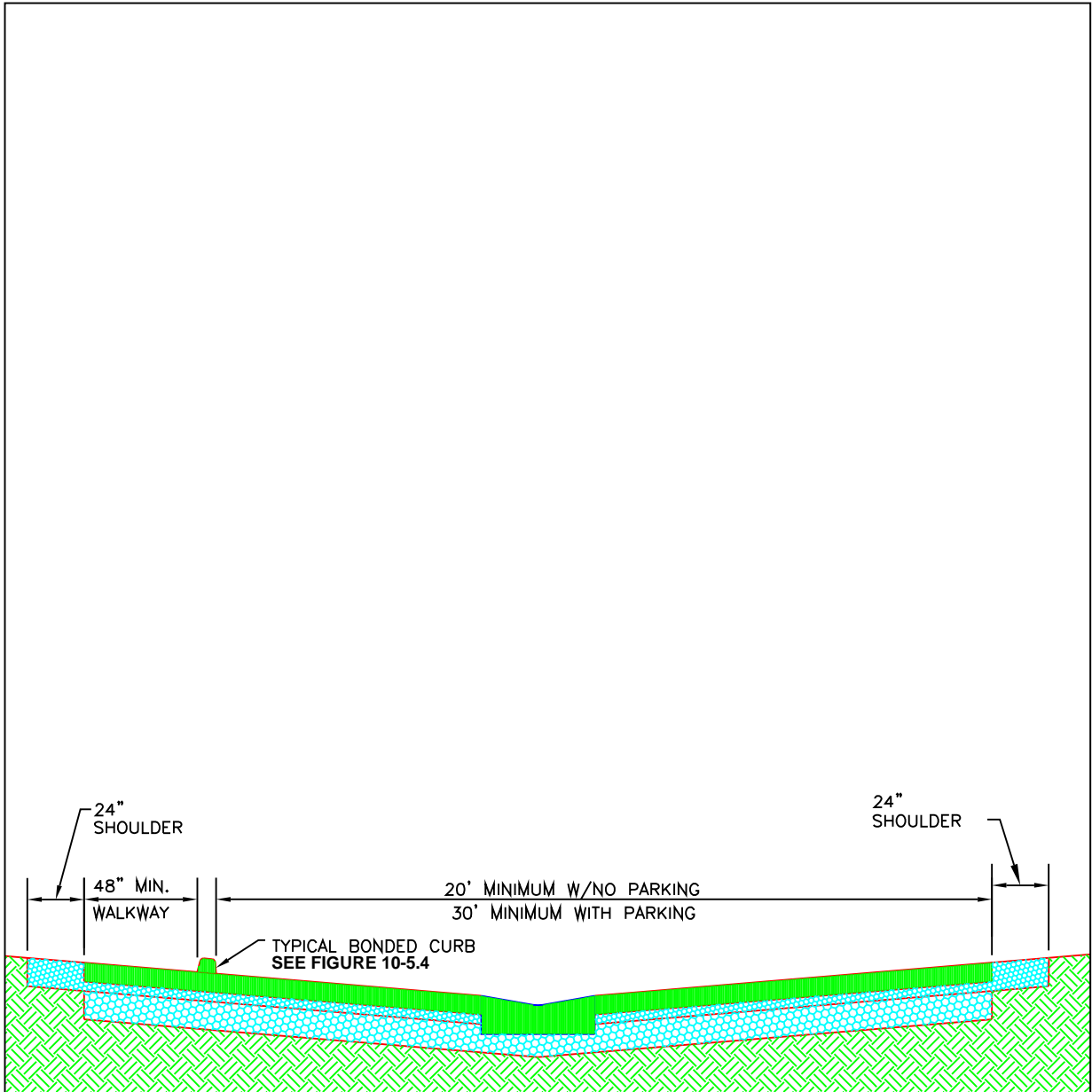
TYPICAL PARKING CONFIGURATIONS

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.3



TYPICAL BONDED CURB DETAILS

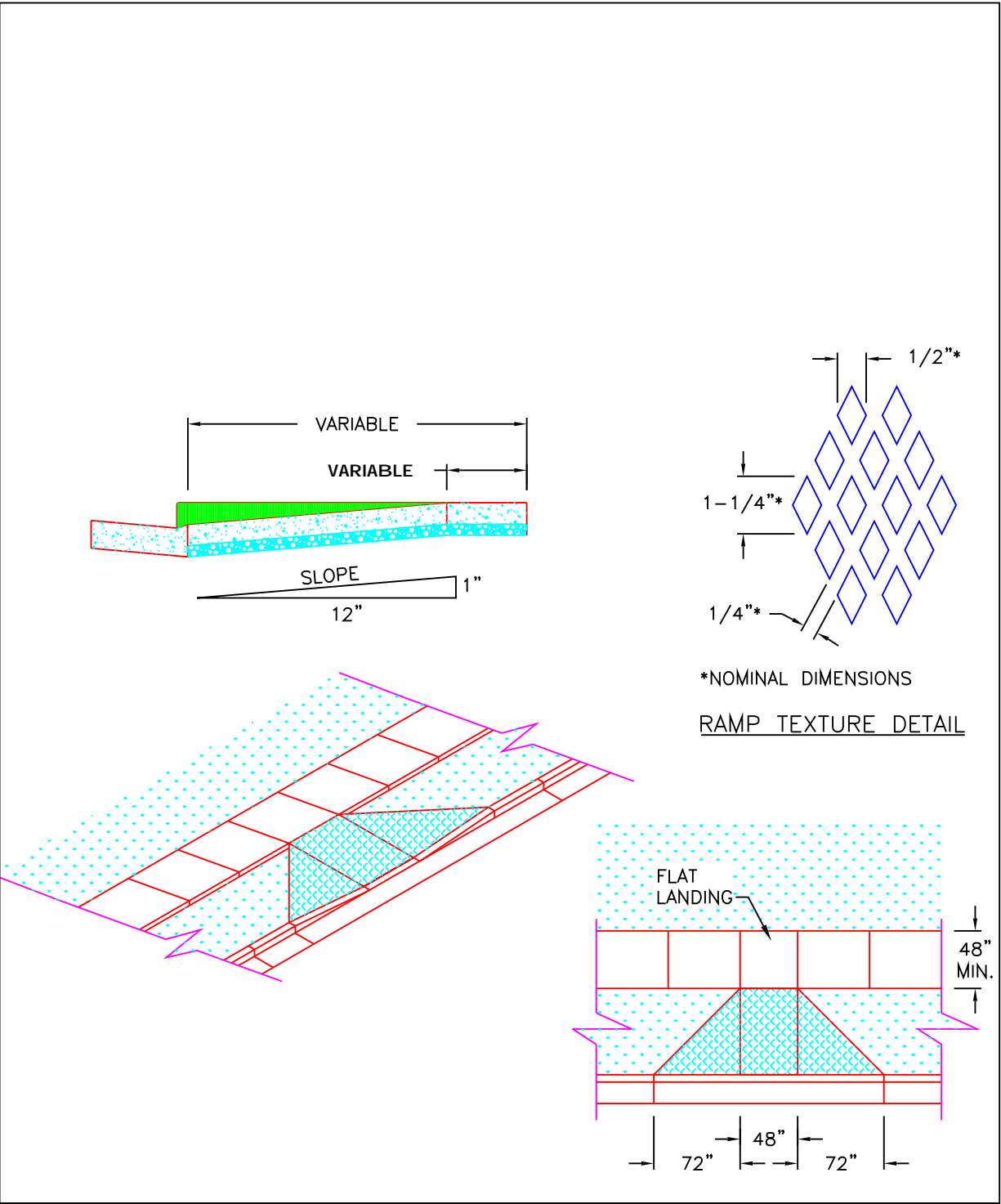
	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.4



**NOTE:** PARK STREETS WITHOUT SIDEWALKS MAY HAVE A DESIGNATED 48" WIDE WALKWAY ON ONE SIDE OF THE STREET. THE WALKWAY SHALL BE MARKED FOR PEDESTRIAN TRAFFIC OR DIVIDED FROM THE TRAFFIC AREA WITH CURBING OR SIMILAR BARRIERS. WALKWAYS SHALL NOT DIMINISH THE MINIMUM REQUIRED WIDTH OF THE STREET.

