SECTION 07 4210

SINGLE PASS CONTINUOUS INSULATION (CI) WALL CLADDING SUPPORT SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Exterior wall panel support system used with continuous insulation panels.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 – Cast-in-Place Concrete: Concrete wall substrate.

B. Section 04 2000 – Unit Masonry: Concrete masonry unit (CMU) wall substrate.

C. Section 05 4000 – Cold-Formed Metal Framing: Wall panel substrates support framing.

D. Section 06 1000 – Rough Carpentry: Exterior sheathing.

E. Section 07 2500 – Weather Barriers: Air and moisture barrier required as part of metal wall panel assembly.

F. Section 07 4200 – Wall Panels: Exterior exposed wall panel assembly.

G. Section 07 6200 – Sheet Metal Flashing and Trim: Field formed flashings and other sheet metal work.

H. Section 07 9005 – Joint Sealers: Perimeter sealant.

I. Section 09 2116 – Gypsum Board Assemblies: Exterior sheathing.

1.03 REFERENCE STANDARDS

A. AAMA - American Architectural Manufacturers Association (www.aamanet.org)
   1. AAMA 501.1 – Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure; 2005

B. ASCE American Society of Civil Engineers (www.asce.org)
   1. ASCE 7 – Minimum Design Loads for Buildings and Other Structures; 2010

C. ASTM International (American Society for Testing and Materials; www.astm.org)
   1. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011
   2. ASTM C203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation; 2012
   3. ASTM C209 - Standard Test Methods for Cellulosic Fiber Insulating Board; 2012
   4. ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions; 2012
   5. ASTM C356 – Standard Test Method for Linear Shrinkage of Preformed High-Temperature Thermal Insulation Subjected to Soaking Heat; 2010
   6. ASTM C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010
   7. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2012
   8. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2010
   9. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2009
   10. ASTM C1104 - Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation; 2013
   11. ASTM C1177 – Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008
   12. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2013

13. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2011
14. ASTM C1396 – Standard Specification for Gypsum Board; 2013
15. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010
16. ASTM D570 – Standard Test Method for Water Absorption of Plastics; 2010
17. ASTM D635 – Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2010
18. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between −30°C and 30°C with a Vitreous Silica Dilatometer; 2008
19. ASTM D792 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement; 2008
20. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2010
21. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics; 2008
22. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics; 2009
23. ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging; 2009
24. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor; 2013
25. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012
26. ASTM D4385 - Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products; 2010
27. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2013
28. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials; 2012
29. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
30. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2010
31. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2009

D. NFPA – National Fire Protection Association (www.nfpa.org)
   1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012

E. PS - Voluntary Product Standard; National Institute of Standards and Technology (NIST)
   1. PS-1 – Structural Plywood; 2007

F. UL – United Laboratories (www.ul.com)
   1. UL 94 - Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances; 2013
   2. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; 2008

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate panel assemblies with rain drainage, flashing, trim, stud back-up, soffits, and other adjoining work.

B. Preinstallation Meeting:
   1. Attendees:
      a. Owner
      b. Architect
      c. Installer
      d. Exterior wall panel manufacturer's representative
      e. Continuous insulation wall panel support system manufacturer’s representative
      f. Installer’s whose work interfaces with or affects wall panels including installers of doors, windows, and louvers.
   2. Review and finalize construction schedule.
   3. Verify availability of materials, installer's personnel, equipment, and facilities needed to maintain schedule.
   4. Review means and methods related to installation, including manufacturer's written instructions.

5. Examine support conditions for compliance with requirements, including alignment and attachment to structural members.
6. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affects this Work.
7. Review temporary protection requirements for during and after installation of this Work.

1.05 SUBMITTALS

A. See Section 01 3000 – Administrative Requirements, for submittal procedures.

B. Product Data: Submit for each type of product indicated; include construction details, material descriptions, dimensions of individual components and profiles, and accessory as necessary for complete fully furnished system assembly.

