

Regional Codes Coordinating Committee

JANUARY 29, 2019

STAFF CONTACT: RYANN CLINE

1. Welcome and Introductions.

Action Items/Presentations

2. Meeting Summary.

- I. The October 4, 2018 meeting summary will be presented for approval.

3. Presentation over Structural Insulated Panels.

- I. Matt Mitchell, James Andrews Custom Homes, will give an overview of Structural Insulated Panels.

Structural Insulated Panels

MATT MITCHELL

JAMES ANDREWS CUSTOM HOMES

GILCHRIST AND COMPANY REAL ESTATE

Structurally Insulated Panels



SIP CONSTRUCTION

MATT MITCHELL – JAMES ANDREWS CUSTOM HOMES, LLC

History of SIPs

- **1930's Military and Forest Products Laboratory in Michigan**
 - **Frank Lloyd Wright's fascination - did not like AC but loved SIP**
 - **Alden Dow (student of Wright) but liked AC and loved SIP**
 - **1st SIP houses in the 1950's by Alden Dow**
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- **SIPs have been around so long, why? They work phenomenally!**
 - **Why not prevalent? It costs more (but the gap is closing).**

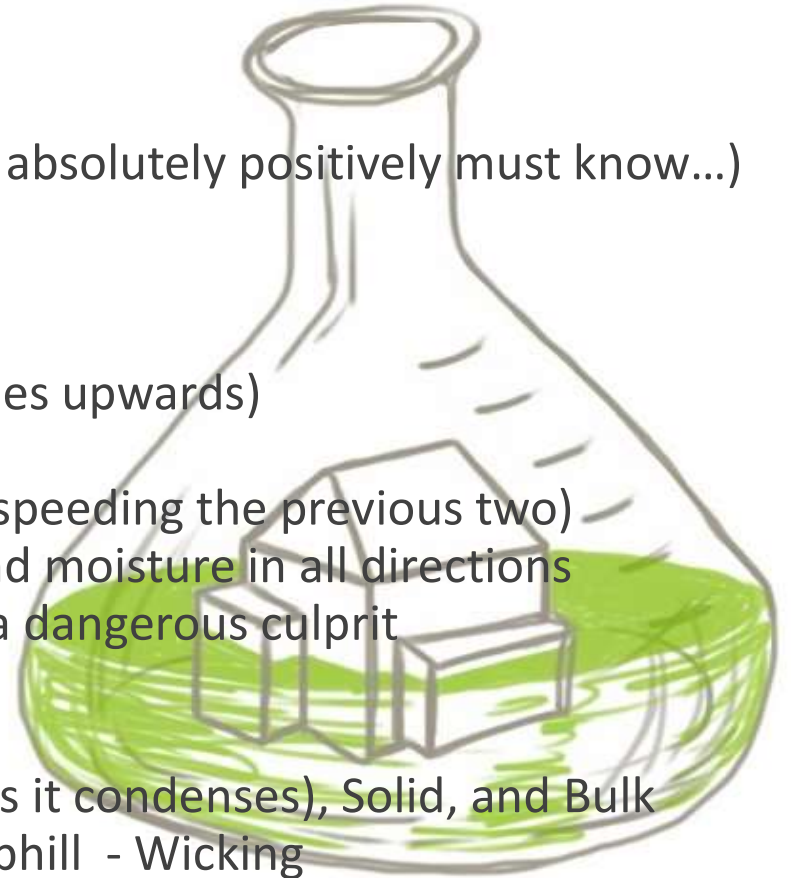
Bit O' Science

Newton's 2nd Law of Thermodynamics (What you absolutely positively must know...)

- Heat moves towards cold (not just upward)
 - Thermal Bridging
- Moisture moves towards dry areas (sometimes upwards)
 - Moisture Infiltration
- High pressure moves towards low pressure (speeding the previous two)
 - Air Infiltration causes movement of heat and moisture in all directions
 - Wind as well as a poorly designed HVAC is a dangerous culprit

Bonus points:

Water attacks in three forms: Vapor (as it condenses), Solid, and Bulk
Capillary Action – how water moves uphill - Wicking

