SECTION 07 05 43

CLADDING SUPPORT SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Engineered, tested, thermally broken, stainless steel Clip and galvanized steel W-Girt insulation and rainscreen framing assembly at exterior cavity walls.

B. Related Requirements

1. Section 04 25 00 - Unit Masonry Panels

2. Section 04 42 00 - Stone Composite Panels

3. Section 07 42 43 - Stone Composite Wall Panels

4. Section 07 21 13 - Mineral Board Insulation

5. Section 07 21 16 - Blanket Insulation

6. Section 07 27 26 - Fluid-Applied Membrane Air Barriers

7. Section 07 42 13 - Metal Wall Panels

8. Section 07 42 43 - Composite Wall Panels

9. Section 07 42 47 - Fiber Reinforced Concrete Wall Panels

10. Section 07 62 00 - Sheet Metal Flashing and Trim

11. Section 07 92 00 - Joint Sealants

1.2 REFERENCES A. ASTM International (ASTM): http://www.astm.org

1. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

2. ASTM C1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.

1.3 International Code Commission (ICC) Evaluation Services:

1. ICC ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements

2. ICC ES AC261 - Acceptance Criteria for Connectors used with Cold-Formed Steel Structural Members

3. ICC ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meeting: Pre-installation Meeting: Arrange in conformance to requirements of Division 01

1. Attendance: Contractor, installer, Owner, Architect, Rainscreen System technical representative, and those representing related work requested to attend.

2. Meeting Time: Minimum 2 weeks prior to prior to beginning work of this Section and work of related Sections affecting work of this Section.

3. Location: Project Site.

B. Sequencing and Scheduling: Conform to Construction Progress Schedule for Critical Path and scheduling for long lead items and to avoid delaying work.

1.5 SUBMITTALS

A. Product Data:

1. Descriptive product literature describing assembly design, performance, and characteristics.

2. Thermal analysis report indicating assembly U-values for the exterior framing system and insulation mounting system combined.

3. Metal finishes, accessories, and components.

B. Shop Drawings:

1. Plans, elevations, framed openings, bearing, details, thermal isolation, fasteners, connectors and anchorage devices, and attachments as needed for project execution.

2. Interface of aluminum assembly with adjacent construction.

3. Stamped and signed by licensed professional engineer, registered with the [State] or [Province] of [xxx].

C. Samples: Two each of components and fasters for system assembly.

D. Design Calculations:

1. Comprehensive analysis of design loads, including dead loads, live loads, wind loads, and thermal movement.

2. Design shall be sealed by a Professional Engineer licensed in the [State] or [Province] of [xxx].

3. Test Data: Independent test results or engineered analysis for performance signed by independent agency representative.

E. Cladding Support System Instructions: Include installation instructions, clearances, special procedures, and conditions requiring special attention.

G. Sample Warranty: Meet or exceed provisions specified by this Section.

1.6 QUALITY ASSURANCE

A. Rainscreen System Product Provider Qualifications:

1. Able to document minimum 5 years of experience designing and supplying work of this Section.

2. Maintain locally available technical product representation available to meet at project site as needed for meetings and inspections of work.

B. Installer Qualifications:

1. Trained and authorized by manufacturer as qualified to install work of this Section.

2. Employ full-time on-site superintendent or foreman to overseeing installation during work of this Section.

3. Able to show successfully completed projects of equivalent scope and quality upon request by Architect.

C. Mock-Ups: Provide under Quality Assurance provisions of Division 01.

1. Mock up complete system at location as directed by Architect.

2. Provide as required to illustrate substrate, air barrier, insulation, framing, flashing, thermal isolation, and treatments at fenestrations, corners, and transitions.

3. Verify mock-up as conforming to manufacturer's instructions and provisions of Contract Documents.

4. Do not begin work of this Section until after inspection by manufacturer's representative is complete and mock-up has been accepted in writing by Architect.

