STATE OF OREGON
BUILDING CODES DIVISION

MANUFACTURED DWELLING INSTALLATION SPECIALTY CODE STUDY GUIDE
for INSTALLERS & INSPECTORS

Based upon the 2010 Manufactured Dwelling Installation Specialty Code
August 1, 2010

General Information

The study guide is to be used to assist you in preparing for the State of Oregon examination for a licensed Manufactured Dwelling Installer (MDI) or a certified Manufactured Structure Installation Inspector (MHI). Limited Installer (LI) and Limited Skirting Installer (LSI) are not required to pass an examination, but should be familiarize themselves with this study guide and the code.

This is not an extensive listing of the knowledge expected from person seeking a license or certification. Where there are general discussions of federal regulations, Oregon laws, Oregon administrative rules, or one of the other adopted Oregon specialty codes, the study guide is not controlling; the applicable regulation, statue, rule, or specialty code is the final authority.

The examination questions are randomly selected from a pool of over 221 questions that cover federal regulations, Oregon statutes and rules, and other adopted Oregon specialty codes. The examination questions are based upon the knowledge and experience that is expected of the individual applicants.

The 2010 Oregon Manufactured Dwelling Installation Specialty Code (MDISC) contains the minimum standards for the installation of manufactured dwellings. In certain instances, the MDISC directs installers and inspectors to follow the home manufacturer's installation instructions. This is necessary as a result of the federal Department of Housing and Urban Development (HUD) establishing minimum installation standards for new manufactured dwelling installations.

As the need arises, the Building Codes Division may need to provide code clarifications. This information is made available on the division's Website. To view code clarifications –

http://www.cbs.state.or.us/external/bcd/programs/mdprogram/code_clarifications.html.

The MDISC makes several references to the other adopted Oregon specialty codes. The MDISC and the other adopted codes are available online:

Manufactured Dwelling Installation Specialty Code –

www.cbs.state.or.us/external/bcd/programs/mdprogram/2010_MDISC_Chapters.html

Oregon Residential Specialty Code –

http://ecodes.biz/ecodes_support/free_resources/Oregon/08_Residential/08ORResidential_main.html

Oregon Mechanical Specialty Code –

http://ecodes.biz/ecodes_support/free_resources/Oregon/10_Mechanical/10_ORMech_main.html

Oregon Electrical Specialty Code –

http://nfpaweb3.gvpi.net/rrserver/browser?title=/NFPAOR/OregonNEC2008

Oregon Plumbing Specialty Code –

http://www.cbs.state.or.us/bcd/programs/plumbing/2008opsc.html

The licensing and certification requirements for persons installing and inspecting manufactured dwellings are authorized in ORS chapter 446 and chapter 455, and in OAR chapter 918, divisions 098 and 515. These statutes and rules are located on the division's Website at www.bcd.oregon.gov.

Scope of work for allowed under each license type:

918-515-0150
Installer Responsibilities and Limits

(1) An installer must:

(a) Work for a business with a valid Construction Contractors Board license; or

(b) The installer is a business with a valid Construction Contractors Board license.

(2) Work covered by an installer's license is limited to:

(a) Preparing the site and stand for the installation of the manufactured dwelling or cabana;

(b) Installing manufactured dwellings, cabanas, skirting, underfloor vapor retarder, ventilation, access, and temporary steps;

(c) Installing the support, tie-down, ERB's, and the structural connections for manufactured dwellings and cabanas;

(d) Providing setbacks, clearances, and fire life and safety protection;

(e) Providing plumbing and electrical utility connections;

(f) Providing plumbing, electrical, and mechanical crossover, appliance, and fixture connections of and to the manufactured dwelling or cabana as permitted by these rules;

(g) Install appliance exhaust ducts and terminations when required;

(h) Performing plumbing, mechanical, and electrical tests when required; and

(i) Serving as the supervisor of individuals licensed by the division as limited installers.

(3) An installer must, at a minimum:

(a) Assure the manufactured dwelling or cabana stand is in compliance with the **Oregon Manufactured Dwelling Installation Specialty Code** prior to the installation of the manufactured dwelling or cabana;

(b) Assure all setbacks, clearances, and fire life and safety installations are in compliance with the **Oregon Manufactured Dwelling Installation Specialty Code;**

(c) Perform electrical and plumbing tests if the respective plumbing and electrical connections were made by the installer;

(d) Close and secure all access panels and covers on or under the manufactured dwelling or cabana;

(e) Assure the underfloor dryer and range exhaust ducts are roughed in if the manufactured dwelling is equipped with or provides for the installation of such an appliance requiring exhaust ducts;

(f) Assure that all doors and windows are adjusted, secured in place, and operational;

(g) Assure all ship-loose flue vents and chimneys are installed, secured in place, and capped according to their listing;

(h) Where the installer also installs the skirting, comply with OAR 918-515-0490(1);

(i) Affix a certification tag to each manufactured dwelling or cabana installed;

(j) Complete all reporting and application forms required by these rules; and

(k) Leave the manufacturer's installation instructions at the installation site to be available at the time of the inspection if used for any part of the installation;

(l) Assure all portions of the manufactured dwelling installation performed by the installer are in compliance with the **Oregon Manufactured Dwelling Installation Specialty Code**; and

(m) Correct all applicable nonconformances within 30 days of receipt of a correction notice.

918-515-0430
Scope of Work Allowed as a Limited Installer

A licensed limited installer may:

(1) Assist a licensed installer in the installation of a manufactured dwelling or cabana when under the direct supervision of licensed installer; or

(2) Assist a licensed limited skirting installer in the installation of manufactured dwelling or cabana skirting or any of the work described in OAR 918-515-0485(1) when under the direct supervision of a licensed limited skirting installer.

918-515-0485
Limited Skirting Installer Responsibilities and Limits

(1) A limited skirting installer must:

(a) Work for a business with a valid Construction Contractors Board License; or

(b) Be a business with a valid Construction Contractors Board license.

(2) Work covered by a limited skirting installers license is limited to:

(a) Installation of manufactured dwelling and cabana skirting, temporary steps, underfloor vapor retarder, ventilation, tie-downs, perimeter foundation supports, appliance exhaust terminations, and underfloor skirting access;

(b) Affixing a certification tag to the manufactured dwelling or cabana skirting;

(c) Completing all reports and application required by the division and these rules;

(d) Serving as the supervisor of individuals licensed by the division as limited installers; and

(e) Any work described in OAR 918-515-0150 when under the direct supervision of a licensed installer.

Scope of responsibility for inspectors:

918-098-1305
Manufactured Structure Installation Inspector Certification

(1) Scope of Activities and Authority.

(a) A manufactured structure installation inspector conducts onsite field inspections of manufactured dwelling or park trailer installations including site preparation, setbacks, drainage, stand, foundation support, earthquake bracing systems, tie-downs, under-floor enclosures, access, egress, plumbing utility connections (within 30 lineal feet of the manufactured dwelling), mechanical connections and electrical feeder assembly connections (as defined by **Article 550** of the **National Electrical Code**), electrical fixture connections, and plumbing, mechanical, and electrical crossover connections for manufactured structures under ORS 446.230 and 446.240;

(b) This certification does not include inspections or plan reviews of manufactured dwelling alterations or manufactured structure accessory structures and accessory buildings. See OAR 918-098-1325 and 918-098-1330 for certification requirements.

(c) This certification can be used only in a jurisdiction that:

(A) Meets all of the requirements of this rule and OAR 918-500-0055;

(B) Complies with ORS 446.250 and 446.253(2) relating to the delegation of full responsibility for permit issuance and inspections;

(C) Issues permits according to ORS 446.253; and

(D) Enforces the current edition of the **Oregon Manufactured Dwelling Installation Specialty Code**, the provisions of OAR chapter 918, division 500, and all referenced standards contained therein.

Chapter 1
Administration

Section 1-1 Title, Scope and Purpose

- This code is known as the **2010 Oregon Manufactured Dwelling Installation Specialty Code**, and must be cited as such.
- This code is intended to provide statewide standards for the protection of life, limb, health, property, 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 building official may require a person to exceed this code except where specifically permitted within this code.

Section 1-2 Applicability

- This code is a statewide preemptive code, and is the minimum and maximum requirements in the state.
- Where differences occur between a city or county code or ordinance and this code, the provisions of this code apply.
- Where different sections of this code specify different materials, methods of construction or other requirements, the most restrictive requirements apply.
- Where a general requirement and a specific requirement in this code conflict, the specific requirement applies.
- Any conflicts between this code and any referenced standard, this code applies.
- Any conflicts between this code, an Oregon Revised Statute or Oregon Administrative Rule, the applicable statute or rule applies.

Non-Applicable Provisions

- This code is not applicable to the following:
  - Installation of manufactured dwellings on land owed or occupied by the federally government.
  - Installation of manufactured dwellings on land owed or occupied by tribal council.
  - Construction or installation of prefabricated, or modular home.
  - Manufactured dwellings used for other than dwelling purposes.
  - Recreational vehicles regulated under ORS chapter 446.

Section 1-3 Duties and Powers of the Building Official

- The building official is authorized and directed to enforce the requirements of this code.
- Building officials are responsible for ensuring a that plans are reviewed, permits are issued, inspections are performed, code interpretations, requiring corrective action, violations are investigated, issuing stop work orders, issuing citations, enforcing the state's licensing requirements, and many other things.

Interpretations

- A building official has the authority to render interpretations of this code.
- These interpretations must meet the intent and purpose of this code.

Alternative Materials, Design and Methods of Construction and Equipment

- This code is not intended to prevent the installation of any material or to prohibit any design or method of construction.
- Building officials have the authority to issue "site-specific" alternatives. Alternatives must be approved by the building official as being at least equivalent to this code.

Section 1-4 Permits

- Permits must be obtained from the building official prior installation of a manufactured dwelling, or an accessory building.
- See Section 1-4.10 for what items are included under the installation permit.
- If an installation involves using other listed materials, copies of the installation instructions must also be left on site.
- Permits must be posted in a semi-permanent and conspicuous location so they are protected from the weather.
- New homes (initial installations) require the installer and inspector to follow certain requirements in the home manufacturer's installation instructions. Be sure to comply with these requirements and leave the manufacturer's installation instructions at the job site in a location accessible to the inspector.
- Multiple permits may be required when the proposed work involves elements outside a typical installation permit.
- Permits are typically valid for 180 days. Building officials may grant an extension provided the request is submitted in writing justifying the need for the extension. If the permit expires, the building official may require a new permit be obtained.
- Construction documents (plans) included with a permit application must be according to Section 1-5.
- Specific information for construction in Flood Hazard Areas is established in Section 1-5.3.1. Additionally, Section 3-2.4 requires that manufactured dwellings intended for installation in flood hazard areas be installed according to the Oregon Residential Specialty Code, Section R324.1.8; Section 4-1.1 allows an exemption from skirting requirements in flood hazard areas; Section 4-3.2.1 contains specific requirements for foundation walls in flood hazard areas; Section 4-10.1 contains specific requirements for ventilation openings in flood hazard areas; and Section 6-4.1 contains specific requirements for electrical crossover connections.

Work Exempt from Permit

- Section 1-4.2 lists certain items exempt from permit requirements.

Alternative Materials, Design and Methods of Construction and Equipment

- This code is not intended to prevent the installation of any material or to prohibit any design or method of construction.

- Building officials have the authority to issue "site-specific" alternatives. Alternatives must be approved by the building official as being at least equivalent to this code.

1-7 Inspections

- All work which requires a permit must be inspected.
- Its the responsibility of the permit holder to contact the building official when work is ready for inspection.
- Work must remain accessible and exposed for inspection purposes, unless prior arrangements have been made between the permit holder and the building official for work that is not feasible to leave open for inspection.
- Basement walls and foundation walls may be constructed and inspected prior to the installation of the manufactured home if prior arrangements are made.
- The permit holder, at their own expense may be required to remove or replace material to allow for inspection.

Set-up Inspections

- A minimum of two (2) inspections must be performed. 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.
- A set-up inspection includes items covered under Section 1-4.10, and must be performed prior to the under-floor area being enclosed by skirting or a retaining wall.
- A final inspection occurs when all work required by the installation permit is completed and includes, but is not limited to, those items listed in Section 1-7.1.3.
- If the permit holder fails to call for an inspection, the building official may charge additional inspection fees.
- Installers (MDI) and limited skirting installers (LSI) are required to affix a division-issued certification tag upon completion of installation and prior to inspection.

1-9 Appeals

- There are two paths person may choose to appeal orders, decisions, or determinations made at the local level. Section 1-9 provides information on these two options.
- Appeals must be based on a claim that the true intent of the code or the rules legally adopted have been incorrectly interpreted, the provisions of this code do not fully, apply, or an equally good or better form of construction is proposed.

1-10 Violations

- When during the course of an inspection a violation is observed, the inspector must write the violation and cite the appropriate code requirement on an inspection report.
- All violations noted must be corrected within time frame established by the building official, which is typically 30 days from the date of inspection report or correction notice.

1-12 Temporary Placement or Storage

Manufactured dwellings may be placed temporarily for periods not to exceed thirty (30) days.

Chapter 2
Definitions

General 2-1

- Provides definitions for terms used in this code.
- Where terms are not defined in this code and are defined in statute, administrative rule, or the applicable adopted Oregon specialty code, such terms have the meanings as recognized in those statutes, rules, and codes.
- Where terms are not defined as specified, such terms have the ordinary accepted meaning as the context implies.

Scope

Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

Terms Defined in Statute, Administrative Rule, or Other Codes.

Where terms are not defined in this code and are defined in the Oregon Revised Statutes, Oregon Administrative Rules, Oregon Electrical Specialty Code, Oregon Structural Specialty Code, Oregon Fire Code, Oregon Mechanical Specialty Code, Oregon Residential Specialty Code, or Oregon Plumbing Specialty Code, such terms shall have meanings ascribed to them as in those statutes, rules, and codes.

Terms not Defined.

Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Words of common usage are given their plain, natural, and ordinary meanings. Words that have well-defined legal meanings are given those meanings.

Definitions

Accessible. 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.

Accessory Building or Structure. A building or structure that is an addition to or supplements the facilities provided by a manufactured dwelling. Accessory building specifically includes, but is not limited to cabanas, ramadas, storage sheds and garages. Accessory structure specifically includes, but is not limited, to awnings, carports, decks, steps and ramps.

Alteration. Any change, addition, repair, conversion, replacement, modification or removal of any equipment or installation which may affect the operation, construction or occupancy of a manufactured structure.

Anchoring System. Equipment or materials used to secure a manufactured dwelling to the ground.

Approved. Approved or certified by the Department of Consumer and Business Services or its designee.

Awning. 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.

Bonding. 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.

Building. Any permanent building but does not include manufactured dwellings or manufactured dwelling accessory buildings.

Cabana. 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.

Carport. 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. The entire transportation system comprising the following subsystems: drawbar and coupling mechanism, frame, running gear assembly, and lights.

DAPIA (Design Approval Primary Inspection Agency). A state or private organization that has been accepted by the Secretary of HUD to evaluate and approve manufactured dwelling designs and quality control procedures.

Drain. A pipe that carries waste, water, or water-borne waste in a drainage system.

Drain, Main. The lowest pipe of a drainage system that receives sewage from all the fixtures within a manufactured dwelling and conducts these wastes to the drain outlet.

Drainage System. All piping, within or attached to the structure, that conveys sewage or other liquid waste to the drain outlet, not including the drain connector.

Earthquake-Resistant Bracing System. 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.

Elevation.

Base Flood Elevation (BFE). The elevation of the base flood, including wave height, relative to the datum specified on a municipalities flood hazard map.

Design Flood Elevation (DFE). The elevation of the design flood, including wave height, relative to the datum specified on a municipalities flood hazard map.

Equipment. Materials, appliances, devices, fixtures, fittings, or accessories used in the construction of manufactured dwellings and the fire safety, plumbing, heat-producing, and electrical systems of a manufactured dwelling.

Fill. A man made deposit of materials intended to raise an existing grade.

Flood.

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

Design Flood. The greater of either (1) the base flood or (2) the flood so designated by the municipality as its regulatory flood, with a one percent chance, or less, of being equaled or exceeded in any given year.

Flood Damage-Resistant Material. Any construction material capable of direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repairs.

Flood Hazard Area. The greater of the either (1) the area within a flood plain subject to a one percent or greater chance of flooding in any year or (2) the area designated as a flood hazard area on a municipalities flood hazard map, or otherwise legally designated.

Flood Insurance Rate Map (FIRM). An official map of a municipality on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the municipality.

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

Foundation Wall. A wall below the floor nearest grade that serves as a structural support for the home.

Frame. The fabricated, rigid substructure that provides support to the affixed manufactured dwelling structure, both during transport and on-site; and provides a platform for securement of the running gear assembly and the draw bar and coupling mechanism.

Freezing Climate. For the purposes of this code, the Building Codes Division has established that a *freezing climate* is a climate region where the maximum number of heating degree days exceeds 9,000 hours. Heating degree day hours have been established by the U.S. Department of Energy and further determined by the Oregon Department of Energy.

Garage. A structure located on a manufactured dwelling site designed for the storage of motor vehicles.

Grade. Has the following meanings:

(1) As it relates to plumbing, is the fall (slope) of a pipe in reference to a horizontal plane expressed in inches per foot length; or

(2) As it relates to the earth, is the finished ground level adjoining the building at all exterior walls.

Ground Anchor. Any device at a manufactured dwelling stand designed to transfer manufactured dwelling anchoring loads to the ground.

Installation. Has the following meanings:

(1) As it relates to construction is the arrangements and methods of construction, fire and life safety, electrical, plumbing and mechanical equipment and systems within a manufactured structure; or

(2) As it relates to siting is 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.

Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the building official and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

Lot. 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.

Lowest Floor. The floor of the lowest enclosed area of a manufactured dwelling. For the purpose of this code, *lowest floor* shall mean the bottom of the longitudinal chassis frame beam in A zones, and the bottom of the lowest horizontal structural member supporting the home in V zones. An unfinished or flood-resistant enclosure, used solely for vehicle parking, home access or limited storage, shall not be considered the lowest floor, provided the enclosed area is not constructed so as to render the home in violation of the flood-related provisions of this code.

Main Frame. The structural component on which the body of the manufactured dwelling is mounted.

Manufactured Dwelling. A manufactured dwelling, mobile home or residential trailer, as defined in ORS 446.003 (Manufactured dwelling does not mean any building or structure subject to the **Oregon Structural Specialty Code**, the **Oregon Residential Specialty Code**, or any unit identified by the manufacturer as a prefabricated structure, modular building, or recreational vehicle).

Manufacturer's Installation Instructions. As required by **24 CFR 3285.2**, manufacturers must provide installation designs and instructions with each new manufactured dwelling that have been approved by the Secretary of Housing and Urban Development or by a DAPIA. These installation instructions are required to equal or exceed the protection provided by **24 CFR 3285 (MMHIS)**.

Pier. An isolated support used in a support system extending between the footing and the manufactured dwelling.

Porch. An outside walking area having a floor that is elevated more than 8 in. above grade.

Prefabricated Pier. 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.

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

Registered Design Professional. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or municipality in which the project is to be constructed.

Repair. The reconstruction or renewal of any part of an existing manufactured dwelling or piece of equipment for the purpose of its maintenance.

Service Equipment. The equipment containing the disconnecting means, overcurrent protective devices, receptacles, or other means for connecting a manufactured dwelling feeder assembly.

Skirting. A weather resistant material used to enclose the space below the manufactured structure.

Stand. The area of the manufactured dwelling site which has been reserved for the placement of a manufactured dwelling or accessory structure.

Structure. That which is built or constructed.

Support System. A combination of footings, piers, caps, and shims that will, when properly installed, support the manufactured dwelling.

Tie-down. See Anchoring System.

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

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

Under-Floor Enclosure. The perimeter skirting, foundation wall or retaining wall used to enclose the under-floor area of a manufactured dwelling.

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

Chapter 3
Pre-Installation, Foundations and Piers

3-1 Pre-Installation

Establishes 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.

Design Loads

Except as otherwise stated, the manufactured dwelling siting, foundation, and installation requirements contained in this code are based on the following:

- Minimum soil bearing capacity is 1,000 PSF
- Minimum pier capacity of 4,000 lbs.
- Roof live load of 30 lbs PSF
- Horizontal wind load of 15 PSF

Note: Additional design loads are specified in Section 3-1.5.

Basic Requirements

Regardless of the type of foundation system provided, the foundation must 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.

3-2 Geographical Requirements

Frost Line

- Conventional footings in freezing climates. See the definition of "freezing climate" in Chapter 2. If the building official determines that the installation is within a freezing climate region of this state, then convention footings must be placed below the frost line, See Table 3-2.1.
- Foundation and retaining wall footings must be placed below the frost line.
- Insulated foundations and monolithic slabs are permitted above the frost line when certain site-specific conditions and characteristics are taken into consideration.

Special Snow Load Conditions

- Manufactured dwellings are built to the federal Manufactured Home Construction and Safety Standards, established by HUD. Under this standard, Oregon's snow roof live load is 20 PSF. If the home is built to a higher roof live load, the home must be installed and inspected according to the manufacturer's installation instructions for ridge beam marriage line connection, ground anchors, or when an aspect of the installation is not covered by this code.
- This code is based upon a roof live load of 30 PSF.
- A building official may not require a manufactured dwelling to be built to a greater roof live load standard.

Wind Resistant Anchoring

- As established by HUD, Oregon has one standard wind zone. This code requires all manufactured dwelling installations to be anchored against the wind (new or secondary installations).
- New home installations must be anchored according the manufacturer's installation instructions.
- Secondary installations may be anchored according to the manufacturer's installation instructions, or according to Section 3-2.6 of this code.
- Certain earthquake resistant bracing systems may comply with this requirement.

Flood Hazard Areas

- Manufactured dwellings may be installed in flood hazard areas when they are elevated and anchored according to the Oregon Residential Specialty Code, Section R324.1.8.
- Home installations shall be a minimum of 12 inches above the design flood elevation (DFE) according to Oregon Residential Specialty Code, Section R324.2.1.
- Lowest floor is the bottom of the longitudinal chassis frame beam (bottom of the I-beam) in A Zones.
- Anchoring the home shall be according to Oregon Residential Specialty Code, Appendix E, Section AE101 and AE102.

Note: Effective April 1, 2010 all home installations shall be anchored against the wind. Typical wind anchoring provisions in most cases is equivalent to typical flood hazard area anchoring requirements.

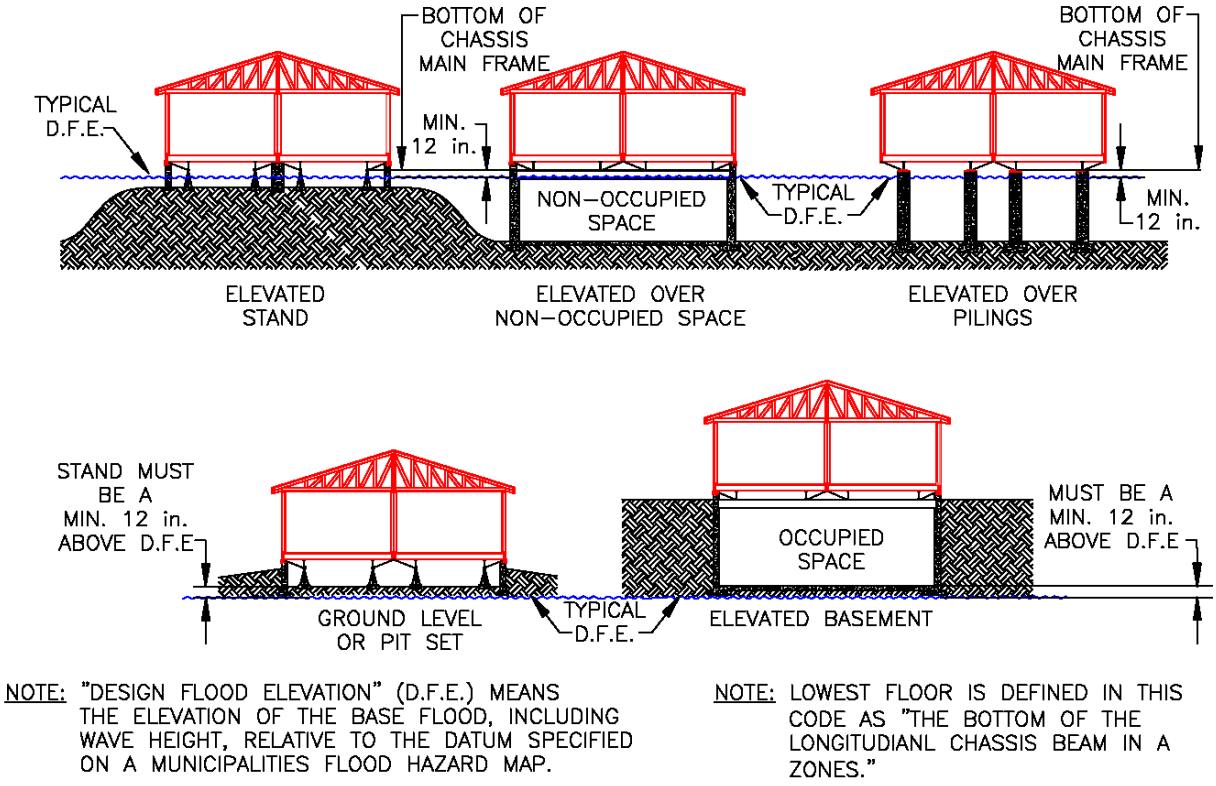
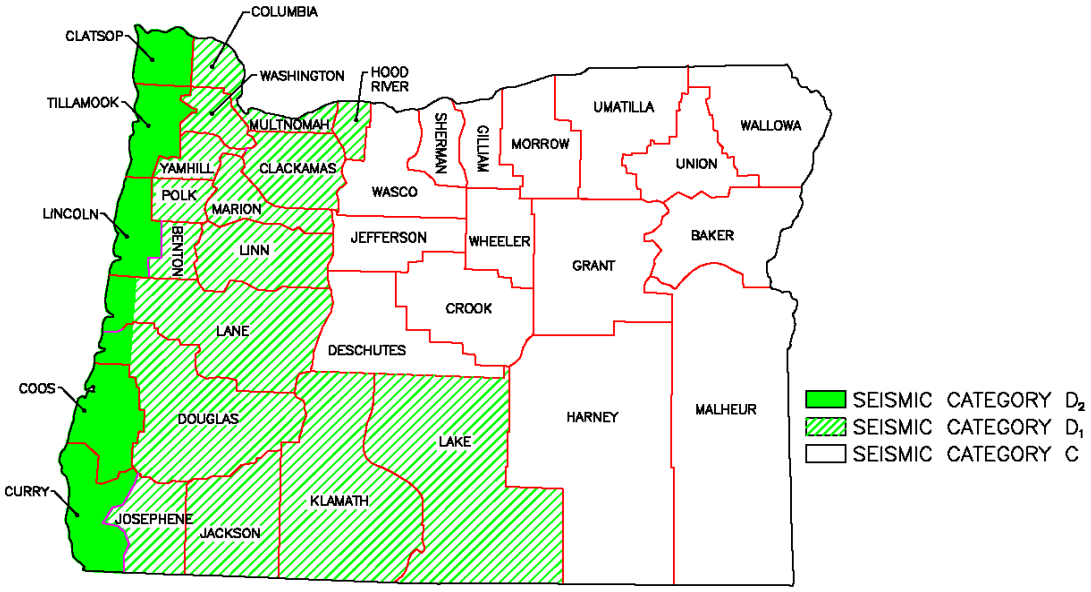


Figure 3-2.4 Typical Methods of Elevating Homes in Flood Hazard Areas

Seismic Design Categories

To identify the different levels of earthquake activity three seismic design categories have been established in Oregon as shown on Figure 3-2.5(a).

- Design Category C – low risk
- Design Category D_1- medium risk
- Design Category D_2 – high risk



THE BOUNDARY OF SEISMIC DESIGN CATEGORY D_2 IN DOUGLAS AND LANE COUNTIES IS THAT LAND WHICH LIES WESTERLY OF RANGE 10 WEST OF THE WILLAMETTE MERIDIAN.

Figure 3-2.5(a) Seismic Design Category Map

Design category C and D_1

- Manufactured dwellings are limited to[(1)]:
  - 3 feet in height for 75% of the under-floor area, and
  - 5 feet – 7 inches for 25% of the under-floor area.
- The fuel gas supply to the manufactured dwelling must be made with a minimum 6 foot flexible gas connector.

