

Secure-Lock MGO Board SIP Panel System

EXPERIENCE THE DIFFERENCE

A Safe, Healthy, Eco Friendly Building System

A home or commercial building constructed with the Secure-Lock building envelope will cost much less to maintain. Our building materials are eco friendly "Green Building" building materials.

Your Secure-Lock building kit can qualify for Leed, Green Building and PATH certifications. In addition to all of these benefits, your building will continue to save you money long after your purchase as one of the most dramatic cost savings are realized in energy use.

Because of its extraordinary insulation ratings, innovative air-tight design and efficient engineering, a building constructed with the Secure-Lock building envelope will use 30 to 70 percent less electrical consumption over the useful life of the building.

This is a substantial savings over 30, 40, 50 or more years of reduced electrical consumption and energy savings.

Contact Us

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ARCHITECT- ENGINEER PRODUCT DESIGN GUIDE

BETTER NEWS

INNOVA PANEL

INNOVA PANEL

THERE IS A BETTER WAY TO BUILD®

Secure-Lock is manufactured for high performance, energy efficient buildings and Panel system that are made from Eco friendly building materials. We manufacture and export Structural Insulated Panels (SIP) with OSB, Cement Fiber and Magnesium Oxide skins. The Secure-Lock Panel is the next generation of Structural Insulated Panel. Our energy-efficient Panel system and building kits will qualify for LEED and Green Building certifications.

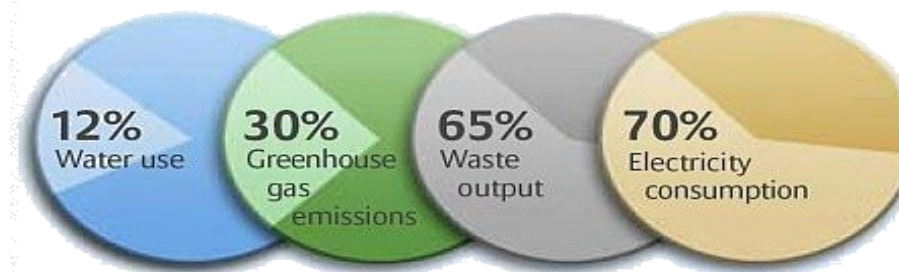
The Secure-Lock Panel building kit includes all of the necessary materials to quickly erect single family homes, town homes, duplexes, commercial buildings, educational buildings, churches, community centers and many, many other structures requiring high performance green building standards. Our panelized building system can be used as an exterior in-fill building skin to provide an eco friendly energy efficient replacement to masonry construction that can be installed in a fraction of the time.

We export our panels and building kits around the World. Build your next project with Secure-Lock Panels.

Tips for Producing Green Buildings With Innova

GOING GREEN PAYS OFF

Green building minimizes consumption and effluence



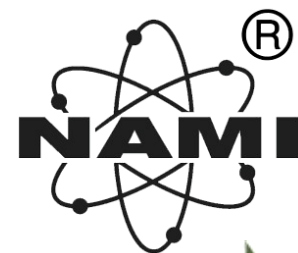
Source: www.usgbc.org

Technology , Innovation...

We combine your wish list with our system flexibility and ingenuity to turn most designs into easy to install prefabricated panelized building kits that are Eco-Friendly and highly energy efficient. We Manufacture "The Buildings Of The Future Today™"

Interior Build-Out : Check out details inside for the Innova interior prefabricated partition .

R-Value Roof Upgrade: Have an old or poorly Insulated building that is costing you a fortune to cool and heat? Check out the Innova retrofit Roof Panel for flat and sloped Roofs. See details inside



LIVE CLEAN BUILD GREEN™

HEALTHY LIVING

- No organic solvents
- No Oils
- No toxic ingredients
- No heavy metal salts
- No Asbestos

Welcome to the
future



Secure-Lock MGO Panel

Who we are

The Company was founded by a team of experienced SIPs builders that were one of the first to introduce SIPs construction products to South America. Recognizing the limitations of standard OSB (SIP) and Cement Fiber (CSIP) panels used here in the USA and other parts of the world, our team of Engineers developed new product options to the industry standard SIP panel in order to overcome these limitations. Our SIP panels have superior fire ratings when compared to standard SIP panels.

What We can Do:

We operate a state of the art SIPs manufacturing facility with two automated lines. We can produce over 500 structural insulated panels daily and up to 3000 energy efficient Building kits a year. We manufacture net zero building envelopes for builders, developers and end users. Our Magnesium Oxide HIP (High Impact) SIPs panel can be used as building skins on high rise buildings replacing concrete block and gaining more Green Building and Leed points for certification. The SIP panel can be used on structural steel and concrete structures to create Eco Friendly high performance building envelopes for shopping centers, warehouses, grocery stores and other big box stores. We can fabricate fast food restaurant building envelopes into energy efficient, Eco Friendly building kits that can be shipped any-where in the USA, saving the restaurant developer valuable time and money. There is an easier way to build, it's the Secure-Lock Way!

Eco-\$mart introduces new product lines:

Secure-Lock MGO SIPs Panels: (Magnesium Oxide SIPs panels). SIP MGO panels are the next generation of SIPs panels having a superior fire rating to traditional fiber cement and OSB SIPs panels. As the result of a license distribution agreement, the Company the exclusive distributor in the USA, Caribbean Island and South America for MGO Corp magnesium oxide board products. The MGO Corp products are fully approved internal and external sheathing products manufactured under JAS/ANZ CODEMARK Con-formity Certification. These certifications are recognized throughout 20 countries world-wide. There are many Magnesium Oxide Board manufacturers, however MGO Corp is currently the only Magnesium Oxide Board available in the USA and South America with these certifications in place for its products. The Secure-Lock MGO Panel is manufactured using the approved MGO board for its external SIPs panel skins.

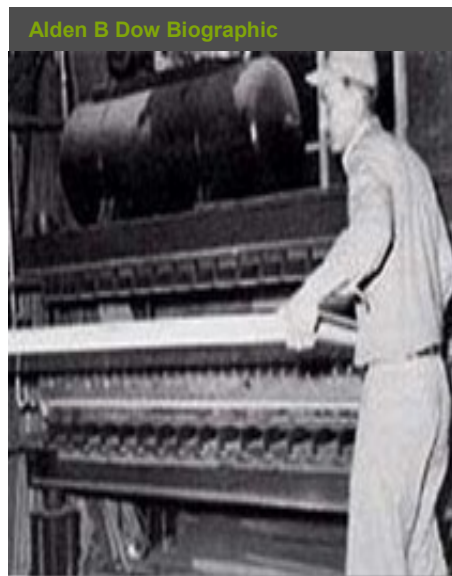
History Of the SIP's Panel

HISTORY OF THE STRUCTURAL INSULATED PANEL (SIP)

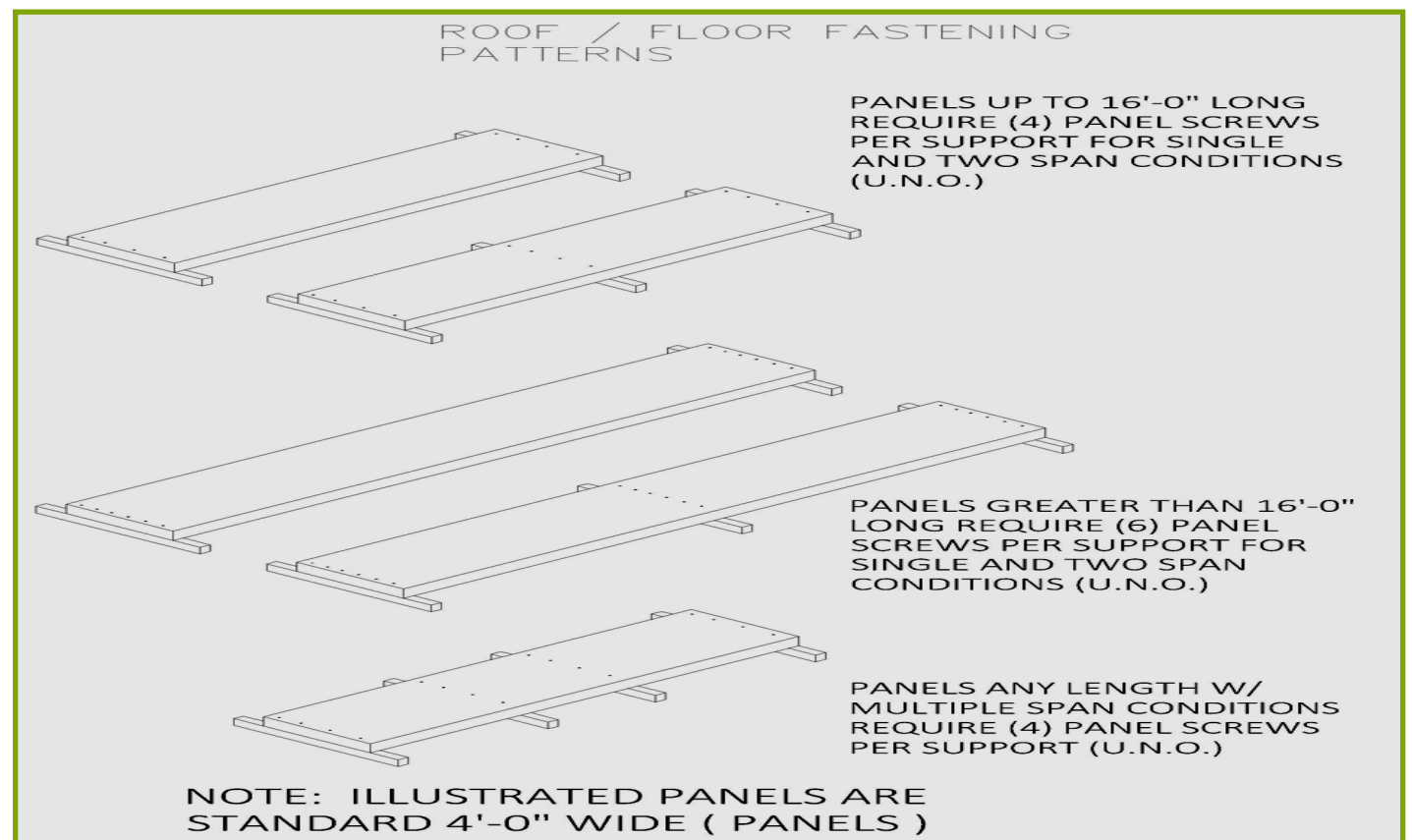
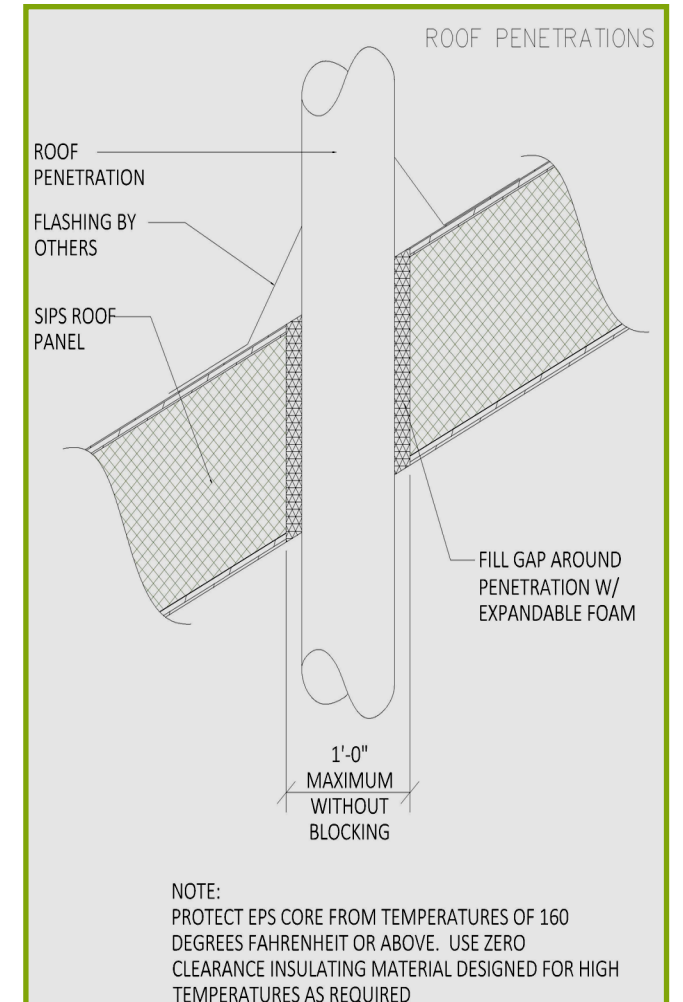
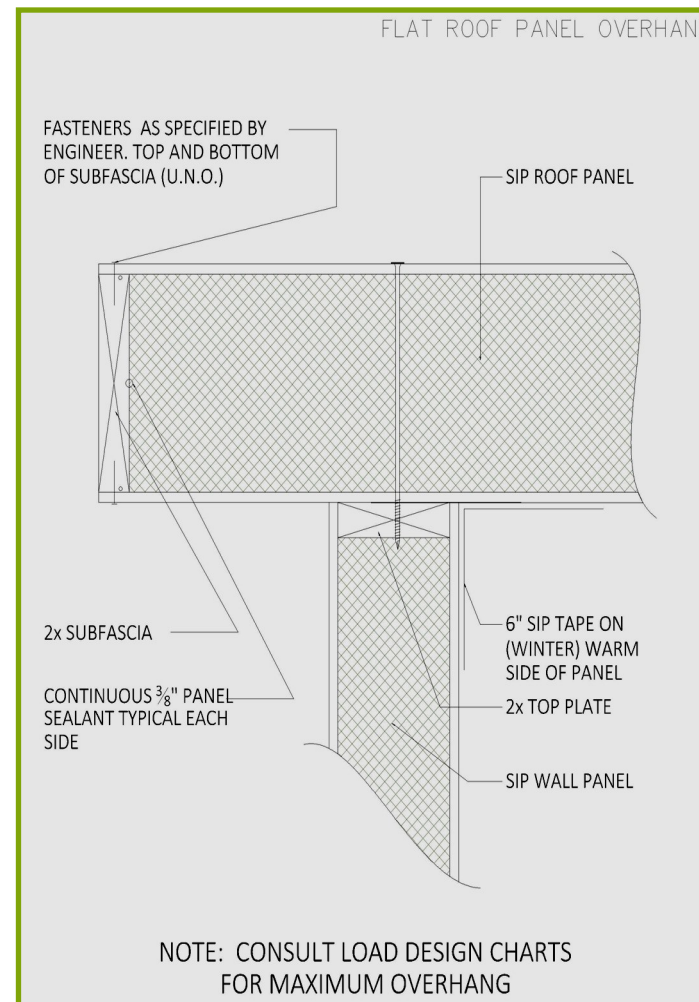
Although foam-core panels gained attention in the 1970s, the idea of using stress skinned panels for construction began in the 1930s. Research and testing of the technology was done primarily by Forest Products Laboratory (FPL) in Madison, Wisconsin as part of an U.S. Forest Service attempt to conserve forest resources. In 1937, a small stressed-skin house was constructed and garnered enough attention to bring in First Lady Eleanor Roosevelt to dedicate the house.

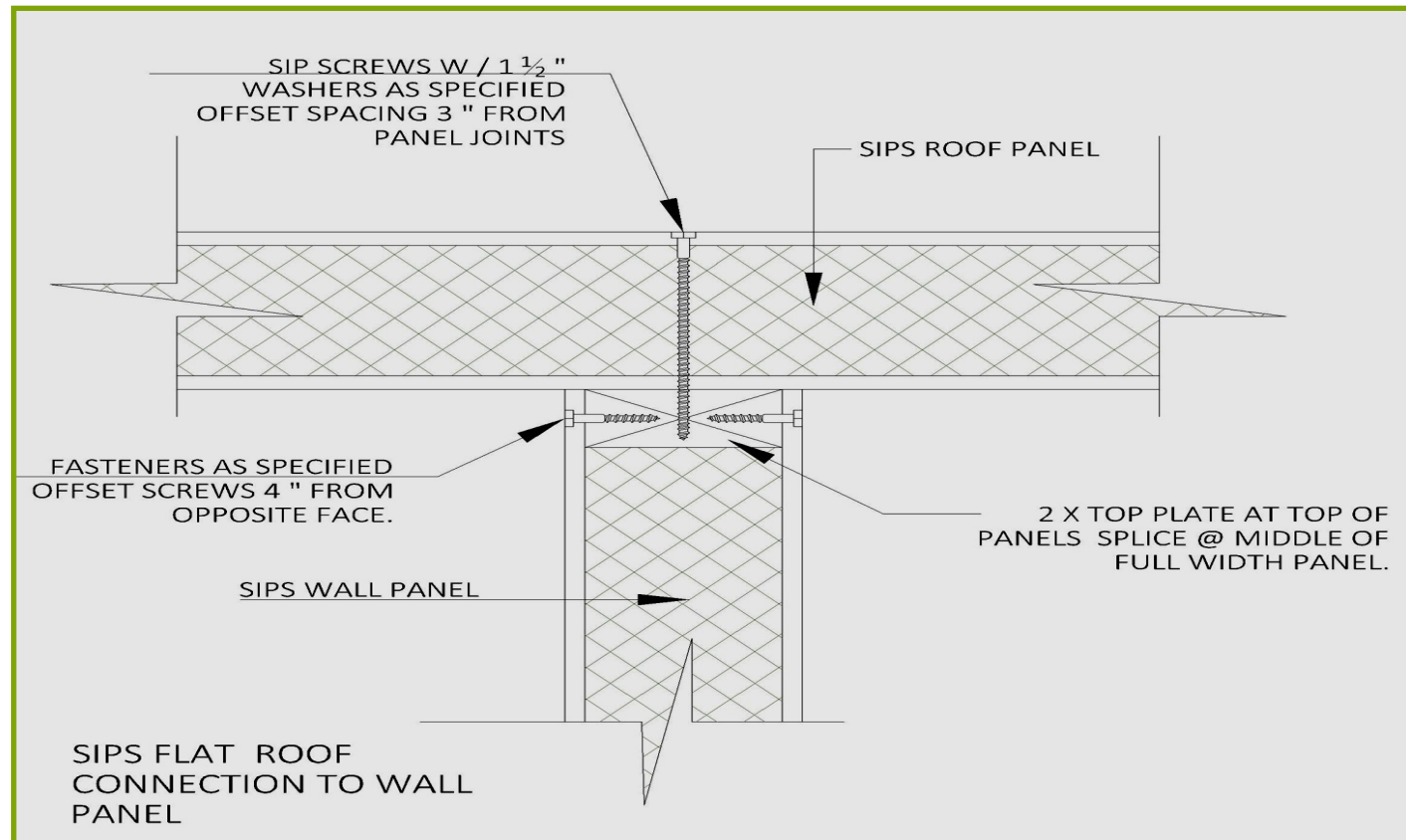
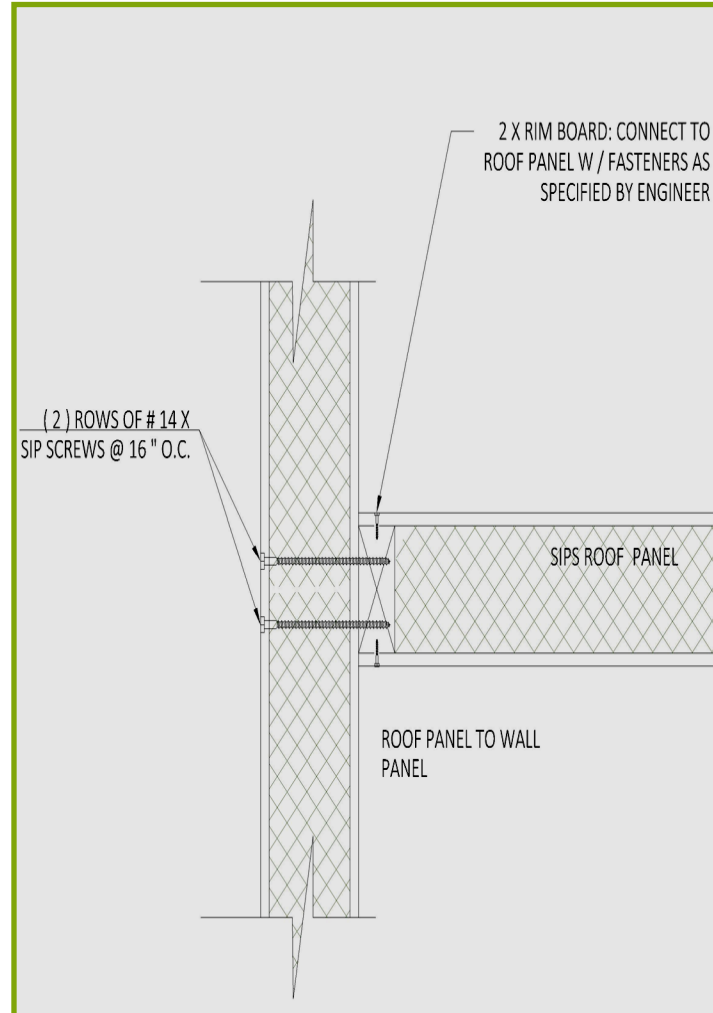
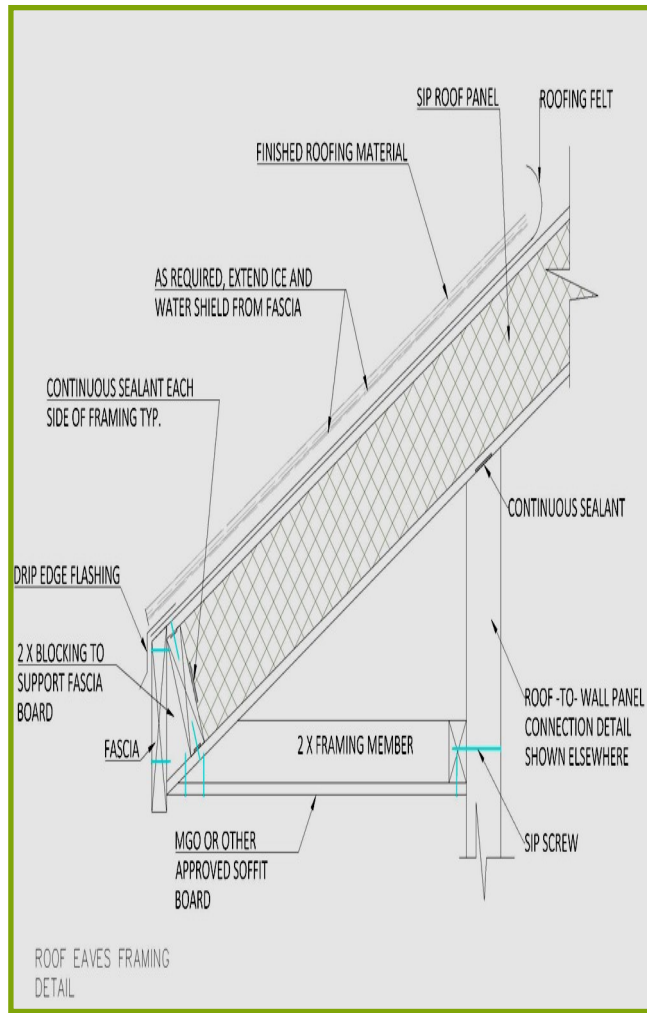
In a testament to the durability of such panel structures, it endured the severe Wisconsin climate and was used by the University of Wisconsin-Madison as a day care center up until 1998 when it was removed to make way for a new Pharmacy School building. With the success of the stress skinned panel, it was suggested stronger skins could support all of the structural loads and eliminate the conventional building frame altogether.