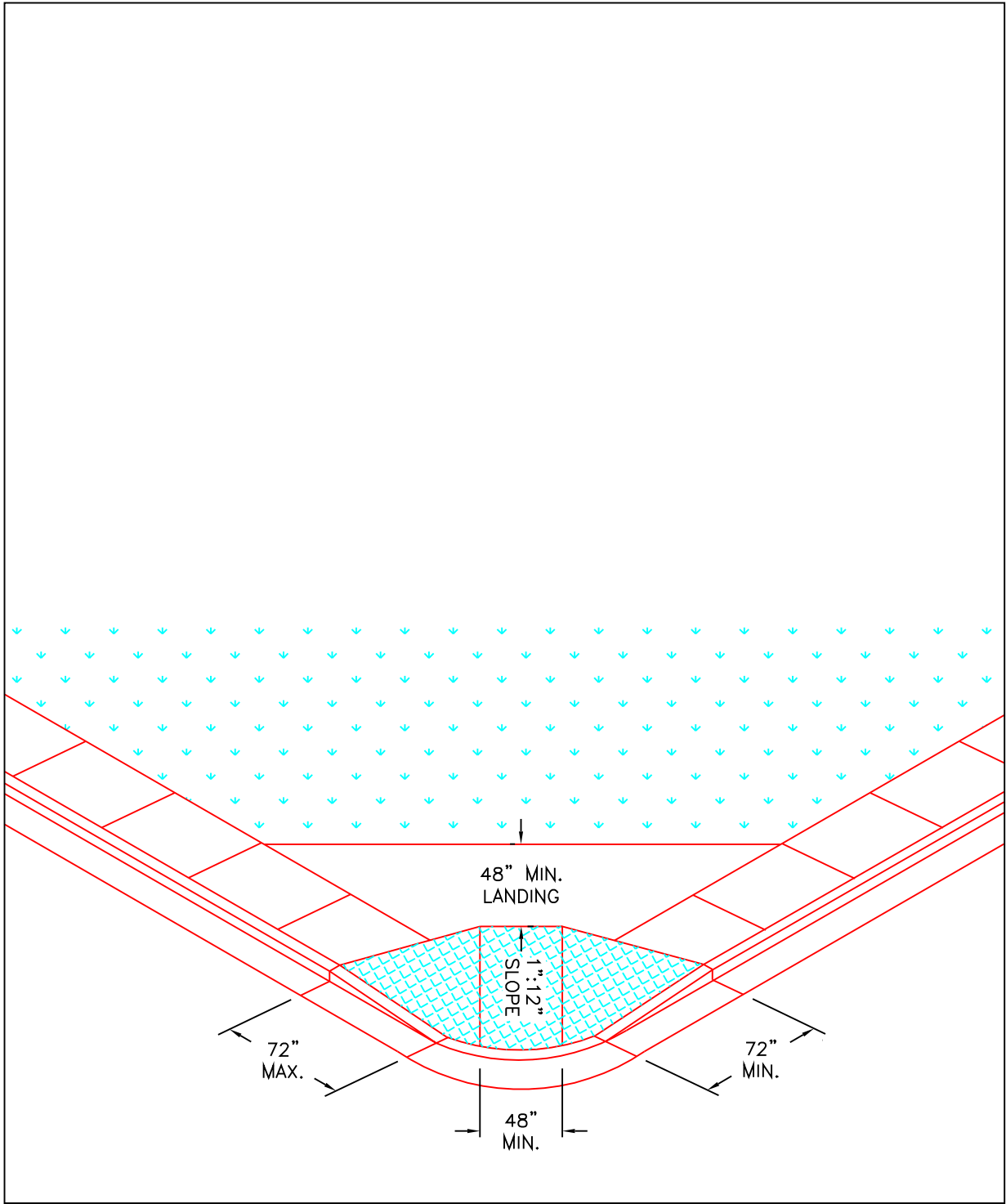
TYPICAL ON-STREET WALKWAY DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.4A



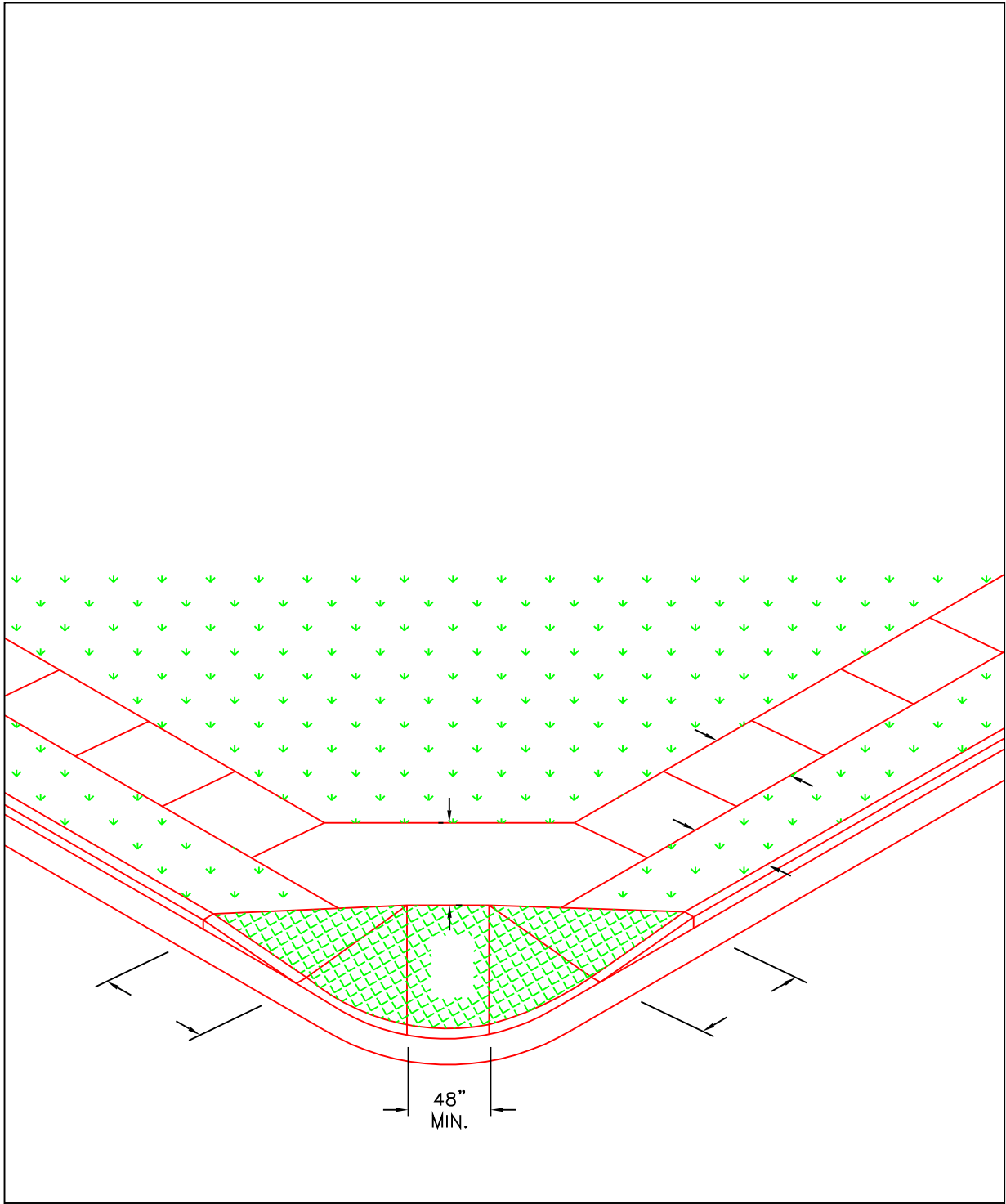
TYPICAL ACCESSIBLE CURB-RAMP DETAIL

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 10</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 10-5.4B</p>



TYPICAL ACCESSIBLE CURB-RAMP DETAIL

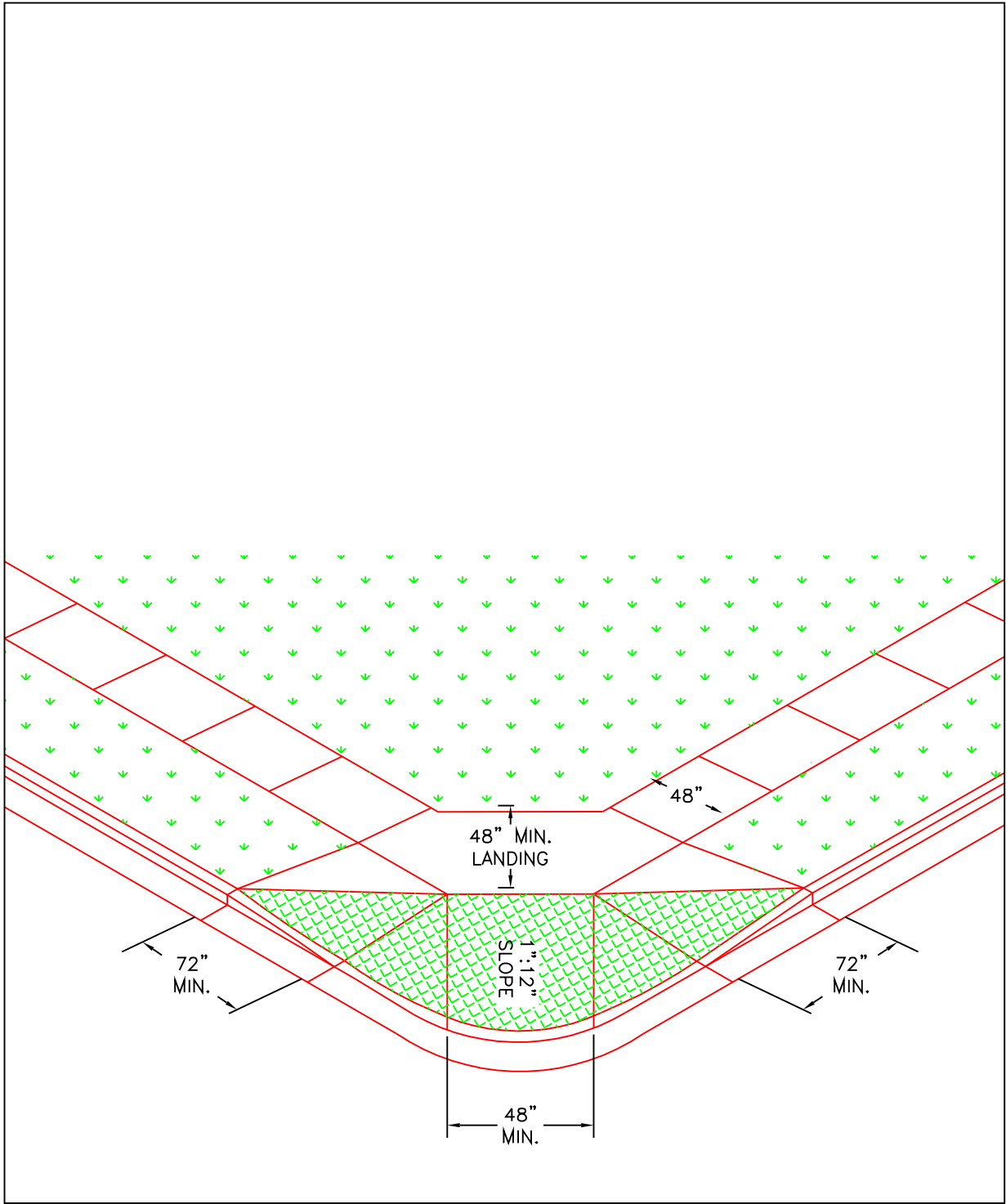
	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 10</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 10-5.4C</p>