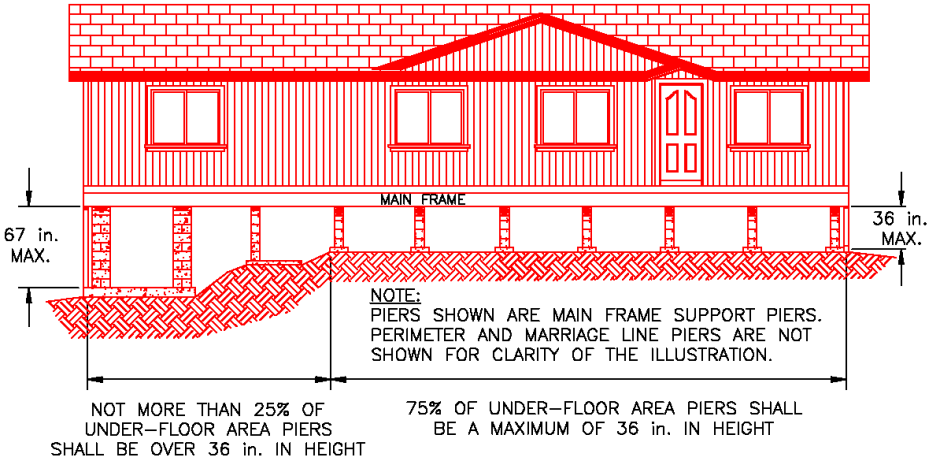


Figure 3-2.5(b) Maximum Pier Height for Seismic Zone C & D_1

Design category D_2

- Manufactured dwellings are limited to[(1)]:
  - 2 feet in height for 75 % of the under-floor area, and
  - 5 feet inches for 25 % of the under-floor area.
- The fuel gas supply to the manufactured dwelling must be made with a minimum 6 foot flexible gas connector.

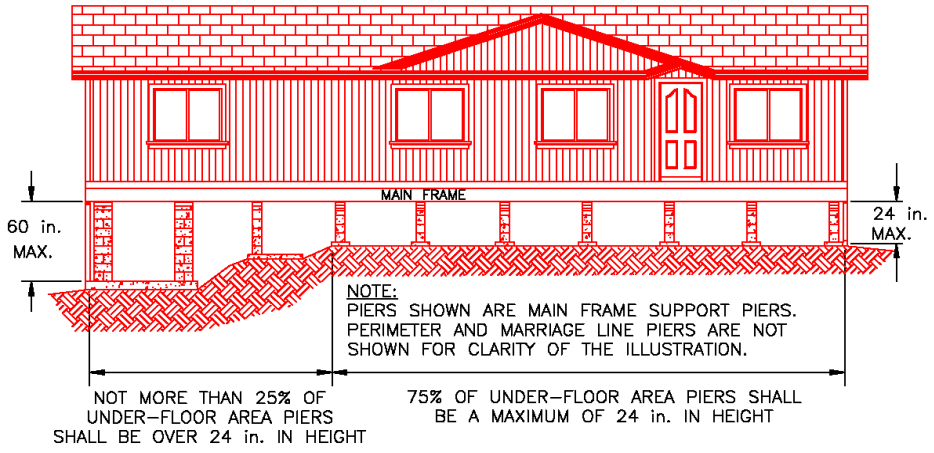


Figure 3-2.5(c) Maximum Pier Height for Seismic Zone D_2

(1) The maximum height limitations identified may be exceeded when the support system is designed for the appropriate seismic design category by a registered design professional, or the manufacturer's Design Approval Primary Inspection Agency (DAPIA) approved plans, and accepted by the building official.

Earthquake Resistant Bracing

- When required, manufactured dwellings must be anchored or braced to resist seismic forces. The following are typical bracing systems:
  - Approved earthquake-resistant bracing system.
  - Approved anchoring system designed to resist seismic conditions.
  - Installing positive connection piers at the main frame and anchoring with approved ground anchors.
- All prefabricated anchoring equipment must be approved for its intended use, and must be installed according to the equipment manufacturer's installation instructions.

Anchoring Requirements

- New manufactured dwellings installations must anchored to one of the following:
  - According to the manufacturer's installation instructions. This anchoring meets HUD's minimum installation requirements for ground anchors for Zone 1 in 24 CFR 3285.402.
  - Attachment to a foundation system, structural skirting, basement wall, or footing when designed by a registered design professional.
  - An earthquake resistant bracing system meeting the requirements in 3-2.6(1)(c).
- Secondary manufactured dwelling installations must be anchored to one of the following:
  - Manufacturer's installation instructions.
  - Foundation footing anchoring system.[(2)]
  - Connector plate anchoring.
  - See Figure 3-2.6.

[(2)] The code specifies that U-bar attachments must be at 11 feet on center. This also applies to the expansion bolts, looped rebar, and any other acceptable anchoring point. The intent of the code is to require anchoring at 11 feet on center and within 1 foot of each end of the home.

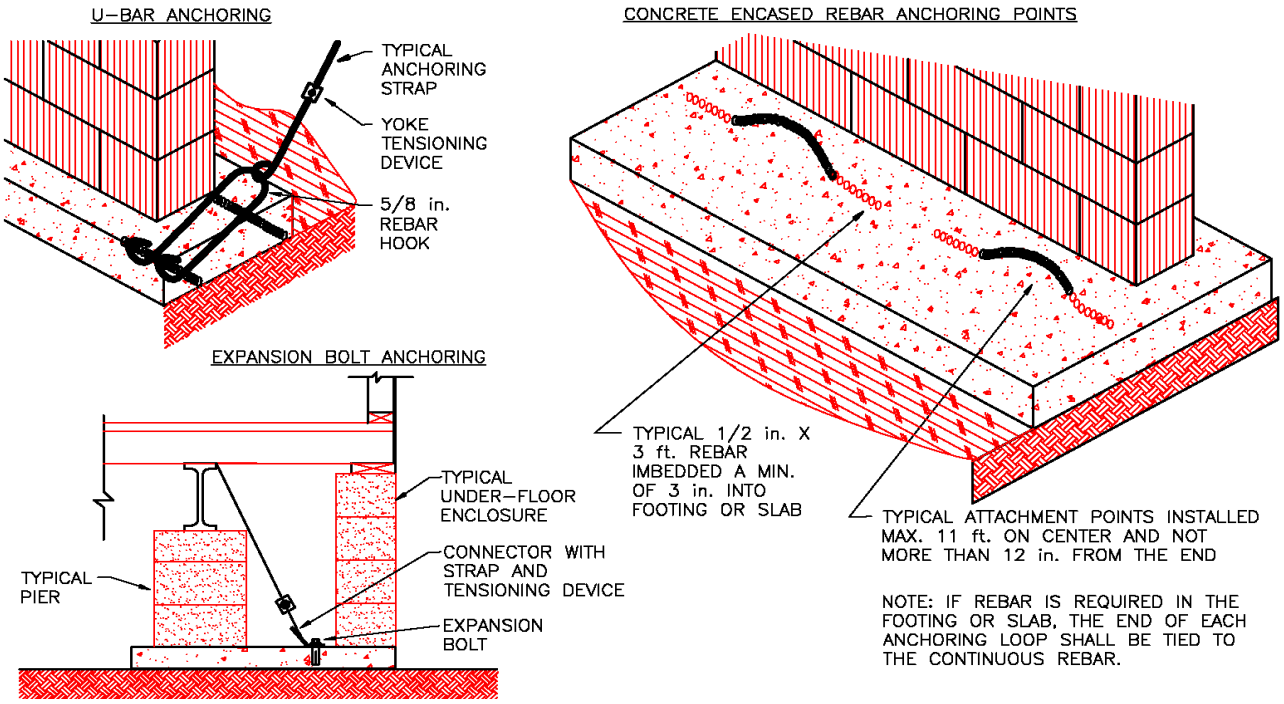


Figure 3-2.6 Typical Foundation Anchoring

3-3 Site and Stand Preparation

Each site must be suitable for its intended use and acceptable to the building official based on this code and local land use regulations.

Grading and Drainage

- Site grading and drainage must provide adequate drainage to divert water away from the manufactured dwelling, including roof run-off from manufactured dwellings, cabanas, and accessory buildings and structures.
- Lots and stands must be provided with adequate drainage to prevent standing water, excessive soil saturation, or erosion from becoming detrimental to the lot, stand, or any structures.
- The ground within a 10 foot perimeter adjacent to a stand must be graded to a minimum fall of 1/2 inch per foot.
- Alternate grading methods may be used when needed and approved by the authority having jurisdiction.

Stands

Manufactured dwelling stands must be natural undisturbed soils or engineered fill. Stands must be free of grass, weeds, organic materials, and highly expansive, compressible or shifting soils.

Soil Bearing Capacity

- For the purpose of this code, undisturbed soils have been determined to have a soil bearing capacity of 1,000 PSF.
- A stand with a soil bearing capacity of 1,000 PSF may be improved by:
  - Adding 6 inches of 3/4 inch minus crushed rock increases soil bearing capacity to 1,250 PSF.
  - Adding 6 inch of 3/4 inch minus crushed rock compacted with two passes of a vibrating machine increases soil bearing capacity to 1,500 PSF.
  - Installation of continuous concrete footings or a concrete slab increases soil bearing capacity to 2300 PSF.
- Engineered fill, when used for a manufactured dwelling stand, must have a soil compaction test to assure the stand is capable of supporting a minimum of 1,000 PSF. The soil report must be submitted to the building official. See Section 3-3.5.2.
- If the soil class or bearing capacity cannot be determined by test or soil records, but its type can be identified, Table 3-3.5 may be used to determine allowable pressures and torque values.

Moisture Barrier

- The entire area under the heated portion of the home must be covered with minimum 6 mil polyethylene membrane sheeting.
  - Sheeting must be overlapped by at least 12 inches at all joints.
  - All holes and tears must be adequately sealed or patched.
  - The barrier must be on top of a poured in place concrete footing.
  - The barrier must be removed from under porches, decks, or landings.
- If a concrete slab contains a foundation encased grounding electrode, there must not be sheeting under the concrete.

3-4 Foundations

- Footings, piers, or other similar load bearing devices must be capable of individually supporting a minimum of 4,000 pounds.
- Concrete masonry units (CMU) must be capable of supporting 15,000 pounds.
- Footings must be a minimum area of 256 square inches.

- Alternate foundation designs must be designed by a registered design professional and constructed in accordance with the Oregon Residential Specialty Code.

3-5 Clearance under Homes

Minimum Foundation Heights

- There must be a minimum of 18 inches between the top of the footing and the bottom of the main frame for 75 % of the crawlspace.
- 25 % of the crawlspace may be a minimum of 12 inches in height between the top of the footing and the bottom of the main frame.
- No area under the home may have a clearance of less than 12 inches between the top of the footing and the bottom of the main frame.

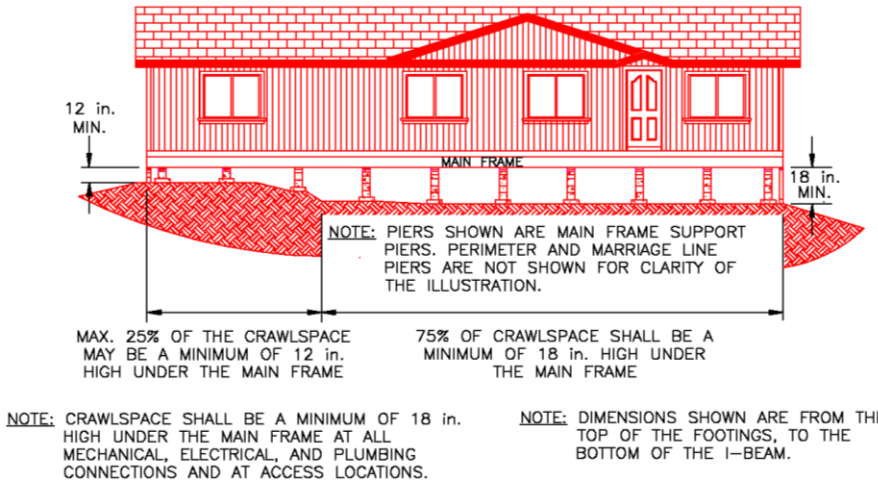


Figure 3-5.1 Minimum Under-Floor Clearances

3-6 Footings

Foundation Footings

- Must be made of approved materials.
- Must be equal to a greater in area than the base of the pier.
- Different types of individual footings may be used.
- Concrete must have a smooth and level top surface.
- If concrete footings or slabs are poured short or too narrow, they may be corrected by adding another continuous footing or slab along side. See Figure 3-6.1.

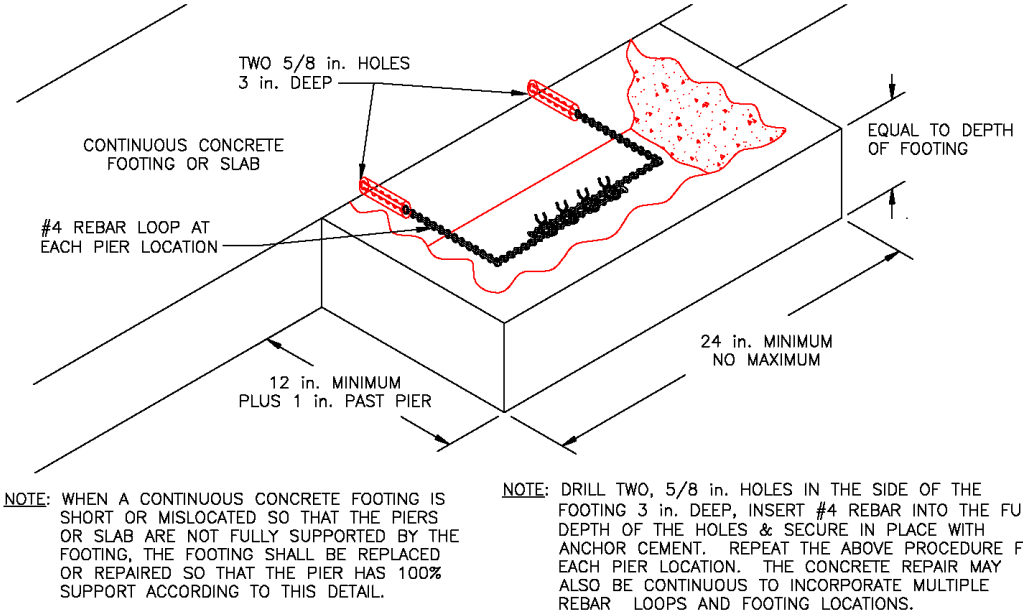
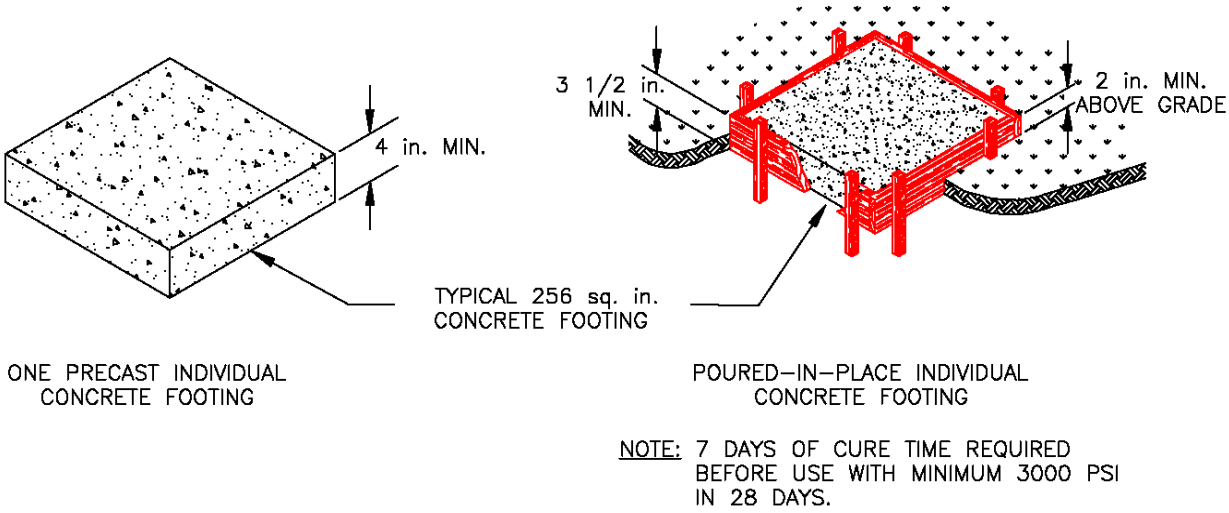


Figure 3-6.1 Continuous Concrete Footing or Slab Repair Detail

Concrete Footings

- Concrete footing may consist of:
  - One 4 inch thick individual precast concrete footing.
  - Minimum 6 inch thick continuous concrete footings not less than 18 inches wide and reinforced with two continuous #4 rebar rods. See Figures 3-6.2(a) and 3-6.2(b).
  - Minimum 3-1/2 inch thick continuous concrete slab footings not less than 48 inches and reinforced with approved fibers, or with 10 gage 6 inch x 6 inch wire fabric. See Figure 3-6.2(c).
  - Minimum 3 ½ inch thick concrete slab (full slab) and reinforced with approved fibers, or with 10 gage 6 inch x 6 inch wire fabric. See Figure 3-6.2(d).
- Concrete must have a minimum 28-day compressive strength of 3,000 pounds.
- Concrete footings, when used to support a perimeter enclosure that supports greater than 8 inches of backfill, must be constructed as shown in figures 3-6.2(c) and 3-6.2(d).



Example: Typical Individual Concrete Footings

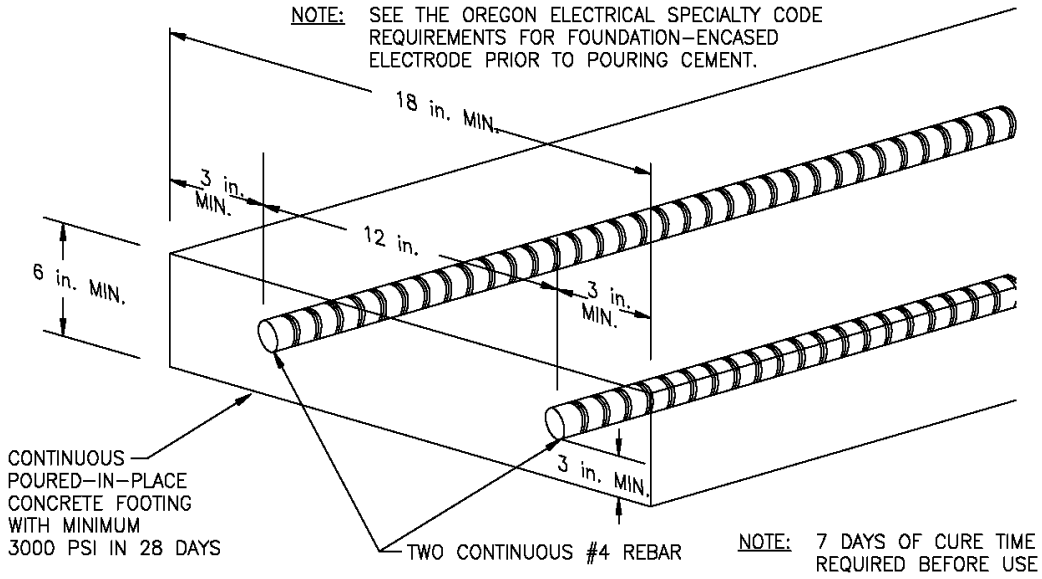


Figure 3-6.2(a) Typical Individual Continuous Concrete Footing

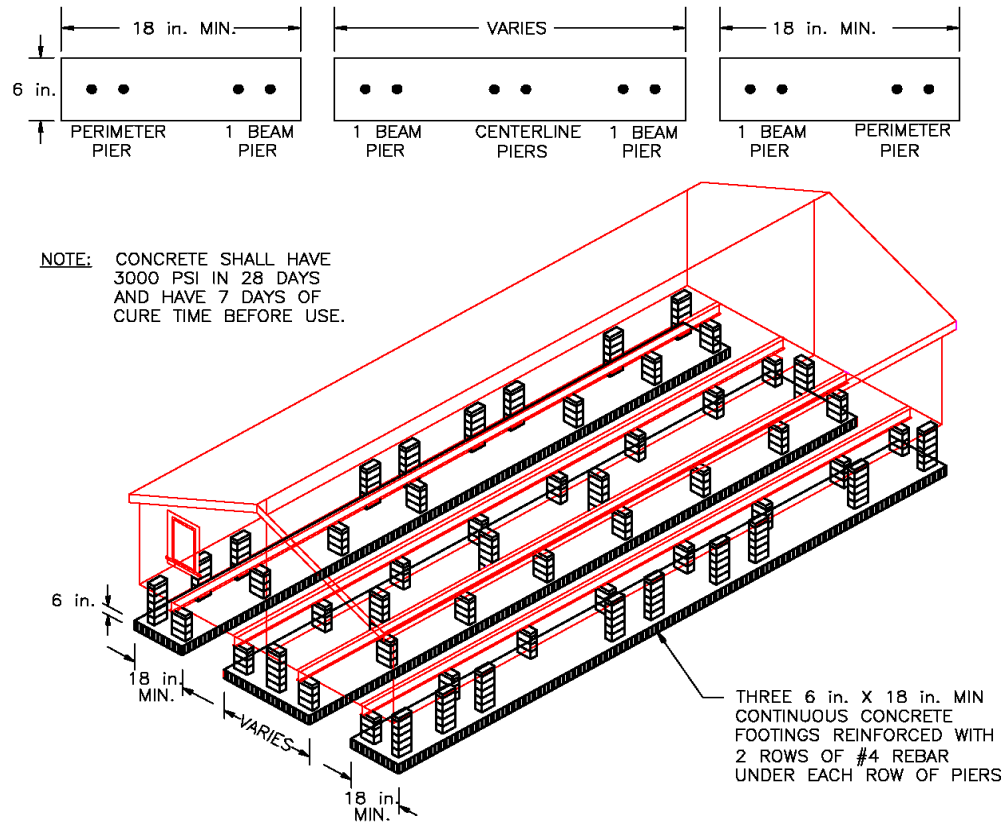


Figure 3-6.2(b) Typical Combined Continuous Concrete Footings (Three-Pad-Pour)

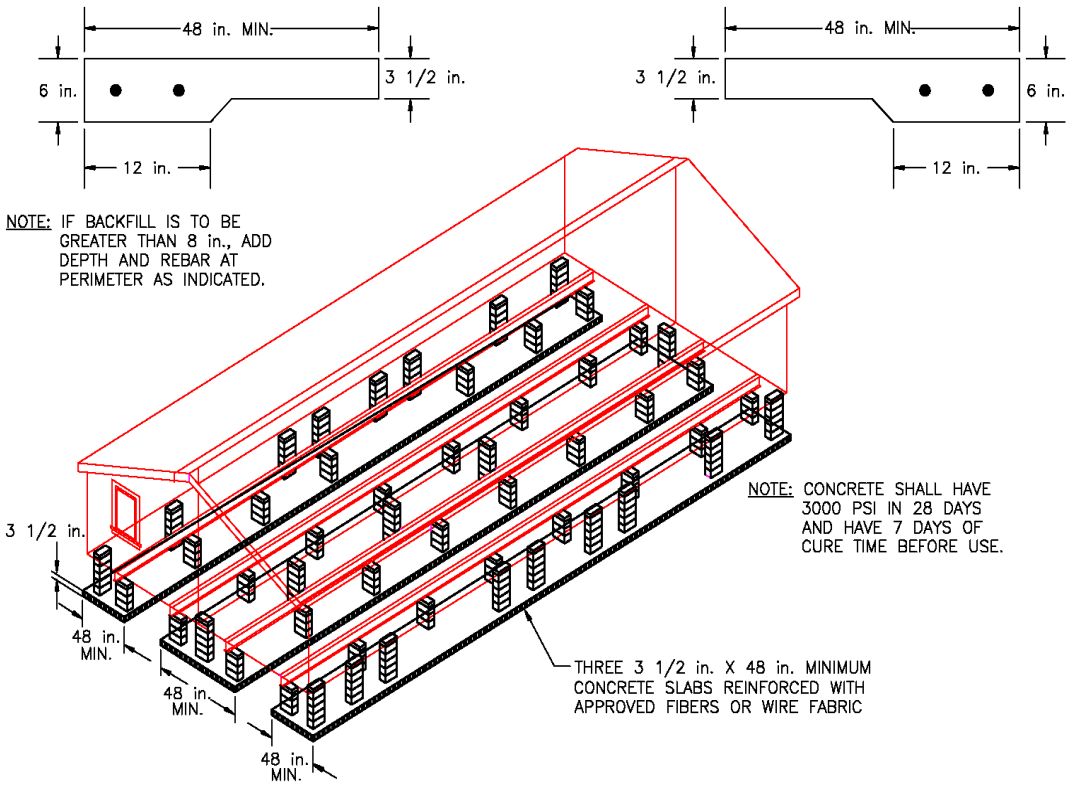


Figure 3-6.2(c) Typical Individual Fiber Reinforced Concrete Footings (Three-Pad-Pour)

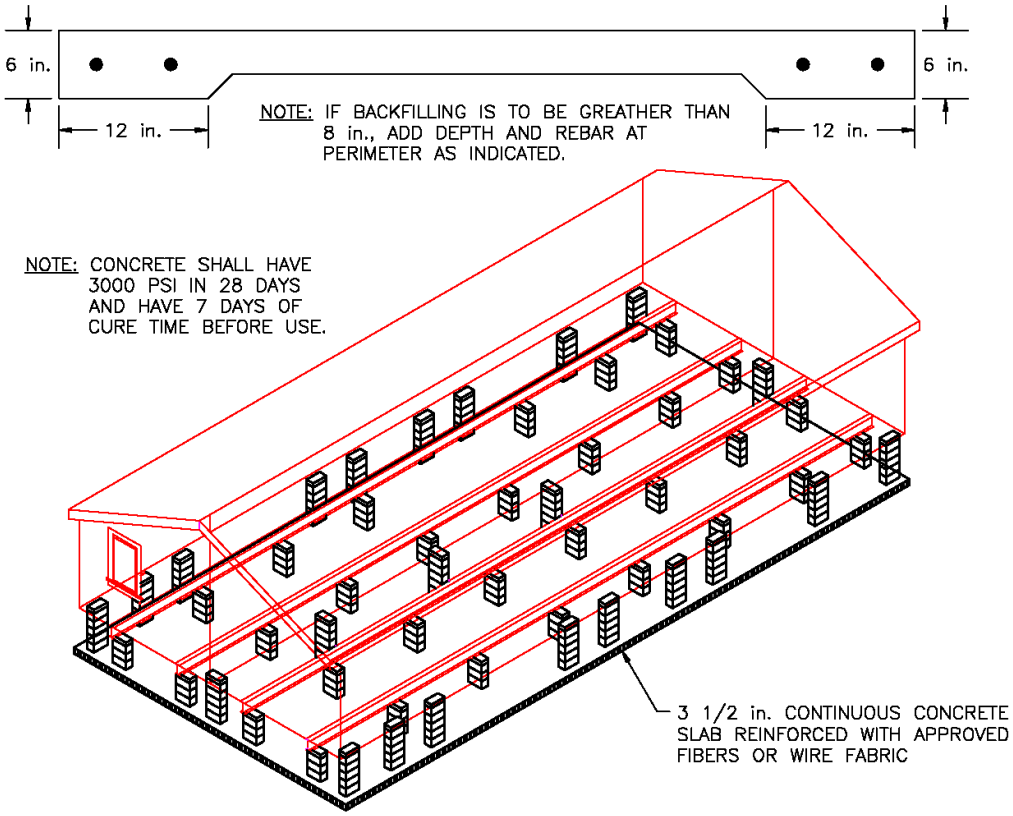


Figure 3-6.2(d) Typical Fiber Reinforced Concrete Slab Footings

Pressure Treated Permanent Wood

- Pressure treated wood must be in accordance with AWPA U1.
- Typical uses include:
  - One layer of 1–1/2 inch thick lumber pressure treated on all six sides.
  - Two perpendicular layers of 1–1/2 inch thick foundation grade lumber pressure treated on all six sides.
- Other materials included in Section 3-6.3.

ABS Footing Pads

ABS footing pads may be used provided they are listed or labeled for the required load capacity and are installed according to the pad manufacturer's installation instructions.

