



Manufactured Home Update

Oregon Department of Consumer & Business Services ■ Building Codes Division

January 2007

Take steps to prevent site-drainage problems

By Dwight West

It is time again to remind everyone about the importance of proper site drainage. Site-drainage issues continue to be at the upper end of the top 10 complaints that BCD deals with during consumer assistance inspections.

Granted, it's difficult to tell during the push out and site prep at some sites whether there will be a drainage problem. But other sites have all the indicators for drainage or water-table problems. Pit-set homes on flat land commonly have water problems.

When we get involved, there are several issues to sort out: Contracts are not clear, owners say they didn't know there would be a problem, contractors don't inform owners, inspectors don't take action, and owners don't want to pay for additional preventative measures.

Chapter 3 of the Oregon Manufactured Dwelling and Park Specialty Code covers the requirements fairly well for what one must do if the site is suspected to have poor drainage or a high water table or if the home is to be pit set. Retailers and

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Data plates contain useful information

By Dan Jones

The data plate required by HUD 3280.5 is an 8.5-by-11 sheet permanently affixed to the manufactured home in an accessible and visible location. The data plate may be located in few different areas, depending on the year the home was built and the manufacturer that built it. Typically, it is found inside a kitchen or utility room cabinet or shelf, in a pantry, or in a bedroom closet.

The information on the data plate should include the name and address of the home's manufacturer, serial number and A/C noted if applicable, model

designation, date of manufacture (the date the HUD Label was installed), HUD Label numbers assigned to the home, a list of factory-installed equipment (brand name and model of appliances), and the wind zone and roof load to which the home was constructed.

Many homes are being constructed with high roof loads and or under an A/C letter. Dealers, contractors, and inspectors always should take a

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contractors should go over this with owners during the preparatory stage so they can arrange funding, take preventative measures, or at least disclose the potential problem to the owner. From there, the site inspection or plot plan review should consider the possibility of a wet stand.

Skirting masons should consider informing the owners that block skirting should be waterproofed

if the site looks like a wet area and the home is to be pit set or backfilled, and they should bid the job accordingly.

Water under the home is a serious issue that can cause health problems and deterioration of the home and the foundation system. It also can cause energy inefficiency. Water under the home is not something to ignore, and it is far easier to prevent than to cure. ■

Data plates, *continued from page 1*

moment and verify the roof load and whether the home was built under an A/C letter, so they can perform the installation and inspection properly.

The Oregon Manufactured Dwelling and Park Specialty Code is the installation standard for homes up to a 30-pound live load max. If the roof load exceeds 30 pounds, the home should be installed and inspected according to the manufacturer's installation instructions. This typically requires more centerline and perimeter pier support among other things. If the home was built under an A/C letter, that portion of the installation and inspection must be performed according to the A/C letter that the manufacturer provides.

During recent inspections, we have noticed that some vents have not been installed at all, or that the vents and their shingles have not been installed properly — which could potentially cause a leak. Please take a moment to review the installation instructions. Verify that all the on-site installed vents such as roof, plumbing, bath fans, whole house, and electric and gas appliance vents are extended to the outside of the home. Ensure an adequate amount of sealant is applied to the roof flashing so that the underside of the flashing is sealed to shingles and water cannot enter through the sides and or the bottom of the flashing into the roof. Also make sure the overlaying shingles are properly cut, staggered, and embedded to the topside of the flashing.

The data plate provides a lot of valuable information — for both the homeowner and the industry. It should be referred to not just during the initial installation, but if there are plans to relocate or add additions to the home. Although some may vary a little in appearance depending on the manufacturer, they all require the same information about the home. ■

Manufacturer Address

Plant Number

Date of Manufacture	HUD Label No.(s)
Manufacturer's Serial Number and Model Unit Designation	
Design Approval by (D.A.P.I.A.)	
This manufactured home is designed to comply with the federal manufactured home construction and safety standards in force at time of manufacture. (For additional information, consult owner's manual.)	

