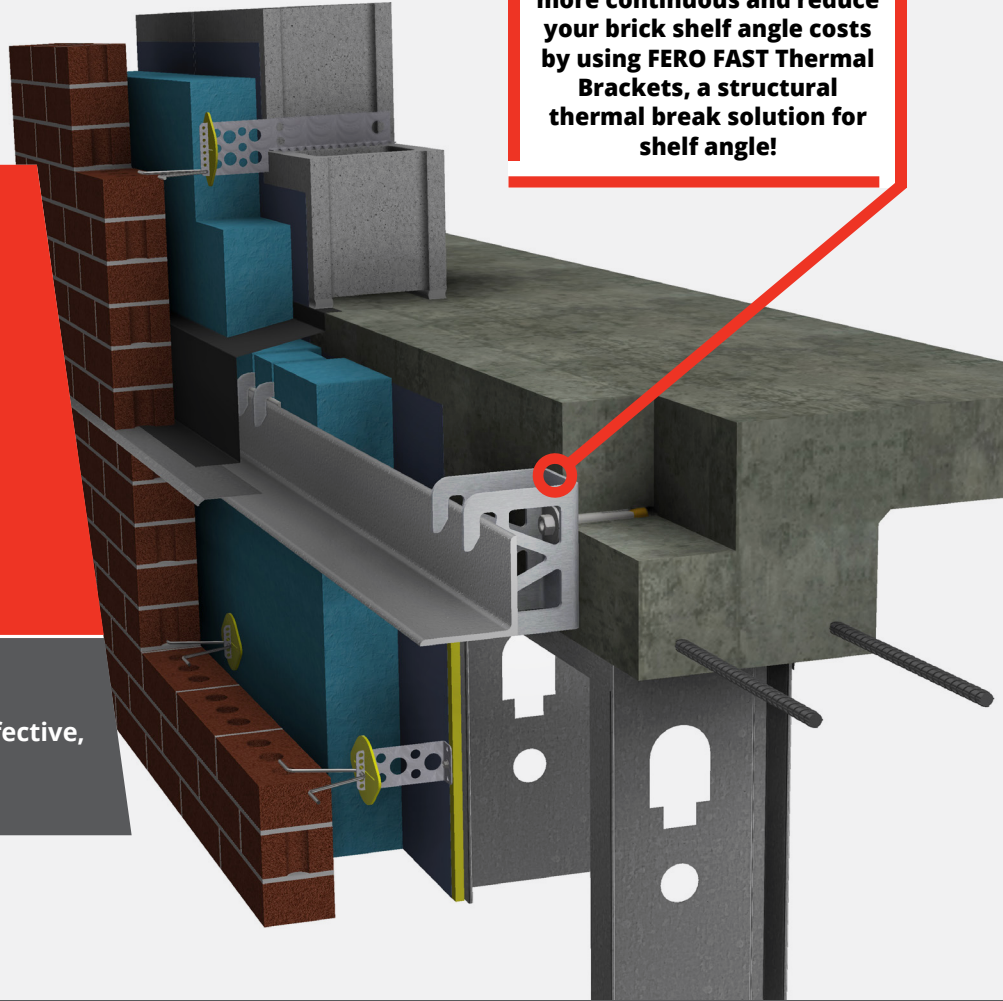




Make the insulation on your building significantly more continuous and reduce your brick shelf angle costs by using FERO FAST Thermal Brackets, a structural thermal break solution for shelf angle!

FAST™ THERMAL BRACKETS

Use FAST Thermal Brackets to make your masonry shelf angle design smart, cost-effective, "thermally-broken" and energy efficient.



STRENGTH. ADJUSTABILITY. PERFORMANCE.

Stand-off the masonry shelf angle from the backing using FAST Thermal Brackets to provide a "thermally broken" shelf angle and masonry veneer support system.



Make Your Building
Energy Efficient



Speed Up
Installation



Reduce
Building Costs

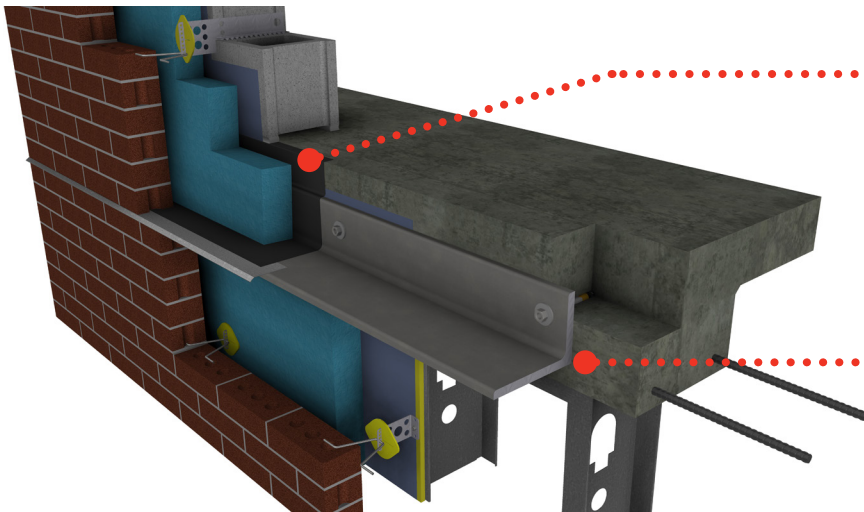
See inside to choose the right FAST Thermal Bracket for your building needs

THE FERRO FAST™ THERMAL BRACKET ADVANTAGE

Challenge

Conventional masonry shelf angle designs compromise the effectiveness of exterior insulation, reducing the energy efficiency of the building. Conventional shelf angles are impractical and expensive, especially with thicker insulation and larger wall cavities.