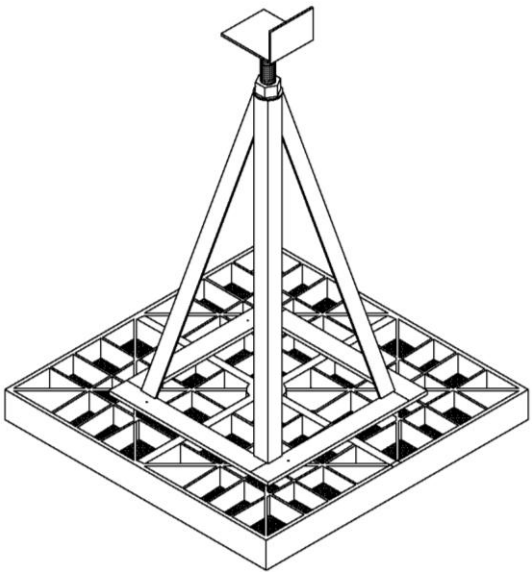
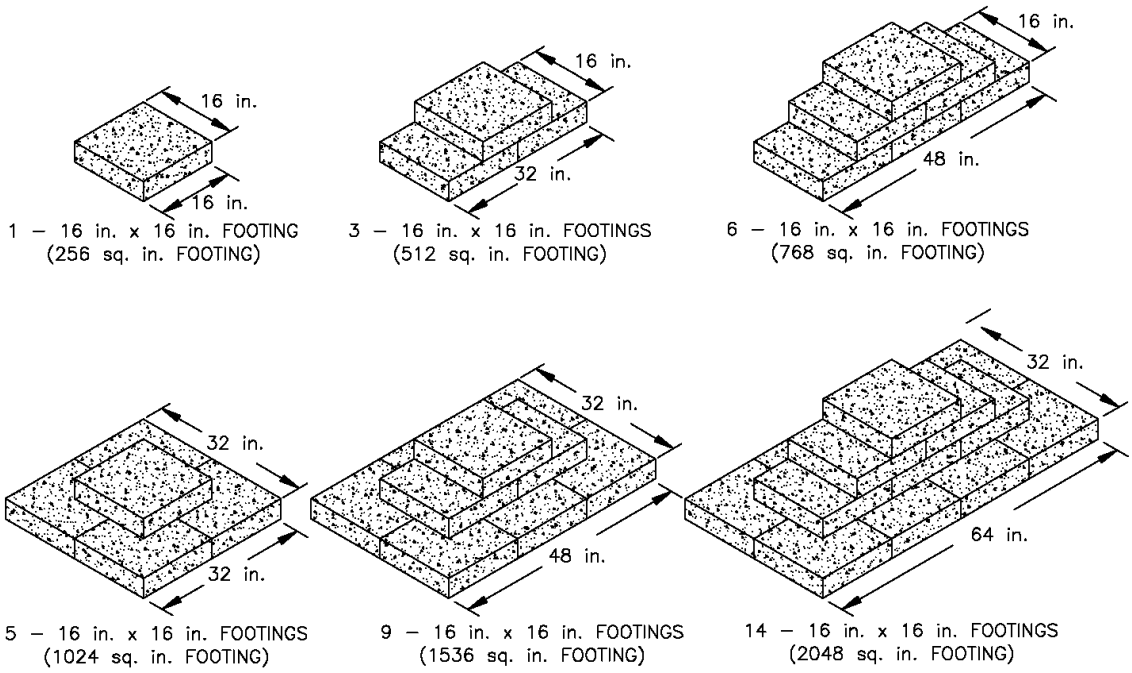


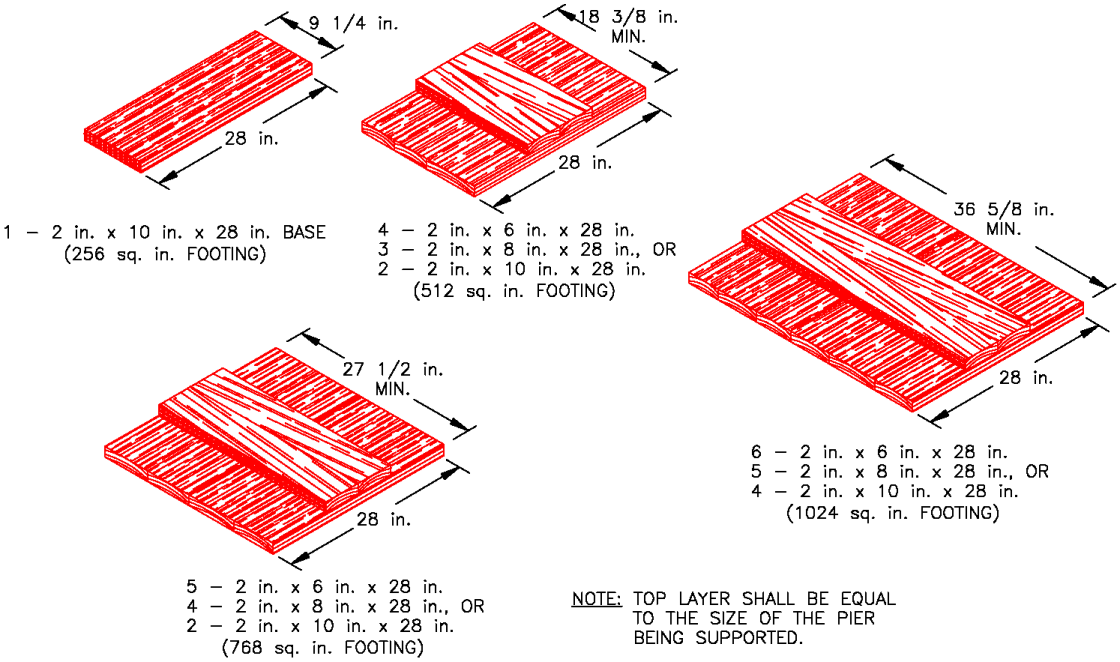
Figure 3-6.4 Typical ABS Footing with Typical Prefabricated Pier

Marriage Line Column Support Footings

- Where the concentrated load of a column support post exceeds the capacity of an individual footing, multiple footing of the same material may be used to distribute the load evenly.
- Multiple footings may be layered in a pyramid shape to distribute the load evenly from the pier to the ground.
- Additional footings are not required on continuous concrete footings or slabs.



Example: Typical Concrete Footing Pyramids



Example: Typical Wood Footing Pyramids

3-7 Piers

- Piers must be capable of supporting a minimum of 4,000 pounds as required by Section 3-4.2.
- Every pier must be supported by a footing.
- Typical pier types:
  - Manufactured piers.
    - Manufactured piers must be listed or approved for its intended use and installed according to the pier manufacturer's installation instructions. Manufactured piers may not be installed in a manner that exceeds the maximum height limitation of the pier.
    - Manufactured piers must have protection against weather deterioration and corrosion equivalent to a coating of zinc on steel of .30 oz. per square foot. *(This requirement is not currently being enforced.)*
  - ASTM rated concrete masonry unit (CMU) foundation piers, 8 inch x 8 inch x 16 inch, assembled according to this code and capable of supporting 15,000 pounds.
  - Other ASTM rated concrete when used in accordance with this code.
  - Other materials or methods approved by the building official.
  - 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.

Foundation (Pier) Heights

- Foundation heights are measured from the top of the footing to the bottom of the I-beam.
- For pier heights less than 36 inches high:
  - The long sides are at right angles to the supported I-beam. See Figure 3-7.2
  - Horizontal offsets may not exceed 1 inch top to bottom.
  - Typically do not require mortar.
- Piers 36 inches to 67 inches must be double blocked and interlocked as shown in Figure 3-7.2.
- Piers over 67 inches high must be designed by a registered design professional.
- Concrete blocks must be stacked with the hollow cells aligned vertically.
- When stacked side-by-side, each layer must be at right angles to the preceding one.

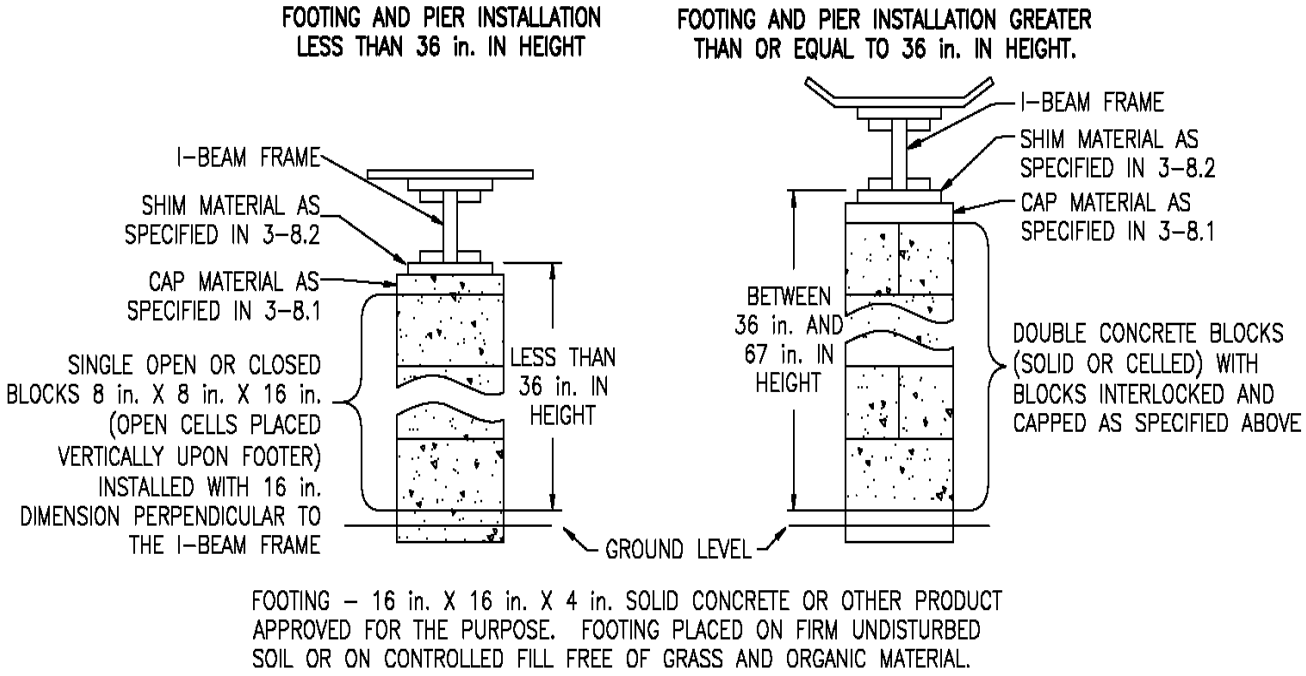


Figure 3-7.2 Typical Footing and Pier Installation

Marriage Line Column Support Piers

- For the initial installation of new manufactured dwellings, the footings must be sized and piers spaced according to the manufacturer's installation instructions.
- For secondary installations, footings may be spaced and sized according to the manufacturer's installation instructions, and if not available, according to Table 3-7.3.
- Where the concentrated load of a column supports exceeds the capacity of single pier, multiple piers may be used to distribute the load.

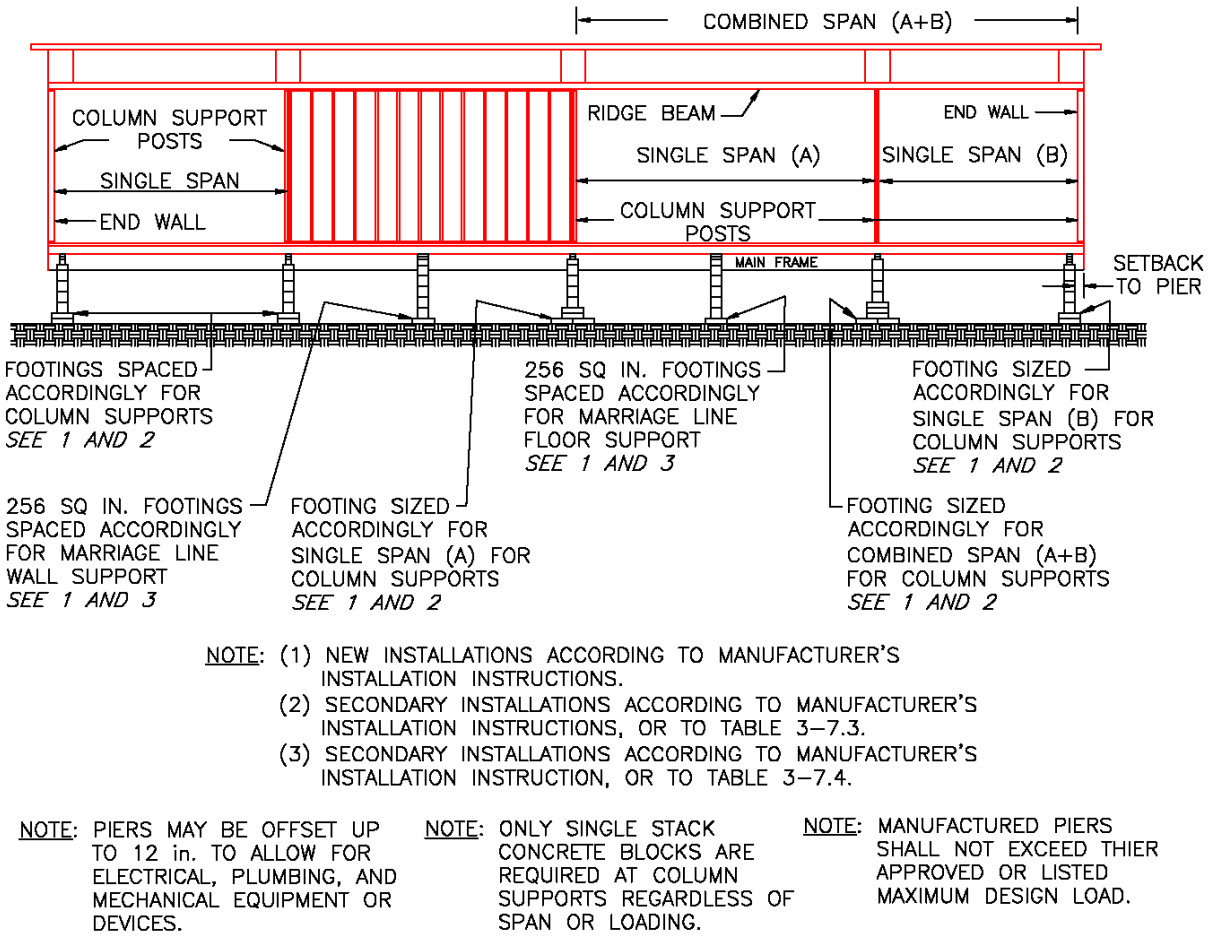


Figure 3-7.2 Typical Marriage Line Pier Layout

Pier Location and Spacing

- Piers must be located and spaced according the manufacturer's installation instructions for new manufactured dwelling installations.
- Piers must be located and spaced according to Table 3-7.4 for secondary installations. New manufactured dwellings having floors 14 feet wide or less may have piers located and spaced according to Table 3-7.4.
- Location and spacing is based upon:
  - Soil capacity.
  - Minimum footing size of 256 square inches.
  - Offsets of up to 12 inches.
- For secondary installations, any horizontal spaces between column support posts must be supported under the marriage line floor and walls with intermediate piers spaced according to Table 3-7.4.

Perimeter Piers

- Required on all homes, except when the distance from the I-beam to the perimeter of the home is less than 16 inches.
- Required on each side of all doors, and any other opening 4 feet wide or greater.
- May be offset up to 12 inches under sidewalls and up to16 inches from the end walls.
- Spaced according to Table 3-7.4.

Recessed Perimeter Piers

- For homes with a transverse floor system, recessed perimeter piers must support a single 4 inch x 4 inch horizontal wood beam, two 2 inch x 4 inch dimensional lumber nailed together, or equal, that spans a minimum of two floor joists.
- For homes with a longitudinal floor system, recessed perimeter piers must support the perimeter joist with a single 4 inch x 4 inch horizontal wood beam, two 2 inch x 4 inch dimensional lumber nailed together, or equal, that spans each floor joist. The support must fit tight against the bottom of the top flange of the I-beam.
- The pier may be recessed a maximum of 12 inches from the perimeter of the home.
- Installations must ensure support in a level position and a tight fit to prevent rocking or other movement.

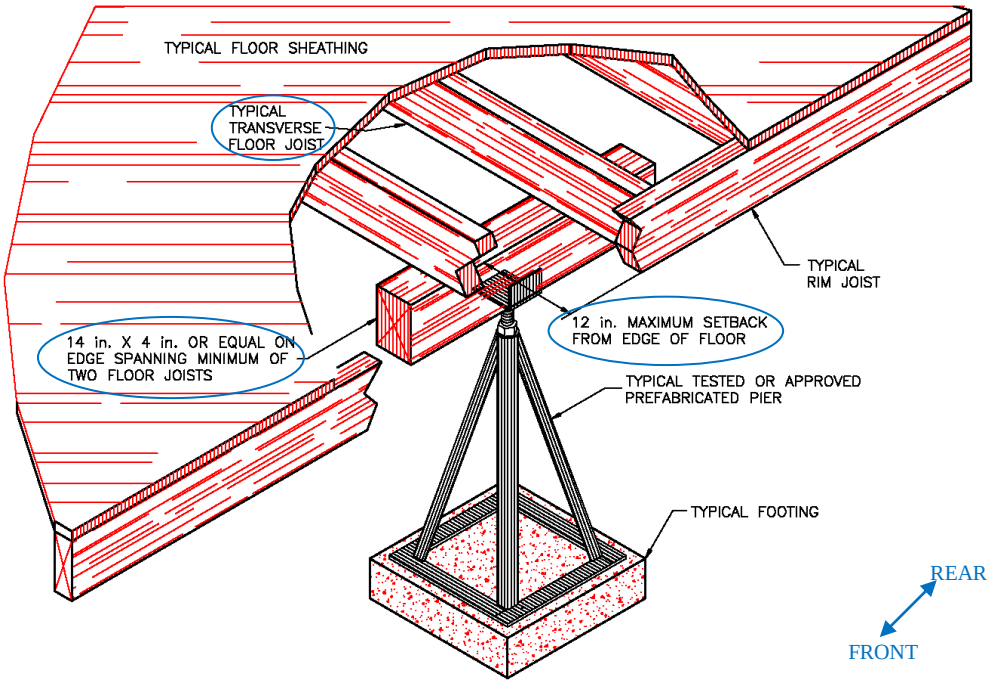


Figure 3-9.2(a) Typical Recessed Pier Detail for Transverse Floors

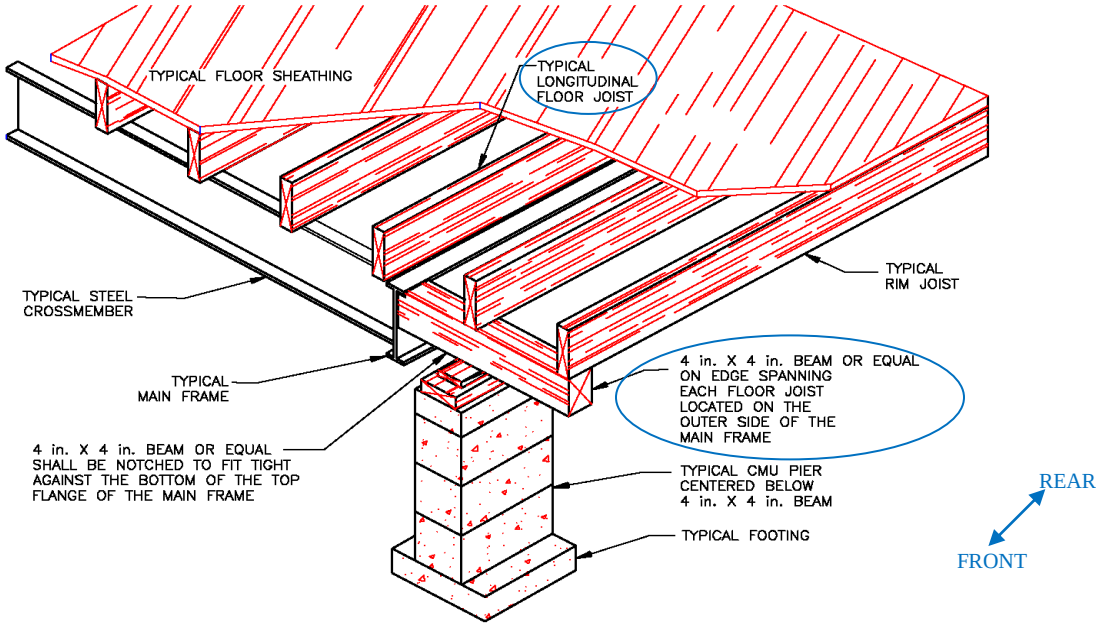


Figure 3-9.2(b) Typical Recessed Pier Detail for Longitudinal Floors

3-8 Pier Caps, Shims and Wedges

- Pier caps must be equal in size to the pier block and be made of material as specified in Section 3-8.1.
- Pier shims for CMU foundation piers must be a minimum of 5 1/2 inches by 16 inches constructed from any of the approved materials specified in Section 3-8.2.
- Wedges for CMU foundation piers must be made with one of the approved materials specified in Section 3-8.3.
- Shims and wedges may not exceed a combined height of 9 inches.

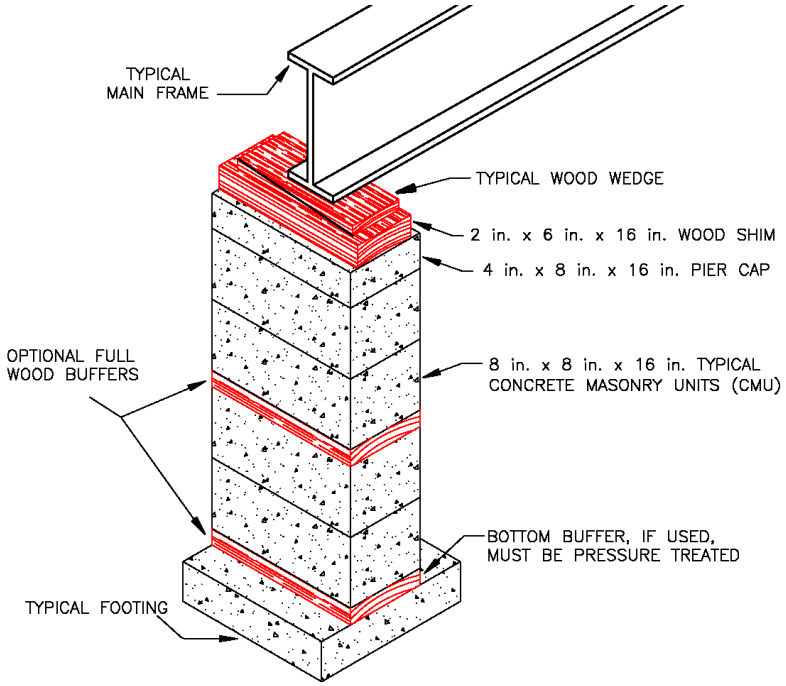


Figure 3-8 Typical Concrete Block (CMU) Pier

3-10 Chassis

- Except for wheels, tires, axles, and hitches, transportation lights, or any parts specifically made to be removed, no portion of a manufactured dwelling chassis may be removed before, during, or after the manufactured dwelling installation.
- Chassis alterations or modifications to the chassis may only be performed according to manufacturer's Design Approval Primary Inspection Agency (DAPIA), or registered design professional, and with the approval of the Building Codes Division.

Chapter 4
Under-Floor Enclosures

4-1 General

- Manufactured dwellings must have the under-floor area enclosed with skirting.
- There are basically six types of under-floor enclosures:
  - Engineered foundation system.
  - Foundation walls.
  - Retaining walls.
  - Structural skirting.
  - Non-structural skirting.
  - Prefabricated skirting.
- Skirting is not required in flood hazard areas.

4-2 Skirting Material

- Skirting must constructed out of durable material acceptable to the building official.
- Skirting must meet the criteria established in Section 4-2.2.

4-3 Foundation Walls

- Foundation walls are used in place of perimeter piers, and skirting.
  - Foundation walls can be used for anchoring, and to support the horizontal pressures of backfill.
  - Foundation walls must provide a tight fit to the bottom of the home, and they must be secured to the manufactured dwelling.
- Foundation walls must be constructed according to Section 4-3.2.
- Non-engineered concrete or CMU foundation walls may be up to 60 inches high and retain up to 48 inches of backfill.
- Foundation walls have specific footing and rebar requirements.
- The building official may require additional requirements if ground water issues exist.

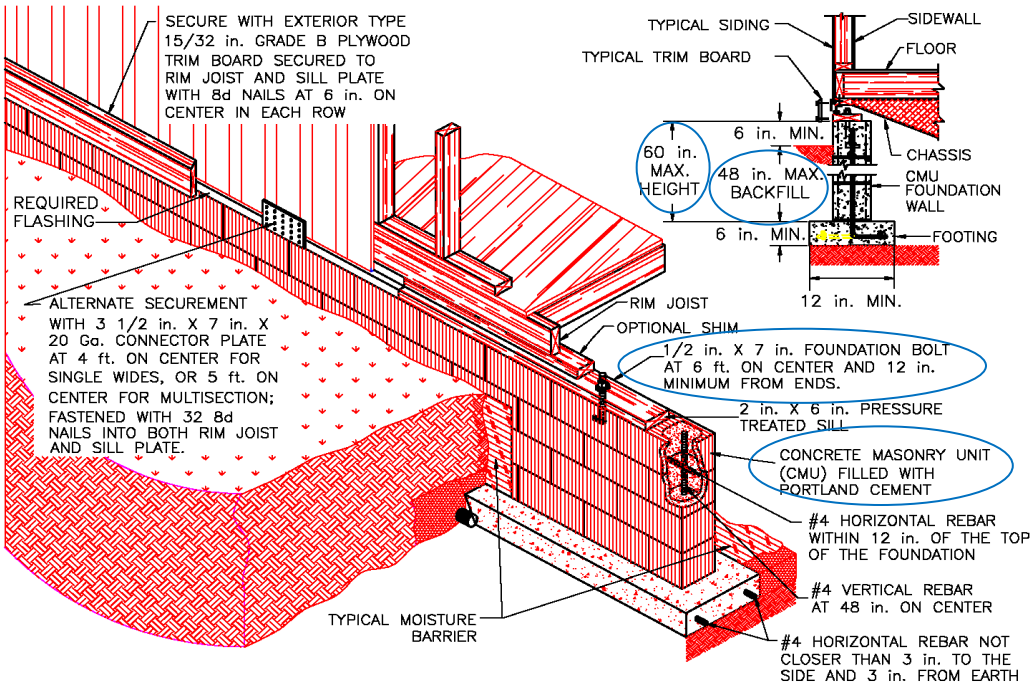


Figure 4-3.2(a) Concrete Foundation Wall Detail

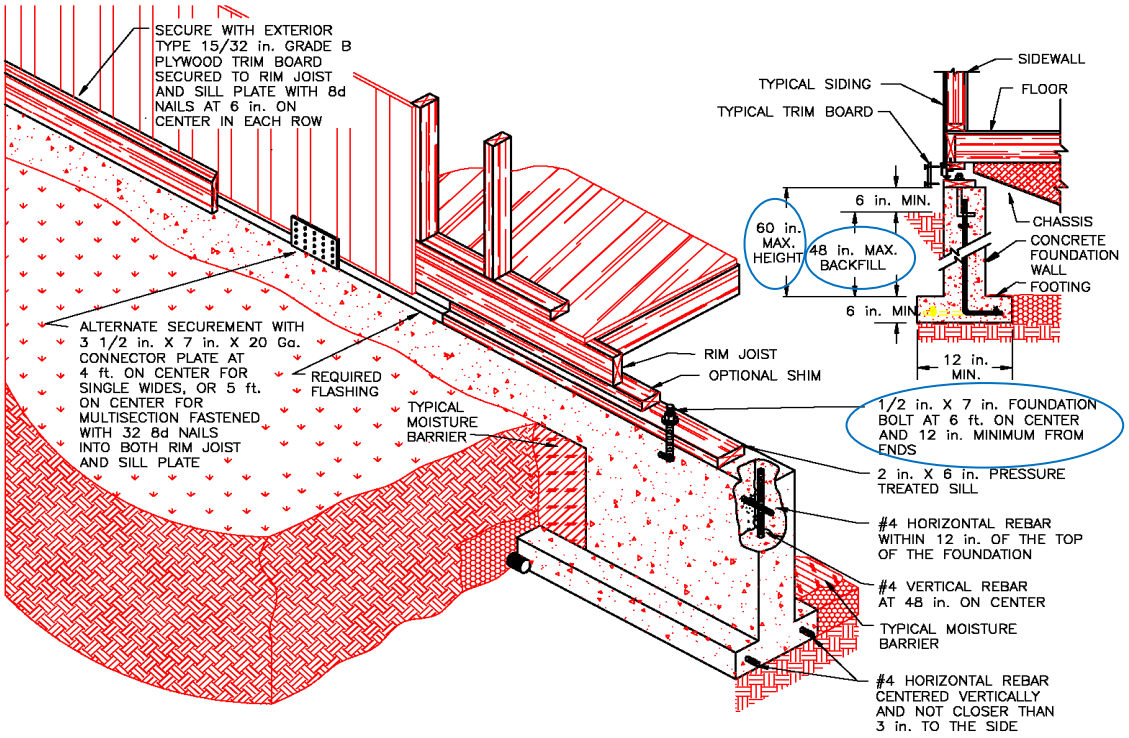


Figure 4-3.2(b) CMU Foundation Wall Detail

4-4 Structural Skirting

- Structural skirting may be used to anchor a manufactured dwelling and to replace recessed perimeter piers.
- Structural skirting may be constructed on site or prefabricated.
- Structural skirting must be installed according to Section 4-4.2.