C. Shop Drawings: Submit fabrication and installation layouts of continuous insulation wall panel support system and exterior cladding system; including details of edge conditions, joints, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
1. Provide distinction between factory-assembled, shop-assembled, and field-assembled work.
2. Provide details of following items at full scale.
   a. Manufacturer’s standard sheet metal trims.
   b. Components of wall panel construction, anchorage methods, and hardware.
3. Include professional engineer’s stamp or seal on shop drawings for attachments and anchors.

D. Coordination Drawings: Submit to-scale exterior elevations that have the following items shown and coordinated with each other, using input from installers of these items as follows:
1. Exterior wall panel system and attachments.
2. Sub-Girts.
3. Continuous insulation wall panel support system.
4. Insulation layout.
5. Wall-mounted items including doors, windows, louvers, and lighting fixtures.
6. Wall penetrations, such as from pipes, electrical fixtures, and other utilities.

E. Test and Inspection Reports: Submit test and inspection reports on each type of exterior wall panel system provided for project based on evaluation of comprehensive tests performed by qualified testing agency.
1. Refer to Section 07 4200.

F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

G. **[Sustainable Design Submittals]** or **[LEED Reports]**:
1. Submit documentation from manufacturer for amounts of pre-consumer and post-consumer recycled content for products specified, and include statement indicating costs for materials having recycled content.
2. Submit documentation providing location of manufacturing.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least three years of documented experience.

B. Installer: Company specializing in performing work of this section and as follows.
1. Installer shall install system in strict compliance with manufacturer’s installation instructions.
2. Installer has not less than three years of documented experience.
3. Installer is factory trained and approved by wall panel support system manufacturer.

C. Design Engineer's Qualifications: Design structural supports and anchorages under direct supervision of a Structural Engineer experienced in design for this type of Work and licensed in the State that the Project is located.

D. Source Limitations: Obtain wall panel support system and continuous insulation from single source and single manufacturer.

1.07 MOCKUPS

A. Mockups: Provide mockups to verify selections, to demonstrate aesthetic effects, and to establish quality standards for fabrication and installation.
   1. Build mockup of typical continuous insulation wall panel assembly **[as shown on Drawings] [<insert size>]**, including **[corner,] [soffits,]** supports, attachments, and accessories.
      a. Include at least four exterior wall panels to represent a four-way panel joint and showing full thickness.
   2. Approval of mockups does not constitute approval of deviation from Contract Documents within mockups unless these deviations are approved by Architect in writing.
   3. Subject to compliance with requirements, approved mockups **[may]** or **[may not]** become part of completed Work if undisturbed upon date of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original unopened containers and packaging with labels clearly identifying product name and manufacturer.
   1. Deliver components and other manufactured items or accessories without damage or deformation.

B. Storage and Handling: Store materials in clean, dry, interior area in accordance with manufacturer's instructions.

C. Protect components during transportation, handling, and installation from weather, excessive temperatures and construction operations.

D. Handle components in strict compliance with manufacturer's written instructions and recommendations, and in a manner to prevent bending, warping, twisting, and surface damage.

1.09 SITE CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of this Work to be performed according to manufacturer's installation instructions and warranty requirements.

B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before wall panel support system fabrication and indicate measurements on Shop Drawings.
   1. Coordinate with construction schedule.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Wall Panel Support System Warranty: Provide jointly written warranty by manufacturer and installer, agreeing to correct defects in manufacturing or installation within a five year period after Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Advanced Architectural Products (AAP): SMARTci and Greengirt Composite Framing System (CFS)
   1. Address: 959 Industrial Drive, Allegan, Michigan 49010.
   2. Phone: (269) 355-1818; Fax: (866) 858-5568; Website: www.smartcisystems.com.

B. Other: Pre-submitted and approved products that meet materials and performance requirements with specified and validated third party testing.

2.02 DESCRIPTION

A. Composite framing support (CFS) members anchored to **[metal stud wall framing over exterior wall sheathing] [concrete masonry units (CMU)]** or **[cast-in-place concrete]**.

