ThermaZee™ System
DESIGN & INSTALLATION RECOMMENDATIONS

Product Use & Description

- **ThermaZee™** is a patented, thermally isolated, rainscreen attachment system used to support exterior cladding/ panels in a wall or soffit application.
- **Thermal Bridging –** ThermaZee™ is a composite component, comprised of two distinct elements: a specially designed, reduced cross-section, metal 'Z' furring combined with a patented, hollow core, extruded plastic, thermal isolation strip. This composite design substantially reduces thermal bridging through the entire wall assembly.
- **Energy Codes –** This drop-in solution delivers effective, code compliant, effective insulating values to meet, or exceed, the requirements of the IECC, ASHRAE 90.1, and many other local jurisdictional requirements.
- **Cladding & Panels –** ThermaZee™ can support a wide variety of cladding/panels including, but not limited to, fiber cement, metal panels, aluminum composite material (ACM), high-pressure laminate (HPL), adhered veneer, and stucco.
- **Orientation –** ThermaZee™ can be installed either horizontally or vertically as required for the cladding/panel system. Limitations will apply based on the installation orientation.
- **Back-Up Wall Construction –** When the appropriate wall anchors are used, ThermaZee™ can be attached to a variety of substrates including steel studs (18-gauge min.), wood studs, concrete masonry units (CMU) or poured-in -place concrete.
- **Building Limitations –** No strict building height limitations exist. Cladding weight and wind pressures are the primary restriction which could exceed the load capacity of the girt and/or connection at a given spacing.
- **Material –** The standard steel used is 18-gauge, 50 ksi yield strength with ASTM A1046, zinc-aluminum-magnesium ZM40 coating. 18-gauge PVDF black coated, 16-gauge thickness and stainless-steel material options are also available, lead times may vary. The isolator is a hollow, extruded thermoset plastic profile and gray in color.

Design & Detailing

Rainscreen Basics:

- The rainscreen cavity must not be sealed as ventilation and drainage are required for the passive removal of liquid water and water vapor.
- The rainscreen cavity must be clear and free from foreign objects obstructing air flow and/or drainage.
- Flashing details should be designed to direct water out of the rainscreen cavity and deflect water away from the building.
- Depending on the height of the building, intermediate drainage and ventilation may be required at some floor line breaks. This may be incorporated at through-wall flashing locations.
- A minimum ¾-inch gap at the base of the rainscreen, and potentially at intermediate locations, is required for proper drainage and ventilation.
- Ventilated coping and window flashing details are also required to achieve proper ventilation unless open joint cladding is installed.

Back-Up Wall Assembly:

- Insulation is commonly used with ThermaZee™, however it is not required. Mineral wool insulation allows for the easiest installation with ThermaZee™ however rigid foam plastic can also be used. All code requirements should be reviewed and confirmed for compliance.

Design & Detailing - continued...

- Substrates and Anchorage:
  - 16-gauge steel studs are preferred for mid- and high-rise applications; 18-gauge steel studs are the minimum allowable gauge required. Minimum penetration into a stud is three full threads.
  - CMU, concrete and wood studs all require a minimum of 1.25-inch embedment.
  - Anchor capacity versus the load applied, with appropriate safety factors, should be verified with project specific engineering.
  - Do not use wedge or sleeve anchors for concrete or CMU. The torque required to set the anchors may not be achieved without damaging the girt or thermal isolation strip.
- Sheathing should be used for open framing (stud wall construction) with ThermaZee™.
- Air and water control layers are generally required by code for exterior wall assemblies. The design, location and application of air and water control layers are the responsibility of other parties. KWS takes no exceptions with any brand or type of air or water control layers.

Installation

Substrate:

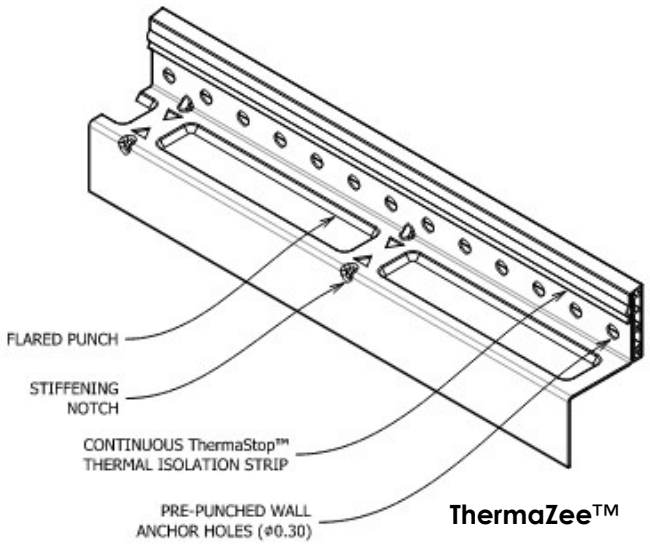
- The installer should verify the back-up wall is free of defects and conforms to tolerances suitable for installation of the façade.
- Installer should verify the air/water control layer(s) are complete, cured, and conform to the manufacturer's requirements and project specific details.
- Installer should verify the back-up wall construction matches the project specific engineering (stud gauge, stud spacing, etc). Notify KWS or the engineer immediately should a discrepancy exist.

