



**MFD. HOME PLACEMENT PERMIT**

**FOR DEPARTMENT USE ONLY**

Project:

Plan Review#:

Application Date:

TaxMap:

Tax

Lot:

Permit#:

Issue Date:

Subdivision:

Lot:

Block:

Assoc. Permits:

**JOB SITE INFORMATION**

**OWNER INFORMATION**

Address:			Name:		
City:	SEASIDE	State:	OREGON	Address:	
Direction:			Cty/St/Zip:		
to jobsite:			Phone:		FAX:

<input checked="" type="checkbox"/>	I am the property owner hiring a construction contractor	License #:	_____	Expires:	_____
<input type="checkbox"/>	I am licensed with the Building Codes Division	License #:	_____	Expires:	_____
<input type="checkbox"/>	I am registered with the Construction Contractors Board	Registration #:	_____	Expires:	_____
<input type="checkbox"/>	Above contractor's Seaside Business License	License #:	_____	Expires:	_____
<input type="checkbox"/>	I am the property owner <b>doing my own work</b>				

Contractor Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

ZONING	FLOOD PLAIN	SANITATION
Zone: _____	Flood: _____ Req. Elev. _____	City Sewer [ ] Septic [ ]
Initials _____	Initials _____	Initials _____

**MANUFACTURED DWELLING PERMIT FEES**

PERMIT ITEMS	COST (EACH)	NO. OF ITEMS	SUM
1) Installation/reinspection (a) Placement: (includes placement, electrical feeder, water/sewer connection)----- <b>Note: Placement permit to be obtained only by homeowner, or Oregon licensed manufactured dwelling installer</b>	\$160.00	1	\$160.00
2) Electrical: (a) Reinspection (per inspection)----- <b>Note: Service permits are issued by Clatsop County Building Codes</b>	\$35.00	N/A	0
3) Plumbing: (a) New water service	\$28.00	1	\$28.00
(b) New sanitation/storm sewer	\$28.00	1	\$28.00
<b>Note: Plumbing permit to be obtained only by homeowner performing work or Oregon licensed plumbing contractor performing work</b>			

(4) Planning Fees	General Development	Flood Plain	Erosion Control	Hazard Mitigation Plan---	0.00
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<b>FEE SUBTOTAL</b>	<b>\$216.00</b>
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(5) Miscellaneous Charges			
(a) 12% surcharge (applicable to above charges)-----			\$25.92
(b) State of Oregon Administrative Fee (on all placement permits)-----	\$30.00	1	\$30.00
(c) Reinspection installation (per inspection)-----	\$110.00		0
(e) Reinspection plumbing (per hour)-----	\$40.00		0

<b>GRAND TOTAL</b>	<b>\$271.92</b>
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APPLICANT'S SIGNATURE	DATE:
APPLICANT'S NAME (PLEASE PRINT):	

## MANUFACTURED DWELLING PERMITS NOW REQUIRE PLOT PLANS

Effective January 1, 1999, Oregon Administrative Rule (OAR) 918-500-0063 requires persons applying for manufactured dwelling installation permits to submit plot plans. This plot plan is intended to take the place of the site inspection, reducing the number of required inspections from three to two. For copies of these administrative rules, call Louann Goffin at (503) 373-7438.

### MINIMUM PLOT PLAN REQUIREMENTS

- \_\_\_\_\_ Approximate elevations at each corner;
- \_\_\_\_\_ Location of all cuts and fills on the lot;
- \_\_\_\_\_ Location of the manufactured dwelling and all accessory buildings and structures, including retaining walls;
- \_\_\_\_\_ Set-backs from property lines, lot lines, streets, public sidewalks, easements of record and other structures on the same or adjacent lots;
- \_\_\_\_\_ Intended finish grade;
- \_\_\_\_\_ Location and type of all site drainage including rain drains;
- \_\_\_\_\_ Where there is more than a 12 inch difference in elevation between two adjacent corners of a site, the plot plan shall include contour lines or shall be submitted with a cross-sectional drawing of the lot showing the approximate elevations of the lot; and
- \_\_\_\_\_ When installed outside a manufactured dwelling park, other information such as location of wells, septic tanks, leach lines, petroleum tanks, natural water ways, easements of record and other information necessary to assure health and safety may be required by the municipality.

Please note, the rules specifically state the above drawings **ARE NOT** required to be prepared by a professional architect or engineer.

## **MINIMUM INSTALLATION INSPECTION REQUIREMENTS**

(Please note: This is just a basic checklist. Depending on circumstances other items may be required.)

### **Foundation Installation**

- \_\_\_\_\_ Verification of the plot plan information, permits and soil compaction tests or soil investigation reports where required.
- \_\_\_\_\_ Stand preparation, vegetation removal and vapor barrier;
- \_\_\_\_\_ Pier and footing type, size and spacing;
- \_\_\_\_\_ Earthquake-resistant bracing; and
- \_\_\_\_\_ Marriage line connections.
- \_\_\_\_\_ Installation, plumbing and electrical permit verification;
- \_\_\_\_\_ Minimum setbacks;
- \_\_\_\_\_ Site graded and drained;
- \_\_\_\_\_ Controlled fill tested and report submitted;
- \_\_\_\_\_ Vapor barrier installed (if under footing); and
- \_\_\_\_\_ Poured in place footings and slabs, forms and reinforcement

### **Multi-Section Connections**

- \_\_\_\_\_ Weather stripping and weather seals;
- \_\_\_\_\_ Exposed structural connections; and
- \_\_\_\_\_ Tie-down anchor approval, location, attachment and installation (when required).

### **Plumbing Connections**

- \_\_\_\_\_ Shut off and pressure reducing valves
- \_\_\_\_\_ Heat tape and pipe insulation
- \_\_\_\_\_ Pipe size, material, grade and support;
- \_\_\_\_\_ Pipe fitting type, size, use and direction;
- \_\_\_\_\_ Cross-over pipe connections;
- \_\_\_\_\_ Water supply connection; and
- \_\_\_\_\_ Sewer or septic pipe connection

### **Electrical Connections**

- \_\_\_\_\_ Feeder type, size, clearance and installation
- \_\_\_\_\_ Service type, size, clearance and installation
- \_\_\_\_\_ Fixture type, support and connection;
- \_\_\_\_\_ Cross-over connection;

- \_\_\_\_\_ Conduit and fitting type, size, material and support;
- \_\_\_\_\_ Wiring type, size, material, securement; and
- \_\_\_\_\_ Wiring methods and connections

**Exterior Finish and Weather Seal**

- \_\_\_\_\_ Bottom board repair
- \_\_\_\_\_ Fire separation between adjacent structures (i.e. garage);
- \_\_\_\_\_ Temporary steps in place and supported on footings; and
- \_\_\_\_\_ Installer's certification tag

**MINIMUM FINAL INSPECTION REQUIREMENTS**

(Please note: This is just a basic checklist. Depending on circumstances other items may be required.)

