

TechPractices: Home Front Homes:

PATH's Technologies in Practice are large scale housing projects throughout the U.S. where innovative technologies are being installed and used. Information is presented from the viewpoint of builders and remodelers who can use these examples as models for projects of their own.

| Home Front, Inc. Snapshot | |
|---------------------------|--|
| Location: | |
| Builder: | Home Front Homes |
| Project Scope: | 1008 SQ FT, single-story, affordable, panelized homes |
| Price: | |
| Innovations: | Fiber-cement Structural Insulated Panels; using no wood, no interior drywall, pre-finished ceilings and roofs, well insulated envelope, moisture resistant, whole house ventilation, and high SEER a/c |

Summary



3 bedroom 2 bath home

Many features in new homes designed to reduce maintenance or increase durability invariably seem to require additional first cost. The panelized housing system developed by Home Front, gives homeowners the durability of a non-wood exterior system, the energy efficiency of full thickness foam insulation, and the lower cost of a panelized system that erects quickly without the need for heavy-lifting equipment.

Details

After many years in the building and the remodeling business, the Company was tired of repairing the ever-present termite and moisture damage that occurs in houses throughout the Florida area. Also, as the mid Gulf coast area became more of a destination for retirement-bound Northerners, the need for affordable, durable, and energy efficient new homes increased.

Home Front, Inc. is building 1008 square foot starter homes using stress skin panels. The initial model line is called *Florida Modern* and was recently sold for \$102,000 including \$20,000 for an infill lot in an existing Sarasota, Florida neighborhood. The house includes 3 BR and 2 baths, a high efficiency heat pump for heating and cooling, stacked washer/dryer in the kitchen, carpet in most rooms, ceramic kitchen floor tile, and a 2-car carport. Optional carport would be added as a part of the completed package.

These specific Roof panels (seen here) are a proprietary product of Elite Aluminum Corp. in Ft. Lauderdale, FL. They have a National Evaluation Service (NES) Report (NER 501) and an International Council of Building Officials (ICBO) approval number. Wall panels are, made of an inside and outside structural surface of fiber-cement board with an inner core of high-density foam,

Individual engineering is provided to building officials to demonstrate the compliance of wall panels and connections with the Florida Building Code. Aluminum connections are used in the Home Front Inc. system to connect the walls and the roof panels. They were developed by the Company and represent the only non-standard part of the Home Front system.

Wall panels have been tested per requirements of ASTM E 330-90, Standard Test Method for Structural performance of Exterior Windows, Curtain Walls, and Doors by Uniform Air Pressure Difference. The Home Front panels also comply with the Dade County, FL wind resistance requirements.

Wall panels have been tested to meet the criteria for large missile impacts of SSTD 12-99, a test standard created by the Southern Building Code Congress International (SBCCI), for determining impact resistance from windborne debris.

In addition, wall panels have been tested as a beam or a header. Under a load of nearly 1000 plf, the tested and measured deflection is less than one-eighth inch. The building system includes a wind resisting steel moment frame that stabilizes the panelized structure.

Installation/Construction

The Home Front structural wall and roof panel system are erected on a concrete slab-on-ground foundation. Anchor bolts are cast into the slab and light gauge steel bottom track is attached.



Typical wall panel



Typical roof panel



Wall erection process



Completed exterior structure

Wall panels arrive on site prepared to fit easily over the bottom track. Stainless steel screws connect the panels to the track. All wall panels can be carried and erected by a 4-person crew in one day.

Roof panels span from the wall to the peak and are installed on the second day. Pre-engineered and approved for use up to a 24' span are easily handled and erected by hand. The roof panels do not require shingles or other covering to be weather tight. The underside of the roof panels are pre-finished, and don't need to be painted.

On the third day, the windows and doors are installed, and the house is locked up at the end of the day. No dumpster is required because all waste leaves the job in less than a single pickup truck load. The completed structure is designed to resist wind loads of 130 mph.

Most benefits of cycle-time reduction occur in the erection, closing in, and completing the exterior shell stages of a Home Front home. Exterior walls do not need insulation or drywall; they come to the job insulated and ready to finish. Exterior walls also have the wiring roughed in during the erection process. The roof does not need shingles, insulation, or drywall. Roof panels come to the job insulated, weather-tight, and with a pre-painted interior surface. Non-bearing interior walls, HVAC, lighting, cabinets and floor finishes proceed just like a typical builder's house.

Benefits:

Home Front System includes:

- Wall and roof panels, installed
- Structural wind frame, installed
- All structural connections and fasteners
- Windows and doors, installed
- Wiring roughed in to exterior walls
- Roof needs no roof covering
- Pre-finished exterior wall surface, or ready for stucco or other exterior finish
- Interior wall surface ready for paint

Preparing the foundation, all lot improvements, all interior finish, mechanical systems, floor finishes, and cabinets are added to the above price.

Other Items that contribute to Cost Savings

- Roof panels are complete, outside and inside.
- No shingles are required so there is no need to hire a roofer, and no drywall to hang on the ceiling of the entire house.
- No insulation contractor is necessary, which saves money for the builder.
- There are no windows to buy or install. They come already installed in the walls and if they leak, they are the responsibility of the panel supplier.
- There is no wood in the walls and with nothing to deteriorate, the penalty for small leaks is less than with other wall constructions.

Florida Modern homes can be built for the same costs as a typical concrete block and wood trussed roof. The savings to the builder are in the ease and speed of construction, and the minimal amount of waste generated on site. For the homeowner, the Florida Modern Home advantages are in reduced energy and maintenance costs and in the open plan with vaulted ceilings throughout.

Energy Efficiency

The Florida Solar Energy Center (FSEC), recently conducted whole-house and duct system air tightness testing at a Florida Modern Home in Sarasota, FL. Converting the test results into an EPA ENERGY STAR rating, the house scored an 87.6, indicating that it should use about 38% less energy than a standardized reference home for this same climate zone, built with minimally acceptable efficiencies for the heating, cooling, and water heating equipment.

This panelized home has all ducts and air handling equipment located inside the insulated envelope. Under the ENERGY STAR program, locating all ductwork within the conditioned space eliminates any need for expensive duct leakage test. Therefore, this type of construction provides energy efficiency, and also eliminates concern about costly duct leakage.

Contact

Do you have a specific question? Try the contact listed below:

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