TYPICAL ACCESSIBLE CURB-RAMP DETAIL

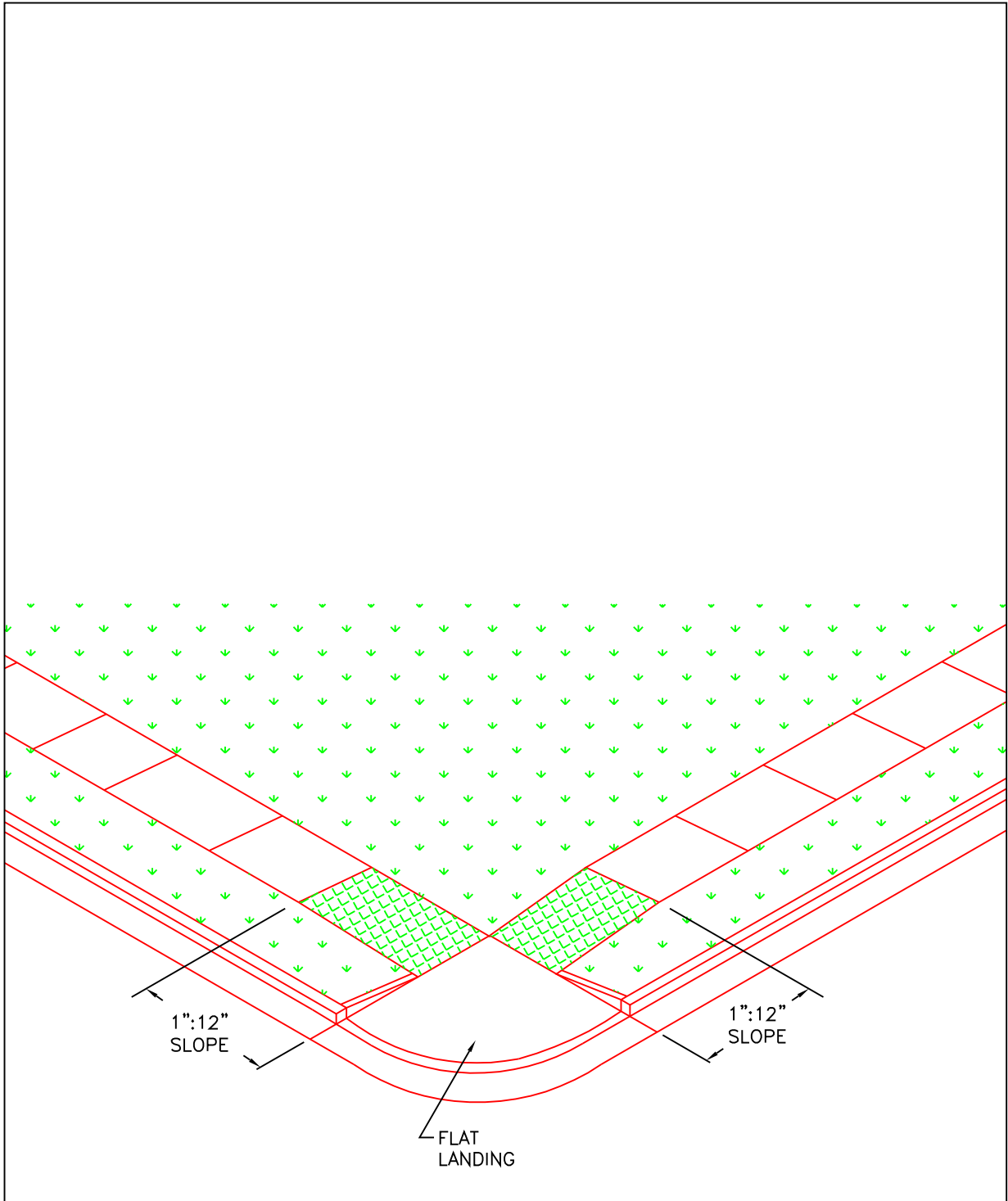
	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 10</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 10-5.4D</p>





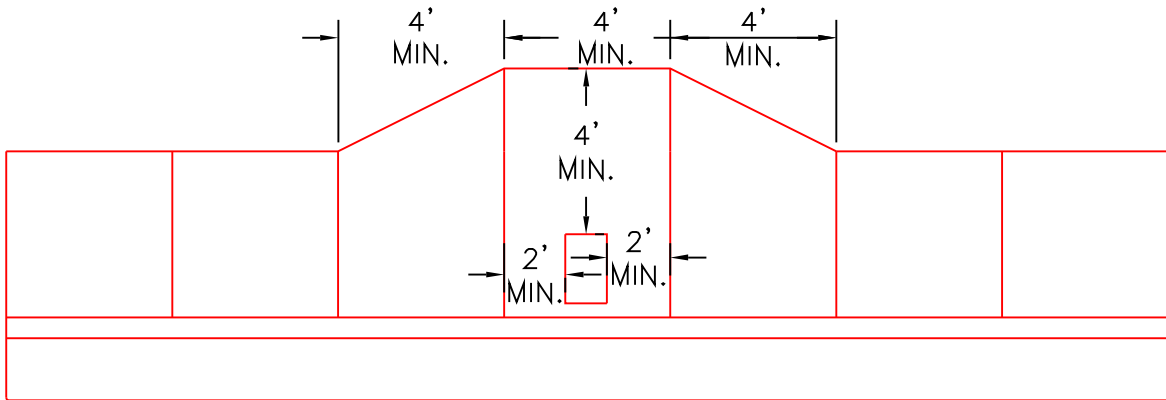
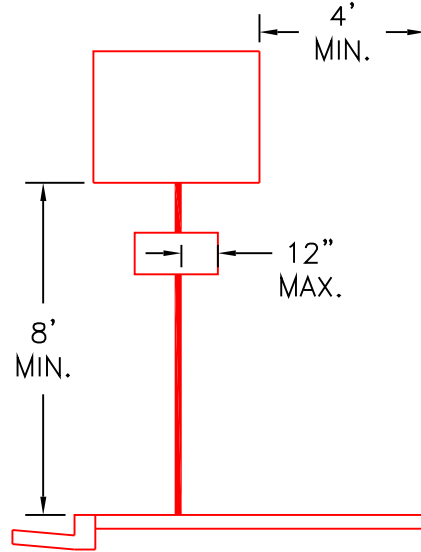
TYPICAL ACCESSIBLE CURB-RAMP DETAIL

	<p>MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES</p>	<p>CHAPTER 10</p>
<p>REV. 12/01/01 RHW</p>		<p>FIGURE 10-5.4E</p>



TYPICAL ACCESSIBLE CURB-RAMP DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.4F