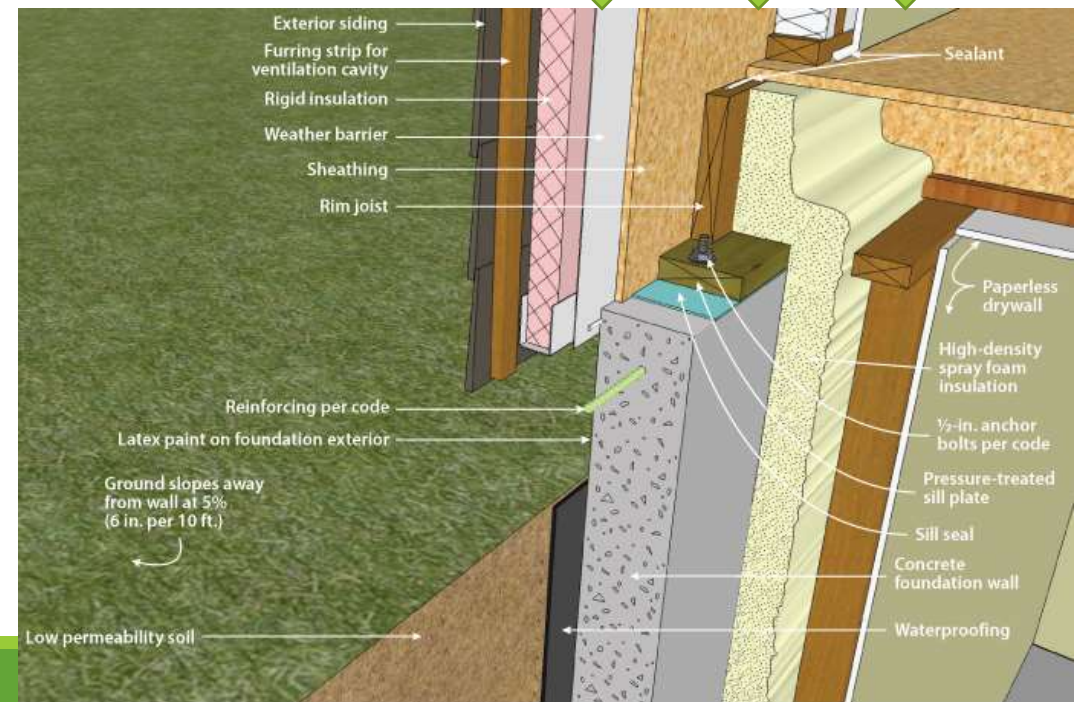


The Problem We Face

- Traditional Stick Framing and the code
- Advanced framing technique
- Wall Cavities
- ZIP system
- Blown Foam ½# or 2#



Little too complex
maybe...much!!!
I challenge someone
to get this correct.

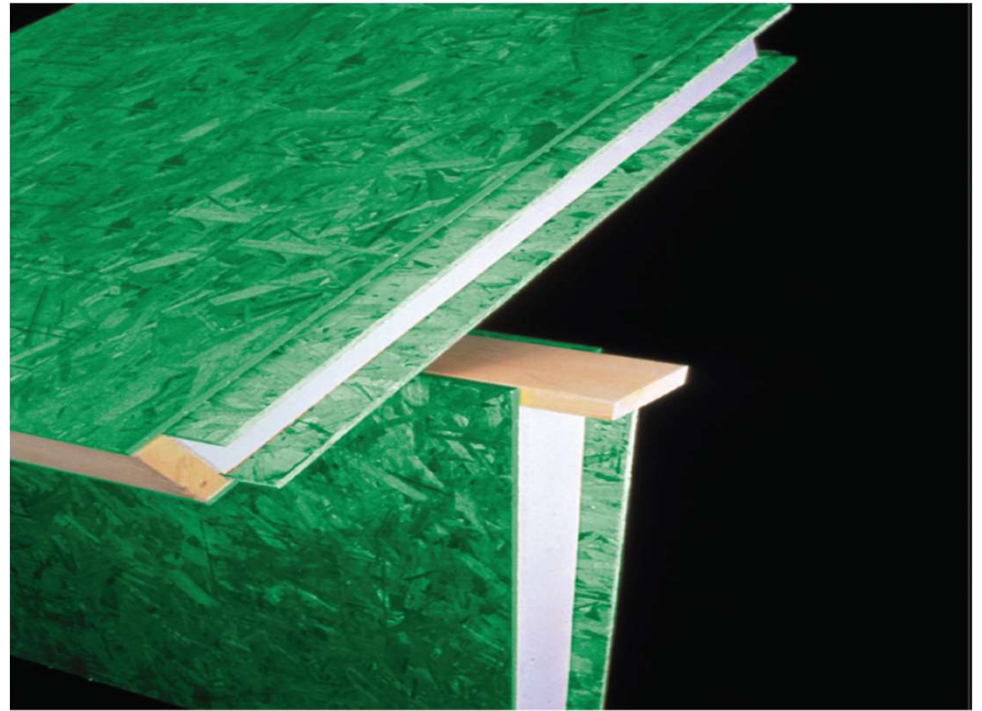


The 2018 Code

- R-value – for Zone 3 Table R402.1.2
 - R 13 + 5 continuous Insulation or R 20 cavities
 - R 38 ceilings
- All air ducts insulated (SIPs exempt) R403.3.1
- Duct leakage testing (SIPs exempt) R403.3.3
- Air Infiltration Maximum 3 air exchanges/hr at 50 Pascals. R402.4.1.2
- ERI rating of 57 Table R 406.4 if alternative path
- R614 of the 2007 Supplement officially introduced SIPs into the IRC
- R610 of the current 2018 code