Conventional Shelf Angles



Interrupted Exterior Insulation

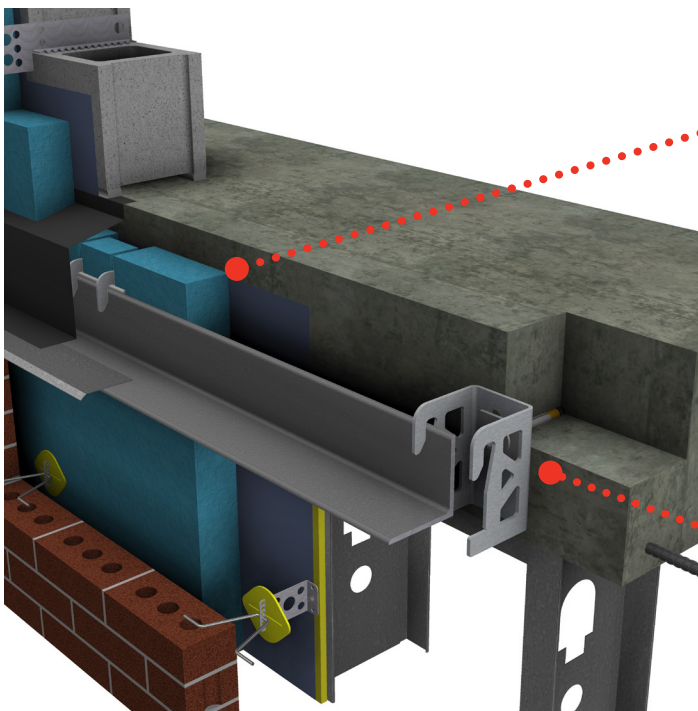
Conventional shelf angles interrupt the thermal plane of the exterior insulation, typically at every floor, reducing thermal efficiency.

Thermal Bridge at Every Shelf Angle

Shelf angles are made of highly conductive steel. A conventional shelf angle fully penetrates the insulation, causing a large linear thermal bridge along the entire horizontal length of every shelf angle on the building.

Solution

FERO's innovative and proprietary FAST Thermal Brackets stand-off the shelf angle from the backing, allowing for continuous air/vapor barrier and insulation behind the shelf angle.



Offset to Reduce Thermal Bridging

FERO FAST Thermal Brackets offset the shelf angle from the backing, and dramatically improve the thermal performance of the building envelope by eliminating the large linear thermal bridge caused by a conventional shelf angle.

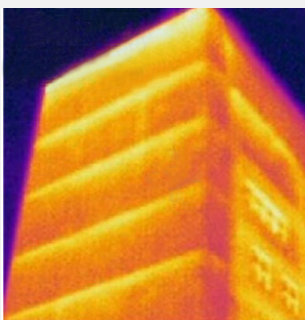
Structural Thermal Break Design Improves Energy Efficiency

FAST Thermal Brackets have a hole pattern designed to reduce the transfer of heat across the FAST Thermal Bracket, improving the overall thermal transmittance while maintaining structural strength of the bracket.

COMPARE: Why Choose FERRO FAST™ Thermal Brackets Over Conventional Shelf Angles?

By standing off (offsetting) the shelf angle from the backup wall, FERRO FAST Thermal Brackets create a 'thermally-broken' shelf angle providing significant advantages over conventional shelf angle designs and installations.

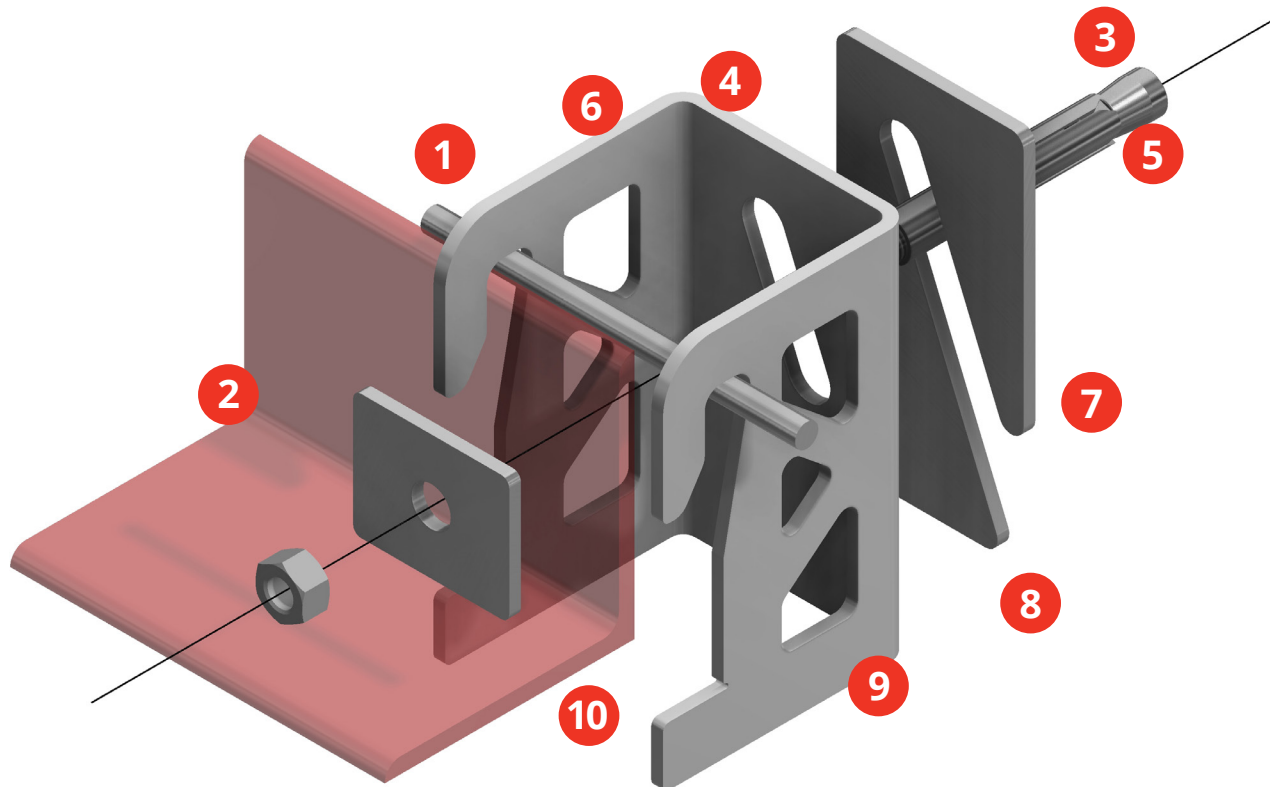
	CONVENTIONAL SHELF ANGLE	FERRO FAST THERMAL BRACKETS
Energy Efficiency	✗ Direct contact of shelf angle with backing creates a significant thermal bridge and limits effectiveness of insulation by 35–60% or more, depending on size of shelf angle.	✓ The stand-off shelf angle allows for continuous insulation, reduces thermal bridging, and limits effectiveness of insulation by less than 1%.
Wall Assembly R-Value	✗ R10.8 (Insulation R-Value 16.8)	✓ R16.7 (Insulation R-Value of 16.8)
Cost	✗ Complex installation and more expensive shelf angle result in higher overall costs.	✓ Ease of installation by a single trade and lower shelf angle costs reduce average cost by over 60% .
Adjustability	✗ Direct anchoring to backing results in limited adjustability.	✓ Fully adjustable horizontally and vertically.
Ease of Installation	✗ Requires multiple trades to install.	✓ Can be quickly installed by a single trade.
Effectiveness with Thicker Insulation and Larger Wall Cavities	✗ Requires large, expensive and hard-to-install shelf angle.	✓ FAST Thermal Brackets can accommodate any cavity size, and because the FAST Thermal Bracket itself spans the cavity, it utilizes a much smaller (and more cost effective) shelf angle.
Thermal Break	✗ “Thermal break pads” behind conventional shelf angle are limited in ability to span wall cavities, do not allow for typical insulation behind the shelf angle, are expensive, and are not a structural thermal break.	✓ FAST Thermal Brackets are a structural thermal break providing superior R-Value without the use of expensive, load compromising thermal break pads.



