

#### **INSTALLATION MANUAL**



### ThermaSteel Generic Assembly Manual

The following information contains some of the many possible suggestions for methods of attachments, modifications, and designing assemblies. These suggestions are not to be considered necessarily the best possible solutions for your needs, but it will serve as one of many possible solutions. All attachment of connections must be reviewed by a certified architect or engineer for your particular applications to insure that it meets with your individual requirement and/or structural application.

Please feel free to contact ThermaSteel, Inc., at 540-633-1250 with any technical assistance you may need.



### ThermaSteel Terminology

- Attachment Plate A 3" x 5" 20GA metal plate used for various methods of joining two panels. See Panel Technology-Attachments.
- Beam pocket A rectangular slot in a panel to allow for a beam.
- **Beveled Edge** Top of panel is beveled to the slope of the roof. Also side of panel is beveled to angle of wall.
- Bracing -Diagonal bracing for racking resistance. Also temporary bracing used for walls and floors.
- **Chase, Horizontal** 2" x 3" rectangular slot 11" from the bottom of the panel running horizontally through the panel which allows for wiring.
- **Corner Metal** A 24GA metal piece bent to the angle of the corner running the height of the wall at the corner used to fasten the panels at the corner on the outside.
- EPS (Modified) Expanded PolyStyrene, modified with additives which inhibit flame spread.
- **End Metal** 4 pieces of 2 ¼ x ¾" x 47" 24GA steel per panel bent at right angles and adhered perpendicular to the top and bottom of the studs on the exterior and interior of the panel. See Panel Technology-Standard Terms
- Exterior Side of Panel The side of a wall or roof panel that would face the weather.
- Filler Panel An EPS panel with shiplaps used to make up spaces between panels less than 16".
- Foam Gun A trigger actuated device used to apply expanding urethane foam.
- Gable End The wall that forms the Gable end of the roof.

### ThermaSteel, Inc. Terminology

- **Hot Knife** An electrical device using various configurations of a ni-chrome wire that is heated to a temp. that easily melts the EPS. Used to form chases and altering panels.
- **Hurricane panel** A special panel developed by ThermaSteel. used in high wind situations and designed to withstand the penetration of projectiles.
- Infill Panel-Standard panels used to fill in between steel and concrete structural elements.
- **Insul Header** A steel header that maintains the thermal break between the exterior and interior steel of the header.
- **Interior Side of Panel** The side of the panel usually exposed to controlled atmospheric conditions such as HVAC.
- Leading Edge The edge of the panel that is used to attach to the adjacent panel and is usually on the right hand of the panel when viewed toward the exterior side of the into the wall.
- **Point Load** Usually a heavy load in a location caused by a concentration of forces in a small area.
- **Ridge Cap** 24GA galvanized Steel bent to the slope of the roof and forming a ridge over the panels joined at the ridge.
- **Rough Opening** The size of the opening called out for window and doors. Tolerance on all sides is usually 1/8"-1/4".
- **Shiplap Joint** The joint formed in the molding process that limits air infiltration at the joint and allows for variations in the walls length.
- Sill A panel or part of a panel that forms the bottom of a window.
- Stacked Panels Panels joined end to end to form walls floors and roofs more that 12' in length.

### ThermaSteel, Inc. Terminology

Strap metal - Metal used to join headers and sills to panels

- Studs 3 ½" metal profiles that form part of the framework for the panel.
- ThermaSteel Panel A standard panel with 12 pieces of steel bonded to the EPS insulation configured

to form a composite building material.

**Track** - 24 to 14 gauge "C" shaped galvanized steel used for Top and Bottom plates that studs or panels are attached to.

### Panel Technology-Standard Terms



Part numbers located on bottom of Panel

### Attachments



### Tool List

#### **MUST HAVE:**

Measuring Tapes Drill with Bits Metal Snips Magic marker **Carpenter Pencils** 4 ft level Framing Square Screw Gun (2500 RPM) Philips bits Claw Hammers Nail apron Skill saw Metal cutting blades Concrete nails Electric cords Adjustable wrench Step ladders

Hot-knife Chalk box Reciprocating saw Metal Blades Flat Prybar Duct Tape Duct Bill Pliers

#### NICE TO HAVE:

Powder atv. Gun(Hilti) Foam gun Autofeed Screwgun Screws Caulk Gun Chop Saw Blades Electric Snips (Kett) Rolling Scaffold Magnetized 4' level

#### FUN TO HAVE:

Cordless Drills Charging Station Generator Drywall saw Pop Rivet Storage box w/locks Aluminum Extension ladder Plan holding station Pick-up magnet

#### SAFETY:

First Aid Kit Ear Protection Safety Glasses Gloves



No 1 injury? Cuts! Wear Gloves!

# **Before Delivery:**



#### <u>Check Shop Drawings</u> <u>Carefully:</u>

Rough Openings Opening placement in wall Overall Dimensions Wall heights





<u>Check Foundation Slab</u> <u>Carefully: Most</u> <u>problems in</u> <u>construction are</u> <u>caused by unlevel and</u> <u>out of square slabs.</u>

Fix holes, valleys and lumps





# **CONSTRUCTION VARIABLES**



**Grind level** 

Fill with grout

Check for any larger swells, humps, large dips or low spots that may need to be either adjusted now or taken into account when the panels are being set.

