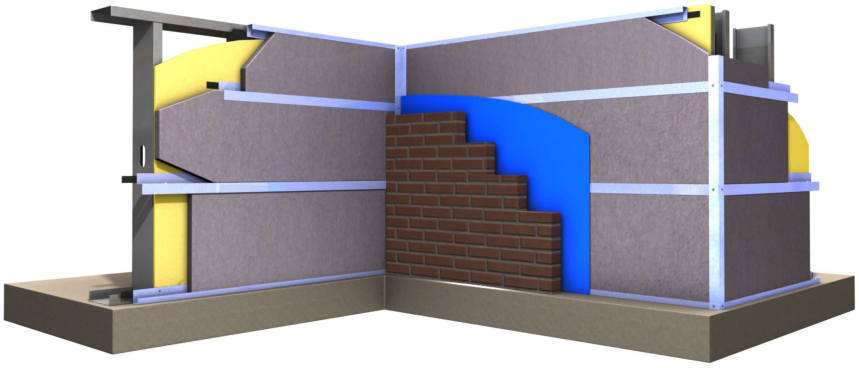
Exterior Wall Framing & Accessories ThermaFast® Continuous Rigid Insulation Framing System

Introduction

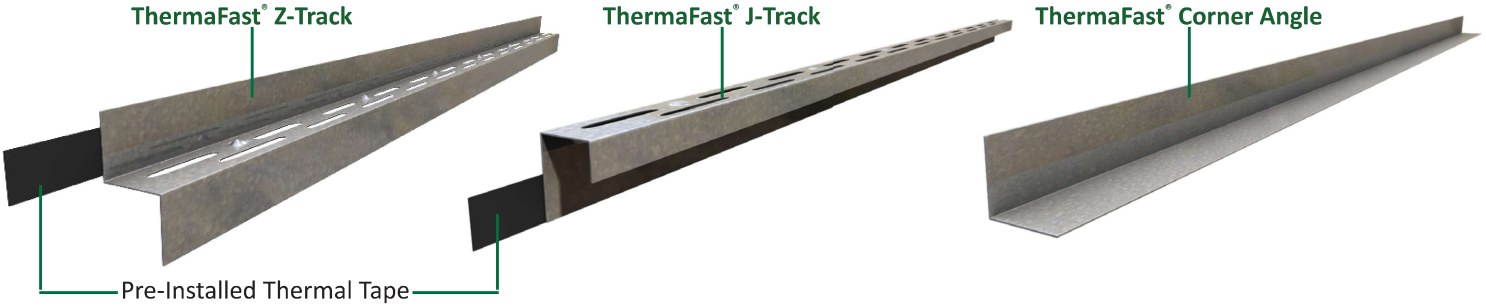
Recent changes in the IECC Energy Conservation Code and ASHRAE Standard 90.1 necessitate the installation of 1 to 4 inches of continuous rigid insulation layer on the outside surface of exterior metal stud walls. Existing building component systems lack sufficient accommodation for cladding assemblies, like cement board panels, siding, metal panels, EIFS, stucco, etc. since there is no viable means to attach to a stable substrate like plywood or gypsum sheathing over the thick rigid insulation layer other than long and unstable cantilevered screws.



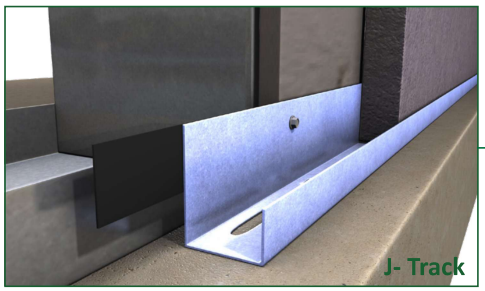
Over time, and lacking a product that addressed this need, Architects have either reduced or abandoned altogether the use of such cladding in their designs, waiting for the steel framing industry to provide a solution.

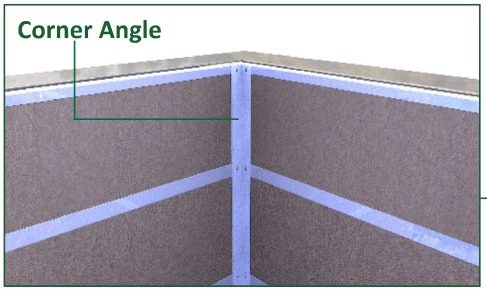
TSN's ThermaFast® Rigid Insulation Framing system is "The" solution. ThermaFast is an engineered installer-friendly set of steel framing tracks and angles designed to be an integral part of the continuous rigid insulation, and at the same time provide a stable component for direct substrate attachment. ThermaFast parts include preinstalled thermal tape on each piece and slotted webs on the Z-Tracks to minimize thermal conductivity through the rigid insulation layer. Unique rigid insulation engagement to keep foam layers from sliding or popping out of place.