B. Insulation panels are installed **[vertically]** or **[horizontally]** between the CFS members.

2.03 PERFORMANCE CRITERIA

A. Structural: Provide system tested in accordance with ASTM E330 and certified to be without permanent deformation or failure of structural members in accordance with design wind velocities for project geographic location and probability of occurrence based on data from wind velocity maps such as provided in ASCE 7 and as approved by authorities having jurisdiction.
   1. Measure performance using test loads equal to 1-1/2 times the design wind loads and with 10 second duration of maximum pressure.
   2. Composite Framing Supports (CFS): Structurally engineered to provide in excess of 3 times structural safety factor for lengthwise, longitudinal, and crosswise loading.

B. Air Infiltration Test: Maximum of 0.06 cfm/sq ft of wall area in accordance with ASTM E283 or ASTM 2357 at an air pressure differential of 6.27 lbf/sq ft across assembly.

C. Water Penetration Test:
   1. Static: No uncontrolled water penetration at a static pressure of **[2.86 lbf/sq ft]** or **[____ lbf/sq ft]** in accordance with ASTM E331.
   2. Dynamic: No uncontrolled water penetration at a dynamic pressure of 6.24 psf in accordance with AAMA 501.1 test method.

D. Hygrothermal: Provide system designed in accordance with ASHRAE 160, to pass requisite 30 day, 7 day and 24 hour wall moisture content requirements. Testing and validation shall be done through WUFI or other approved transient hygrothermal/moisture modeling systems.

E. System Thermal Design: Installed continuous insulation system including insulation, composite framing support, sub-girts, clips and cladding attachment shall not have thermal bridging of fasteners or framing that creates a continuous metal path from the exterior surface of the insulation to **[the stud framing inside the wall cavity]** or **[interior face of wall]**. System thermal design shall meet/exceed the thermal and design requirements as stated in ASHRAE 90.1-2013 or [2013ANSI] or [2013 IBCC] or [2013 IECC] or [2013IGCC] codes.
   1. Thermal Resistance: Wall assembly U Value of [<__>] or R Value of **[<___>]**.
   2. Thermal Performance Test: Provide thermal resistance (R-value) indicated, in compliance with ASTM C1363, corrected to 15 mph outside and still air inside, with as-installed condition including fastening and joints.
      a. Provide efficiency of no less than **[<86-95>percent],** with a maximum temperature differential of 18 degrees F from the interior wall surface to interior wall cavity and node locations with a 70 degree exterior to interior wall temperature delta.
      b. Provide test unit with at least one insulation panel horizontal and vertical joint the length and height of the test chamber area.
      c. Or Provide finite element analysis of three dimensional simulation of the described wall assembly stamped by professional engineer in compliance with the performance requirements and exceeding it by 3%.

F. Temperature: Comply with structural loading requirements within temperature range of minus 55 degrees F to 180 degrees F.

G. Fire-Test-Response Characteristics: Provide wall panel support system with the following fire-test-response characteristics determined by the indicated test standard as applied by UL or other testing and inspection agency acceptable to authorities having jurisdiction.
   1. Surface Burning Characteristics: Not greater than the following, per ASTM E84 or UL 723, for foam insulation, FRP and interior surface:
      a. Flame spread index: 25 or less.
      b. Smoke developed index: 450 or less.
   2. Intermediate Scale Multistory Fire Test: Comply with NFPA 285 and International Building Code (IBC) 2012 acceptance criteria for wall height above grade and fire separation distances.

2.04 COMPOSITE FRAMING SUPPORT

A. Composite Framing Support (CFS): CFS shall consist of polyester and vinyl ester bioresin matrix with recycled materials, ultra-violet inhibitor, fire retardant additives, and integral continuous metal inserts the length of

profile. CFS shall be reinforced with glass strand rovings used internally for longitudinal (lengthwise) strength and continuous strand glass mats or stitched reinforcements used internally for transverse (crosswise) strength.