Did You Know?

Conventional shelf angle design interrupts placement of exterior insulation and reduces thermal efficiency. A steel shelf angle is highly conductive. This interruption and full penetration of the insulation by the shelf angle negatively impact the effectiveness of the insulation along the entire length of the shelf angle at every occurrence, typically at every floor level. In this image, brick masonry veneer is supported at each floor level by a conventional shelf angle. Yellow banding at each floor level demonstratively shows heat loss caused by thermal bridging through the shelf angles.

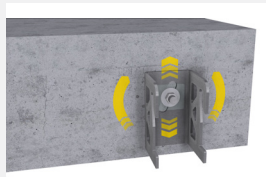
FERO FAST™ THERMAL BRACKET FEATURES



- 1** A patented solution for stand-off shelf angles.
- 2** Offsets shelf angle from the backing to allow for continuous insulation behind the shelf angle, and with FERO's innovative flange hole pattern the FAST System significantly reduces the negative effects of thermal bridging.
- 3** Easily anchored to backing without welding or a need to drill holes in the shelf angle.
- 4** Fully adjustable both horizontally and vertically, easily accommodating construction tolerances and any wall configuration or type of exterior masonry veneer.
- 5** Compatible with fasteners of all sizes and types, providing the full range of shelf angle adjustability without the need for separate embeds.
- 6** FAST Thermal Brackets are a structural thermal break, providing superior 'R' value, avoiding the use of expensive thermal break pads and avoiding associated load capacity, fire resistance and creep considerations.
- 7** No channels, knife edges, embeds or other types of components needed for shelf angle stand-off, offering simplicity and reducing cost of components, layouts, and installations.
- 8** FERO FAST wall assemblies deliver an R-Value (R16.7) within 1% of the insulation R-Value (R16.8). Conventional shelf angles reduce the effectiveness of insulation by 35-60% or more, depending on size of shelf angle.
- 9** Easy to install in less time and for lower cost with just a single trade onsite; no welding or inserts needed, or anchor channels required.
- 10** Can be sized for any wall cavity, creating significant cost savings by eliminating the need for larger, more expensive shelf angles. Larger wall cavities with thicker insulation simply utilize a deeper FERO Thermal Bracket to span the cavity with a standard sized, economical, shelf angle.

Vertical Adjustability

The slot on the back of the FAST Thermal Bracket allows up to 1-3/4" of vertical adjustment.



Horizontal Adjustability

Up to two FERO FAST Shim Plates can be used to adjust the FAST Thermal Bracket horizontally outward from the backing.

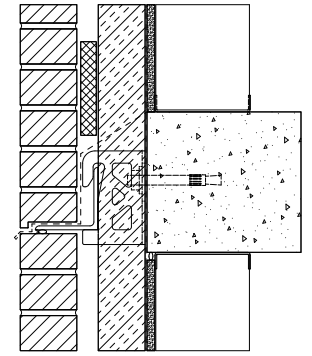
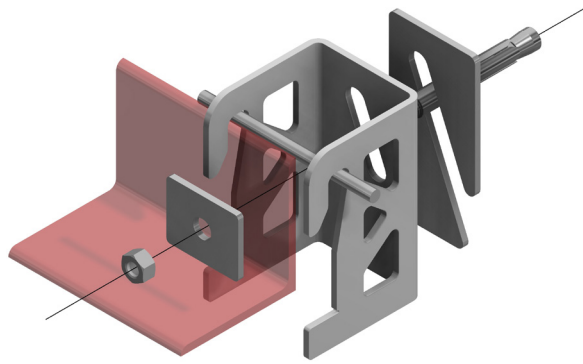


*Documented by independent testing.