- \_\_\_\_\_ Skirting or perimeter foundation installation;
- \_\_\_\_\_ Under-floor access provisions;
- \_\_\_\_\_ Under-floor ventilation;
- \_\_\_\_\_ Temporary step removal;
- \_\_\_\_\_ Permanent step or ramp installation;
- \_\_\_\_\_ Site grading and drainage;
- \_\_\_\_\_ Sidewalks and driveways;
- \_\_\_\_\_ Door and window adjustment, caulking and securement;
- \_\_\_\_\_ Accessory building and structure permits (i.e., deck, awning, carport, garage, etc.)
- \_\_\_\_\_ Under-floor dryer and range duct installation and termination;
- \_\_\_\_\_ Smoke detector location, installation and test; and
- \_\_\_\_\_ Ground fault circuit interrupter (GFCI) test.



#### Section 4.135 MANUFACTURED HOME ON AN INDIVIDUAL LOT



1. The manufactured home shall be multi-sectional and enclose a floor space of not less than 1,000 square feet.
2. Shall be placed on an excavated and back-filled foundation and enclosed at the perimeter such that the manufactured home is not located more than twelve inches (12") above grade.
3. Shall have a pitched roof with a nominal pitch of three feet (3') in height for each twelve feet (12') in width.
4. Shall not have bare metal siding or roofing.
5. Shall be certified by the manufacturer to have an exterior thermal envelope meeting performance standards which reduce levels equivalent to the performance standards required of single family dwellings constructed under the state building code as defined in ORS 455.010 OR efficiency standards.
6. Shall have a garage or carport constructed of like materials.
7. Shall utilize at least two of the following design features:
  - A. dormers
  - B. recessed entries
  - C. cupolas
  - D. bay or bow windows
  - E. attached garage
  - F. window shutters
  - G. off-sets on building face or roof (minimum 12")
  - H. gables
  - I. covered porch entry
  - J. pillars or posts
  - K. eaves (minimum 6")
  - L. tile or shake roof
  - M. horizontal lap siding.

## **Section 6.090 MANUFACTURED DWELLING PARK**

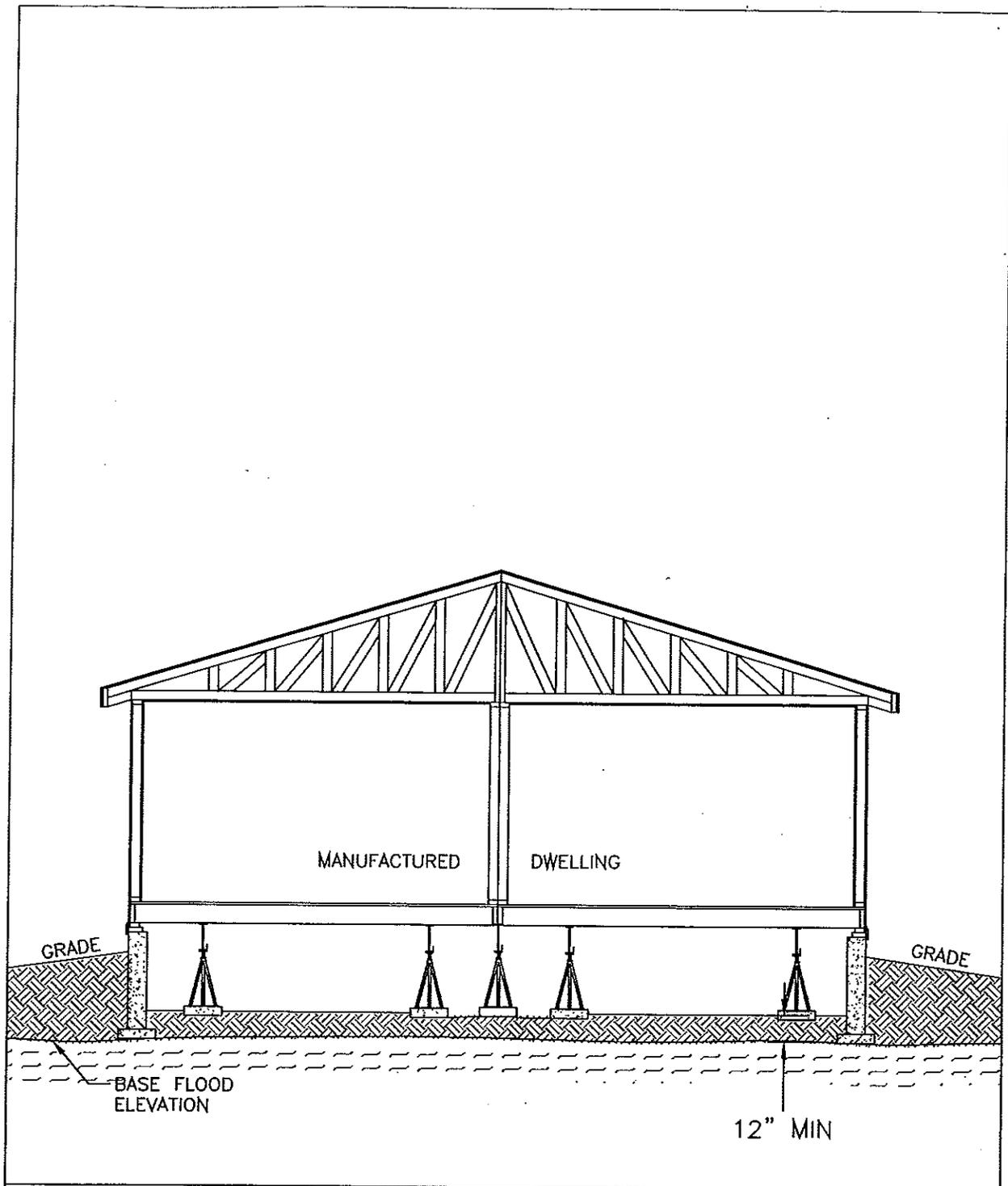
A Manufactured Dwelling Park may be permitted as a conditional use provided it meets the requirements of Chapter 446, "Oregon Revised Statutes" and the "Rules and Regulations Governing the Construction and Sanitary Operation of Traveler's Accommodations and Trailer Parks" adopted by the Oregon State Board of Health. In addition, the following minimum standards shall apply:

**Section 6.091 Minimum Area for a Manufactured Home.** The minimum area for a manufactured dwelling park shall be two acres.

