



ThermaSteel Corporation

**ARCHITECTURAL
SPECIFICATIONS**

**ARCHITECTURAL SPECIFICATIONS
FOR
THERMASTEEL FRAME BUILDING PANEL SYSTEM**
Manufactured by ThermaSteel Corp.

PART I - GENERAL

1.01 Summary: These specifications are to be used in preparing details and documentation for projects using the ThermaSteel Building System, manufactured by ThermaSteel Corp. For further product description and usage refer to:

A. ThermaSteel Assembly Manual

1.02 System Description:

A. The ThermaSteel Building System is customized to exact architectural drawings and specifications and can be used for below grade foundation wall systems as well as structural floor, wall and roof systems. (See attached drawing)

B. Individual panel size and configuration is dependent upon project design requirements. Maximum overall size shall be no greater than 4' x 12'. Panel thickness shall be either 3 1/2", 5 1/2" or 7 1/2". Panel weight shall be no greater than 1.625 lb/sf.

C. Panels shall be composed of:

1. Integral steel framework of 24ga galvanized G-90 steel.
2. Exterior sheathing materials as specified by customer. (i.e. brick, lap siding, vinyl, etc.)
3. Polystyrene core insulation, Class 1 fire rated, is molded into a steel frame to produce a structural composite panel.

D. Joinery and peripheral components shall be:

1. Footer track shall be 18ga galvanized steel attached per code directly to concrete slab-on-grade or other appropriate foundation. Panel is positioned over track and secured using self-tapping sheet metal screws.
2. Shiplap joints on each panel will be joined using #8, 1/2" self-tapping screws.
3. A header is designed in various configurations to accommodate truss systems for various roof slopes or for parapet on flat roofs.

4. Corner components shall be manufactured using the same materials as the specified wall panels.
5. Other components shall be custom designed as necessary to meet project design as well as structural requirements.

E. Performance requirements: As a minimum the ThermaSteel 4' x 8' panels shall be tested by an independent laboratory to meet the following criteria:

1. Load Criteria:

WALL PANELS (STANDARD-ASSUMES SAFETY FACTOR OF 2.5)									
PANEL TYPE	DIMENSIONS				AXIAL LOAD LBS/LF kg/m	LATERAL LOAD LBS/SF (L/360) kg/m ²	LATERAL LOAD LBS/SF (L/240) kg/m ²	RACKING SHEAR LBS/LF kg/m 1/8" defl. Max.	
	W	H	T	RIB					
W 8-3/24	4'	8'	3 1/2"	24"	1033 lbs/lf	13.6 lbs/sf	20.5 lbs/sf	107 lbs/lf	249 lbs/lf
	1.2m	2.4m	8.9cm	60cm	1537 kg/m	66.4 kg/m ²	100.1 kg/m ²	159.2 kg/m	370.5 kg/m
W 8-5/24	4'	8'	5 1/2"	24"	1067 lbs/lf	16.8 lbs/sf	21.8 lbs/sf	93 lbs/lf	243 lbs/lf
	1.2m	2.4m	13.9cm	60cm	1587.7 kg/m	82 kg/m ²	106.4 kg/m ²	138.4 kg/m	361.6 kg/m
W 8-3/16	4'	8'	3 1/2"	16"	1300 lbs/lf	20.5 lbs/sf	27.9 lbs/sf	162 lbs/lf	355 lbs/lf
	1.2m	2.4m	8.9cm	40cm	1934 kg/m	100.1 kg/m ²	136.2 kg/m ²	241.1 kg/m	525.2 kg/m
W 8-5/16	4'	8'	5 1/2"	W	1869 lbs/lf	40.9 lbs/sf	42.3 lbs/sf	125 lbs/lf	312 lbs/lf
	1.2m	2.4m	13.9cm	40cm	2781 kg/m	199.7 kg/m ²	206.6 kg/m ²	186 kg/m	464.3 kg/m
W 12-5/24	4'	12'	5 1/2"	24"	1104 lbs/lf	55.6 lbs/sf	>55.6 lbs/sf		
	1.2m	3.6m	13.9cm	60cm	1642.8 kg/m	271.5 kg/m ²	>271.5 kg/m ²		
W 12-5/16	4'	17'	5 1/2"	16"	1541 lbs/lf	53.7 lbs/sf	53.6 lbs/sf		
	1.2m	3.6m	13.9cm	40cm	2293 kg/m	262.2 kg/m ²	310.6 kg/m ²		