After the creation of their prototype, Forest Products Laboratory entered their custom designed SIP into the marketplace where it sold for the next thirty years.



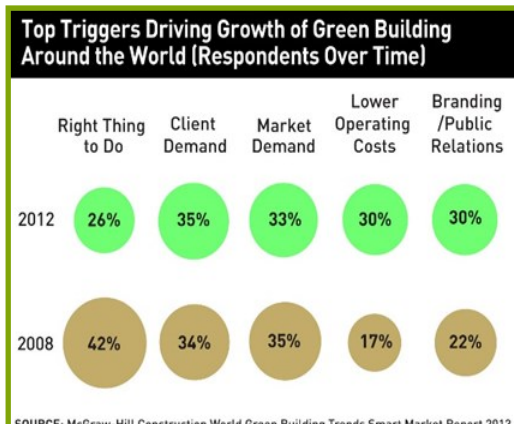
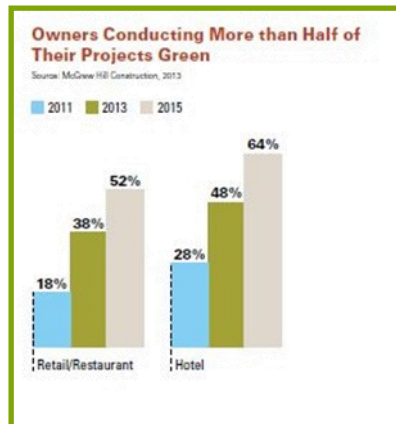
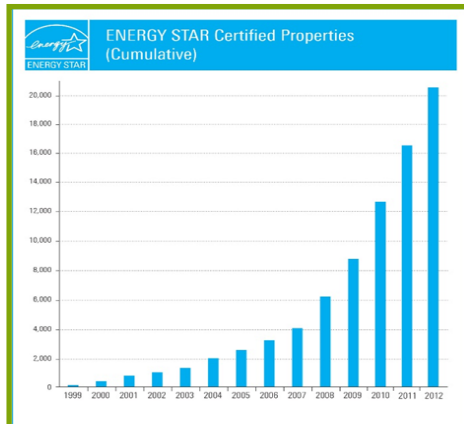
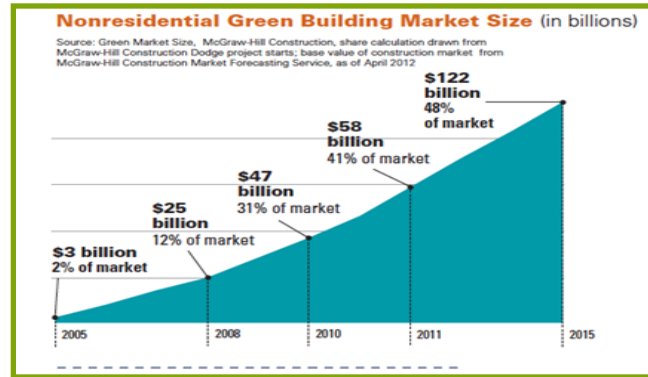
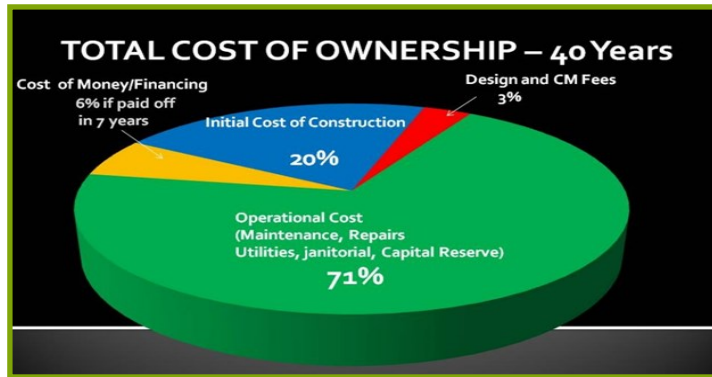
Son of the founder of DOW Chemical Company, Alden became exposed to structural panels while an architecture student of Frank Lloyd Wright. Later to become a well know Architect himself, he sought to create a structural panel with an insulated core. In 1950, Dow did just that and as a result he is generally credited with creating the first structural insulated panel.







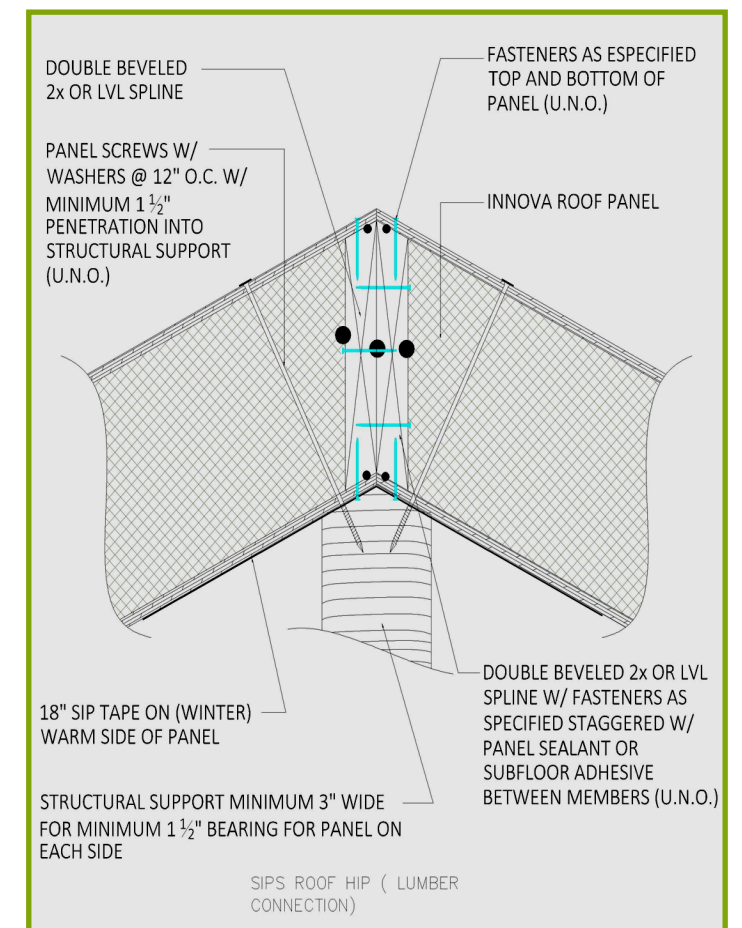
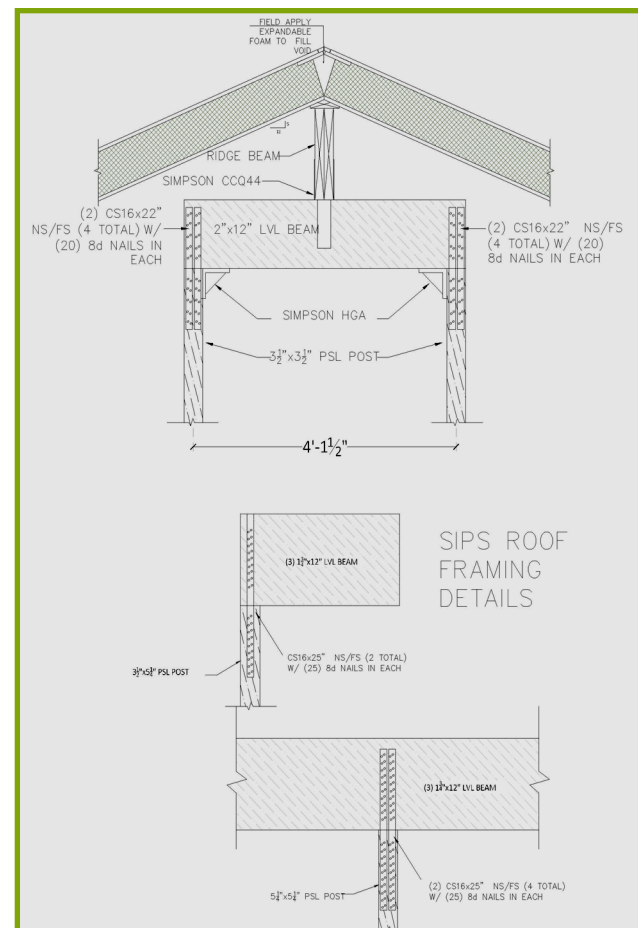
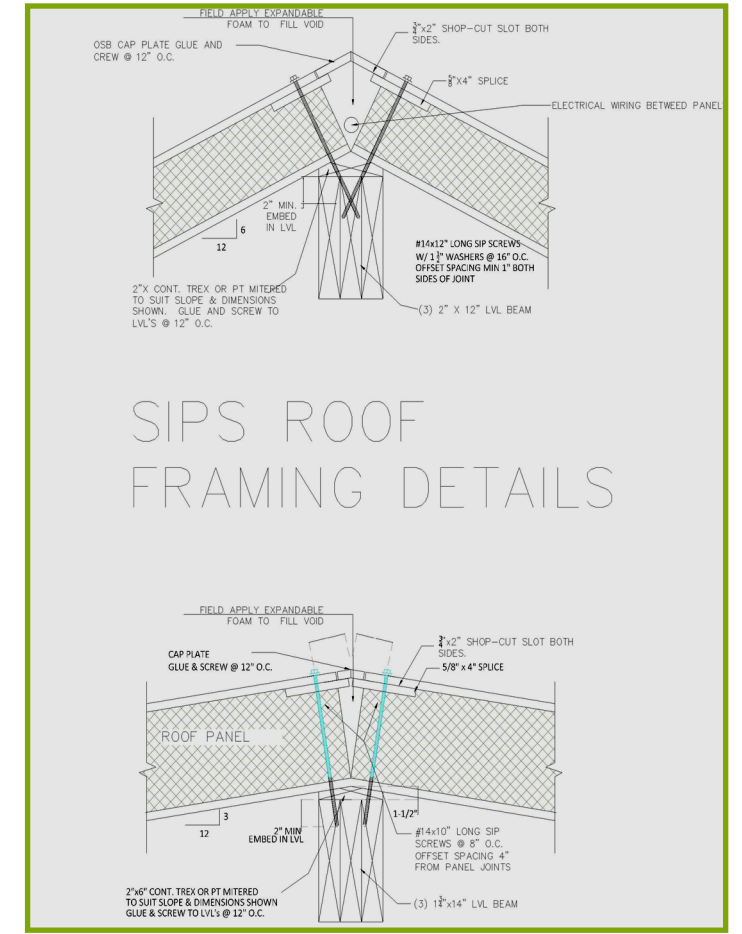
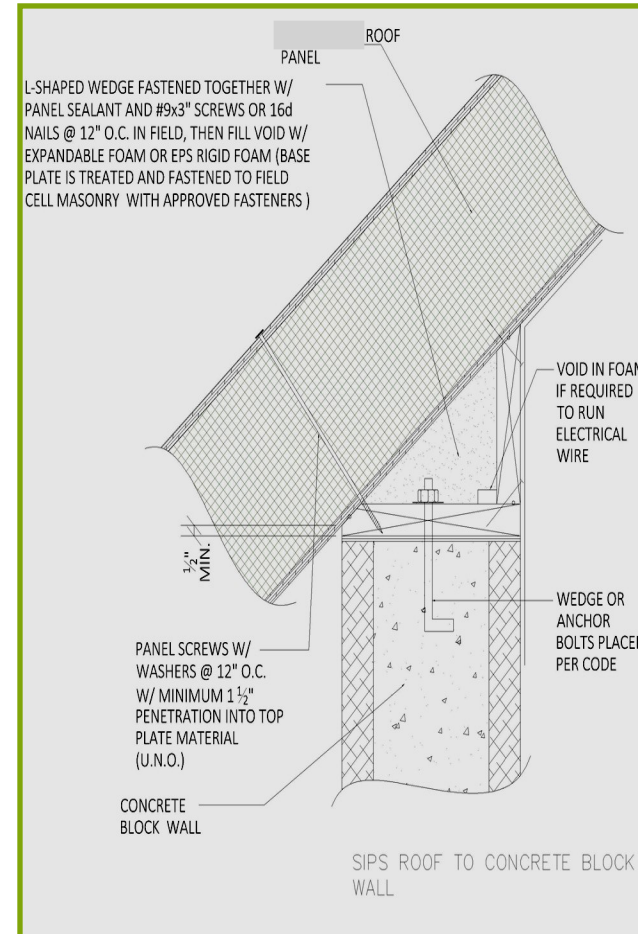
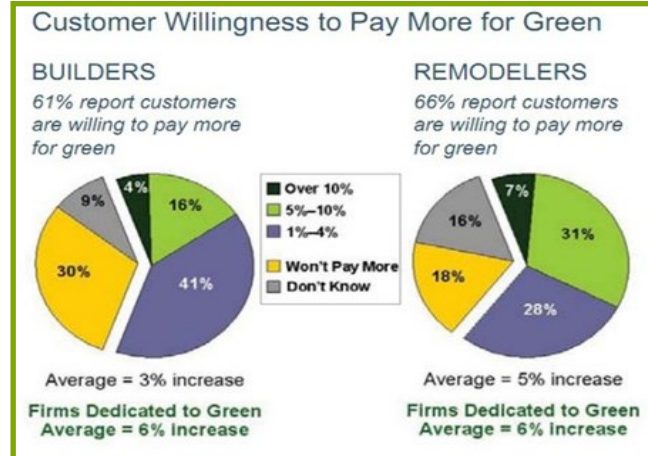
Over the past decade, the dramatic rise in energy costs and an increasingly vocal, environmentally conscious public have led to the growth of green industries. Since 2002, industry revenue has experienced annualized growth of 28.9%. Aided by local and state building codes that promote the use of energy-efficient building design and materials, demand for green construction has skyrocketed. Government programs like Leadership in Energy and Environmental Design (LEED) and Energy Star have also driven demand forward. Green and sustainable building construction is forecast to be the fastest revenue growth industry through 2017 as reported by Ibis World. Educated building Owners and Tenants now understand more than ever that the operational cost of buildings far exceed initial cost of construction. Innova Panel has developed an Innovative portfolio of green sustainable products to help Architects, Engineers, Developers and Builders distinguish themselves in the green construction market.

