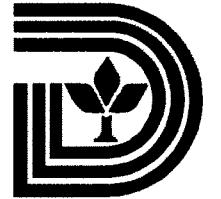


Memorandum



CITY OF DALLAS

DATE February 17, 2011

TO Housing Committee Members: Steve Salazar, Chair, Carolyn R. Davis, Vice-Chair, Tennell Atkins, Dwaine Caraway, Angela Hunt, Ann Margolin, Pauline Medrano

SUBJECT Carl Franklin Homes

On Tuesday, February 22, 2011, you will be briefed on Carl Franklin Homes. A copy of the briefing is attached.

Please let me know if you have any questions.

A handwritten signature in black ink.

for A.C. Gonzalez
Assistant City Manager

c: The Honorable Mayor and Members of the City Council
Mary K. Suhm, City Manager
Deborah Watkins, City Secretary
Tom P. Perkins, Jr., City Attorney
Craig Kinton, City Auditor
C. Victor Lander, Administrative Judge, Municipal Court
Ryan S. Evans, First Assistant City Manager
Forest Turner, Assistant City Manager
Jill A. Jordan, P.E., Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Jerry Killingsworth, Housing/Community Services Director
Helena Stevens-Thompson, Assistant to the City Manager



SIPs

A Solution to Meet and Exceed
New Energy Codes for
Affordable Housing



About Carl Franklin Homes

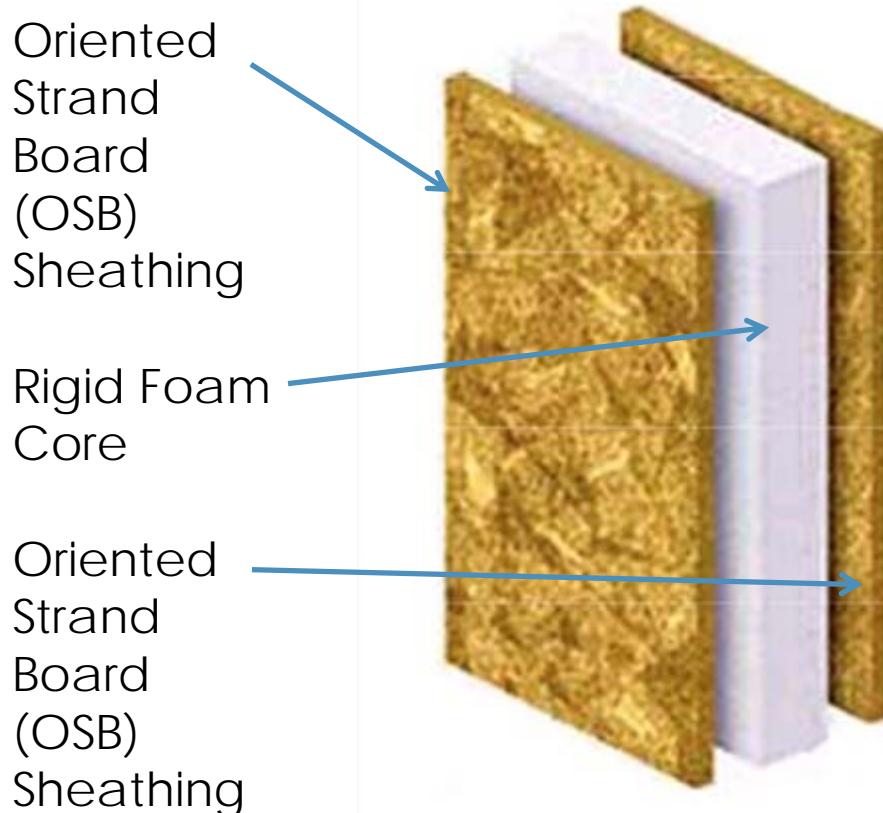
- Building extreme energy efficient performing homes since 1994.
- 2004 recipient of the "Excellence in Energy Performance" award from ENERGY STAR
- Earned the designation as a HUD "Best Practices" builder and a former HUD "Innovations in Building Technologies" award winner.
- Previously featured on HGTV and Discovery Channel for extreme energy efficient construction methods featuring SIPs
- Steve Brown, president and owner or Carl Franklin Homes, currently sits on the Board of the Structural Insulated Panel Association (SIPA)



What is a Structural Insulated Panel (SIP)

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- A SIP is a foam core insulated panel that is used in the construction of the exterior shell of a building (the “Envelope”).
- This “shell” is sealed at the seams and creates an airtight enclosure.
- SIP construction provides an extreme energy efficient envelope that, in case studies, has shown **energy savings of 50-60%**. **This envelope exceeds the new Energy Star enclosure requirements for 2012.**



The Benefits of Structural Insulated Panels (SIPs)

.....and Why Now?