FAST™ THERMAL BRACKETS

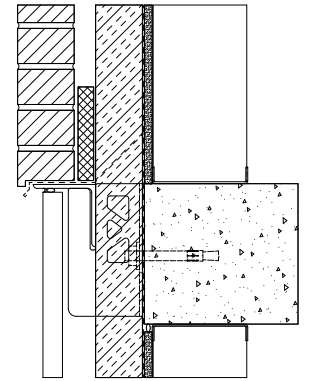
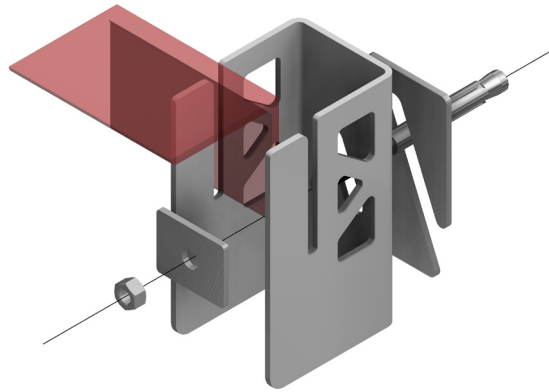
FAST Thermal Bracket

The FAST Thermal Bracket provides industry-leading thermal performance and quick and easy installation. The Standard Bracket is used where veneer bearing is coincident with the structural slab and bearing support is concealed. Brackets are readily available in any size height or depth at a low cost, and can accommodate any size shelf angle and any size bolt.



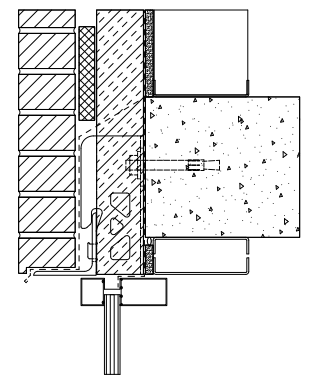
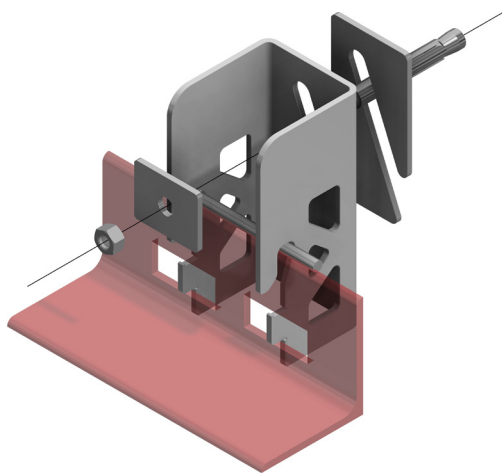
FAST Thermal Bracket-Inverted

The FAST Thermal Bracket-Inverted supports the veneer flush to the top of the building foundation, or any other required elevation, by holding the shelf angle in an inverted position. The FAST Thermal Bracket-Inverted provides the same customization offered by all FAST Thermal Brackets.



FAST Thermal Bracket Lintel System

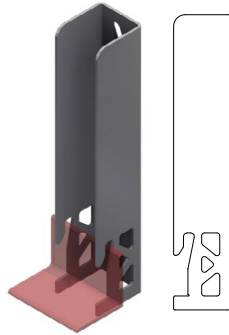
The FAST Thermal Bracket Lintel System makes it easy to maintain aesthetics and veneer elevations at the head of windows, doors and other openings by supporting the veneer on an angle installed flush with the underside of the bracket. FERO FAST Thermal Lintel Brackets are sold together with the FAST Punched Shelf Angle as a complete system. The FAST Thermal Bracket Lintel System can be made to fit any wall cavity and support veneer at any distance below floor level.



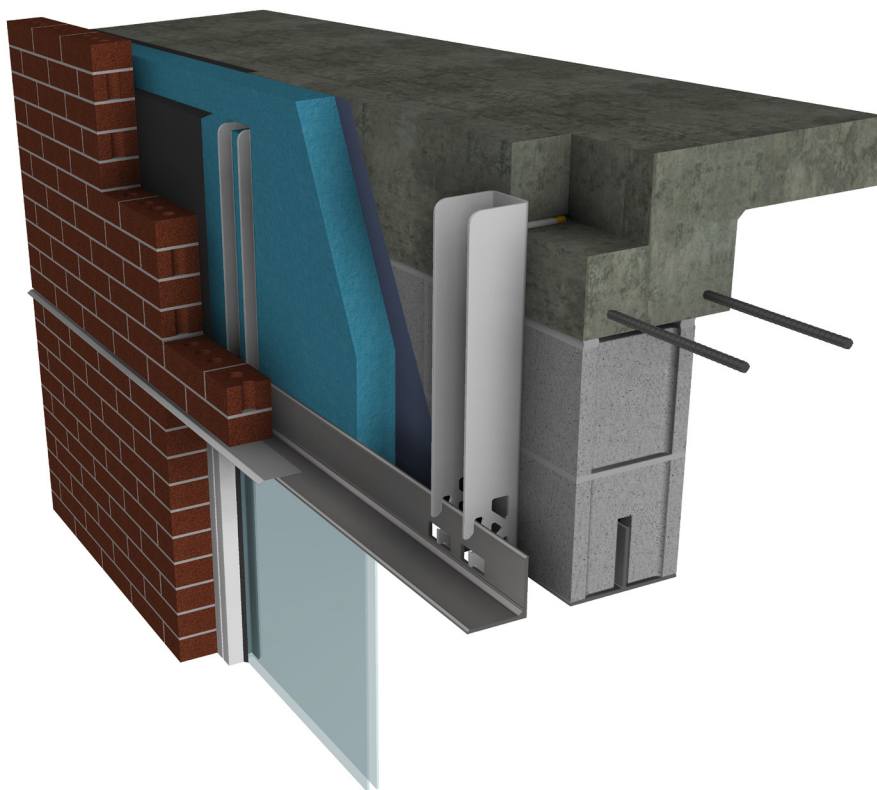
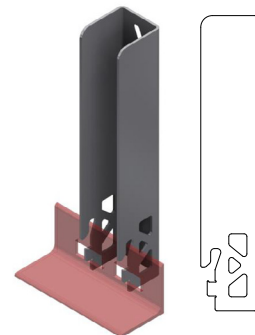
FAST™ Thermal Bracket-Extended

