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SECTION 07 05 43.07

STEEL CLADDING SUPPORT SYSTEMS

This document is intended to serve as a proprietary guide that provides Advanced Architectural Products' recommendation for specification language that applies to their products.

This document does not inherently serve as a pre-written master specification. Review and edit as needed to suit each Project's individual requirements. Text in bold parenthesis indicates choices or options that the specifier preparing the Project specifications must select.

ABOUT US

Advanced Architectural Products, based in Allegan, Michigan, is a leading innovator in high-performance building enclosure and continuous insulation systems. Since our founding in 2012, we have been dedicated to developing cutting-edge solutions that enhance energy efficiency, structural integrity, and sustainability in modern construction.

Our flagship products, **GreenGirt®** CMH and **SMARTci®** systems, utilize advanced composite metal hybrid technology to provide superior thermal performance and moisture control, supporting Architects, Engineers, and builders in creating more efficient and durable structures.

With a state-of-the-art headquarters in Allegan, a 100,000-square-foot manufacturing and research facility in Hamilton, Michigan, and a West Coast distribution center in Washington, we are committed to innovation, quality, and customer success. Recognized as one of Inc.'s Fastest Growing Companies, we continue to push the boundaries of construction technology.

PART 1 - GENERAL

This section specifies the **GreenGirt®** Steel continuous insulation sub-framing system, consisting of galvanized steel Z-girts with integrated thermal isolation brackets, compatible accessories, and installation in conjunction with various rigid insulation materials for use in exterior wall assemblies.

1.01 SECTION INCLUDES

- A. Steel sub-framing system with field-installed thermal brackets for continuous insulation applications behind exterior cladding.
- B. Related fasteners, accessories, and structural support components.

1.02 RELATED REQUIREMENTS

Keep the following subparagraph(s) to reference requirements that may typically be expected in this Section but are specified in other Sections.

- A. Section 03 3000 – Cast-in-Place Concrete for concrete wall substrates supporting the sub-framing system.

- B. Section 04 2000 – Unit Masonry for concrete masonry unit (CMU) wall substrates receiving cladding support system.
- C. Section 05 4000 – Cold-Formed Metal Framing for backup stud framing supporting insulation and cladding.

Coordinate with Division 07 Sections for cladding, air barriers, insulation, and firestopping to ensure proper sequencing and performance. Update related section numbers as appropriate.

- D. Section 07 21 00 – Thermal Insulation for insulation materials installed with or behind sub-framing system.
- E. Section 07 25 00 – Weather Barriers for fluid-applied or sheet air/water/vapor barriers behind the support system.
- F. Section 07 92 00 – Joint Sealants for perimeter sealants around facade system penetrations and transitions.
- G. Section 07 40 00 – Exterior Wall Cladding for metal panels or other rainscreen cladding attached to the system.
- H. Section XX XX XX (**Insert Spec Section Name Here**) for (**Insert Description of what item is for here**)

1.03 REFERENCE STANDARDS

- A. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized).
- B. ASTM C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM D1621 – Compressive Properties of Rigid Cellular Plastics.

1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct preinstallation (teleconference) (conference at Project site).
 - 1. Attendees: Invite Contractor, Architect, Owner's representative, and Installer to preinstallation conference.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate installation of continuous insulation sub-framing support system as indicated on drawings for proper drainage, flashing, trim, backup support, soffits, and other related Work.
 - 1. Review and finalize construction schedule.
 - 2. Verify availability of materials, installer's personnel, equipment, and facilities needed to meet established schedule.
 - 3. Review means and methods related to installation in accordance with manufacturer's installation instructions.
 - 4. Examine support conditions for compliance with installation requirements, including alignment and attachment to structural support system.
 - 5. Review flashings, wall cladding details, wall penetrations, drainage plane, openings, and condition of other construction that is related to this Work.
 - 6. Review temporary protection requirements for during and after installation of this Work.

1.06 SUBMITTALS

- A. Product Data: Submit manufacturer's product data sheets indicating material composition, dimensional properties, performance data, and installation requirements.
- B. Shop Drawings: Include layout of support system, fastening patterns, spacing, insulation thickness, girt orientation, and substrate interface details.
 - 1. Provide details on accessories, connections, and attachment to adjacent work.
 - 2. Provide a list of locations where steel cladding support systems are to be used and indicate depth of product at each location.
- C. Certificates:
 - 1. Any other manufacturer must certify that products meet or exceed specified requirements.
 - 2. Certificate of compliance with Buy America Act, verifying that all materials meet applicable domestic production requirements.
 - 3. Certificate confirming all system components, including sub-framing members and fasteners, are manufactured in the United States.