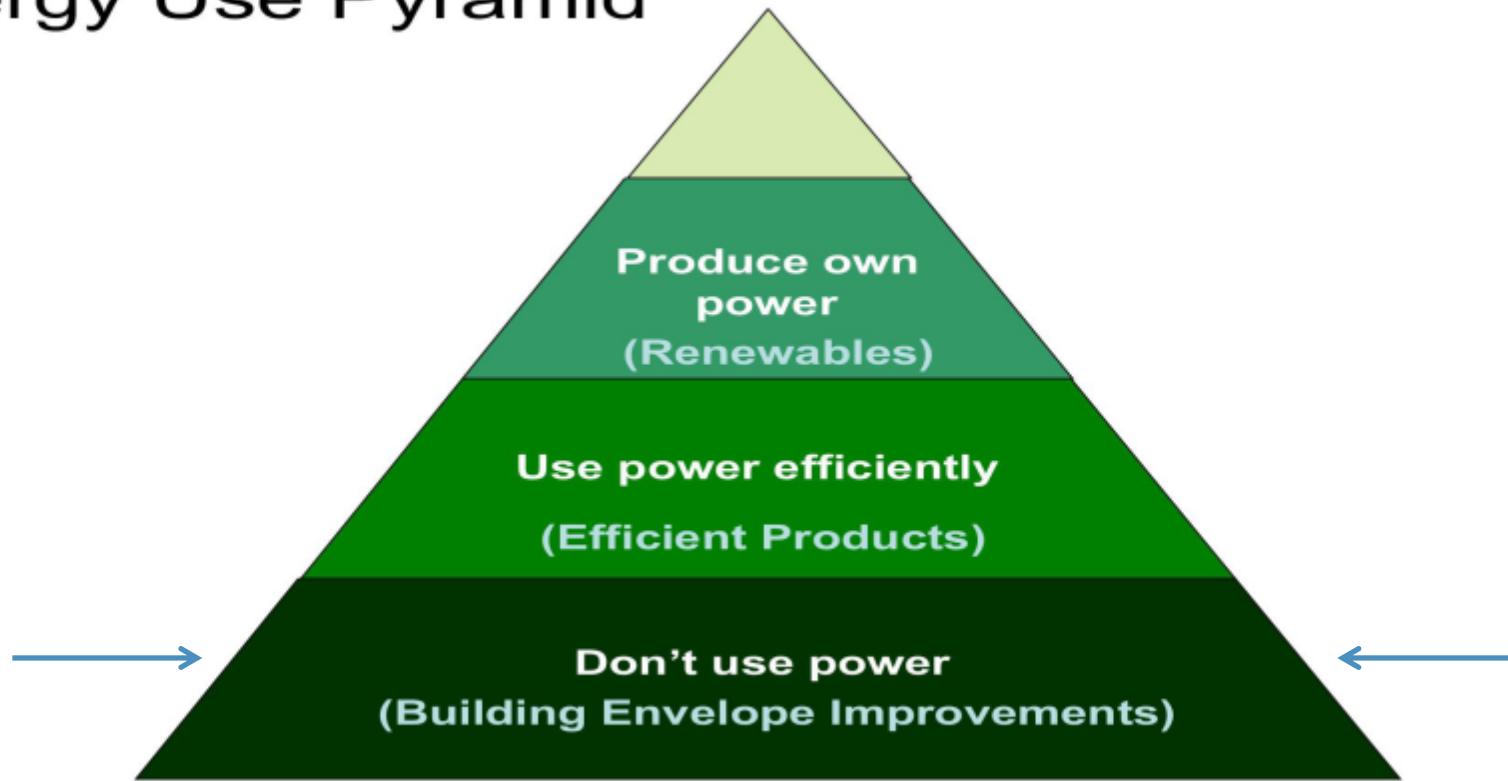
- Meet new Energy Code Requirements
 - Increase in "green" building codes and standards will dictate higher energy efficient home enclosures. This requirement is easily obtainable with SIP construction. (See "Energy Star specifications for 2011-2012). SIP construction can lead to energy cost savings of 50-60% over standard stick-frame construction.
- Shorter Build Times
 - Much earlier "dry-in" stage eliminates delays in construction caused by weather and outside elements.
 - Easy installation allows for a much faster frame and cheaper labor for panel installation.