2. Fire Resistance: The panels have been tested for surface burning characteristics in accordance with UL 723 procedures (ASTM E84):
 - a. 3 1/2" (8.9cm) thick EPS, 1 1/2" PCF (24 kg/m³):

Flame spread rating:	5-10
Smoke developed:	65-300
 - b. 5 1/2" (13.9cm) thick EPS, 1.0 PCF (16kg/m³):

Flame spread rating:	5-20
Smoke developed:	125-175

In addition, fire wall assemblies have been tested in accordance with ASTM E119 for 1-hour and 2-hour ratings. Some are shown in the fire resistance table on the next page:

Wall Description	Rating
3 1/2" ThermaSteel w/steel channels - 1/2" regular gypsum boards - attached with 1" screws 12" o.c.	Minimum
3 1/2" ThermaSteel panel w/ recessed steel channels on exposed side - 5/8" Type X FIRECODE gypsum panels, recessed layer 5/8" gypsum over recessed channels - recessed gypsum board attached with 1" type S screws, 12" o.c., outer board attached with 1 5/8" type S screws, 12" o.c., on exposed side, no. 6 5/8" self-tapping screws 12" o.c., on protected side	1 hour
3 1/2" ThermaSteel panel w/steel channels - double layer 1/2" Type X FIRECODE gypsum boards - panels attached with 1" screws at 24" o.c. on exposed side, 1 5/8" screws at 12" o.c. on protected side	2 hour
5 1/2" ThermaSteel panel w/steel channels -- unfaced 2" fiberglass insulation sandwiched between 5/8" Type X FIRECODE gypsum board (protected) and 1/2" regular gypsum board (exposed) - gypsum boards and fiberglass attached with 1 3/8" x 1 1/2" Hat studs at 24" o.c.	1 hour Party Wall

3. Sound Rating:

Wall Description	STC Rating
3 1/2" ThermaSteel partition panel with - 1/2" regular gypsum on either side	36
3 1/2" ThermaSteel partition panel with - 5/8" regular gypsum on either side	37
2 -3 1/2" ThermaSteel panels with - 5/8" regular gypsum on either side	40
2 -3 1/2" ThermaSteel panels with - 5/8" air space between and 5/8" gypsum on either side	42
2 -3 1/2" ThermaSteel panels with - ceiling tile	48
2- 3 1/2" ThermaSteel panels 3 1/2" air space on one side, from metal furring channels and with-5/8" gypsum on either side	49
ThermaSteel party wall panel: 5 1/2" panel with 5/8" gypsum on either side, 2" hat channel on either side of panel, infilled with 2" batt type FG insulation, covered with 1/2" gypsum. Total width = 8 5/8" with load capacity of 1250/LF	51
2 - 1 3/4" ThermaSteel panels (3 1/2" panel split down middle), 2" FG Batt insulation between panels, 5/8" gypsum on each side. Total width = 7"	53
ThermaSteel Zublin partition wall: 2 -3 1/2" ThermaSteel panels with 2" air space between and 1/2" & 5/8" gypsum on either side. Total width = 11 1/4" o.c. on exposed side, 1 5/8" screws at 12" o.c. on protected side	57
WOOD COMPARISON Wood studs with fiberglass insulation and 5/8" gypsum on each side. Notes: Wood studs are better at low frequency only. ThermaSteel is better than wood for approximately 90% of the frequency range. ThermaSteel is excellent in high frequency	34

* Improved sound rating values may be accomplished by the use of any of the following:

- 5 1/2" Panels
- Fiberglass sound blankets between walls
- Dynamat sound proofing films
- The use of lead oil on one or both interior surfaces.
- Changing the density of the EPS on either side.

