



## TECHNICAL BULLETIN 15-7-2

### R-TEC CI System – The One-Step Engineered Solution for ASHRAE 90.1 Continuous Insulation

#### The R-TEC CI System in a Ventilated Rain Screen Design

Ventilated rain screens have increased in popularity, and rightfully so, as they protect a building's structure from moisture effects. This exterior cladding design prevents the building's wall construction from being damaged by mold and other moisture related problems, which in turn avoids repair costs and prolongs the material's life on the building.

The R-TEC CI System is used in ventilated rain screen constructions. It provides a superior attachment system for all types of exterior cladding, among others:

- Metal
- Phenolic
- Fiber Cement
- Terracotta
- Brick

#### Continuous Insulation

The R-TEC exterior cladding attachment system is designed for continuous insulation applications. The bracket and screw design allow for the use of all types of exterior insulation – from mineral wool to low or high density foam. The self-tapping nature of the screws, with their patented design,

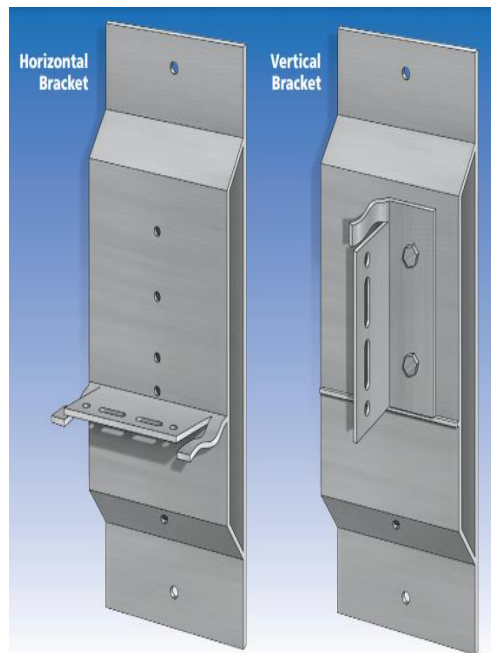
prevents overtightening of the screws so softer insulations will not be compressed.

The R-TEC CI System also conforms to the ASHRAE 90.1-2013 standard for continuous insulation. The system complies with the literal definition of the standard where only fasteners can penetrate the insulation. In other words, nothing can go through the insulation except for fasteners; where in previous practice, metal channels would cut through and create thermal breaks

in the insulation and thus, eliminate its continuity. With the R-TEC design, continuous insulation is maintained because the insulation is not breached by metal/plastic clips or profiles; only the small surface area of a screw diameter enters the insulation.

This in turn, reduces the thermal bridging caused by an attachment system. The only heat transfer that occurs through the insulation by the attachment system is through the cross

sectional area of the diameters of stainless steel screws that penetrate it. This is the literal definition of ASHRAE 90.1-2013.



**R-TEC** BRACKET



## ASHRAE 90.1-2013

The newest ASHRAE 90.1 standard addresses continuous insulation in that only fasteners can penetrate the insulation. This reduces the thermal bridging caused by larger objects and thus, improves building's thermal capabilities, which consequently leads to energy and cost savings.

There are two main ways to comply with the ASHRAE 90.1-2013 standard for continuous insulation:

1. Conform to the literal definition of the standard
2. Meet the standard requirements by achieving acceptable U-values

Meeting the standard in the first way is the easier option and the R-TEC CI System does just that. Complying with the standard by U-values may require extra insulation to achieve the necessary value for a given construction. Using the R-TEC CI System eliminates the calculations and alternate insulation options because it complies with ASHRAE 90.1-2013 by definition.

## Benefits and Features

The R-TEC CI System has many features that make it a highly advantageous attachment system for exterior cladding materials. The biggest benefit is the ease of installation. The installation is of great importance because when attached correctly, the exterior cladding should remain for the life of the building.

- Easy to install – three self-tapping screws and the bracket's on the wall
- Bracket contains hands-free clip
  - Allows for easier placement of the substructure profiles onto the brackets

- Eliminates the need for shims since it allows for adjustment
- Meets the literal definition of ASHRAE 90.1-2013 for continuous insulation – no need to look at U-values or add extra insulation
- Allows for spacing on every other stud\* which saves cost and time
- Each project with the R-TEC CI System receives an engineered layout design
- Can be used for any insulation type, from mineral wool to foam, at varying thicknesses of 1" to 5"
- Multiple fastening options for exterior cladding – face fastened, back fastened, adhesive
- On-site job assistance available

The R-TEC CI System comes as a full package. The elements included in the set are:

- Engineered design
- Static calculations
- Wall layout drawings for bracket locations and details
- R-TEC CI Brackets
- Aluminum profiles
- Screws and rivets

American Fiber Cement Corporation is also eager to assist in other needs for the wall structure. For instance, the building wrap can be included in the full package if desired. Feel free to contact us with any technical questions or for more information.