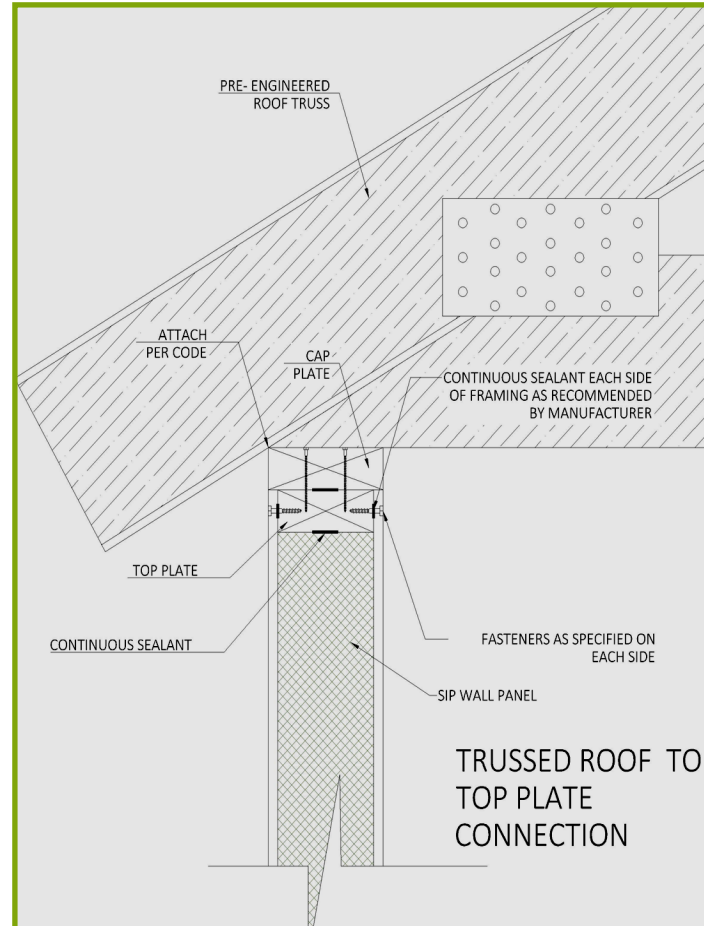
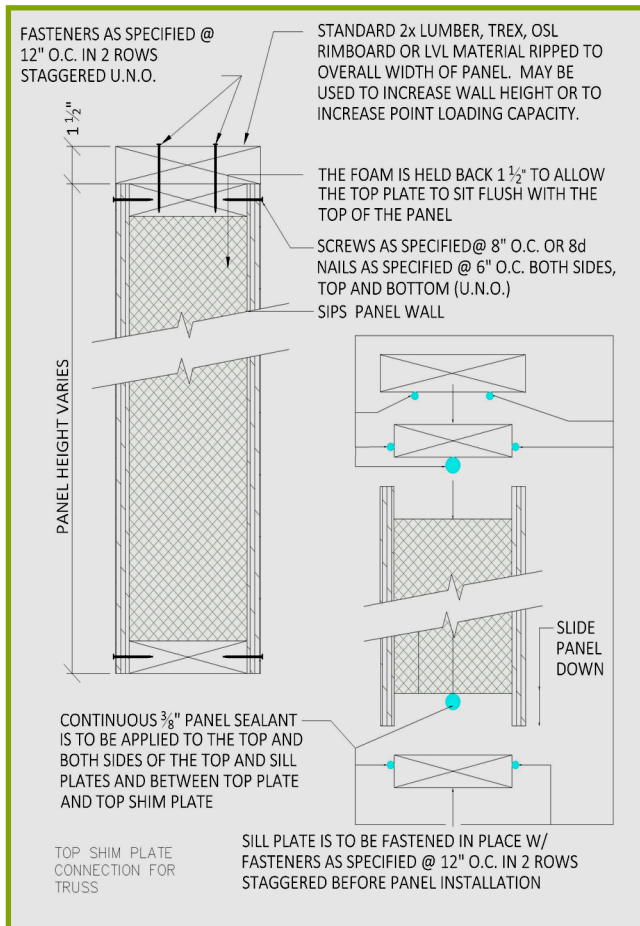
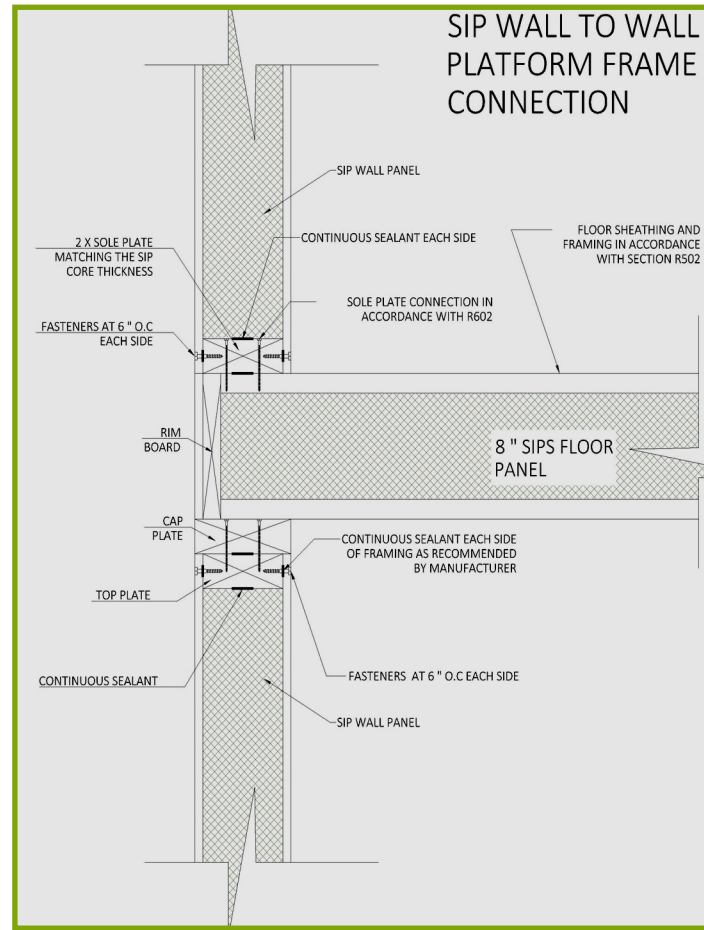
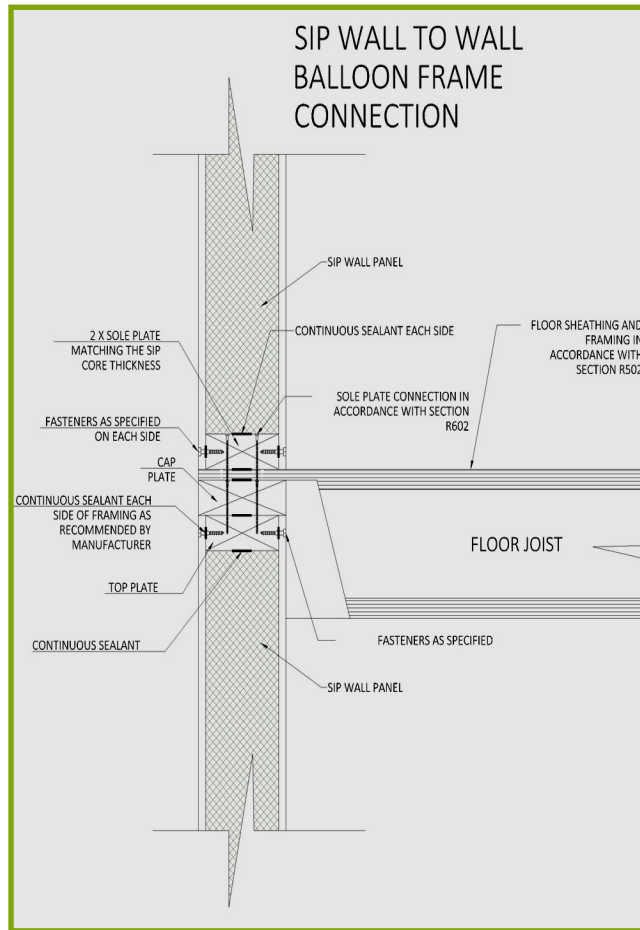


New Construction Comparison

	CODE BUILT CALIFORNIA TITLE	ENERGY STAR	PASSIVE HOUSE INSPIRED	PASSIVE HOUSE CERTIFIED	LEED GOLD
COST DIFFERENCE	Base	2%	5%	7%	7.5%
INCREASED ENERGY EFFICIENCY	Base	15%	Up to 90%	Up to 90%	30%
POTENTIAL INCREASED VALUE	Base	5%	10%	10%	10%

Estimates are approximate and are based on a 3,500SF custom home with Building Costs of \$315 per SF.





OUR PRODUCT LINE



OSB



CEMENT



MGO



Available SIP Products

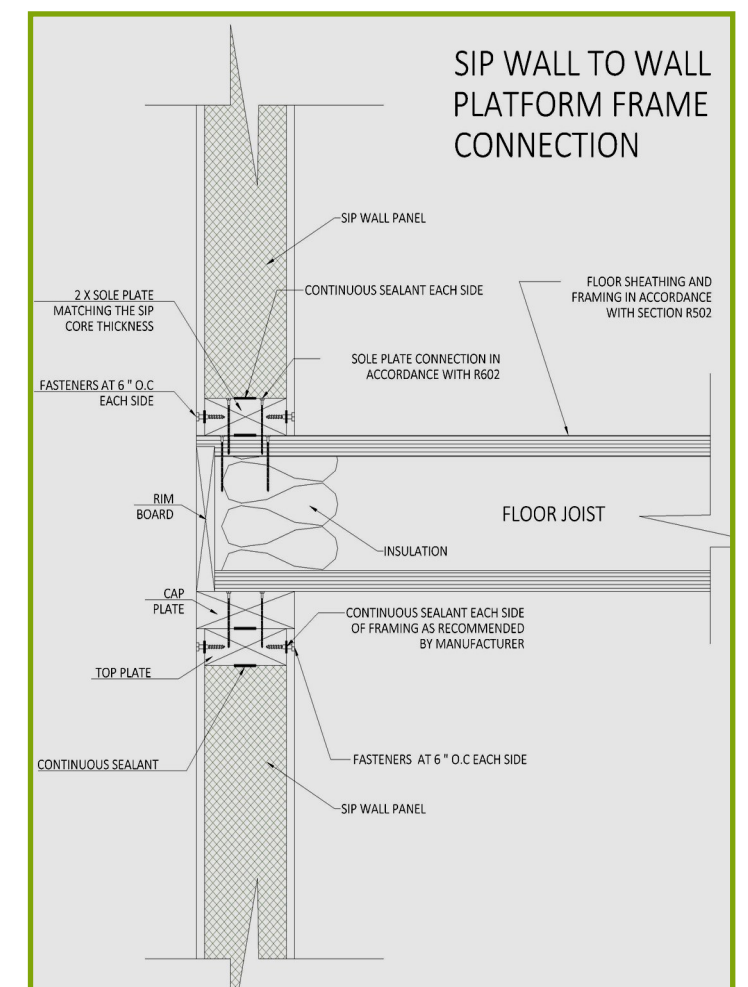
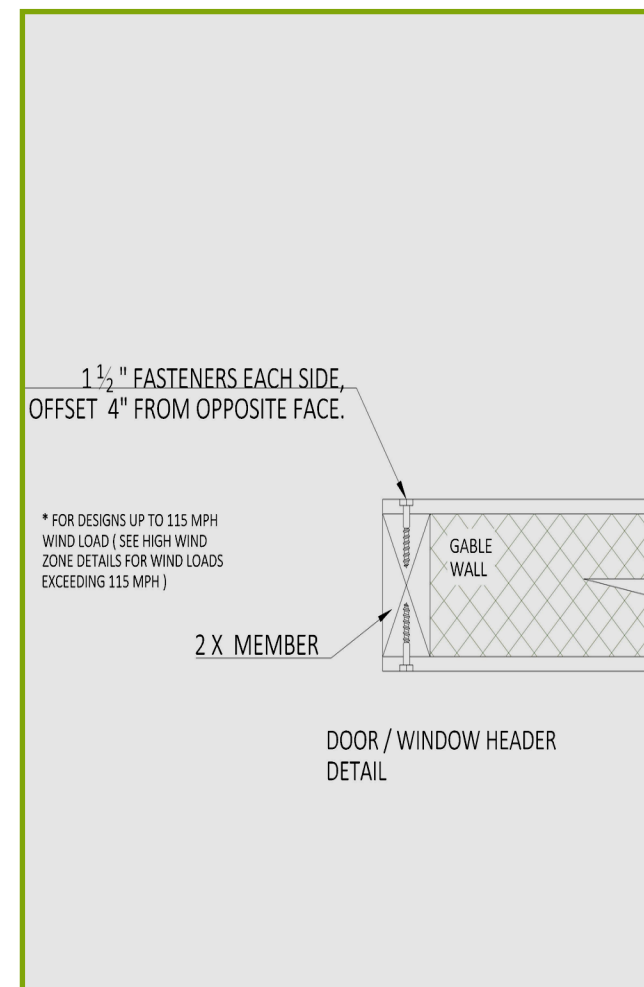
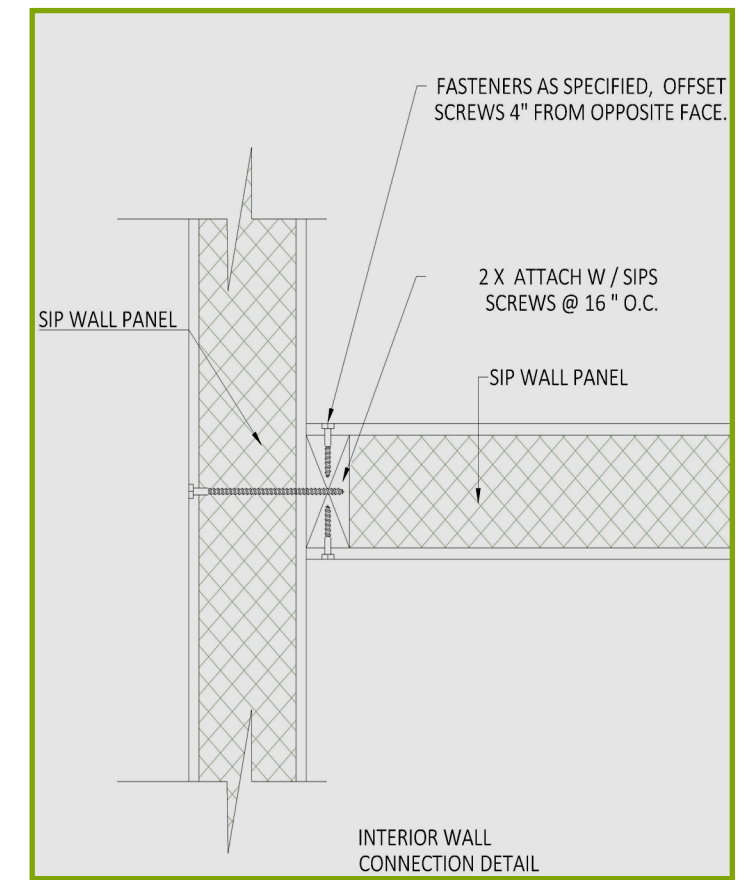
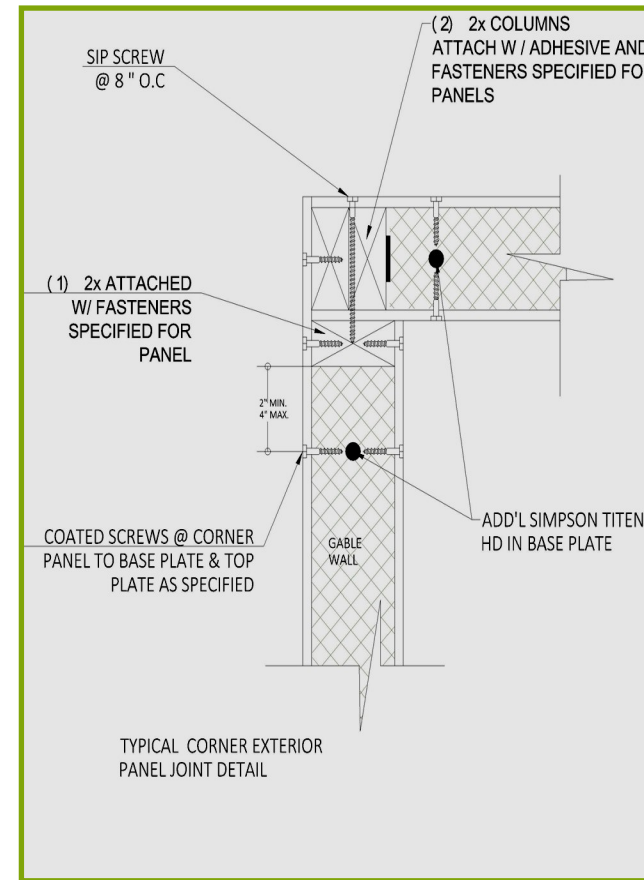
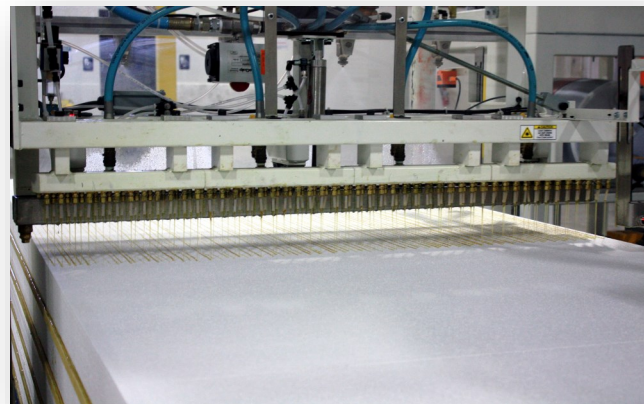
1. OSB SIP Wall, Floor and Roof Panels
2. Cement Fiber SIP wall Panels
3. MGO SIP wall, roof and floor panels
4. MGO SIP High Impact (HIP) wall Panel
5. OSB / MGO SIP Roof / Floor Panel
6. Plywood / MGO SIP roof Panel – Dade County
7. Plywood SIPS R Value Retro-fit roof panel – Dade County
8. OSB Retro-fit R Value roof panel
9. Prefabricated building kits
10. In-Fill exterior walls for high rise buildings, tunnel form projects, structural steel and concrete framed building structures
11. MGO Interior wall partitions for interior build out, retro-fits and high rise construction
12. Fencing and barrier walls

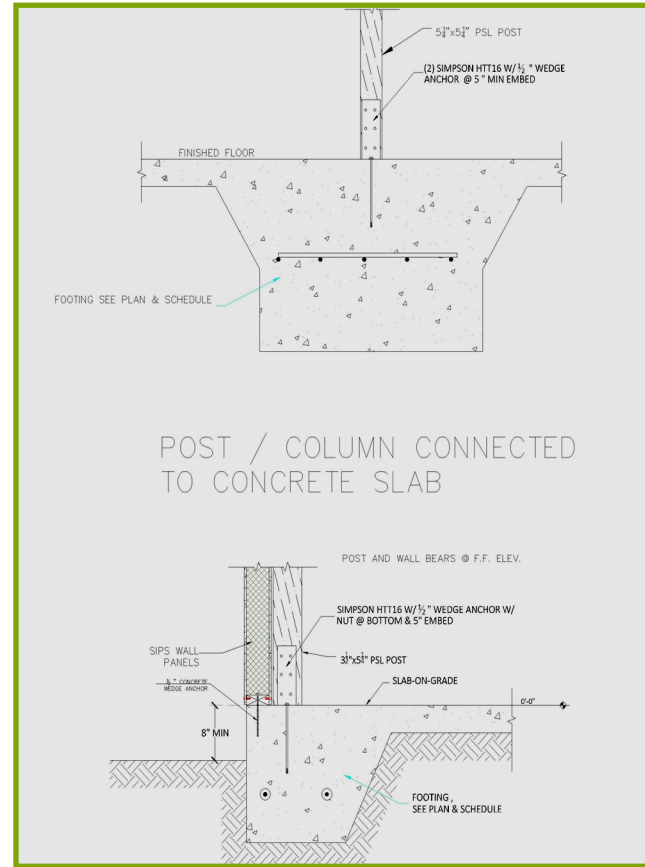
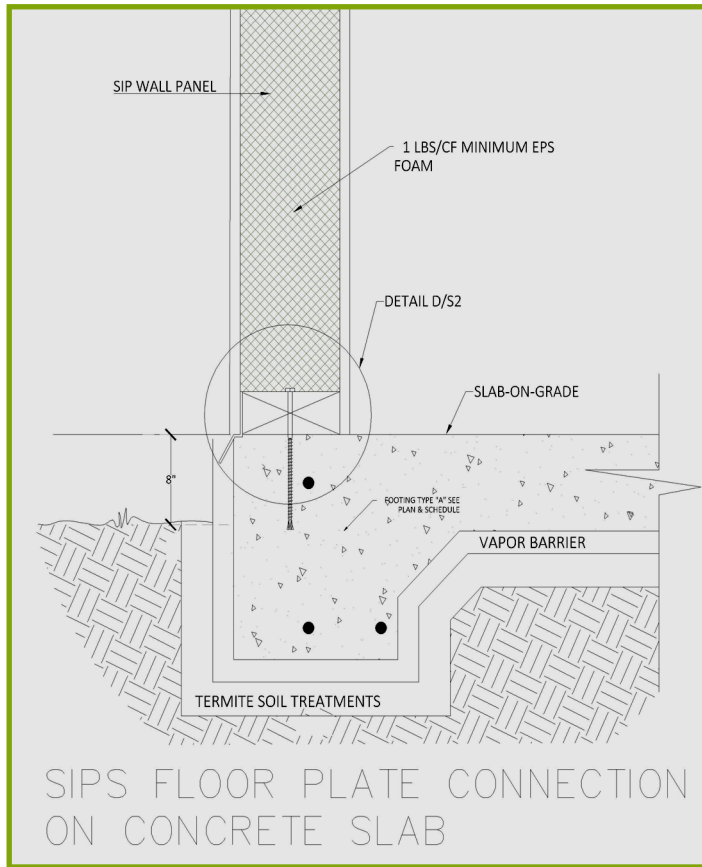


Our Manufacturing Facility



ALL SIPS PANELS ARE MANUFACTURED IN OUR CLIMATE CONTROLLED FACTORY WITH STATE OF THE ART EQUIPMENT TO PRODUCE ONE OF THE HIGHEST QUALITY SIPS AVAILABLE IN THE MARKET. SECURE-LOCK PANELS ARE EXTREMELY STRONG, DURABLE, ENER-GY EFFICIENT AND A COST EFFECTIVE WAY TO BUILD.