The factory installed equipment includes:

Equipment	Manufacturer	Model Designation
For heating	_____	_____
For air cooling	_____	_____
For cooking	_____	_____
Refrigerator	_____	_____
Water Heater	_____	_____
Clothes Dryer	_____	_____
Dishwasher	_____	_____
Garbage Disposal	_____	_____
Fireplace	_____	_____
_____	_____	_____
_____	_____	_____

HOME CONSTRUCTED FOR Zone I Zone II Zone III
 This home has not been designed for the higher wind pressure and anchoring provisions required for ocean/coastal areas and should not be located within 1500' of the coastline in Wind Zones II and III, unless the home and its anchoring and foundation system have been designed for the increased requirements specified for Exposure D in ANSI/ASCE 7-98.

This home has _____ has not _____ been equipped with storm shutters or other protective coverings for windows and exterior door openings. For homes designed to be located in Wind Zones II and III, which have not been provided with shutters or equivalent covering devices, it is strongly recommended that the home be made ready to be equipped with these devices in accordance with the method recommended in manufacturer's printed instructions.



Adequate marriage line sealing prevents drafts

By Mark Campion

As every installer has experienced, the sections do not always come together tight. However, since about 99 percent of all installers use closed cell foam around the perimeter joists, endwalls, and ceiling, we don't spend a lot of time worrying about how tight the sections fit together. The code even allows gaps up to 1 inch without full depth shimming. For gaps between 1 inch and 1 ½ inches, a full depth shim is required at the lag bolt or screw locations.

Section 3-11.3 "Weather Seal" talks in nonspecific terms about the sections being sealed to limit heat loss and prevent air and moisture penetration. But this raises the question, what is adequate sealing? How much heat loss or air infiltration is acceptable?

The reality is that we seem to be getting more complaints about "drafts" at the endwalls and marriage line floor. Is closed cell foam really that effective when the gap is ½ inch or more?

The inspection process is laid out in 1-8.13.2 "Inspection Criteria." Section (b), subpart "Marriage Line Connections," subpart "1" talks about weather stripping and seals at the floors, walls, and roof connections as part of the "set-up inspection." How the seal is to be made is spelled out in detail in 3-11 Marriage Line Connection and Seal, specifically part (b) through (c). A nice schematic can be found at Figure 3-11.1.

Jurisdictions should be aware that during the set-up inspection they can inspect the marriage line seal — and the code gives them the authority to inspect — from inside the home before the drywall is installed and the carpet is laid. If the jurisdiction requires an inspection of the marriage line prior to cover, it needs to disclose this fact when it issues the permit.

1-8.2 states that it is the responsibility of the permit holder to notify the jurisdiction when work is ready to be inspected, and that when a contractor (installer) has finished his or her portion of the work, the contractor shall advise the permit holder. 1-8.3(a) states that work cannot proceed until

the inspection is performed, and 1-8.5 states in greater detail that work cannot be covered until it is inspected. 1-8.4 does mention that exterior coverings, siding, and roofing can be covered with prior approval of the local jurisdiction. This obviously makes sense in inclement weather. Just because the skirting has not been installed doesn't mean that the drywall connections can be finished and the carpet laid. Contractors and dealers should note that the local jurisdiction can have these areas opened to inspect lagging, screwing, and sealing.

As mentioned earlier, doubled-over close cell foam is the most common seal by far. However, it is only a minimum. Depending on the size of the gap, it may not be the best choice, and installers and inspectors need to use their judgment about whether it is an effective seal. I would argue that when you encounter larger gaps, you should consider expansive foam. Heat rises, and most heat loss is at the ceiling. If the sealing at the marriage line floor is poor, in conjunction with poor sealing at the marriage line ceiling, then a stack or chimney effect can be created — especially between marriage line walls where there is no carpet, pad, or drywall to lessen the effect. Since we cannot inspect the tightness of the connections or how adequate the seal is between walls along the marriage line, the inspector can only infer from the exposed marriage line floors and ceiling. For example, if those connections are tight, then the others probably are also.

Getting back to our original question, the code does not give us any specific guidance on adequate sealing or specific acceptable amounts of heat loss or air infiltration. But the code does spell out an inspection process that gives the local jurisdiction the authority to inspect these areas, and use its judgment as to what is acceptable or effective. Once the sections are together, the installer can also see that something more than closed cell foam is needed.

