Manufactured Home Update

Oregon Department of Consumer & Business Services ■ Building Codes Division April 1998

Storage lot monitoring program

By Brian Lamb

In April 1997 the Oregon Manufactured Dwelling Standard (OMDS) adopted rules requiring temporary blocking of homes in storage longer than 30 days. Information regarding this ruling was distributed throughout the Oregon manufactured housing industry, which was informed that there would be a grace period of approximately two months in order to accommodate dealers and owners getting started with the new and unfamiliar program.

In June 1997 the first round of inspections started on various holding lots along the I-5 corridor and in the Bend and Redmond areas. Twenty-three separate holding lots were inspected with 317 homes (634 floors) unblocked or with torn close-up plastic along the marriage lines. Notification was sent to homeowners (dealers) requiring corrections. After 30 days, the lots were re-inspected: 66 homes were still out of compliance. Ten more days were allotted. Fees were assessed for failure to make corrections.

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Inside

Code change work for 2000 OMDS begins in July

By Patrick D. Lewis

The Manufactured Dwelling Installation Advisory Committee will begin working on the 2000 edition of the Oregon Manufactured Dwelling Standard in July 1998. Between now and then, the Division will be seeking code change proposals from the public. Public input is vital in keeping this standard current with the needs of consumers, industry, and government. We encourage you to send in code change proposals using the forms provided on pages 119–129 of the 1997 OMDS. When sending in proposals, make sure you provide a justification statement and the estimated fiscal impact, if any. Good ideas often get rejected if the committee has to guess what problem is being solved or what the price tag will be.

Please return all code change submittals to Patrick Lewis, Technical Advisory Group, Building Codes Division, PO Box 14470, Salem, OR 97309 not later than June 30, 1998. Code change submittals received after that date will have to wait until 2001 to be considered for the 2003 edition of the standard. If you have any questions regarding the process, please call me, (503) 373-1266. ■

OMHA, BCD set class schedule

To become a licensed manufactured dwelling installer, limited installer, limited skirting installer, or certified manufactured home installation inspector, you must first attend a training class sponsored by Oregon Manufactured Housing Association and Building Codes Division. Those interested in the manufactured dwelling installer license or the inspection certification must attend two days of instruction and pass a written examination. Limited installers and limited skirting installers (LSI) need only attend the first day of instruction and are not required to pass the written test.

The class fee is $75. Class registration forms are available from Oregon Manufactured Housing Association, 2255 State St., Salem, OR 97301, (503) 364-2470. To assure adequate materials and facility arrangements, pre-registration is strongly encouraged. However, walk-in registrations will also be accepted. The fee includes all class materials and lunch both days. The course presents information from the Oregon Manufactured Dwelling Standard, as well as materials from Oregon Revised Statutes and Administrative rules that pertain to manufactured home installation.

In addition to taking the OMHA class, to become licensed or certified you must submit an application form, with the appropriate license fee, to Building Codes Division. Application forms are available from BCD, (503) 373-1268. Fees are listed on the application. The MDI fee is $55; the inspector certification fee is $22. Inspector certification application forms must be received at least two weeks before the selected class date in order for applicants to be eligible to take the manufactured home installation inspector certification examination.

1998 Class Schedule

February 4-5 — Holiday Inn, 25425 S.W. Boones Ferry Road, Wilsonville

April 15-16 — DoubleTree Hotel, 3280 Gateway Road, Springfield

June 17-18 — Riverhouse Convention Center, 3075 N. Hwy. 97, Bend

August 19-20 — DoubleTree Hotel, 304 S.E. Nye Avenue, Pendleton

October 14-15 — DoubleTree Hotel, 200 North Riverside, Medford

December 9-10 — Holiday Inn, 25425 S.W. Boones Ferry Road, Wilsonville

Storage lot *continued from page 1*

Another round of inspections commenced in October 1997. The same holding lot locations were sampled. The number of non-complying units was cut almost in half. The program is heading in the right direction. As time goes on and the Division identifies repeat offenders, it will be the intent of the Division to direct and help the owners of these homes to bring the units into compliance. It will continue to be the responsibility of the owners and dealers to assure the requirements are met.

The storage lot monitoring program is intended to alleviate problems associated with sagging frames, twisted walls, and wet interiors when the home arrives onsite. This program will continue and may need to be updated as the need arises. We, as an industry, must continue to assure that the integrity of our homes is not sacrificed prior to occupancy by the consumer.

When notification of violations is received, the issues must be corrected within 30 days, and Building Codes Division must be notified in writing that corrections were made. Failure to do so will result in automatic re-inspections, fees assessed for the inspections, and possible forwarding of the case to the Compliance Department of Building Codes Division, where civil penalties may be imposed.

To some, the program may seem frivolous or excessive government regulation. But in reality, many problems found in homes after the set can be directly related to how and where the homes were stored.