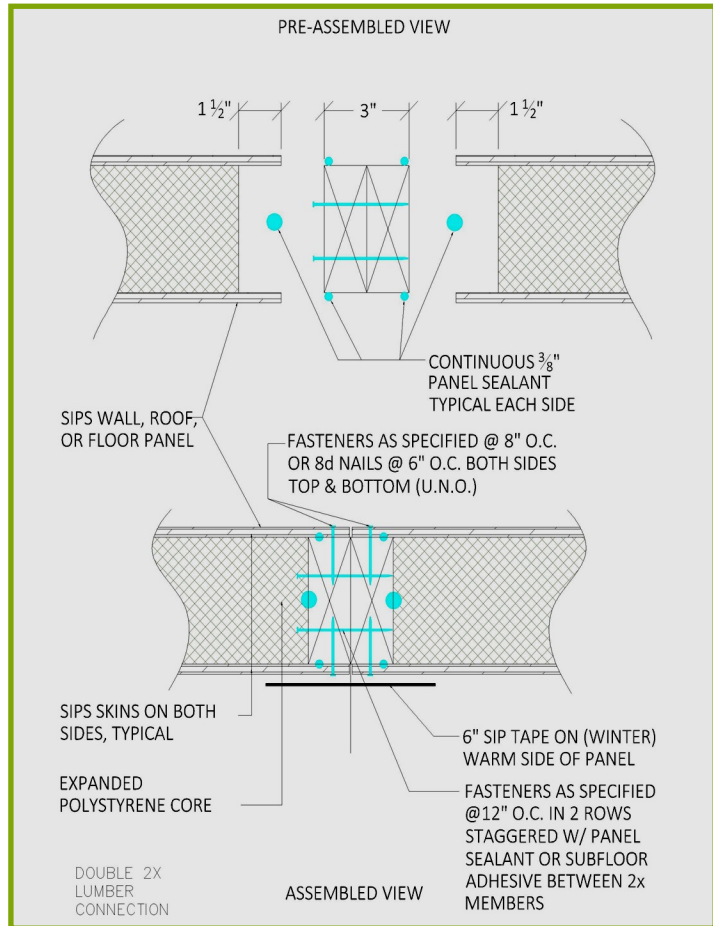
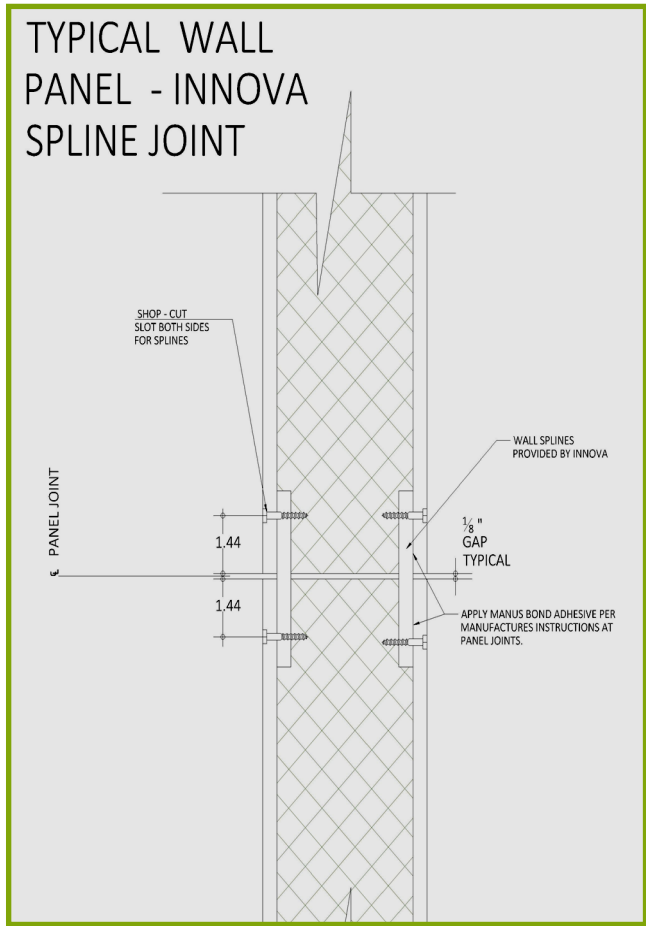


SHIPPING DEPARTMENT



Our Shipping department uses the best tools and technology so that our product reaches it's destination in the best condition.

Shipping Tools



Electric Lift



Gas Forklift



Combi-Lift



Miter Saw



Panel Saw



Scale





THE SECURE-LOCK WAY ...!

you can purchase raw Structural Insulated Panels, or fully fabricated buildings. We can work with your design or ours to fabricate easy to install eco-friendly, energy efficient building kits for almost any design and use .

We can customize any building kit to our customer requirements from a complete building envelope kit, to a complete building including furniture.

Our standard building envelope kit in close the building irony.

SIP PANEL “ CLEAR WALL ” R VALUES

“Clear Wall” R value is the sum R value of a group of layered materials. The actual R value of a building, “Whole

5/16” Hardie Wall Panels

Panel Thickness	1Lbs Density Foam Panel Only	2Lbs Density Foam Panel Only
4 3/8”	15.42	17.86
6 1/4”	23.76	27.08
8”	32.10	36.60

7/16” OSB Roof /Floor / Wall Panels

Panel Thickness	1Lbs Density Foam Panel Only	2Lbs Density Foam Panel Only
4 1/2”	16.22	18.36
6 1/2”	24.56	27.88
8 1/2”	32.89	37.40
10 1/2”	41.24	46.92

5/8” Advantec Roof/Floor /Wall Panel

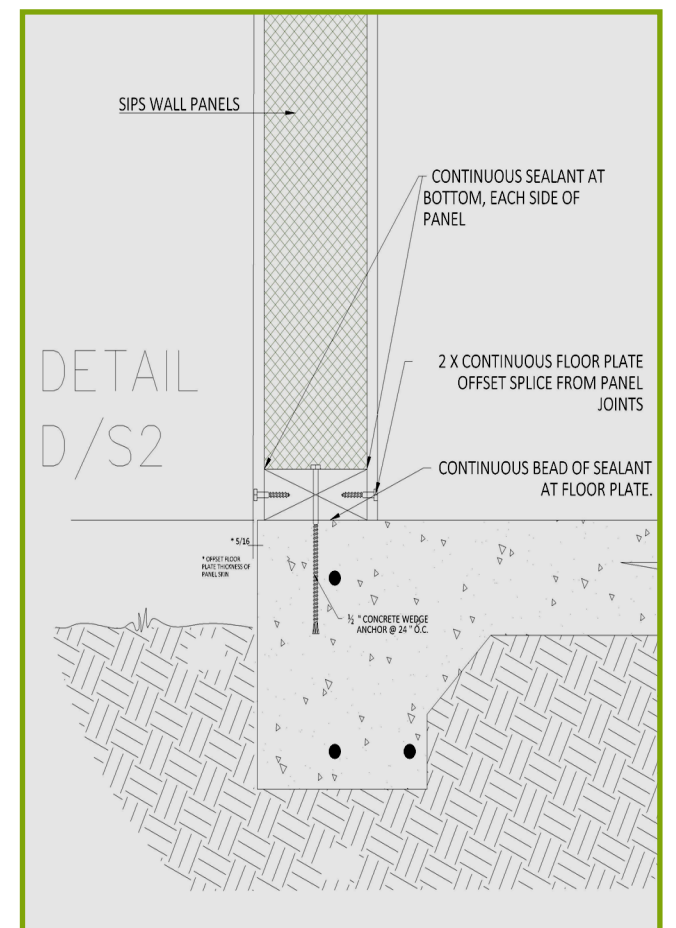
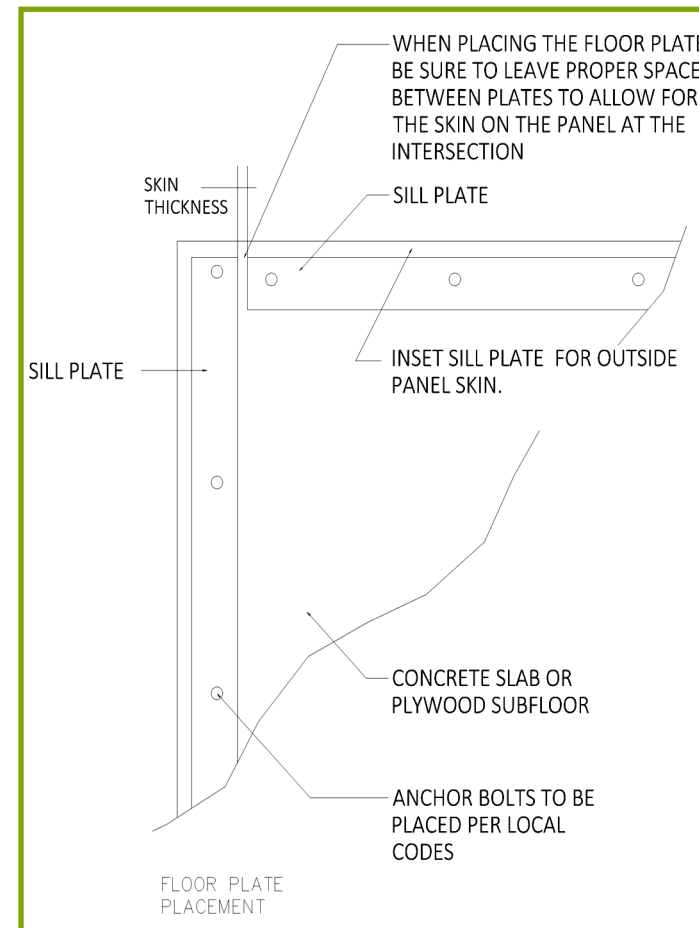
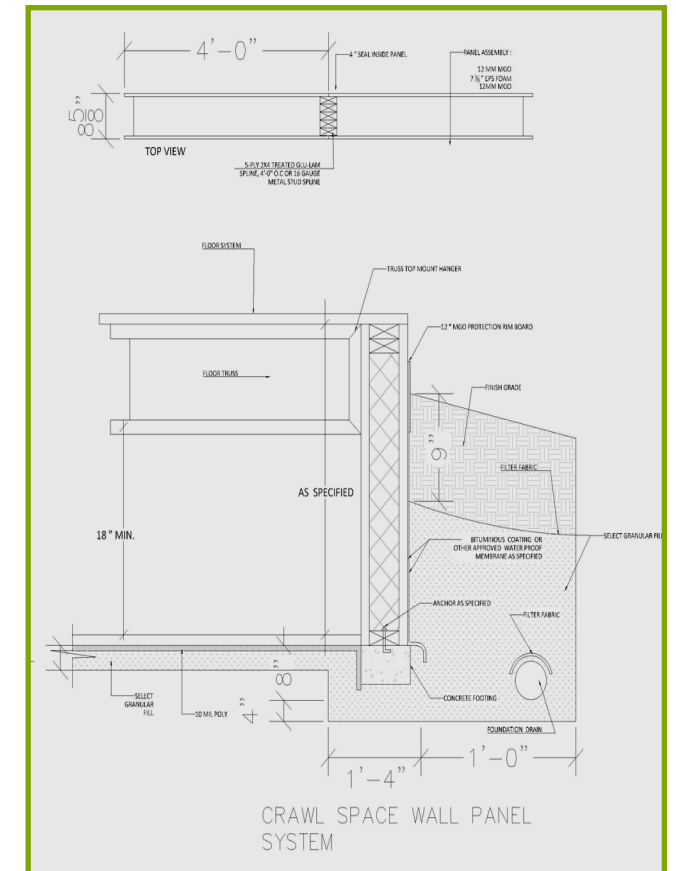
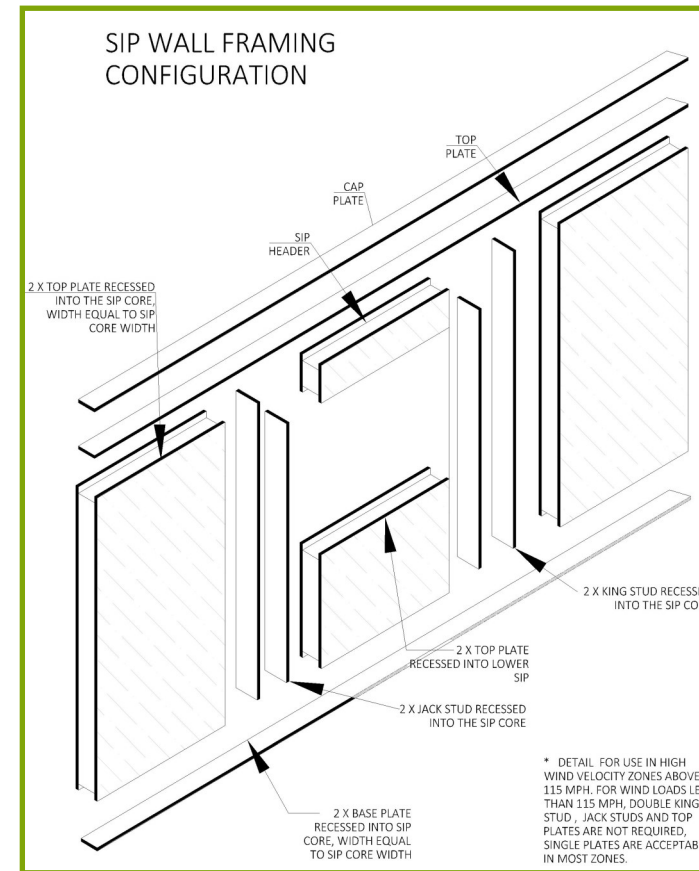
Panel Thickness	1Lbs Density Foam Panel Only	2Lbs Density Foam Panel Only
5”	16.3	18.9
6 3/4”	24.1	28.0
8 3/4”	31.1	36.2
10 3/4”	41.26	47.00

12mm MGO Roof/Floor/Wall Panels

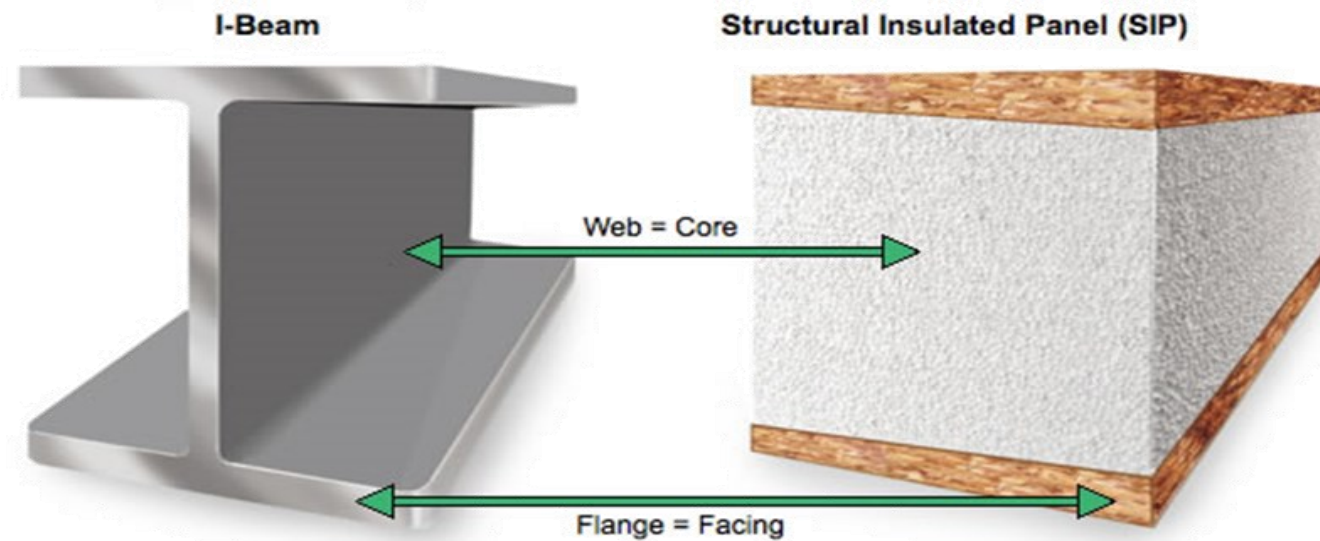
Panel Thickness	1Lbs Density Foam Panel Only	2Lbs Density Foam Panel Only
4 5/8”	16.32	19.42
6 5/8”	24.66	27.98
8 5/8”	33.00	37.50
10 5/8”	41.34	47.02

7/16” OSB /12 mm /MGO Roof /Floor /Wall Panels

Panel Thickness	1Lbs Density Foam Panel Only	2Lbs Density Foam Panel Only
4 9/16”	16.27	18.35
6 9/16”	24.61	27.93
8 9/16”	32.94	37.45
10 9/16”	41.15	46.97



SIP PANELS ARE STRONG



Structural insulated panels (SIPs), are a composite building material. They consist of an insulating layer of rigid core sandwiched between two layers of structural board. The board can be plywood, cement fiber, magnesium oxide board (MgO) or oriented strand board (OSB) and the core is expanded polystyrene foam (EPS). SIPs share the same structural properties as an I-beam or I-column. The rigid insulation core of the SIP acts as a web, while the sheathing fulfills the function of the flanges. SIPs combine several components of conventional building, such as studs and joists, insulation, vapor barrier and air barrier. They can be used for many different applications, such as exterior wall, roof, floor and foundation systems.