I will offer one tip: If it is windy out, and you can feel the wind, the seal is not adequate. ■

Dealing with open decks

By Tom Nicolai

If you attended the recent Manufactured Home Show, you should have noticed that a very high percentage of homes are now built with covered porches. Open porches, decks, or landings are not included in the living space of the home and are not insulated or waterproofed. They are built to allow air and moisture to flow through them to the crawl space below. The main concern with this popular home feature is that it's known to rain in Oregon — and on that rare occasion when rain does fall, water will flow through the open deck floor, pool up, and somehow find a way to get under the rest of the home. Water in crawl spaces causes differential settling below pier footings and structural problems inside the home.

Wind is another concern. Because recessed porches are not enclosed with walls, they're lighter than other portions of the building. In a good wind, the ceiling above large porches can act like a big wind scoop, making open-deck homes more vulnerable to wind uplift and later movement.

State installation standards address moisture and wind uplift concerns in several ways. For manufactured dwelling installers and licensed skirting installers, that means special measures and costs associated with open-porch homes.

No ground moisture barrier

One measure that prevents rainwater movement from below an open porch to the crawl-space area below the heated portion of a home is removal of the ground moisture barrier below the open porch. With the moisture barrier removed, rain falling on the deck will drain through the deck and (possibly) stay put until it evaporates after the rain stops.

Skirting to separate the under-floor area from the open deck area

The Oregon Manufactured Dwelling & Park (OMD&P) Specialty Code also requires that skirting or some other appropriate material be used to separate the under-deck area from the area below the heated portion of the home. Approved skirting

material or flexible materials such as sheet vinyl, Plexiglas, rigid fiberglass, ABS, 6 mil visqueen, or EPDM are possible choices. Many enclosures are made of pressure-treated plywood. You need to make sure the material is appropriate for the wet conditions it will encounter. The perimeter of an open deck can be enclosed with lattice or other skirting material, but if enclosed, it will need separate access entry. See OMD&P 3-9.1.

Pressure-treated wood

Because foundation supports below an open deck are exposed to moisture, pier caps, shims, and support beams made of wood must be pressure-treated to resist rotting. It may take some searching to find a supplier of pressure-treated pier materials. Because on-site application hasn't proven as effective as pressure treatment, only pressure-treated materials are allowed. Requirements for pressure treating of wood products below open decks appear in the exception to Section 3-5.8; you can also find them in 3-5.12.4

When do open decks need tie-downs?

When the roof over an open deck exceeds 70 square feet, a tie-down needs to be installed at the outermost corner (or corners) of the open deck. The foundation crew needs to know about the ties so they can install the ground anchor or set footing anchors before the foundation is poured and the home is set. If the footing is poured before the ground anchor is installed, major repair heartburn can result. Tie-down requirements for open decks are in Section 3-2.3.3 in the OMD&P.

Not just any tie-down will do. The state standard specifies minimum materials standards for tie-down equipment. This equipment is probably not available at the local hardware store and may need to be specially ordered prior to foundation construction.

Exposed decks and porches involve a lot of work and attention to detail. But following the minimum state standards should prevent moisture and wind uplift problems. ■

Update on national HUD programs

By Albert Endres

HUD announced some updates on programs it has been working on that affect the manufactured housing industry in the Federal Register of Dec. 11, 2006. Of six programs that relate to manufactured housing, four of them affect the code side of the industry.

The program that would have the most effect on Oregon factories, dealerships, and codes is the On-Site Completion Program. Unfortunately this program has been temporarily withdrawn, because the industry needs to take a harder look at the entire process.

The other three programs should not have any effect on Oregon since in each instance, Oregon has its own state plan. Those programs are: the

Federal Installation Standards, for which rules are planned to be finalized in February; the Federal Manufactured Home Installation Program, for which rules are planned to be finalized in April; and the Manufactured Housing Dispute Resolution Program, whose rules are planned to be finalized in February.