5. Protect and maintain accepted mock-up as standard of quality for work of this Section.

6. Accepted mock-ups may be incorporated into the work of this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Conform to provisions of Division 01 and manufacturer's instructions.

B. Ordering: Conform to manufacturer's ordering instructions and lead time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

D. Store and handle to keep clean, dry, and protected from damage due to weather and construction activities.

1.8 FIELD CONDITIONS

A. Site Environmental Requirements: Do not install materials until site conditions conform to manufacturer instructions.

1.9 WARRANTY

A. Conform to Warranty requirements specified by Division 01.

B. Cladding Support System: 2-year materials warranty covering defective materials of stainless and galvanized steel framing systems.

1.10 SOURCE QUALITY CONTROL

A. Single Source Responsibility: Furnish engineered design and fabrication by or under direct responsibility of single Cladding Support System.

B. Field Measurements:

1. Verify conditions prior to preparing shop drawings and beginning fabrications.

2. Where this is not practical, verify with dimensions shown on shop drawings and mark corrections prior to installation.

PART 2 PRODUCTS

2.1 CLADDING SUPPORT SYTEMS

A. Quality Standard: True Blue Products, LLC - True Clip and Girt: Exterior Insulation and Rainscreen Mounting System, thermally insulated and isolated between Clips and substrate, specified as basis of design. 1. Tel: (530) 581-5299, 2. Email: info@trueblueproducts.net 3. Web Site: www.trueblueproducts.net

B. Substitution Requests: As specified by Section xx xx xx.

2.2 REGULATORY REQUIREMENTS

A. Design and Structural Properties: Conform to provisions of 2012 International Building Code (IBC) including IBC Section 1604.3.3 and IBC-2012 Section 2211 including applicable referenced AISI specifications and standards, including the following as applicable.

1. AISI S100.

2. AISI S200.

3. AISI S211.

4. AISI S212.

5. AISI S213.

2.3 PERFORMANCE / DESIGN CRITERIA

A. Structural Design: Provide engineered design capable of supporting all components exterior of the weather barrier, including all insulation, withstanding combined effects of stresses from dead loads, wind loads, normal thermal movement, and other anticipated stresses without evidence of permanent defects or failure.

1. Wind Load: Uniform pressure (velocity pressure) as indicated on Structural Drawings, acting inward or outward.

2. Dead Loads: Design for loading to accommodate support of exterior insulation and cladding systems specified by related sections and shown on Drawings and as required by applicable building code.

B. Thermal Expansion and Contraction: Design for movement due to cyclic day and night temperatures to not exceed safety factors for fasteners, joints, seals, and components.

C. Insulation installation: Design for insulation mounted indirectly to the structural studs or substrate without penetrations through the weather barrier other than Clip fasteners supporting adjustable W-Girts, and insulation mounting providing pressure against the insulation exterior to eliminate gaps between the insulation and the substrate.

D. Cladding Accommodation: Framing support assembly to be adjustable for level and plumb without the use of shims while maintaining dimensions to face of cladding materials indicated on Drawings. Design framing support configuration, size, spacing, and adjusting as needed to accommodate support for each cladding type, including:

1. Unit Masonry Panels specified by Section 04 25 00

2. Stone Composite Panels specified by Section 04 42 00

3. Stone Composite Wall Panels specified by Section 07 42 43

4. Metal Wall Panels specified by Section 07 42 13

5. Composite Wall Panels specified by Section 07 42 43

6. Fiber Reinforced Concrete Wall Panels specified by Section 07 42 47

E. Rain Screen Design:

1. Design a system assembly to accommodate a drained/back ventilated system to accommodate movement of air movement into the rain screen cavity and move water vapor out.

2. Design a system assembly to accommodate a pressure equalized system to help prevent water intrusion into the rainscreen cavity while allowing air movement to move water vapor out.