**Sebastian Gadzina**

American Fiber Cement Corporation

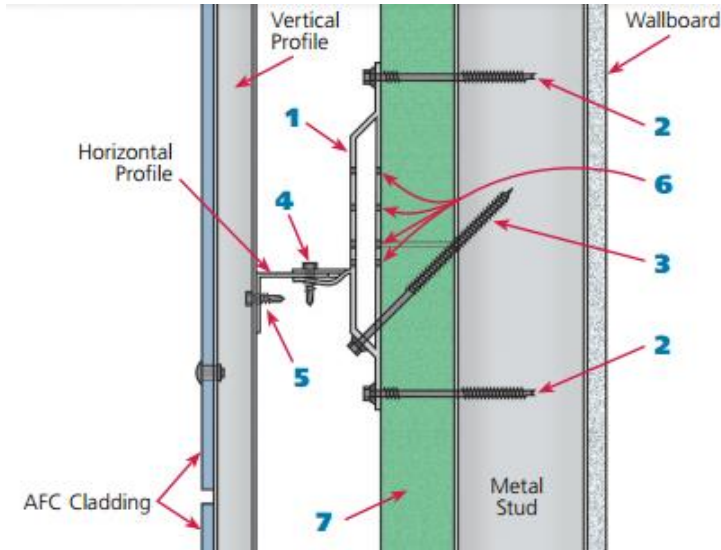
6901 S. Pierce St., Ste 260

Littleton, CO 80128

p: 303-978-1199

m: [sgadzina@afccaldding.com](mailto:sgadzina@afccaldding.com)

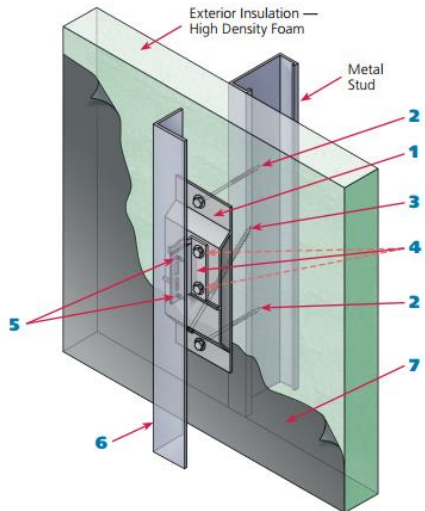
\* For typical application but can vary based upon dynamic and dead loads.



**TYPICAL CROSS-SECTION**  
**Horizontal System 2**

*With 2" High Density Foam Insulation*

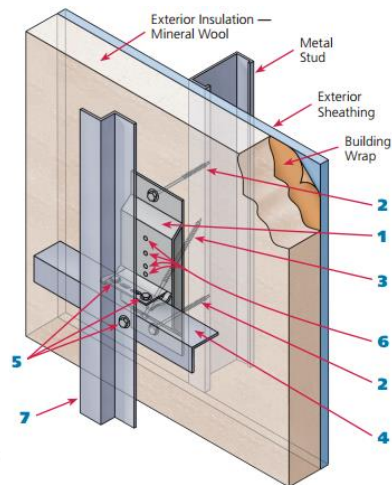
1. Horizontal **R-TEC** BRACKET
2. Horizontal screws (2)
3. Diagonal screw (1)
4. Screws to attach horizontal profile
5. Rivet/screw to attach vertical profile
6. Alignment holes corresponding to insulation thickness for drilling pilot hole in metal stud (Alignment holes accommodate insulation of various thicknesses)
7. Exterior insulation



**Vertical System**

*High Density  
Foam Insulation*

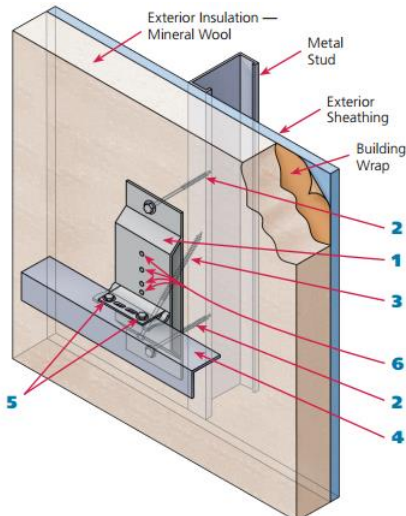
1. Vertical **R-TEC** BRACKET with alignment holes corresponding to insulation thickness for drilling pilot hole in metal stud
2. Horizontal screws (2)
3. Diagonal screw (1)
4. "L" Bracket attached with 2 screws provided
5. Screws for attaching profiles
6. Aluminum "L" or "T" profile
7. For open joint cladding systems: Black self-adhered UV-resistant membrane



**Horizontal System 2**

*Mineral wool or  
low density insulation*

1. Horizontal **R-TEC** BRACKET
2. Horizontal screws (2)
3. Diagonal screw (1)
4. Aluminum "L" profile (horizontal system)
5. Screws for attaching profiles
6. Alignment holes corresponding to insulation thickness for drilling pilot hole in metal stud
7. Aluminum "Hat" or "Z" profile



**Horizontal System 1**

*Mineral wool or  
low density insulation*

1. Horizontal **R-TEC** BRACKET
2. Horizontal screws (2)
3. Diagonal screw (1)
4. Aluminum "L" profile (horizontal system)
5. Screws for attaching profiles
6. Alignment holes corresponding to insulation thickness for drilling pilot hole in metal stud