Structurally stronger than a stick-frame home

- A 4.5" thick SIP panel has more structural strength (up to 140/mph wind shear) than a 2"x6" stick frame wall and the walls are straighter.
- Reduced interior noise (Quieter Home Environment)
 - SIP construction can provide an excellent barrier against noise pollution due to the extremely tight joint connections and the solid foam core insulation. It also provides better control over indoor air quality due to the air barrier created by the panel.
- Less jobsite waste
 - Reduces amount of waste at construction site since panels are pre-cut at the production facility.

Energy Use Pyramid

5



It is an accepted fact that the tighter the home enclosure is, the more energy efficient the home is to operate. For that reason, energy standards for construction are on the rise. Energy Star has implemented a major increase in their program beginning in 2011, with total implementation in 2012. The new requirements are so stringent, it has many builders worried if they can meet the standards. (See attached article, Greater Dallas Home Builders Assoc., Jan. 2011). SIPs exceed these enclosure requirements easily compared to stick frame construction.



Hey, Phil, What's Green Built Texas Going To Do About Energy Star?

As you can imagine, members of the Green Built Texas (GBT) board and I have heard this question a lot in the last few weeks; and for good reason. Currently, the EPA's above-code program defines the way more than 40 percent of Texas homes are built and is a core requirement for compliance with the GBT protocol. However, it's about to undergo the most sweeping changes in its history and all of us are struggling to keep up.

These changes will come in two phases, ENERGY STAR Version 2.5 and 3.0. The first phase will include the controversial move from a consistent HERS performance threshold for all homes to a variable target for each individual home.

In other words, one home may qualify with a HERS 78, while another may need a HERS 70 in order to meet the new program requirements. Much of this will depend on the home's size; larger homes will be subject to a "size adjustment factor" (or penalty depending on who you talk to).

Version 2.5, effective in April, will also require the Air Sealing and Air Barrier sections of the new Thermal Enclosure Checklist. The more rigorous HVAC and Moisture Management checklists will roll in with Version 3.0 in January 2012.

Visit EnergyStar.gov and click on the "new homes" tab to find out more

about the changes this paragraph only begins to explain.

This is the EPA's plan as of the time of this writing so you may want to check that web site often and watch the HBA's *Punch List* newsletter for any updates. Originally, Version 3.0 was supposed to be effective this month and there was no such thing as Version 2.5.

In fact, some raters just recently received the updated RemRate software and have not had adequate time to work builders interested in meeting the new ENERGY STAR requirements. As such, there is a good deal of uncertainty as to what the program will evolve into and what the market acceptance of it will be. This combined with the fact that new challenges could make it illegal for a city to mandate the program, creates the need to find an alternative at least for the time being.

Here are the alternatives that the GBT board established. These will become effective for the GBT program in April.

Select one (1) of the following energy efficiency strategies:

1. Obtain ENERGY STAR Version 2.5 certification
2. Achieve fixed HERS Index of 75 or below (as proven by RemRate software supporting ENERGY STAR Version 2.0) and obtain compliance with Chapters 3 and 5 of the ENERGY

*Phil Crone,
Director of Green
Building &
Governmental
Affairs*



STAR Version 3.0 Thermal Enclosure System Checklist

Essentially, starting in April, a GBT builder can either go all out with the new ENERGY STAR requirements or, in the alternative, they can hit a straight HERs Index of 75 as proven by the software that supports Version 2.0, which we all have come to know and love. Like many builders, GBT wants to stick with ENERGY STAR, but must consider market realities along with the significant (and potentially unforeseen) paradigm shifts that Version 3.0 and, to a lesser extent, Version 2.5, will usher in.