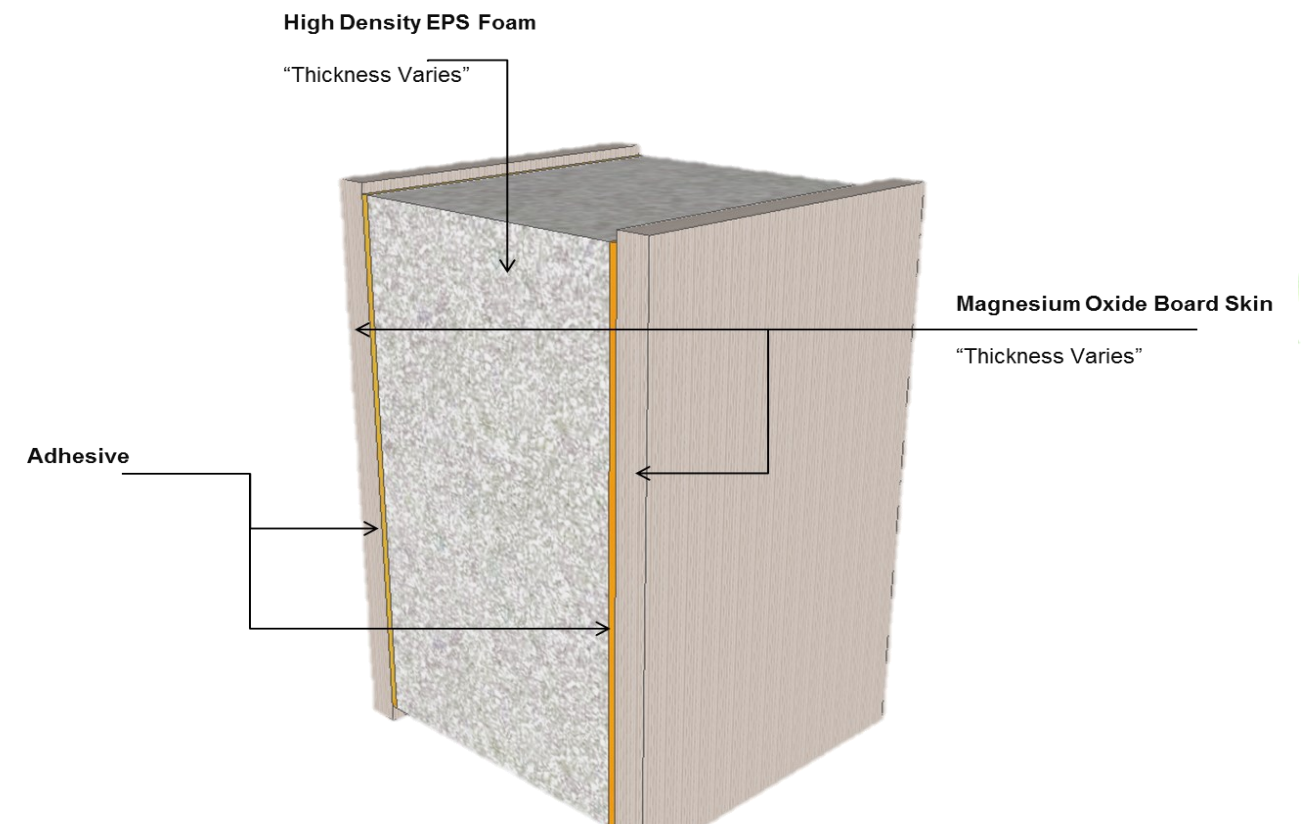


SIPs support bending loads like a beam



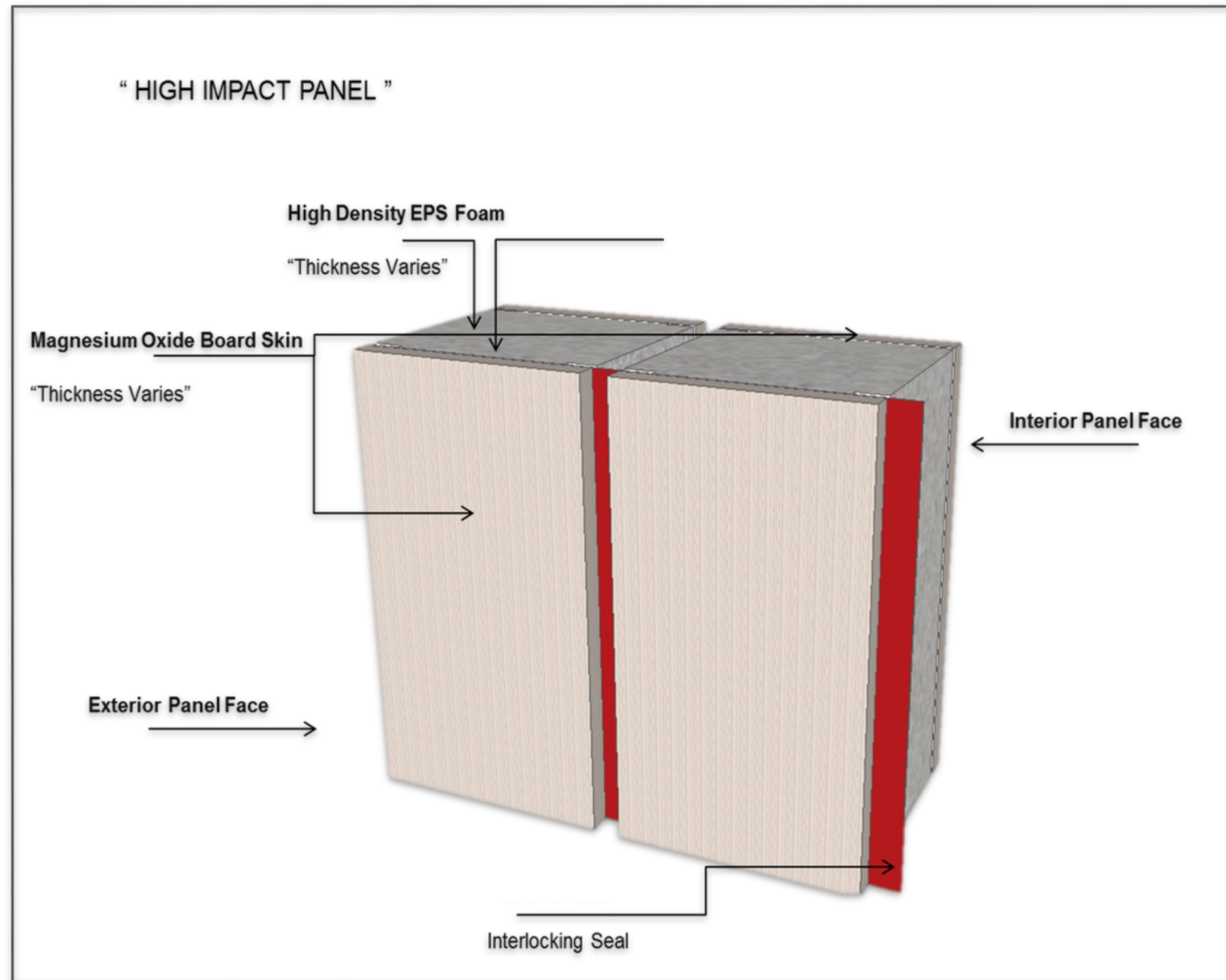
- 1. OSB SIPS Wall, Floor and Roof Panels** – The standard OSB SIP panel is manufactured with 7/16" PS2 rated OSB. Panel skin thickness is available in all standard OSB sheathing thickness. Additional material lead time may be required for non-standard OSB thickness request. OSB Panels are available in lengths up to 24' long.
- 2. Cement Fiber SIPS** – Secure-Lock uses James Hardie Board for its cement fiber panel skins. James Hardie board is available for SIPS in 5/16" thickness and lengths of 8', 10' and 12'.
- 3. MGO SIPS wall, roof and floor panels:** MGO panel skins are available in thickness from 6mm to 30 mm. The standard exterior SIPS wall panel skin is a 10mm MGO skin. The standard interior wall panel skin is 8mm. MGO floor and roof panel standard skins are 12mm.

SECURE-LOCK MGO PANEL





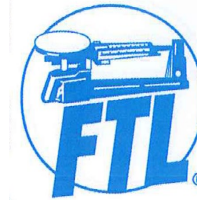
4. MGO SIPS High Impact (HIP) Wall Panel – The Secure-Lock HIP SIPS panel was designed for the Dade County Coastal High Wind Zone which specifies a 180 MPH wind load requirement. This is currently the highest hurricane wind loading requirement in the USA. The Secure-Lock MGO SIP HIP panel passed all of the Dade County testing requirements with 10 mm MGO skins. The most common skin size for this panel is 12mm as most client want the added fire protection offered by the thicker panel skins.



5. OSB / MGO SIPS Roof / Floor Panel – This panel is manufactured with standard 7/16" OSB skin top side for standard finish roof applications and 12 mm MGO bottom skin. The MGO skin on the bottom side eliminates the need for installing drywall to the underside of the panel. After the panel is set, it can be tapped and finished like drywall or other finish board, no additional framing or screw inspections are required saving valuable time and money. Thicker OSB and / or MGO skins can be provided upon request.

6. Plywood / MGO Roof Panel – This panel was developed for the Dade County Florida building code requirements as OSB sheathing is not allowed. The standard plywood/MGO panel has 1/2" CDX plywood skin topside and a 12mm MGO skin bottom side. Alternate thickness of plywood / MGO is available upon request.

Magnesium Oxide SIP (MGOSIP)



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877

e-mail: clientservices@fenlab.com www.ftl-inc.com

Florida State Cert. No: TST1657
 Miami Dade County Cert. No: 13-0306.01
 Report Date: 7/26/2013
 Completion Date: 6/28/2013
 Expiration Date: 6/28/2023
 Miami Dade County Auth. No: FTL-12084
 File Number: 13-818
 Lab. Number: 7321-02
 Project Number: 13-4526
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OFFICIAL TEST REPORT

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Professional Engineer:

Mariin Brinson, P.E.
 FL License No. 60749

Cement Fiber SIP (CSIP)



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

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e-mail: clientservices@fenlab.com www.ftl-inc.com

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Report Date: 7/26/2013
Completion Date: 6/28/2013
Expiration Date: 6/28/2023
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OFFICIAL TEST REPORT

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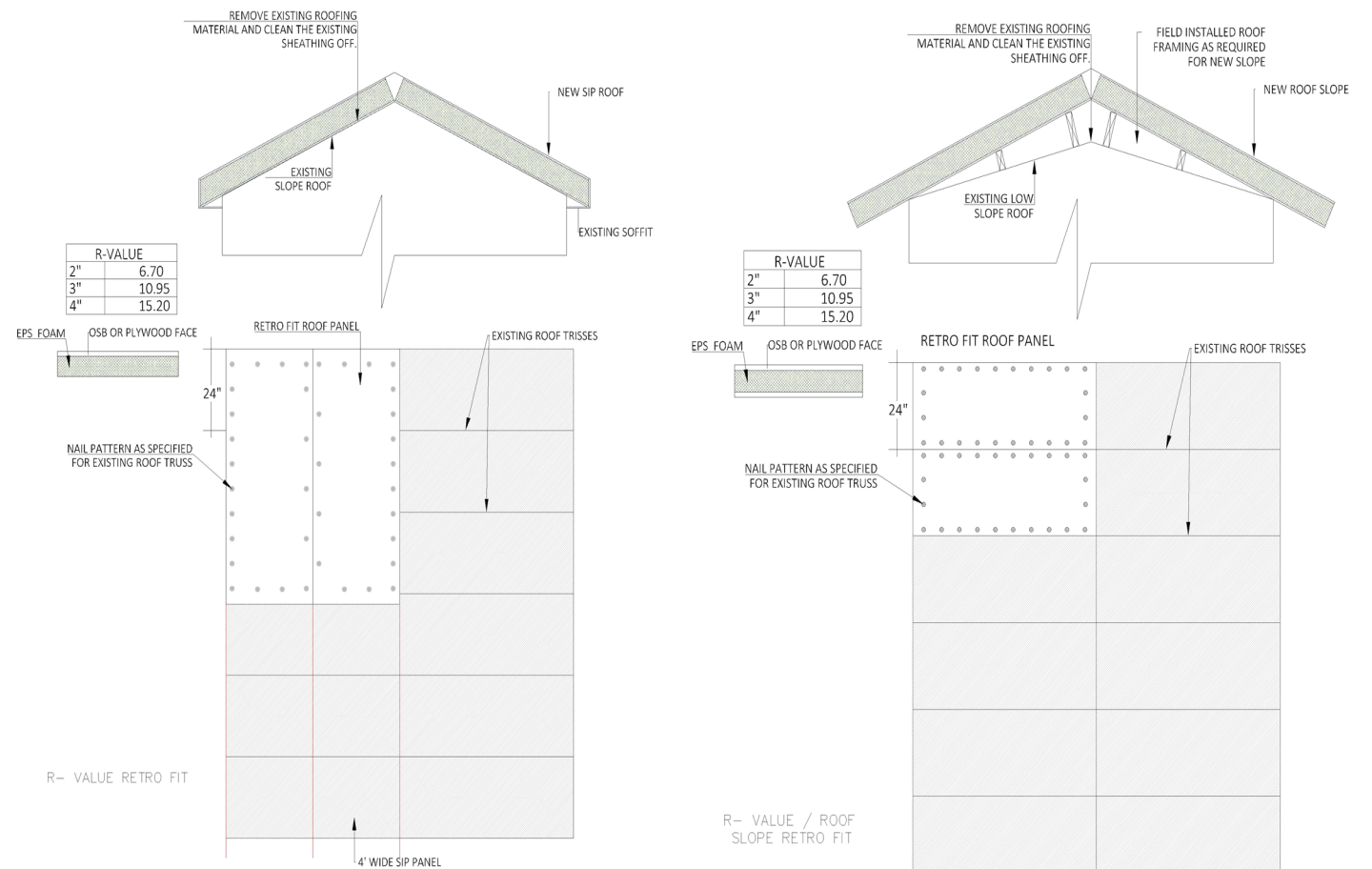
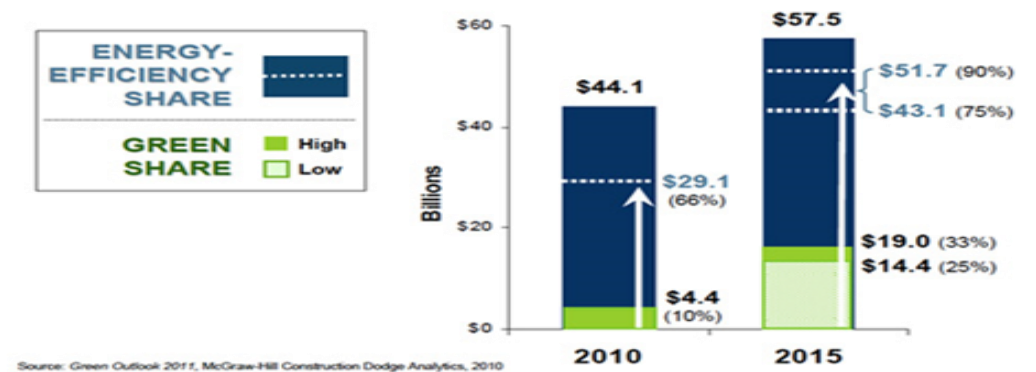
Professional Engineer:

Marlin Brinson, P.E.
FL License No. 60749

7. Plywood SIPS R Value Retro-Fit Roof Panel – The R Value retro-fit SIPS panel was developed for renovation projects. This panel is ideal for low and flat roof applications where sufficient attic space is not available for conventional insulation. The R-Value Retro-Fit Panel can also be used to change the roof pitch or form hip roofs. The panel has a plywood skin on one side for application of the finish roofing system. The other side of the panel is exposed EPS foam. The existing roof is stripped down to the existing sheathing. Any additional sheathing or truss repairs, HIP or change in slope framing is performed at this time. The SIP Retro-Fit Roof panel is attached to the existing trusses through the existing sheathing with SIP screws. The SIP R Value Retro-fit roof panel is an easy way to upgrade the energy efficiency of any existing roof system while also providing the opportunity to revise and modernize slopes, add HIPS and additional architectural profiles to the roof. The Plywood skin panel must be used in Dade County.

8. OSB SIPS R Value Retro-Fit Roof Panel – The OSB skin retro-fit roof panel is Florida product approved for use in all areas except those that are governed by the Dade County Building Codes.

Projected Major Renovation/Retrofit Market Size for Energy Efficiency & Green



Typical House Kit

1	Trex Bottom Plate	2" x 6" x 16'-0"
2	Trex Bottom Plate	2" x 4" x 16'-0"
3	SYP Top Plate	2" x 6" x 16'-0"
4	SYP Top Plate	2" x 4" x 16'-0"
5	MGO Splines	(Wide) 4' x 4"
6	SYP Roof Splines	2" x 6" x 8"
7	LVL Laminated Veneer Lumber Beams	36 Pies (Ft.)
8	SYP Fascia	2" x 6" x 16'-0"
9	Exterior Door Buck	2" x 4" x 85" (Yellow)
10	Exterior Door Buck	2" x 4" x 36" (Brown)
11	Interior Door Buck Bathroom	2" x 4" x 85" (Yellow)
12	Interior Door Buck Bedroom	2" x 4" x 25.50" (Green)
13	Interior Door Buck Bedroom	2" x 4" x 29.50" (Blue)
14	Interior Door Buck Bathroom	2" x 6" x 85" (White)
15	Interior Door Buck Bedroom	2" x 4" x 29.50" (Orange)
16	SYP Conner Buckle (Red)	2' x 4" 93"
17	SYP Conner Buckle (Purple)	2' x 6" 93"
18	Buck- Window (Pink)	2" x 4" x 48"
19	Buck- Window (Green)	2" x 4" x 54"
20	Bathroom Window Buck (Blue)	2" x 4" x 16"
21	Bathroom Window Buck (Yellow)	2" x 4" x 24"
22	Interior Wall Buck (Red)	2" x 4" x 8"
23	Interior Wall Buck (Blue)	2" x 6" x 8"
24	Interior Bathroom Doors	2'-0" (RH)
25	Interior Bathroom Doors	2'-0" (LH)
26	Interior Bedroom Doors	2'-4" (RH)
27	Interior Bedroom Doors	2'-4" (LH)
28	Exterior Doors	3'-0" (LH)
29	Exterior Doors	3'-0" (RH)
30	Windows	4' x 4'
31	Windows - Bathroom	1' x 2'
32	MGO Board Insulated Exterior Wall Panel	E-1 To E-67
33	MGO Board Insulated Interior Wall Panel	I-1 To I-28 (x2)
34	MGO Bathroom wet wall	4'x9' 8mm Skin
35	MGO Kitchen wet wall	4'x10' 8 mm
36	MGO LVL Covers Patch	4'x10' 8 mm
37	OSB Roof Panel	R-1 To R-36
38	"Z" Flashing	10' (10 Ft.)
39	Anchor - Corner & Exterior Door	HTT4 or WAH16
40	Galvanized wedge anchors Red Heads	1/2" x 7" (Exterior Bottom Plate)
41	Tapcons Hex Drive (Interior Bottom Plate)	1/4" x 4"
42	3 in. coated wood screws	Windows , Walls
43	Metal Track Screws	5/8"
44	MGO Panel Screws	#10 - 1 3/4" Prime
45	Sip Screws	SIP TP-9000,9" T-30
46	Simpson Sos-Hanger	HUCQ610
47	Simpson "L" Bracket	HGAID
48	Bathroom/Kitchen Metal Framing Track	6"
49	Bathroom/Kitchen Metal Framing Stud	6"
50	EG Roofing Nails (For Z Flashing)	1"
51	Coil Nails framing nails	3"
52	Galvanized Ring Shank Coil Nails	2-1/2" x .131 (roof nails) for roof spline & fascia
53	Joist Hanger Nails	(For Straps and Anchor Straps)
54	Manus Bond 75-AM	(Tubes)
55	Silicone Caulking White	(12 Ounce. Tubes)
56	Foam Minimum	Foam
57	Foam Maximum	Foam
58	Privacy set #43939	Privacy Door Lock - for interior doors
59	Entry & Deadbolt #43971	(Entry Door Lock and Deadbolt- for front door) set



TREX



Wet Wall Metal Structure



"Z" Flashing



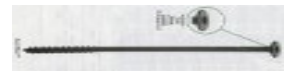
MGO Splines



Anchors



Coated Wood Screws



SIP Screws



Metal Track Screws



Coil Nails (framing nails)



Foam Maximum



Doors



Yellow Pine (SYP)



Pressure Treated (PT)



Manus Bond



OSB Splines



Galvanized Wedge Anchors



MGO Panel Screws



Tapcons Hex Drive)



EG Roofing Nails



OSB Panel -MGO Panel



Foam Minimum



Door Lock Set



Windows

2.2 LUMBER

A. Grade and Species: Visually graded dimension lumber No. 2 or better of any of the following species:

- 1.Spruce-Pine-Fir; NLGA
- 2.Hem-Fir (North); WCLIB or WWPA
- 3.Douglas Fir – Larch; WCLIB or WWPA
- 4.Southern Pine; SPIB

B. Lumber shall be kiln dried to not more than 19% moisture content

C. Lumber shall be clearly marked with grade stamp of grading agency.

D. Engineered wood products shall be used where required for structural adequacy.

- 1.Laminated Veneer Lumber (LVL)
- 2.Parallel Strand Lumber (LSL)
- 3.Laminated Strand Lumber (LSL)

2.3 FASTENERS

A. Common Nails: ASTM F1667

B. Panel Screws: screws with pancake head, minimal thread diameter 0.255 inches, minimum shank diameter 0.190 inches and a minimum head diameter 0.625 inches.