**Section 6.092 Average Area for a Manufactured Home.** The average area of manufactured dwelling sites within the manufactured dwelling park shall be no less than 2,500 square feet, excluding roadways, recreation areas, and other accessory facilities. No manufactured dwelling site shall have an area less than 2,000 square feet.

**Section 6.093 Sight-Obscuring Fence.** A sight-obscuring fence, evergreen hedge or other evergreen planting maintained not less than six feet (6') high shall enclose the manufactured dwelling park on all sides except at points of ingress and egress and along public rights-of-way where it will not exceed three feet (3') in height. Section 4.050, Clear Vision Areas shall govern at street intersections.

**Section 6.094 Parking Space for a Manufactured Home.** A parking space shall be provided for each manufactured dwelling space on the site. In addition, guest parking spaces shall also be provided in every manufactured dwelling park within 200 feet of the manufactured dwelling spaces served, and at a ratio of one parking space for each dwelling space. Parking spaces shall have durable and dustless surfaces, be adequately maintained for all-weather use and shall be properly drained.

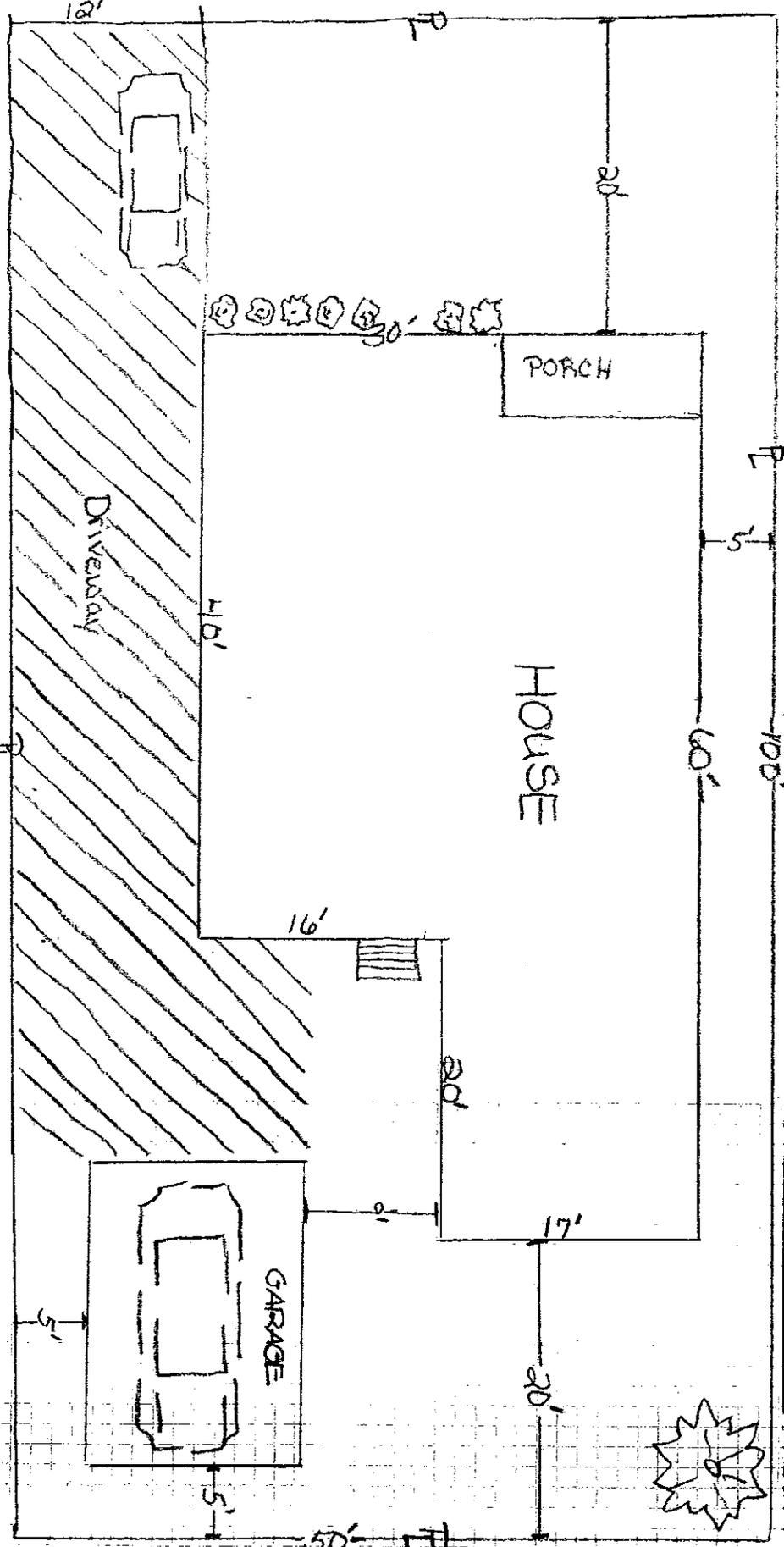


TYPICAL GROUND LEVEL OR PIT SET INSTALLATION

REV. 12/01/01 RHW	MANUFACTURED STRUCTURE AND PARK SPECIALTY CODES	CHAPTER 3 FIG. 3-2.4.1B
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(STREET NAME)

SAMPLE PLOT PLAN



SCALE=3/32"IN



AREA	
Lot size	5000 sq. ft.
Footprint residential	1540 sq. ft.
garage	280
Lot coverage	1820 or 36.4%

- Plot plan should include:
1. Scale and north arrow
  2. All structures on property (including decks & porches)
  3. Setbacks from ALL property lines and structures
  4. Access point
  5. Off-street parking area
  6. Lot dimensions
  7. Lot coverage

NOTE:  
A minimum of 5 feet must be maintained between buildings. Two parking spaces per dwelling unit for one and two family dwellings. A parking space must be a minimum of nine feet in width and 18 feet in length.