FERO FAST Thermal Brackets can be extended downward to any elevation, permitting the support of a masonry veneer that extends from below a concrete slab or beam. This provides an ideal solution for angle above openings and significantly reduces material cost by replacing structural steel.

FAST THERMAL BRACKET-EXTENDED



FAST THERMAL LINTEL SYSTEM-EXTENDED



Did You Know?

The thermal performance of a wall assembly can be further improved by using FERO thermal brick ties. ***Our thermal brick ties are ideal for use in large cavities and have been independently tested for thermal performance.*** FERO ties feature engineered thermal holes in the body of the tie that reduce thermal conductivity without affecting load resistance.

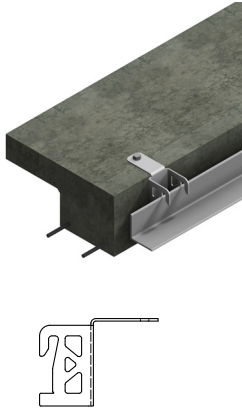
FERO ties are conveniently surface mounted to the outboard face of the backing or side mounted to the stud. Available with slot connection to accommodate differential movements, or holed connection to provide composite action between veneer and backing. Available in lengths to accommodate any width of cavity including large cavities.

FAST™ BRACKETS: Choose The Right Thermal Bracket For Your Construction Needs.

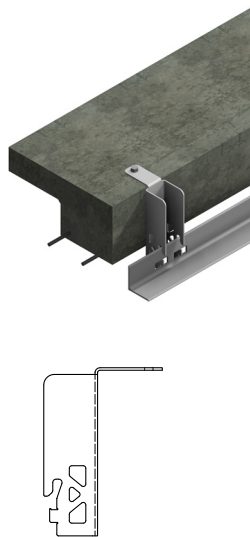
FAST Thermal Bracket Additional Configurations

FAST Thermal Brackets are available in a wide variety of configurations to accommodate any type of wall assembly. Contact FERRO, and we'll provide a design solution to meet your needs.