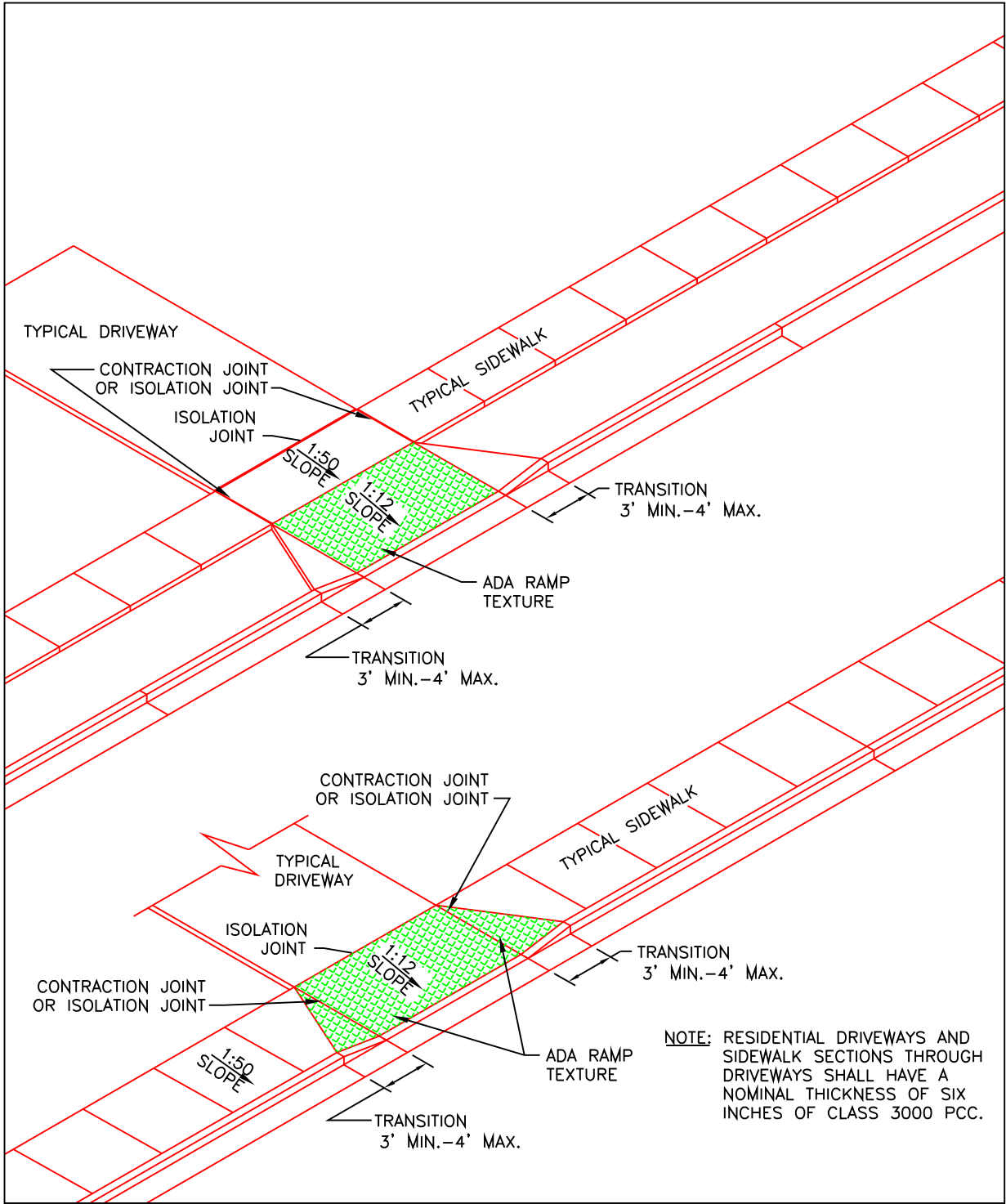
**NOTE:** WHEN SITE CONSTRAINTS PROHIBIT A FOUR FOOT CLEARANCE, THE CLEARANCE MAY BE REDUCED TO NO LESS THAN THREE FEET.

TYPICAL SIDEWALK OBSTRUCTION DETAIL

REV. 12/01/01 RHW

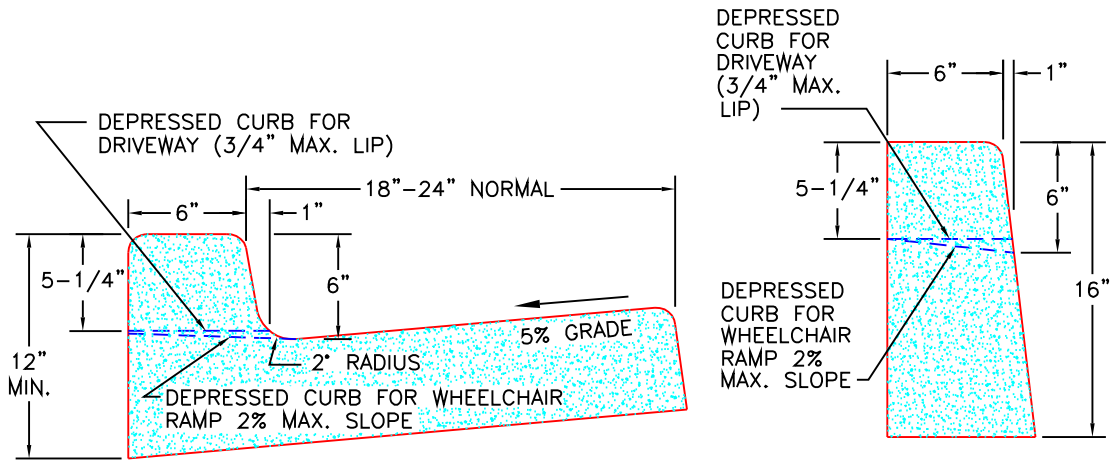
MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 10  
FIGURE 10-5.4G



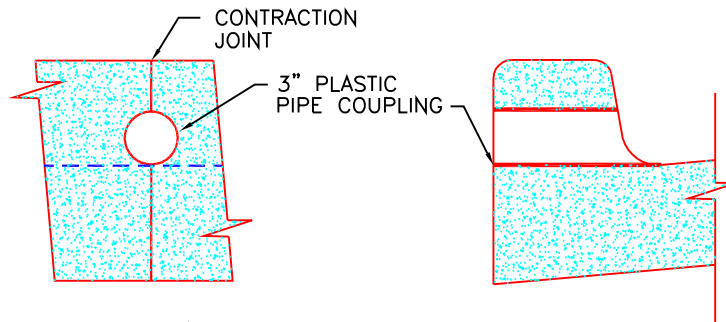
TYPICAL PEDESTRIAN ACCESS ACROSS DRIVEWAY

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.4H



TYPICAL CURB & GUTTER

TYPICAL STRAIGHT CURB



WEEP HOLE THROUGH CURB

**NOTE:** WHEN SIDEWALKS ARE CONSTRUCTED, EXTEND 3" PIPE TO BACK OF SIDEWALK AND INSTALL COUPLING.

**NOTE:** ALL RADII SHALL BE 3/4" UNLESS OTHERWISE SHOWN.

**NOTE:** ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.

**NOTE:** CONTRACTION JOINTS SHALL BE PLACED AT 15' INTERVALS AND SHALL EXTEND AT LEAST 50% THROUGH THE CURB AND GUTTER.

**NOTE:** A CONTRACTION JOINT SHALL BE PLACED ALONG AND OVER WEEP HOLE THROUGH THE CURB AND THROUGH GUTTER.

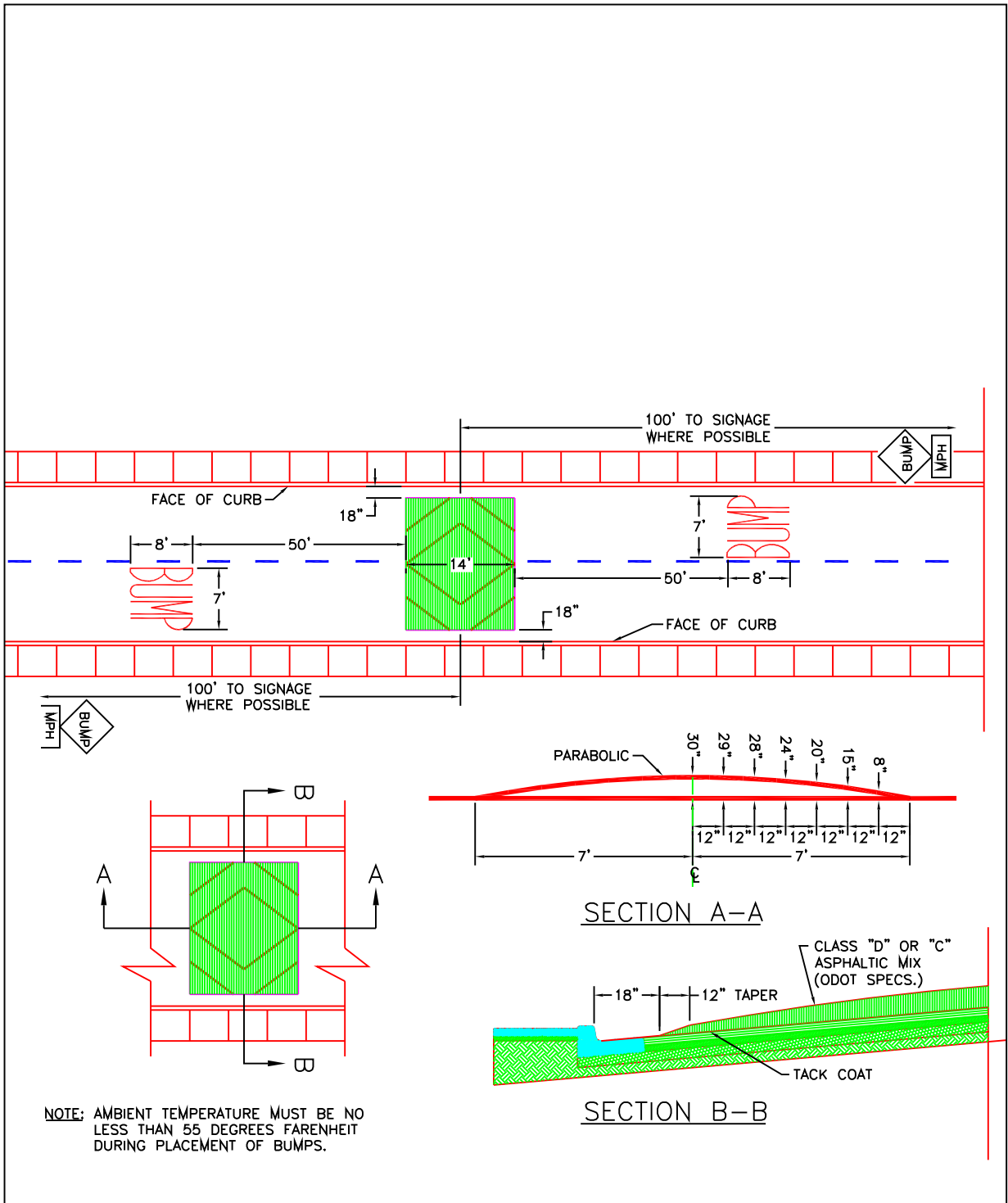
TYPICAL CURB, GUTTER & WEEPHOLE DETAIL

REV. 12/01/01 RHW

MANUFACTURED STRUCTURE  
AND PARK SPECIALTY CODES

CHAPTER 10

FIGURE 10-5.5



TYPICAL SPEED BUMP DETAIL

	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 10
REV. 12/01/01 RHW		FIGURE 10-5.6