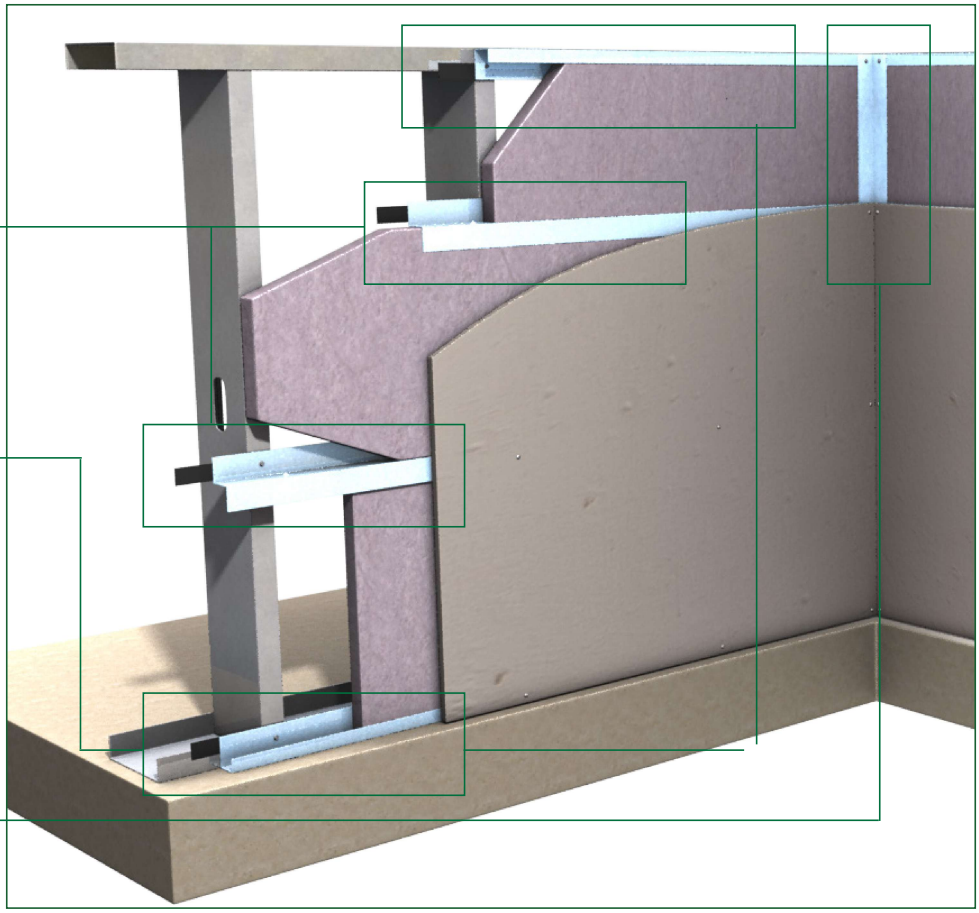
System Components



System Configuration







Request TSN catalog of thermal resistances and thermal transmittances of wall assemblies with ThermaFast® Continuous Rigid Insulation Framing System.

Exterior Wall Framing & Accessories ThermaFast® Continuous Rigid Insulation Framing System