1. Height: **[2inch high – Simple Z-GreenGirt]** or **[2.5 inch high – Simple Z-GreenGirt] or [3.0 inch high – Simple Z-GreenGirt] or [4.0 inch high – Simple Z-GreenGirt]**
2. On Center Spacing: **[16 inch]** or **[24 inch]** or **[48 inch]**.
3. CFS Orientation: **[Horizontal]** or **[Vertical]**.
4. Provide continuous non-corrosive steel insert for engagement of fasteners, **[16 gage] [18 gage]** with G90 coating designation in compliance with ASTM A653.
    a. Steel insert shall fully engage with adjacent CFS at ends.
    b. Sub-girts and other exterior wall panel support accessories shall be anchored to steel insert set into and part of the CFS.
5. Provide integral compression seal in CFS sections to ensure insulation panel will not dislodge and to stop air movement throughout system.
6. CFS section to have integral anti-siphon grooves on exterior flanges.
7. CFS section to have force distribution zones integrally designed into profile.
8. CFS to have spline seals for adjacent insulation units.
9. Surface Burning Characteristics:
    a. Flame Spread: 25 or less, when tested in accordance with ASTM E84.
    b. Smoke Development: 450 or less, when tested in accordance with ASTM E84.
10. Flammability: UL 94.
11. Self-Extinguishing: ASTM D635.
12. Profile Visual Requirements: ASTM D4385.
13. Tensile Stress: Engineered lengthwise and crosswise tensile stress is in compliance with performance loading criteria and specified safety factors, in accordance with ASTM D638.
14. Compressive Stress: Engineered lengthwise and crosswise compressive stress is in compliance with performance loading criteria and specified safety factors, in accordance with ASTM D695.
15. Flexural Stress: Engineered lengthwise and crosswise flexural stress is in compliance with performance loading criteria and specified safety factors, in accordance with ASTM D790.
16. Modulus of Elasticity: Engineered to meet the performance loading criteria and specified safety factors.
17. Barcol Hardness: 45, in accordance with ASTM D2583.
18. Water Absorption: Less than 0.46 percent by weight, within 24 hours, in accordance with ASTM D570.
19. Density: Within range of 0.062 to 0.070 lbs/cu in, in accordance with ASTM D792.
20. Lengthwise Coefficient of Thermal Expansion: 7.0 x 10-6 inch/inch/degrees F, in accordance with ASTM D696.
21. Notched Izod Impact, Lengthwise: 24 ft lbs/in, in accordance with ASTM D256 within temperature range indicated.
22. Notched Izod Impact, Crosswise: 4 ft lbs/in, in accordance with ASTM D256 within temperature range indicated.
23. Basis of Design: Advanced Architectural Products (AAP); Product **[2inch high – Simple Z-GreenGirt]** or **[2.5 inch high – Simple Z-GreenGirt] or [3.0 inch high – Simple Z-GreenGirt] or [4.0 inch high – Simple Z-GreenGirt]** (www.smartcisystems.com)

2.05 INSULATION

A. Insulation Panel Edges: Provide factory formed edges on insulation that interlock with composite framing support (CFS) members.

B. Polyisocyanurate Panel Insulation: Rigid cellular foam, complying with ASTM C1289; Type I, Class 1 with aluminum foil both faces.
    a. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
    b. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
    c. Thermal Resistance: **[2 inch, R-Value 13.1] [2-1/2 inch, R-Value 16.7] [3 inch, R-Value 20.31]** or **[4 inch, R-Value 27.4]**; ASTM C518 at 75 degrees F.
    d. Comply with fire-resistance requirements, as indicated on the Drawings, and as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
    e. Compressive Strength: **[Grade 1, 16 psi] [Grade 2, 20 psi]** or **[Grade 3, 25 psi]**; ASTM D1621.
    f. Dimensional Stability: Less than 2 percent linear change after 7 days; ASTM D2126.
    g. Moisture Vapor Permeance: Less than 0.05 perm; ASTM E96.

h. Water Absorption: Is less than 0.05 percent by volume; ASTM C209.
i. Service Temperature: Range of minus 100 degrees F to 250 degrees F.
j. Basis of Design: Hunter Panels, LLC; Product Xci Foil (www.hunterxci.com)