## DEFINITIONS

*This code uses terminology unique to the manufactured dwelling and construction industry. The following are explanations of the terminology used in this code as derived from several recognized sources. Unless otherwise expressly stated, the following definitions shall, for the purpose of this code, have the meanings indicated in this appendix. Definitions quoted from other documents are from the most recent publication of those documents at the time this code was printed. Where terms are not defined in this code, such terms shall have the meanings ascribed to them in the reference standards. Where terms are not defined in either this code or the referenced standards, such terms shall have their ordinary accepted meanings within the context with which they are used according to Webster's Third New International Dictionary of the English Language, Unabridged, Copyright 1986.*

- **“Accessible”** has the following meanings:
  - **“Accessible”**, as defined in **NFPA 501-1999**, means able to approach, access a fixture, connection, appliance, or equipment. Access shall be permitted to require the removal of an access panel, door, or similar obstruction.
  - **“Accessible, Readily”**, as defined in **NFPA 501-1999**, means direct access without the necessity of removing any panel, door, or similar obstruction.
  - **“Accessibility”**, as it relates to **ORS 447.210**, means the removal of architectural barriers for the purpose of providing full access to persons with disabilities.
- **“Accessory Building or Structure”**, as defined in **ORS 446.003**, means any portable, demountable or permanent structure established for use of the occupant of the manufactured structure and as further defined by rule by the director.
  - **“Accessory Building”**, as defined in **OAR 918-500-0005**, means an accessory building as defined in **ORS 446.003(1)** and specifically includes but is not limited to cabanas, ramadas, storage sheds, garages, and basements.
  - **“Accessory Structures”**, as defined in **OAR 918-500-0005**, means an accessory structure as defined in **ORS 446.003(1)** and specifically includes but is not limited to awnings, carports, decks, steps and ramps.
- **“Adjustment of Equipment”**, as defined in **OAR 918-500-0005**, means the adjustment of the rate, flow, speed, temperature, etc. as necessary for the continued operation of the equipment but does not include the repair, replacement, conversion, alteration or addition to any equipment.
- **“Affected Buildings”**, as defined in **ORS 447.210**, includes any place of public accommodations and commercial facilities designed, constructed and altered in compliance with the accessibility standards established by the **Americans with Disabilities Act**. “Affected Buildings” also includes any government building that is subject to **Title II** of the **Americans with Disabilities Act**. “Affected Buildings” also includes private entities, private membership clubs and churches that have more than one floor level and more than 4,000 square feet in ground area or that are more than 20 feet in height, measured from the top surface of the lowest flooring to the highest interior overhead finish of the building. (See definition of commercial facilities.)
- **“Air conditioner”**, as defined in **NFPA 501-1999**, means all equipment intended or installed for the purpose of processing the treatment of air so as to control simultaneously its temperature, humidity, cleanliness, and distribution to meet the requirements of the conditioned space. (does not include evaporative coolers)
- **“Alteration”**, as defined in **ORS 446.003**, means 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:
    - Minor repairs with approved component parts;
    - Conversion of listed fuel burning appliances in accordance with the terms of their listing; or
    - Adjustment and maintenance of equipment; or replacement of equipment or accessories in kind. (See definition of replacement in kind)
- **“Anchoring System”**, as defined in **OAR 918-500-0005**, means the equipment or materials used to secure a manufactured home to the ground.
- **“Approved”**, as defined in **ORS 446.003**, means approved, licensed or certified by the Department of Consumer and Business Services or its designee.

- **“Attached Garage”**, as defined in **OAR 918-500-0005**, means a garage which is *designed to be* structurally independent of a manufactured dwelling but *may be attached to a manufactured dwelling according to this code*.
- **“Authority Having Jurisdiction”**, as defined in **OAR 918-500-0005**, means the Building Codes Division or local government which has been appointed by the Administrator to inspect and issue permits for installation, alteration or conversion of manufactured dwellings, equipment, accessory buildings and structures.
- **“Awning”**, as defined in **ORS 446.003**, means any stationary structure, permanent or demountable, used in conjunction with a manufactured structure, other than window awning, for the purpose of providing shelter from the sun and rain, and having a roof with supports and not more than one wall or storage cabinet substituting for a wall. (*also known as a patio cover*)
- **“Base Flood”**, as defined in **44 CFR Chapter 1**, means the flood having a one percent chance of being equaled or exceeded in any given year.
- **“Board”**, as defined in **ORS 446.003**, means the Manufactured Structures and Parks Advisory Board.
- **“Bonding”**, as defined in **NFPA 501-1999**, means the permanent joining of metallic parts to form an electrically conductive path that will ensure electrical continuity and the capacity to conduct safely any current likely to be imposed.
- **“Breakaway Wall”**, as defined in **44 CFR Chapter 1**, means a wall that is not part of the structural support of the building and is intended through its design and construction to collapse under specific lateral loading forces, without causing damage to the elevated portion of the building or supporting foundation system.
- **“Building”**, as defined in **OAR 918-500-0005**, means any permanent building but does not include manufactured dwellings or manufactured dwelling accessory buildings.
- **“Building Drain”**, as defined in the **OAR 918-500-0005**, means 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 dwelling and conveys it to the building sewer.
- **“Building Sewer”**, as defined in the **Oregon One and Two Family Dwelling Specialty Code**, means 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.
- **“Building Supply”**, as defined in the **Oregon One and Two Family Dwelling Specialty Code**, means 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.
- **“Cabana”**, as defined in **ORS 446.003(6)**, means a stationary, light-weight structure which may be prefabricated or demountable, with two or more walls, used adjacent to and in conjunction with a manufactured structure to provide additional living space.
- **“Carpport”**, as defined in **ORS 446.003**, means a stationary structure consisting of a roof with its supports and not more than one wall, or storage cabinet substituting for a wall, and used for sheltering a motor vehicle.
- **“Chassis”**, as defined in **NFPA 501-1999**, means the entire transportation system comprising the following subsystems: drawbar and coupling mechanism, frame, running gear assembly, and lights.
- **“Clearance”**, as defined in **OAR 918-500-0005**, means the minimum allowable distance between two adjacent surfaces or points.
- **“Combination Park”**, as defined in **OAR 918-500-0005**, means a lot or tract of land that has been approved to contain both a manufactured dwelling or mobile home park and a recreation park.
- **“Combustible Material”**, as defined in **NFPA 501-1999**, means any material not meeting the definition of limited-combustible or noncombustible material in **Section 3.2 of NFPA 501-1999**.
- **“Comfort Cooling Equipment”**, as defined in **NFPA 501-1999**, means all equipment intended or installed for the purpose of processing the treatment of air so as to control simultaneously its temperature, humidity, cleanliness, and distribution to meet the requirements of the conditioned space. (*does not include evaporative coolers*)
- **“Commercial Facilities”**, as defined in **ORS 447.210**, includes non-residential facilities, such as office buildings, factories, and warehouses, whose operations affect commerce.
- **“Concealed”**, as defined in **OAR 918-500-0005**, means rendered inaccessible by the structure or finish of the manufactured dwelling, accessory building, or accessory structure.
- **“Conversion”** or **“to convert”**, as defined in **ORS 446.003(9)**, means the process of changing a manufactured structure in whole or in part from one type of vehicle or structure to another.
- **“DAPIA”** means 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.