The dates for final rules remain tentative, as there may be more challenges to the proposals. The debate for all of these programs has been going on for five years and may continue. If you have any specific questions about any of these programs, please feel free to contact me at Albert.G.Endres@state.or.us or (503) 378-5975. ■

Cite it, write it

By Albert Endres

As most of you know by now, Oregon Administrative Rule 918-098-1900 requires that any corrective notice must adequately cite the applicable specialty code that addresses the noncompliance observed. This rule took effect Jan. 1, 2006. To some, this may appear to be a new requirement but in reality, this requirement has been in place for manufactured home installation violations since April 1, 2002. The reference is in the Manufactured Dwelling and Park Specialty Code, Section 1-12.1.

Unfortunately, a sampling of the inspection reports or phone calls that come to my attention indicates this requirement is not being universally followed. I realize that at times inspectors may forget or do

not have the appropriate codebook with them when the report is written, but it appears there is still a disregard for the requirement.

When citizens, installers, or dealers call me with questions, they frequently report that they have been written up for something and they are not sure of the code. I ask them what reference the inspector quoted, and they either cannot produce the report or they say there is no reference noted.

Making the reference is required, but it also is helpful to me in identifying the problem. It needs to be done.

If you have any questions about this, please feel free to contact me at Albert.G.Endres@state.or.us or (503) 378-5975. ■

Follow manufacturer directions when installing windows

By Gary Hart

You may associate window installation with factory work, but it can also be applicable in the field when factories, dealers, or contractors are replacing windows.

Here are some tips for installing windows made by two common manufacturers: Kinro and Philips. Reviewing their installation instructions, there appear to be several similar specifications.

Starting with the rough opening size:

Kinro: Rough opening should be square, check width, height, and diagonal measurements for squareness, "should be no more than 1/8" variation between these measurements." "Avoid the use of warped, twisted, or knotted framing members."

Philips: "Rough opening sill must be square within 1/8" across its width."

Most windows are installed after the siding is installed. Homes should have been in a level position during siding installation, not only to avoid possible problems during installation, but to ensure the window openings remain square.

Both window manufacturers address requirements on the surface where the window-mounting flange is to be secured:

Kinro: "Flat around perimeter of the window opening."

Philips: "This area must not have gaps or voids beneath the mounting flange."

This may pose special opportunities if a grooved siding product is used.

Transportation of manufactured homes

By Kurt Pugh

The Oregon Department of Transportation has been making an effort in recent months to improve the transportation methods of manufactured homes. This is the right time for this. Our homes are getting bigger across the board, and we need to address this as an industry.

ODOT has been outstanding in working with the industry to improve our transportation methods. When I started with the state, no one was weighing their homes; but it appears that most of our factories have purchased scales and are setting processes to weigh most of the homes. In addition, we are seeing new axles, and most plants are installing new tires. There have been quite a few questions on the correct

Kinro/Philips: "Keep windows closed and locked during installation."

Kinro: "It is recommended to apply 1/8" thick, suitable, good quality, non-hardening, water resistant sealant tape (putty or butyl type) to the back of the window flanges in order to provide a good seal with the homes weatherproof envelope. If a gunable sealant is used, a 3/16" to 1/4" bead should be centered over the mounting holes on the back of the window mounting flange."

Philips: "Apply a 1/4" continuous bead of pumpable sealant to the back side of the mounting flange, in line with the pre-punched holes."

Both manufacturers continue on to state the fastening, sequence, type of fastener, and spacing requirements. Instructions use the words "should" and "recommend" verses "shall" and "required," but the product's warranty covers only windows installed and maintained according to the installation instructions.

Check to make sure you have the most current installation instructions.

Try to acclimate vinyl windows prior to installing to avoid flange damage during installation. If damage does occur, refer to the manufacturer's repair methods.

Check window operation at the plant and after installation of the home to ensure that windows do not bind and the bedroom windows meet the egress requirements. ■

method to weigh each unit. To ODOT's credit, its staff members have gone to several of our plants to review the correct methods. If you have questions about weighing, contact ODOT at (888) 275-6368.

Another important transportation issue is the proper towing of the home. Based on the HUD stands, homes should be towed at a maximum of 50 miles per hour. This is how they have been tested and designed. We all know this speed is sometimes exceeded, but we need to adhere to it.

