

Perimeter Enclosure Part I

By George Porter

Well, we aren't supposed to call it skirting anymore are we? In some ways it would be a mistake to think of it as just a sort of "cover-up" for the frame, pipes and wheels under the home. There are reasons why we need it on our homes and extremely good reasons for it to be done correctly. Improperly applied skirting can damage the home. Yes, I said skirting! The way I see it a perimeter enclosure can be several things. It can be vinyl sheets you screw to the sides of the home (we will get back to this), or it can be a block wall around the edge of the home required by most banks called a "permanent foundation" (even if it doesn't touch the home at all), or it can be a real foundation (all types of which should be permanent by the way), or it could even be a basement wall. Let's look at each in some detail:

Some basic rules for perimeter enclosures:

1. The ventilation required is directly proportional to the moisture that can get under the home. The more it leaks, the more air it needs.
2. It must comply with the factory installation manual. This is how we maintain the warranty.
3. If the ground and/or home move in relation to each other, then provisions must be made to accommodate this difference as it occurs.
4. Enclosures should be made of something at least as durable as the exterior of the home.

Skirting.

If you look in a manufactured home installation manual, you will see that there are requirements for proper venting in the skirting. 99.9 % say that ratio is 1:150. This means that for every 150 square feet under the home you must have at least one square foot of free vented area. Free vented area means the size of the actual hole in the skirting. You must also have a vent located within 3 feet of every outside corner of the home. When you apply the skirting you can't mess up the home and if the ground is subject to frost heave then the enclosure can't be allowed to affect the side wall of the home.

Why is it a good thing to have skirting? Properly applied skirting does many jobs. It makes the home look better, no doubt about that, but it performs some other very important functions as well. Eliminating wind chill, believe it or not, is one and controlling rain water is another. There is also the ability to create a geothermally heated area under the home. Creating this barrier changes the environment below the floor, for the better we hope. For instance, in the State of Kentucky, if you have skirting on a home, the frost depth required for the footings more than 24 inches from the perimeter of the home is cut in half. If the home has no skirting, the footings must be full depth. This policy has been in effect for about 10 years, covering many thousands of homes, and has caused no problems. There has been enough concrete saved to probably build a highway across the entire State. Frost heave needs water to make the ice and the skirting keeps it out. It is a barrier to the wind and

eliminates wind chill. Relatively still air will not carry heat away from the structure and ground like rapidly moving air.

Notice I said “relatively” still air. You do have to vent the area under the home or you will have a moisture build up from the ground and damage the structure. The ground by the way is warm. Allowed to seek its natural temperature without influences such as sunshine and cold air it will maintain a temperature of about 55 degrees. All deep caves are this temperature plus or minus one degree. Shelter the area under the home and you will trap some of this heat. If you could seal off the entire area under the home then you would need no ventilation, but you can't, because skirting is not air or water tight. As a little bit of moisture (humidity) gets in the below floor area, you must have a little bit of air to take it out. A failure to recognize this simple fact has caused lots of rot.

The skirting installer has several problems to solve here.

1. Most people can figure out how much ventilation they need by simple math. Divide the area of the floor by 150 and that's how much venting you need, but how much ventilation is in a skirting panel? The manufacturer of the panel is the only one who knows, read the literature. You will probably find that you will need two out of three panels around the home to be of the vented variety. Some skirting manufacturers use three or four rows of little vents running vertical on their panels, some use just two rows, and others come with none, you have to cut them in and screw vents on the skirting. Whatever it is, you have to meet the ratio of 1:150 found in the home manual. It is very possible to never be able to get enough ventilation under some homes! For instance, suppose you had a triple section home made with 16 wide sections and it was sited fairly close to the ground, about 24 inches to the sidewall. The first and third boxes have three sides to get ventilation from, but the middle has only the ends. You will need some very heavily vented skirting to make this work. You will probably need either bigger vents or raise the home to solve this problem.
2. Where will you attach the skirting? Interestingly, the manufacturer of the skirting may also make the vinyl siding on the home. The directions for the siding say that you can't “face nail” a panel. It will cause it to not be able to expand as it should and will wrinkle the panel. Vinyl siding is of course applied by the slots at the top so it can move with changing temperature, if it gets lots of screws or nails through it making it tight to the side of the home, it gets ugly. So . . . how does one put vinyl skirting on vinyl siding without messing up the siding? According to most skirting directions you should drill a 2 inch hole through the siding before putting the skirting screw in the middle of that hole. The skirting must be slightly loose so the siding behind it can move and not wrinkle up!

There has to be a better idea out there than this and happily there is. Many installers simply attach a treated 2x4, on edge, under the perimeter of the home on the bottom of the floor joists with long galvanized deck screws. If this board is recessed about one inch, then the top of the skirting cap is under the home and this will help keep the water from getting behind it.

3. If the home is located in an area of the nation where the ground freezes then either the skirting must have a non-movable frost free foundation or be able to adjust itself as the need arises. Solid skirting with stiff bracing will severely effect the sidewalls of the home if the ground heaves. I have personally seen a 12 x 50 home lifted off some of the pier blocks by galvanized skirting on a 2 x 2 wooden frame against the ground. Most commercially made vinyl skirting has provisions for frost expansion in the top track; most “home made” skirting does not. Without room for expansion something has to give, either the skirting buckles or the home edge moves.
4. When skirting gets tall enough it will need help or it will blow out. Somewhere around four feet in height is when vinyl starts to lose its ability to resist wind forces. The panels will fold and cave in so for this reason most skirting manufacturers have devices for stiffening the sheets. It is usually a steel rod that clips behind each panel but there is a limit to the height at which it is effective and it will tell you in the directions. If it is necessary to exceed this height you are on your own! It might be best to call an engineer or architect so you are covered but if you “engineer” it yourself, it is yours alone to guarantee.
5. There is some relief from all these venting calculations. Just use all vented panels, you can t over vent. As time goes on the venting ratio of 1:150 may change. Right now only about 2% of the manufacturers will let you do this. Their manuals say if you put a vapor barrier down on the ground and seal the moisture in, they will allow a new venting ratio of 1:1500. This is one tenth of the original formula and it works if all conditions are right. The lot must be properly graded with no barriers next to the home like landscape timbers or concrete sidewalks and the vapor barrier must be at least 6 mil poly with all seams overlapped and sealed tightly.

Next time we will discuss “permanent” ground enclosures.