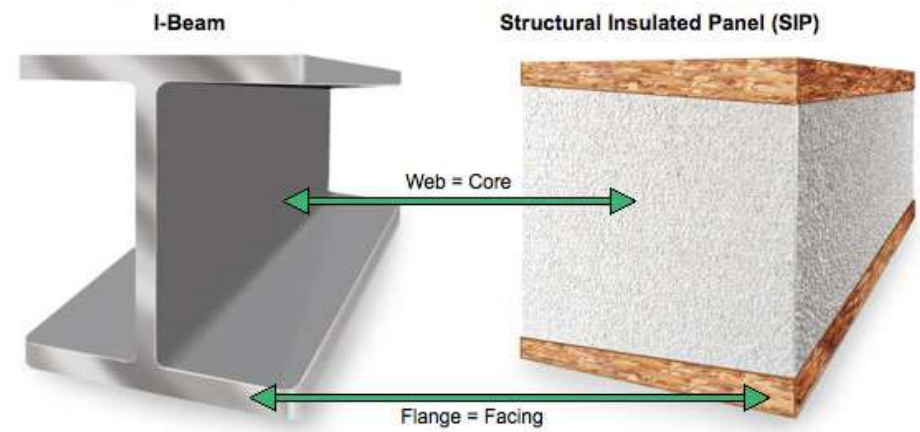
Structural Insulated Panels (SIPS) are Composed of: 3 Simple Parts

- SIP Grade Oriented strand board
 - Meets PS2-92
- Expanded polystyrene (EPS)
 - Structural Grade
- Laminating adhesive
 - Meets ICC ES AC05
- These things are crazy Strong!!!



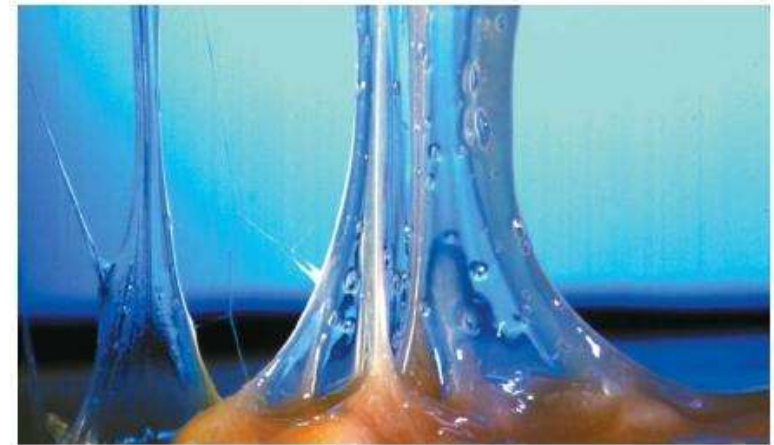
Expanded Polystyrene Core (EPS)

- Structural “web” of panel
 - like an I-Beam
- Eliminates thermal bridges
- Stable R-value (4 per inch)
- Moisture Resistant
- Solid cavity, no air movement (no micro climates)
- Positive net carbon benefit
- 100% recyclable



Adhesive

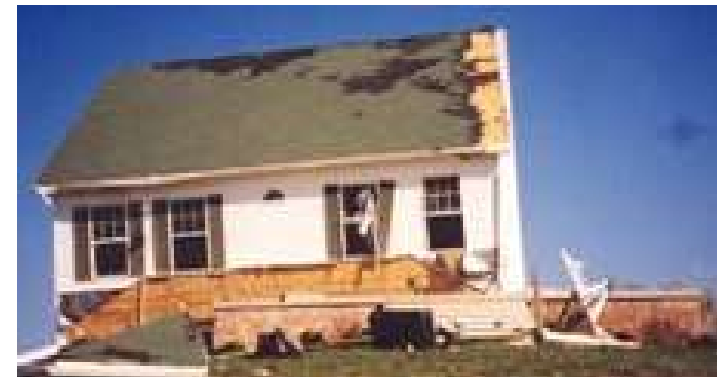
- Structural wood adhesive that is used in:
 - SIPs
 - Glu-lam beams
 - Wood I-joist
 - Auto industry
- Cross-linked = long term durability
- ICC-ES Recognized



