**SECTION 07 48 00**

**RAINSCREEN ATTACHMENT SYSTEM**

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by the following method in Microsoft Word:

 Display the FILE tab on the ribbon, click OPTIONS, then DISPLAY. Select of deselect HIDDEN TEXT.

This guide specification section has been prepared by Knight Wall Systems for use in the preparation of a project specification section covering the ThermaZee thermally isolated cladding attachment system.

The following should be noted in using this specification:

Hypertext links to manufacturer websites are included after manufacturer names to assist in product selection and further research. Hypertext links are shown in blue text, e.g.:

www.acme.com

Optional text requiring a selection by the user is enclosed within brackets and shown in red text, e.g.: “Color: [Red.] [Black.]”

Items requiring user input are enclosed within brackets and shown in red text, e.g.: “Section [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_\_].”

For assistance in the use of products in this section, contact Knight Wall Systems by calling 855-597-9255 or visit their website at [www.knightwallsystems.com](http://www.knightwallsystems.com)

1. **GENERAL**
	1. SYSTEM DESCRIPTION
		1. Provide a thermally broken, rainscreen attachment system to sufficiently support cladding installed over exterior insulation while maintaining visual design concepts.

The following paragraph specifies the minimum requirements of adjacent construction and overall design of the attachment system. Edit to suit project specific requirements. KWS minimum stud gauge for proper system application is 18-gauge (43 mil), however 16-gauge (54 mil) is often preferred for mid-to-high rise applications (4+ story) to ensure the most beneficial and effective girt layout/spacing.

* + 1. Design Requirements:
			1. Employ qualified professional engineer licensed in State of [\_\_\_\_] to perform structural design.
			2. Design furring system to withstand live and dead loads in accordance with [Building Code.] [Structural General Notes on Structural Drawings.] [\_\_\_\_\_\_.]
			3. Minimum stud gauge of back-up wall assembly to be 43 [54] mil thickness.
			4. Continuous, solid, non-perforated framing profiles (including C- or Z-shaped sections or furring) penetrating insulation are not allowed.
			5. Attachment system must have proven thermal isolation with a reduction in thermal bridging as indicated by calculations or finite element analysis in accordance with ASHRAE guidelines.
			6. Fasteners: tension shall be taken as the sum of direct tension plus tension due to prying for eccentrically loaded connections. Prying may be reduced or eliminated if proven via engineering analysis or testing.
	1. ADMINISTRATIVE REQUIREMENTS
		1. Pre-Installation Conference:
			1. Attendance: [Architect,] [Owner,] [Construction Manager,] [Design/Builder,] Contractor, installer, and related trades.
			2. Review: Project conditions, back-up wall framing, manufacturer requirements, delivery and storage, staging and sequencing, and protection of completed work.
	2. SUBMITTALS
		1. Action Submittals:
			1. Drawings: Illustrate products, installation, spacing and connection to adjacent construction.
			2. Product Data: Manufacturer’s descriptive data and product attributes.
			3. Samples: [Selection samples.] [Verification samples.]
		2. Informational Submittals:
			1. Structural calculations: Manufacturer's comprehensive structural design analysis signed and sealed by a registered professional engineer.
			2. Three-dimensional thermal modeling indicating framing system’s impact on exterior insulation rated R-value.
	3. QUALITY ASSURANCE

The following paragraph specifies a minimum level of experience required of the parties performing the work of this section. Retain if required, and edit to suit project requirements.

* + 1. Installer Qualifications: Firm specializing in work of this Section, with minimum [3] [\_\_] years’ documented experience.
		2. Mock-Ups: Coordinate mock-up materials and requirements with mock-up specified in Division 01 [and exterior cladding specification].
		3. Single source responsibility: Furnish engineered rainscreen attachment system components under direct responsibility of single manufacturer.
	1. DELIVERY, STORAGE AND HANDLING
		1. Deliver materials in manufacturers’ original, unopened and undamaged containers or crates. Keep materials clean, dry and free of dirt and other debris and protect from weather or construction activities. Follow manufacturers’ recommendations.
	2. WARRANTY
		1. Manufacturer’s 10-year limited warranty against structural failure of system; includes the labor and material cost for removal and replacement of defective material; includes the labor cost for removal and reinstallation of overlying façade finish panels as required to access defective materials. All materials and components to be supplied and installed per manufacturer’s requirements. Excludes repairs, replacement, and corrective work to the substrate, primary structure, finish panels, and/or property – unless otherwise noted above.
		2. Installer’s 2-year warranty against defects in installation of system.
1. **PRODUCTS**
	1. MANUFACTURERS
		1. Contract Documents are based on products by Knight Wall Systems. [www.knightwallsystems.com](http://www.knightwallsystems.com)
		2. Substitutions: [Refer to Division 01.] [Not permitted.]
	2. MATERIALS
		1. Steel Sheet:
			1. Steel classification: Structural steel, 50 ksi yield strength.
			2. Corrosion protection coating: ASTM A1046, zinc-aluminum-magnesium, minimum thickness ZM40.
	3. COMPONENTS
		1. Comply with ANSI/ASHRAE 90.1.