C. Grabber Cement Board Screws: Length as specified. Screws shall have a 10.5 mm wafer head with nibbs for flush seating, 8 gauge shank diameter with high low (alternating) thread and self-drilling point. All fasteners utilized with cement fiber or MGO board shall be treated with a corrosion resistant coating per ASTM B117.

2.4 FABRICATION

A. Common Nails: ASTM F1667

B. Remove foam as required to accommodate wood blocking and splines.

C. Provide electrical wiring chases in foam core where required.

PART 3- EXECUTION

3.1 PREPARATION

A. Examine foundations, sills, framing and other surfaces to receive SIPs and verify that conditions are suitable or the installation of SIPs. Report any unsatisfactory conditions to the Contractor. Do not proceed with installation until unsatisfactory conditions have been corrected.

INSTALLATION

A. Hoist SIPs in place by lifting equipment suited to size of panels. Exercise care to prevent damage to SIPs

B. Install SIPs plumb, square and true to line.

C. Fill all panel joints with expanding urethane foam or seal by other approved method.

D. Repair or replace all damages SIPs.

E. Remove debris from project site and legally dispose of debris.

END OF SECTION 06120

SECTION 06120 – STRUCTURAL INSULATED PANELS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- B. This Section includes Structural Insulated Panels (SIP).

- C. Related Sections include the following:

1. Section 06100 - Rough Carpentry
2. Section 06130 - Timber Framing
3. Section 07466 -Fiber Cement Board
4. Section 07250 - "Weather Barriers" for water resistive barrier
5. Section 07900 – Joint Sealants

1.3 PREFORMANCE REQUIREMENTS

- A. Structural Performance: Provide SIPs capable of withstanding design loads including dead load, live loads, and wind loads. Design loads shall be in compliance with the requirements of the local Building Code.

1.4 SUBMITTALS

- A. Product Data: SIP manufacturer's product literature including structural properties and installation instructions.
- B. Shop Drawings: Show fully dimensioned fabrication and installation details for SIPs. Shop drawings shall be prepared under the supervision of a Professional Engineer.

1.5 QUALITY ASSURANCE

- A. SIP Manufacturer shall be a member of the Structural Insulated Panel Association (SIPA)
- B. Structural Design: A Professional Engineer shall perform a structural analysis and design of the SIP assembles in accordance with the design loads.
- C. Installation Contractor must follow all Panel Manufacturer Installation Instructions.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. SIPs shall be kept dry and protected with waterproof covering during transportation and storage.
- B. Exercise care to prevent crushing of SIP edges with cargo hold down straps during transportation.
- C. Carefully load and unloads SIPs from trucks to prevent damage to the panels.
- D. Store SIPs elevated off of the ground on sleepers.
- E. Take care in handling SIPs to prevent delamination. Do not lift panels by the top skin.

1.7 COORDINATION

- A. Time delivery and installation of SIPs to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow the installation of SIPs.

PART 2- PRODUCTS

2.1 STRUCTURAL INSULATED PANELS (SIP)

- A. Subject to compliance with the specified requirements, SIP shall be manufactured by Innova Panel.

- B. Panel Skins:

- a) Oriented Strand Board (OSB): 7/16" thick minimum
- b) Cement Fiber Board: 5/16" minimum, Board shall comply with all requirements of ASTM 1185 and 1186.
- c) Magnesium Oxide Board: 8mm minimum thickness for state of Florida conformance, 10mm for Dade County Compliance. Board shall comply with all requirements of ASTM 1185 & 1186.

- A. Core: [EXPANDED Polystyrene (EPS) shall comply with ASTM C578 and shall have a minimum density of 0.9 pcf.] EPS shall be treated with borate for termites.

- D. Adhesive: ASTM D2559

9 -Prefabricated Building Kit – We manufacture Eco Friendly prefabricated single and multi-family housing, light commercial centers, schools, medical and special purpose buildings. Pick from one of our designs or we will work with your design and pre-fabricate it into an Eco friendly, easy to install, energy efficient building kit. Need one, need one thousand, We have the manufacturing capacity to mass produce building kits to meet the scheduling needs of most project schedules.

SINGLE FAMILY HOUSES



Bonsai House
2 Bedrooms – 1 Bathroom Apartment
Area: 409.55 sq. ft / 38.05 sq.mt



Cactus House
2 Bedrooms – 1 Bathroom Total Area:
387.50 sq. ft / 36.00 sq. mt



Module | Studio Possibility
1 Bedroom – 1 Bathroom Total Area:
720 sq. ft / 67.10 sq. mt



Apple House
1 Bedroom – 1 Bathroom Apartment
Area: 288 sq. ft / 26.76 sq. mt



Almus House
1 Bedroom, 1 Bath. Total Area: 387.00
sq. ft / 36.00 sq. mt



2 Bedroom, 1 Bath Efficiency
Total Area: 421 sq. ft / 30.07 sq. mt



Baobab House
2 Bedrooms – 1 Bathroom Apartment
Area: 475.76 sq. ft / 44.20 sq. mt



Amur House
2 Bedrooms – 1 Bathroom Total Area:
576 sq. ft / 53.58 sq. mt



Araguany House Option A
2 bedroom, 2 ½ bath Total Area: 898 sf,
83.42 m2 (Gable Roof Option)



Araguany House Option B
2 bedroom, 2 ½ bath Total Area 973.86
sq. ft / 90.47 sq. mt (Flat Roof Option)



Ficus House Short
3 Bedrooms – 2 Bathrooms Apartment
Area: 540.78 sq. ft / 50.24 sq. mt



Cherry House Modify
2 Bedrooms – 2 Bathrooms Apartment
Area: 608.94 sq. ft. / 56.57 sq. mt.



Mahogany House
2 Bedrooms – 2 Bathrooms Total Area:
977.36 sq. ft / 90.80 sq. mt



Redwood House
2 Bedrooms – 2 Bathrooms Total Area:
1,550 sq. ft / 144 sq. mt



Pinotea House
3 Bedrooms – 1 Bathroom Apartment
Area: 540.00 sq. ft. / 50.16 sq. mt



Cherry House
3 Bedrooms – 2 Bathrooms Apartment
Area: 775.12 sq. ft. / 72.00 sq. mt



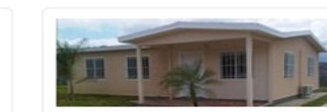
Ficus House Long
3 Bedrooms – 2 Bathrooms Apartment
Area: 794.05 sq. ft / 73.77 sq. mt



Cedar House Short
3 Bedroom, 2 Baths Total Area: 840.00
sq. ft / 78.00 sq. mt



Cypress House
3 Bedrooms – 2 Bathrooms Total Area:
799.74 sq. ft. / 74.30 sq. mt



Cedar House Long
3 Bedroom, 2 Bath. Total Area: 840.00
sq. ft / 78.00 sq. mt



Plum House
3 Bedrooms – 2 Bathrooms Apartment
Area: 861.05 sq. ft. / 79.99 sq. mt.



Cottonwood House
3 Bedrooms – 2 Bathrooms Total Area:
1,202.50 sq. ft. / 111.72 sq. mt



Butternut Single Townhouse
3 Bedrooms – 2 Bathrooms Total Area:
1,350 sq. ft / 126.00 sq. mt



Casa Rio Trecero
4 Bedroom - 1 Bathroom Total Area:
1124 sq. ft / 104.43 sq. mt



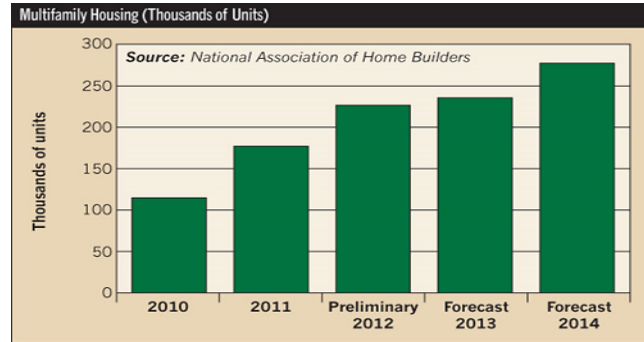
Casa Barcelona
4 Bedroom, 2 ½ Baths Total Area 1744
sq. ft / 162.43 sq. mt



Black Cherry House
5 Bedrooms – 4 ½ Bathrooms Total Area
Apart: 2,479.77 sq. ft. / 230.38 sq. mt

Our Standard Building Kit includes the building envelope and interior walls. We include our standard windows, interior and exterior doors and hardware with many of our kits that are manufactured for export.

MULTI-FAMILY HOUSES





Pecan Duplex
2 Bedrooms – 1 Bathroom Apartment
Area: 540.78 sq. ft / 50.24 sq. mt



Module | I Studio Possibility
1 Bedroom – 1 Bathroom Total Area:
720 sq. ft / 67.10 sq. mt



Poppy Townhouse – (Amapola)
2 Units: 3 Bedrooms / 2 ½ Bathrooms
Each Unit Area: 1350 sq. ft / 126 sq. mt
Total Area: 2700 sq. ft / 252 sq. mt



Dominican 4-Plex Mixed
2 Bedroom, 1 Bath and 1 Bedroom 1
Bath. Total Area 1566sf, 145.48 m2



Dominican 4 Plex 2 Bedroom
2 Bedroom, 1 Bath. Total Area 1651sf,
153.39 m2



Willow Apartments
Each Unit 2 Bedrooms / 2 Bathrooms
Each unit has a story with 8 Apartments.
Total Building Area: 7,157.76 sq. ft /
665.00 sq. mt



Walnut 8-Plex
3 Bedrooms – 1 Bathroom Total Building
Area: 4,096 sq. ft / 380.56 sq. mts Total
Apartment Area: 512.00 sq. ft / 47.57 sq.
mts



Holly Duplex
3 bedroom, 2 baths each side Unit Area:
624.00 sq. ft / 58 sq. mt Total Area: 1248
sq. ft / 115.88 sq. mt



Poplar
2 Levels Each Unit: 3 Bedrooms/2
Bathrooms Unit Area: 775 sq. ft / 72sq. mt
Level Area: 1550sq. ft / 144sq. mt Total
Area: 3,100sq. ft / 288sq. mt



Apamate Duplex
3 Bedroom, 2 Bath each side. Unit Area:
656.75 sq. ft / 61.00 sq. mt Total Area:
1313.50 sq. ft / 122.00 sq. mt



American Standard Duplex
3 Bedroom, 2 Bath each side. Total Area
1744sf, 162.01 m2



Alder Apartments
2 Story Building 16 Units Total- 2
Bedrooms/ 1 Bathroom Each Unit Area:
908.00sq. ft / 84.38sq. mt Level Area:
7,262sq. ft / 675sq. mt Total Area:
14,524sq. ft / 1350sq. mt



Butternut Duplex Townhouse
Total Building Area: 2,771.20 sq. ft /
257.40 sq. ft / Each Unit First Floor Area:
692.50 sq. ft / 64.33 sq. mt



Butternut 4-Plex Townhouse
Total Building Area: 5,542.40 sq. ft /
514.80 sq. mt Each Unit First Floor Area:
692.50 sq. ft / 64.33 sq. mt Each Unit
Second Floor Area: 692.50 sq. ft / 64.33
sq. mt




Dominican 4-Plex Starter
1 Bedroom, 1 Bath. Total Area 1234sf,
114.62 m2



Cactus Multifamily House
2 Bedrooms – 1 Bathroom Total Area
Apartment: 387.50 sq. ft. / 36.00 sq. mt



Hemlock Camp
2 Bedrooms – 2 Bathrooms Apartment
Area: 318. sq. ft. / 29.58 sq. mt



Spruce Duplex
3 Bedrooms – 2 Bathrooms Apartment
Area: 761.19 sq. ft / 70.71 sq. mt

Technical Data SIP-seal

Specific Gravity	1.4-1.5
Tack Free Time	Less than 1 hour @77 F/50% RH
Skin Time	Less than 30 minutes @ 77 F/50% RH
Sag	Non-sagging
Tensile Strength	225 psi
Lap Shear	275 psi
Elongation	275 %
High Temperature Resistance	Up to 300 F for short periods
Low Temperature Flexibility	Properties retained to -75 F
Shore A	45-50
Corrosive Properties	Non-corrosive
Staining	Non-staining
UV Stability	After 2000 hours UV-A no change in appearance or physical properties (ASTM G26)
Packaging	10.1 oz tubes, 10 and 20 oz sausage packs, 1,3,5,& 55 gal
Standard colors	Bright White, White, Aluminum Gray, Black
Surface Preparation: Apply to clean dry surfaces free of contaminants that can interfere with adhesion. Remove any old adhesive before applying SIP-seal.	
Painting: SIP-seal can be painted with most industrial and commercial paints. Test compatibility of paint with SIP-seal before proceeding.	
Storage Life: 12 Months – For maximum shelf life, store unopened product at or below 80 degrees F.	
Precautions: Use with adequate ventilation. Inhalation of vapor during application and cure may cause slight eye or throat irritation. In case of contact with eyes, lips or mouth, flush thoroughly with water. If irritation persists, consult a physician. Avoid repeated, prolonged contact with skin. See MSDS for additional information. KEEP OUT OF REACH OF CHILDREN	
Technical Service: Sustain and Manus technical representatives are always available to provide assistance. Please contact our technical service department with your questions or requests for specific applications.	
Limited Warranty: Any goods proved defective will be replaced or the purchase price refunded. The limited warranty described herein is in lieu of any other warranty, expressed or implied, including any implied warranty of merchantability or fitness for a particular use. The user shall determine suitability of the product for its intended use. Liability for any incidental or consequential damage or loss is excluded. The user assumes all risks of the product's use, handling and storage.	
Distributed by:	Sustant, LLC PO Box 66 Lake Elmo, MN 55042 651-300-0505 www.sustantblue.com
Manufactured by:	Manus Products, Inc. 866 Industrial Blvd West Waconia, MN 55387 952-442-3323

Applications

Manus Bond SIP-seal is an industrial grade sealant and adhesive formulated for high performance applications. This one part moisture cure sealant and adhesive has proven itself with years of use in transportation OEM and construction.

For Construction:

- SIPs panel sealant
- Window and door sealant
- Agricultural building sealant
- Sub-floor adhesive
- Panel adhesive
- Bonding to steel structures
- Bonding architectural woodwork to interior walls
- Adhering resin panels
- Adhering solid surface

Manufacturing:


Use SIP-seal as a structural adhesive for assemblies of difficult to bond materials such as frp, abs, pvc, metal, resin panels, wood, etc.

Application instructions:


Apply in continuous beads in accordance with the SIP manufacturer's manual. Apply to clean, dry, dust free and frost free surfaces to ensure a proper seal.




COMMERCIAL



Pine Lodge
Big Horn Mountain Wildlife




Module | Office Possibility
Office – 1 Bathroom Total Area: 720 sq. ft / 67.10 sq. mt




Module | Shopping - Commercial Possibility
Total Area: 11,598.24 sq. ft / 1077.51 sq. mt

SPECIAL USE




Hickory Studio
Multiple Area – 1 Bathroom Living Area: 348.16 sq. ft. / 32.38 sq. mt Total Area: 485.16 sq. ft / 45.07 sq. mt




Single Car Garage Option B
Construction Area 392 sq. ft/36.42 sq. mt.




Pool Shed
Total Area: 64.00 sq. ft. / 5.95sq. mt




Triple Car Garage
Garage Area: 868.30 sq. ft / 80.67 sq. mt



Single Car Garage Option A
Construction Area 392 sq. ft/36.42 sq. mt.




Double Car Garage
Garage Area: 704.62 sq. ft / 65.46 sq. mt




Double Car Garage w/ Carport
Garage Area: 672.00 sq. ft / 62.43 sq. mt
Total Area: 1068.76 sq. ft / 99.29 sq. mt



Double Car Garage w/ Porch Option 2
Garage Area: 624.00 sq. ft / 57.97 sq. mt
Total Area: 816.00 sq. ft / 75.80 sq. mt




Module | Shopping - Commercial Possibility
Total Area: 11,598.24 sq. ft / 1077.51 sq. mt



Camp House Bed and Breakfast Lodge
Construction Area : 5,300 sq. ft - 492.39 m²
7 Bedrooms/ 10 Bathrooms

EDUCATIONAL



Educational Facilities
Total Area: According Design



Module | Elementary Schools Possibility
Total Area: 11,598.24 sq. ft / 1077.51 sq. mt



High Performance
Sealant & Adhesive
Technologies for
Sustainable
Construction

MANUS - BOND

SIP-seal brand Low VOC Sealant and Adhesive

SIP-seal is a high performance sealant and adhesive for SIPs construction. It provides superior performance as a joint sealant, a unique ability to bond diverse materials, excellent working properties and a significant green profile. SIP-seal is based upon a proven formulation with broad industry application for over 15 years. It passes vapor transmission tests as a SIP joint sealant, maintains its flexibility over time and offers working characteristics that exceed the demanding requirements of SIPs installers. Smooth, consistent gunning, excellent adhesion, and superior longevity within a sealant that meets the most stringent sustainability goals.

- Performance**
- One part, low VOC, high solids sealant and adhesive for high performance building envelopes.
 - Bonds to OSB, EPS, FRP, PVC, ABS, plywood, vinyl, aluminum, steel, concrete and PUR foam.
 - Will not attack EPS
 - Will not harden or become brittle
 - Remains flexible after cure (-75F to 250F)
 - USDA accepted for agricultural buildings.
 - Highly durable and UV resistance
 - ASTM C920
- Working properties**
- Application Temp 0F to 120F – will not freeze
 - Cures in the presence of moisture
 - Easy and consistent flow
 - Shelf life 12 months stored below 80 degrees F.
- Sustainability**
- HAPs free, Isocyanate free, solvent free
 - VOC – less than 12g/L
 - LEED 4.1 Low-emitting materials
 - LEED for Homes
 - Falls below SCAQMD and CARB thresholds

10- In-Fill exterior walls for high rise buildings, tunnel form projects, structural steel and concrete framed building structures:



**PRESIDENTIAL EXECUTIVE ORDER
13423 AND 13514**

Over the past decade, the Federal Government has taken a range of initiatives to implement sustainable design, building, and facility requirements into new and existing Federal buildings. Executive Orders are driving specific green building practices and requiring accountability. These Executive orders set far-reaching requirements for Designers. All applicable Federal projects, contracts, leases, buildings, and procurements must apply USGBC's Leadership in Energy and Environmental Design (LEED) Rating System.



SIP's Panels

Architect: Reynolds, Smith and Hills - Contractor: James A. Cummings, Inc. - Project Manager: Jerry Gillman

West and Northwest Concourses

Fort Lauderdale / Hollywood International Airport

The West and NW concourses were constructed in 1985 with a cast in place concrete structure and structural insulated panels (SIP) manufactured by E.G. Smith. The SIP is used as the exterior wall cladding system with a typical spandrel glass window frames. Almost thirty years later, these SIPs remain in use serving their intended purpose for many more years to come.