**Table 11-2.3 Minimum Setbacks and Fire Separation Inside Parks**

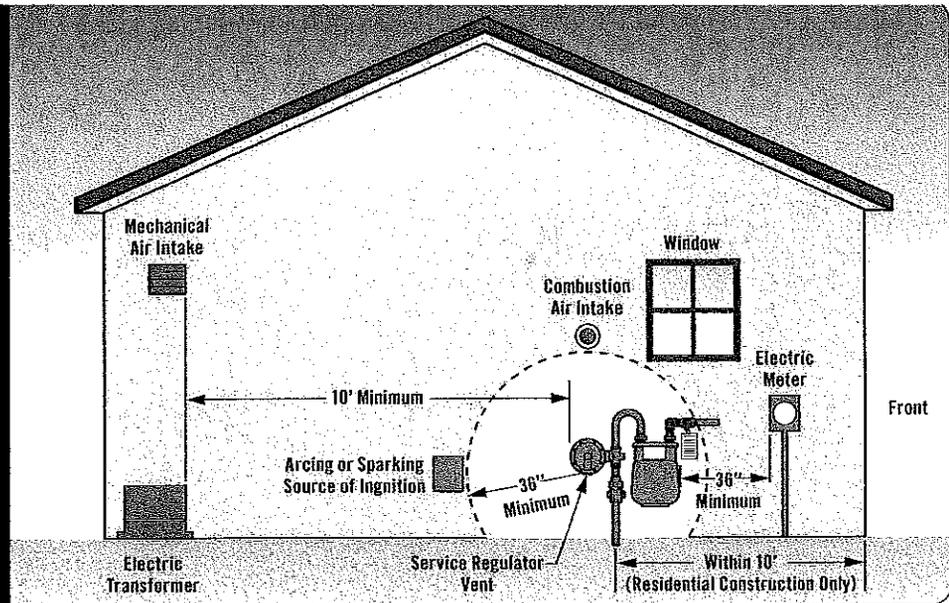
	<b>Manufactured Dwellings</b>	<b>Accessory Buildings</b>	<b>Accessory Structures</b>
<b>Property Line</b>	5 ft.	5 ft.	5 ft.
<b>Park Street</b>	5 ft.	5 ft.	5 ft.
<b>Park Sidewalk</b>	2 ft.	2 ft.	0 ft.
<b>Manufactured Dwelling on Same Lot</b>	<i>See Note (1) &amp; (2)</i>	3 ft.	0 ft.
<b>Manufactured Dwelling on Adjacent Lot</b>	10 ft.	6 ft.	6 ft.
<b>Buildings on the Same Property</b>	10 ft.	6 ft.	6 ft.
<b>Accessory Buildings on Same Lot</b>	3 ft.	3 ft.	0 ft.
<b>Accessory Building on Adjacent Lot</b>	6 ft.	6 ft.	6 ft.
<b>Accessory Structures on Same Lot</b>	0 ft.	0 ft.	0 ft.
<b>Accessory Structures on Adjacent Lot</b>	6 ft.	6 ft.	6 ft.

**NOTES:**

- (1) The building official may approve reduced setbacks and clearances than those dimensions in this table with the use of fire resistive construction according to the prescriptive requirements in the **Oregon Residential Specialty Code**.
- (2) Additional requirements in OAR 918-500-0530 may be applicable.
- (3) Setbacks from perimeter property lines and public streets may be greater than those dimensions shown in this table if the municipality adopted local amendments by ordinance.
- (4) Setbacks and clearances addressed in this table shall be measured to the exterior wall of the structure and shall not include the eave overhangs except for awnings and carports.

# NW Natural Meter Location Requirements

Effective April 1, 2011



## Meter Location Requirements

Effective April 1, 2011

- Above ground, adjacent to and outside of the building being served
- Along the building front or along the side of the building within 10 feet of the front (Residential construction only)
- In a location with adequate space for a standard meter set, accessible for maintenance, and protected from potential vehicular damage as required
- A minimum of 36 inches (horizontal measure) from any portion of the meter set to an electric meter
- A minimum of 10 feet from any portion of the meter set to an electric transformer
- A minimum of 10 feet from any portion of the meter set to any mechanical air intake opening
- A minimum of 8 feet 6 inches from any portion of the meter set to the centerline of any railroad track
- A minimum of 36 inches measured in any direction from the vent of the service regulator to:
  - A combustion air intake
  - A window that can be opened
  - Any natural gas appliance direct vent assembly as specified by the manufacturer
  - Any source of ignition that could arc or spark during normal operation
- Not under a carport roof, an awning, or an overhang larger than a standard eave.
- Not under a stairwell or staircase providing the only access or exit to the building (stairwells providing alternative access or exit to the building are an exception to this requirement)

**Note:** The restriction of placing a meter in a location not directly under overhead power lines has been eliminated and that option is now allowed.

If your retrofit requires a variance, or if you have any questions, please contact DG Graham at (503) 220-2433.

If you are a residential new construction builder with questions, please contact Roger Binns at (503) 721-2493.

# GFCI, smoke detector tests required on manufactured dwellings



by Patrick Lewis

Because of the number of failures reported by homeowners, the Manufactured Structures and Parks Advisory Board adopted OAR 918-500-0065 requiring manufactured dwelling installation inspectors to test the ground-fault circuit interrupter (GFCI) and smoke detectors on each manufactured dwelling installed.

Several jurisdictions have requested more information on the testing procedures required by the rule. It was the intent of the board to keep the testing simple.

The only smoke detector test necessary is for the inspector to press the test button on the device for five to ten seconds. If pressing the test button sets off the alarm, the test is a success. If the alarm doesn't sound, the test is unsuccessful and the failure needs to be identified as a code violation on the inspection report and requires correction.

On GFCIs, the inspector only needs to plug a GFCI/receptacle tester into each GFCI-protected receptacle and push the test button. If the test trips the GFCI, it is successful. If the GFCI does not trip, the GFCI failed the test and the inspector needs to identify the failure as a code violation on the inspection report and require a correction.

GFCI receptacles include receptacles located on the outside of an exterior wall, over a kitchen counter within six feet of a sink, and at each bathroom lavatory. If there are several receptacles protected by one GFCI, the inspector needs to reset the GFCI after each test until the whole circuit is tested. GFCI testing devices are available at most building supply stores and generally cost between \$5 and \$10 each.

For both tests, the inspector should make sure circuit breakers are in the "on" position for the circuits being tested. These same tests are also performed at the factory by the manufacturer of the home and again in the field by the installer.