- **“Decorative Appliance”**, as defined in **NFPA 54-1999**, means a self-contained, freestanding, fuel-gas burning appliance designed for installation only in a vented fireplace and whose primary function lies in the aesthetic effect of the flame.
- **“Direct Supervision”**, as defined in **OAR 918-500-0005**, means being physically present 85 percent of each day to provide leadership and direction on the job site to limited installers installing manufactured dwellings.
- **“Direct Vent”**, as defined in **NFPA 54-1999**, means appliances that are constructed and installed so that all air for combustion is derived directly from the outside atmosphere and all flue gases are discharged to the outside atmosphere.
- **“Drain”**, as defined in **NFPA 501-1999**, means a pipe that carries waste, water, or water-borne waste in a drainage system.
- **“Drain Connector”**, as defined in **NFPA 501-1999**, means the removable extension, consisting of all pipes, fittings, and appurtenances, from the drain outlet to the drain inlet serving the manufactured home.
- **“Drain, Main”**, as defined in **NFPA 501-1999**, means the lowest pipe of a drainage system that receives sewage from all the fixtures within a manufactured home and conducts these wastes to the drain outlet.
- **“Drain Outlet”**, as defined in **NFPA 501-1999**, means the lowest end of the main or secondary drain to which a sewer connection is made.
- **“Drainage System”**, as defined in **NFPA 501-1999**, means all piping, within or attached to the structure, that conveys sewage or other liquid waste to the drain outlet, not including the drain connector.
- **“Dwelling Unit”**, as defined in **NFPA 501-1999**, means one or more habitable rooms, designed to be occupied by one or more persons, with facilities for living, sleeping, cooking, and eating.
- **“Earthquake-Resistant Bracing System”**, as defined in **OAR 918-500-0005**, means a certified and approved anchoring, bracing, or support system designed and constructed to protect the health and safety of the occupants of, and reducing damage to, a manufactured dwelling in the event of an earthquake.
- **“Engineered Foundation System”**, as defined in **OAR 918-500-005**, means a certified and approved engineered system of prefabricated foundation supports installed to manufacturer’s installation instructions. (formerly known as a “Full Foundation System)
- **“EPDM”** means ethylene propylene diolefin monomer, a rubber sheeting used to prevent water penetration in roofing, foundations and other similar applications where moisture or water penetration must be eliminated or minimized.
- **“Equipment”**, as defined in **ORS 446.003**, means materials, appliances, subassembly, devices, fixtures, fittings and apparatuses used in the construction, plumbing, mechanical and electrical systems of a manufactured structure.
- **“Factory Built Porch”**, as defined in **OAR 918-500-0005**, means an exterior porch, deck, or landing, including roof, built by the manufactured dwelling manufacturer and shipped with the manufactured dwelling.
- **“Feeder Assembly”**, as defined in **NFPA 501-1999**, means 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, that are designed for the purpose of delivering energy from the source of electrical supply to the distribution panel board within the manufactured home.
- **“Field Technical Service”**, as defined in **OAR 918-500-0005**, means the clarification of technical data, including, but not limited to, Division interpretations, investigations or training relating to the application of laws, rules, codes, standards and regulations administered and enforced by the Building Codes Division.
- **“Fill”**, as defined in **OAR 918-500-0005**, means a man made deposit of materials intended to raise an existing grade and includes the following types:
  - **“Engineered Fill”**, means fill over 12 inches in depth placed in layers of soil, crushed stone, or masonry waste material, free of expansive soils and organic materials, compacted and tested according to accepted engineering practices to insure that it meets the required load bearing capacity and specified compaction standards as determined by laboratory tests of soil samples from the fill material.
  - **“Non Engineered Fill”**, means fill of 12 inches or less in depth consisting of soil, crushed stone, or masonry waste material, free of expansive soils and organic materials, compacted with two passes of a vibrating compacting machine.
  - **“Fill”** does not include the 6 inches of gravel required on some manufactured dwelling stands.
- **“Fireplace”**, as defined in **NFPA 54-1999**, means a fire chamber and hearth constructed of noncombustible material for use with solid fuels and provided with a chimney.
  - **“Fireplace, Masonry”**, as defined in **NFPA 54-1999**, means a hearth and fire chamber of solid masonry units such as bricks, stones, listed masonry units, or reinforced concrete, provided with a suitable chimney.

- **“Fireplace, Factory-Built”**, as defined in **NFPA 501-1999**, means a hearth, fire chamber, and chimney assembly composed of listed factory-build components assembled in accordance with the terms of listing to form a complete fireplace.
- **“Fireplace Stove”**, as defined in **NFPA 501-1999**, means a chimney connected solid fuel-burning stove having part of its fire chamber open to the room.
- **“Flood Hazard Area”**, as defined in **44 CFR Chapter 1**, means all zones identified on the FEMA’s Flood Insurance Rate Map.
- **“Flood Insurance Rate Map or FIRM”**, as defined in **44 CFR Chapter 1**, means an official map of a community, on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.
- **“Flood Plain”**, as defined in **44 CFR Chapter 1**, means any land area susceptible to being inundated by water from any source.
- **“Flood Way”**, as defined in **44 CFR Chapter 1**, means the channel of a river or other water course and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
- **“Footing”**, as defined in **NFPA 501-1999**, means that portion of the support system that transmits loads directly to the soil.
- **“Foundation Wall”**, as defined in **OAR 918-500-0005**, means concrete, block, or wood stem wall supporting the perimeter of the manufactured dwelling.
- **“Frame”**, as defined in **NFPA 501-1999**, means the fabricated, rigid substructure which provides considerable support to the affixed manufactured home structure, both during transport and on-site; and also provides a platform for securement of the running gear assembly, the draw bar, and coupling mechanism.
- **“Garage”**, as defined in **OAR 918-500-0005**, means a structure located on a manufactured dwelling site designed for the storage of motor vehicles.
- **“Gas Supply Connector”**, as defined in **NFPA 501-1999**, means a listed flexible connector designed to connect the manufactured home to the gas supply source.
- **“Grade”** has the following meanings:
  - **“Grade”**, as it relates to plumbing and as defined in **NFPA 501-1999**, means the fall (slope) of a pipe in reference to a horizontal plane expressed in inches per foot length (*millimeters per meters*).
  - **“Grade”**, as it relates to the earth and as defined in **Oregon One and Two Family Dwelling Specialty Code**, means the finished ground level adjoining the building at all exterior walls.
- **“Ground”**, as defined in **NFPA 501-1999**, means a conductive connection, whether intentional or accidental, between an electrical circuit or equipment and earth, or through some conducting body that serves in place of the earth.
- **“Grounded”**, as defined in **NFPA 501-1999**, means connected to earth, or to some conducting body that serves in place of the earth.
- **“Ground Anchor”**, as defined in **NFPA 501-1999**, means any device at a manufactured home stand designed to transfer manufactured home anchoring loads to the ground.
- **“Ground Level Installation”**, as defined in **OAR 918-500-0005**, means a manufactured dwelling with a below-grade foundation system and a perimeter retaining wall or foundation which is back filled against it.
- **“Habitable Area”**, as defined in **OAR 918-500-0005**, means an indoor area intended for human habitation consist of, but not be limited to, areas used for living, eating, cooking, sleeping, or recreational purposes.
- **“Habitable Room”**, as defined in **NFPA 501-1999**, means a room or an enclosed floor space intended for living, eating, food preparation, or sleeping purposes, not including bathrooms, foyers, hallways, and other accessory floor spaces.
- **“Heating Appliance”**, as defined in **NFPA 501-1999**, means an appliance for comfort heating or for domestic water heating.
- **“Heat-Producing Appliance”**, as defined in **NFPA 501-1999**, means all heating and cooking appliances and fuel burning appliances.
- **“Heat Pump”**, as defined in **NFPA 54-1999**, means an automatically operated appliance utilizing a refrigeration system for supplying either heated air or liquid, or heated and/or cooled air or liquid.
- **“Immediate Family”** as defined in **OAR 918-500-0005**, means father, mother, brother, sister, son, daughter, son-in-law, daughter-in-law, grandson, granddaughter, grandfather, grandmother, stepmother, stepfather, stepson, stepdaughter, brother-in-law, or sister-in-law.
- **“Installation”**, as defined in **ORS 446.003**, in relation to:
  - **“Construction”** means the arrangements and methods of construction, fire and life safety, electrical, plumbing and mechanical equipment and systems within a manufactured structure.

- “**Siting**” means the manufactured structure and cabana foundation support and tie-down, the structural, fire and life safety, electrical, plumbing and mechanical equipment and material connections and the installation of skirting and temporary steps.
- “**Insignia**”, as defined in **ORS 446.003** means:
  - For a manufactured dwelling built to the HUD standards for such a dwellings, the HUD label; or
  - For all other manufactured structures, the insignia issued by this state indicating compliance with state law.
- “**Installer**”, as defined in **ORS 446.003**, means any individual licensed by the director to install, set up, connect, hook up, block, tie down, secure, support, install temporary steps, install skirting for or make electrical, plumbing or mechanical connections to manufactured dwellings or cabanas or who provides consultation or supervision for any of these activities, except architects licensed under **ORS 671.010 to 671.220** or engineers licensed under **ORS 672.002 to 672.325**.
- “**IPIA**” means 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.
- “**Labeled**”, as defined in **OAR 918-500-0005**, means equipment or materials used in the manufacture or installation of a manufactured dwelling, 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.
- “**Listing Agency**” as defined in **OAR 918-500-0005**, means an agency that: Is regularly engaged in conducting its own tests, listing, labeling or contracting its testing procedures to a nationally recognized testing agency; Maintains a periodic inspection program on production of currently listed products; and Publishes, at a minimum, an annual report which is used to determine whether products have been tested to such national standards and found safe for use in a specified manner.
- “**Load Bearing Device**”, as defined in **OAR 918-500-0005**, means any equipment or device used in the support of a manufactured dwelling including but not limited to footings, piers, caps and shims.
- “**Load, Dead**”, as defined in **NFPA 501-1999**, means the weight of all permanent construction, including walls, floors, roof, partitions, and fixed service equipment.
- “**Load, Live**”, as defined in **NFPA 501-1999**, means the weight superimposed by the use and occupancy of the manufactured home, including wind load and snow load, but not including dead load.
- “**Load, Wind**”, as defined in **NFPA 501-1999**, means the lateral or vertical pressure or uplift on the manufactured home due to wind blowing in any direction.
- “**Lot**”, as defined by statute in **ORS 446.003**, means any space, area or tract of land, or portion of a manufactured dwelling park or mobile home park, which is designated or used for occupancy by one manufactured dwelling.
- “**Park Lighting**” terminology used in this code shall be based on the following definitions.
  - “**Candela**”, as defined by the **International System of Units (SI)**, means the SI unit of luminous intensity (formerly called the candle). One candela equals one lumen per steradian.
  - “**Disability Glare**”, as defined by the **Northwest Lighting Industry Association**, means glare resulting in reduced visual performance and visibility often accompanied by discomfort glare.
  - “**Discomfort Glare**”, as defined by the **Northwest Lighting Industry Association**, means glare producing discomfort but which does not necessarily interfere with visual performance of visibility.
  - “**Footcandle**”, as defined by the **Northwest Lighting Industry Association**, means a standard measurement of illuminance, representing the amount of illuminance on a surface on foot square on which there is a uniformly distributed flux of one lumen.
  - “**Illuminance**”, as defined by the **Illuminating Engineering Society of North America**, means the density of incident luminous flux on a surface. Illuminance is the standard metric for lighting levels, and is measured in lux (lx) or footcandles (fc).
  - “**Lumen**”, as defined by the **Illuminating Engineering Society of North America**, means the quantity of luminous flux emitted within a unit solid angle (one steradian) by a point source with one candela intensity in all directions.
  - “**Luminaire**”, as defined by the **Illuminating Engineering Society of North America**, means a complete lighting unit, consisting of a lamp or lamps together with the components required to distribute the light, position the lamps, and connect the lamps to a power supply (often referred to as a fixture).
  - “**Lx**”, as defined in the **International System of Units (SI)**, means the unit of illuminance equal to one lumen per square meter or 10,764 lx is equal to one foot candle.
  - “**Photocell**”, as defined by the **Illuminating Engineering Society of North America**, means a device that measures the amount of incident light present in a space.