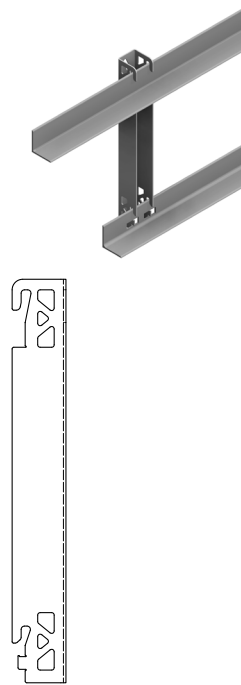
**FAST THERMAL
BRACKET-TOS**



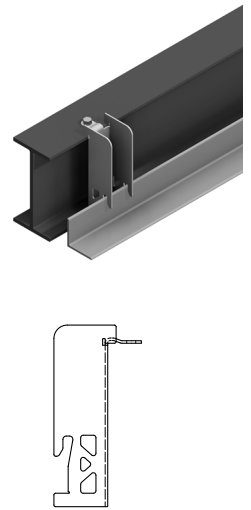
**FAST THERMAL
BRACKET-TOS LINTEL**



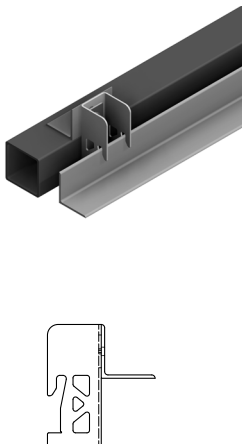
**FAST THERMAL
BRACKET-DOUBLE**



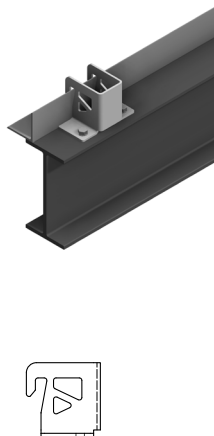
**FAST THERMAL
BRACKET-IBEAM**



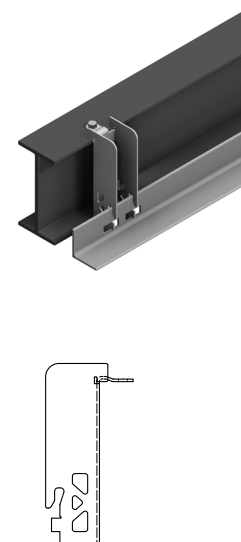
**FAST THERMAL
BRACKET-HSS**



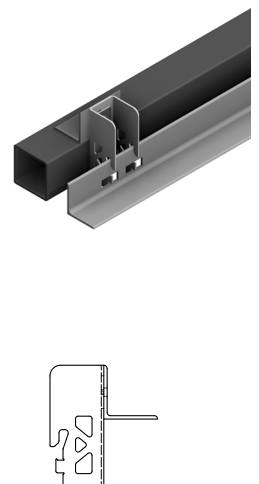
**FAST THERMAL
BRACKET-HAB**



**FAST THERMAL
BRACKET-IBEAM LINTEL**



**FAST THERMAL
BRACKET-HSS LINTEL**

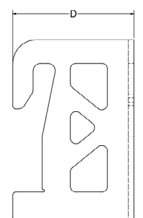


LOAD TABLE AND DESIGN INFORMATION

FAST™ BRACKET DEPTH "D"	MAXIMUM ALLOWABLE VERTICAL LOAD PER BRACKET	MAXIMUM BRACKET SPACING	MAXIMUM ALLOWABLE VENEER HEIGHT			
			CLAY BRICK	LIGHTWEIGHT CONCRETE BLOCK	NORMAL WEIGHT CONCRETE BLOCK	NATURAL STONE
in. (mm)	lb. (kN)	ft. (mm)	ft. (m)	ft. (m)	ft. (m)	ft. (m)
1.0 (25)	1500 (6.7)	2 (600)	18.7 (5.6)	25.0 (7.6)	19.7 (6.0)	15.3 (4.6)
		3 (900)	12.5 (3.8)	16.6 (5.0)	13.1 (3.9)	10.4 (3.1)
		4 (1200)	9.3 (2.8)	12.5 (3.8)	9.8 (2.9)	7.7 (2.3)
1.5 (38)	1400 (6.2)	2 (600)	17.5 (5.3)	23.3 (7.1)	18.4 (5.6)	15.3 (4.6)
		3 (900)	11.6 (3.5)	15.5 (4.7)	12.2 (3.7)	10.4 (3.1)
		4 (1200)	8.7 (2.6)	11.6 (3.5)	9.2 (2.8)	7.7 (2.3)
2.0 (51)	2100 (9.3)	2 (600)	26.2 (7.9)	35.0 (10.6)	27.6 (8.4)	23.3 (7.1)
		3 (900)	17.5 (5.3)	23.3 (7.1)	18.4 (5.6)	15.6 (4.7)
		4 (1200)	13.1 (3.9)	17.5 (5.3)	13.8 (4.2)	11.6 (3.6)
2.5 (64)	2100 (9.3)	2 (600)	26.2 (7.9)	35.0 (10.6)	27.6 (8.4)	23.3 (7.1)
		3 (900)	17.5 (5.3)	23.3 (7.1)	18.4 (5.6)	15.6 (4.7)
		4 (1200)	13.1 (3.9)	17.5 (5.3)	13.8 (4.2)	11.6 (3.6)
3.0 (76)	2100 (9.3)	2 (600)	26.2 (7.9)	35.0 (10.6)	27.6 (8.4)	23.3 (7.1)
		3 (900)	17.5 (5.3)	23.3 (7.1)	18.4 (5.6)	15.6 (4.7)
		4 (1200)	13.1 (3.9)	17.5 (5.3)	13.8 (4.2)	11.6 (3.6)
3.5 (89)	2100 (9.3)	2 (600)	26.2 (7.9)	35.0 (10.6)	27.6 (8.4)	23.3 (7.1)
		3 (900)	17.5 (5.3)	23.3 (7.1)	18.4 (5.6)	15.6 (4.7)
		4 (1200)	13.1 (3.9)	17.5 (5.3)	13.8 (4.2)	11.6 (3.6)
4.0 (102)	1925 (8.6)	2 (600)	24 (7.3)	32.0 (9.7)	25.3 (7.7)	21.4 (6.5)
		3 (900)	16 (4.8)	21.3 (6.4)	16.8 (5.1)	14.3 (4.4)
		4 (1200)	12 (3.6)	16.0 (4.8)	12.6 (3.8)	10.6 (3.2)
4.5 (114)	1750 (7.8)	2 (600)	21.8 (6.6)	29.1 (8.8)	23.0 (7.0)	19.4 (5.9)
		3 (900)	14.5 (4.4)	19.4 (5.9)	15.3 (4.6)	13.0 (4.0)
		4 (1200)	10.9 (3.3)	14.5 (4.4)	11.5 (3.5)	9.7 (2.9)
5.0 (127)	1575 (7.0)	2 (600)	19.6 (5.9)	26.2 (7.9)	20.7 (6.3)	17.5 (5.3)
		3 (900)	13.1 (3.9)	17.5 (5.3)	13.8 (4.2)	11.7 (3.6)
		4 (1200)	9.8 (2.9)	13.1 (3.9)	10.3 (3.1)	8.7 (2.7)
5.5 (140)	1400 (6.2)	2 (600)	17.5 (5.3)	23.3 (7.1)	18.4 (5.6)	15.5 (4.7)
		3 (900)	11.6 (3.5)	15.5 (4.7)	12.2 (3.7)	10.4 (3.2)
		4 (1200)	8.7 (2.6)	11.6 (3.5)	9.2 (2.8)	7.7 (2.4)
6.0 (152)	1250 (5.6)	2 (600)	15.6 (4.7)	20.8 (6.3)	16.4 (4.9)	13.9 (4.2)
		3 (900)	10.4 (3.1)	13.8 (4.2)	10.9 (3.3)	9.3 (2.8)
		4 (1200)	7.8 (2.3)	10.4 (3.1)	8.2 (2.4)	6.9 (2.1)
6.5 (165)	1100 (4.9)	2 (600)	13.7 (4.1)	18.3 (5.5)	14.4 (4.3)	12.2 (3.7)
		3 (900)	9.1 (2.7)	12.2 (3.7)	9.6 (2.9)	8.2 (2.5)
		4 (1200)	6.8 (2)	9.1 (2.7)	7.2 (2.1)	6.1 (1.9)
7.0 (178)	1020 (4.5)	2 (600)	12.7 (3.8)	17.0 (5.1)	13.4 (4.0)	11.3 (3.4)
		3 (900)	8.5 (2.5)	11.3 (3.4)	8.9 (2.7)	7.5 (2.2)
		4 (1200)	6.3 (1.9)	8.5 (2.5)	6.7 (2.0)	5.6 (1.7)