SIP Grade OSB Skins

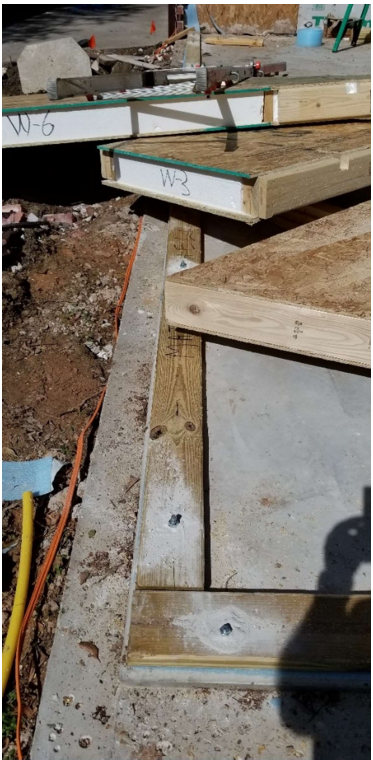
- Structural engineered wood sheathing
- Specific suppliers approved for SIPs
- Manufactured from fast regenerating trees
- Jumbo size – most commonly 8' x 24'
- SIP Grade not from lumber yard
- Crazy Strong Material

SIP house hit by 200 mph tornado. All occupants walked down stairs and out the front door unharmed. The concrete broke tearing it off of the foundation.



Inspecting Concern

- **Anchor Bolts:** for visually inspecting:
 - Partial frame inspection after the sill plate is installed and before walls are installed.
 - Allow pictures to be taken and turned in at the frame inspection for the file.
- **Sheer Wall: No extra engineering required:**
 - The structure walls and roof are already built to exceed shear force wind considerations as a base line for all their structures.
 - Plan reviewer and Inspector's job is easier.



Mold, Mildew & Termite Resistant SIP's

- Borate provides protection to wood based building materials from....
 - Weathering, mold, and mildew during job site storage and the construction process
 -and long term protection from mold, termites and decay after completion of the structure.
- Treatment earns green building points
- Typically identified by coating color



Indoor Air Quality

Size it right!!!

- ~One ton per 1,200 sf is where I am planning a SIP house will come in at
 - Variable speed condenser
 - ERV
 - Humidistats in the bath fans & sometimes a dehumidifier on the system
- No return ducts necessary – just vents to the attic (check with city B.O.) which makes the attic a plenum.
- Very tight vs “breathable walls”
 - Code will not allow for “breathable” anymore

In between the two is **VERY DANGEROUS** which is where the code is allowing builders and cities to approve structures.

Sip Framing Steps of Construction - Multi Tasking

Process becomes One Single Step

- Framing lumber
- Exterior sheathing
- Decking
- Exterior wall and roof cavity insulation
- Wood destroying Insect/mold mildew prevention for 20 years
- Sealed penetrations
- Exterior air/vapor barrier

For Stick framing any trades, many crossing steps and hands = the potential for mistakes and substandard sealing of the environmental envelope. Modern Framing is way too complex to do properly at current costs.



Benefits

- Fewer points of failure
 - Fewer joints
 - Fewer pieces
- Stronger
- Cleaner - Healthier
- Faster to build and need less sophisticated framers
- 20 Year Wood destroying Insect Warranty
- 20 Year Mold and Mildew Warranty
- Easier to Quality Control



SIP Benefits for the Owner

- Comfort control, no drafts, even temperature
- Quieter – reduced exterior noise in mid to high frequency spectrum
- Structural durability and Fire safety – Chimney Effect
- Much Lower energy costs
- Much longer lifetime cycle – centuries
- Cleaner, healthier Air Quality



SIP Manufacturers

- Factory cut vs field cut
- Factory CNC machine vs Factory hand cut
- Process of using a factory with a CNC machine attached to the 3D CAD



**5 Axis CNC machine capable
of cutting 8' x 24' SIP panels.**

Cost Discussion

- No one characteristic as to convince one to use SIPs – It's the SUM of the parts
- Very difficult to quantify how much more the cost of SIPs
 - Shape and Height play a big factor cost per SF
- “Holistic High Performance” – match all of the specs for a true comparison.
 - Total wall R-value
 - Strength
 - Air exchanges per hour at 50 Pascal's
 - Smaller HVAC
 - Benefits

Liability

- It is difficult enough to properly build a house now...just wait!
- The liability is huge. We are already paying through the nose for insurance.
- The guys in the field are not putting it together correctly now.
- It will only get more complex and difficult.
- SIPs makes it, not perfect, but easier.