We manufacture the SIP panel of the future. The Secure-Lock MGO SIPS HIP is the energy wise eco-friendly choice for an exterior wall cladding system to meet the needs of today's high performance building standards. Our panels are highly energy efficient and will help designers gain valuable points for Leed and Florida Green Building certifications. Concrete structures, structural steel buildings, metal building insulated claddings, in-fill walls on high rise structures, tunnel form exterior end wall system and more. The Secure-Lock panel can be installed on most buildings in a fraction of the time as concrete block keeping pace with even the most aggressive project schedules. Panels can be assembled on the ground and flown up and set in place similar to precast concrete construction. Our panels make an excellent choice for the exterior end walls of Tunnel form projects. Unlike metal stud, lath and plaster end wall details, the Secure-Lock panel does not mold, is not affected by termites and has superior insulating and fire resistance ratings. The most common commercial SIPS panels are 6" and 8" panels with 12 mm or 14mm skins.



Oriented Strand Board

Brookneal, VA; Grenada, MS; Hosford, FL; Mt. Hope, WV; Skippers, VA; Fordyce, AR

Specifications

Blue Ribbon® OSB is a performance rated structural panel made of compressed wood strands arranged in opposing oriented layers and bonded with phenolic resin under heat and pressure. Each panel is certified to Department of Commerce Industry Consensus Standard PS 2-2004 by APA -The Engineered Wood Association for use as wall, roof, and floor sheathing or for combine single layer floor applications. Panels are rated for Exposure 1 bond durability¹ for protected applications and limited exposure during normal construction delays. Blue Ribbon OSB is blue edge coated to limit absorption and pick-up of moisture.

Manufacturing Locations

Brookneal, VA Grenada, MS Mt. Hope, WV
Fordyce, AR Hosford, FL Skippers, VA

Major Uses

APA Rated® Sheathing

Blue Ribbon OSB APA Rated® Sheathing is an excellent selection for wall, roof deck and sub-floor sheathing applications. This APA-The Engineered Wood Association certified panel offers strength, stiffness, dimensional stability, racking and impact resistance, uniformity and excellent fastener holding capacity. Its solid construction provides uniformity with good fastener holding. Rated sheathing has a screen impression surface on one side that, when installed up on roofs, provides a more slip-resistant surface for worker safety. (Exposure 1 panels are not recommended for permanent full exposure or conditions of high moisture and humidity such as exterior siding applications, poultry house linings, sign, etc.)

Rated Sturd-I-Floor®

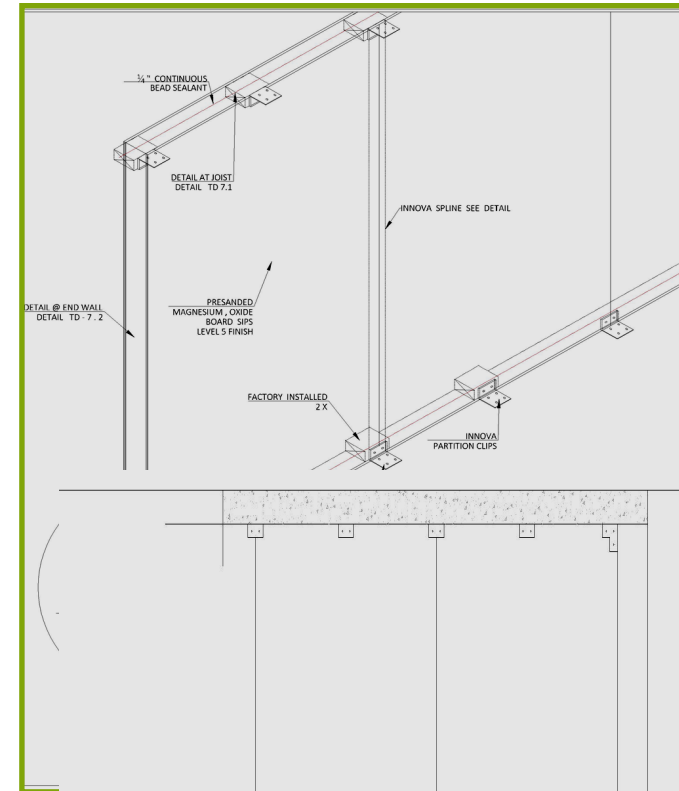
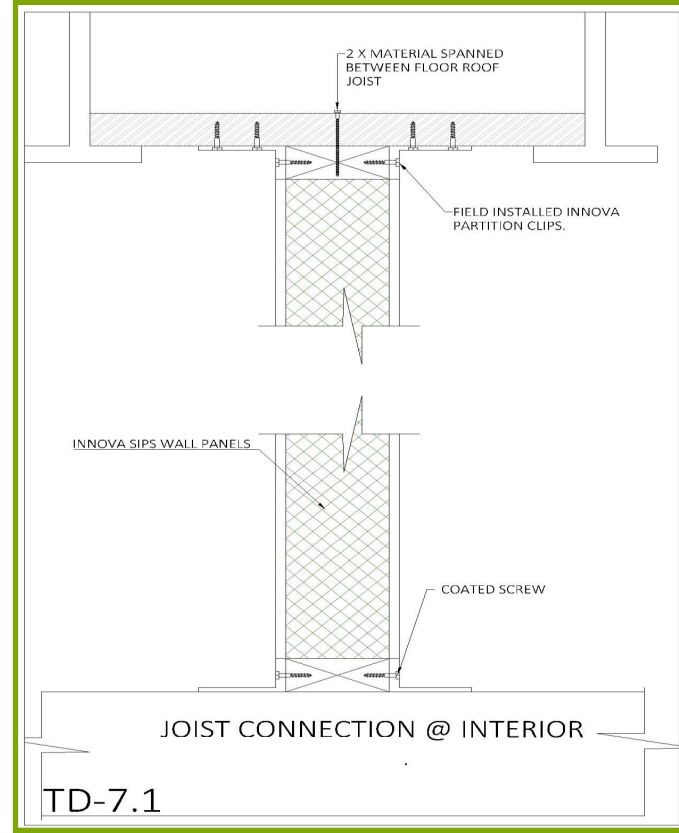
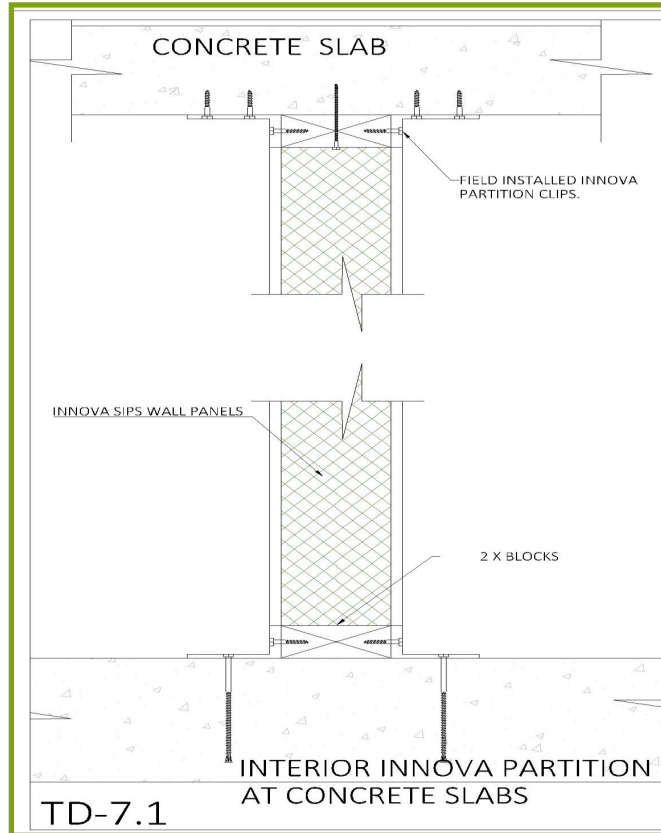
Blue Ribbon OSB Rated Sturd-I-Floor® is an excellent product that combines sub-floor and underlayment requirements in a single panel². Because of its cross oriented, multi-layered construction, OSB Sturd-I-Floor provides exceptional stability and stiffness and has a touch sanded surface. These APA-The Engineered Wood Association certified Sturd-I-Floor panels are available in square edge or tongue and groove long edge profiles. OSB Sturd-I-Floor is manufactured and available in standard 8-foot length, and is available in 12-foot and 16-foot special order lengths, offering savings opportunities in installation time and labor costs. Also, Blue Ribbon OSB Sturd-I-Floor panels are covered for up to 10 years against delamination under its builder's limited commercial warranty³.

Product Availability

Thickness/ Product	Span	Grenada		Skippers		Mt. Hope		Brookneal		Fordyce		Hosford	
		Pcs. per unit	Wt. (lbs. per msf)	Pcs. per unit	Wt. (lbs. per msf)	Pcs. per unit	Wt. (lbs. per msf)	Pcs. per unit	Wt. (lbs. per msf)	Pcs. per unit	Wt. (lbs. per msf)	Pcs. per unit	Wt. (lbs. per msf)
3/8" Rated Sheathing	24/0	94	1375	85	1406	96	1545	90	1545	94	1406	94	1438
7/16" Rated Sheathing	24/16	80	1500	87	1553	87	1528	87	1543	80	1547	80	1553
15/32" Rated Sheathing	32/16	70	1656	-	-	78	1641	-	-	70	1735	70	1765
1/2" Rated Sheathing	32/16	70	1719	70	1732	78	1768	70	1936	70	1735	70	1806
19/32" Rated Sheathing	40/20	56	2219	-	-	63	2116	63	2128	56	2234	56	2284
5/8" Rated Sheathing	40/20	56	2219	63	2235	-	-	-	-	-	-	-	-
23/32" Rated Sheathing	48/24	47	2500	-	-	55	2425	-	-	-	-	-	-
3/4" Rated Sheathing	48/24	47	2531	55	2425	-	-	-	-	-	-	-	-
19/32" Rated Sturd-I-Floor®	20" o.c.	56	2156	63	2235	63	2116	63	2250	56	2156	56	2284
23/32" Rated Sturd-I-Floor®	24" o.c.	47	2438	55	2425	55	2425	55	2700	47	2438	47	2535

11-Secure-Lock MGO Interior wall partitions for interior build out, retro-fits and high rise

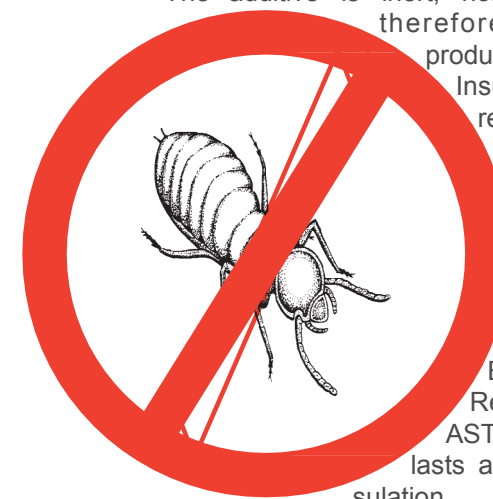
con-struction: We manufacture prefabricated interior wall partitions that are easy to install and Eco friendly. Interior Build-out and remodeling projects can be completed in a fraction of the time. Electrical chases are provided in the panels to the specified layout or we can provide the Secure-Lock standard chases which work with most electrical designs.



Insect Resistant RIGID INSULATION

EFFECTIVE, SAFE and DEVELOPED to create the confidence to build to the most demanding standards.

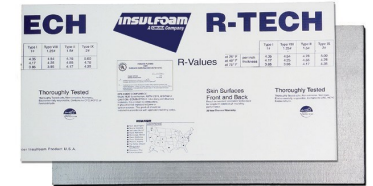
Through extensive research and testing, Insul-Foam® has developed an effective, non-toxic additive that will deter insects in the Insul-Foam® and R-Tech® family of products. In keeping with our commitment to the environment, Insul-Foam® insect-resistant EPS is environmentally sound and contains no dyes, formaldehyde or ozone-depleting HCFC's.



The additive is inert, non-nutritive, and highly stable and therefore will not decompose, decay, or produce undesirable gases or leachates. Insul-Foam® insect-resistant EPS is recyclable and safe for waste-to-energy systems and landfills. It is a process which uses a natural mineral formulated to resist normally occurring exposure to wood-boring insects, specifically carpenter ants and termites. Insul-Foam's non-toxic treatment is Environmental Protection Agency Registered, meets the Standards of ASTM D3345 and WPA EL 12-72, and lasts as long as the Insul-Foam® rigid insulation.

Insul-Foam® has been manufacturing expanded polystyrene rigid insulation for over 40 years. The Insul-Foam® and R-Tech brands guarantee that you're getting the best available insulation material in the market place.

Insul-Foam® is committed to helping you realize the best possible return on your investment in R-Tech, Total Wall, R-Tech Fanfold, exterior one-coat stucco T&G rigid insulations and Insul-Foam® GF (Geofoam). Insul-Foam® and R-Tech brands have a proven record of innovative characteristics and long term performing physical properties.



Insect resistant R-Tech insulation



Insect resistant Total Wall Exterior Insulation System



Insect resistant R-Tech Fanfold Insulation



Insect resistant One-Coat Stucco T&G Insulation



Insect resistant InsulFoam GF (Geofoam)



Insect resistant R-Tech Cavity Wall &

Perimeter Foundation Insulation

Description

InsulFoam I is a versatile insulation consisting of a superior closed-cell, lightweight and resilient expanded polystyrene (EPS). InsulFoam I meets or exceeds the requirements of ASTM C578, Type I, *Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation*. InsulFoam I has a nominal density of 1.0 lb/ft³. In addition, InsulFoam I offers a long-term, stable R-Value and has excellent dimensional stability, compressive strength and water resistant properties.

Uses

InsulFoam I is a quality EPS product and is used in numerous building construction applications.

Roofing: InsulFoam I is well-suited for single ply roof applications that employ mechanically fastened or ballasted TPO, PVC, EPDM and CSPE, as well as low-sloped built-up, modified bitumen and fully adhered single ply roofs that incorporate cover boards or slip sheets. Please consult local building codes and membrane manufacturers for system requirements.

Other Construction Applications: InsulFoam I is used in assorted building applications, including pre-stressed and pre-cast structural concrete panels, metal roof flute-fill, siding backer board, building sheathing, roads and bridge fill, below-slab and perimeter insulation, and numerous other geofoam applications.

Advantages

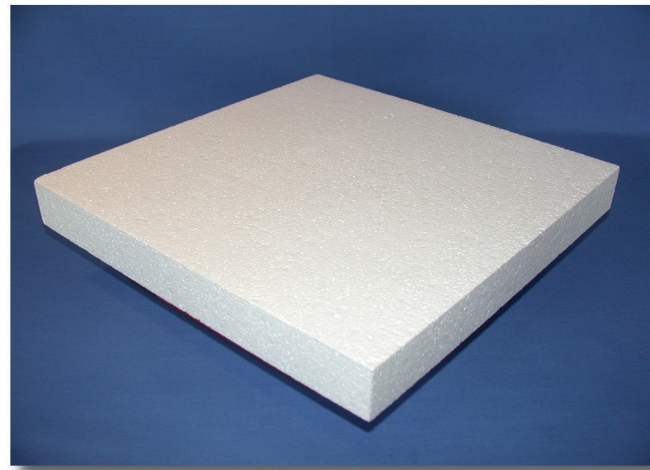
Environmentally Friendly. It contains no formaldehyde or ozone-depleting HCFCs, contains recycled material, and is 100% recyclable if ever removed or replaced.

Stable R-Value. Designers are well served knowing the product's thermal properties will remain stable over its entire service life. There is no thermal drift, so the product is eligible for an Insulfoam 20-year thermal performance warranty.

Proven Performance. The same fundamental EPS chemistry has been in use since the mid-1950s, so the actual performance of the product is well known.

Water Resistant. InsulFoam I does not readily absorb moisture from the environment.

Code Approvals. InsulFoam I is recognized by the International Code Council Evaluation Service (ICC-ES), and has numerous Underwriters Laboratory and Factory Mutual Approvals. Please contact your local Insulfoam representative for details.



Sizes

InsulFoam I is typically available in 4' x 4' and 4' x 8' sizes with thickness from 1/4" to 40", and is readily available in custom lengths and widths with little to no impact on lead time. It is also available in tapered panels.

Typical Tested Physical Properties*

Property	Test Method	Value
Density (nom. pcf)	ASTM C303	1.00
C-Value (Conductance) - per inch BTU/(hr·ft ² ·°F)	ASTM C518 or ASTM C177	@ 25 °F
		@ 40 °F
		@ 75 °F
R-Value (Resistance) - per inch (hr·ft ² ·°F)/BTU	ASTM C518 or ASTM C177	@ 25 °F
		@ 40 °F
		@ 75 °F
Compressive Strength (psi, 10% deformation)	ASTM D1621	10-14
Flexural Strength (min. psi)	ASTM C203	25
Dimensional Stability (maximum %)	ASTM D2126	2.0
Water Vapor Permeance (max. perm., 1 inch)	ASTM E96	5.0
Water Absorption (max. % vol.)	ASTM C272	4.0
Capillarity	—	none
Flame Spread	ASTM E84	< 20
Smoke Developed	ASTM E84	150-300

*Properties are based on data provided by resin manufacturers, independent test agencies and Insulfoam.

Electrical Wiring in SIPs

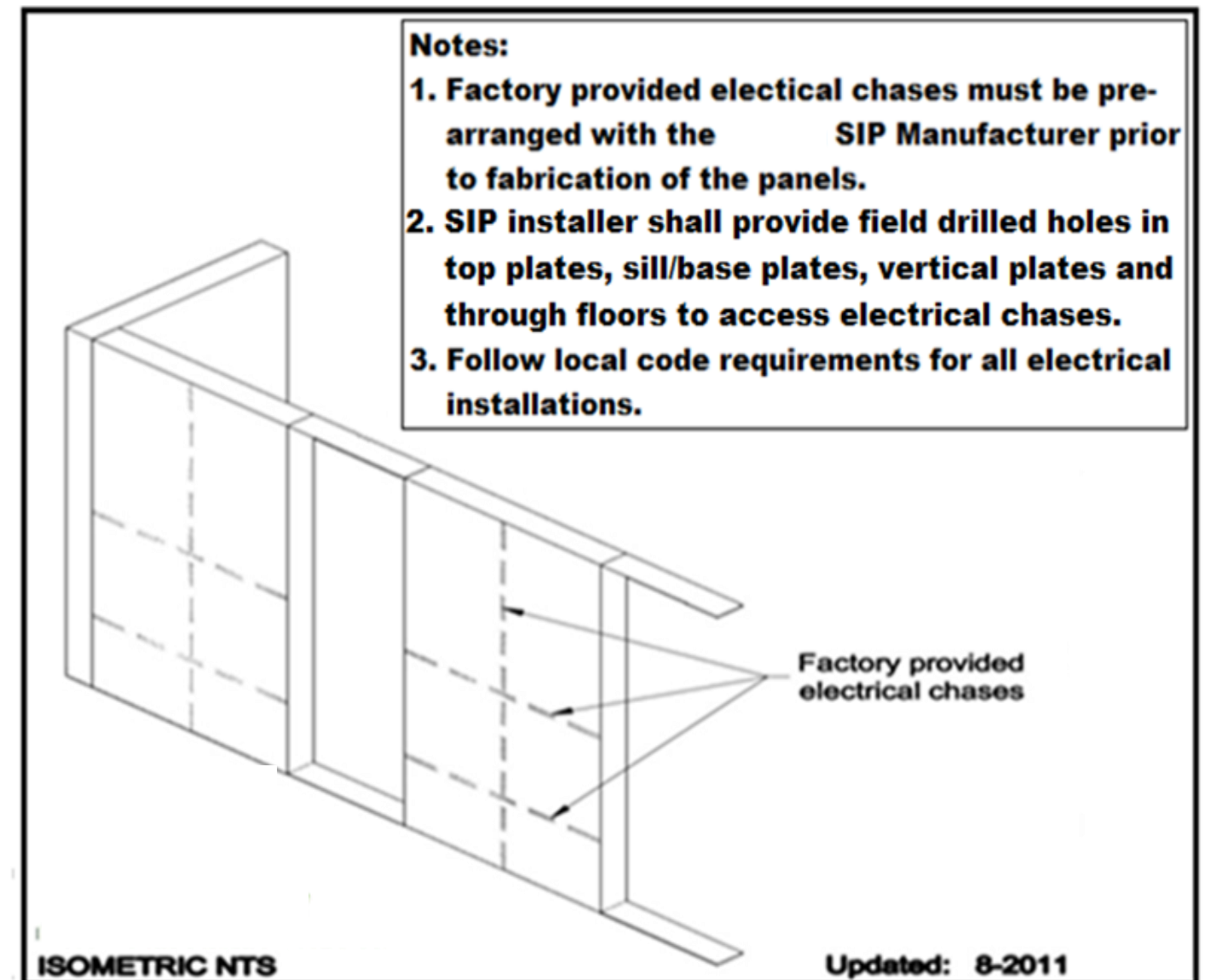
Overview

Wiring in SIPs is no different than conventional construction electrical wiring. You have the option of ordering your SIPs panel package with custom installed electrical chases per your electrical drawings, factory installed generic electrical chases or you can order your panels without electrical chases and field install them in the locations necessary.