Notes: **1.** Design loads are the maximum allowable vertical loads that a FAST Thermal Bracket can support using its standard L4x4x1/4" (L102x102x6mm). Tests used a stiffened backing and shelf angle in order to isolate FAST Thermal Bracket capacities. Brackets were anchored using a 5/8" (16mm) bolt vertically centred in the bracket slot and a point load was applied 0.79" (20mm) o/c from the end (toe) of the angle. Tabled allowable loads are (unfactored) service loads, and have been established by test and calculation, and demonstrate a level of safety and performance consistent with North American design standards. Tabled allowable veneer heights are calculated as (maximum allowable vertical load per bracket) ÷ (weight of veneer per unit area x bracket spacing). **2.** Anchor bolt slip resistance is higher than the stated design loads with proper FAST Thermal Bracket installation. Slots must be alternating and bolts should be tightened to snug plus half turn. **3.** Veneer weights used are: 40lb/ft² (195kg/m²) for clay brick; 30lb/ft² (146kg/m²) for 105lb/ft² (1682kg/m²) lightweight concrete block; 38lb/ft² (185kg/m²) for 125lb/ft² (2002kg/m²) normal weight concrete block; and 45.0lb/ft² (220kg/m²) for natural stone. **4.** The typical FAST Thermal Bracket slots are sized for a 5/8" (16mm) diameter anchor bolt, but brackets can be made for other anchor bolt diameters upon request. Comply with all manufacturer's design and installation requirements pertaining to capacity, edge distances, torquing etc. FERRO does not assume responsibility for the design of the anchorage of the FAST Thermal Brackets. The values shown in this FAST System Load Table assume that the FAST Thermal Bracket is adequately anchored. **5.** Where the FAST™ system is designed/intended to support masonry veneer having panel height exceeding 30' (9.1m), contact FERRO for additional design information. **6.** The bracket spacing may vary by ±4" (100mm). **7.** Use the FERRO Rectangular Washer when installing the FAST Thermal Bracket (required). **8.** The FAST System Load Table applies to the FAST Standard, FAST Lintel, and FAST Inverted. This table will generally apply to the Extended FAST systems and custom FAST Thermal Brackets as well, but additional engineering may be required. Contact FERRO for more information. **9.** FERRO recommends not installing over gypsum sheathing (unless otherwise engineered) as tension from the anchor bolt may crush gypsum sheathing; unrelated to the FAST Thermal Brackets.

**FAST Thermal
Bracket Depth "D"**



FERO FAST™ BRACKET INSTALLATION PROCEDURE

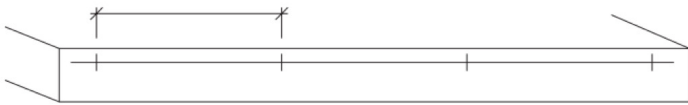
How to Install

A chalk line is snapped to establish the location of the FAST Thermal Brackets in elevation, and anchor holes are predrilled at the required spacing. One of two methods may be used to position and fasten the brackets:

Method 1. Accurately position the shelf angle temporarily or by installing brackets at its outer ends. Hook the intermediate brackets onto the angle and spread them horizontally to their bolt locations. Securely fasten the brackets against the structural backing. **Or:**

Method 2. Accurately position the bracket at each anchor location, both in elevation and perpendicular to the wall. Securely fasten the brackets against the structural backing. Rotate the angle into the claws of the brackets.

- 1 Snap a chalk line, mark the approximate location of the anchors, and drill anchor holes.



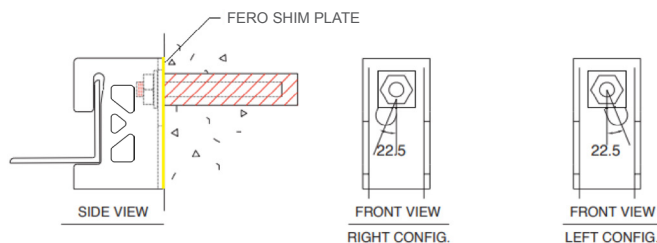
- 2 Install FAST Thermal Brackets and finger tighten anchor bolts.



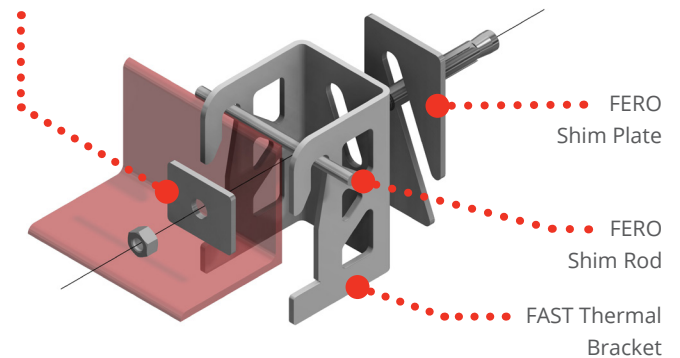
- 3 Insert shelf angle, adjust brackets (step 4), and tighten anchor bolts securely to structural backing.



- 4 Install FERO Shims Plates (if required); Install FERO Shim Rods to ensure that the vertical leg of angle is in contact with (back of) bracket claw/(front of) bracket slot. Alternate installation of right and left bracket configuration to prevent bracket slip.

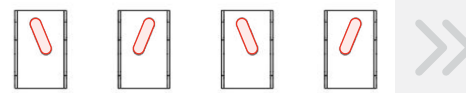


FERO Rectangular Washer



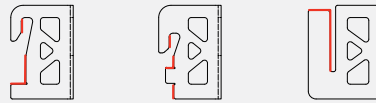
IMPORTANT NOTES

Ensure brackets are installed with the slots in alternating orientations to prevent slipping.