- **“Visual Comfort Probability (VCP)”**, as defined by the *Illuminating Engineering Society of North America*, means the rating of a lighting system expressed as a percentage of the people who, when viewing from a specified location and in a specified direction, will be expected to find it comfortable in terms of discomfort glare.
- **“Main Frame”**, as defined in **NFPA 501-1999**, means the structural component on which the body of the manufactured home is mounted.
- **“Maintenance of Equipment”**, as defined in **OAR 918-500-0005**, means 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 or to any equipment.
- **“Manufactured Dwelling”** means a manufactured home, mobile home or residential trailer, as defined in **ORS 446.003** (Manufactured dwelling does not mean any building or structure subject to the structural specialty code adopted pursuant to **ORS 455.100 to 455.450** or any unit identified by the manufacturer as a *prefabricated structure, modular building, or recreational vehicle*)
- **“Manufactured Structure”**, as defined in **ORS 446.003**, means a recreational vehicle (*including park trailers*), a recreational structure, or manufactured dwelling. (*Manufactured structure does not mean any building or structure subject to the structural specialty code adopted pursuant to ORS 455.100 to 455.450 or any unit identified by the manufacturer as a prefabricated structure or modular building*)
- **“Manufacturer’s Representative”**, as defined in **OAR 918-500-0005**, means an employee, dealer or person authorized by a manufacturer through contract to act on behalf of the manufacturer.
- **“Minor Repair”**, as defined in **OAR 918-500-0005**, means a simple repair such as replacing broken glass, fittings, devices or fixtures, using approved component parts but does not include the repair or replacement of major portions of the structural, plumbing, electrical or mechanical system or conversions, alterations or additions.
- **“Model”**, as defined in **OAR 918-500-0005**, means an individual manufactured structure, as designated by the manufacturer, intended to be manufactured with a specific floor plan indicating a fixed location of all walls, cabinets, structural components, and plumbing, mechanical and electrical equipment as approved by the authority having jurisdiction.
- **“Multiple”**, as defined in **OAR 918-500-0005**, means two or more individual manufactured dwellings designed to be adjoined with a zero clearance between them.
- **“Municipality”**, as defined in **ORS 446.003**, means a city, county or other unit of local government otherwise authorized by law to enact codes.
- **“Noncompliance”**, as defined in **OAR 918-500-0005**, means a failure of a manufactured dwelling, alteration or installation to comply with an appropriate building code.
- **“Notice of Violation”**, as defined in **OAR 918-500-0005**, means written notification by the Division stating the manufactured dwelling or equipment may not be used, rented, leased, or sold or offered for rent, lease, or sale due to violations of **ORS Chapter 446** or the appropriate building code. (Also known as, “Red Tag”, “Stop Work Order”, “Prohibited Sales Notice”).
- **“Occupied Space”**, as defined in the **Oregon One and Two Family Dwelling Specialty Code**, means the total area of all buildings or structures on any lot or parcel of ground projected on a horizontal plane, excluding permitted projections as allowed by this code.
- **“Option”**, as defined in **OAR 918-500-0005** means a provision made during the manufacture of a home to facilitate the future installation of any appliance or other equipment (e.g., air conditioner, wet bar or dishwasher).
- **“Park Building”**, as defined in **OAR 918-500-0005**, means any non residential building used for park purposes.
- **“Park Street” or “Park Driveway”**, as defined in **OAR 918-500-0005**, means a private way that affords principal means of access to abutting individual manufactured dwelling lots and auxiliary buildings.
- **“Park Trailer”**, as defined in **OAR 918-500-0005**, means a vehicle built on a single chassis, mounted on wheels, designed to provide recreational, seasonal or temporary living quarters, and which has a gross trailer area not exceeding 400 square feet in the set-up mode *with all attachments*. Such a vehicle may be connected to utilities necessary for operation of installed fixtures and appliances and shall be referred to and identified by the manufacturer or converter as a recreational vehicle.
- **“Pier”**, as defined in **NFPA 501-1999**, means that portion of the support system between the footing and the manufactured home, *exclusive of caps and shims*.
- **“Play Area”**, as defined in **OAR 918-500-0005**, means an area inside a park exclusively dedicated for children to play and exercise but does not include a park club house, pool, storage lot or other area set aside for the general use of the park residents.
- **“Plenum”**, as defined in **NFPA 501-1999**, means an air compartment that is part of an air-distributing system, to which one or more ducts or outlets are connected.

- **“Porch”**, as defined in **NFPA 501A-1999**, means an outside walking area having a floor that is elevated more than eight inches (203 mm) above grade.
- **“Prefabricated Cabana”**, as defined in **OAR 918-500-0005**, means a cabana built at an off site location and transported to the site for installation.
- **“Prefabricated Foundation System”**, as defined in **OAR 918-500-0005**, means a listed or approved engineered system of prefabricated foundation supports installed to the device manufacturer’s installation instructions.
- **“Prefabricated Pier”**, as defined in **OAR 918-500-0005**, means a listed or approved individual pier which is manufactured at an off site location but does not include concrete masonry units or earthquake-resistant bracing systems.
- **“Public Way”**, as defined in **OAR 918-500-0005**, means a public street, road, or hi-way providing access to a park.
- **“Quick Disconnect Device”**, as defined in **NFPA 501-1999**, means a hand-operated device which provides a means for connecting and disconnecting a gas supply or connecting gas systems, and which is equipped with an automatic means to shut off the gas supply when the device is disconnected.
- **“Ramada”**, as defined in **ORS 446.003**, means a stationary structure having a roof extending over a manufactured structure, which may also extend over a patio or parking space for motor vehicles, and is used principally for protection from snow, sun or rain.
- **“Readily Accessible”**, see accessible.
- **“Recessed Porch”**, as defined in **OAR 918-500-0005**, means an open floor area supported by the main frame which is located outside the exterior walls of the manufactured dwelling which may be enclosed by a roof, three or less walls, screening or glass.
- **“Regulator, Pressure”**, as defined in **NFPA 54-1999**, means a device placed in a gas line for reducing, controlling, and maintaining the pressure that portion of the piping system downstream of the device.
- **“Regulator, Service”**, as defined in **NFPA 54-1999**, means a pressure regulator installed by the serving gas supplier to reduce and limit the service line gas pressure to the delivery pressure.
- **“Repair”**, as defined in **OAR 918-500-0005**, means the reconstruction or renewal of any part of an existing manufactured dwelling or piece of equipment for the purpose of its maintenance (See alteration).
- **“Replacement In Kind”**, as defined in **OAR 918-500-0005**, means 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.
- **“Roof Jack”**, as defined in **NFPA 501-1999**, means that portion of a manufactured home heater flue or vent assembly, including the cap, insulating means, flashing, and ceiling plate, located in and above the roof of a manufactured home.
- **“Room Heater, Vented”**, as defined in **NFPA 54-1999**, means a vented self contained, free standing non recessed, fuel –gas burning appliance for furnishing warm air to the space in which installed, directly for the heater without duct connections.
- **“Running Gear Assembly”**, as defined in **NFPA 501-1999**, means the subsystem consisting of suspension springs, axles, bearings, wheels, hubs, tires, and brakes, with their related hardware.
- **“Sealed Combustion System Appliance”**, as defined in **NFPA 501-1999**, means an appliance that by its inherent design is constructed so that all air supplied for combustion to the appliance’s combustion system, and all products of combustion are completely isolated from the atmosphere of the space where it is installed.
- **“Service Equipment, Manufactured Home”**, as defined in **NFPA 501-1999**, means the equipment containing the disconnecting means, over current protective devices and receptacles or other means for connecting a manufactured home feeder assembly.
- **“Set Up”**, see the definition of installation.
- **“Single Family Dwelling”**, as defined in **OAR 918-500-0005**, means a manufactured dwelling used by an individual or two or more persons related by blood or marriage or a group of not more than ten persons not related by blood or marriage living together. When located in a labor camp as defined in **OAR 437-02-0142** (which the Building Codes Division adopted by reference as **OAR 918-450-0005**) single family dwelling shall include manufactured dwellings with not more than five bedrooms, used to house up to ten persons not related by blood or marriage.
- **“Single Station Alarm Device”**, as defined in **NFPA 501-1999**, means an assembly incorporating the smoke detector sensor, the electrical control equipment, and the alarm-sounding device in one unit.
- **“Site, Manufactured Dwelling”**, as defined in **OAR 918-500-0005**, means a designated parcel of land designed to accommodate a manufactured dwelling, its accessory structures or buildings, and accessory equipment for the exclusive use of the occupants.
- **“Skirting”**, as defined in **ORS 446.003**, means a weather resistant material used to enclose the space below the manufactured structure.