You don't want a guy like this after you...

Phil Crone, CGP, JD – Executive Officer of Dallas Builders Association



Discussion Items

4. 86th Texas Legislative Session Update.

- I. Jim Olk, City of Garland and Vice Chair of the RCCC, will discuss relevant legislative bills.

Discussion Items

5. RCCC Chair.

- I. The RCCC will discuss David Kerr's change of employment from the City of Plano to the City of Melissa and his wish to remain chair of the RCCC.

Discussion Items

6. Advisory Board Membership.

- I. NCTCOG will discuss the need for a chair for both the Energy and Green Advisory Board and the Electrical Advisory Board.

Discussion Items

7. Regional Codes Work Program Funding.

- I. Funding Goal for FY19 = \$100,000
- II. Current Committed Funding for FY19 = \$21,700

7. Regional Codes Work Program Funding (FY19).

Entity	Amount Committed (As of 1/24/2019)
City of Dallas	\$7,500
City of Decatur	\$500
City of Edgecliff Village	\$500
City of Farmers Branch	\$1,400
City of Frisco	\$3,250
City of Justin	\$500
City of Murphy	\$1,000
City of Plano	\$4,150
City of Rockwall	\$1,400
City of Sanger	\$500
City of Venus	\$500
Town of Highland Park	\$500
Total Committed	\$21,700

Discussion Items

7. Regional Codes Work Program Funding.

- I. FY2020 Cost Sharing
 - i. Information for FY2020 will be emailed out soon.
 - ii. New online interface for cost sharing participation.

2019 Population (NCTCOG Estimates)	Cost
1 million+	\$7,500
750,000–999,999	\$7,000
500,000–749,999	\$6,000
350,000–499,999	\$5,000
200,000–349,999	\$4,150
100,000–199,999	\$3,250
50,000–99,999	\$2,150
25,000–49,999	\$1,400
10,000–24,999	\$1,000
Less than 10,000	\$500

Discussion Items

7. Regional Codes Work Program Funding Options.

- I. Framework for charging for deliverables.
 - i. The Regional Public Works Council charges for the Public Works Construction Standards.
 - ii. An electronic version is \$50 per download and a hard copy is \$85.
 - iii. Cost sharing members get one free download of the electronic version.

Discussion Items

7. Regional Codes Work Program Funding Options.

- I. Framework for charging for deliverables.
 - i. The Wastewater And Treatment Education Roundtable charges for the trainings the group hosts.
 - ii. The registration fee covers the cost of the instructor and lunch for attendees.
 - iii. Cost sharing members get priority registration and a discounted registration fee.

Discussion Items

8. FY2019 Training Discussion.

- I. FY2019 Code Amendment Workshop.
 - i. The workshop had a total of 75 attendees.
 - ii. The video recording of the event is available at the following links:
 - i. <https://www.nctcog.org/envir/regional-building-codes/amendments>
 - ii. <https://www.nctcog.org/envir/regional-building-codes/training>
 - iii. <https://youtu.be/ds8FC8m-WGY>
 - iii. Evaluations discussion.

Discussion Items

8. Anticipated Training Timeline and Topic Prioritization.

Deliverable	Date
Code Adoption Process Video	January/February 2019
Elected Official Training	May 2019
Another Video	June/July 2019
ESL/Energy Training	July/August 2019
Another Video	August 2019
Small City Roundtable	September 2019

Discussion Items

9. Code Adoption Outreach.

- I. NCTCOG will provide an update on the progress of the 30 second explainer video covering the code adoption process and will solicit feedback on the draft video script.

Discussion Items

10. Electronic Plan Review Submittal Subcommittee Update.

- I. The Electronic Plan Review Submittal Subcommittee is scheduled to meet on February 5, 2019.
- II. Meeting materials from the September 25, 2018 Stakeholder meeting can be found on the [Regional Codes Coordinating Committee webpage](#).

Other Business and Roundtable Discussion

11. Future Agenda Items.

- I. The committee can request future agenda items.

12. Roundtable Topics/Other Business.

- I. RCCC members and NCTCOG may share additional items of interest.

Other Business and Roundtable Discussion

13. Schedule for the Next RCCC Meeting.

- I. The next meeting date is tentatively schedule for Tuesday, April 30, 2019 at 9:30 AM in the William J. Pitstick Executive Board Room.

14. Adjournment.

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