If I had to guess, some of you will think this move does not go far enough, others will think it goes too far and everybody else will probably be confused to some extent. This illustrates the proverbial tightrope that program leaders are trying to walk and the work to educate and inform that lies ahead. Also ahead is a larger effort to make comprehensive changes to the entire GBT protocol. Since this is first and foremost your program, all HBA members will receive an opportunity to submit written comments and recommendations throughout this process.

CARL FRANKLIN HOMES, L.C.

Affordable homes.....

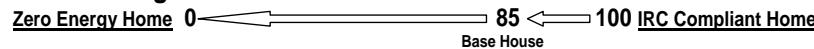
Affordable living....

7

Subject: Building Envelopment Improvements for 2012

Using **Energy Star** compliance as the base (minimum) code for single family construction, its requirements are increasing significantly for the year 2012. Current homes are built to a minimum of **15%** more energy efficient than the 2004 International Residential Code (IRC). Using a **HERS** (Home Energy Rating System) index of **100** as the IRC coded home, the Energy Star home would have to score a **HERS 85** as a minimum standard. This index will increase an additional **15%** for **2012**, technically making the minimum HERS score a **70**. (NOTE: As Energy Efficiency Increases, the HERS rating Decreases) To achieve this, the energy efficiency of the exterior envelope will need to be increased. Wall systems can go from 2x4 stud frame to 2x6 stud frame, interior wall insulation can increase from R-13 to R-19, a possible rigid foam insulation can be added to the outside of the frame wall, and some form of air barrier will help to attain this goal.....or you could just use a 4.5" SIP (Structural Insulated Panel) and do the same thing.

HERS Rating:



Price Difference:

Wall Section:

Stick Frame: (3 part process)

2x6 Stud Frame Wall
R-19 Batt Insulation
Dow 1/2" Rigid Foam
VaproShield or Owens Corning Air Barrier
Approx. \$4/sq.ft.

SIP: (one part process)

4.5" EPS SIP

Approx. \$4/sq.ft.

Other Factors to Consider:

Increased installation time
due to the need of different trades
More skilled labor

Shorter installation time
with no additional trades
No additional skilled labor

SIPs will decrease installation time, increase efficiency of the energy envelope, and reduce jobsite waste better than stick built homes. Also, all homes but SIPs require a blower door test for the HERS rating. SIP homes have been exempted from this test due to the expectancy of a tight energy envelope delivered by the panel itself.

...where affordable just begins with the price of the home...



Construction Cost Comparative: SIP vs. Stick Frame

- 
- SIP construction is very similar in cost to standard “stick frame” construction.
 - SIP construction saves costs attributed to construction time and framing labor, deletes insulation costs, and allows for a downsized HVAC system.

APPROX. 1280 SQFT 3BDRM 2BTH NO GARAGE,			APPROX. 1280 SQFT 3BDRM 2BTH NO GARAGE				
STICK-BUILT HOME WITH CODE INSULATION			SIP HOME				
WALLS	R-13	TRUE R-8	WALLS	R-16	TRUE R-16		HIGHER TRUE R VAL.
ROOF	R-30	TRUE R-20	ROOF	R-28	TRUE R-28		HIGHER TRUE R VAL.
FIRE RETARDANT RATINGS:	NONE		FIRE RETARDANT RATINGS:	MINOR		SIP HSE MORE FIRE RESISTANT	
ENERGY RATING:	85 HER		ENERGY RATING:	43 HER		SIP HSE 50% MORE EFFICIENT	
SHEAR WIND VALUE	NONE		SHEAR WIND VALUE	140 MILE		SIP WALL STRONGER	
STICK FRAME WALL STRENGTH	16" OC		SIP FRAME WALL STRENGTH:	9" OC		SIP WALL STRONGER	
BLOWER DOOR	2.3		BLOWER DOOR ***	1.2		SIP HSE TIGHTER	
DUCT BLASTER	REQUIRED		DUCT BLASTER:	NOT REQUIRED			