These two tests fall under "final inspection duties." However, if the inspector has access to the home during the installation, the tests may be performed at any time, as long as there is power to the home. If the inspector **cannot** enter the home to perform these tests, the permittee should be informed that the final inspection cannot be approved until the tests take place. Jurisdictions may charge additional fees if inspectors are required to make additional trips to the home site for testing. Permittees should be told when permits are issued that the interior of the house must be accessible for the inspection and tests. ■



*Working with Oregonians  
to ensure safe building  
construction while  
supporting a positive  
business climate.*

**2010 Oregon Manufactured Dwelling Installation  
Specialty Code (MDISC)**

**Sections 2-1.3 and 3-2.4**

**2008 Oregon Residential Specialty Code (ORSC)**

**Section R324**

**Code Section:** 2010 MDISC Section 2-1.3 & 3-2.4  
2008 ORSC Section R324

**Code Edition:** 2010 MDISC  
2008 ORSC

**Date:** Effective January 1, 2011

**Subject:** Elevating manufactured dwellings in flood hazard areas.

**Questions:**

1. What is the correct method of determining the elevation of a manufactured dwelling intended to be installed in a flood hazard area?
2. Is there a different elevation requirement for manufactured dwellings intended to be installed in an existing manufactured dwelling park located in a flood hazard area?
3. Are under-floor crossover ducts required to be elevated above the Design Flood Elevation (DFE)?

**Answers:**

1. Manufactured dwellings intended to be installed in flood hazard areas must be elevated so that the bottom of the longitudinal chassis (I-beam) is at or above the DFE. *See Figure 1 on Page 3.*  
*Note: Anchoring requirements remain in effect.*
2. No, manufactured dwellings intended to be installed in flood hazard areas must be elevated so that the bottom of the longitudinal chassis (I-beam) is at or above the DFE despite the home being located in an existing manufactured dwelling park. *See Figure 1 on Page 3.*  
*Note: Anchoring requirements remain in effect.*
3. No, under-floor crossover ducts are not required to be elevated above the DFE.

Building Codes Division ♦ Department of Consumer and Business Services ♦ State of Oregon  
1535 Edgewater NW Salem, Oregon ♦ PO Box 14470 Salem, OR 97309-0404  
503-378-4133 ♦ Fax 503-378-2322 ♦ [bcd.oregon.gov](http://bcd.oregon.gov)



*In accordance with OAR 918-008-0110, the information contained in this statewide code interpretation is legally binding on any party involved in activities regulated by applicable Oregon law, applicable Oregon regulations or the state building code. If the information contained in this statewide code interpretation is cited as a basis for a civil infraction, a representative of the jurisdiction must cite the interpretation number found in this document.*

## Analysis:

1. Certain adopted specialty codes in Oregon establish the minimum requirements for elevating structures in order to protect them from flood waters. Elevation requirements in these codes have been developed to meet or exceed the Federal Emergency Management Agency (FEMA) requirements. When the MDISC was developed, the division took into consideration the flood elevation requirements in the ORSC because of the FEMA compliant provisions in that code. The MDISC, Section 3-2.4 refers users of the code to the ORSC for elevation provisions for manufactured dwelling installations.

Additionally, local jurisdictions typically adopt a flood damage prevention ordinance compliant with FEMA requirements, which incorporates by reference applicable adopted Oregon specialty codes. Model ordinance language is maintained by the Oregon Department of Land Conservation and Development.

Key elements of this issue.

- The ORSC, Section R324 requires the “lowest floor” of a site built home located in a flood hazard area to be elevated at least 12 inches above DFE.
- The MDISC defines lowest floor as the bottom of the longitudinal chassis (I-beam) and requires the installation to also comply with the ORSC, Section R324.1.8. Under this method, an additional (*unnecessary*) 12 inches is added to the bottom of the longitudinal chassis (I-beam).

This inadvertent error was created during the development of the 2010 MDISC and was missed during the code review committee process. The intent of the definition was to establish that a manufactured dwelling located in a flood hazard area must be elevated so that the bottom of the longitudinal chassis (I-beam) is at or above the DFE.

This code interpretation makes it clear that the definition of “lowest floor” in the ORSC, Section R324 and the extra 12 inches of height required do not apply to manufactured dwelling installations. This extra elevation, in some cases, may require the foundation system to be engineered, which adds substantial costs.

2. The MDISC is applicable to both new and secondary installations of manufactured dwellings located inside or outside of manufactured dwelling parks. Manufactured dwellings installed in flood hazard areas must be elevated so that the bottom of the longitudinal chassis (I-beam) is elevated at or above the DFE despite the home being located in a new or existing park, or located outside a park.

The division determined that it was irresponsible to allow manufactured dwellings intended to be installed in existing manufactured dwelling parks located in flood hazard areas to be installed so that the bottom of the longitudinal chassis (I-beam) is below the DFE. Owners or occupants of these homes should have equivalent protections from flood damage that other homes have when installed in flood hazard areas.

3. Under-floor crossover ducts are exempted from being required to be elevated above the DFE since their cost is minimal in comparison to the cost of elevating the home. Under the previous manufactured dwelling installation code, under-floor crossover ducts were not required to be elevated above the DFE.

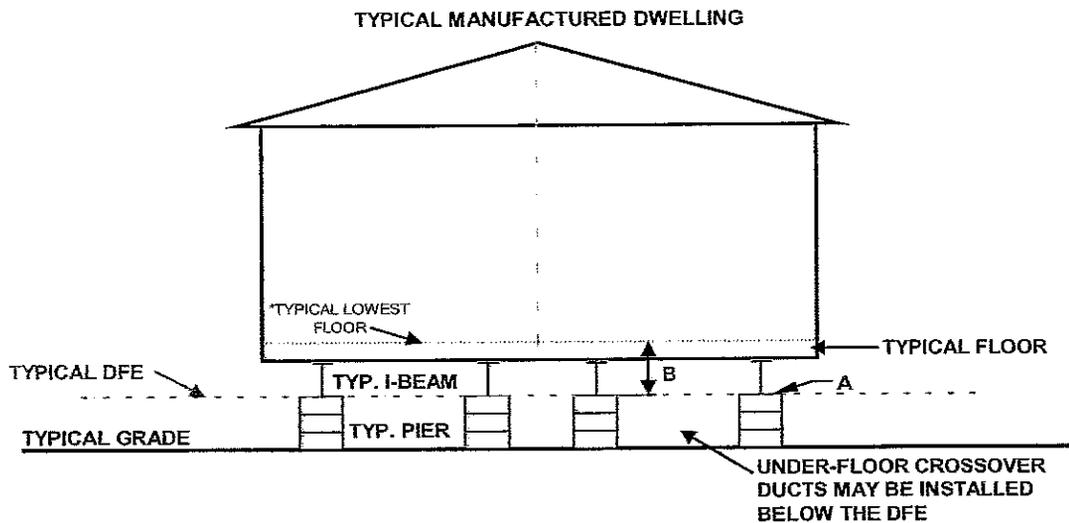
## Contact:

Richard J. Baumann, Policy Analyst

[Richard.J.Baumann@state.or.us](mailto:Richard.J.Baumann@state.or.us)

(503) 373-7559

FIGURE 1 – ELEVATING IN FLOOD HAZARD AREAS



**NOTE:** This code interpretation and the figure above specify that manufactured dwellings (new or secondary) intended to be installed in a flood hazard area must be elevated so that the bottom of the longitudinal chassis (I-beam) is elevated at or above the Design Flood Elevation (DFE).

– DFE is equivalent to Base Flood Elevation (BFE)

**A** = Identifies the bottom of the longitudinal chassis (I-beam) for the purposes of elevating a manufactured dwelling intended to be installed in a flood hazard area.

**B** = This dimension is provided for the purposes of demonstrating that manufactured dwellings elevated according to this code interpretation meet or exceed the minimum elevation requirements established by FEMA. The distance from the \*lowest floor" to the bottom of the longitudinal chassis (I-beam) is typically about 20 inches.

within the components and to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation in accordance with ASCE 24. Electrical wiring systems are permitted to be located below the required elevation provided they conform to the provisions of the *Electrical Code* for wet locations.

**R322.1.7 Protection of water supply and sanitary sewage systems.** New and replacement water supply systems shall minimize or eliminate infiltration of flood waters into the systems in accordance with the plumbing provisions of this code. New and replacement sanitary sewage systems shall minimize or eliminate infiltration of floodwaters into systems and discharges from systems into floodwaters in accordance with the plumbing provisions of this code.

**R322.1.8 Flood-resistant materials.** Building materials used below the elevation required in Section R322.2 (flood hazard areas including A Zones) or R322.3 (coastal high-hazard areas including V Zones) shall comply with the following:

1. All wood, including floor sheathing, shall be pressure-preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use or be the decay-resistant heartwood of redwood, black locust or cedars. Preservatives shall be listed in Section 4 of AWPA U1.
2. Materials and installation methods used for flooring and interior and *exterior walls* and wall coverings shall conform to the provisions of FEMA/FIA-TB-2.

**R322.1.9 Manufactured homes.** New or replacement *manufactured homes* shall be elevated in accordance with Section R322.2 or Section R322.3 in coastal high-hazard areas (V Zones). The anchor and tie-down requirements of Sections AE101 and AE102 of Appendix E shall apply. The foundation and anchorage of *manufactured homes* to be located in identified floodways shall be designed by a *registered design professional* and constructed in accordance with ASCE 24.

**R322.1.10 As-built elevation documentation.** A *registered design professional* shall prepare and seal documentation of the elevations specified in Section R322.2 or R322.3.

**R322.2 Flood hazard areas (including A Zones).** All areas that have been determined to be prone to flooding but not subject to high velocity wave action shall be designated as flood hazard areas. Flood hazard areas that have been delineated as subject to wave heights between 1½ feet (457 mm) and 3 feet (914 mm) shall be designated as Coastal A Zones. All building and structures constructed in whole or in part in flood hazard areas shall be designed and constructed in accordance with Sections R322.2.1 through R322.2.3.

**R322.2.1 Elevation requirements.** For the purposes of Section R322, required elevations shall be a minimum of 1 foot (305 mm) above the design flood elevation unless increased by the local jurisdiction under the authority of

National Flood Insurance Program (NFIP) incorporated in 423 U.S.C. 40001-4128.

1. Buildings and structures in flood hazard areas not designated as Coastal A Zones shall have the lowest floors elevated at least 1 foot above the design flood elevation.
2. Buildings and structures in flood hazard areas designated as Coastal A Zones shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or to the design flood elevation, whichever is higher.
3. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including *basement*) elevated at least as high above the highest adjacent *grade* 1 foot above as the depth number specified in feet on the FIRM, or at least 3 feet (915 mm) if a depth number is not specified.
4. Basement floors that are below *grade* on all sides shall be elevated at least 1 foot above the design flood elevation.

**Exception:** Enclosed areas below the design flood elevation, including *basements* whose floors are not below *grade* on all sides, shall meet the requirements of Section R322.2.2.

5. The finished ground level of an under-floor space such as a crawl space shall be equal to or higher than the outside finished ground level.

**Exception:** Under-floor spaces that meet the requirements of FEMA/FIA-TB-11.

**R322.2.2 Enclosed area below design flood elevation.** Enclosed areas, including crawl spaces, that are below the design flood elevation shall:

1. Be used solely for parking of vehicles, building access or storage.
2. Be provided with flood openings that meet the following criteria:
  - 2.1. There shall be a minimum of two openings on different sides of each enclosed area; if a building has more than one enclosed area below the design flood elevation, each area shall have openings on exterior walls.
  - 2.2. The total net area of all openings shall be at least 1 square inch (645 mm<sup>2</sup>) for each square foot (0.093 m<sup>2</sup>) of enclosed area, or the openings shall be designed and the *construction documents* shall include a statement by a *registered design professional* that the design of the openings will provide for equalization of hydrostatic flood forces on exterior walls by allowing for the automatic entry and exit of floodwaters as specified in Section 2.6.2.2 of ASCE 24.
  - 2.3. The bottom of each opening shall be 1 foot (305 mm) or less above the adjacent ground level.

- 2.4. Openings shall be not less than 3 inches (76 mm) in any direction in the plane of the wall.
- 2.5. Any louvers, screens or other opening covers shall allow the automatic flow of floodwaters into and out of the enclosed area.
- 2.6. Openings installed in doors and windows, that meet requirements 2.1 through 2.5, are acceptable; however, doors and windows without installed openings do not meet the requirements of this section.

**R322.2.3 Foundation design and construction.** Foundation walls for all buildings and structures erected in flood hazard areas shall meet the requirements of Chapter 4.