Nomenclature

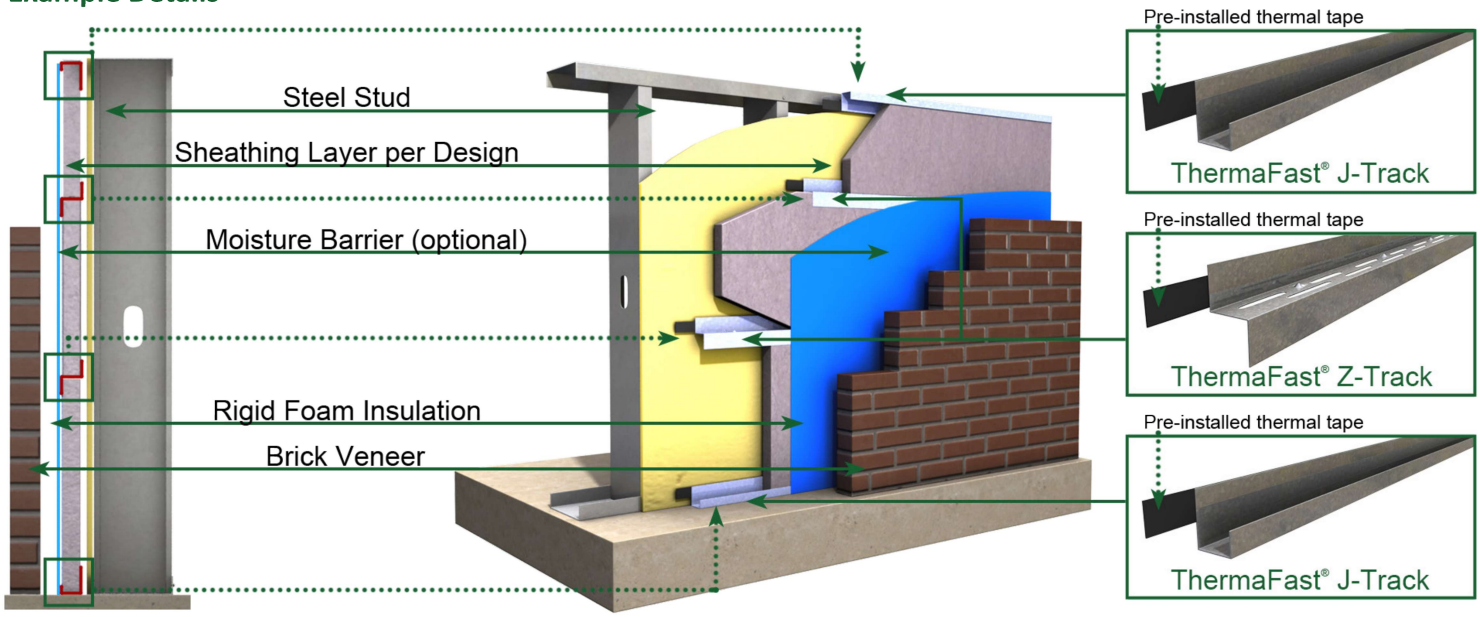
150ZT-54, 50 ksi

Rigid Foam Insulation Depth (in) x 100
Ex: 1.5" = 150
For all "CA" sections, this dimension is the leg length ex: 2" leg = 200

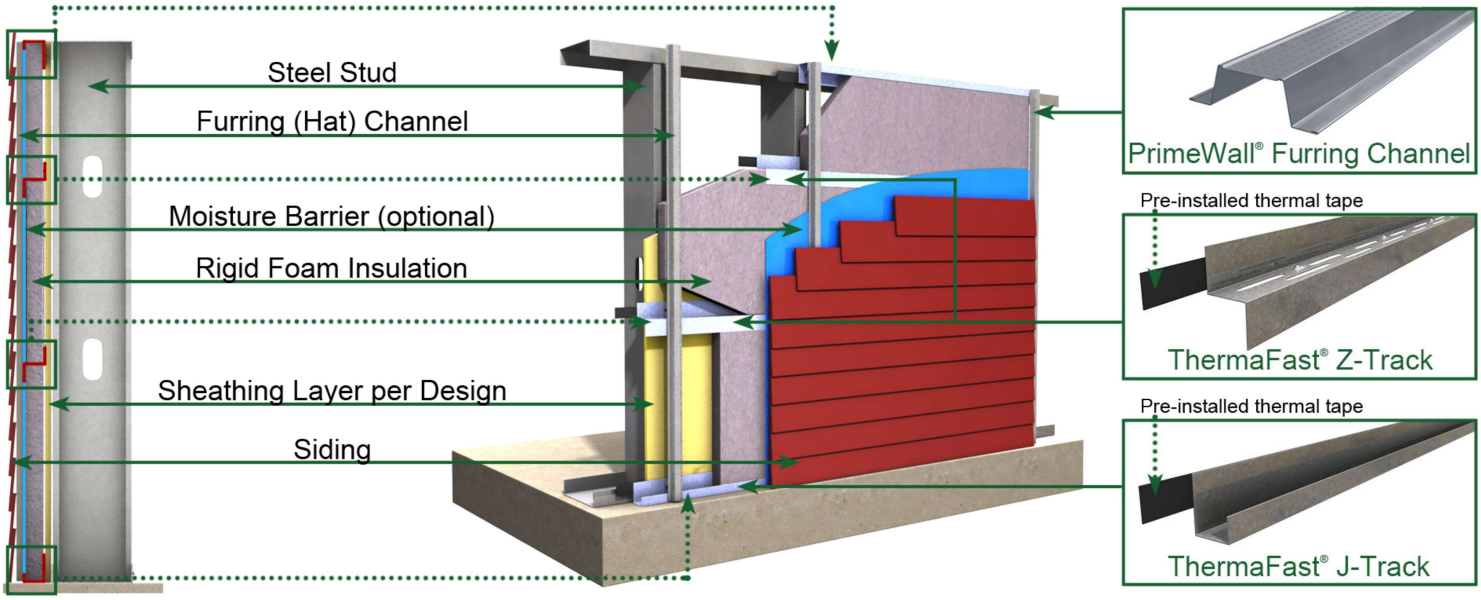
Style
Ex: ZT = Z-Track Section
Other desginators are as follows:
***JT** = J-Track*
***CA** = Corner Angle*

Material Thickness (mils)
Ex: 0.054" = 54 mils (16ga)
Material Thickness is the minimum base metal thickness in mils, representing 95% of the design thickness.

