Structural Insulated Panel Systems

4,000 sq ft home built entirely out of FOAM

Green Rhino Building Systems

Based on patented technology by:
Don Grieb, Architect.

Location in Scottsdale, Arizona

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Important note about the construction of this home

The contractor totally ignored the advice of the Architect, and as a result, it took several extra months to complete the construction.

The BEST WAY to do this type of construction is to BUILD THE ENTIRE HOME *using only foam*, and during the process to lay in the wiring and plumbing as you would with normal home construction.

The BEAUTY of building with foam is that ANY CHANGES, such as repositioning windows or electrical or plumbing is fast and easy.

Build the home completely with foam and then once inspected and the layout and design is as desired …… THEN, AND ONLY THEN….coat the foam with stucco on the outside and use clay plaster on the inside.

This particular contractor was changing things as he went along and started putting on the stucco in and outside while other work was going on. This resulted in having to redo a number of areas and extended to finish time and labor costs by quite a bit.

In the end, the finished product turned out to be beautiful as well as practical.

HERE ARE JUST SOME OF THE BENEFITS OF USING FOAM CONSTRUCTION:

The Foam material is multi-functional: That is to say that it provides:

1) Shape, structure and form of the building and the BEST insulation possible!
2) Changes in layout or placement, if required are FAST and EASY (low labor costs).
3) Overall construction is much faster than conventional construction methods using wood or brick or block. Construction times can be as low as 1/2 of the old standard construction methods.
4) Overall, bottom line costs including MATERIALS, LABOR and CONSTRUCTION TIME are substantially lower.
5) The building is soundproof, weather proof, no leaks, bugs won't eat it.
6) Temperature variations inside the building are very stable compared to other construction methods which are impacted by Solar radiation which causes heat build up in the summer time and heat leakage in winter.
7) As a result of the items listed above the size of the air-conditioning and heating systems are much smaller and require substantially less energy.
8) The color of the finished building can be blended into the stucco as it is applied and the coating will last for years without fading or need to be repainted !
9) There are many more benefits that can be listed here…..

Conventional WOOD construction vs. FOAM construction

NOTE: For this comparison we will assume the plumbing and wiring are same for both and not discussed as can be seen from this comparison, the FOAM construction technique is far superior to the older conventional methods of construction

Building a conventional home involves the requirement of a number of different "TRADES" (carpenters, painters, Drywall people, insulation people, etc. In UNION STATES you do not dare use anyone who is not a member of "the correct" trade.

SHOWN HERE ARE THE STEPS THAT ARE REQUIRED TO BUILD A TYPICAL WOOD FRAME HOME"

1) Pour concrete slab and footing - requires time to setup
2) Framing: Saw up lots of boards and nail or screw together
3) Put on outside sheeting by nail or screw
4) Put in insulation materials, fiberglass or foam in
5) Put on sheetrock by screws
6) Put tape on sheetrock and let dry
7) Sand over tape to smooth out walls
8) Texture sheetrock
9) Paint sheetrock
10) Put on wire for plaster on outside or other technique
11) Apply stucco or other texture
12) Paint outside

The insulation quality will be low, and can be spotty if it was not installed properly. There are typically leaks and cracks where bugs and termites can crawl in as well as leaks for heating and cooling.

Reworking mistakes or change orders can take lots of time with this type of construction

Building a home or building with FOAM construction is:

EASY
FAST
LOW SKILL LABOR REQUIRED

SHOWN HERE ARE THE STEPS THAT ARE REQUIRED TO BUILD USING FOAM CONSTRUCTION

1) Put in FOAM slab (flooring) & footing (better insulation).
2) Using fast set glue, fasten wall to flooring (typ 4' x different lengths). Glue on second layer to gain 8' high wall.
3) Coat outside with stucco with color added to stucco.
4) Plaster inside using clay coating materials with color added.