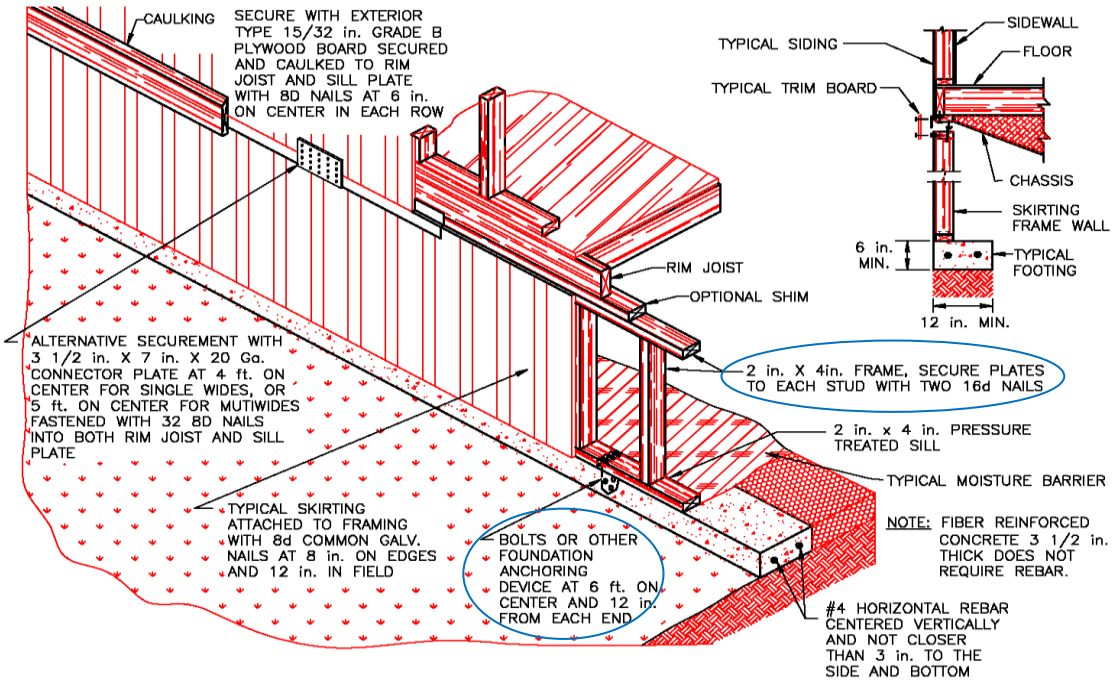


Figure 4-4.2 Structural Skirting Detail

4-5 Non-Structural Skirting

- Non-structural skirting is intended only as an under-floor enclosure.
- Non-structural skirting may be constructed with many different types of materials.
  - Wood skirting must follow the requirements of Section 4-5.1.
  - Metal or vinyl skirting must follow the requirements of Section 4-5.2.
- Non-structural skirting may not support any unbalanced fill.

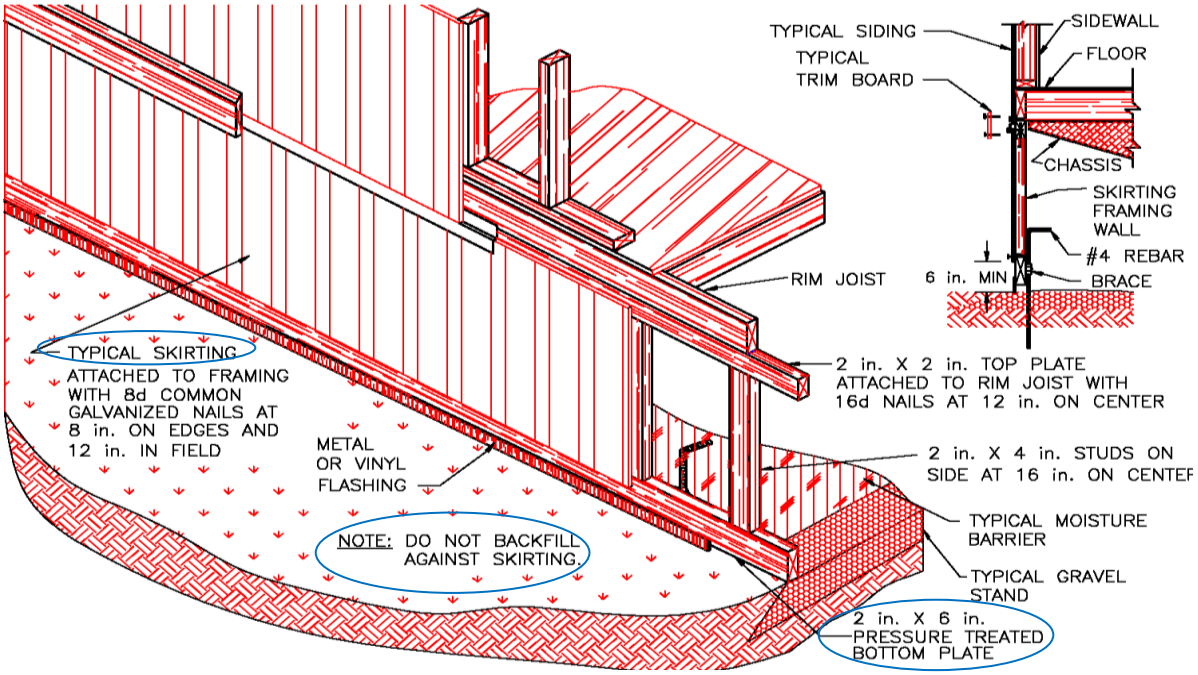


Figure 4-5.1 Non-Structural Wood Skirting Detail

4-6 Prefabricated Structural Skirting

- Prefabricated structural skirting must be installed according to the manufacturer's installation instructions.
- Prefabricated structural skirting must be installed according to Section 4-6.1.
- Prefabricated structural skirting may not support unbalanced fill greater than 8 inches unless specifically allowed in the skirting manufacturer's installation instructions.
- Prefabricated structural skirting may be used as perimeter support if rated for the designed load.

4-7 Masonry Block Skirting

- Masonry block skirting may be constructed from most types of block or stone.
- Masonry block skirting must be installed according to Section 4-7.1.
- Masonry block skirting may be mortared or dry stacked. If dry stacked it may only be used only as an enclosure.
- Masonry block skirting may not support unbalanced fill greater than 8 inches.
- Masonry block skirting may be used as perimeter support provided it complies with Section 4-7.1(5).

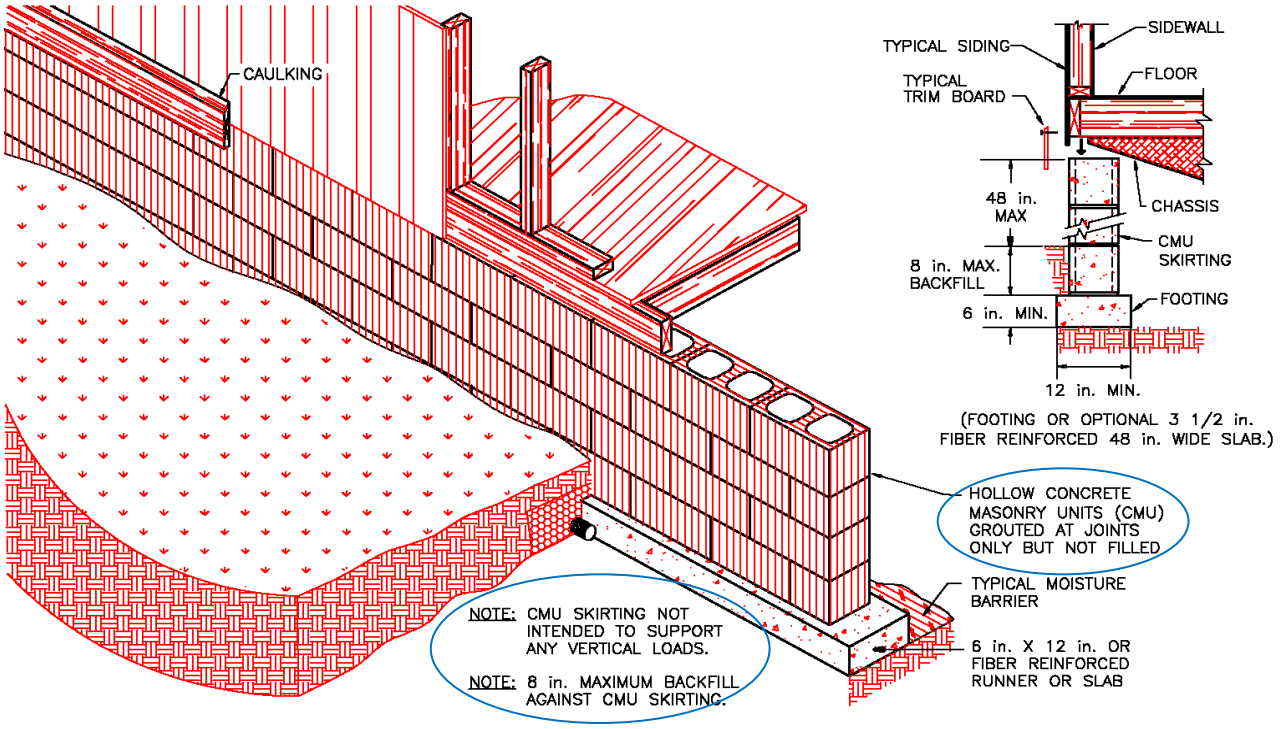


Figure 4-7.1 Concrete Masonry Block (CMU) Skirting Detail

4-8 Concrete Masonry Unit (CMU) Retaining Wall Skirting

- CMU retaining walls may take the place of skirting, and may support the horizontal pressures of backfill.
- CMU retaining walls must be installed according to Section 4-8.2.
- CMU retaining walls must be constructed with rated concrete block.
- CMU may support up to 28 inches of unbalanced fill.

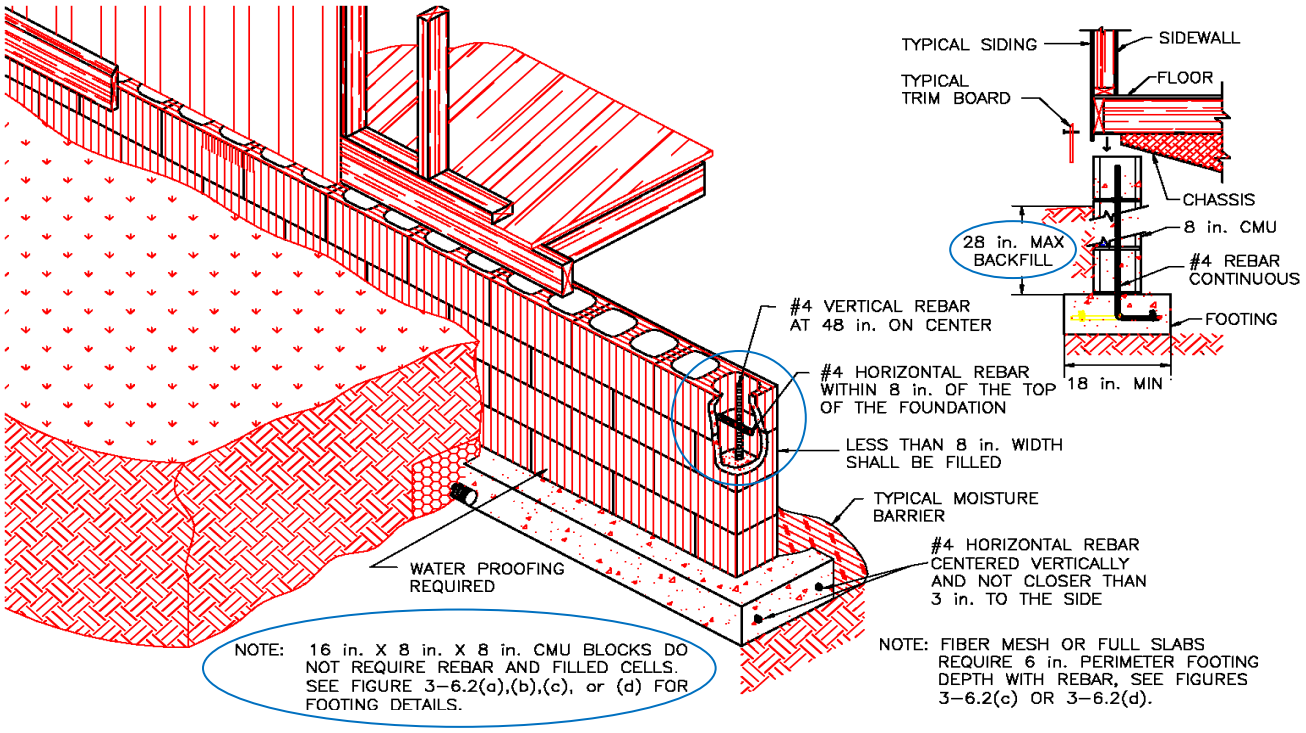


Figure 4-8.2 Concrete Masonry Unit (CMU) Retaining Wall Skirting Detail

4-9 Under-Floor Separations

- A separation must be provided between the under-floor area of a manufactured dwelling and the areas below porches, decks, landings, or other similar structures, including factory built structures.
- The purpose of this separation is to prevent the migration of moisture to the underside of the home.
- Under-floor separations must be according to Section 4-9.2.
- The under floor enclosure must be placed below the recessed exterior walls of the manufactured dwelling.
- The under floor enclosure must be made of a durable, rigid, or flexible material.
- There barrier must be placed at the footing to prevent water migration.

4-10 Under-Floor Ventilation

- The enclosed under-floor area of a manufactured dwelling must be vented.
- Under-floor ventilation must be according to Section 4-10.1.
- Each home must have a minimum of 4 vents that provide cross ventilation on at least two sides of the home.
- Ground level installations must have vent wells installed where backfill or pavement would otherwise block the vent opening.
- Vents may be of the closable type.
- Vents must have wire mesh of not less than 1/8 inch screen.

Ventilation Sizing

- The net free ventilation area must be equivalent to 1 square foot for every 1500 square feet of under-floor area.
- When a vent does not include a rating of net free area, deduct 25% of the gross ventilation area for vent hardware such as screens or louvers.
- A mechanical ventilation system may be installed provided the system provides a minimum air flow rate of 1.0 CFM for each 50 square feet of under-floor area.

Example: For a home with 1800 square feet of under-floor area.
1800 (# sq. ft) ÷ 1500 (1 sq. ft. per 1,500 sq. ft.) = 1.2 sq. ft.
1.2 sq. ft. x 144 inches (1 sq. ft.) = 172.8 (sq. in. of venting required).
If a 70 square inch vent is used: 172.8 (sq. in. required) ÷ 70 (sq. in. vent) = 2.46 (vents).
This installation only requires 3 vents. However, the code requires a minimum of 4. Four vents must be installed.

Table 4-10.2 Ventilation Sizing Table

Type of Home	Min. # Vents Required	Min. Free Area Required
Singe Wide	4	90 sq. in.
Double Wide	4	180 sq. in.
Triple Wide	4	280 sq. in.
Quad	4	380 sq. in.

NOTES:
(1) More vents than the minimum required may be installed to achieve the minimum free area.
(2) The minimum free area required is provided as a guide for a typical type of home being vented. The actual amount of free area required may be determined by calculation as per 4-10.2.

4-11 Under-Floor Access

Access to the under-floor area must be provided according to Section 4-11.1.

Skirting

Access openings must provide a minimum clear opening of 18 inches x 24 inches, and an access door must be provided

Ground Level Access

- Ground level (pit set homes) must be provided with an access well or another approved means of access.
- Access wells must provide a minimum opening of 18 inches x 24 inches, and the well must have a minimum horizontal inside dimension of 24 inches x 30 inches.
- The access well must have a removable water resistive cover.

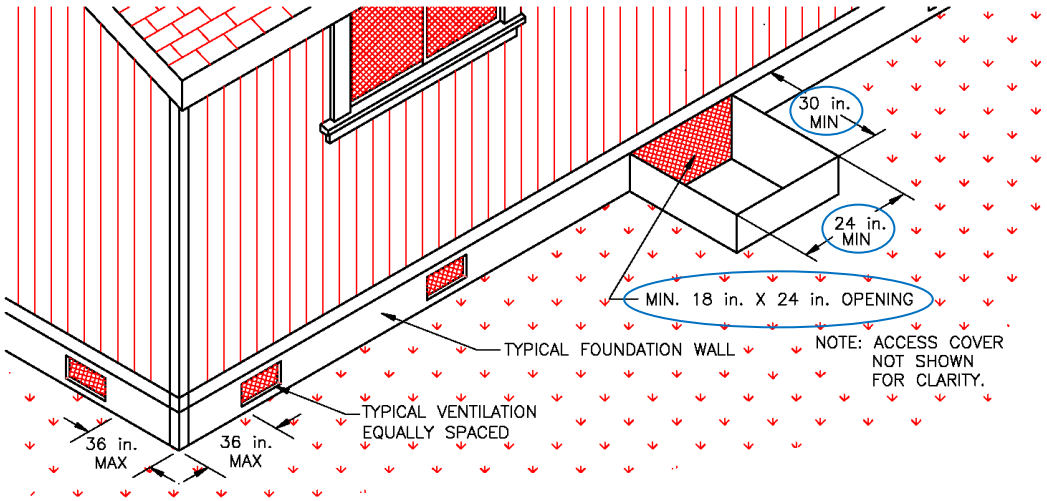


Figure 4-7.1 Concrete Masonry Block (CMU) Skirting Detail

Through the Floor and Stairway Access

- Through the floor access must be according to Section 4-11.1.3
- Stairway access must comply with Section 4-11.1.4.

Chapter 5
Installation Procedures

5-1 Marriage Line Connection and Seal

All marriage lines that are exposed to outside air must be sealed with a durable, non-porous caulking, closed cell foam, urethane, or other approved material.

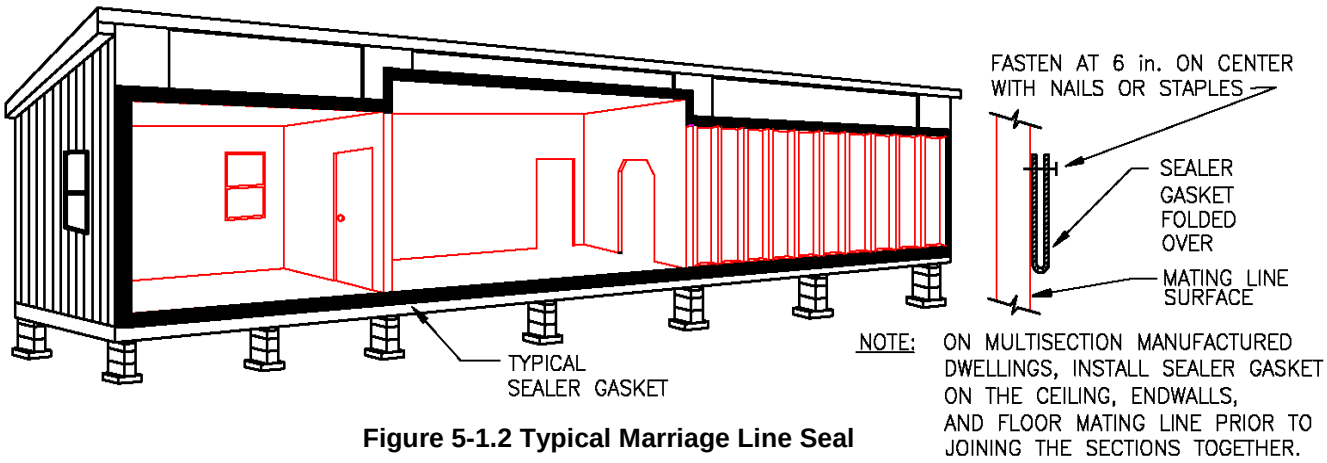


Figure 5-1.2 Typical Marriage Line Seal

5-2 Marriage Line Attachments

Ridge Beam Connections

- Typical ridge beam connections consist of 1/2 inch diameter bolts (with washers) installed every 32 inches on center, or 3/8 inch lag screws (with washers) staggered side to side every 16 inches on center. See Figure 5-2.1.1(a) and Figure 5-2.1.1(b).
- Ridge beam column support locations on an initial installation must be secured according to the manufacturer's installation instructions.
- Reference this code or manufacturers installation instructions for other methods of securement.

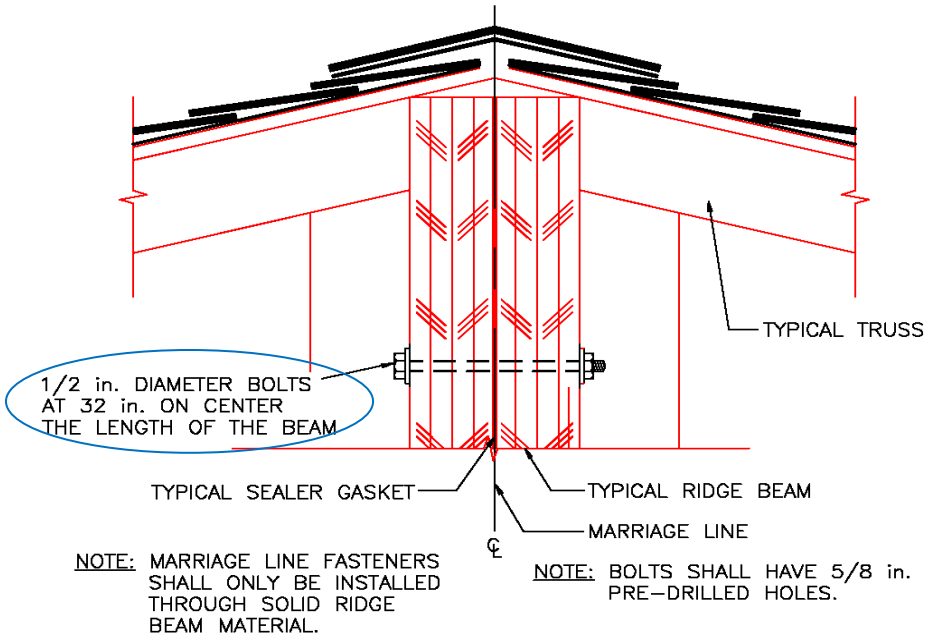


Figure 5-2.1.1(a) Typical Ridge Beam Bolt Connection

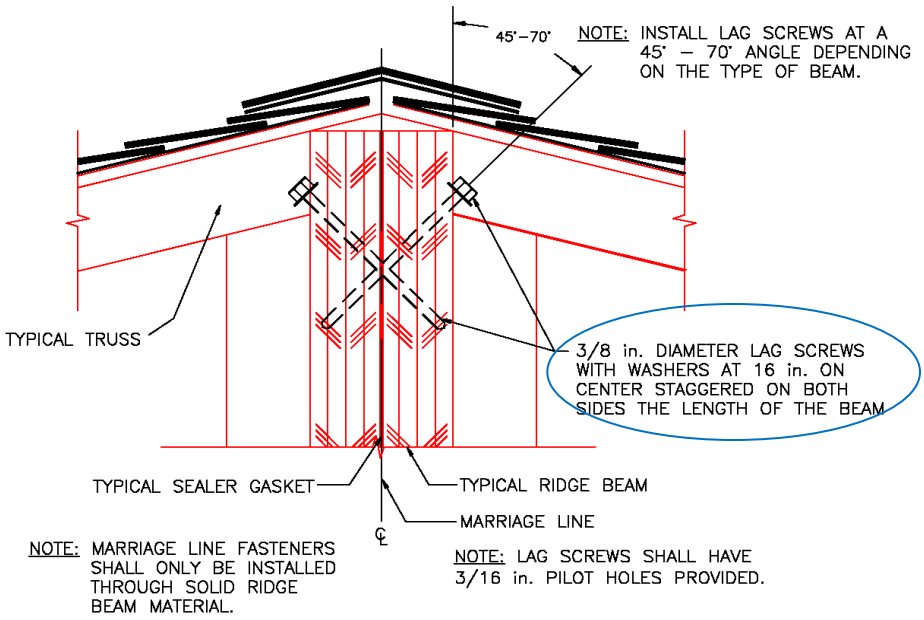


Figure 5-2.1.1(b) Typical Ridge Beam Lag Screw Connection

- **Wall Connections**
  Marriage line walls of multi-section homes must be secured according to one of the following methods:
  - Fasteners, whether lag screws or wood screws, must be installed in areas where there is solid studs on both sides of the marriage line, and the fasteners are long enough to penetrate at least 2 inches into the adjoining stud.
  - End walls must be secured with # 10 wood screws spaced equally at 12 inches on center on one side or staggered from side to side of the marriage line studs to within 6 inches of the floor and ceiling. See Figure 5-2.1.2(a)
  - End walls must be secured with 3/8 inch diameter lag screws installed with washers, spaced equally and staggered from side to side of the marriage line studs at a maximum of 24 inches on center. See Figure 5-2.1.2(b)
  - Interior marriage line walls must be secured with # 8 wood screws spaced equally at 16 inches on center to within 8 inches of the floor and ceiling. See Figure 5-2.1.