Example Details*



Example Details - ThermaFast® used with Furring Channel



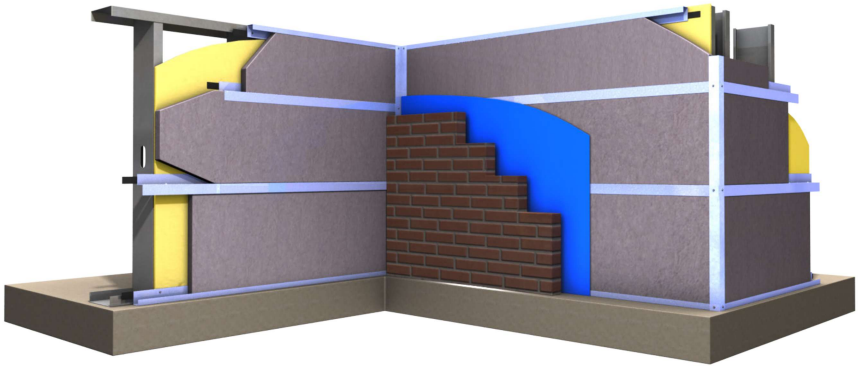
** Refer to project specification and/or architectural sections for wall assembly details related to fire and acoustical performance as well as water resistance.*

Exterior Wall Framing & Accessories

Thermal Resistances & Thermal Transmittances of Wall Assemblies

Introduction

This catalog provides thermal performance data (R- and U-values) of the ThermaFast® Rigid Insulation Framing System produced by the Steel Network Inc. The ThermaFast System is used in exterior wall assemblies to support rigid foam insulation with thicknesses ranging from 1.0 inch to 4.0 inch. In addition, the ThermaFast System provides viable means to attach the cladding assemblies, like cement board, siding, metal panels, to a stable substrate instead of using long and unstable cantilevered screws to the sheathing layer. This summary allows designers to have fast and straightforward access to information with sufficient accuracy to reduce uncertainty in the thermal performance of building envelope components.



Thermal modelling for this project was completed using a 3D finite element analysis heat transfer software package by SolidWorks®; SW Thermal Solver and follows ASHRAE/IES Standard 90.1 requirements.

Assembly #[1]	Steel Stud Size	Exterior Rigid Insulation Thickness	Stud Cavity Insulation (min.)	ThermaFast® Z-Track Size	Nominal Resistance R_0 $m^2.K/W$ ($hr \cdot ft^2 \cdot °F/Btu$)	Transmittance U_0 $W/m^2\ K$ ($Btu/ft^2 \cdot hr \cdot °F$)
6" Steel Stud Walls						
1[2]	600S162-43	2"	None	200ZT-54	1.88 (R-10.67)	0.532 (0.093)
2	600S162-43	1.5"	R-19 Batt	150ZT-54	3.12 (R-17.71)	0.321 (0.056)
3	600S162-43	2"	R-19 Batt	200ZT-54	3.50 (R-19.89)	0.285 (0.050)
4	600S162-43	2"	1 ½" Spray Foam	200ZT-54	2.94 (R-16.7)	0.340 (0.060)
5	600S162-43	2"	3" Spray Foam	200ZT-54	3.50 (R-19.89)	0.286 (0.050)
6	600S162-43	3"	R-19 Batt	300ZT-54	4.04 (R-22.97)	0.248 (0.044)
7	600S162-43	4"	R-19 Batt	400ZT-54	4.50 (R-25.55)	0.222 (0.039)
8" Steel Stud Walls						
8	800S162-43	2"	R-25 Batt	200ZT-54	3.91 (R-22.18)	0.258 (0.045)
9	800S162-43	3"	R-25 Batt	300ZT-54	4.44 (R-25.2)	0.225 (0.040)
10	800S162-43	4"	R-25 Batt	400ZT-54	4.89 (R-27.75)	0.205 (0.036)

Table Notes:

[1] Details of input and output data for each assembly are provided in Section 5 of the full report "Thermal Analysis of ThermaFast® Rigid Insulation Framing System" by the Steel Network, Inc.

[2] Assembly 1 is only presented as a reference for other assemblies.