

Frames

By George Porter

A Manufactured Home is a more complicated piece of engineering than most other homes. Our building code makes us have a multi-purpose chassis. Strangely, we don't move all that much after the first installation, but HUD said many years ago that we must have a frame (transportation system) and I guess that is how the game will be played. It limits our natural evolution from trailer to house but those are the rules and I guess we are stuck with them. There are some advantages to this frame however and if we could just make the public (and a few salesmen and zoning officials) understand that, then we would be a lot better off.

Let's make a list of the good things the frame gives us:

1. Mobility. If you ever have to move the home again it is all pretty much right there waiting to go. Mods are a little more complicated and stick build is a very big deal.
2. It unitizes the structure. One time I saw a home with a trussed floor, lots of metal plates on little pieces of lumber, it had had a rough trip from somewhere and the little plates were all backing off from the wood and it made the whole floor system weak. There are still some floors like that today, but most homes in our industry use big lumber lagged to steel frames. It is so well connected together that in almost all wind zone 1 homes, if you secure the frame, you have secured the whole home.
3. You will not find a better system in an earthquake than a big heavy steel frame. I would prefer to go through an earthquake in a modern manufactured home with a proper foundation rather than any other kind of housing structure. The chances of survival are excellent. In Japan it is a "feature-benefit" used in the sales process.
4. We save on lumber in the floor. By backing up the floor joists with I-beams we can use smaller joists and lose no strength in the floor load.
5. It provides us with the ability to have a shallow frost protected foundation. The major supports of our homes are tucked under the perimeter by several feet. When the home has a perimeter enclosure, such as vinyl with an expansion top cap, then the depth of the footings can be far less than a conventional foundation which is located on the outer edges of the home. The area under the home is protected from wind chill, water, and is a geothermal zone warmed by the enclosed earth to help retard freezing. Unfortunately some local authorities are having trouble understanding this and it cost us lots of extra money for their footings. Maybe, if we could get them to just crawl under there sometime in the winter they could figure it out?
6. Steel is lighter than wood of the same strength. In fact steel is 30% lighter than wood for the same strength.

7. Steel bends. This doesn't sound like a plus but it is. We can easily camber (bend) steel to sort of build a spring in it. In fact we have to when we build the home; if we didn't the tail and belly of the house might drag on the road in extreme cases. At a minimum it would allow the box to bend so much that it would cause damage to the home. Manufactured Homes have a frame that is tailored to fit each home, not only for the length and width, but for the weight it must carry as well. Modular homes are shipped on generic carriers and while they do get the job done without much trouble in most cases, they are not especially engineered for each home they are carrying. Many times I have seen a lot of frame sticking out from under a mod where the box is smaller than the frame by 10 feet or more. Both work, but the Manufactured Home frame, properly cambered and sized, is a better tool for the job.
8. Steel doesn't absorb moisture. Dampness will not make a steel beam warp or get soft. Please be aware however, that a steel beam exposed to lots of dampness over an extended period time will rust, even if it is properly coated at the start. This is one of the reasons why site preparation is so important. While the condition is to be avoided, sometimes in the course of transportation and or onsite problems such as water heater failure, temporary extreme climate conditions, or even a broken pipe, the steel will help hold the floor straight. There is certainly a limit to this, but a pure wood floor would not survive as well as one backed up by a steel frame.
9. Steel is an excellent building material. People look under our homes and think, "Oh my Goodness, this thing is a "trailer," it has a steel frame. We have got to stop hiding from this "Trailer Frame" thing. Sooner or later somebody has to reply to this strange complaint with the words like, "So what?" or better yet, "Yeah, isn't it great!" There are some good things about it and besides that, try and go live in something without steel, and I don't mean just the nails, bolts and screws. For years when stick builders need to have a big span or a special load bearing wall, they always use a steel beam. Every large hotel or government building in the world uses steel framing. When you reinforce concrete what do you use? When you want to stick build a home in a severe wind zone what do builders have use to hold the rafters to the walls and the walls to the foundation? What is the Golden Gate Bridge and all the ships in the Navy made of? Steel of course, so why would we feel we have to be ashamed of our frame? We probably ought to brag about it!
10. Hey, Leonardo de Vinci's "Mona Lisa" has had a frame since 1506 and she has been smiling for 500 years! So how bad can it be?