- **“Smoke Alarm”**, as defined in **ORS 479.250**, means a self-contained single or multiple station detection device for products of combustion other than heat that conforms to the state building code, rules of the State Fire Marshal and that is listed by Underwriters Laboratories or any other nationally recognized testing laboratory. “Smoke alarm” includes but is not limited to devices listed under **UL 217 (1998)**. “Smoke alarm” may include two or more single station units wired to operate in conjunction with each other.
- **“Smoke Detector”**, as defined in **ORS 479.250**, means a device that is not self contained, that detects products of combustion other than heat, that is intended for use in conjunction with a central control panel, that conforms to the state building code and rules of the State Fire Marshal and that is listed by Underwriters Laboratories or any other nationally recognized testing laboratory. “Smoke detector” includes but is not limited to devices listed under **UL 268 (1998)**.
- **“Stand”**, as defined in **OAR 918-500-0005**, means that area of the manufactured dwelling site which has been reserved for the placement of a manufactured dwelling or accessory structure.
- **“Structure”**, as defined in **OAR 918-500-0005**, means that which is built or constructed, an edifice or building of any kind, or piece of work artificially built up or composed of parts joined together in some definite manner.
- **“Substantial Damage”**, as defined by **FEMA in 44 CFR Chapter 1**, means that the retail cost of repairing a dwelling up to code equals or exceeds 50 percent of the pre-damage market value of the dwelling (excluding land value).
- **“Support System”**, as defined in **NFPA 501-1999**, means a combination of footings, piers, caps, and shims that will, when properly installed, support the manufactured home.
- **“Tag”**, as defined in **OAR 918-500-0005**, means a label or insignia issued by the Division and applied to manufactured dwellings to indicate compliance with federal or state laws, rules and regulations (See insignia).
- **“Testing Laboratory”** or **“Testing Agency”**, as defined in **OAR 918-500-0005**, means an organization: In the business of testing equipment and systems; Qualified and equipped to perform or to observe experimental testing to approved standards; Not under the jurisdiction or control of any single manufacturer or supplier for an affected industry; Which publishes reports including specified information about the equipment and systems tested and found safe for use in a specified manner; and Whose methods and standards have been approved by the Division.
- **“Tie-down”**, as defined in **ORS 446.003**, means any device designed to anchor a manufactured structure securely to the ground (*See anchor*).
- **“Transportation system”**, (see chassis).
- **“Under-floor Enclosure”**, as defined in **OAR 918-500-0005**, means the perimeter skirting, foundation wall or retaining wall used to enclose the under floor area of a manufactured dwelling.
- **“Utilities”**, as defined in **ORS 446.003**, means the water, sewer, gas or electric services provided on a lot for a manufactured structure.
- **“Utility Connection”**, as defined in **OAR 918-500-0005**, means: Installation and connection of the manufactured dwelling electrical feeders to the electrical service *disconnect*; Installation and connection of the manufactured dwelling drain (building drain) to the sewer utility termination (building sewer); Installation and connection of the manufactured dwelling water distribution system to the water utility termination (building supply); and Installation and connection of the manufactured dwelling fuel gas distribution system to the gas utility termination.
- **“Utility Termination”**, as defined in **OAR 918-500-0005**, means: The electrical service equipment provided on a lot for the manufactured dwelling utility connection (*also known as the service disconnect*); The building sewer provided on a lot for the manufactured dwelling utility connection; and The building water supply provided on a lot for the manufactured dwelling utility connection.
- **“Valve, Service Shut Off”**, as defined in **NFPA 54-1999**, means a valve, installed by the serving gas supplier between the service meter or source of supply and the customer piping system, to shut off the entire piping system.
- **“Vent, Gas”**, as defined in **NFPA 501-1999**, means factory-built vent piping and vent fittings, listed by an approved testing agency, that are assembled and used in accordance with the terms of their listings for conveying flue gasses to the outside atmosphere.
- **“Vent System”**, as defined in **NFPA 501-1999**, means that part of a piping installation that provides circulation of air within a drainage system.
- **“Vertical Tie”**, as defined in **24 CFR 3280.302**, means a tie intended to resist the uplifting or overturning forces.
- **“Visual Inspection”**, as defined in **OAR 918-500-0005**, means an inspection by the Division of the visible portions of completed construction for the purpose of identifying code violations or approving and issuing an insignia of compliance.

- **“Water distribution System”**, as defined in **NFPA 501-1999**, means potable water piping within, or permanently attached to, the manufactured home.
- **“Water Heater”**, as defined in **NFPA 501-1999**, means an appliance for heating water for domestic purposes other than space heating.
- **“Weatherization”**, as defined in **OAR 918-500-0005**, means the act of improving a manufactured dwellings ability to limit heat loss and air infiltration by adding insulation, sealing ducts and openings, replacing windows and doors, and by making other improvements to increase the energy efficiency of the manufactured dwelling.
- **“Wildfire Hazard Zone”**, as defined in the OOTFDSC, means an area legally determined by the authority having jurisdiction to have special hazards caused by a combination of combustible natural fuels, topography, and climatic conditions that result in a significant hazard of catastrophic fire over relatively long periods each year. (Wildfire hazard zones are determined using criteria established by the Oregon Department of Forestry).

# APPENDIX B

## ACRONYMS

This code uses terminology and acronyms unique to the manufactured dwelling and construction industry. The following are explanations of acronyms used in this code, and are included here for the convenience of the user.

- **“AA”** means Aluminum Association.
- **“ABS”** means acrylonitrile-butadiene-styrene.
- **“ICF”** means insulated concrete form.
- **“ADA”** means Americans with Disabilities Act.
- **“ADAG”** means Americans with Disabilities Act Accessibility Guidelines.
- **“AGA”** means American Gas Association.
- **“AHA”** means American Hardboard Association.
- **“AISC”** means American Institute of Steel Construction, Inc.
- **“AISI”** means American Iron and Steel Institute.
- **“AMP”** means ampere.
- **“ANSI”** means American National Standards Institute.
- **“APA”** means American Plywood Association.
- **“ASME”** means American Society of Mechanical Engineering.
- **“ASTM”** means the American Society for Testing and Materials.
- **“AWPA”** means the American Wood-Preservers’ Association.
- **“BFE”** means the base flood elevation.
- **“BTU”** means British Thermal Units.
- **“CFM”** means Cubic feet per minute.
- **“CFR”** means Code of Federal Regulations.
- **“CMU”** means concrete masonry unit.
- **“CPVC”** means chlorinated polyvinyl chloride.
- **“DAPIA”** means Design Approval Primary Inspection Agency.
- **“DL”** means dead load.
- **“DOT”** means the U.S. Department of Transportation.
- **“EPDM”** means ethylene propylene diolefin monomer,
- **“ERB”** means earthquake-resistant bracing.
- **“FEMA”** means Federal Emergency Management Agency.
- **“FIRM”** means Flood Insurance Rate Map.
- **“FHA”** has two uses:
  - Relating to federal mortgage loans means the Federal Housing Administration;
  - Relating to discriminatory sales or rental practices means the Fair Housing Act.
- **“HUD”** means U.S. Department of Housing and Urban Development.
- **“ICF”** means insulated concrete form.
- **“IPIA”** means Production Inspection Primary Inspection Agency.
- **“LAG”** means lowest adjacent grade.
- **“LL”** means live load.
- **“MBS”** means masonry block skirting.
- **“MD&P”** means Oregon Manufactured Dwelling and Park Specialty Code.
- **“NEC”** means National Electrical Code.
- **“NFIP”** means National Flood Insurance Program.
- **“NFPA”** means National Fire Protection Association.
- **“OAR”** means Oregon Administrative Rule.
- **“ORS”** means Oregon Revised Statute.
- **“PB”** means Polybutylene.
- **“PCP”** means positive connection pier.
- **“PEX”** means crosslinked polyethylene.
- **“PFP”** means prefabricated foundation pier.
- **“PSI”** means pounds per square inch.
- **“PSF”** means pounds per square foot.



- “**PVC**” means polyvinyl chloride.
- “**RPP**” means *recessed perimeter piers*.
- “**SI**” means the International System of Units.
- “**UL**” means Underwriters Laboratories, Inc.

# APPENDIX C

## SYMBOLS

*This code uses both the United States units of measurement and the International System of Units (SI). Below is an explanation of the SI and U.S. symbols contained in this book and their U.S. equivalent. Where possible in this publication, conversions to SI have been rounded to the nearest whole number.*

### **Symbols**

- **“A”** means ampere
- **“cm”** means centimeter.
- **“ft”** means foot.
- **“g”** means gram.
- **“in”** means inch.
- **“K”** means 1,000.
- **“kg”** means kilogram.
- **“kJ”** means British thermal unit
- **“km”** means kilometer.
- **“kW”** means kilowatt.
- **“L”** means liter.
- **“lx”** means one lumen per square meter.
- **“m”** means meter.
- **“mi”** means mile.
- **“mm”** means millimeter.
- **“Oz”** means ounce.
- **“Pa”** means pascal.
- **“Pd”** means pound.
- **“Sq”** means square.
- **“T”** means ton.
- **“W”** means watt.
- **“Yd”** means yard.