**Exception:** Unless designed in accordance with Section R404:

1. The unsupported height of 6-inch (152 mm) plain masonry walls shall be no more than 3 feet (914 mm).
2. The unsupported height of 8-inch (203 mm) plain masonry walls shall be no more than 4 feet (1219 mm).
3. The unsupported height of 8-inch (203 mm) reinforced masonry walls shall be no more than 8 feet (2438 mm).

For the purpose of this exception, unsupported height is the distance from the finished *grade* of the under-floor space and the top of the wall.

**R322.3 Coastal high-hazard areas (including V Zones).** Areas that have been determined to be subject to wave heights in excess of 3 feet (914 mm) or subject to high-velocity wave action or wave-induced erosion shall be designated as coastal high-hazard areas. Buildings and structures constructed in whole or in part in coastal high-hazard areas shall be designed and constructed in accordance with Sections R322.3.1 through R322.3.6.

**R322.3.1 Location and site preparation.**

1. New buildings and buildings that are determined to be substantially improved pursuant to Section R105.3.1.1, shall be located landward of the reach of mean high tide.
2. For any alteration of sand dunes and mangrove stands the *building official* shall require submission of an engineering analysis which demonstrates that the proposed *alteration* will not increase the potential for flood damage.

**R322.3.2 Elevation requirements.**

1. All buildings and structures erected within coastal high hazard areas shall be elevated so that the lowest portion of all structural members supporting the lowest floor, with the exception of mat or raft foundations, piling, pile caps, columns, grade beams and bracing, is:
  - 1.1. Located at least 1 foot (305 mm) above the design flood elevation, if the lowest horizontal structural member is oriented parallel to the

direction of wave approach, where parallel shall mean less than or equal to 20 degrees (0.35 rad) from the direction of approach, or

- 1.2. Located at the base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher, if the lowest horizontal structural member is oriented perpendicular to the direction of wave approach, where perpendicular shall mean greater than 20 degrees (0.35 rad) from the direction of approach.

2. Basement floors that are below *grade* on all sides are prohibited.
3. The use of fill for structural support is prohibited.
4. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios and walkways.

**Exception:** Walls and partitions enclosing areas below the design flood elevation shall meet the requirements of Sections R322.3.4 and R322.3.5.

**R322.3.3 Foundations.** Buildings and structures erected in coastal high-hazard areas shall be supported on pilings or columns and shall be adequately anchored to those pilings or columns. Pilings shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Water loading values used shall be those associated with the design flood. Wind loading values shall be those required by this code. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile systems design and installation shall be certified in accordance with Section R322.3.6. Mat, raft or other foundations that support columns shall not be permitted where soil investigations that are required in accordance with Section R401.4 indicate that soil material under the mat, raft or other foundation is subject to scour or erosion from wave-velocity flow conditions. Slabs, pools, pool decks and walkways shall be located and constructed to be structurally independent of buildings and structures and their foundations to prevent transfer of flood loads to the buildings and structures during conditions of flooding, scour or erosion from wave-velocity flow conditions, unless the buildings and structures and their foundation are designed to resist the additional flood load.

**R322.3.4 Walls below design flood elevation.** Walls and partitions are permitted below the elevated floor, provided that such walls and partitions are not part of the structural support of the building or structure and:

1. Electrical, mechanical, and plumbing system components are not to be mounted on or penetrate through walls that are designed to break away under flood loads; and
2. Are constructed with insect screening or open lattice; or
3. Are designed to break away or collapse without causing collapse, displacement or other structural damage

## APPENDIX E

# MANUFACTURED HOUSING USED AS DWELLINGS

### SECTION AE101 ANCHORAGE INSTALLATIONS

**AE101.1 Ground anchors.** Ground anchors shall be designed and installed to transfer the anchoring loads to the ground. The load-carrying portion of the ground anchors shall be installed to the full depth called for by the manufacturer's installation directions and shall extend below the established frost line into undisturbed soil.

Manufactured ground anchors shall be listed and installed in accordance with the terms of their listing and the anchor manufacturer's instructions and shall include means of attachment of ties meeting the requirements of Section AE102. Ground anchor manufacturer's installation instructions shall include the amount of preload required and load capacity in various types of soil. These instructions shall include tensioning adjustments which may be needed to prevent damage to the manufactured home, particularly damage that can be caused by frost heave. Each ground anchor shall be marked with the manufacturer's identification and listed model identification number which shall be visible after installation. Instructions shall accompany each listed ground anchor specifying the types of soil for which the anchor is suitable under the requirements of this section.

Each approved ground anchor, when installed, shall be capable of resisting an allowable working load at least equal to 3,150 pounds (14 kN) in the direction of the tie plus a 50 percent overload [4,725 pounds (21 kN) total] without failure. Failure shall be considered to have occurred when the anchor moves more than 2 inches (51 mm) at a load of 4,725 pounds (21 kN) in the direction of the tie installation. Those ground anchors which are designed to be installed so that loads on the anchor are other than direct withdrawal shall be designed and installed to resist an applied design load of 3,150 pounds (14 kN) at 40 to 50 degrees from vertical or within the angle limitations specified by the home manufacturer without displacing the tie end of the anchor more than 4 inches (102 mm) horizontally. Anchors designed for connection of multiple ties shall be capable of resisting the combined working load and overload consistent with the intent expressed herein.

When it is proposed to use ground anchors and the building official has reason to believe that the soil characteristics at a given site are such as to render the use of ground anchors advisable, or when there is doubt regarding the ability of the ground anchors to obtain their listed capacity, the building official may require that a representative field installation be made at the site in question and tested to demonstrate ground anchor capacity. The building official shall approve the test procedures.

**AE101.2 Anchoring equipment.** Anchoring equipment, when installed as a permanent installation, shall be capable of resisting all loads as specified within these provisions. When

the stabilizing system is designed by an engineer or architect licensed by the state to practice as such, alternative designs may be used, providing the anchoring equipment to be used is capable of withstanding a load equal to 1.5 times the calculated load. All anchoring equipment shall be listed and labeled as being capable of meeting the requirements of these provisions. Anchors as specified in this code may be attached to the main frame of the manufactured home by an approved  $\frac{3}{16}$ -inch-thick (4.76 mm) slotted steel plate anchoring device. Other anchoring devices or methods meeting the requirements of these provisions may be permitted when approved by the building official.

Anchoring systems shall be so installed as to be permanent. Anchoring equipment shall be so designed to prevent self disconnection with no hook ends used.

**AE101.3 Resistance to weather deterioration.** All anchoring equipment, tension devices and ties shall have a resistance to deterioration as required by this code.