The FERO rectangular washer is required to be used for anchoring all FAST Thermal Bracket configurations.

Angle must be in full contact with the FAST bracket on the areas shown below:



When using a FERO shim plate, the shim must bear directly against the backing and extend over the full surface and height of the bracket.

Field measure the required height from anchor to bottom of angle and the required depth from backing to veneer. Order brackets with height and depth corresponding to field conditions.

Installation procedure is applicable to all FAST Bracket configurations. The FERO shim rod locks the shelf angle in place during construction. One rod is used for each length of angle, e.g., for an angle being held by four brackets, the one shim rod can go in any of the brackets holding that angle.

Did you know that:

1. FAST Thermal Brackets can be used with any type of anchorage and any type of backing. **2.** The skewed slot on the back of each FAST Bracket allows for vertical adjustment of up to 1-3/4" (44 mm), making expensive wedge inserts, cast in concrete for adjustability, redundant and unnecessary. **3.** A minimum of two FAST Thermal Brackets are required to support a shelf angle. **4.** FAST Thermal Brackets have a single skewed slot on their back web to receive the anchor bolt. FAST Thermal Brackets are manufactured with two different and opposing slot orientations. Orientation of the slots on adjacent brackets must be alternated (left and right) during installation. **5.** Preventing vertical slippage of the FERO FAST Bracket System does not rely solely on the installation torque of the anchor bolt and the vertical frictional resistance developed between bracket and backing. Because of the angled and opposing slot orientations between adjacent brackets, the Brackets must slide laterally in-plane in order to slip vertically. The frictional resistance between the continuous shelf angle and adjacent Brackets helps to prevent in-plane lateral displacement of Brackets and to reduce the likelihood of vertical displacement. **6.** Anchor bolts should be installed in accordance with the manufacturer's recommendations.

FAST™ BRACKET COMPONENTS

FULLY CUSTOMIZABLE

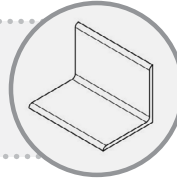
- ✓ any depth
- ✓ any height
- ✓ any anchorage
- ✓ any angle



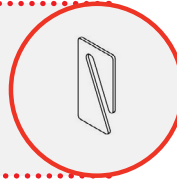
Included with every order of FAST Thermal Brackets:

- ✓ FEROWashers
- ✓ FEROW Shim Rods

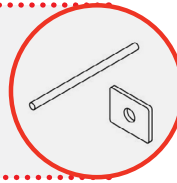
Angle Iron: Standard angle sizes as required and can be supplied locally



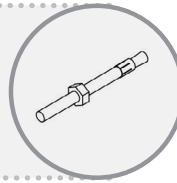
FERO Shim Plate (Optional): Used to add distance to help meet construction tolerances perpendicular to the wall



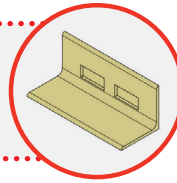
FERO Wedge Rod and Washer: Included with every FAST order and required to use with the FAST system



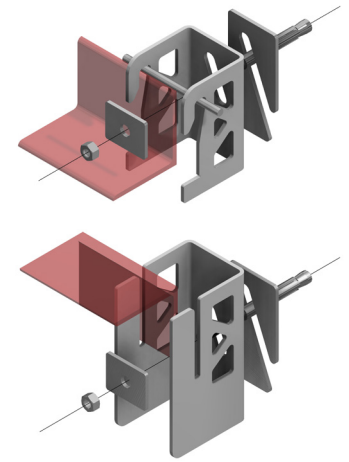
Anchor Bolt/Fastener: Specified by the structural engineer based on required structural performance



FERO Punched Angle: Supplied by FEROW as part of the patented FAST Lintel system



FAST THERMAL BRACKET



FAST THERMAL BRACKET LINTEL SYSTEM-EXTENDED



Any Size Shelf Angle

All FAST Bracket configurations (other than the FAST Thermal Lintel System which comes with FAST punched lintel) can be used with any size shelf angle obtained from local suppliers.

FAST Thermal Lintel System



FEROW's FAST Punched Angle. The FAST Thermal Lintel System includes both FAST Thermal Lintel Brackets and FEROW's proprietary FAST Punched Angle which can be manufactured to any size.

Shims



FAST Bracket Shim Plates accommodate construction tolerances horizontally, perpendicular to the structural backing. FEROW recommends ordering FAST Shim Plates with FAST Thermal Brackets so they are readily available onsite as needed. FEROW Fast Shims are hot dipped galvanized or stainless steel, both fabricated in accordance with ASTM A123.

Fastener Requirements (Anchorage)

FAST Thermal Brackets are typically connected to the backing with one 5/8" (16mm) diameter fastener, but can be fabricated for any fastener diameter or type of fastener, including embeds and anchor channels, if desired, for a project. **All fasteners are specified by the designer of the masonry veneer and are not supplied by FEROW, allowing for installers to source fasteners locally and economically.**



Expert Support

Talk to FERRO for help determining the FAST™ Thermal Bracket solution for your building project. We can engineer and customize all types of FAST Thermal Brackets including for use with curved veneer walls.

Technical Support: engineering@ferrocorp.com



Download Specifications & Resources


Download FERRO FAST Thermal Bracket specs, CAD files, and installation guides to start designing your project.


www.ferrocorp.com




Contact Us

Talk to our sales team for any other inquiries.

 780.455.5098 or Toll Free 1.877.703.4463

 sales@ferrocorp.com

 www.ferrocorp.com



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The FERRO FAST family of masonry supports, as installed may fall within the scope of one or more US or foreign patents or patent applications. Those patents include US 9,316,004; US 9,447,585;

US 10, 323,419; US 10,294,676; US 11,041,315; US 11,162,265 and other pending applications.

Other US and Foreign Patents Pending.