The blocking of homes is not always easily accomplished. The transporter may not allow homes to be blocked at its facilities, or homes may be unblocked and moved in order to gain access to an adjacent home. We hope these situations can be worked out. If not, further rule making will apply to transport companies or other entities in possession of manufactured housing, as well as dealers. Contact Brian Lamb, (503) 378-3731, with questions or concerns. ■

Feedback from the fed up in the field

By Linda Duncan, service manager, Hidden Valley Homes, Grants Pass

I've been involved with the manufactured home industry for about 12 years. During my tenure, I've seen the product, consumer opinion, and the rules related to these homes change drastically. Since the introduction of the OMDS, the burden of meeting the new codes has fallen to the dealer and installer, with costs passed directly to the consumer. As costs rise to meet these new codes, the term "affordable manufactured housing" seems to be going the way of the dinosaur.

Take the average double-wide. At approximately $40 per square foot (that being a rather conservative estimate) delivered and set, it sounds like a great deal. But don't forget to add permits, site preparation, foundation (optional but recommended), perimeter enclosure, utility installation and connections, decks, steps, garage or carport, and the land. Compared to the fact that Joe Contractor can provide a site-built home (minus the land) for about $55 per square foot, manufactured homes become a tough sell. We all know the stigma related to a "mobile home," its depreciation vs. a site-built, etc.

Now add the new codes. Raise the house, add some more block. Got an open porch? Don't forget to separate it from the area under the home and tie it down. Site not level and over 25% of the home will be over 36 inches high? Tell your customer to call your local architect or engineer. Site is level? Basic metal skirting won't fit anymore due to the 18-inch set, and if it's a block perimeter, you'll have another full course of block. Set-up crews charge for all this, too, so add in your labor, and watch your costs rise. Older homes that were never designed for perimeter blocking are required to be blocked, directly affecting the cost of moving that "affordable home."

But when the house is installed, there are further problems as the manufacturers aren't required to build a home that is legal when set. They can ship you an R-4 heat duct, a plastic dryer exhaust vent, and no sill seal. A railing is required when the porch (built by the manufacturer) height is 30 inches. Add it up: an 18-inch set plus a 12-inch I-beam plus a 6-inch floor joist = code violation. Factory crews install 2,000 staples in a roof to protect it from wind damage during transport. I believe this is called "industry standard." It is the installer's responsibility to seal the holes, but it's tough to adequately patch Swiss cheese, so the installer must remove the damaged shingles and replace them. The dealer pays the installer, and the customer pays the dealer.

If dealers, manufacturers, and authors of the rules related to these homes cannot make some concessions to keep our costs reasonable, while ensuring consistency and safety, the entire industry (dealers, manufacturers, and installers alike) shall face extinction. ■

Dryer ducts are frequently installed incorrectly. This installation uses the right material (rigid flexible metal, not metal foil), but uses too much of it. Ducts should be installed with no dips or traps where water and lint can collect. This could be corrected by shortening the duct to eliminate the trap.

Photos by Dave Brook

Good job of insulating the water line, except for the sections that aren't insulated. Insulating part of it won't get the job done.

OMDS Q & A

By Patrick D. Lewis

This article answers our readers' questions about the Oregon Manufactured Dwelling Standard (OMDS). If you have questions about the OMDS and would like to see them addressed in future issues of this publication, send them to Patrick Lewis, Technical Advisory Group, Building Codes Division, PO Box 14470, Salem, OR 97309.

General

Question 1: *Can a manufactured dwelling be used for adult foster care?*

Answer: Oregon Revised Statute (ORS) 446.245 restricts manufactured dwellings to single family use, with some exceptions. Those exceptions are spelled out in Chapter 12 of the OMDS. Regarding adult foster care homes, the OMDS allows this use provided the manufactured dwelling does not accommodate more than 10 persons, is not altered in a way that would take it out of conformance with federal standards, is (when required) accessible to persons with disabilities, has the occupancy and location approved by the authority having jurisdiction, and has a certificate of occupancy issued by the authority having jurisdiction prior to occupancy. These same rules apply for lodging houses, congregate residences, and family day care uses. *OMDS reference: Section 1206(a) & (b)*.

Question 2: *If a manufactured dwelling is used as an adult foster care home, does it have to have the HUD labels or state insignia removed and sent back to the Division?*

Answer: No. As long as the manufactured dwelling is being used in one of the permitted uses described in Chapter 12 of the OMDS, the labels or insignia would not have to be (and should not be) removed. The only time it would be appropriate to remove the label or insignia would be if the manufactured dwelling was undergoing a permanent change of occupancy outside the permitted uses described in Chapter 12. *OMDS reference: Sections 205(b), (c), & (d), 1004 and 1206(c)*.