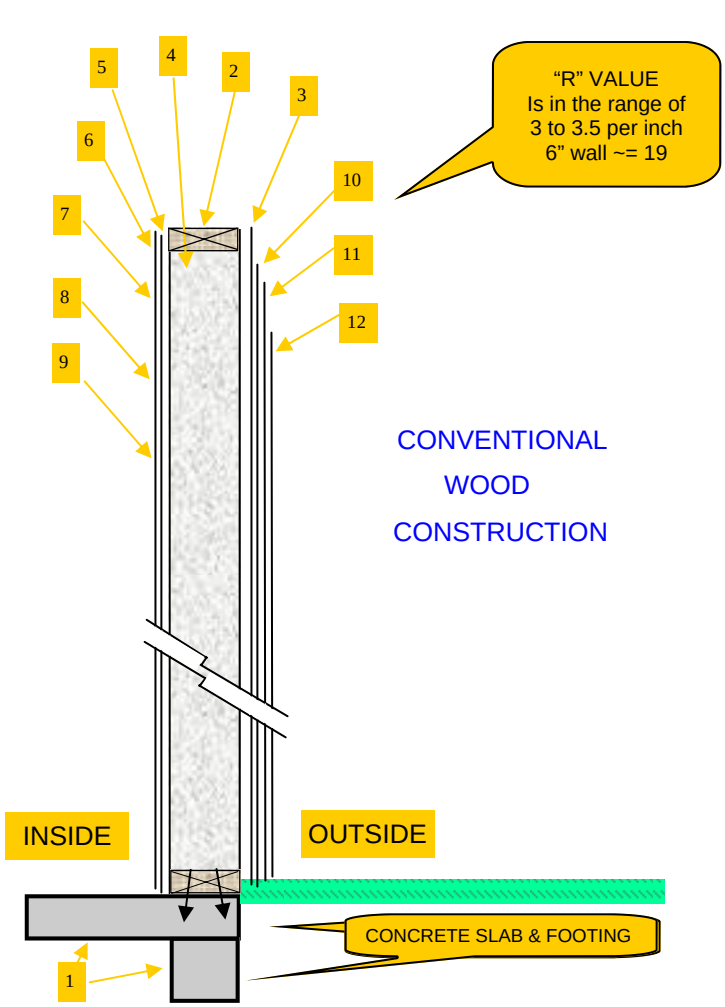
The FOAM serves as:

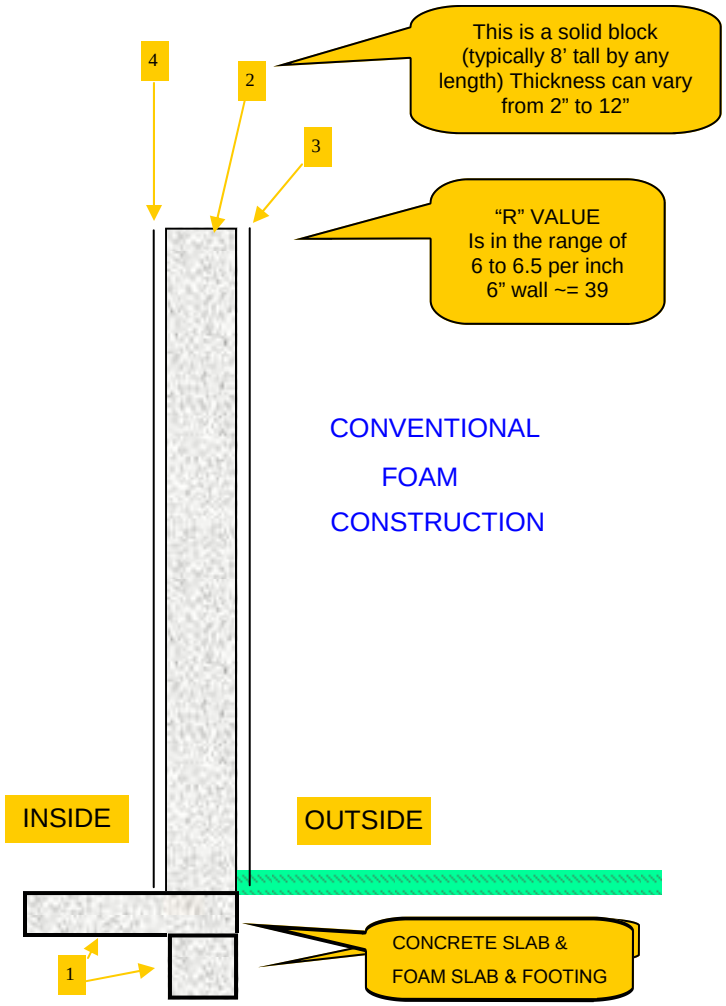
The form and structure of the building
The insulation to temperature AND noises

This type of construction tends to be very easy to work with and does not require skilled labor. Rather, good people who can follow directions.