F. Tolerances:

1. Accommodate deflection of structural members.

2. Maintain clearances at adjacent construction.

3. Prevent load transfer to non-structural elements.

G. Thermal Barriers:

1. Thermally isolate metal components in contact with support wall.

2. Shims should not be used for plumb and true, as the Sub-Cladding system must be able to be adjustable to accommodate this.

H. Thermal Insulation: As specified by Section 07 21 13.

1. Design thickness and type of insulation into system assembly.

2. Perform comparative thermal analysis to determine both insulation and framing mounting system's effect on wall assembly.

I. Effect on Wall Assemblies Thermal Resistance: Insulation and Framing system thermal efficiency must be demonstrated in a side by side comparative computer simulated thermal analysis to at least 7 other similar clip style insulation and cladding support systems.

1. Two- or three-dimensional computer simulated thermal analysis or guarded hot-box test (ASTM C1363-11) results required.

2. Side by side comparative computer simulated thermal analysis to at least 7 other insulation and cladding support systems.

2.4 STEEL SUB-FRAMING:

A. Gauge, Configuration, Dimensions, and Spacing: Minimum gauge and as required to conform to design criteria for each assembly.

Material: Stainless steel 302 or 304 Alloy for Insulation Girt Wires and Clips.

Material: G90 Galvanized steel for W-Girt insulation and rainscreen cladding support.

B. Wall Clips and Framing:

1. Single Clips with thermal isolator (wall brackets) having pre-punched holes: For minimum two stainless steel wall anchors per Clip.

a. Pre-punched Holes and slots: For easy engagement and placement of stainless steel self-tapping hex-head screws for use in leveling, planeing and attaching adjustable the W-Girt.

2. W-Girts having pre-punched holes with 8 inch on center placement for easy engagement and placement of Insulation Girt Wires and their associated fasteners.

3. Dimensions: Plane and level as needed to offset cladding from wall plane, allowing for installation of insulation to match the given offset (Not to exceed one inch).

a) Align offsets to differing wall planes as shown on Drawings.

4. Recommended Product: True Blue Products (TBP) “True Clip and Girt”

a. Clips: Minimum 16 ga stainless steel with thermal isolator.

b. W-Girt: Minimum 18 ga G90 galvanized steel

1. Profile: W-Girt to be used as vertical furring members.

2. W-Girts are factory punched to accommodate Insulation Girt Wires and associated stainless steel fasteners.

2.5 THERMAL ISOLATOR

1. Material: Injection molded High Density Polypropylene.

2. Size: To accommodate Clip.

3. Recommended Product: True Blue Products (TBP) Isolator.

2.6 CONNECTORS AND ANCHORS

A. Connectors used with Cold-Formed Steel Framing Members: Conform to ICC ES AC261

B. Screw Fasteners: Stainless steel as instructed by manufacturer.

1. Minimum ¼” self-drill hex-head screw fastener to be used to attach W-Girts to Clips, and to attach Girts to other girts.

2. Minimum ¼” self-drill hex-head screw fastener to attach Clips to steel studs.

a. Self-drill hex-head TEK screw fasteners of sufficient length

b. Minimum 1/4” of threads must penetrate steel stud members.

C. Concrete and Masonry Wall Anchors: Mechanical and Adhesive anchors, bolts, nuts, and washers suited to use and as required for transference of design loads.

1. Mechanical Anchors: Expansion type, conforming to ICC ES AC193.

2. Adhesive Anchors: Torque Controlled, conforming to ICC ES AC308

2.7 ACCESSORIES

A. Girt Wires: Girt wires are fastened to the W-Girt to assist in holding Insulation in place without penetrating the weather barrier.

B. Insulation Stiches: Stainless steel spring wires to help close gaps within joints of the insulation.

C. Bracing, Furring, Bridging, Plates, Gussets, and Clips: Formed sheet steel or fiberglass, thickness as necessary to meet structural requirements for special conditions encountered.