# Before Delivery:



**Establish corners** 



Check for square





Establish Wall

Lengths

#### Set chalk lines





#### Set Center lines For doors- Layout Openings

### "ThermaSteel is Here"



Take a physical inventory while unloading to Ensure all panels are on the delivery truck. Check for any damage.

Hey! you got C-23 in there ?.... Yea! Coming to ya! Check it off.

# **Painless Material Handling**

Proper method to handle panels



# Handling



#### Lifting up on the leading edge- NOT.

# Logistics-Staging the project



This is one Method of staging That eliminates Moving panels from the bottom of a stack

# LAY OUT PROCEDURE



### Mark door openings



Install Sill foam or 30# felt To isolate track.

#### Save those chalk lines!









#### J-BOLT CONNECTION – LOOKING AT **CHANNEL BOTTOM SIDE UP**



Layout track to bolts



Mark for bolt holes



**Hole Punch** 

Unibit



Hole Saw



**Transfer measurements** 





**Install Track** 





16

### **RECOMMENDED METAL TRACK CONNECTIONS**

Cut the legs off of each side of the track to make a tongue that will insert into the a joining piece of track and anchor according to local code.



#### MISCELLANEOUS CONNECTION MATERIALS FOR BOTTOM TRACK



Possible Material for Concrete: Expansion Bolts Tapcon Screw w/ 1" Flat Washer Hilti Pins J-Bolts Blue Bolts

Possible Material for Wood/Steel: Screws with 1" Flat Washers Nails





# Track cut outs for plumbing & electrical



Another method of sealing under bottom track is to use Ice and Water Shield.

#### STRAIGHTEN BENT CHANNEL



Straighten puckers in the legs of the channel with a lineman's pliers or a wide mouth pliers used in the sheet metal trade. Puckers form adjacent to each of the tightened anchor bolts. It is better to bend the legs slightly outward.



# **CRUCIAL STEPS**



Mark and label for each panel in the track. All measurements are taken from the outside of the panel (do not include the leading edge metal).

# ThermaSteel-ASSEMBLY



Start at corner Assemble walls into Track

Use a flat tool when installing panel in track



Use minimum screws until walls are fully installed – after fully installed use 2 screws per stud inside and out, top and bottom



Once walls are installed caulk the top of the legs of the bottom track inside and out.



Brace @ 8' OC

### ThermaSteel-ASSEMBLY



Staging is critical to saving time





#### **Steel Header to ThermaSteel**



#### **Steel Joists to ThermaSteel**

# Field Adjustments: Panel needs to be shortened or cut off



Use flat blade tool: Try not to deform the end metal.

### Field Adjustments- Panel needs to be shortened or cut off



Step 3: Mark and cut with Reciprocating saw. Don't let blade wander. Step 2: Clean excess foam from metal end metal.

Step 4: Re-attach end metal with two screws per stud on each side.

### **Field Adjustments** Panel too wide. Needs to be cut lengthwise



Step 1: Pry off end metal on Both sides-Top And bottom.

Step 2: Clean excess foam

Step 3: Mark to remove amount between studs to make the panel the desired width.

### **Field Adjustments** Panel too wide. Needs to be cut lengthwise





Step 4: Mark by snapping line.

Step 5: Cut with circular or Reciprocating saw. Don't let blade wander.

### Field Adjustments Panel too wide. Needs to be cut lengthwise



Note: Using a circular saw you will have to flip the 5 1/2" panel to make the cut all the way through the panel. With a reciprocating saw it can be cut through in one pass from one side. Careful that the blade does not wander.



Step 6: Remove excess foam to desired width. Step 7: Re-attach end metal with two screws Per stud on each side top and bottom.

# Field Adjustments



Step 8: Make sure gap is filled with foam.

# Field Adjustments: Let-in bracing



Step 2: Cut piece of track or just use flat metal between studs.



Step 3: Screw attach.



Example showing Brace to attach exit light.

EPS Foam

Step 1: Mark for placement between studs. Groove for leg of track in foam.

#### **Metal Stud**



# ThermaSteel - ELECTRICAL





Hot knife is used to make custom routes for wiring and plumbing





# ThermaSteel - ELECTRICAL

Switch box attached to stud.





Rec. box can be foamed in place.



Underside of ThermaSteel Panel for concrete floor spanning 20\

> Notice uncut portion used to hold wire away from surface

Wireway cut in EPS

with hot knife

Wiring in ThermaSteel, Inc. Ceiling

# ThermaSteel-PLUMBING



# Bathroom plumbing for double sink

# **Roof Panel Application**



ThermaSteel, Inc Ltd.Roof panels perpendicular to beams. No furring strips may be used





ThermaSteel, Inc. Roof panels parallel to trusses.



ThermaSteel, Inc Panels for Curved Roof.



# ThermaSteel-CLADDING



### Plank siding attached with Stainless Steel Trim Head Screws



Brick