Insulation:

- Installation of the insulation should be done per the manufacturer's requirements. ThermaZee™ is not intended to fully retain the insulation in place over its service life.
- Foam plastic and mineral wool insulation may be used. Cutting, or trimming, of the foam plastic insulation may be necessary for proper installation.

Wall Anchors & Fasteners:

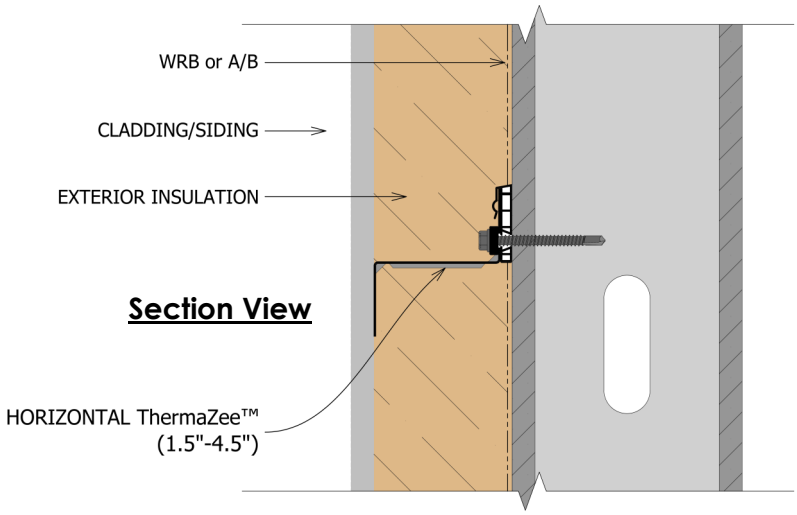
- Steel substrate fasteners require three full threads of penetration. Wood, CMU and concrete anchors typically require a 1.25-inch embedment. Embedment depths and resulting capacities with appropriate safety factors should be verified with project specific engineering.
- Do not remove and reinstall fasteners into the same hole. If necessary to completely remove a fastener, (such as when reconnecting a girt or redrilling an anchor) ensure a new hole is drilled for it. Fastener connections will be weakened if holes are reused.
- Do not strip or over-torque the fasteners. All fasteners must be installed snug-tight. If a fastener is stripped, neither the hole nor fastener should be reused.



ThermaZee™

Installation - continued...

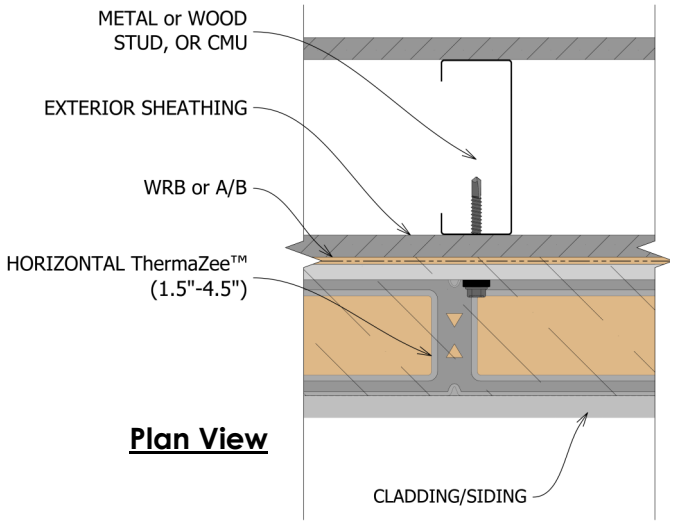
- Depending on the head style of the wall anchor used, washers may be required. All KWS wall anchors are supplied with a patented, preassembled, thermal isolating washer (ThermaStop).
- While rare, any plastic isolation pieces that break during installation must be replaced with new pieces. ThermaZee™ wall anchors are typically ¼-inch diameter, but should be verified with project specific engineering. Anchor length will vary depending on wall design to ensure proper minimum embedment.
- Follow all fastener requirements, such as minimum edge distances, drill speeds, etc. as set by fastener manufacturer, engineering documents, applicable standards and/or local building codes.