Reworking mistakes or change orders are fast and easy.

Once the foam structure is completed… and carefully inspected to verify that it meets all the requirements of the owner. THEN and only THEN is it coated.





Gated Community In North East Scottsdale, Arizona

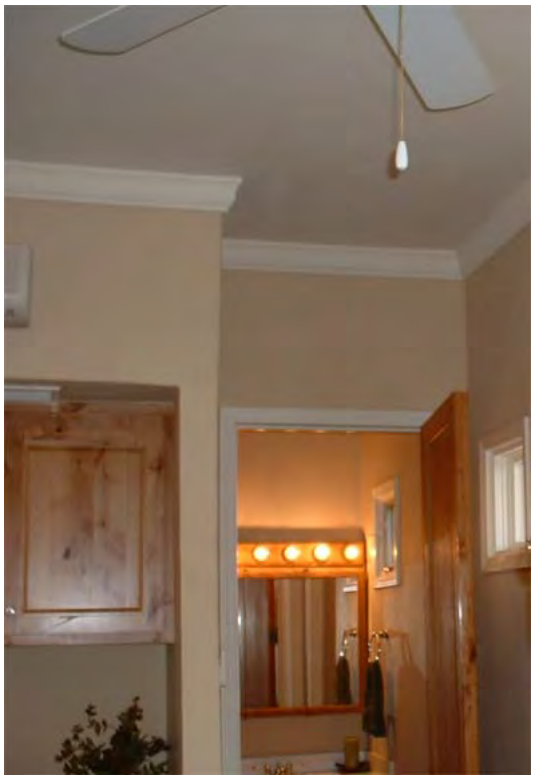
Plans for home were obtained from a stick built home
in the same community and duplicated in foam.