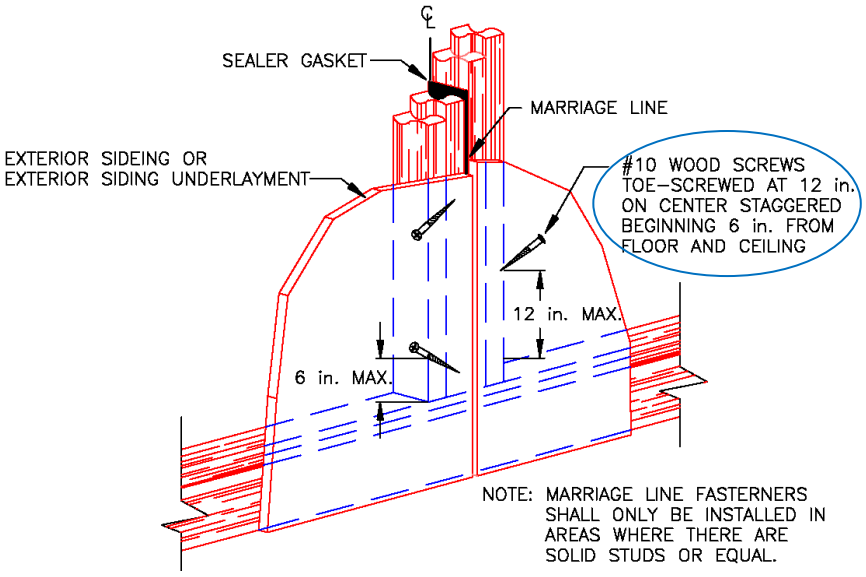


Figure 5-2.1.2(a) Typical Marriage Line End Wall Wood Screw Connection

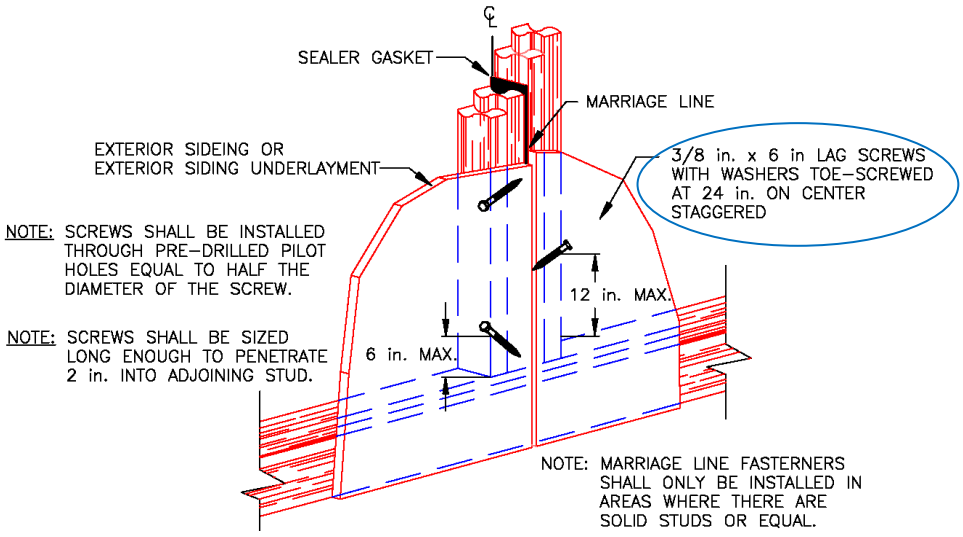


Figure 5-2.1.2(b) Typical Marriage Line End Wall Lag Screw Connection

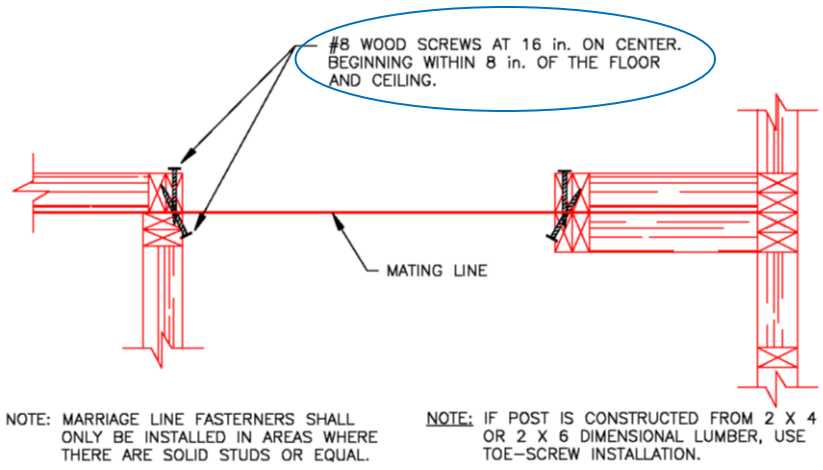


Figure 5-2.1.2(c) Typical Marriage Line Interior Wall Connection

- **Floor Connections**
  Marriage line floors of multi-section homes must be secured according to one of the following methods:
  - With 1/2 inch diameter bolts with washers installed at each marriage clip under the floor. See Figure 5-2.1.3(a)
  - With 3/8 inch diameter lag screws installed with washers spaced equally and staggered from side to side of the mating joist 24 inches on center. Lag screws must be installed at a 45 to 90 degree angle, and must be long enough to penetrate through both joists. See Figure 5-2.1.3(b)
  - With #10 wood screws spaced equally and staggered from side to side of the mating joists 12 inches on center. Woods screws must be installed 45 to 90 degree angles, and must be sized long enough to penetrate through both joists. See Figure 5-2.1.3(c)

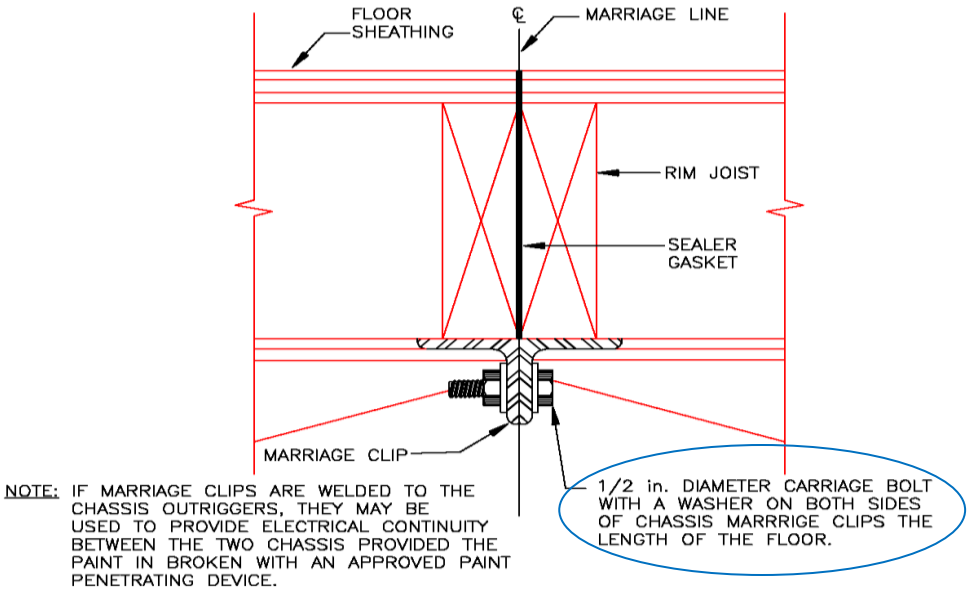


Figure 5-2.1.3(a) Typical Floor Connection with Marriage Clips

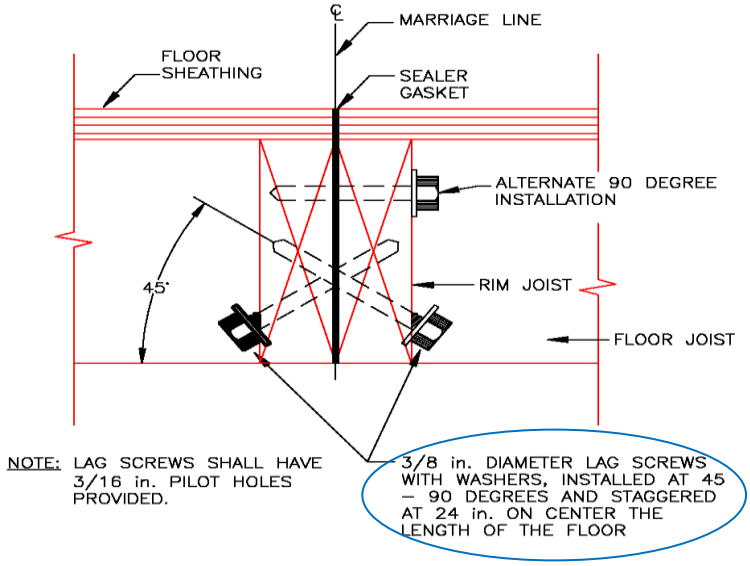


Figure 5-2.1.3(b) Typical Floor Connection Using Lag Screws

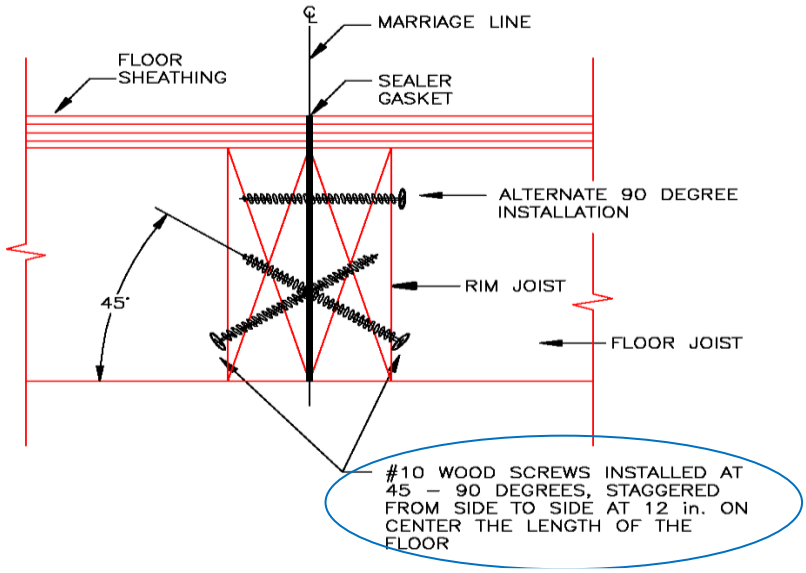


Figure 5-2.1.3(c) Typical Floor Connection Using Wood Screws

5-3 Weather Seal

All joints between multi-section manufactured dwellings must be sealed and weather stripped to limit heat loss and prevent air, moisture, and other damaging infiltration.

Roof Seal

- All roofing material must be installed according to the roofing manufacturer's installation instructions.
- Roofing at the marriage line seam must be sealed with 10 inch wide roofing underlayment.
- Field installed shingled roof caps (hip and ridge shingles) must be oriented with respect to the prevailing winds.
- All roof penetrations for site installed plumbing vents, mechanical vents, or chimneys must be sealed according to code and the product manufacturer's installation instructions.
- Holes from shipping material must be sealed with approved roofing cement.
- All damaged roofing must be replaced.

Wall Seal

- Exterior wall seams at the marriage line must be closed up with siding material rated for exterior exposure. Siding should be the same type, grade, and thickness as used on the manufactured dwelling.
- All damaged siding must be repaired to the manufacturer's instructions or replaced with material rated for exterior exposure. Siding should be the same type, grade, and thickness as used on the manufactured dwelling.
- All wall penetrations for plumbing, electrical, mechanical, or gas fixtures or devices must be sealed.

Floor Seal

- Prior to finished flooring materials being installed, floor surfaces must be smooth, flush, and level.
- All decking penetrations for plumbing, electrical, mechanical, or gas fixtures or devices must be sealed.
- All insulation removed or displaced during installation and testing must be put back in place.
- All access panels must be attached in place.
- All cuts, holes, or tears in the bottom board must be sealed, including but not limited to areas around structural connections, plumbing, electrical, mechanical, gas, and heating/cooling equipments must be adequately repaired or sealed to resist the entrance of rodents.

Chapter 6
Electrical Connections

6-1 General

- All electrical equipment and installations must be designed, constructed, and installed in accordance with this code and where not specific, to the applicable provisions of the Oregon Electrical Specialty Code.
- Alternate methods permitted in the Oregon Electrical Specialty Code, but not mentioned in this code may be permitted if acceptable to the building official. See Section 1-3.9.
- All electrical equipment, materials, devices, appliances, and fittings must be listed and labeled for it's intended use, and installed according to this code and where not specific, to the Oregon Electrical Specialty Code.
- For the purposes of inspection, all electrical connections must be accessible for inspection by the building official, including excavations containing electrical equipment.

6-2 Electrical Feeders

- Manufactured dwelling feeder conductors must consist of one of the following:
  - A listed factory installed or provided power cord, connected according to the manufacturer's installation instruction or this code.
  - A permanently installed overhead feeder containing four insulated conductors listed for use and sized according to Table 6-2.1(a).
  - A permanently installed overhead feeder containing three insulated conductors listed for use and sized according to Table 6-2.1(a). An "uninsulated" messenger of a factory assembled quadraplex cable must be installed in compliance with the applicable provisions of Oregon Electrical Specialty Code, Articles 230.24, 230.32, and 550-10.
  - A permanently installed underground feeder containing four insulated conductors listed for use and sized according to Table 6-2.1(b).
  - A permanently installed feeder installed by the manufacturer according to DAPIA approved plans when the service equipment is mounted on the home at the manufacturing plant.
  - 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.
- The green colored insulated conductor of the feeder must be connected to the grounding bar 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 must be isolated from the ground bar inside the main distribution panel or inside any junction box used in conjunction with the manufactured dwelling branch circuit or feeder.

Feeder Sizing

- Feeder size is based on the amperage of the main circuit breaker inside the manufactured dwelling's main distribution panel.
- Feeders must 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).
- Overhead feeders must be sized according to Figure 6-2.1(a)
- Underground feeders and conduit must be sized according to Table 6-2.1(b).

Table 6-2.3(a) Above Ground Feeder Conductor Clearances

Amperage of Home	Conductor Use	Number of Conductors	Wire Size (Copper)	Wire size (Aluminum)
50 Amps	Ungrounded	2	# 8	# 8
	Grounded	1	# 10	# 10
	Grounding	1	# 10	# 8
100 Amps	Ungrounded	2	# 4	# 3
	Grounded	1	# 6	# 4
	Grounding	1	# 8	# 6
150 Amps	Ungrounded	2	# 2	# 1/0
	Grounded	1	# 3	# 1
	Grounding	1	# 6	# 4
200 Amps	Ungrounded	2	# 1/0	# 3/0
	Grounded	1	# 1	# 1/0
	Grounding	1	# 6	# 4
225 Amps	Ungrounded	2	# 2/0	# 4/0
	Grounded	1	# 1/0	# 3/0
	Grounding	1	# 4	# 2

NOTES:

(1) Insulation type shall be type THW, THWN, or THHW only.

(2) For installations not specifically covered in this table see the **Oregon Electrical Specialty Code** for further information.

Table 6-2.3(b) Underground Feeder Conductor Clearances

Amperage of Home	Conductor Use	Number of Conductors	Wire Size (Copper)	Wire Size (Aluminum)	Conduit Size (Copper)	Conduit Size (Aluminum)
50 Amps	Ungrounded	2	# 6	# 4	1 in. I.D.	1 in. I.D.
	Grounded	1	# 8	# 6		
	Grounding	1	# 10	# 8		
100 Amps	Ungrounded	2	# 4	# 2	1 in. I.D.	1-1/4 in. I.D.
	Grounded	1	# 6	# 3		
	Grounding	1	# 8	# 6		
150 Amps	Ungrounded	2	# 1	# 2/0	1-1/4 in. I.D.	1-1/2 in. I.D.
	Grounded	1	# 2	# 1/0		
	Grounding	1	# 6	# 4		
200 Amps	Ungrounded	2	# 2/0	# 4/0	1-1/2 in. I.D.	2 in. I.D.
	Grounded	1	# 1/0	# 2/0		
	Grounding	1	# 6	# 4		
225 Amps	Ungrounded	2	# 3/0	250 MCM	2 in. I.D.	2 in. I.D.
	Grounded	1	# 2/0	# 4/0		
	Grounding	1	# 4	# 2		

NOTES:

(1) Insulation type shall be type USE, UF, THW, THWN, or THHW only.

(2) Conduit sizes are based on Schedule 40 PVC only.

(3) For installations not specifically covered in this table see the **Oregon Electrical Specialty Code** for further information.

Feeder Installations

- Feeder installations, whether cord connected, overhead, or underground must be installed according to this code and to the electrical equipments listing, and where not specific, to the Oregon Electrical Specialty Code. Clearances must be according to Table 6-2.1(a) for above ground feeder conductors and Table 6-2.1(b) for underground feeder conductors.
- Electrical equipment or materials may not obstruct the access to the under-floor area.
- Conduit must be installed and secured at the intervals required in Table 6-2.3(c).
- Feeders must be connected to the electrical service disconnect within view of the manufactured dwelling and within 30 ft. of the manufactured dwelling exterior wall.

Table 6-2.3(a) Above Ground Feeder Conductor Clearances

Location	Minimum Height
Above Roof Surface	8 ft.
Above Roof Ridge	3 ft.
Above Pedestrian Access	10 ft.
Above Private Driveways	12 ft.
Above Public Driveways	18 ft.
Above Alleys and Streets	18 ft.

NOTES:

(1) Exceptions to Article 230-24 of the **Oregon Electrical Specialty 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) A reduction in clearance to 3 ft. shall be permitted where the voltage between conductors does not exceed 300 volts and the roof has a slope of 4 in. in 12 in. or greater.

(c) Where the voltage between conductors does not exceed 300 volts, a reduction in clearance above only the overhanging portion of the roof not less than 18 in. shall be permitted if (1) not more than 6 ft. of service-drop conductors, 4 ft. 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. 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) For installations not specifically covered in this table see the **Oregon Electrical Specialty Code** for further information.

Table 6-2.3(b) Underground Feeder Conductor Clearances

Location of Wiring Method	Direct Burial Cable	Rigid Metal Conduit	Rigid Non-Metal Conduit	Branch Circuit 20 Amp max.
All Locations not specified below	24 in.	6 in.	18 in.	12 in.
Trench with 2 in. thick concrete cover	18 in.	6 in.	12 in.	6 in.
Under 4 in. concrete slab extending 6 in. over wiring	18 in.	4 in.	4 in.	6 in.
Under Streets & Driveways and Parking Lots	24 in.	24 in.	24 in.	24 in.
1 & 2 Family Driveways and Parking Areas	18 in.	18 in.	18 in.	12 in.

NOTE:

For installations not specifically covered in this table see the **Oregon Electrical Specialty Code** for further information.

Table 6-2.3(c) Electrical Raceway Securement Schedule

Conduit Type	From Termination Point (J-Box)	Intermediate Support
Electrical Metallic Tubing	3 ft.	10 ft.
Electrical Nonmetallic Tubing	3 ft.	3 ft.
Flexible Metal Conduit	12 in.	54 in.
Intermediate Metal Conduit	3 ft.	10 ft.
Liquidtight Flexible Metal Conduit	12 in.	54 in.
Liquidtight Flexible Nonmetallic Conduit	12 in.	3 ft.
Rigid Metal Conduit	3 ft.	16 ft.(1)
Rigid Nonmetallic Conduit	3 ft.	5 ft.(1)

NOTES:

(1) Spacing of supports is based on 2 in. diameter conduit only and will vary for smaller or larger sizes according to the **Oregon Electrical Specialty Code**.

(2) Raceways shall have hangars, slings, clamps or brackets which do not compress, distort, cut, or abrade the raceway.

(3) For installations not specifically covered in this table see the **Oregon Electrical Specialty Code** for further information.

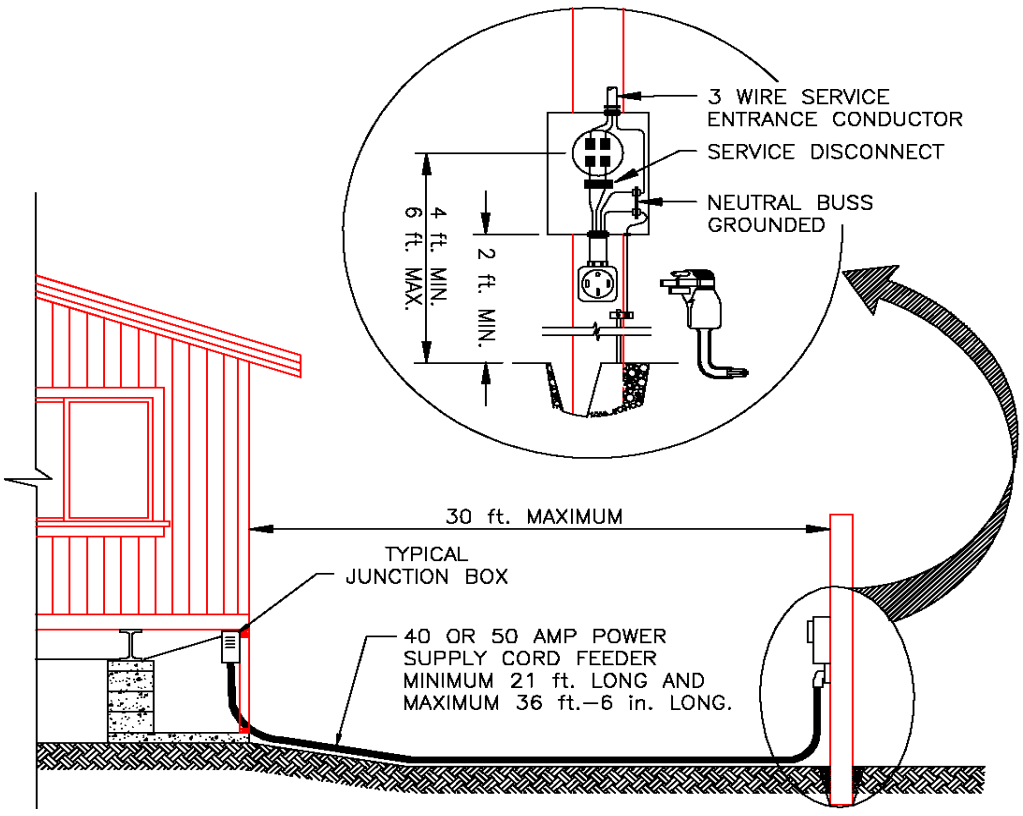


Figure 6-2.3(a) Typical Cord Connected Feeder Installation

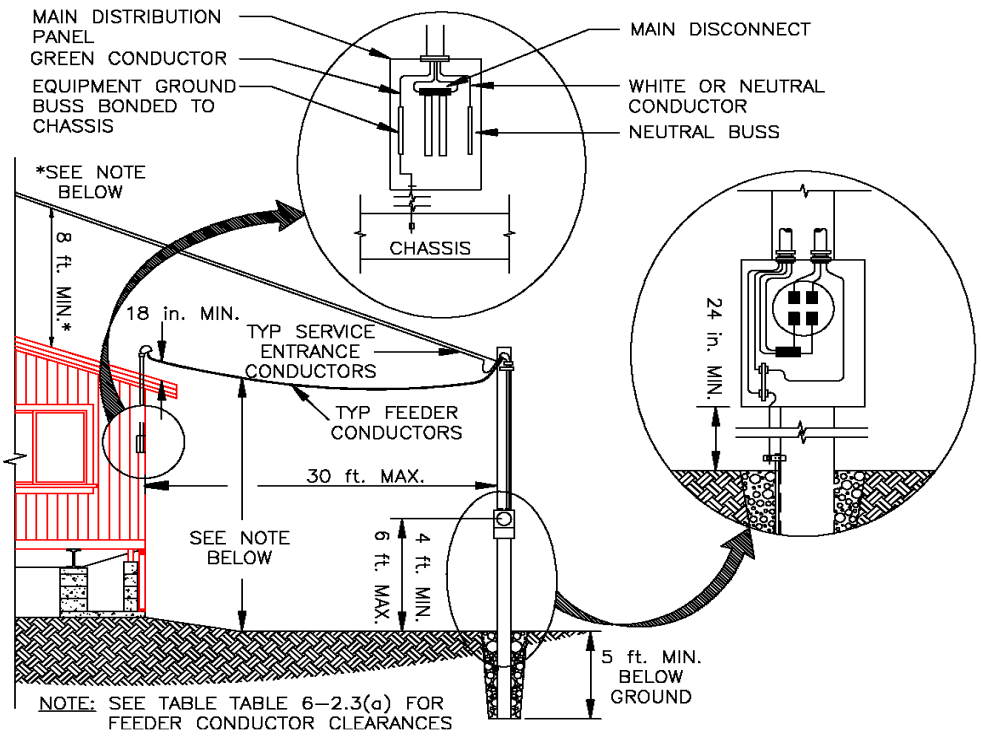


Figure 6-2.3(b) Typical Overhead Feeder Installation

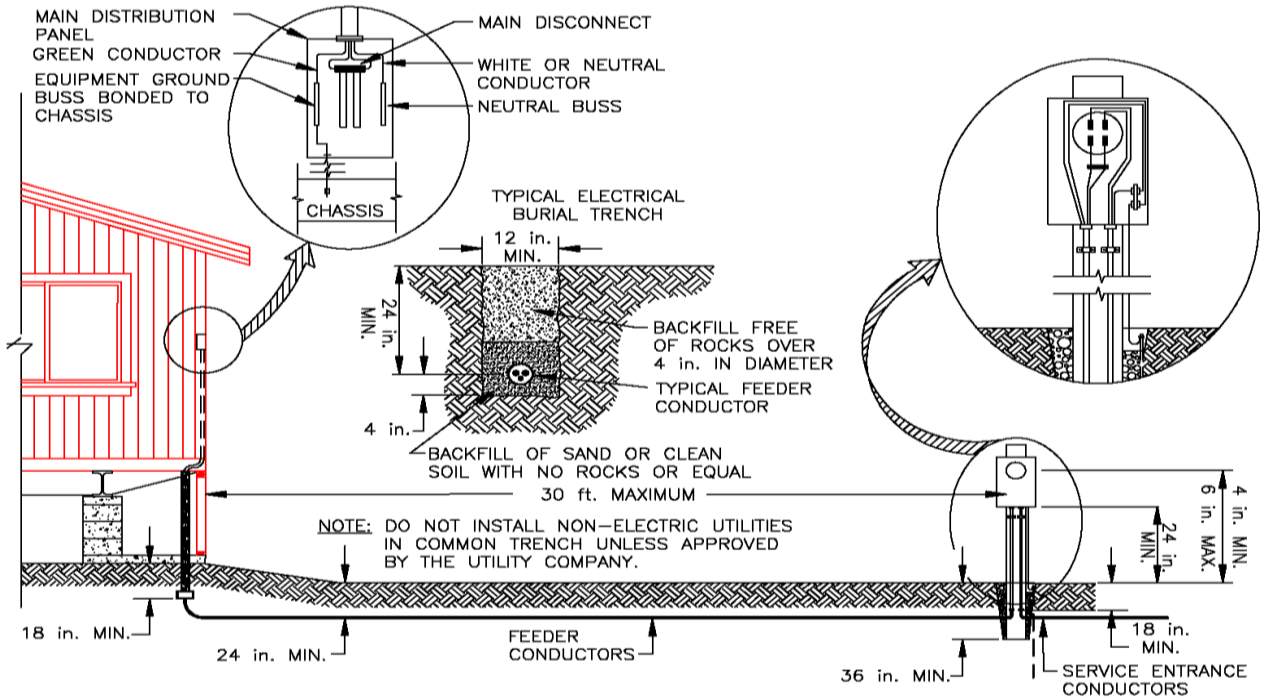


Figure 6-2.3(c) Typical Underground Feeder Installation

Temporary Feeder Installations

Manufactured dwellings installed for display purposes only must have electrical installations completed according to Section 6-2.5.

6-3 Electrical Service Equipment

Service equipment for a manufactured dwelling must be provided for a manufactured dwelling by one of the following methods:

- Service equipment may be installed on the manufactured dwelling at the factory during the initial construction.
- The service equipment may be field installed on the manufactured dwelling at the installation site.
- The service equipment may be installed on a pole or as an approved pedestal adjacent to the manufactured dwelling.
- 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 and in sight of the manufactured dwelling, or a disconnect means may be provided within 30 feet and in site of the manufactured dwelling.

Note: Service equipment and service equipment grounding is not under the scope of the license for manufactured dwelling installers, limited installers, or limited skirting installers.

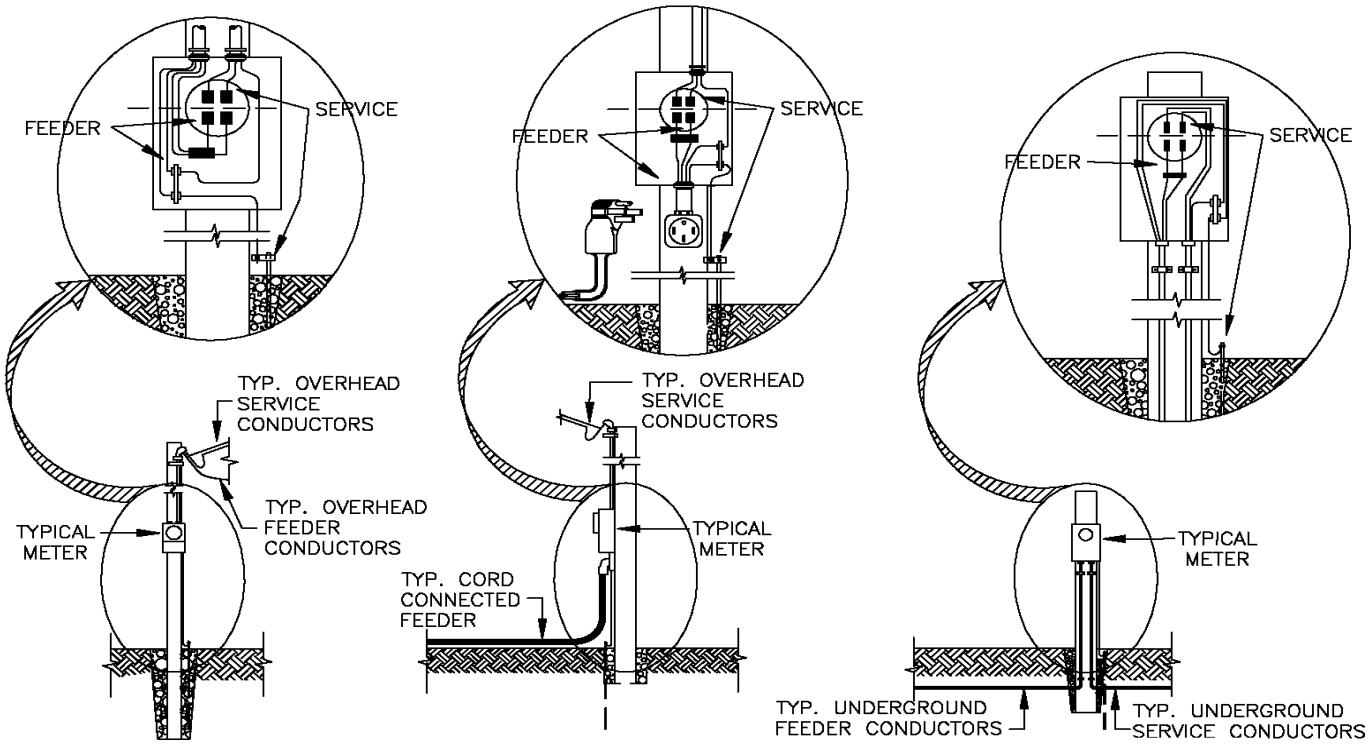


Figure 6-3.1 Typical Demarcation between Feeder and Service

6-4 Electrical Crossover Connections

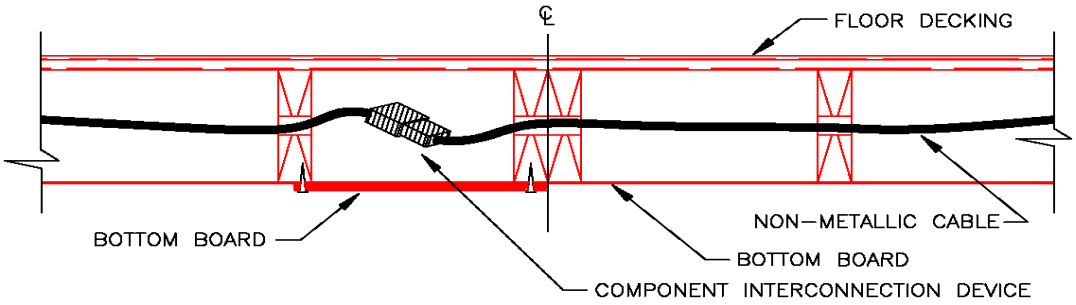
Crossover Connection

Multisection manufactured dwellings must have the electrical crossover circuits connected according to the following:

- A minimum of 12 inches above the base flood elevation.
- With approved connectors and contained within junction boxes or within wall or floor cavities, or other areas designated by the manufacturer.
- Remain accessible.
- Must have physical protection and suitable terminations according to the Oregon Electrical Specialty Code.