Question 3: *Are manufactured dwelling installation permits and installer certification labels required on manufactured dwellings being installed on an Indian reservation?*

Answer: This is entirely up to the tribe itself. The Division has no authority to require permits or labels on tribal lands. However, many tribal councils do insist on either the permits, the certification labels, or both, and may either have their own inspectors or contract with another jurisdiction to perform inspections. It is best to check with the specific tribe for its requirements before installing a manufactured dwelling on a reservation. Property owned by a tribe that is outside the reservation would be treated like any other property in Oregon and all state codes and laws would be applicable.

Manufactured dwelling carports and awnings

Question 1: *Can site-built awnings or carports be attached to and supported by a manufactured dwelling?*

Answer: No. Section 805(c) of the OMDS specifically allows listed and approved prefabricated awnings and carports to be attached to manufactured dwellings according to their listing. Section 805(b) of the OMDS for site-built awnings and carports does not contain the same provisions. Therefore, site-built awnings and carports should comply with Section 805(j) of the OMDS which requires them to be self-supported, free-standing structures attached to the dwelling only with the appropriate flashing or sealing material to provide a weather seal.

Question 2: *Can a manufacturer of manufactured dwellings prohibit prefabricated awnings or carports from being attached to its manufactured dwelling?*

Answer: Yes and no. Section 104 of the OMDS establishes the OMDS as a preemptive statewide standard, meaning if a contractor or homeowner properly attaches a listed prefabricated awning or carport to the side of a manufactured dwelling according to Section 805(h) of the OMDS, the installation will comply with state building code and may be approved by the municipal building inspector. If a manufacturer chooses to prohibit the attachment of awnings or carports to its homes, it becomes a contract issue between the manufacturer, dealer, and customer, but not a code issue. Regardless of any known or unknown contracts between customer and others, the state building code is a minimum standard.

Manufactured dwelling underfloor ducts

Question 1: *Are all underfloor ducts required to have R-8 insulation?*

Answer: No. Section 603 of the OMDS, which states the R-8 requirement, speaks specifically about heat and

air conditioning crossover ducts (ducts going from one section to another in manufactured home). So does this mean that all other ducts have no insulation requirements? Again, the answer is no. First: dryer ducts, range ducts, exhaust ducts, and combustion air ducts are not required to be insulated. Second: all underfloor heating and air conditioning crossover supply ducts are required to have R-8 insulation and meet all the requirements of Section 603 of the OMDS. Third: all underfloor heating and air conditioning crossover return ducts are required to have R-8 insulation and meet all the requirements of Section 603 of the OMDS. Fourth: heating and air conditioning supply or return air ducts that are under the floor, but are not crossover ducts, are not required to have R-8 insulation, but are required to meet the minimum federal standard that calls for R-4 insulation.

Question 2: C*an a manufacturer ship R-4 insulated crossover duct in houses intended for installation in Oregon?*

Answer: Yes. Even though the minimum duct insulation in Oregon is R-8 for crossover ducts, the manufacturer is only required to supply a minimum R-4 insulated crossover duct with each multi-section manufactured dwelling, according to federal standards. Unfortunately for the consumer, the R-4 duct would have to be discarded and replaced with an R-8 duct at the time of installation, meaning the consumer is paying for two ducts instead of one. While most manufacturers are considerate enough of their customers to provide the R-8 crossover duct, there is nothing mandating them to do so. Upon installation, the installer and inspector must assure the correct R-8 duct is installed.

Perimeter foundation enclosures

Question 1: *When does the perimeter enclosure under a manufactured dwelling become a retaining wall?*

Answer: Section 304(l) of the OMDS states perimeter enclosures may support up to eight inches of unbalanced fill without having to be constructed as retaining walls. Section 304(m) of the OMDS states that when there is more than eight inches of unbalanced fill against one side of an underfloor enclosure, retaining walls shall be designed and used to resist the lateral displacement of soil and other materials.

Question 2: *Why are the perimeter foundation requirements for manufactured dwellings more than the requirements for site-built housing?*

Answer: Perimeter foundations under a site-built house can depend on the floor framing to stabilize the top of the foundation wall and help resist the lateral pressures from soil or ground water. Manufactured dwelling perimeter enclosures are not normally tied into the floor system, and therefore don't have the stabilization afforded site-built homes. To compensate for this difference, manufactured dwelling perimeter enclosures supporting more than eight inches of unbalanced fill are built as retaining walls instead of foundation walls.

Question 3: *Are separate permits and fees required for a retaining wall used as the perimeter enclosure under a manufactured dwelling?*

Answer: Yes and no. Section 203(a)(1) of the OMDS includes the perimeter enclosure as part of the manufactured dwelling installation permit and permit fee. However, this section describes a state permit fee used in state jurisdictions only. Municipalities that have been delegated the manufactured dwelling installation program may establish their own policy and may require a separate permit and fee for retaining walls.

Question 4: *Doesn't Section 111.1 Exception 1.18 of the Oregon One and Two Family Dwelling Specialty Code exempt retaining walls less than four feet in height from all permits and fees?*

Answer: Yes and no. Most retaining walls used under manufactured dwellings as perimeter enclosures are less than four feet in height. However, this exemption from permits and fees is limited by ORS 455.31(2) which disallows the exemption if the retaining wall could adversely affect the structural integrity of the dwelling. In most cases, manufactured dwellings depend on the retaining walls for part of their structural integrity and aren't exempt from permits or fees.