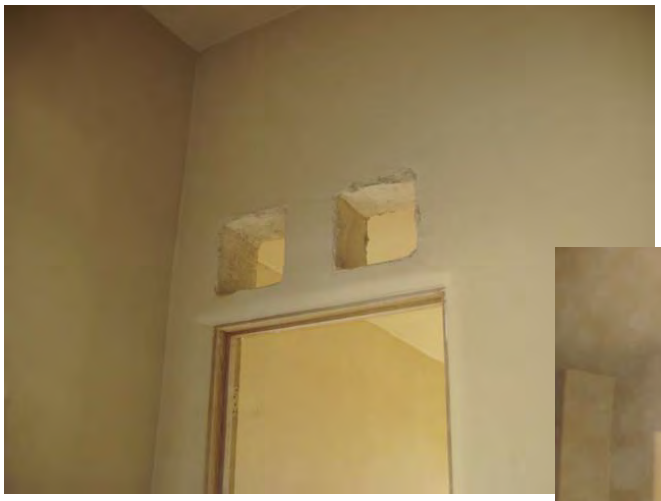
Location of Foam Home

Aerial of completed home

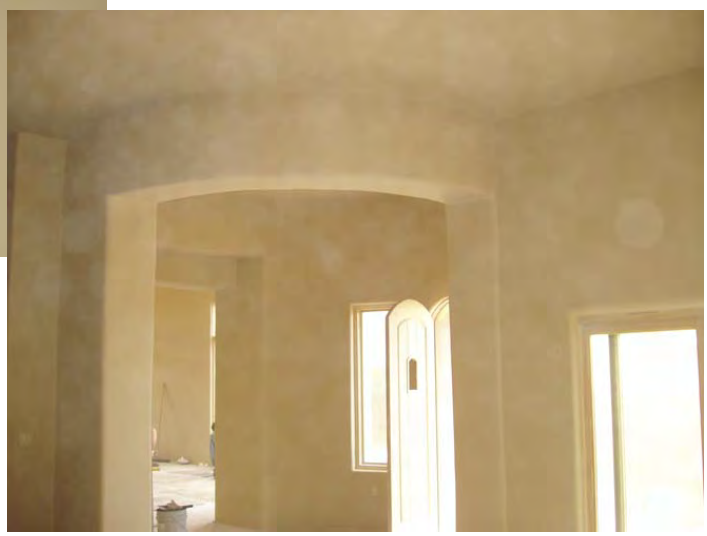
Putting in the landscaping

Back porch awaiting installation of doors and windows





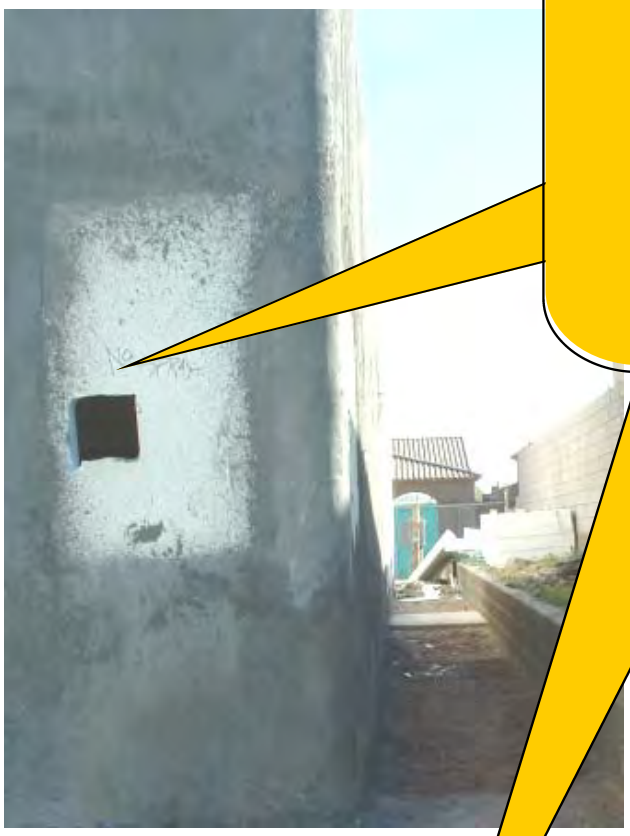
Interior views of nearly completed home



Completed home

Home awaiting patented coating and paint

Nearly completed home awaiting final finishing and painting



Window location before it is cut into the foam and near completion of construction

3 ton heat pump (AC)

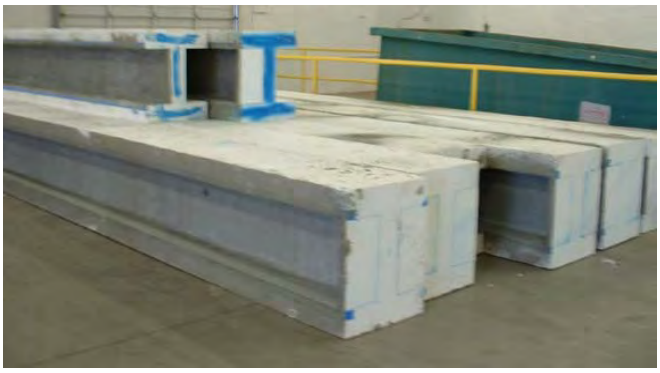
The stick built Home of this same floor plan requires a 10 TON

Exterior construction views

Exterior construction views

"I" beam design can span 100 feet clear

Coat the inside of the beam with special stucco mixed with fiberglass and put on end caps as shown



Space between "I" beams can be used to run AC ducts and wiring

Rounded edges

Parapet wall

"I" Beams

Exterior construction details

Note the electrical wiring being installed

Stubouts for the plumbing
Workers did not protect plumbing from stucco

Interior Construction Views
Note the interior ceilings are about 14 ft

NOTE
Areas designated
For window
location

NOTE
Orange markings
To indicate
electrical

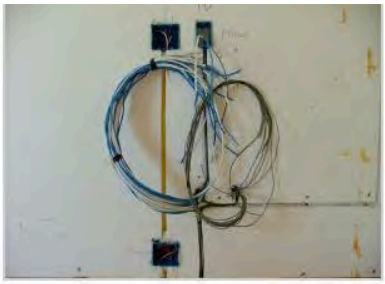
NOTE
Areas designated
For window
location

Various Installation Photos

Green Rhino Coating Material

Workers cutting foam panels

Various installation photos



stem wall at garage corner showing steel for concrete

Completion of Patio w/ EPS foam

Various installation photos

Various installation photos