Retain "Delegated Design Submittals" Paragraph below if structural calculations for sub-framing are required.

- D. Delegated Design Submittals: Submit comprehensive structural analysis for steel cladding support systems in compliance with performance requirements and design criteria, signed and sealed by the qualified professional engineer responsible for preparation.
- E. Structural Steel Sub-Framing Submittal:
 - 1. Provide professional engineer stamped calculations for the composite sub-framing system carrying the associated cladding system considering the following:
 - a. Structural properties of the sub-framing based on cold-formed steel profiles and bracket behavior.
 - b. Point loading of the fasteners and representative dynamics of the cladding system.
 - c. Uniform loading calculations not being allowed as it is not representative to actual wall systems.
 - d. Calculations for eccentric cantilever conditions.
 - 2. Provide finite element analysis (FEA) to model and evaluate areas of the longest steel girt cantilever span possible between intermediate framing members/attachment.
 - a. FEA shall include maximum dead load and wind load conditions.
 - b. FEA shall include point loads representative of fastener locations.
 - c. Maximum directional stresses in model shall have a safety factor of 4 or greater.
 - d. Stresses shall be indicated and analyzed in 3 directions.
 - e. FEA shall accurately replicate the wall system and physical loading dynamics.
 - f. Report shall be furnished with submittal.
- F. Warranty: Provide five (5)-year manufacturer's warranty for steel sub-framing support system commencing on the date of manufacture or date of substantial completion.

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least ten years of documented experience.
- B. Installer Qualifications: Company specializing in performing work as indicated in this section with at least five years of documented experience and approved by manufacturer.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site without damage or deformation in manufacturer's original unopened containers and with labels that clearly identify product name and manufacturer.
- B. Storage: Store materials in clean, dry, and level interior or exterior areas for limited duration in accordance with manufacturer's written instructions.
- C. Protect components during transportation, handling, and installation from moisture, excessive temperatures, and other construction operations in accordance with manufacturer's written instructions.
- D. Handle components in accordance with manufacturer's written instructions and in a manner to prevent bending, warping, twisting, and surface, edge, or corner damage.

1.09 SITE CONDITIONS

- A. Weather Limitations: Proceed with installation when existing and forecasted weather conditions allow for assembly of this Work in accordance with manufacturer's written installation instructions.

PART 2 - PRODUCTS

2.01 PRODUCTS, GENERAL

- A. Provide sub-framing components and accessories from a single manufacturer to ensure material compatibility, uniformity, and sole-source responsibility for system performance and warranty.
- B. Components specified in this Section shall be manufactured in the United States of America.

2.02 MANUFACTURER

The specified system is proprietary, and substitution requests should be evaluated carefully. Ensure structural equivalence and thermal performance match the specified system before considering alternates.

- A. Advanced Architectural Products (A2P)
 - 1. 959 Industrial Drive, Allegan, Michigan, 49010
 - 2. Phone: (269) 355-1818
 - 3. Website: www.GreenGirt.com
- B. Basis of Design Product:
 - 1. **GreenGirt®** Steel Continuous Insulation Sub-framing system.

2.03 PRODUCT DESCRIPTION

- A. Steel cladding support and continuous insulation system consisting of cold-formed galvanized steel Z-girts with integrated thermal isolation brackets, designed to provide a thermally broken sub-framing layer for exterior wall assemblies incorporating continuous insulation.
- B. Z-girts shall be fabricated from steel conforming to ASTM A653, minimum G90 zinc coating. Profile Z-girts to provide rigidity and facilitate alignment during installation. Where applicable, overlapping flange profiles may be used to assist in straightening. Flange profile shall maintain continuous vertical or horizontal alignment, minimizing installation tolerance accumulation.
- C. Thermal isolation brackets shall be field-installed non-metallic components with low thermal conductivity to reduce heat transfer between the cladding support system and building structure.
- D. Z-girt profiles shall include integrated retention features to mechanically secure insulation in place without the use of through-fastened pins or adhesive systems.
- E. System shall be capable of supporting cladding loads imposed by dead load, wind load, and thermal movement, and shall be engineered for attachment to a variety of substrates including cold-formed steel framing, wood framing, concrete, or CMU backup walls.
- F. System shall accommodate insulation thicknesses from 1 inch to 5 inches and be compatible with mineral wool, polyisocyanurate, extruded polystyrene, and similar rigid insulation materials.
- G. All components shall be suitable for use in non-combustible construction and shall not compromise the fire-resistance rating of the wall assembly when installed in accordance with tested assemblies.