Exterior stairways and landings

Question 1: *Is a landing required outside an exterior door of a manufactured dwelling?*

Answer: Yes and no. Figure 809.1 of the OMDS shows a landing outside the manufactured dwelling exit door, but this illustration is only an example, not the code. Section 810 of the OMDS requires landings to be built according to the Oregon One and Two Family Dwelling Specialty Code. Section 312 of the Oregon One and Two Family Dwelling Specialty Code states a minimum three foot by three foot landing shall be required on each side of an egress door. However, this section of the code also contains an exception which eliminates the requirement for the landing if the exit door is an "in-swing" door, so it doesn't swing over the stairs.

Exterior storm doors or screen doors that swing over the stairs are also allowed without a landing.

Piers and tie-downs

Question: *Are tie-downs required in high-wind areas when a combination of prefabricated piers and concrete piers are used to support a multi-section manufactured dwelling?*

Answer: Yes. Section 307 of the OMDS requires all multi-section manufactured dwellings supported by prefabricated piers and located in a high wind area to be tied down. Exception 2 states multi-section manufactured dwellings supported on approved concrete blocks are not required to be tied down. However, the OMDS does not specify the number, the location, or what percentage of piers have to be concrete blocks in order to eliminate the tie-down requirement. The OMDS was written assuming the piers would all be of one type or another, not mixed. Therefore, the way the current standard is written, tie-downs are required as long as there is still one prefabricated pier supporting any part of the manufactured dwelling.

Installation

Question 1: *The OMDS requires that grass and organic material be removed from the manufactured dwelling stand prior to installing the manufactured dwelling. However, between the time the site is graded and the manufactured dwelling is sited, small patches of grass may grow back. The building inspector is requiring me to remove the grass again. Is this really necessary? Won't it just die out under the vapor barrier anyway?*

Answer: The inspector is correct to require the stand be free from organic material at the time of the manufactured dwelling installation. If the grass is allowed to stay, and a footing is placed over it, the stand will not provide the bearing capacity or stability necessary to support the home. If the vapor barrier is placed over the vegetation, it often creates a greenhouse effect and encourages its growth. When this happens, the organic material will push its way through the vapor barrier and sometimes creates a jungle under the home. This underfloor growth can create habitation for rodents, snakes, and other pests and can become a fire hazard. Thank your building inspector for catching this before the home was sited. It may be a nuisance now, but your inspector saved you a lot of work and liability down the road. *OMDS reference: Sections 302(e) & (i).*

Question 2: *A local jurisdiction has approved concrete runners only 30 inches wide and 2-4 inches thick under a manufactured dwelling. As a licensed installer, I asked the jurisdiction how I could install a home on runners that were obviously not in compliance with the OMDS. The jurisdiction told me that because they approved the runners, I was relieved of all liability. When, and in what circumstances, can the local jurisdiction relieve installer responsibility for work performed?*

Answer: The local jurisdiction has the authority to approve alternate methods and materials for the installation of manufactured dwellings when the conventional methods described in the code do not work for a specific situation or when someone has come up with a better way of achieving the same results required by the code. Alternate methods and materials are required to meet the intent of the code without having to comply with the specific requirements of the code. If a jurisdiction approves an alternate method or material, the jurisdiction may share some responsibility and liability for that installation, but it does not have authority to waive the installer's responsibility and liability assigned by Oregon Revised Statute (ORS) 446.395 through 446.420. *OMDS reference: Sections 205(b), 301(g) & (h) and 303(a)(13).*

Question 3: *Do manufactured dwelling tie-down devices have to be engineered for the wind load area they are placed in (80, 90, or 100 mph)?*

Answer: The 80, 90, and 100 mph wind zones described in the Oregon One and Two Family Dwelling Specialty Code are not applicable to manufactured homes. Tie-down devices, when required on manufactured dwellings, only have to meet the requirements in the OMDS that are derived from the federal Manufactured Home Construction and Safety Standards (24 CFR 3280.306(c)). The Division is currently doing an extensive study of the tie-down requirements in Oregon to see if the OMDS needs to be updated. *OMDS reference: Section 307(e).*

Electrical

Question 1: *Is the electrical disconnecting means for the electrical feeder required to be located within 30 feet of a manufactured dwelling on display at a dealer's sales lot?*

Answer: If a manufactured dwelling is on display at a dealer's sales lot, is not being used as a dwelling, and is not occupied, the 30-foot limitation on the feeder-disconnecting means required by OMDS would not apply. This exception for temporary installations would not apply to display units in mobile home parks, manufactured dwelling parks or subdivisions. *OMDS reference: Sections 402(e) and 403(a).*

Question 2: *Can the electrical feeder conductors be reduced in size when they serve limited loads of a manufactured dwelling on display at a dealer's sales lot?*

Answer: If a manufactured dwelling is used on display at a dealer's sales lot, is not being used as a dwelling, is not occupied, and only lighting, heating, and cooling appliances will be used, the feeder capacity may be reduced to a size adequate to carry the anticipated load. This exception for temporary installations would not be applicable to display units in mobile home parks, manufactured dwelling parks or in subdivisions. OMDS reference: *Sections 402(a) & (b) and Tables 402-A.1 & 402 A.2*.