**AE101.4 Tensioning devices.** Tensioning devices, such as turnbuckles or yoke-type fasteners, shall be ended with clevis or welded eyes.

### SECTION AE102 TIES, MATERIALS AND INSTALLATION

**AE102.1 General.** Steel strapping, cable, chain or other approved materials shall be used for ties. All ties shall be fastened to ground anchors and drawn tight with turnbuckles or other adjustable tensioning devices or devices supplied with the ground anchor. Tie materials shall be capable of resisting an allowable working load of 3,150 pounds (14 kN) with no more than 2 percent elongation and shall withstand a 50 percent overload [4,750 pounds (21 kN)]. Ties shall comply with the weathering requirements of Section AE101.3. Ties shall connect the ground anchor and the main structural frame. Ties shall not connect to steel outrigger beams which fasten to and intersect the main structural frame unless specifically stated in the manufacturer's installation instructions. Connection of cable ties to main frame members shall be  $\frac{5}{8}$ -inch (15.9 mm) closed-eye bolts affixed to the frame member in an approved manner. Cable ends shall be secured with at least two U-bolt cable clamps with the U portion of the clamp installed on the short (dead) end of the cable to assure strength equal to that required by this section.

Wood floor support systems shall be fixed to perimeter foundation walls in accordance with provisions of this code. The minimum number of ties required per side shall be sufficient to resist the wind load stated in this code. Ties shall be evenly spaced as practicable along the length of the manufactured home with the distance from each end of the home and the tie

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.

**NOTES:**

- (1) The building official may approve reduced setbacks and clearances than those dimensions in this table with the use of fire resistive construction according to the prescriptive requirements in the **Oregon Residential Specialty Code**.
- (2) Additional requirements in OAR 918-500-0530 may be applicable.
- (3) Setbacks from perimeter property lines and public streets may be greater than those dimensions shown in this table if the municipality adopted local amendments by ordinance.
- (4) Setbacks and clearances addressed in this table shall be measured to the exterior wall of the structure and shall not include the eave overhangs except for awnings and carports.

## CHAPTER 11 FIRE AND LIFE SAFETY

### 11-1 Smoke Alarms.

**11-1.1.** As required by **24 CFR 3280 (MHCSS)** manufacturers shall provide instructions on how to inspect and retest each smoke alarm during initial installation of the home, and provide homeowners with operating and testing information from the smoke alarm manufacturer.

**11-1.2.** When a manufactured dwelling is relocated, each smoke alarm, as required in **ORS 479.260** and **OAR 837-045-0050**, shall be tested to assure it is connected and in working order.

**ORS 479.260 is not part of this code but is reproduced here for the reader's convenience:**

**479.260 Transfer of dwelling unit or lodging house without smoke alarm or smoke detector prohibited.** (1) A person may not convey fee title to any real property that includes a dwelling unit or lodging house, or transfer possession of any dwelling unit or lodging house pursuant to a land sale contract, unless there is installed in the dwelling unit or lodging house a smoke detector or the required number of approved smoke alarms, installed in accordance with the state building code and rules of the State Fire Marshal adopted under **ORS 479.295**. The smoke alarms required by this subsection must meet the requirements of **ORS 479.297**.

(2)(a) A person may not convey ownership or transfer possession of any manufactured dwelling, as defined in **ORS 446.003**, unless there is installed in the manufactured dwelling the required number of approved smoke alarms or smoke detectors, installed in accordance with the state building code or with the federal manufactured dwelling construction and safety standards adopted under **ORS 446.155**.

(b) A smoke alarm installed in a manufactured dwelling that is resold by a person other than the manufacturer or authorized dealer must meet the requirements of **ORS 479.297**.

**OAR 837-045-0050 is not part of this code but is reproduced here for the reader's convenience:**

#### **837-045-0050**

#### **Installation and Location of Smoke Alarms and Smoke Detectors**

(1) All smoke alarms or smoke detectors shall be installed and located in accordance with the listing and manufacturer's instructions and **OAR 837-045-0045** through **837-045-0060**.

#### (2) Dwelling Units:

(a) Smoke alarms and smoke detectors in dwelling units shall be installed in each sleeping room as per

the applicable requirements of the State Building Code at the time of construction and in the corridor or area giving access to sleeping areas according to the manufacturer's instructions. Where sleeping areas are located on an upper level, the smoke alarm or smoke detector shall be installed in an accessible location as close as practical to the center of the ceiling directly over the stairway. Where sleeping areas are widely separated (i.e., on different levels or opposite ends of the dwelling unit) and/or where a single smoke alarm or smoke detector will not adequately service all sleeping areas, a smoke alarm or smoke detector shall be installed adjacent to each sleeping area.

(b) When activated, the installed smoke alarm(s) or smoke detector(s) shall produce an alarm sound audible in the dwelling unit, guestroom(s) and sleeping area(s).

#### (3) Efficiency Dwelling Units, Lodging Houses and Hotels:

(a) In an efficiency dwelling unit, lodging house guestroom or hotel room or suite, the smoke alarm or smoke detector shall be installed on the ceiling or a wall of the main room or sleeping area.

(b) When activated, the smoke alarm(s) or smoke detector(s) shall produce an alarm sound audible in the main room and sleeping area(s).

### 11-2 Fire Separation Distances.

**11-2.1.** Fire separation distances shall comply with the requirements of this code and where not specific, to the **State Building Code**.

**11-2.2.** Fire separation distances outside a manufactured dwelling park shall be in accordance with the **Oregon Residential Specialty Code**, Section **R302**, or the requirements of the municipality, whichever is more stringent.

**11-2.3.** Fire separations within a manufactured dwelling park shall be as required **Table 11-2.3**, as per **ORS 446.100**, and where not specific, to the **Oregon Residential Specialty Code**.

**ORS 446.100 is not part of this code but is reproduced here for the reader's convenience:**

**446.100 Prohibited acts in connection with construction and use of parks; rules for spacing of units.** (1) A person may not:

(a) Construct a mobile home or manufactured dwelling park at a place that is unsuitable due to swampy terrain, lack of adequate drainage or proximity to the breeding places of insects or rodents.

(b) Install a manufactured dwelling closer than five feet from a property boundary line.

(c) Construct in a mobile home or manufactured dwelling park a manufactured dwelling space less than 30 feet in width or less than 40 feet in length.

(2) The Director of the Department of Consumer

# THE FLOOR TO BE 1 FT. ABOVE

**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.