2.04 SYSTEM COMPONENTS

A. Z-Girts:

- 1. Material: Galvanized steel sheet conforming to ASTM A653, minimum G90 coating.
- 2. Profile: Continuous Z-profile with overlapping flange for alignment and rigidity.
- 3. Thickness: Minimum 18 gauge (1.2 mm) unless otherwise required by design.
- 4. Length: Factory-fabricated standard lengths; field-cut as necessary.

Select girt width based on insulation thickness, cladding system stand-off requirements, and structural span analysis.

- 5. Widths: **(1.5) (2) (2.5) (3) (3.5) (4) (4.5) (5)** inches.

Select horizontal or vertical installation as appropriate for project from the following.

- 6. Orientation: **(Horizontal) (Vertical)** installation.

B. Thermal Isolation Brackets:

- 1. Material: Injection-molded thermoplastic or composite with a thermal conductivity not greater than W/m·K.
- 2. Configuration: Field-installed to isolate steel components from the backup structure.
- 3. Flame and smoke performance: Compliant with ASTM E84, Class A rating.

C. Structural Support: Manufacturer to perform engineering analysis to ensure:

- 1. Structural capacity to support cladding systems in accordance with project loading requirements.

2. Compatibility with multiple cladding attachment methods.

D. Performance Requirements:

1. Minimizes thermal bridging between structural framing and exterior cladding.
2. Contributes to the effectiveness of the wall assembly's thermal envelope.
3. Maintains structural alignment and fastening integrity under design loads.

2.05 ACCESSORIES

- A. Retention Locks: Integrated mechanical features formed into Z-girt profile to secure rigid insulation.
- B. Shims and Blocking: As required for alignment and load transfer; must be non-compressible and thermally compatible.
- C. Flashings, Termination Bars, and Sealant Backing: As required for interface with adjacent materials.

2.06 PERFORMANCE CHARACTERISTICS

Coordinate with design team to confirm project-specific wind load, dead load, and thermal requirements. Adjust safety factors or additional testing requirements as needed.

A. Thermal Efficiency:

1. Cladding support system shall contribute to assembly thermal performance by minimizing or eliminating thermal bridging.

B. Structural Capacity:

1. Fastener withdrawal capacity shall meet or exceed that of conventional 18-gauge cold-formed steel framing used for cladding support.
2. System shall exhibit a high strength-to-weight ratio suitable for vertical and lateral cladding loads.
3. Comply with structural design requirements of ASCE 7, including wind load and component/support criteria.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are clean, dry, structurally sound, and free from oil, grease, debris, or irregularities that would impair system performance.
- B. Ensure framing is installed to meet project tolerances for alignment and spacing per contract documents and manufacturer requirements.
- C. Confirm that environmental conditions are suitable for installation, including ambient temperature, wind conditions, and moisture levels.
- D. Verify compatibility and continuity with adjacent assemblies including sheathing, air/water barriers, fenestrations, and transitions.

3.02 INSTALLATION

- A. Install Z-girts in accordance with the manufacturer's instructions, ensuring proper alignment and spacing.
- B. Secure components to the substrate using approved fasteners.

- C. Place insulation materials between Z-girts, ensuring a snug fit without gaps.
 - 1. Insulation must be continuously supported and mechanically retained in a manner that maintains insulation continuity and minimizes thermal bridging.
- D. Attach cladding systems to the Z-girts as per cladding manufacturer guidelines.

3.03 FIELD QUALITY CONTROL

- A. Inspect system during and after installation for:
 - 1. Proper girt spacing and alignment.
 - 2. Tight compression of insulation materials.
 - 3. Secure mechanical fastening.
 - 4. Continuity of insulation across entire surface with no voids or bypasses.
- B. Correct any deficiencies before proceeding with cladding installation.

3.04 CLEANING AND PROTECTION

- A. Remove construction debris from installation area.
- B. Protect installed insulation system components from damage caused by weather, other trades, and subsequent construction.
- C. Replace damaged or non-performing materials with new components as approved by the manufacturer.

END OF SECTION