Question 3: *How do you hook up a manufactured dwelling if the electrical service equipment is located 40 feet from the dwelling instead of the 30-foot maximum established in the OMDS?*

Answer: Article 550 of the National Electrical Code provides an exception to the 30-foot requirement by allowing a disconnecting means suitable for service equipment to be located within 30 feet of the manufactured dwelling between the existing service equipment and the manufactured dwelling. This exception could permit a manufactured dwelling to be 60 feet away from the service equipment as long as the disconnecting means is installed properly, grounded and all conductors are sized correctly. *OMDS reference Section 402(e) and 403(a)*.

Question 4: *If the electrical service equipment is 40 feet from the manufactured dwelling, can a licensed installer install the added disconnecting equipment and the 40 feet of conductors?*

Answer: No! The intent of the license is for the installer to make the initial electrical connections. The installer is not licensed and has not been trained to add electrical equipment or run any additional conductors. This work can only be done by a licensed electrician or the homeowner.

Plumbing

Question 1: *Where is the main water valve required to be located for a manufactured dwelling?*

Answer: The main water valve for a manufactured dwelling water supply line can be installed by the manufacturer in any accessible location, or if installed on site, be located under the home, if made accessible, or it may be located outside the skirting within the 30 lineal feet of water pipe as measured from the exterior of the manufactured dwelling. *OMDS reference: Sections 503(a) & (b)*.

Question 2: *How far away from the manufactured dwelling can its sewer clean out be?*

Answer: The clean out required outside the manufactured dwelling may be located under the home, if made accessible, or may be located outside the skirting within the 30 lineal feet of sewer pipe as measured from the exterior of the manufactured dwelling. *OMDS reference: Sections 504(a) & (b)*.

Question 3: *Are water expansion tanks required on manufactured dwellings when a check valve is installed on the municipality's water supply line?*

Answer: Site-built housing often comes with expansion tanks installed on the inlet side of the water heater in order to conform to the Oregon One and Two Family Dwelling Specialty Code. However, neither the State nor a municipality have the authority to require expansion tanks to be added to manufactured dwellings, because they are built to a preemptive federal standard. *OMDS reference: Sections 102 & 104*.

Question 4: *How do I know when surface drainage is required under a manufactured dwelling installed below grade?*

Answer: The OMDS allows "ground level installations" (below grade or pit sets) when the authority having jurisdiction is satisfied that ground moisture is not detrimental to the dwelling site or where an approved drainage system has been provided. What this means is an approved drainage system is required unless the authority having jurisdiction specifically determines that it is not. Some jurisdictions in Eastern Oregon may make the determination that no surface drainage is necessary if the home is going into a very arid climate and the soil is very porous, but it would be very difficult for a jurisdiction in the Willamette Valley or on the Oregon coast to be able to substantiate that no underfloor drainage is necessary. Your best bet is to plan on installing drainage on every ground level installation unless your jurisdiction gives you approval to do otherwise. *OMDS reference: Section 304(k)*.

Fuel gas

Question 1: *Can ventless gas fireplaces, stoves, or room heaters be used in manufactured dwellings?*

Answer: The OMDS does not prohibit the use of ventless gas fireplaces, stoves, or room heaters, it only requires they be specifically listed and approved for manufactured home use. At this time, we are not aware of any ventless gas heating appliances listed and approved for manufactured home use according to the federal Manufactured Home Construction and Safety Standards (24 CFR 3280.703). If permits and inspections are requested for the installation of a gas fireplace, stove, or room heater, whether venting or non-venting, the jurisdiction should make sure the gas heating appliance is listed to UL Standard 307B-First Edition 1982 with revision May 18, 1987, and is marked "for manufactured home use" on the listing label. *OMDS reference: Section 1101(a) & (e)*.

Question 2: *Which side of the gas meter is the fuel gas shut-off valve required to be on?*

Answer: The standard is not specific on where the fuel gas shut-off valve has to be located other than it has to be installed upstream from the manufactured dwelling site gas outlet. It can be on either side of the meter. *OMDS reference: Section 702(a)*.

Question 3: *If the fuel gas shut-off valve is located upstream of the meter, will the gas utility company's shut-off valve suffice, or do I have to install an additional valve?*

Answer: Only one valve is required. It makes no difference whether it is installed by the gas utility company, a contractor, or the homeowner. *OMDS reference: Section 702(a)*.