*** BLOWER DOOR TEST NO LONGER REQUIRED FOR ENERGY STAR RATING ON SIP HOUSES ONLY!!! Energy Star recognizes there is no need to test a SIP house because the extreme tightness of the home is a function of the panel and is obtained naturally with the use of SIPs. (Energy Star Program 2.5 and 3.0)

Ease of Installation



- Structural Insulated Panels arrive at the construction site pre-cut so that the actual installation time is reduced to a matter of days rather than weeks.
- Pieces are assembled according to a plan showing individually numbered panels shipped to the jobsite in assembly order.
- Joints between adjoining panels are sealed airtight with a foam sealant to prevent moisture and hot and cold air from penetrating the structure.
- Roofing panels can be installed as quickly as wall panels allowing the structure to be "dried-in" and free from weather and other outside elements that could otherwise delay construction.
- Highly skilled labor force is not required for panel installation.
- For construction professionals knowledgeable in standard wood frame construction the learning curve for an affordable housing structure can be as fast as one (1) home.
- Representatives from Carl Franklin Homes will assist builders new to SIP construction.
- Panels are pre-drilled with electrical chases at the factory
- Production methods are environmentally friendly. The foam inside a panel consists of 98% air, requires little petroleum, and is made with a non-CFC blowing agent.



Other SIP Facts

- From the street, SIP homes appear no different than standard construction homes and can be finished out in brick, stone, or even stucco veneers.
- Any floor plan (residential or commercial) can be built using SIP construction.
- Typical lifespan of SIP construction is longer than that of stick frame construction and is considered more durable.
- The interior of the home is still built with standard stick frame construction since the envelope is the key component to the extreme energy efficiency.
- Wall thicknesses are similar to standard construction and are available in 4.5", 6.5" and up to 12.25". The thicker the wall, the higher the R-value rating associated with the structure.



DAY 1: Exterior wall installation.
Total exterior wall frame time is

11



- Wall panels can be installed by one man



DAY 2: Gables and Ridge Beams go up



DAY 3: Interior and Exterior walls framed and roof installation begins

14



DAY 3: Roof panels are installed with 12" Titanium Screws

15



DAY 3: Roof installation almost complete
House dried-in by end of Day 4.