4. Thermal Efficiency:

- | | | |
|----|--------------------------|---------------|
| a. | 3 1/2" ThermaSteel panel | R-Value of 16 |
| b. | 5 1/2" ThermaSteel panel | R-Value of 25 |
| c. | 7 1/2" ThermaSteel panel | R-Value of 34 |

1.03 Quality Assurance

A. Qualifications:

1. Panel manufacturer shall be ThermaSteel Corp.
2. Contractor/Installer shall be knowledgeable in the proper installation of the ThermaSteel Building System.
3. All supplied fasteners and other third party supplied components shall be certified by ThermaSteel Corp. as to quality and suitability for use.

B. Regulatory Requirements:

1. The ThermaSteel Building System and panel shall meet or exceed all code requirements for structure and fire safety.
2. The use of the ThermaSteel panel shall be in accordance with all applicable building codes.

C. The ThermaSteel Building System and panel shall be recognized for the intended use by applicable building codes.

D. Third Party Inspection:

1. Manufacture of the building panel and components shall comply with quality assurance standards of a contracted independent third party quality assurance inspection agency.

1.04 Delivery, Storage, Handling

A. All ThermaSteel panels and components shall be delivered to the job site with labels intact. Questionable panels or parts shall not be used.

B. Store all panels in a clean and safe area.

C. Panels shall be handled so as not to damage corners, edges, or channels prior to installation.

1.05 Project Conditions

A. Application of sealants, primers, elastomeric coatings, brick or stone facings or other forms of exterior sidings or finishes shall be done under the conditions set forth by the manufacturers of those products.

1.06 Sequencing and Scheduling

- A. Installation of the ThermaSteel panels shall be coordinated with the other building trades.
- B. Foundations or slab-on-grade must be complete and properly cured, ready to accept the footer track prior to installation of the building panels when they are used as structural wall systems.
- C. Exterior finishing must be accomplished in a timely manner following the installation of the ThermaSteel building panels.
- D. Other building trades may be scheduled as required.

1.07 Warranty

- A. ThermaSteel Corp. shall provide a two year warranty against defective material upon written request. See warranty for complete details.

PART II - PRODUCT

2.01 Manufacturer: The ThermaSteel panel and components are all proprietary products of ThermaSteel Corp. and manufactured under strict quality controls as monitored by a third party independent quality assurance agency.

2.02 Materials

- A. 24ga galvanized G-90 roll formed steel shall comprise the integral framework of the panel. Expandable polystyrene incorporated into the design shall provide a sufficient thermal break to ensure non-conductivity of temperature between surfaces.
- B. The exterior skins of the panel shall be at the discretion of the customer. Specifications for the non-proprietary sheathings shall be available upon request from ThermaSteel Corp.
- C. The panel core shall be Class 1 fire-retardant foam with a minimum density of 1.0 lbs/cf to 1.5 lbs/cf injected into the panel cavity to form a composite panel.
- D. Footer tracks shall be 18ga galvanized G-90 roll-formed steel on all load bearing walls.
- E. Header and other required components shall be custom designed to meet the structural requirements of the architectural design.
- F. Mechanical fasteners and other third party components shall be available from authorized manufacturers and selected by the architect/owner.
- G. Joint sealants, exterior finishes, facings or sidings shall be recommended by ThermaSteel Corp. and selected by the architect/owner.

PART III - EXECUTION

3.01 Examination

- A. Prior to the installation of the ThermaSteel panels, it is the contractor's responsibility to ensure that:
 - 1. The foundation/footer/slab-on-grade is appropriately level and smooth and ready to accept the footer track of the building system.

3.02 Preparation

- A. Protection
 - 1. In following good building site practices, it is recommended that the ThermaSteel building panels and components shall be protected from permanent or temporary damage prior to, during, and following installation until proper sealant and exterior finishing are applied.
- B. Foundation Preparation
 - 1. The foundation/footer/slab-on-grade shall be prepared so as to be level and square prior to delivery of the panels.
- C. Wall System Preparation
 - 1. When the ThermaSteel panels are used as a curtain wall, the structural steel wall system shall be prepared so as to provide a level plane for panel installation using construction devices to serve that purpose. All structural systems should be dry and free from extraneous materials which may prevent proper fastening of the panels.