Question 4: *Is a gas flex-connector required on a manufactured dwelling if it is put on a permanent foundation?*

Answer: Yes! The OMDS has two options for gas connectors on manufactured homes. One is the six-foot flexible gas connector and the other is rigid gas piping with a swing joint and a listed earthquake activated gas shut-off device. Both methods are specifically designed to help prevent fires from occurring if the home falls off its foundation during an earthquake. Because the OMDS does not require a physical attachment to foundations, the same hazard exists whether the foundation is permanent or temporary. *OMDS reference: Section 702(b)*. ■

Class explores gas appliances installation

By Albert Endures

The Manufactured Home Section of BCD sponsored its second industry training in December, focusing on gas furnace and gas water heater installation and inspection.

Ken Kirk of Coleman/Evcon, discussed a checklist he uses when he troubleshoots gas furnace installations in the field. Many of the checklist items identified details of proper furnace flue connections that prevent damage to the furnace and ensure proper venting of combustion by-products. In particular, flanges on flue components must be fully engaged to avoid combustion gas spillage inside the home or attic. Kirk also indicated that the roof jack must be properly sealed to avoid water damage to the furnace (the flue manufacturer provides a sealant with a 15-year life). If the seal fails, water runs back into the furnace and can destroy electrical circuits and cause rust formation that can weaken the integrity of the heat exchanger. Kirk indicated roof tar can harden and develop cracks, so is not a good material to use for flue sealant. The product supplied by the manufacturer is a silicone material.

Dave Shiller and Gary Schoenkorf, Sunrise Pipe and Supply, kindly made arrangements for Wayne Caris and Miles Harris with Rheem Manufacturing Company to discuss installation details for their gas water heaters. Important details include securing the roof vent; sealing the roof flange; checking for construction debris in the flue; alignment of the air-inlet hole, tubes, and fittings; use of manufacturer supplied screws to secure the brackets to the top of the water heater (longer screws may penetrate the inner tank); and securing the flue flange to the collar on the water heater. Rheem representatives indicated that several design changes were under consideration to make the collar connection more stable. The collar connection needs to be tight and stable.

This was the second industry training class offered by the Division. Al Rust was the meeting facilitator. Representatives from several home manufacturers as well as numerous inspectors attended the session. Building Codes expects to conduct an industry training class once per quarter. Some of the sessions will be fairly specific to a distinct industry group, while others will encompass the entire industry. The Division will notify the expected audience prior to each class. If you would like to be on a notification list for all classes, please contact Tom Nicolai, (503) 373-7243. ■

Customer satisfaction

By Tom Nicolai

What does customer satisfaction mean? One definition is that buyers or purchasers are happy or content with the product they bought for the amount of money they spent. The service that comes with a product also influences customer satisfaction.

In an effort to increase customer satisfaction, one manufacturer began a program it calls "Custom Care." This program began with selected dealers and has expanded slowly to include other dealers. Expanding at a controlled rate has allowed the manufacturer to maintain a high level of quality and of satisfaction.

Once a home is set and exterior close-up is finished by the dealer, a crew from the factory completely finishes interior close-up work. The factory crew finishes all tape and texture, completes plumbing and electrical system tests and makes any other necessary repairs. Once the factory visit is complete, the dealer installs carpet and makes an appointment with the homeowner for a walk-through. A complete walk-through is conducted with the homeowners and any repairs are done at that time. Included with the walk-through is sitting down with the homeowners and going over the homeowner's packet. All warranty issues, including dealer, manufacturer and homeowner responsibilities, appliance operation, and warranty processes are explained. This has been a great help for homeowners who are uncertain about who to contact when service is required.

Since the inception of this program, service work from the dealers involved has dropped dramatically. ■

Window operation tip

By Mark Campion

Occasionally, I find homeowners who have trouble operating their windows properly. In particular, people seem to have trouble closing and latching their windows. I've even seen broken windows result from homeowner attempts to force the window closed. Invariably, the windows involved are vertical, single-hung units: the top unit is fixed and the lower unit slides up and down. The wider the window, the more potential for operational problems. Some homeowners complain that there is something wrong with the window, when they just don't know how to operate it properly.

Although most of us take for granted that homeowners know how to close and latch a window, the frame of a vinyl single-hung unit can flex quite a bit, making operation tricky for the uninitiated. If the window is pulled down by the top of the frame, and the homeowner pulls toward themselves at the same time, it is possible that the track at the top of the sliding unit will not seat with the channel on the bottom of the fixed unit. Homeowners should be instructed to pull down, but not toward themselves, as they lower the window. This will allow the track on the sliding unit to seat correctly in the channel of the upper unit and allow the latch to engage.