D. Galvanic Protection: Utilize tapes and other methods as necessary to separate and prevent contact between dissimilar metals.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify conditions ready to receive work of this Section before beginning.

B. Backup Wall: Verify level and plumb, free of defects, and conforming to tolerances suitable for installation of subsequent work.

C. Weather Resistive Barrier: Verify complete, cured, and conforming to manufacturer's instructions. Verify fenestrations, transitions, discontinuities, and sills and ledgers flashed and sealed to move moisture to exterior of building as part of air barrier system.

3.2 PREPARATION

A. Review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

B. Adjust and perform work as necessary for plumb and true alignments.

3.3 INSTALLATION

A. Conform to manufacturer's instructions and provisions of Contract Documents.

B. Erect cold-formed rain screen assembly to be level, plumb, and in alignment with building features including corners, off-sets, and fenestrations.

C. Clips and Vertical W-Girt:

1. Mount Clips per structural engineering at on-center locations horizontally at each stud location using self-drilling, self-tapping screws at metal stud framed walls and expansion or adhesive anchors at concrete and masonry walls.

a. Lay Clips out at given vertical and horizontal increments.

b. Tighten snug tight as instructed by fastener manufacturer instructions.

c. Where using snug tight criteria, verify torque for each installer using hand tools at beginning of project.

d. All window, jambs, doors, and openings must be fully flashed by others prior to mounting of system.

2. Thermally isolate Clips utilizing thermal break material between the Clip and support wall substrate.

3. Attach W-Girt to Clip by use of self-tapping screw fasteners through the pre-punched holes in the Clip.

D. Horizontal Rails:

1. Add Z or H shaped horizontal rails over vertical W-Girts if required.

a. Space vertically to make suitable bearing surfaces for each cladding system as instructed by cladding manufacturer and as shown on Architect accepted shop drawings.

b. Begin at bottom and mount to vertical W-Girts using ¼" self-drilling, self-tapping stainless-steel screws.

c. Tighten screws to snug tight, typically between 90-95 in/lbs of torque. Verify equivalent snug tight condition for installers using hand tools.

d. Install successive horizontal rails as required.

E. Semi-Rigid or Rigid Mineral Wool Insulation: Install to expand into and tightly fit between Clips to make a continuous, unbroken insulated face of wall as specified by Section 07 2x xx.

F. Girt Wires: fasten Girt wires to W-Girt to assist in holding insulation without penetrating the weather barrier.

G. Insulation Stiches: Stainless steel spring wires to help close gaps within joints of the insulation.

H. Touch-up shop-applied protective coatings damaged during handling and installation, as required.

I. Use shearing instruments (i.e., snips, nibbler, etc.) for cutting metal framing components to avoid. If saws are used surrounded metal coating MUST be protected from sparks.

J. Cut installed horizontal rails to minimally attach to at least two separate vertical W-Girts to prevent rotation of rail. (if required)

1. At unsupported span of installed horizontal rails that extend past closest vertical rails, do not exceed structural engineering requirements.

2. At opening jambs (i.e., windows, doors, and other fenestrations) do not extend the horizontal rails past vertical W-Girts by more than 3 inch in length.

3.4 ERECTION TOLERANCES

A. Maximum Framing Member Variation from Plane:

1. Individual Framing Members: Do not exceed 1/8 inch in 10 foot.

3.5 FIELD QUALITY CONTROL

A. Field Technical Service: Make intermittent and final inspection to verify installation in conformance to manufacturer instructions and suitable as framing assembly for subsequent metal panels, acrylic plastering, and other cladding installations.

1. Confirm snug tight and fastener sizing.

2. Confirm framing members installed in correct orientation.

3.6 ADJUSTING

A. Inspect and adjust after installation. Replace or repair defective work.

B. Adjust and reconfigure as necessary to accommodate cladding systems for installations over work of this Section. Do not reuse pre-drilled holes unless fastener size is increased.

END OF SECTION 07 05 43