Component Interconnection Devices

When provided by the home manufacturer, interconnection devices may be used provided the interconnection meets Section 6-4.2.



NOTE: WHERE MORE THAN ONE SET OF CONNECTORS EXIST, SNAP TOGETHER THOSE CONNECTORS WITH SIMILAR COLOR CODING OR MARKINGS.

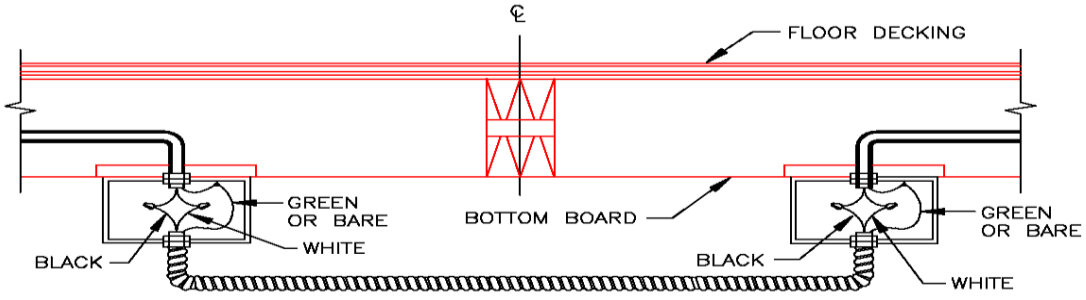
NOTE: CROSSOVER CONNECTIONS SHALL BE CONTAINED WITHIN JUNCTION BOXES OR WITHIN FLOOR CAVITIES.

NOTE: CROSSOVER CONNECTIONS SHALL BE A MINIMUM OF 12 in. ABOVE THE THE BASE FLOOD ELEVATION.

Figure 6-4.2 Typical Component Interconnection Devices

Hard Wire Connections

When provided by the home manufacturer, junction boxes may be used provided the installation meets Section 6-4.3.



NOTE: CROSSOVER CONNECTIONS MAY BE WITHIN THE FLOOR CAVITY AND ACCESSIBLE THROUGH AN UNDER—FLOOR ACCESS PANEL.

NOTE: JUNCTION BOXES AND FLEXIBLE CONDUIT SHALL BE APPROPRIATELY LISTED.

NOTE: CROSSOVER CONNECTIONS SHALL BE A MINIMUM OF 12 in. ABOVE THE THE BASE FLOOD ELEVATION.

Figure 6-4.3 Typical Hard Wired Crossover Connection

Bonding

Multisection manufactured dwellings must be bonded together at the marriage line. Each steel chassis must be either:

- 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.
- Be bonded to the adjacent chassis with bolts or rods capable of conducting current from one chassis to another. Star washers, self tapping or self drilling screws, or similar paint penetrating devices must be used to provide an effective bonding path between each chassis.

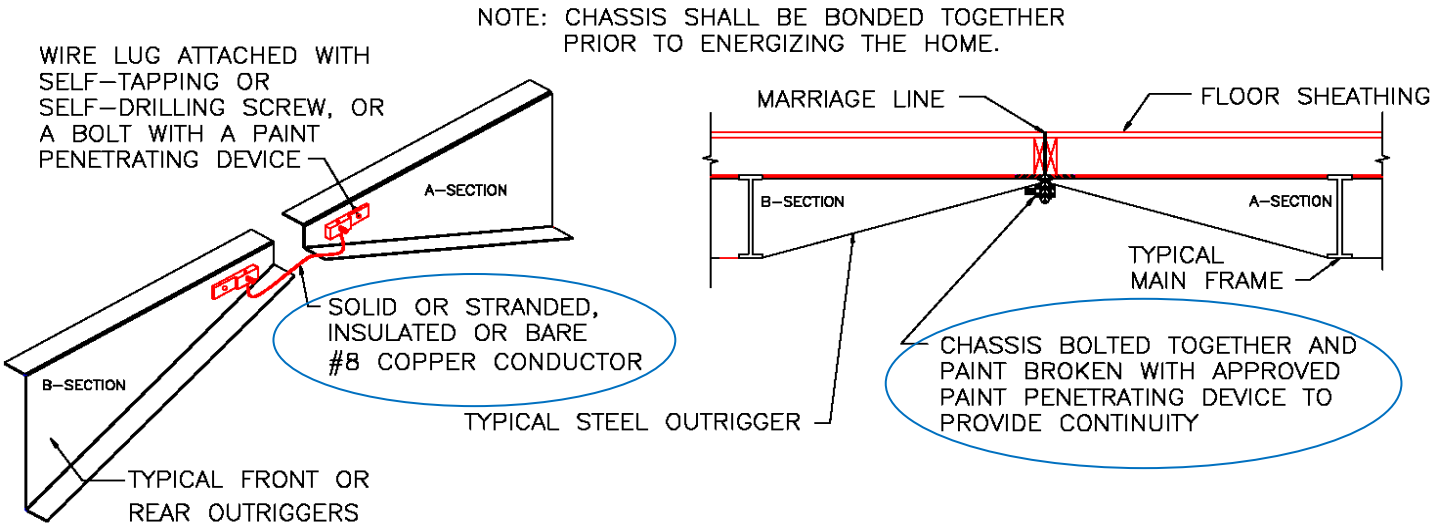


Figure 6-4.4 Typical Chassis Bonding Crossover Connection

6-5 Installation of Site-Installed Electrical Equipment

Electrical equipment and fixtures (i.e. ceiling fans, chandeliers, exterior lights, and mechanical equipment) that are shipped-loose with the manufactured dwelling must be installed on site according to the equipment manufacturer's installation instructions and in accordance with the Section 6-5.1.

Note: A licensed manufactured dwelling installer or limited installed may connect site-installed electrical equipment and fixtures.

Note: Heat tape when used, must be connected to the heat tape receptacle outlet under the manufactured dwelling near the main water inlet. Heat tape must be listed for manufactured home use and installed according to the heat tape manufacturer's installation instructions.

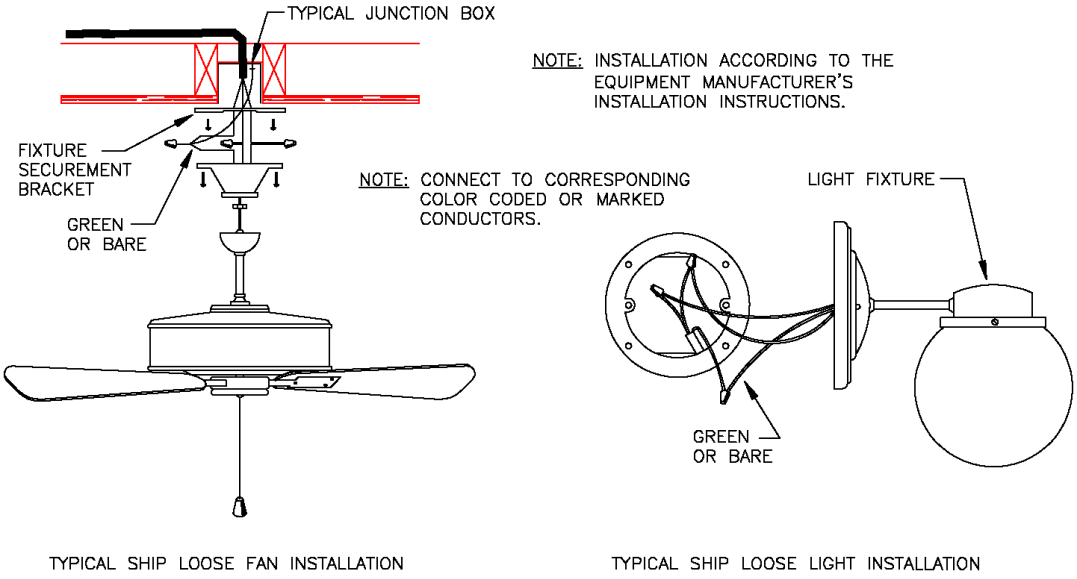


Figure 6-5.1 Typical Site Installed Electrical Equipment and Fixtures

6-6 Electrical Testing

Required Tests

Each manufactured dwelling must be subjected to electrical testing after all electrical connections have been made.

- A polarity test to determine connections have been made properly.
- A continuity test to ensure that metallic parts are properly bonded.
- Ground fault circuit interrupters (GFCI) must be tested for proper function.
- Operational tests of devices, especially smoke alarms. This does not including certain appliances like water heaters, electric ranges, electric furnaces, dishwashers, etc.

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.

Chapter 7
Plumbing Connections

7-1 General

- All plumbing equipment and installations must be designed, constructed, and installed in accordance with this code and where not specific, to the applicable provisions of the Oregon Plumbing Specialty Code.
- Alternate methods permitted in the Oregon Plumbing Specialty Code, but not mentioned in this code may be permitted if acceptable to the building official. See Section 1-3.9.
- All plumbing equipment, materials, devices, appliances, and fittings must be listed and labeled for it's intended use, and installed according to this code and where not specific, to the Oregon Plumbing Specialty Code.
- For the purposes of inspection, all plumbing connections must be accessible for inspection by the building official, including excavations containing plumbing equipment.

Note: Certain piping under the manufactured dwelling may be subject to the requirements established by HUD under 24 CFR 3280 (MHCSS) and may be different than the requirements of the Oregon Plumbing Specialty Code.

7-2 Water Distribution System

Water Connections

- The building water supply piping must be new and made of approved material in accordance with Table 7-2.1.
- Piping must be supported at:
  - 3 foot intervals for rigid piping (PVC or CPVC).
  - 32 inches for flexible tubing (PB or PEX).
- If the local water pressure exceeds 80 PSI an approved pressure regulator is required.
- The water supply piping must be a minimum 3/4 inch inside diameter.
- An accessible full way shutoff valve must be installed on the water supply within 5 feet of the manufactured dwelling. It may be underneath or adjacent to the dwelling. (This valve on the water meter may not serve as the shut off valve for the manufactured dwelling)
- When a backflow device (check valve) is installed an approved expansion tank is required. Expansion tanks must be adequately supported.

Note: Water supply piping within 30 lineal feet of the manufactured dwelling may be installed by a licensed manufactured dwelling installer or limited installer. Water supply piping greater than 30 lineal feet from the manufactured dwelling must be installed by a licensed plumbing contractor.

Note: Water supply piping size may need to be increased from 3/4 inch inside diameter piping where the maximum length necessary to reach the water meter exceeds 100 lineal feet from the manufactured dwelling.

Table 7-2.1 Approved Water Piping Materials

Approved Materials	Reference Standard
Acrylonite Butadine Styrene (ABS)	ASTM D 2282 or ASTM D 1527
Chlorinated Polyvinyl Chloride (CPVC)	ASTM D 2846
Cross-linked Polyethylene (PEX)	ASTM F 877 or ASTM F 876
Flexible Connector	ASME A 112.18.6
Polyethylene (PE)	ASTM D 2239
Polyvinyl Chloride (PVC)	ASTM D 1785 or ASTM D 2241
Steel Hot Dipped Zinc Coated	ASTM A 53

NOTES:

(1) See the **Oregon Plumbing Specialty Code** for a more comprehensive list of approved piping material.

(2) Piping must be labeled or marked by the manufacturer to indicate that the material conforms to that specific standard.

(3) ABS, PVC and PE may only be installed up to the building water supply line; they are not approved for installations under the home.

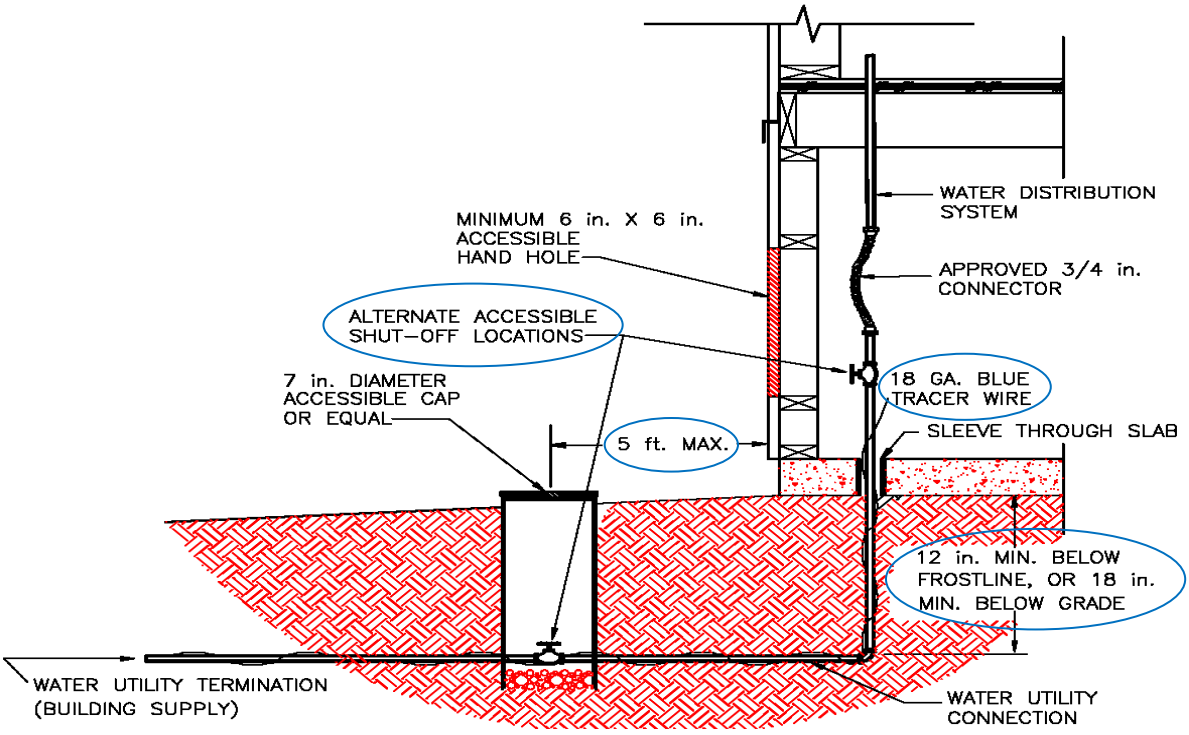


Figure 7-2.1 Typical Main Water Supply Connection

7-3 Underground Installations

Water supply piping must be installed in trenches according to the following:

- All water supply piping outside the manufactured dwellings under-floor area must be installed underground. See Figure 7-2.1
- Piping must be buried a minimum of 18 inches below grade and must also at least 12 inches below the frost line. See Table 3-2.1 for frost penetration depths. See Figure 7-2.1
- Non-metallic piping must have a blue 18 gage tracer buried in the trench the entire length of the pipe. The end of the tracer must be left above finished grade. See Figure 7-2.1

7-4 Water Line Crossover Connections

- Multisection manufactured dwellings with water supply piping in more than one section must have the crossover connections completed with connectors according to one of the following:
  - Supplied by the manufacturer.
  - With approved flexible water connector sized no less than the water lines being connected.
  - With other approved materials listed in Table 7-2.1**.**
- Crossover connections must be protected from freezing with pipe insulation.

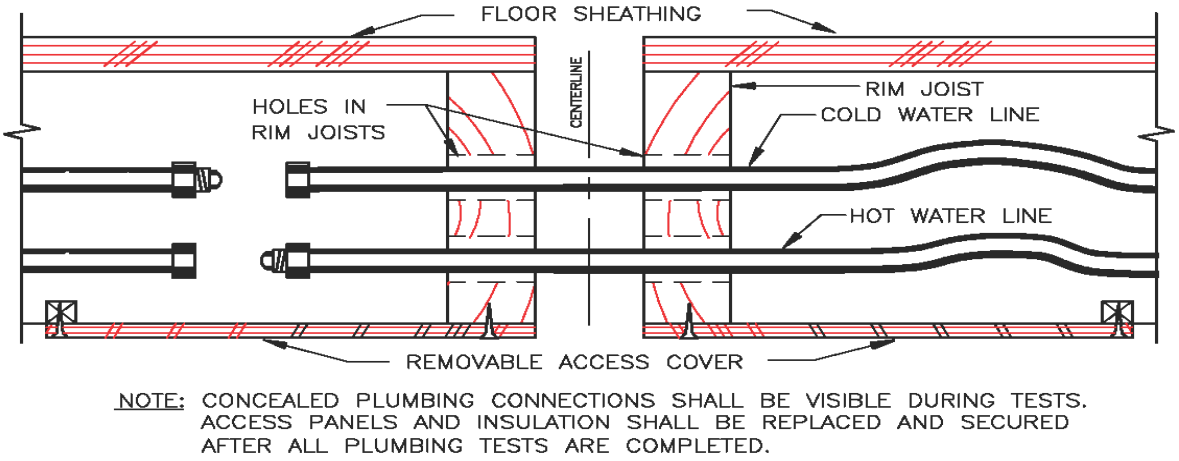


Figure 7-4.1 Typical Water Line Crossover Connection

Protection

Exposed sections of water supply piping in the under-floor area must be protected from freezing by either wrapping the piping with pipe insulation, or installing an electric heat tape listed and approved for manufactured dwelling use.

7-5 Water Distribution System Testing

Water Test

- Upon completion of the water supply connection and marriage line crossover connection, the manufactured dwelling must be tested by pressuring all the water lines with water from the site's water supply or using air at 80 PSI for a minimum of 15 minutes without loss of pressure or evidence of leakage.
- If the water lines are made of CPVC, the test pressure must be reduced to 30 PSI.

Test Failures

Upon failure of the water test, check all applicable field connections, repair any leaks, and repeat the applicable test until the system passes. If tests continue to fail, notify factory authorized service personnel and report failures. The site's water supply must remain off, except for further testing, until all leaks have been repaired.

7-6 Drainage System

Drain Piping

- Drain piping under the home must be installed according to the manufacturer's installation instructions and the HUD Code.
- The building drain piping must be made of approved materials as listed in Table 7-6.1, and supported according to this code.

- Drain piping must be free from defect and be installed with acceptable workmanship.

Note: Certain piping under the manufactured dwelling may be subject to the requirements established by HUD under 24 CFR 3280 (MHCSS) and may be different than the requirements of the Oregon Plumbing Specialty Code.

Table 7-6.1 Approved Drain Piping Materials

Approved Materials	Reference Standard
Acrylonite Butadine Styrene (ABS)	ASTM D 2661 or ASTM F 628
Polyvinyl Chloride (PVC)	ASTM D 2665 or ASTM D 891
NOTES: (1) See the **Oregon Plumbing Specialty Code** for a more comprehensive list of approved piping material. (2) Piping must be labeled or marked by the manufacturer to indicate that the material conforms to that specific standard.	

Drain Piping Connection

The installation and connection of the manufactured dwelling drain outlet to the sewer must comply with this code and where not specific to the Oregon Plumbing Specialty Code. See Figure 7-6.2.

- Piping must be installed to provide a minimum 1/4 inch per foot grade in all horizontal drain piping. See Figure 7-8.1
- When a cleanout is installed at the upper end of the run, the grade may be reduced to 1/8 inch per foot. See Figure 7-8.1
- Appropriate sized directional fittings must be used for all changes in direction.
- Piping must be installed without undue strains, stresses, and must have provisions for expansion and contraction.
- Piping must be supported at 4 feet on-center for rigid drain piping (ABS or PVC). Horizontal piping under the home does not require vertical rigid support. See Figure 7-8.1

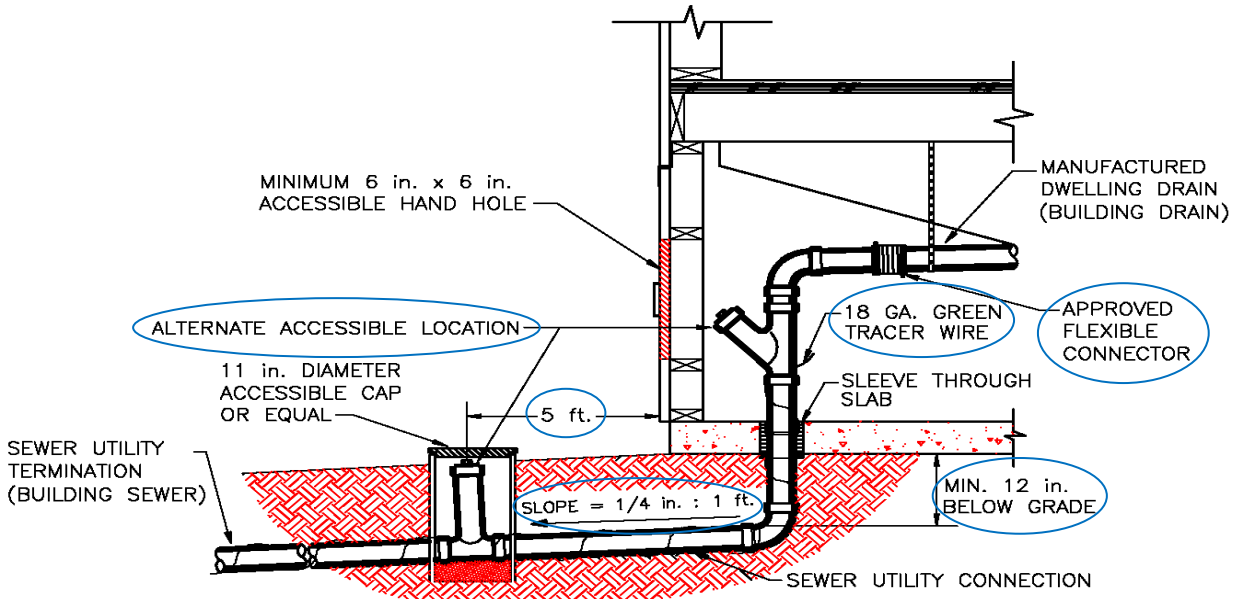


Figure 7-6.2 Typical Drain Line Connection

Drain Piping Cleanouts

A drain piping cleanout fitting must be installed in the drain piping system either under home or within 5 feet of the home. See Figure 7-6.2.

- The cleanout fitting must be a directional fitting when installed above ground, or a two-way cleanout fitting when installed underground.
- The cleanout must have 18 inches of clearance directly in front of the cleanout opening without removing any permanent construction.

7-7 Underground Installations

- Drainage piping must not be above ground outside the buildings under floor area.
- Drainage piping installed outside the manufactured dwelling must be installed in underground according to the following:
  - Buried a minimum of 12 inches below grade. See Figure 7-6.2
  - Graded at 1/4 inch per foot. See Figure 7-6.2
  - Drainage piping installed deeper than and parallel to footings must be set away from the footing at a minimum of 45 degrees. See Figure 7-7.1.
  - Non-metallic drainage piping must have a green 18 gage tracer wire buried in the trench the entire length of the pipe. The end of the tracer wire must be left above finished grade at the cleanout next to the manufactured dwelling. See Figure 7-6.2

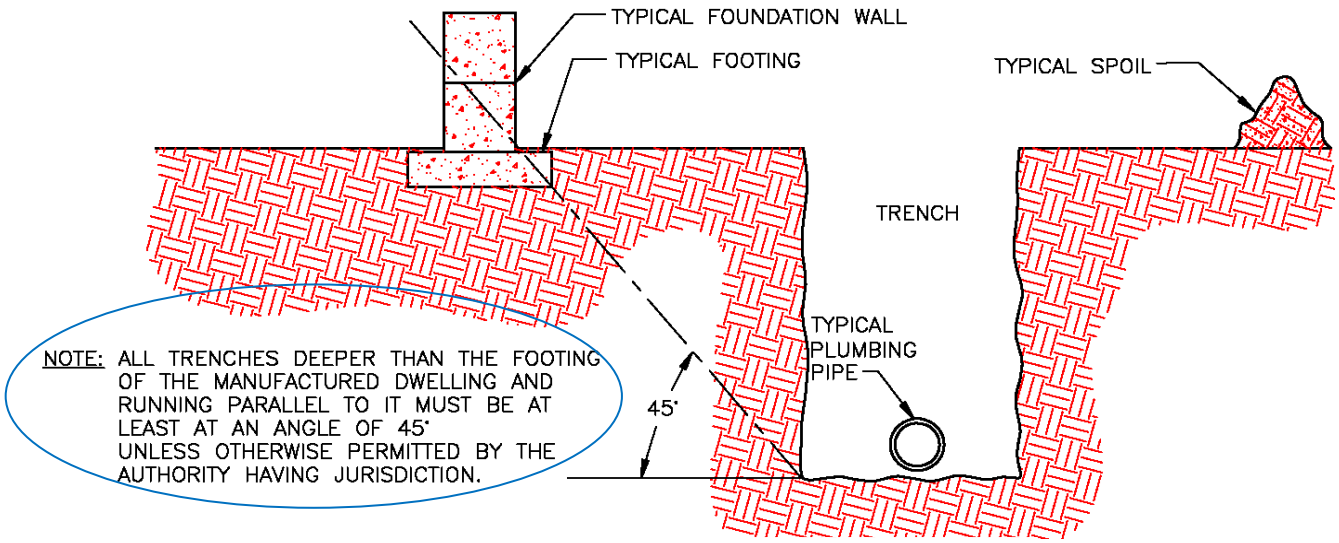


Figure 7-7.1 Typical Footing Setback from Trench

7-8 Drain Piping Crossover Connections

Drain line crossover connections in multisection manufactured dwellings must be connected in accordance with one of the following. See Figure 7-8.1

- With the materials supplied by the manufacturer and installed according to the manufacturer's installation instructions.
- With approved pipe and fitting connectors of the same diameter as the pipes and fittings being connected and not less than schedule 40 DWV (Drain, Waste, and Vent).
- With approved shielded flexible connectors.

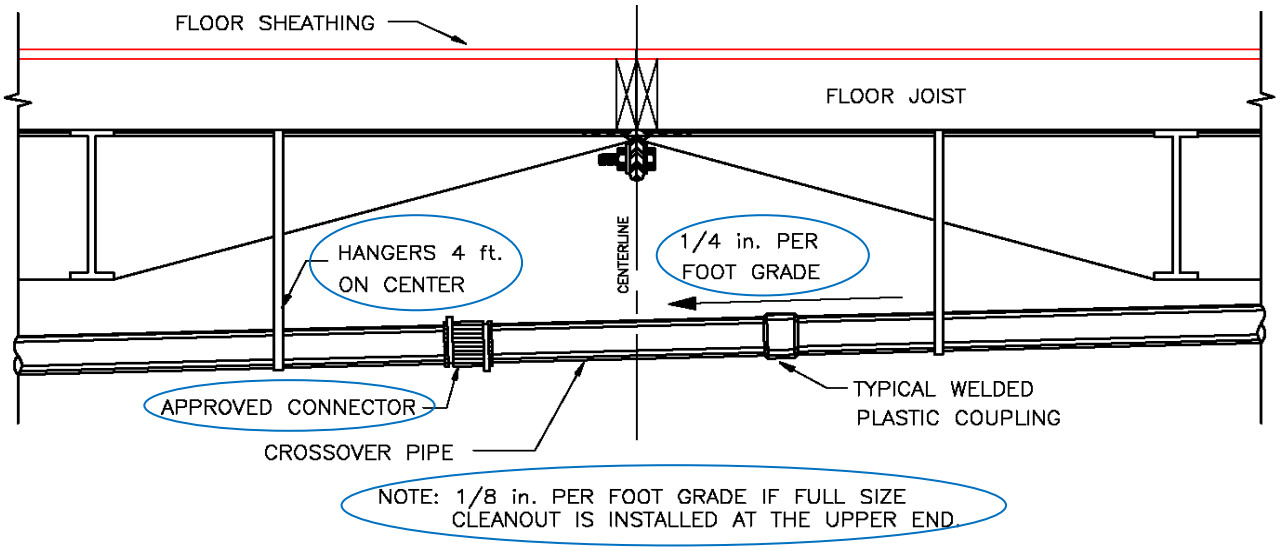


Figure 7-8.1 Typical Drain Line Support and Crossover Connection

7-9 Drainage System Testing

Drainage Test

- Upon completion of the building drain connection and marriage line crossover connection, the drainage system must be rechecked for leaks according to the following:
- Remove all access panels to all p-traps, cleanouts, and fixture drain connections inside the walls and floor.
  - Test each fixture or receptor, including the washer standpipe, for a minimum of 3 minutes by letting water flow through the fixture or receptor at the normal operating pressure.
  - If water under pressure is not available, test each fixture and receptor by pouring at least 3 gallons of water into each fixture and receptor.
  - Visually check each p-trap, cleanout, and fixture or receptor connection for leaks during the test.
  - After the test has been successfully completed, replace all insulation and access panels in floors and walls.