Another window feature that is unfamiliar to most homeowners is the window slot vents in some Super Good Cents homes. I frequently find slot vents closed and homeowners with no idea what they are. I show them how to open and close the vents. And I explain that the vents are an important component of their whole house ventilation system. The vents let fresh air flow slowly into the home whenever the whole house fan is running. Often when homeowners complain of moisture problems on windows, you find their slot vents are closed, restricting the proper functioning of the ventilation system. ■

Drywall crack repair tip

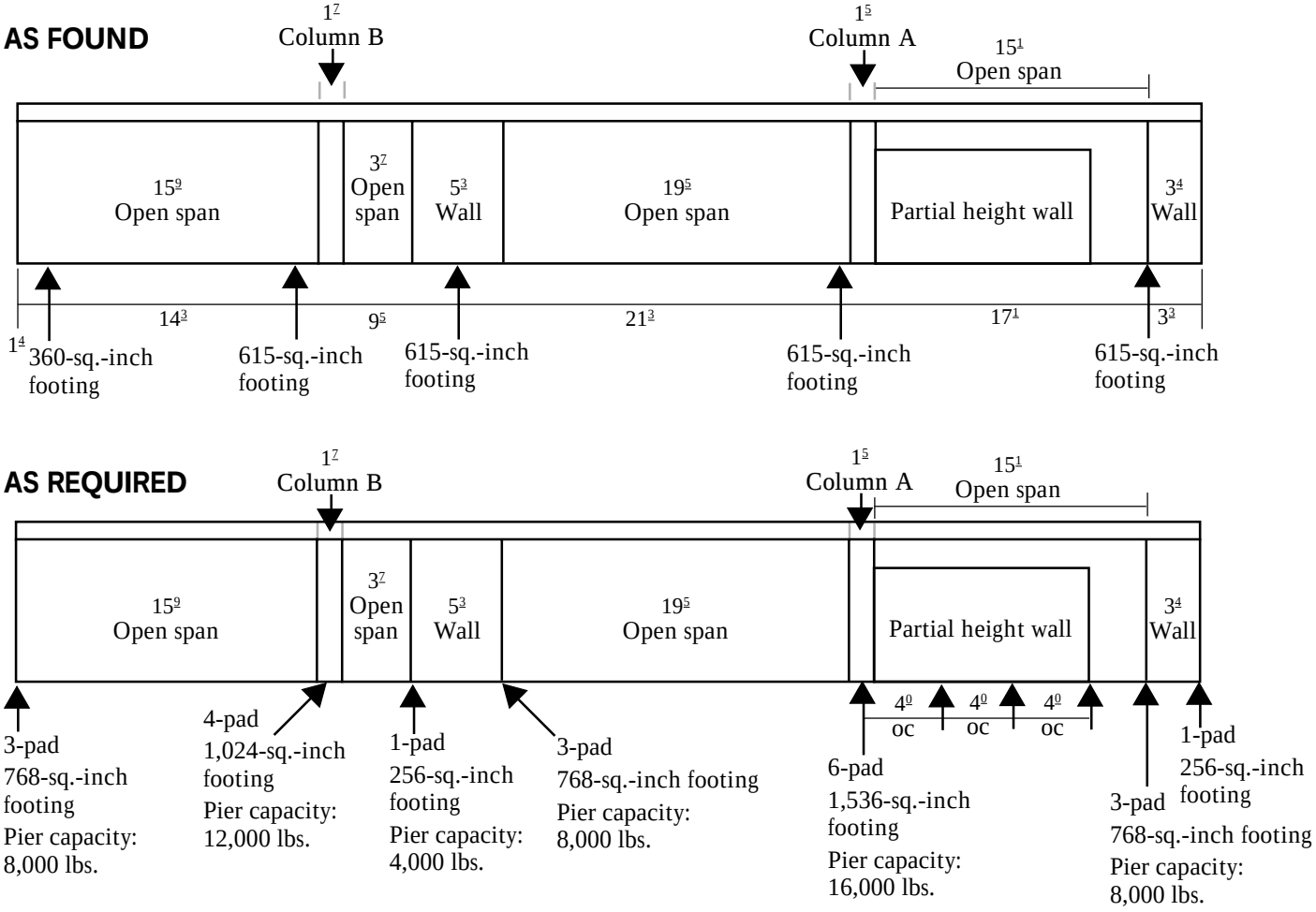
By Mark Campion

A common problem encountered in the field is shrinkage of the mud, or caulk, used at the seam between the ceiling and wall panels. Tim Duchemin, an independent contractor specializing in field tape and texture close-up and repair, recommends the use of general purpose mud, not caulk, at this seam. He says it is much more stable, being less prone to shrinkage. Drawbacks? It requires touch-up paint after allowing sufficient time for it to dry. ■

More on centerline supports: footnote 5

By A. B. Boe

The drawings below show an interesting, rather complex centerline. The first drawing shows the centerline "as found." The second drawing shows the supports required by the 1997 OMDS. As the drawing show, this centerline contains not one, but two columns that are in the middle of two adjacent open spans. Footnote 5 in Table 304 tells how to handle columns that are in the middle of adjacent spans.