DAY 5: House ready for brick and paint

17



DAY 52: House completed. Hill Country Style

18



Period Style Home

19



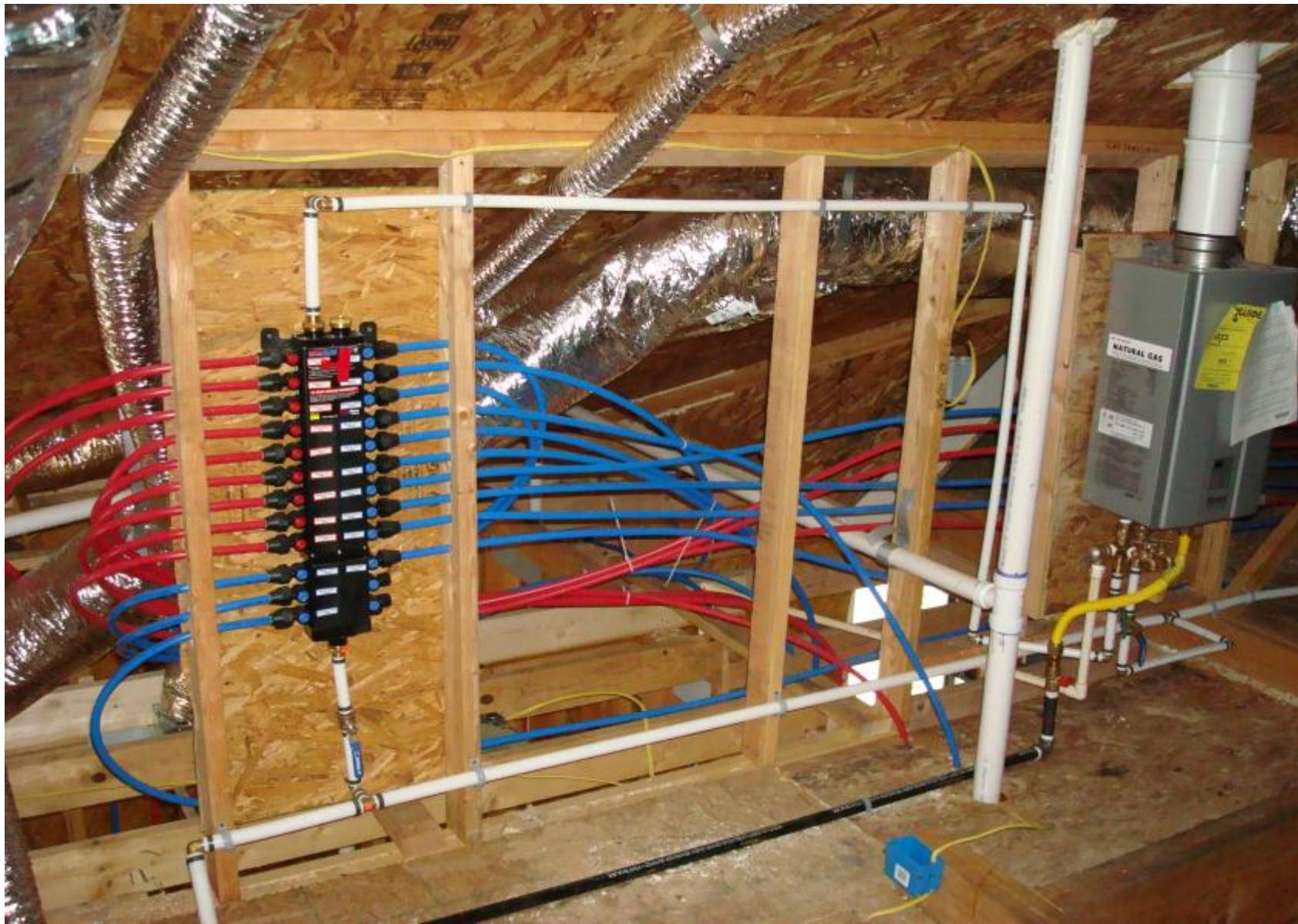
Cottage Style Home

20



Conditioned attic space allows for plumbing systems without additional insulation

21



Conditioned attic space allows the HVAC unit to operate in the same temperature it's producing.

22



Attics are uncluttered....this span is 42' from camera to end wall.....

23



Large or small.....SIPs can be used in any design

24



Ranch Style Home with Metal Roof

25



SIP enclosure, stained concrete floors, no VOC paints, certified FSC wood cabinets, energy efficient lights, recycled glass counter tops, low flow plumbing fixtures and Solar Hot Water.....technologies used by Carl Franklin Home

26



SIP roof on an ICF (insulated concrete form) house

27



Structural Insulated Panel Plant



Plant Equipment arrives by truck and the line is set up. Shown is the make-up table(lower rt.), press (on truck and inline), and roll-off table (upper left after the press)



...another production line and press...



Expanded Polystyrene (EPS) is used as the insulation in a SIP. Panels are stacked in a plant ready to be made into panels. Note the electrical chases pre-cut in the panels.



Panel Plant Objectives

Provide "Whole House Enclosure Systems" to Builders

1. As a total Energy Envelope Solution Company, structural insulated panel (SIPs) manufacturing will be the main component for new construction; however, we plan to offer other solutions that will meet the new requirements if a builder does not want to use panels. We feel once a builder understands the energy savings with panels and ease of installations most will want to use them. We will also offer solutions and training on rehabbing existing homes with several types of insulation.
2. As a "One Stop Shop", we will offer energy efficient doors and windows along with the panel packages. We will provide green/energy efficient sealants for bottom wall plates and window sealing tapes to help ensure an airtight enclosure.
3. As for SIPs, we can deliver panels to the jobsite for your builder to erect, or, will offer to erect the envelope on site.

REQUEST FOR FUNDS

- Carl Franklin Homes, L.C. (as managing partner for the Panel Plant Ownership) is requesting the following funds in either a grant or low interest, long-term loan:
- Panel Plant Equipment: \$400,000.00
- "G & A" Funding: \$200,000.00
- **TOTAL FUNDING:** \$600,000.00

Breakdown of costs and uses
found in presentation booklet