Test Failures

Upon failure of any of the tests, check all applicable field connections, repair any leaks, and repeat the applicable test. If tests continue to fail, notify factory authorized service personnel immediately and report failures. The site's water supply must remain off, except for further testing, until all leaks have been repaired.

Chapter 8
Mechanical Connections

8-1 General

Gas Supply

- Gas supply requirements not specifically covered in this code must be in accordance with the Oregon Residential Specialty Code, Chapter 24.
- The gas supply to the manufactured dwelling must be made with a 6 foot flexible gas connector.

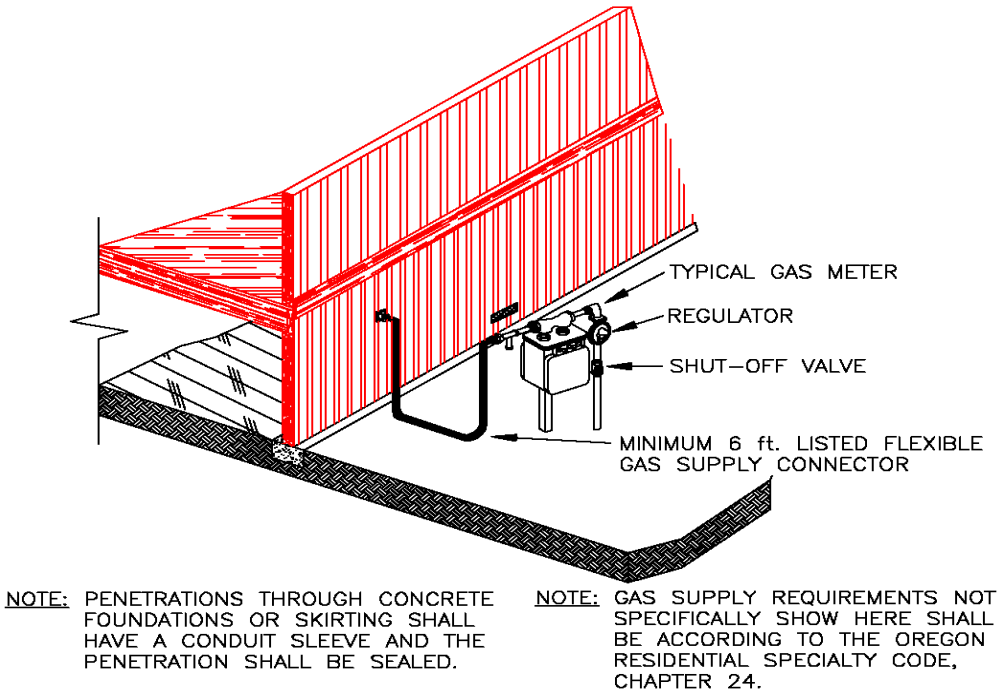


Figure 8-1.1 Typical Gas Supply Connection

8-2 Gas Supply Crossover Connections

- Multisection manufactured dwelling gas supply piping crossovers and fittings must be listed for exterior use and must be the same size as the main unit pipe.
- Gas supply piping crossover connections must be connected at the marriage line.
- Tools may not be used to connect or remove the flexible connector quick-disconnect. If a quick-disconnect is not used, an approved shutoff valve is required at each crossover point upstream of the connection.

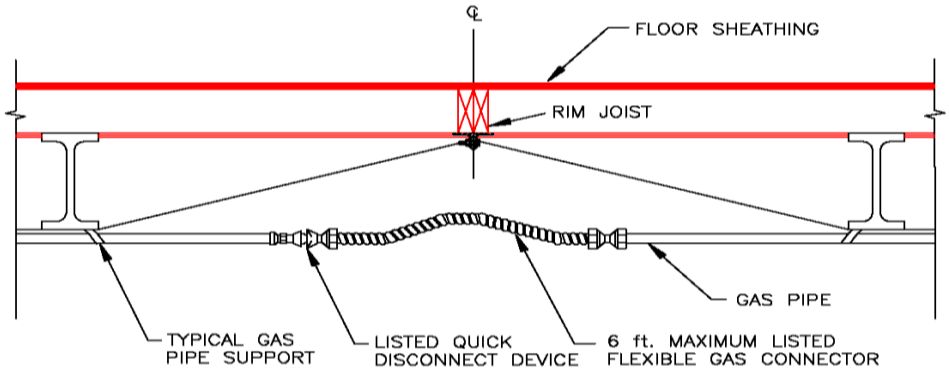


Figure 8-2.1 Typical Gas Supply Crossover Connection

8-3 Gas Supply Testing

Testing

Gas tests are required to be done in accordance with the following, based upon the Oregon Residential Specialty Code, Chapter 24.

- Appliances and equipment designed for operating pressures of less than the test pressure or is not to be included in the test must be either disconnected or isolated from the gas supply piping system. Individual appliance shutoff vales may be closed to isolate an appliance.
- Test pressure must be measured with a manometer or with a pressure-measuring device designed and calibrated to read, record, or indicate a pressure loss caused by leakage during the pressure test period.
- Gas piping systems under 14 inches water column pressure, must be tested at a pressure of not less than 10 PSI.
- Test pressure must be held for not less than 15 minutes with no drop in pressure.

Test Failures

Upon failure of the test, check all applicable connections, repair any leaks, and repeat the test. If test continues to fail, notify factory authorized service personnel immediately and report failures. The site's gas supply must remain off until all leaks have been repaired.

Connection Procedures

Gas burning–appliance vents must be inspected to ensure that they have been connected to the appliance and that roof jacks are installed and have not come loose during transit.

8-5 Under-Floor Ducts

- Under-floor heat and air conditioning ducts must:
  - Be listed to UL 181.
  - Have a minimum of R-8 insulation
  - Installed with a minimum of bends and excess length so as not to restrict airflow.
  - Be supported and connected according to the duct and appliance manufacturer's instructions.
  - Not be crushed, dented, or compressed.
  - Have all tears, holes, and penetrations sealed with approved foil tape or other approved duct sealer.
- Where extensions, splices or sharp turns (when the inside radius is less than the inside diameter of the duct) are used, they must be made with minimum 28 gage 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 vapor retarder required must be installed on all sheet metal extensions, elbows, tees, wyes, and collars.
- The inner liner must 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. Ducts may not have stress at the connection points.
- The outer liner, insulation, and vapor retarder must 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 must be sealed with approved foil tape or other approved duct sealer.
- Adequate clearances must be maintained under the manufactured dwelling for the under-floor heat and air conditioning ducts. Ducts must be elevated above the ground, footing, or slab a minimum of 1 in. with masonry or pressure treated blocks or straps.

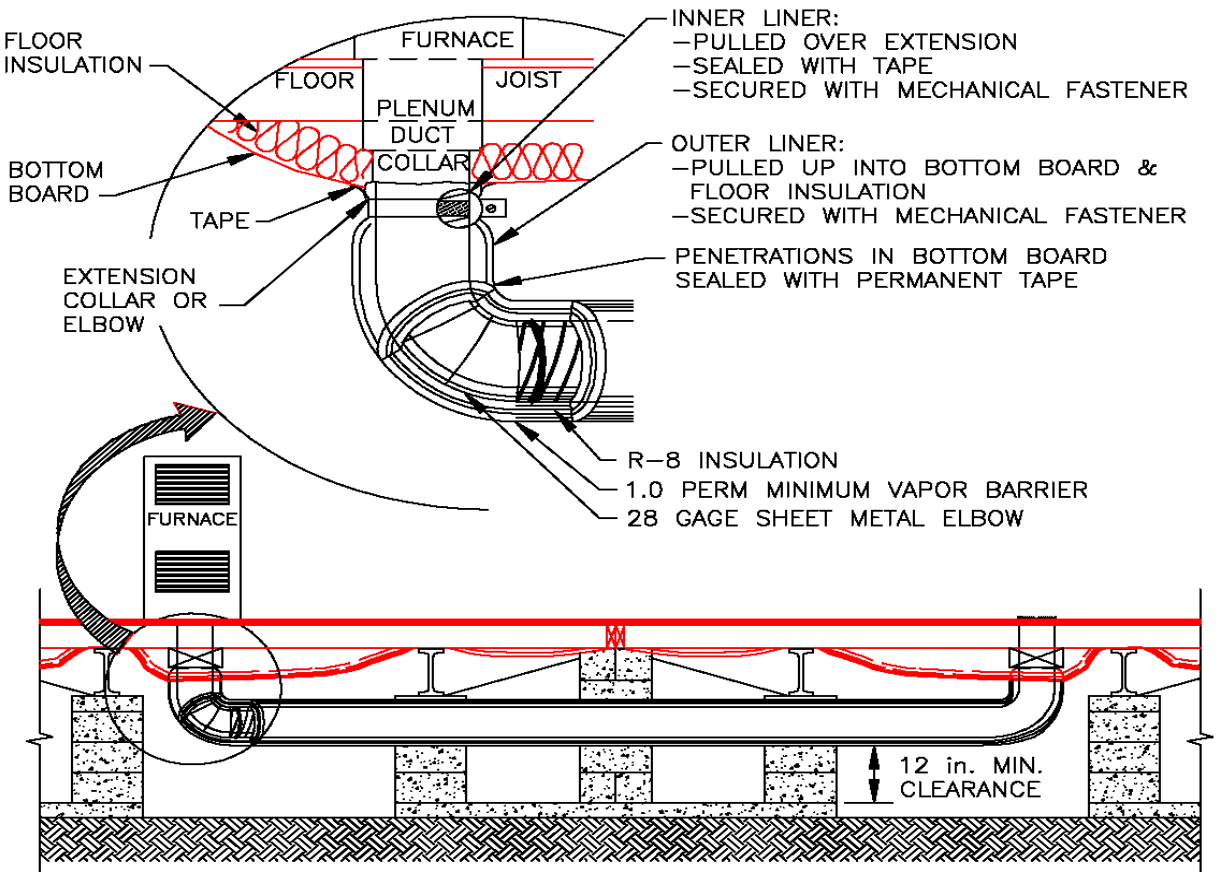


Figure 8-5 Typical Under-Floor Duct Crossover Connection

Chapter 9
Preparation of Appliances

9-1 Clothes Dryer Vent

- When a manufactured dwelling is wired for a clothes dryer, the clothes dryer vent must exhaust to the exterior of the home, beyond the perimeter skirting.
- Exhaust ducts must be:
  - A minimum 4 inch diameter.
  - 30 gage rigid metal, semi-rigid metal, or flexible metal.
  - A maximum length of 25 feet. The length must be reduced by 2–1/2 feet for each 45 degree bend, and 5 feet for each 90 degree bend.
- Exhaust ducts may not terminate in a garage, under-floor area, or accessory structure.

Note: Manufactured dwelling installers and limited installers must install the clothes dryer exhaust duct and route it to the exterior perimeter of the manufactured dwelling. If the installer or limited installer does not install the skirting, the limited skirting installer must complete the dryer exhaust duct installation through the skirting.

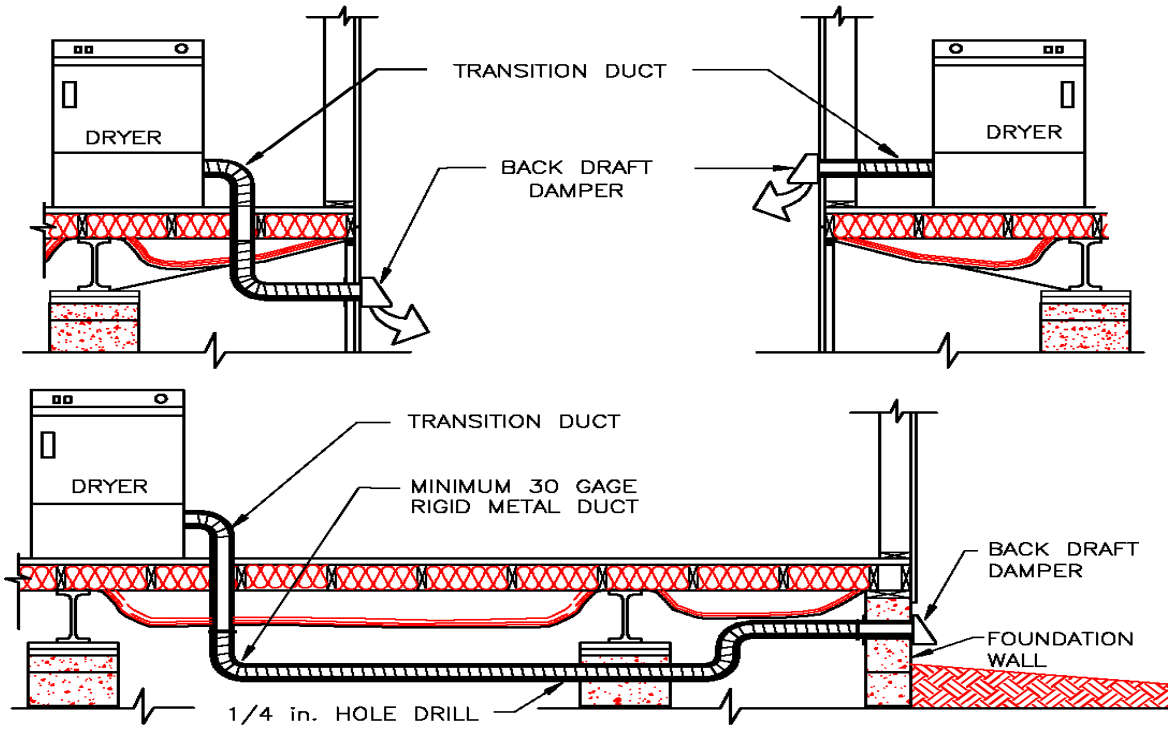


Figure 9-1.1 Typical Dryer Exhaust Duct Installation

9-2 Comfort Heating and Cooling Systems

Air conditioners and heat pumps may not exceed the rating shown on the home's compliance certificate and must installed according the equipment manufacturer's installation instructions. If the manufactured dwelling has a factory provided outlet for heating/air conditioning equipment, it must be equal to or greater than the minimum circuit ampacity identified on the equipment.

9-3 Solid Fuel-Burning Appliances

- Solid fuel-burning appliances may be installed in manufactured dwellings.
- Solid fuel-burning appliances must:
  - Be listed for use in manufactured dwellings or mobile homes.
  - Be installed according to 24 CFR 3280 (MHCSS), Section 3280.709, this code, and to the equipment manufacturer's installation instructions.
  - Be secured to the manufactured dwelling floor.
  - Not be installed in alcoves or sleeping areas, unless certain exceptions apply. See Section 9-3.2 Exception 1 and 2.
- Appliance chimneys, flues and vents may be shipped loose when they exceed the maximum heights permitted for highway travel or a part of an alternate construction home. Shipped loose portions of chimneys, flues, or vents must be installed according to the appliance manufacturer's installation instructions.
- The finished chimney must extend at least 3 feet above the highest point at which it penetrates the roof and at least 2 feet higher than any building or other obstruction located within a horizontal distance of 10 feet.

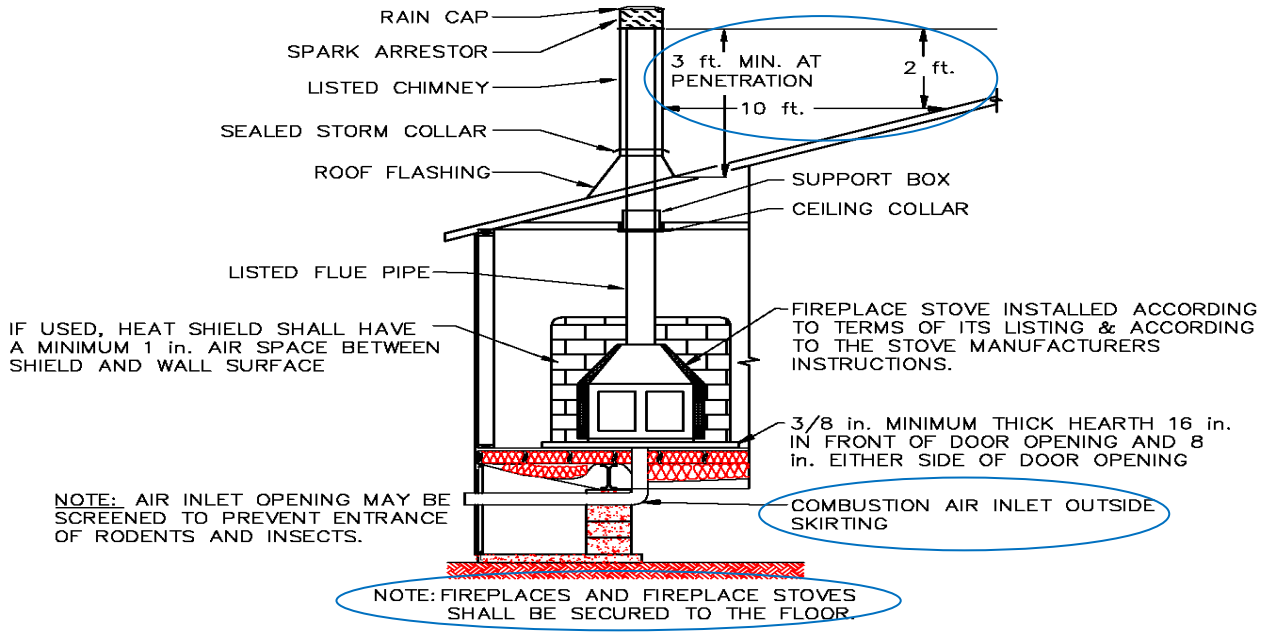


Figure 9-3.3 Typical Fireplace Stove Installation

9-4 Combustion Air Duct Inlets

- Combustion air intake ducts may not terminate under the home and must extend outside the skirting. See Figure 9-3.3
- The air intake ducts may not be installed in a garage cabana, basement, or other confined area.

9-5 Range, Cooktop, and Oven Venting

If the home is equipped with a combination range (cooktop/grill) or oven that contains its own exhaust system, the vent must exhaust to the exterior of the home. When the vent exhausts through the floor and if perimeter skirting is installed, the vent must extend through the exterior perimeter of the home.

9-6 Water Heaters

- Water heaters installed in a manufactured dwelling must be according to this section, and where not specific, to the manufacturer's installation instructions and the Oregon Residential Specialty Code.
- Water heaters installed in a manufactured dwelling during or prior to the initial sale to the first customer must be installed according to the manufactured dwelling manufacturer's installation instruction, consistent with 24 CFR 3280 (MHCSS). Water heaters must be listed for manufactured home or mobile home use.
- When water heaters are installed after the completion of the initial sales contract (new homes) or are installed as part of a secondary installation, they must be installed according to the following:
  - Listed, but do not have to be listed for manufactured home or mobile home use;
  - Installed according to the appliance manufacturer's installation instructions; and
  - If required to have a drain pan installed, the drain pan drain line must routed in a manner to drain to the exterior of the manufactured dwelling. See Figure 9-6.3.
  - The water heater pressure relief valve drain line must discharge below the manufactured dwelling. (24 CFR 3280 (MHCSS), Section 3280.609)
- Fuel-burning water heaters must be installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured dwelling by:
  - The installation of a listed direct vent (sealed combustion system) appliance; or
  - 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 may not be any door, removable access panel, or other opening into the enclosure from the inside of the manufactured dwelling. Any opening or penetrations for ducts, return air inlets, piping, or wiring must be sealed with non-combustible caulking or equal.
- Fuel-burning water heaters must be equipped with a direct vent combustion air inlet designed to conduct air directly into the fire chamber. Combustion air may not be taken from within any manufactured dwelling wall, floor, ceiling, or crawl space.
- Fuel-burning water heaters may be chimneys, flues and vents may be shipped loose when they exceed the maximum heights permitted for highway travel or are part of an alternate construction home. Shipped loose portions of chimneys, flues, or vents must be installed according to the appliance manufacturer's installation instructions.

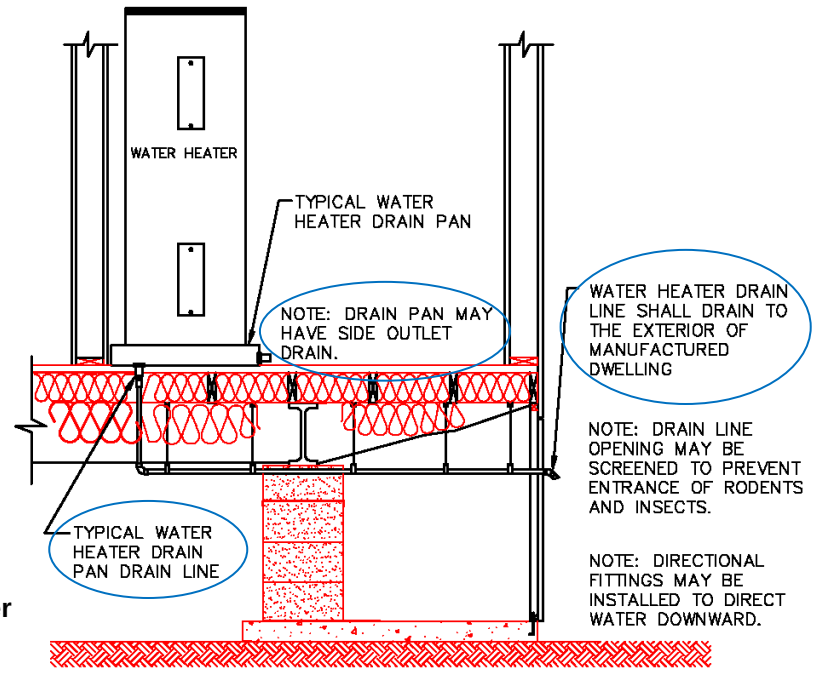


Figure 9-6.3 Typical Water Heater Drain Pan Drain Line

Chapter 10
Site Installed Features

10-1 General

Site installed features, including garages, porches, awnings, carports, cabanas, ramadas, decks, landing, stairs, and ramps must be constructed according to this code and where not specific, to the Oregon Residential Specialty Code.

Access and Egress - Garages

- Each manufactured dwelling must have a minimum of two egress doors.
- One of the manufactured dwelling exit doors must open directly outside without passing through any other accessory building.
- Garages may not be placed where a bedroom egress window is blocked unless there is a second egress window available or installed in the same bedroom.
- Egress doors may exit into a garage provided the garage also has an equally sized egress door exiting directly to the exterior. Excluding the vehicle door(s).

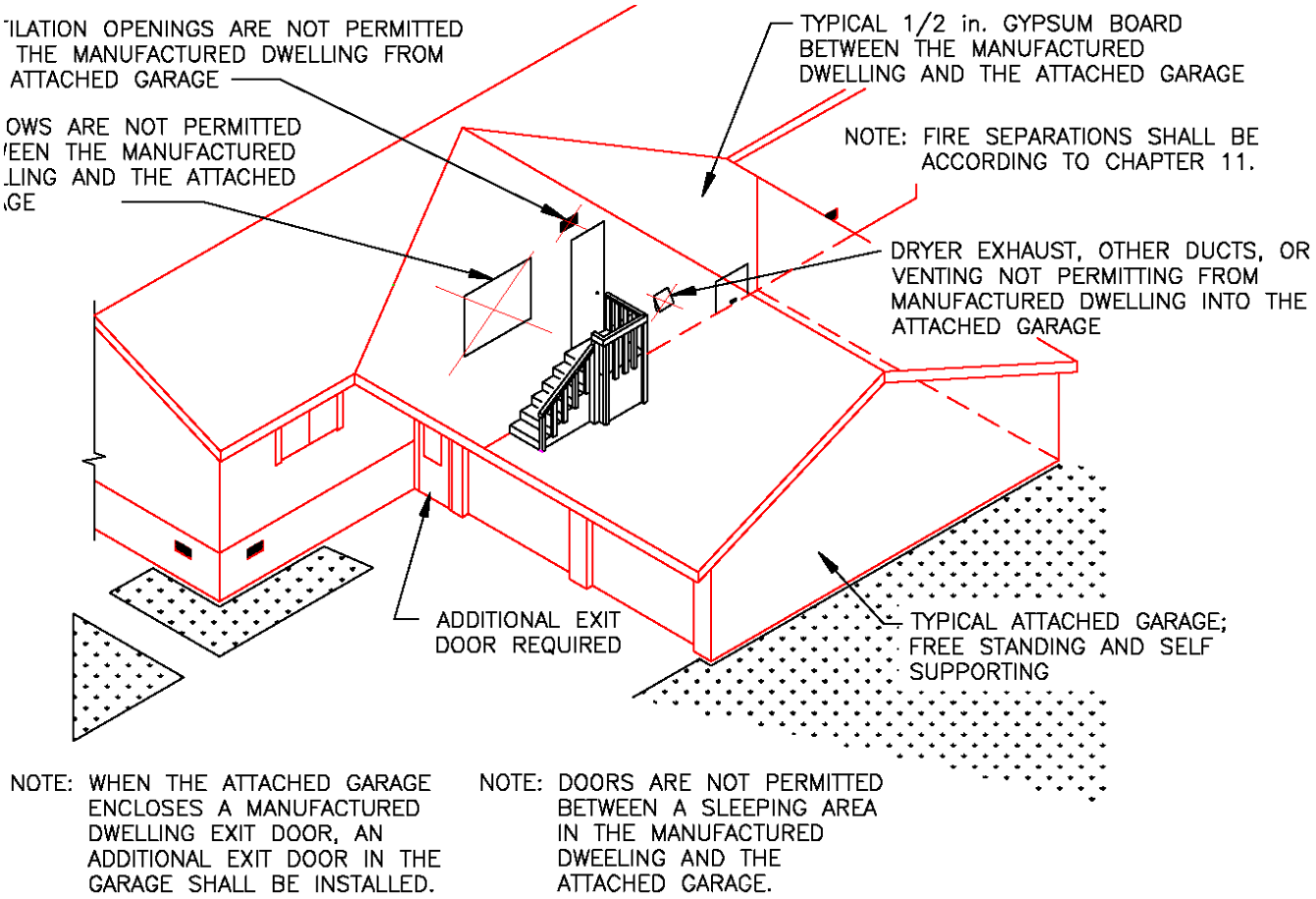


Figure 10-2 Typical Attached Garage

10-3 Other Structures

- Site constructed porches, awnings, carports, cabanas, ramadas, decks, landings, stairs, ramps, handrails, and guardrails must be constructed and inspected according to this code and, where not specific, to the Oregon Residential Specialty Code.
- These site-constructed structures must be free standing and self supporting.
  - They may be attached to the home with flashing material, roofing, or sealants.
  - They may not block a required egress.
  - Temporary steps may be used during installation. If used, temporary steps must meet the requirements of Section 10-3.4.
- Site built awnings and carports must be constructed, anchored, and supported according to the requirements of this code and, where not specific, to the Oregon Residential Specialty Code.
- Site built awnings and carports must be self supported, free standing structures, they may be attached to a manufactured dwelling only with flashing, roofing materials or other sealing materials to provide a weather seal to prohibit the trapping of water.
- When prefabricated, must be installed according to the structure manufacturer's installation instructions and this code
- Prefabricated awnings and carports may 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 the attached awning or carport.
- Prefabricated awnings and carports may be supported by the manufactured dwelling's exterior wall provided extra perimeter foundation support in that area consisting of one-half spaced perimeter blocking is installed.
- Factory-built or site constructed porches, decks, landings and stairways must have handrails and guardrails constructed and installed according to the Oregon Residential Specialty Code, Sections R311 and R312.