Girts may be spaced up to 32 inches on center when oriented vertically, or 48 inches on center when oriented horizontally. Girts can support claddings that weigh up to 15 pounds per square foot. Spacing and maximum dead load is dependent on girt depth, orientation, cladding weight, design wind pressures, and tension forces on fasteners. Maximum allowable spacing and dead load is determined for each project.

* + 1. Primary [Horizontal] [Vertical] Girts:
			1. Profile: ThermaZee; z-channel, front and back flanges of equal length, with attachment holes.

In the following paragraph 18 gage is standard for all finishes; 16 gage is available when required by design calculations or panel manufacturer requirements, in mill finish.

* + - 1. Thickness: Minimum [18] [16] gage.
			2. Web perforations: Minimum 50 percent open area.

Minimum depth is determined by insulation thickness. Additional depth up to 4.5 inches can be added by design professional to create desired aesthetics.

* + - 1. Depth: [[1.5] [2] [2.5] [3] [3.5] [4] [4.5] inches.] [As indicated.]
			2. Thermal isolation:
				1. Located between back flange and substrate; continuous along length of channel
				2. Minimum 0.25 inch thickness.
				3. Thermal conductivity: Less than 0.18 Watts per Meter Kelvin.
				4. Designed to prevent accumulation of liquid water on upper edge.
			3. Finish: [Mill.] [Black PVDF coated.]

Optional secondary rails attach to primary rails to provide additional panel support or to create reveals for panel design. Use of secondary rails is dependent on panel type, layout, orientation, and configuration. Contact Knight Wall Systems with questions.

2-inch PanelRail is typically used. If panel cladding has large clips that require additional material for attachment, rails are also available with 3-, 4-, or 5-inch faces for fastening.

* + 1. Secondary [Vertical] [Horizontal] Rails:
			1. Profile: PanelRail; square hat channel with stiffening lips, weep drains and attachment holes.

In the following paragraph 18 gage is standard for all finishes; 16 gage is available when required by design calculations or panel manufacturer requirements, in mill finish.

* + - 1. Thickness: Minimum [18] [16] gage.
			2. Web perforations: 3/4 inch diameter holes at maximum 4 inches on center.
			3. Fastening face width: [[2] [3] [4] [5] inches.] [As determined by structural analysis.]
			4. Depth: 3/4 inch.
			5. Finish: [Mill.] [Black PVDF coated.]

Optional specialty secondary rail: RevealRail may be used at vertical joints at face fastened panels to create panel separation or shadow effects. Only to be used when ThermaZee is horizontal oriented.

* + 1. Secondary Vertical Joint Rail:
			1. Profile: RevealRail; square hat channel with stiffening lips.

In the following paragraph 18 gage is standard for all finishes; 16 gage is available when required by design calculations or panel manufacturer requirements, in mill finish.

* + - 1. Thickness: Minimum [18] [16] gage.
			2. Dimensions: 2.0 inches at web, 1.625 inches at each flange, with 0.25 stiffening lips.
			3. Depth: 3/4 inch.
			4. Finish: [Mill.] [Black PVDF coated.]
	1. ACCESSORIES

Mineral fiber insulation is recommended. Depth of insulation cannot exceed depth of ThermaZee girts.

* + 1. Thermal Insulation: Refer to Section [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_\_].
		2. [Siding] [Cladding] Panels: Refer to Section [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_\_].
		3. Wall Anchors: Corrosion resistant coated steel; thermally isolated with minimum 1/8 inch thick polymer washer; type, spacing and embedment as system engineer requires.

* + 1. Bracing, Furring, Bridging, Plates, Gussets, and Clips: Formed sheet steel, thickness to meet structural requirements.
		2. Galvanic Protection: Utilize tapes and other methods to separate and prevent contact between dissimilar metals.
1. **EXECUTION**
	1. INSTALLATION
		1. Install in accordance with manufacturer’s instructions and approved engineering calculations.
		2. Place girts no greater than maximum spacings indicated.
			1. Girt layout may need to be coordinated with cladding layout and fastening requirements.
			2. Components must not be cut while installed on the building unless a shearing instrument is used.
		3. Friction fit thermal insulation tight to girts.
		4. Install [siding] [cladding] as specified in Section [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_\_].
	2. ADJUSTING
		1. Clean and touch up damaged coatings.

END OF SECTION