Section View

ThermaZee™:

- **Length** – the standard length is 96-inches. 120-inch lengths are available. Contact KWS for current pricing and lead times. The minimum installed length of a ThermaZee™ is typically 24-inches and must be secured to the back-up wall with a minimum of two wall anchors not spaced further than allowed per project specific engineering. Contact KWS if shorter lengths are required to be installed.
- **Orientation** – ThermaZee™ should be installed straight and square in either a vertical or horizontal direction on the back-up wall. For horizontal installation on the clear wall, the front flange of the profile should be pointed downward. For special conditions and details (such as windowsills), the profile may be installed with the front flange pointed up to facilitate panel attachment, if necessary.
- **Butting** – when multiple ThermaZee™ pieces are installed in succession, a 3/8-1/2-inch gap should occur between girts. The same gap must be maintained at outside and inside corners. Ensure the ends of rails do not touch.



Plan View

- **Cantilever** – ThermaZee™ cantilever distances of greater than 8-inches beyond the last wall anchor must be evaluated by project specific engineering.
- **Attachment** – all fasteners attaching to the front flange of the ThermaZee™ must maintain a minimum of 3/8" edge distance.
- **Jambs and Corner Conditions** – ThermaZee™ must attach at all jamb and inside/outside corner conditions to provide support for the cladding/panel, siding and/or flashings. Position as required for proper support.
- **Cuts at Punches** – cutting the ThermaZee™ at one of the flared punched openings in the center web is allowed as long as the cantilever distance of the outer flange above the remaining flared punched opening does not exceed 2" in length.

Installation - continued...

- **Cutting** – The use of shearing tools (snips, nibblers, etc.) for cutting metal framing components is preferred. Saws may be used, but are not recommended, as the sparks produced during cutting will damage the anti-corrosion coating. If sparks are generated during cutting, take precautionary steps to protect the component(s) from sparks as well as any stockpile of material near the cutting station. The components must not be cut while installed on the building unless a shearing instrument is used.
- **Shimming** – ThermaZee™ can be shimmed between the back-up wall and the girt. Shims must be sized properly for full bearing between the back flange of the girt/isolator and the wall. Undersized shims can result in increased prying, rocking and other connection instability. Shims should be installed facing downward to limit water collection. Shim thickness of greater than 1/2-inch is not recommended. In the rare case that shims greater than 1/2-inch thick are required, confirm the viability of their employment with either project specific engineering or contact KWS.

Delivery & Storage

- Crates – All girts/rails arrive in wooden crates, unless shipped via parcel post. Full crates can weigh up to 4,000 lbs and typically measure 10'-5" long x 3'-10" wide x 2'-4" tall. Configuration can vary based on girt lengths and order quantity.
- Weather Protection – Store KWS products in a dry location. Store all components indoors, if possible. If stored outdoors, keep components fully covered to protect from the weather. Do not store in standing water. Do not allow water to build up and remain on stacked components. Do not seal crate if contents are wet. If contents become wet, take appropriate measures to allow for components to dry.
- Shipping Carriers
  - Parcel Post: UPS (mock-ups, individual boxes of hardware)
  - LTL: Old Dominion (smaller orders; typically 3 or less crates)
  - Full Truck Load: Contract carrier with a dedicated flatbed trailer (large orders)
- Scheduled Delivery – carrier is instructed to give a 48-hour notice before delivery to coordinate final onsite logistics.
- Damage – all damage to any crates or other items delivered must be notated on the bill of lading upon delivery. Photographs are highly recommended. Ensure the bill of lading matches the contents of the delivery. Notify KWS immediately of any damage, discrepancies, or concerns.

Warranty

- 1-Year Limited Warranty – available on all KWS products. Remedy is the replacement of any material found to be defective, within the limitations of the warranty.
- 10-Year Limited Warranty – available on all KWS systems when KWS also provides project specific engineering *and* wall anchors. Remedy is to provide both labor and material for defects or structural failure of a component, within the limitation of the warranty.

Availability and Support

- All of Knight Wall Systems' components are purchased directly. Customer service and order assistance is available through an extensive network of local sales representatives. KWS can provide technical support during design and construction. For assistance, please call 1.855.KWS.WALL or email: info@knightwallsystems.com Material lead time is typically 3 weeks depending upon quantities and material requirements. Custom components lead time is 5+ weeks. Contact KWS for project specific lead times.