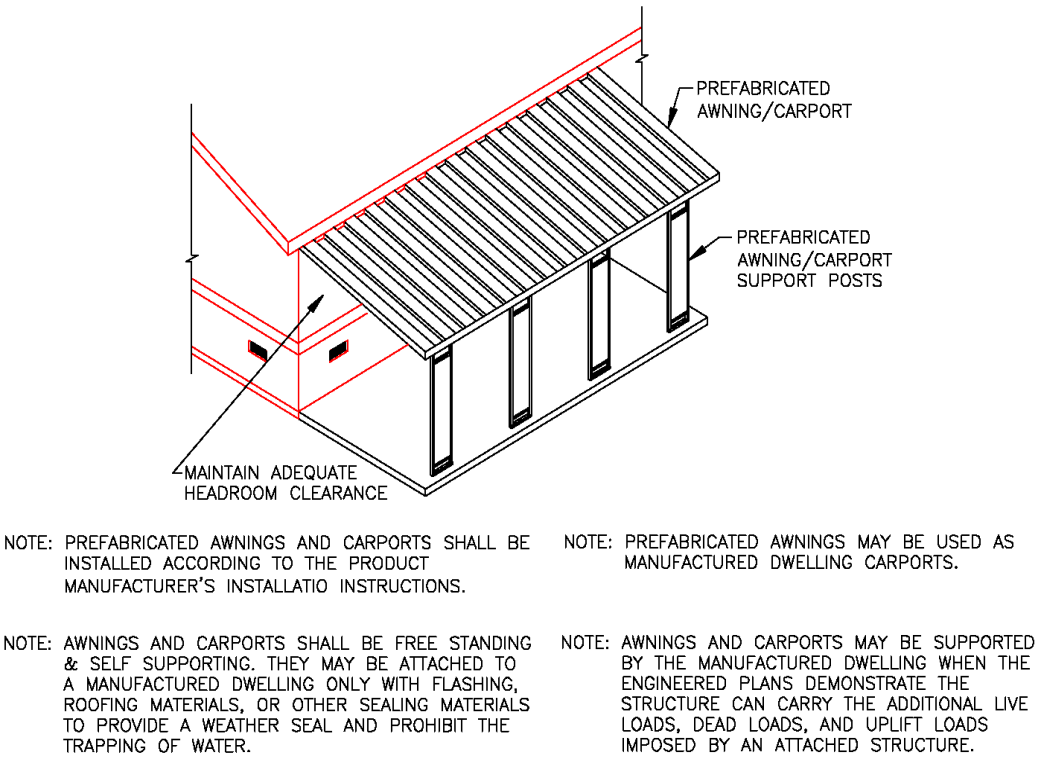


Figure 10-3.2 Typical Prefabricated Awning/Carport Installation

Dormers and Gables

Dormers may be installed over an existing roof and must be constructed according to the Oregon Residential Specialty Code, or may be constructed according to the manufacturer's DAPIA approved plans.

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. See Section 10-3.4.
- Temporary steps must be supported in a manner that provides safe, level, and stable stairs.

Ramadas

A ramada must be designed, constructed and installed according to the requirements of this code and, where not specific, to the Oregon Residential Specialty Code.

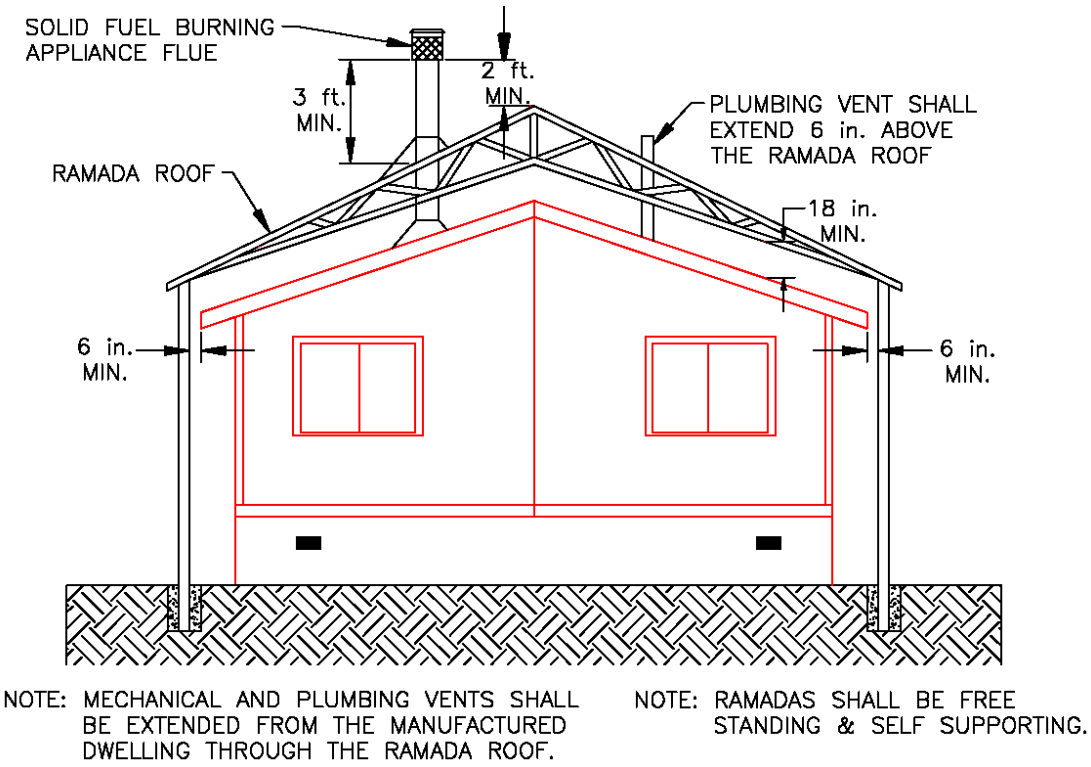


Figure 10-3.5 Typical Ramada Installation

Chapter 11
Fire and Life Safety

11-1 Smoke Alarms

- In new manufactured dwellings (the initial installation) 24 CFR 3280 (MHCSS) requires that manufactured dwelling manufacturer provide instructions on how to inspect and test smoke alarms. The number and location of the smoke alarms is established by HUD.
- For secondary installations smoke alarms must be tested to be sure the smoke alarm is connected and in working order.

Note: ORS 479.260 and OAR 837-045-0050 specific information relating to secondary manufactured dwelling installations.

Note: Administrative rule OAR 918-500-0590 provides a broader scope of smoke alarm requirements in different situations.

The following information from OAR 918-500-0590 is provided for information only:

Manufactured dwellings must have approved operating smoke alarms installed and located according to the following:

(1) At the time of initial sale and installation, a new manufactured dwelling must have operating smoke alarms installed complying with the federal Manufactured Home Construction and Safety Standards (24 CFR 3280).

(2) After the initial sale or installation, a manufactured dwelling must have approved operating smoke alarms according to 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;

(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 visual inspection is being performed on a manufactured dwelling by the division; and

(g) Prior to an Oregon insignia of compliance being issued by the division.

(3) Unless specified otherwise, smoke alarms must be installed according to the device manufacturer's instructions and located according to the following:

(a) In the living area remote from the kitchen and cooking appliances;

(b) In each room designated for sleeping;

(c) In the corridor or area giving access to sleeping areas; and

(d) On each additional level where sleeping areas are located.

11-2 Fire Separation Distances

- Each manufactured dwelling, accessory building, and accessory structure must be sited and installed to comply with the fire separation distances specified in this code.
- Fire separation distances outside a manufactured dwelling park must be in accordance with the Oregon Residential Specialty Code, Section R302, or the requirements of the municipality, whichever is more stringent.
- Fire separation distance inside a manufactured dwelling park must be as required in Table 11-2.3, and where not specific to the Oregon Residential Specialty Code.

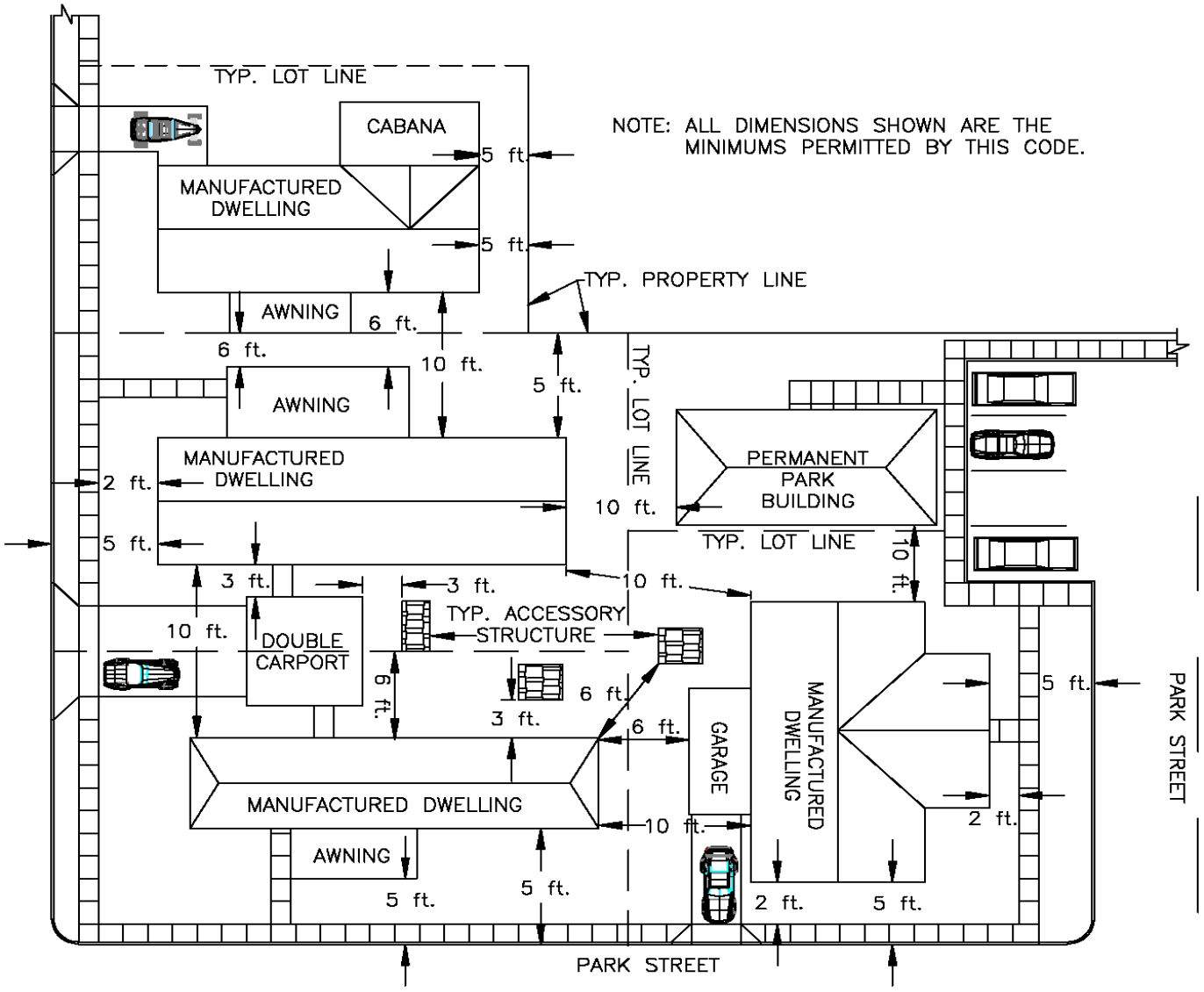


Figure 11-2.3 Typical Fire Separation Distances within a Manufactured Dwelling Park

Table 11-2.3 Minimum Setbacks and Fire Separation Inside Parks

	Manufactured Dwellings	Accessory Buildings	Accessory Structures
Property Line	5 ft.	5 ft.	5 ft.
Park Street	5 ft.	5 ft.	5 ft.
Park Sidewalk	2 ft.	2 ft.	0 ft.
Manufactured Dwelling on Same Lot	*See Note (1) & (2)*	3 ft.	0 ft.
Manufactured Dwelling on Adjacent Lot	10 ft.	6 ft.	6 ft.
Buildings on the Same Property	10 ft.	6 ft.	6 ft.
Accessory Buildings on Same Lot	3 ft.	3 ft.	0 ft.
Accessory Building on Adjacent Lot	6 ft.	6 ft.	6 ft.
Accessory Structures on Same Lot	0 ft.	0 ft.	0 ft.
Accessory Structures on Adjacent Lot	6 ft.	6 ft.	6 ft.

11-3 Fire Sprinkler Systems

Fire sprinkler systems, if provided, must have a water supply system that complies with NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes.

Administrative Rule Requirements
OAR 918-500 and 918-515

- Its important to understand that this code no longer contains all the information previously covered under the scope of the previous code, (2002 Manufactured Dwelling and Park Specialty Code). This includes, but is not limited to, alternate uses, certificate of occupancy, change of occupancy, warranty work, alterations, and the regulation of manufactured dwelling parks. Because these items do not relate to installation requirements of manufactured dwellings they have been adopted in to administrative rule.

Alternate Uses

- Manufactured dwellings are constructed, approved, and intended for use as detached single-family dwellings. However, manufactured dwellings may be used as other than detached single-family dwellings provided the manufactured dwelling remains in compliance with the requirements in OAR 918-500-0530.

Certificate of Occupancy and Change of Occupancy

- A certificate of occupancy is not required for a manufactured dwelling used for single-family dwelling occupancy. See OAR 918-500-0540(1).

- Converting a manufactured dwelling to another occupancy type or use must be in accordance with OAR 918-500-0540(2).

- When a manufactured dwelling is sold “as is” or “with all faults” and is intended to be used as a non-regulated structure, such as an agricultural use, the owner must remove all appliances, all plumbing fixtures in the kitchen, and baths, and must return any federal or state insignias or labels to the division. See OAR 918-500-0540(4).

Warranty Work

- Permits are not required for manufacturer’s warranty work on manufactured dwellings when completed by the manufacturer or the manufacturer’s representative. See OAR 918-500-0550.

Siting Without Insignia

- An insignia of compliance is not required to site a manufactured dwelling, unless the requirement is provided by the municipality. See OAR 918-500-0560.

Alterations

- Alterations to manufactured dwellings include, but are not limited to any change, addition, alteration, repair, conversion, replacement, modification, refurbishing, re-manufacturing, or removal of any part of the manufactured dwelling or manufactured dwelling equipment. See OAR 918-500-0580(1).

- Certain alterations are exempt from permit, but may not be exempt from the requirements of the Manufactured Dwelling Installation Specialty Code. See OAR 918-500-0580(2).

- Alterations before or at the time of sale to the first customer must conform to HUD standards and be inspected by the state Building Codes Division, except for certain site installed mechanical equipment. See OAR 918-500-580(4).

- Alterations to manufactured dwellings after the initial sale to the first customer must conform as specified in OAR 918-500-580(7).

- Listed or approved fuel burning appliances must be installed to provide for the complete separation of the combustion system from the interior atmosphere of the manufactured dwelling. See the Note in OAR 918-500-580(6).

- Re-roofing must conform to the requirements in OAR 918-500-0580(10).

- Two or more manufactured dwelling may be joined together to enlarge the total gross floor area according to the requirements in OAR 918-500-0580(11).

Smoke Alarms

- Manufactured dwelling must have approved operating smoke alarms installed and located according to the requirements in OAR 918-500-0590.

_____

END

STUDY GUIDE
PRACTICE EXAMINATION

Based upon the 2010 Manufactured Dwelling Installation Specialty Code

Applicants are *not* required to take or pass this practice examination. This practice examination has been provided as part the preparation for the actual license or certification examination.

Answers to the exam questions are provided at the end of the exam.

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1. Manufactured dwelling installation inspectors are required to assure that installer's certification tag(s) are affixed to the home during the final inspection?
   A. When a licensed installer performs the installation.
   B. When the home owner installs the home.
   C. Both A and B.
   D. None of the above.

2. Temporary steps must be removed and replaced with permanent steps or ramp prior to final inspection.
   A. True.
   B. False.

3. An installation permit shall be obtained from the building official prior to any work is performed that is regulated under the Manufactured Dwelling Installation Specialty Code.
   A. True.
   B. False.

4. The person who obtained the installation permit or their authorized agent is responsible for notifying the building official when work is ready for inspection.
   A. True.
   B. False.

5. A ramada may be constructed over a manufactured dwelling for the purposes of eliminating the dangers of excessive snow loads for a manufactured dwelling located in a high snow load area.
   A. True.
   B. False.

6. The minimum length for an approved flexible gas connector used to connect the manufactured dwelling to the gas supply connection shall be a minimum of:
   A. 6 ft. in length in seismic design category D_1.
   B. 6 ft. in length in seismic design category D_2.
   C. 6 ft in length in seismic design category C.
   D. All the above.

7. Effective April 1, 2010, manufactured dwelling must be anchored against the wind according to the following:
   A. New manufactured dwelling installations.
   B. Secondary installations of manufactured dwellings.
   C. Only in high wind areas according to the 2010 Manufactured Dwelling Installation Specialty Code.
   D. Both A and B.

8. Site grading and drainage shall be a minimum of ____ inch per foot away from the foundation for the first ____ feet.
   A. 3 and 5.
   B. 1/4 and 10.
   C. 1/2 and 10.
   D. 3/4 and 5.

9. A soil determined to have a bearing capacity of 1,000 PSF may be increased to 1,250 PSF by covering the stand with:
   A. Compacted soil 6 inches in depth.
   B. Engineered fill 6 inches in depth and compacted with two passes of a vibrating compacting machine.
   C. 6 inches of 3/4 inch-minus crushed rock.
   D. None of the above.

10. Load-bearing devices, such as footings, piers, shall be capable of individually supporting a minimum of:
   A. 3,000 pounds.
   B. 4,000 pounds
   C. 15,000 pounds.
   D. All the above.

11. Poured-in-place concrete shall have a minimum _____ compressive strength of _____.
   A. 7 day and 2,500 pounds.
   B. 14 day and 3,000 pounds.
   C. 28 day and 2,000 pounds.
   D. 28 day and 3,000 pounds.

12. _____ continuous concrete slab footings may be a minimum of 3–1/2 thick provided that backfill is limited to 8 inches or less.
   A. Three-pad-poured.
   B. Portland cement.
   C. Steel reinforced.
   D. Fiber reinforced.

13. The minimum number of ventilation openings required to vent the under-floor area is?
   A. It is determined by calculating the square footage of the home and dividing in by the vent opening size.
   B. Two vents are required on each end of a multi-section manufactured dwelling.
   C. Four (4) vents.
   D. Six (6) vents.

14. Access to the under-floor area must:
   A. Be provided from both the interior and the exterior of the home.
   B. Be a minimum of 18 inches X 24 inches in size.
   C. Must be a minimum of 12 inches below the main I-beam.
   D. None of the above.

15. Skirting shall be constructed of durable rigid material. Examples of durable rigid material include:
   A. Vinyl.
   B. Exterior grade plywood.
   C. Foam.
   D. All the above.

16. Holes or gaps at the bottom of the skirting is acceptable.
   A. True.
   B. False.

17. A typical CMU foundation wall shall have the open cells filled with _____.
   A. Air.
   B. Gravel.
   C. Portland cement.
   D. None of the above.

18. Structural skirting shall be supported by _____ or _____.
    A. 6 inches 3/4 inch crushed rock or foundation wall.
    B. A concrete foundation footing or slab.
    C. Both A and B.
    D. None of the above.

19. Multisection manufactured dwelling marriage lines shall be sealed. Acceptable sealing materials include:
    A. Sill seal.
    B. Closed cell foam.
    C. Non-porous caulking.
    D. All the above.

20. Gaps between multisection manufactured dwellings:
    A. Never happen and are not a problem.
    B. If smaller than 1/8 inch, do not need to be corrected.
    C. Shall be corrected by shimming or other acceptable sealing material.
    D. None of the above.

21. Multisection manufactured dwelling marriage line wall lag screws must be installed through pre-drilled pilot holes.
    A. True.
    B. False.

22. Marriage clips under the floor a multisection manufactured dwelling floor require:
    A. 1/2 inch diameter bolt and washers.
    B. 3/8 inch diameter lag screws and washers.
    C. According to the manufacturer's installation instructions.
    D. Any of the above.

23. All joints between multisection manufactured dwelling sections shall be sealed and weather-stripped.
    A. True.
    B. False

24. Roof penetrations around vents and chimneys shall be sealed.
    A. True.
    B. False.

25. Each chassis section of a multisection manufactured dwelling shall be bonded together at the marriage line with:
    A. # 8 copper conductor or with bolts or rods capable of conducting current from one chassis to another.
    B. # 12 aluminum conductor with star washer or paint penetrating device.
    C. # 8 copper conductor from the chassis to the ground rod for the electrical service.
    D. None of the above.

26. A manufactured dwelling electrical feeder may be:
    A. An underground feeder assembly.
    B. An overhead feeder assembly.
    C. A power cord feeder assembly.
    D. All the above.

27. What is the maximum distance, in feet, that electrical service equipment may be installed from a manufactured dwelling?
    A. 25.
    B. 30.
    C. 35.
    D. 40.

28. Electrical equipment and installations shall be according to the MDISC and where not specific, to the:
    A. NFPA 72.
    B. ANSI 70.
    C. Oregon Electrical Specialty Code.
    D. Uniform Electrical Code.

29. Conduit for underground feeders shall be sized according to:
    A. MDISC Table 6-2.1(b).
    B. MDISC Table 7-2.1(b).
    C. Oregon Electrical Specialty Code Table 210.24.
    D. None of the above.

30. Plumbing equipment and installations shall be according the MDISC and where not specific, to the:
    A. Uniform Plumbing Code
    B. IAPMO Standards
    C. Oregon Plumbing Specialty Code
    D. None of the above.

31. Typical horizontal drain piping shall be installed to provide a minimum ___ inch per foot grade:
    A. 1/8.
    B. 1/4.
    C. 1/2.
    D. 3/4.

32. Water supply piping:
    A. May be buried in the same trench as the drain piping.
    B. Shall be buried 12 inches below grade.
    C. Shall be buried 18 inches below grade and 12 inches below the frost line.
    D. Shall be buried with and 18 gage green insulated copper wire.

33. Water distribution system testing and drainage system testing shall be performed according to the:
    A. 2002 Manufactured Dwelling and Park Specialty Code.
    B. Oregon Residential Specialty Code.
    C. Oregon Manufactured Dwelling Installation Specialty Code.
    D. Oregon Plumbing Specialty Code.

34. Type ABS, PVC, or PE water piping may be installed under a manufactured dwelling:
    A. True.
    B. False.

35. Gas supply requirements not specifically covered in the MDISC shall be in accordance with:
    A. International Mechanical Code.
    B. International Fuel Gas Code.
    C. Oregon Residential Specialty Code, Chapter 24
    D. All the above.

36. If a quick-disconnect device is not used, an approved shutoff valve is required at each crossover:
    A. True.
    B. False.

37. Under-floor heating and air conditioning ducts shall be a minimum:
    A. 25 feet in length.
    B. R-8 insulation.
    C. R-9 insulation.
    D. Both A and B.

38. A sharp bend in an under-floor heating and air conditioning duct may exceed the inside diameter of the duct.
    A. True.
    B. False.

39. A solid fuel burning appliance chimney shall extend at least 3 feet above the highest point at which it penetrates the roof.
    A. True.
    B. False.

40. Heat producing appliances combustion air may be obtained from the under-floor area of a manufactured dwelling.
    A. True.
    B. False.

41. Fuel burning water heaters shall be installed to provide a complete separation of the combustion system from the interior atmosphere of the manufactured dwelling.
    A. True.
    B. False.

42. A clothes dryer exhaust duct shall be a maximum of ____ feet in length and shall be reduced by 5 feet for every ____ degree bend.
    A. 25 and 45.
    B. 30 and 90.
    C. 25 and 90.
    D. 90 and 25.

43. If an accessory structure or building is placed adjacent to an installed manufactured dwelling and the structure or building encloses an egress door, the structure or building must:
    A. Be relocated so that the egress door no longer opens into the structure or building.
    B. Never be located where an egress door will open into an accessory structure or building.
    C. Have an additional egress door installed in the accessory structure or building.
    D. Both A and C are correct.

44. Temporary steps, if built with pressure-treated lumber and placed on a level surface, may be used as permanent steps.
    A. True.
    B. False.

45. A manufactured dwelling located within a park must maintain a minimum of ___ feet from a manufactured dwelling located on an adjacent lot?
    A. 3.
    B. 5.
    C. 6.
    D. 10.

46. Manufactured dwellings located outside a manufactured dwelling park shall have the same setbacks and clearances specified in Table 11-2.3.
    A. True.
    B. False.

47. A licensed manufactured dwelling installer may perform the installation of an electrical service (meter base) on a manufactured dwelling.
    A. True.
    B. False.

48. Alterations to a manufactured dwelling after the initial sale to the first customer may conform to:
    A. Oregon Residential Specialty Code.
    B. 2002 Oregon Manufactured Dwelling and Park Specialty Code.
    C. Manufactured Home Construction and Safety Standards (HUD).
    D. A or C.

49. Certification tags may only issued to installers.
    A. True.
    B. False.

50. Certification tags shall be installed on a manufactured dwelling:
    A. In a visible location on the exterior wall at the rear end of the manufactured dwelling and near the insignia or HUD label.
    B. In a visible location on the exterior adjacent to the primary entrance door of the manufactured dwelling.
    C. In a visible location on the street facing side of the manufactured dwelling for easier identification by an installation inspector.
    D. May be placed on any visible location on the exterior at the request of the homeowner.

51. If multiple licensed installers are completing various portions of a manufactured dwelling installation, each installer must affix an individual certification tag for the work performed.
    A. True.
    B. False.

52. A manufactured dwelling installer's license is not required for excavating, concrete flat work, drywall, or carpet laying.
    A. True.
    B. False.

END

Answers

1. = A
   Ref: MDISC 1-7.1.3(12)
2. = A
   Ref: MDISC 1-7.1.3(4) & (5) and 10-3.4.1
3. = A
   Ref: MDISC 1-4.4
4. = A
   Ref: MDISC 1-7.4
5. = A
   Ref: MDISC 1-3.9
6. = D
   Ref: MDISC 3-2.5.1, 3-2.5.2, and 3-2.5.3
7. = D
   Ref: MDISC 3-2.3
8. = C
   Ref: MDISC 3-3.3(4)
9. = C
   Ref: MDISC 3-3.5.1(1)
10. = B
    Ref: MDISC 3-4.2
11. = D
    Ref: MDISC 3-6.2(6)
12. = D
    Ref: MDISC 3-6.2(4)
13. = C
    Ref: MDISC 4-10.1(2)
14. = B
    Ref: MDISC 4-11.1.1
15. = D
    Ref: MDISC 4-2.1
16. = B
    Ref: MDISC 4-2.2(6)
17. = C
    Ref: MDISC Table 4-3.2(b)
18. = B
    Ref: MDISC 4-4.2(2)
19. = D
    Ref: MDISC 5-1.2(2)
20. = C
    Ref: MDISC 5-2.2(5)
21. = A
    Ref: MDISC 5-2.1.2(1)(b)
22. = A
    Ref: MDISC 5-2.1.3(1)
23. = A
    Ref: MDISC 5-3.1
24. = A
    Ref: MDISC 5-3.1.1(7)
25. = A
    Ref: MDISC 6-4.4(1) & (2)
26. = D
    Ref: MDISC Table 6-2.1
27. = B
    Ref: MDISC 6-3.1(4)
28. = C
    Ref: MDISC 6-1.1
29. = A
    Ref: MDISC 6-2.2(3)
30. = C
    Ref: MDISC 7-1.1
31. = B
    Ref: MDISC 7-6.2(1)
32. = C
    Ref: MDISC 7-3.1(3)
33. = C
    Ref: MDISC 7-5 and 7-9
34. = B
    Ref: MDISC Table 7-2.1
35. = C
    Ref: MDISC 8-1.1
36. = A
    Ref: MDISC 8-2.3
37. = B
    Ref: MDISC 8-5.2.1
38. = B
    Ref: MDISC 8-5.2.2
39. = A
    Ref: MDISC 9-3.4
40. = B
    Ref: MDISC 9-4.1
41. = A
    Ref: MDISC 9-6.4
42. = C
    Ref: MDISC 9-1.1(6)
43. = C
    Ref: MDISC 10-2.2
44. = B
    Ref: MDISC 10-3.4.3
45. = D
    Ref: MDISC Table 11-2.3
46. = B
    Ref: MDISC 11-2.2
47. = B
    Ref: OAR 918-515-0150(e)
48. = D
    Ref: OAR 918-500-0580(7)
49. = B
    Ref: OAR 918-515-0300(2)
50. = A
    Ref: OAR 918-515-0310(2)
51. = A
    Ref: OAR 918-515-0300
52. = A
    Ref: OAR 918-515-0010(6)
    Note: “Flat work” includes concrete floors, driveways, patios, and sidewalks. Flat work does not include any concrete foundation or footing used for supporting a manufactured dwelling.