Footing size

Because a column between two spans bears weight from both spans, the footing area below the column is the sum of the footing areas required for the adjacent spans. For example, the column labeled A has a three-pad span (768-square-inch footing required) on one side and a three-pad span (768-square-inch footing required) on the other. Column A requires a six-pad footing (1,536 square inches). The column labeled B requires a three-pad footing (768 square inches) for the span on one side, and a one-pad footing (256 square inches) for the span on the other side. So, the footing below the column B should be the sum of the adjacent footings: four pads (1,024 square inches). See 1997 OMDS section 304(d)(2)(A) & (B) and Table 304. Read the footnotes.

Pier capacity

The same general principal applies to the pier capacity under columns between adjacent spans: the pier capacity under the column is the sum of the pier capacities required for the adjacent spans. For column A, a 16,000-pound pier capacity is needed because the spans on either side of column A each require 8,000-pound-capacity piers. Because a single stack of rated blocks is assumed to have a 15,000-pound capacity, a double block stack or three 6,000-pound-capacity metal piers would be required to build a 16,000-pound pier.

For column B, the pier capacity for the column should be 12,000 pounds, the sum of the 4,000-pound pier capacity required on one side and the 8,000-pound pier capacity on the other. A 12,000-pound pier could be constructed of a single stack of blocks, or two 6,000-pound-capacity metal piers. ■

Recognition for service to the manufactured home industry

By Albert Endures and staff

You may have noticed an article in the last *Manufactured Home Update* titled "Recognition." This was the first of what is intended to be a regular feature of the *Update*. Although there are many dedicated and capable people and businesses performing beyond what is required, the staff at Building Codes Division meets only a few of you each quarter. For those who continually exceed expectations, you are all to be commended. As we work with those who exemplify superior service to the industry each quarter, we will do our best to recognize their contribution. For this quarter, the following people deserve recognition:

Brent Knight, *Fleetwood Homes, Washington*
For assistance in handling consumer assistance cases in a timely and professional manner

Shirley Cox, *service manager, Shadow Ranch, Roseburg, Oregon*
For involving the BCD Customer Assistance Section in special manufactured home cases

Jon Thomas, *service manager, Nashua Homes, Idaho*
For stepping up and assisting a homeowner when the dealer was no longer in business and Nashua had no apparent obligation to repair

Carl Schamburg, *installation manager and installer, Palm Harbor Village, Millersburg, Oregon*
For utilizing the Division in alterations and damaged home cases and for being a constant source of information on installation issues

Mike Kammer, *installer*
For informing the Division of a potentially hazardous condition that may affect other homes

Ted Darling, *building official, Confederated Tribes of Grande Ronde*
For helping to initiate a joint effort with the tribe and Building Codes concerning a manufactured home installation on tribal lands

Service department, *Fleetwood Homes of Washington, service department*
For a very open and valuable meeting about customer assistance programs

Ken Kirk, *Coleman/Evcon*
For sharing his expertise about gas furnace installation and maintenance during a quarterly industry training sponsored by Building Codes Division

Dave Schiller and Greg Schoenkopf, *Sunrise Pipe and Supply* and Wayne Caris and Miles Harris, *Rheem Mfg. Co.*
For sharing their expertise about gas water heater installation and maintenance during a quarterly industry training sponsored by Building Codes Division

Accurate bids by contractors

By Tom Nicolai

In many customer assistance cases, one of the main topics of concern is unexpected costs. Either the homeowner has not planned on covering a particular cost or the cost of an item is higher than originally expected. Site preparation costs frequently involve unexpected surprises.

Many times the homeowner will attempt to save money by handling their own site preparation. They contact excavating contractors, explain the job and ask for bids. Problems frequently result when contractors base their bid solely on information provided by the homeowner. Homeowners may not be aware of code requirements for site preparation or of the fine points of excavation work. Once they get to the site to begin work, contractors frequently realize it will take more to do the job than they originally figured. Additional expense and unpleasant financial surprises result.

For this reason, it is very important for contractors and homeowners to inspect the site prior to making a bid. It would be best for both to inspect the site together and come to an agreement about what needs to be done and how much it will cost. These agreements should be placed in a written contract and signed by both parties. Clear communication and accurate bidding will help everyone avoid unexpected costs. ■

OSU offers manufacturer training

By Al Rust

The OSU Installation Monitoring Program has moved into a new training area. Site-based training has been available to installers, building officials, dealers, park owners and factories. Last month, we had our first factory inquiry about training for service personnel. The new service manager at this factory understood how proper installation of the home could affect service costs. After the classroom training, service personnel went to a new home installation site with an OSU trainer and saw first-hand the effects of the installation process on their customer's home. Some aspects of the installation did not comply with the state standard, and corrections were made. This factory and its dealers will be working more closely to assure that its homes meet OMDS requirements. We encourage all industry members to take full advantage of this free training. To arrange a training, call (503) 378-8053.

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