3.03 Installation

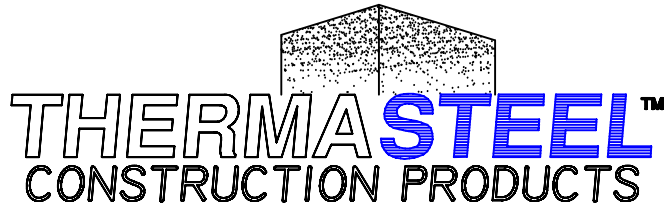
- A. Installation instructions shall be customized for each project. In general, panels are connected:
 - 1. To the foundation using a footer track bolted to the slab upon which the panel is placed and attached with mechanical fasteners.
 - 2. At the top using a metal track or wood plate over the top of the panels and attached using mechanical fasteners.
 - 3. To the structural steel framing using mechanical fasteners of appropriate design and length in a pattern as specified by the ThermaSteel structural engineer.

3.04 Field Quality Control

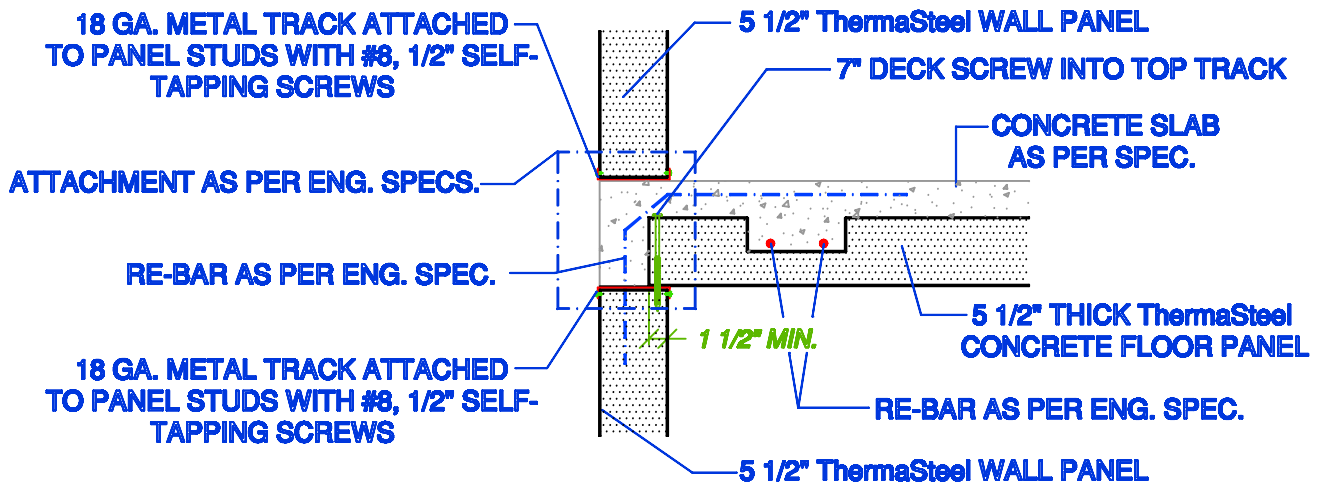
- A. The contractor shall be responsible for the proper installation of the ThermaSteel Building System and the necessary sealants and finishes.
- B. Contractors shall be factory trained as to the installation of the system.
- C. A representative of ThermaSteel Corp. shall act as an on-site resource for a period of one day or as negotiated to help ensure proper installation of the system.

3.05 Cleaning

- A. All excess materials, if any, shall be removed from the job site by the contractor in accordance with contract provisions.
- B. All surrounding areas where the panels have been installed and the finish applied shall be left free of debris and foreign substances resulting from the contractor's work.



CONCRETE FLOOR PANEL ATTACHMENT DETAIL



ALL REBAR, CONCRETE SLAB, STRUCTURAL BEAMS AND SUPPORTS ARE TO BE SIZED AND LOCATED BY OTHERS UNLESS NOTED.