If we all work together, with ODOT's help, we can improve the methods of transportation and keep Oregon roads safe for all of us. ■

Re-roofing older manufactured homes

By Albert Endres

Section 7-5.2 of the Oregon Manufactured Dwelling and Park Specialty Code has a shortcoming in its attempt to cover all of the re-roofing possibilities with manufactured or mobile homes.

The intent of this section is to have composition shingles removed before re-roofing with either new shingles or metal roofing. The reason for this relates to the dead load rating of the trusses used on the home. The design is reliant upon a maximum dead load and the true live load capacity. Although adding additional weight on the dead load does not, by definition, reduce the live load value, the additional weight may exceed the designed dead load. It can also affect the deflection and recovery expectations.

What the code has failed to address is the older, metal roofing homes. These homes were built in the factory with a full piece metal roof, either installed over bowed trusses or pitched trusses. They were typically done on singlewides and doublewides in the '70s and early '80s. I am sure you have all seen

them as there are still thousands of them around.

The design of this application was to have the metal roof as the only covering on the roof. The metal was laid directly on top of the trusses with only a layer of R5 insulation between the metal and the truss. There was no sub-roof. As the metal degrades over time, many homeowners have opted to have the metal covered with a listed product, usually EPDM or some other vinyl product. Since this is technically re-roofing, the code would imply the metal needs to be removed. But this is not the case because the metal is the only layer of material over the trusses.

I intend to address this issue when the code is updated but until then, you can install a listed EPDM, vinyl, or similar roofing material over the top of the metal. If you have any questions about these mature homes, please feel free to contact me at Albert.G.Endres@state.or.us or (503) 378-5975. ■

Installing water heater pan drains

By Albert Endres

The HUD Standards changed on May 30, 2006 in regard to water heater pans. The standards now require that each home produced on or after May 30, 2006 is required to have a pan under the water heater. The standards are silent, however, on how the drain assembly is to be installed.

In the absence of guidance from HUD, the following is what Oregon is requiring. If HUD gives us a determination in the future, this may be revised.

The manufacturers are required to install the pan. They also must install the drain line to run to the outside of the home. In the event that damage may occur in some applications during transit, they may ship the piping and fittings loose to be installed in the field.

The pressure/temperature pipe is still required to drain directly under the home. It cannot be piped to terminate in the pan.

For replacement water heaters in previously built homes, it becomes a bit more difficult. The HUD Standards do not address replacements, and the Oregon Manufactured Dwelling and Park Specialty Code is silent. Until the code addresses the issue, do the following:

If the home where the water heater is being replaced was built on or after May 30, 2006, a pan is required. If the installation instructions of the water heater require a pan, a pan is required. If the home was built before May 30, 2006 and the instructions do not require or recommend a pan, under the HUD Standards, the home does not need a pan. Following the site built code, if there is a pan present when the replacement is being done, leave the pan or replace the pan if necessary. If there is no pan, replace like with like.

If you have any questions, please contact me at Albert.G.Endres@state.or.us or (503) 378-5975. ■

City/county planning departments must communicate with assessment/taxation offices

By Sherry Mitchell

When the use of a manufactured structure has changed significantly, it is critical that the city and county planning departments communicate with county assessment/taxation offices regarding the status of these homes. Examples include: a manufactured structure being used as a storage unit or remodeled to the point that the occupancy changes from that of a manufactured structure to a one- and two-family dwelling.

The assessment/taxation offices need this information to ensure that their tax rolls and the State of Oregon LOIS Ownership program are accurate. One way to ensure communication is by sending a copy of inspection reports to the assessment office. City and county planning departments should contact the assessment/taxation office for information on how to best relay this information to them. ■

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Editing, design and production

Kiki Hammond, designer, DCBS Communications
Lisa Morawski, editor, DCBS Communications



BCD Administrator

Mark S. Long

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Oregon Department of
Consumer & Business Services
Building Codes Division
1535 Edgewater NW, Salem, Oregon
Mailing address:
P.O. Box 14470, Salem, OR 97309-0404

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