Factory Installed Wire Chases

Wall panels: Secure-Lock can include generic horizontal chases at the 16" level AFF (for outlets) and at the 44" level AFF (for switches and counter height outlets). Vertical chases, which are typically located 4' O.C., allow wire to run vertically through the wall panels to access switch locations and at other locations as needed to provide vertical wiring options for the electrician. (See figure G-10). Secure-Lock typically installs wire chases according to this standard, but for an additional charge, wire chases can be installed to exactly match an electrical plan. Custom wire chase placement per an electrical plan is done while the panel layout drawings are being designed. A detailed electrical plan would be required at that time to ensure proper coordination with the manufacturing process. Installing electrical chases in the field is a simple process that is detailed in Electrical wiring technical bulletin.

Roof panels: Each roof panel has a factory installed 1" diameter electrical chase provided at no charge upon request. When a building has a cathedral ceiling with a SIP roof, having wire chases installed in the panels will make wiring for lighting, fans, smoke detectors, etc. easier. Wiring can be run from an interior wall or can be run in conduit along an exposed overhead beam or hidden in a soffit used to conceal ductwork or recessed lighting. There are many different options depending on the building use and floor plan.



Magnesium Oxide Board Corporation's Cheat Sheet



GENERAL PHYSICAL CHARACTERISTICS		
Flexural modulus	1.093 × 106psi	ASTM D6109
Flexural strength	1295psi	ASTM D6109
Compressive strength	3000psi	ASTM C684
Shear strength	391psi	ASTM D6109
Flame spread	0	ASTM E84
Smoke developed	0	ASTM E84
Smoke density	None	ASTM E662 not req
Moisture content	8%	
Impact resistance	1.65 ft/lb-in of notch	
Punch Through	1.75"pin @ 1,133kg	
Thermal insulation	U-value 12mm 0.3947	
Fungus/mould	Non-nutrient	ASTMG21
Smoke	Nontoxic	ASTM E662

WARNING: The above information is ONLY relevant to MgO Corp Board CODEMARK Approved CM-11-A007 products. These results are not a reflection of the performances of other MgO products.

IMPACT TESTING (ASTM D5628)		
Drop height	Unclamped edges	Clamped edges
305 mm	Hairline cracking	Hairline cracking
152 mm	Superficial cracking	Superficial cracking

DESIGN RECOMMENDATIONS						
Panel	L/305 (305mm)	L/305 (406mm)	L/305 (610mm)	L/240 (305mm)	L/240 (406mm)	L/240 (610mm)
12 mm	458.94ksm	195.29ksm	58.59ksm	693.30ksm	292.94ksm	92.76ksm
14mm	1225.49ksm	517.53ksm	156.24ksm	1845.56ksm	781.19ksm	229.47ksm

IMPACT TESTING (ASTM D5628)			
Panel	05 mm oc	406 mm oc	610 mm oc
12 mm	6669.39ksm	3666.70ksm	1640.49ksm
14 mm	12738.25ksm	7177.17ksm	3193.11ksm

Above recommendations based on a maximum allowable flexural stress of 1000 psi.

Panel Shear

12 mm panel 140.51/meter

15mm panel 196.90/meter

Above recommendations based on a safety factor of 4. The use of a T-shaped spline 12.7 mm high with 25.4 mm wings on both sides is recommended for panels 15 mm thick, or heavier, used for sub-flooring.

Methods

MgO Corp Board (CM-11-A007) may be scored and snapped, cut, trimmed, drilled or shaped using ordinary power or hand tools. MgO Corp Board panels may

Be fastened to supporting joists using self-drilling, self-countersinking, corrosion protected cement board screws. Fasteners should be spaced at 305 mm intervals along edges. Spacing may be increased to 457 mm at intermediate joists.

There are several ways to cut MgO Corp Board products during the installation process:

A Jigsaw, Sawzall or a low RPM circular saw (Makit3-5/8" battery operated circular saw works well) - either of which will help to reduce dust.

A standard circular saw will also work (it is advised to use a dust collection bag and mask) using a standard blade (the blade will dull slightly faster compared to cutting wood).

Use a T-square and a backer board knife to score the panel, then lay the panel on a 3/8" piece of rebar or dowel and snap like drywall. Use a Roto-Zip tool to cut electric outlet holes.

It is recommended that 2 people move the panels as often as possible to keep it in the best condition. The panel weight is such that with only 1 person moving it with too much pressure in the wrong spot can cause it to break.

Control Document PD no. 01392

- Hotel, Resorts & Restaurants
- Airports, Theaters, Train Stations & Emergency Services Buildings
- Residential Homes, Transportable Homes & Mining Community Developments



Product Data Sheet: Magnesium Oxide (MgO) board

Product of: Magnesium Oxide Board Corporation Pty Ltd

ACN: 151 952 724

(3) Construction, Material Finishes

MGO Corp products are manufactured from mineral components that are fibrous reinforced so assure the bonding process is superior at all times. All products are free of toxic ingredients or asbestos and have been certified and registered under the AS/NZS Standards and the BCA Codes of Australia.

MGO Corps panels and boards are manufactured in natural beige to cream colour, yet at the time of manufacture the finish can be changed to allow customers to clearly distinguish there products. The standard production finish is very smooth on one side and sand textured on the other with standard edges being square or tapered (special edges and size sheets are available subject to order quantities) MgO Corp Panels and Boards may be cut trimmed or shaped using ordinary power or hand tools and the installation system is identical to that of present sheeting systems. All MgO Corp sheets / panels will accept any type of paint, wall paper, rock or skim coat, tiling or laminate finish.

(4) Ingredients:

- **MgO (Magnesium Oxide)--50.6%** (so called burnt magnesium) used in medicine for curing heartburn;
- **Mgcl2 (Magnesium Chloride)--27%**. It's contained in marine and rainwater and is the element of such material as Bishofit
- **Perlite (SiO2)--3.1%** (volcanic glass) in the MGO Boards is used as the filling materials.
- **Alpha Cellulose Material--14.3%;**
- **Filler-- 5%** Glass fiber mesh and non-woven fabric

(5) MgO Composition Ingredient:

- Magnesium Oxide (MgO) 50.6%
- Magnesium Chloride Solution (MgCl2) 27%(included NaCl≤1.5%
- Phosphoric Acid (H3PO4) no
- Iron Sulfate (FeSO4) no
- Polyvinyl Alcohol Glue no
- Aluminum Sulfate water solution (AlSO4) no
- Magnesium Sulfate no
- Alpha Cellulose Material 14.3%
- Perlite 3.1%
- Glass fiber mesh and non-woven fabric 5

Magnesium Oxide Board Corporation PTY LTD

Head Office: Shop 8 Twin Waters Shopping Village, Ocean Drive Twin Waters QLD 4654

Postal: PO Box 9302, Pacific Paradise, QLD, 4564

Phone: +61 7 5450 7314 Fax: +61 7 54507051



Product Data Sheet 10mm Magnesium Oxide Board Corporation (MGO Corp Board)

Product of: Magnesium Oxide Board Corporation Pty Ltd

CAN: 151 952 724

The Following Technical data sheet is reference to 10mm MGO Corp Board (CM-11-007 code compliant product)

(1) Description of Product:

MGO board / Fireproof / Water Resistant / Impact & Acoustic Boards (Magnesium Oxide board)

(2) Place of applications:

Residential, Commercial and Industrial Building & Constructions, Partition Walls, Internal & External Sheeting, flooring systems, Common Finishes, Paper Coated, Laminated or Decorative Finishes, Suspended & Acoustic ceilings, XPS/EPS Sandwich Panels etc.

MGO Corp Boards patented products comply and exceed AUS/NZ standards

- Mold Resistant,
- Fire Resistant,
- Water Resistant,
- Impact Resistant Properties
- Superior Acoustic Values
- 100% Environmentally Friendly
- Zero Carbon Impact on Construction



CertMark
Certified Carbon Neutral
ISO 14064

MGO Corp Boards are lighter, flexible, pliable & more cost effective than traditional sheeting systems significantly reducing installation cost over a project at times offering savings of between 20-200% of that of competing products depending on the applied applications.

MGO Corps construction panels are extremely well suited for use in Flood or Fire Prone areas and the product ranges extensively cover both internal and external sheeting applications.

MGO Corp Paneling and Boards are used throughout QLD, WA, NT, UK, USA & ASIA, in the following projects:

- High-Rise Commercial and Residential Buildings
- Schools, Hospitals & Government Facilities

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CMA-CM40009

MgO Corp Boards are JAS/ANZ, CODEMARK Certified (CMA-CM40009) & BCA Approved.

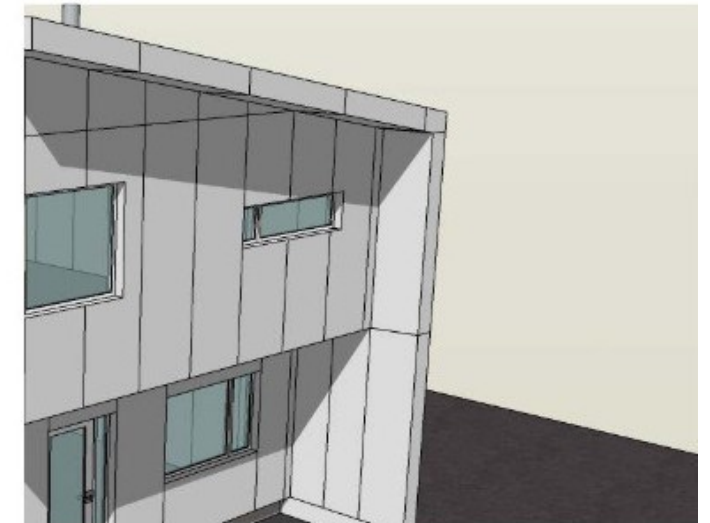
MgO Corp Board (CMA-CM40009) products are code compliant under BCA

BCA Volume 2 Part 3.5.3.3, Fibre cement planks and weatherboard cladding

BCA Volume 2 Part 3.5.3.4, Fibre cement sheet wall cladding

BCA Volume 2 Part 3.5.3.5, Eaves and soffit linings

BCA Volume 2 Part 3.7.1, Fire separation for FRL to (-120/120)



BCA Volume 2 Part 3.8.6, Sound insulation to >Rw 54

NFPA 221, standard for high challenge fire walls, fire walls and fire barrier walls, 2009 edition, section 3.3.14.6

NFPA 850-10 fire protection for electric generating plants and high voltage DC converter stations 2010 edition section 5.1.3.3-4

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2009 edition, section 3.3.14.5

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2009 edition, section 3.3.12.7

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2009 edition, section 3.3.14.7

NFPA 850-10 fire protection for electrical generating plants and high voltage DC converter stations 2012 edition section 5.1.4.3-4

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2006 edition, section A3.3.12.6

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2006 edition, section 4.6

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2006 edition, section A4.9

NFPA 221, standard for high challenge fire walls, and fire barrier walls, 2008 edition, section 4.8.3



Fire and Acoustic Walls, Floors and Ceilings

About

Magnesium Oxide Board Corporation P/L (MgO Corp) is a provider of innovative building solutions. Whether you are looking at using magnesium oxide boards or one of the building systems developed by our industry partners, you will be amazed at the benefits available to you.

MgO Corp magnesium oxide boards offer many characteristics that make them a highly desirable building material:

CodeMark approval for use in Australia CM-11-A0007

Fire rated. Current approvals up to 120 minutes and bushfire zone-approved

Sound attenuation. The room will feel quieter with MgO Corp product on the floor, walls and ceiling than with most commonly used materials.

Light but strong. Wall boards can double as bracing sheets. High point and distributed loads can be accommodated.

Dimensionally stable. Variations of heat and moisture have little effect on the dimensions of the board or its properties.

Very high impact resistance. Great for use by families, in leased and rental properties, warehouses and secure facilities.

Easy to use. MgO Corp board can be cut, drilled, nailed and screwed with normal wood working tools

Termite resistant.

Healthy. As well as being non-toxic, MgO Corp board does not support mold or mildew, or provide a food source for termites or vermin. A great product to use for sufferers of allergies and asthma.

Low energy used in the manufacture of MgO Corp boards.

Not expensive. You can now afford to use the MgO Corp boards on the floor, walls, ceiling, soffits, external claddings, skirting's, architraves and cupboards. The building will be resistant to fire, floods, accidental damage and earthquakes, plus offer a healthy and pleasant environment to live in.

MgO Corp boards can be finished with normal paint, render, tile and wallpaper products. Special heat reducing coatings are also available

General

Where the BCA specifies the need for a fire separation system, a level of fire separation needs to be determined according to the type of structure and the uses on either side of the wall, floor or ceiling structure.

The level of fire separation is expressed by three numbers. For example, 60/60/60 represents

The first number indicates that for 60 minutes the wall must continue to carry the design loads. A dash here indicates a non-loadbearing wall.

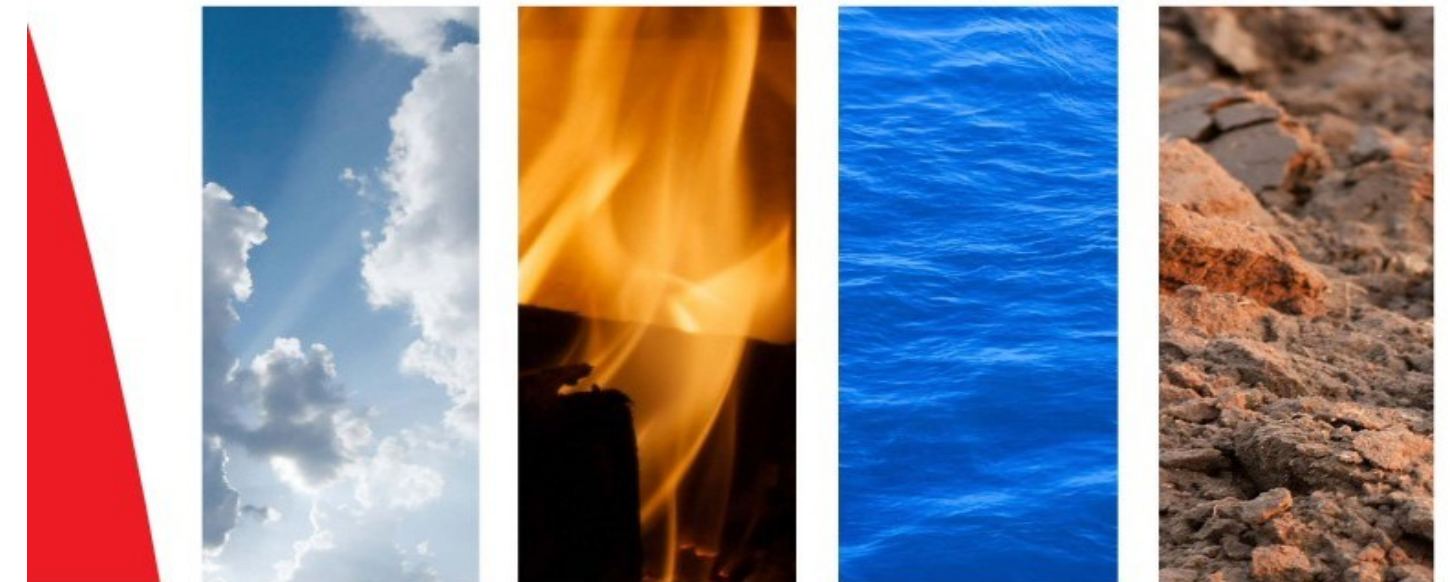
The second 60 minutes is the time before the wall's integrity is affected to allow the penetration of hot gases or flames.

The third 60 minutes indicates an insulation failure for allowing too much heat to pass through the wall.

Refer to the BCA to determine the fire and acoustic levels required for each application.

Magnesium Oxide (MgO) board is approved for use (CM-11-A007) in fire applications as follows:

9mm single board gives 60/60/60 and -/60/60
10mm single board gives 90/90/90 and -/90/90
12mm single board gives 120/120/120 and -/120/120.





CERTIFICATE OF CONFORMITY

This is to certify that

Magnesium Oxide Board™ Corporation (MgO) Board™



Product description
MgO Corp Magnesium oxide board is an environmentally friendly all natural magnesium oxide cold ceramic sheeting. Available in the following dimensions:
Brand name : MgO Board™

- 3mm to 50mm thickness
- 1220mmX2440mm
- 1200mmX2745mm
- 1200mmX3050mm

Product purpose or use
MgO board is intended as an Interior and exterior wall sheeting. Drop ceiling panels Fascia and Flooring.

Complies with the Building Code of Australia:

1. BCA Volume 2 Part 3.5.3.3, Fibre cement planks and weatherboard cladding.
2. BCA Volume 2 Part 3.5.3.4, Fibre cements sheet wall cladding.
3. BCA Volume 2 Part 3.5.3.5, Eaves and soffit linings.
4. BCA Volume 2 Part 3.7.1, Fire separation for FRL to (Timber Frame 60/60/60 Metal frame 90/90/90) Non Load bearing FRL - /120/120).
5. BCA Volume 2 Part 3.7.4, Bushfire areas including all state variations to Part 3.7.4.0 and 3.7.4.1 as tested under AS 1530 part 8.1-2007 and AS 1530 part 8.2-2007.
6. BCA Volume 2 Part 3.8.6, Sound insulation to Rw 53.
7. BCA Volume 1 Section C for FRL to (-/120/120).
8. BCA Volume 1 Section C1.8 (light weight construction).

Subject to the following conditions and limitations:

1. Must be installed in accordance with the approved MgO board™ general installation manual (GIM- edition 1- 2011) or fire installation manual (FIM edition 1-2011).
2. Must be installed by a qualified tradesman or builder.
3. Must only be used in situations applicable for the products use as detailed in the relevant sections of the installation manual (GIM edition 1-2011) or fire installation manual (FIM edition 1-2011).
4. When used in fire separation wall must be installed in accordance with the MgO Corp. fire wall installation manual and only in non load bearing walls for FRL (-/120/120).

NOTE: Formerly issued as CM-11-A007.

Certificate holder
Magnesium Oxide Board Corporation Pty Ltd
Shop 8/175 Ocean Drive
Twin Waters Qld 4564
ABN 47 151 952 742

CodeMark certification body
CertMark Australasia Pty Ltd
(ACN 154 3036 804)
JAS-ANZ Accreditation No. Z4450210AK
Address: PO Box 7144, Sippy Downs, QLD, 4556
Website: www.certmark.com.au

Signature: John Thorpe
Director, CertMark Australasia Pty Ltd

Signature: Luke Owen-Jones
Unrestricted with JAS-ANZ. The ABCB does not in any way warrant, guarantee or represent that the Product the subject of this Certificate of Conformity conforms with the Building Code of Australia. The ABCB disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this Certificate.
It is advised to check that this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the ABCB website, www.abcb.gov.au.

Date of issue: 13/08/2011

Date of expiry: 13/08/2014

Certificate Number: CMA-CM40009