C. Extruded Polystyrene (XPS) Panel Insulation: Closed-cell, extruded polystyrene insulation; ASTM C578, Type X.
a. Flame Spread Index: 5 or less, when tested in accordance with ASTM E84.
b. Smoke Developed Index: 45 to 175, when tested in accordance with ASTM E84.
c. Thermal Resistance: Long term thermal performance (LTTR) R-Value of 5 per inch; ASTM C518 at 75 degrees F.
d. Thickness: **[2 inch] [2-1/2 inch]** or **[3 inch]**.
e. Comply with fire-resistance requirements, as indicated on the Drawings, and as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
f. Flexural Strength: 60 psi; ASTM C203
g. Compressive Strength: At least 16 psi; ASTM D1621.
h. Moisture Vapor Permeance: Less than 1.5 perm; ASTM E96.
i. Water Absorption: Is less than 0.10 percent by volume; ASTM C272.
j. Dimensional Stability: Is less than 2 percent in linear change; ASTM D2126.
k. Basis of Design: Owens Corning Foam Insulation, LLC; Product Foamular CC XPS Rigid Foam Insulation (www.owenscorning.com)

D. Sprayed Polyurethane Foam (SPF) Insulation: Two-component closed-cell spray polyurethane foam system with EPA-approved, zero ozone-depleting blowing agent and processed with Elastospray® 8000A isocyanurate.
a. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
b. Smoke Developed Index: 350 or less, when tested in accordance with ASTM E84.
c. Thermal Resistance: R-Value of 6.7 per inch at less than 4 inch thick; ASTM C518.
d. Thickness: 3 inch, maximum.
e. Comply with fire-resistance requirements, as indicated on the Drawings, and as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
f. Core Density: 2.0 to 2.3 lb/cu ft at 2 inch thick per pass; ASTM D1622
g. Tensile Strength: 62.4 psi; ASTM D1623
h. Compressive Strength: 26 psi; ASTM D1621.
i. Moisture Vapor Permeance: Less than 0.46 perm at 3 inch thick; ASTM E96.
j. Water Absorption: Is less than 0.60 percent by volume; ASTM D2842.
k. Basis of Design: BASF Corporation; Product Spraytite 81206 Series (www.spf.basf.com)

E. Mineral Fiber Panel Insulation: Non-combustible, mineral fiber insulation made of basalt rock and slag; ASTM C612, Type IVB.
a. Provide reinforced aluminum foil facing on exterior side; with flame spread index of 20 or less, and smoke development index of 35 or less, when tested in accordance with ASTM E84.
1) Thickness: 0.0059 inch, overall.
2) Reinforcement: Consisting of tri-directional fiberglass and polyethylene film.
3) Moisture Vapor Permeance (Foil): Less than 0.02 perm; ASTM E96.
4) Product; Type 5225-3x2 Foil Facing by Custom Laminating Corp. (www.customl.com)
b. Thermal Resistance: R-Value of **[4.1]** or **[4.2]** per inch at 75 degrees F; ASTM C518.
c. Thickness: **[2 inch]** or **[3 inch] or [4 inch]**.
d. Moisture Resistance, Absorption: Less than 0.07 percent; ASTM C1104.
e. Dimensional Stability, Linear Shrinkage: Less than 2 percent at 1200 degrees F; ASTM C356.
f. Maximum Density, Actual: **[3.5 lb/cu ft – CurtainRock] [6.0 lb/cu ft – RockBoard 60]** or **[8.0 lb/cu ft – RockBoard 80]**.
g. Basis of Design: Roxul Inc; Product **[Curtain Rock] [RockBoard 60]** or **[RockBoard 80]** (www.roxul.com)

F. Mineral Fiber Panel Insulation: Non-combustible, mineral fiber insulation made of basalt rock and slag; ASTM C612, Type IVA.
a. Thermal Resistance: R-Value of 4.2 per inch at 75 degrees F; ASTM C518.
b. Thickness: **[2 inch] [2-1/2 inch] [3 inch]** or **[4 inch]**.
c. Moisture Resistance, Absorption: Less than 1.0 percent; ASTM C1104.
d. Dimensional Stability, Linear Shrinkage: Less than 2 percent at 1200 degrees F; ASTM C356.

e. Maximum Density, Nominal: **[4.0 lb/cu ft – FireSpan 40]** or **[8.0 lb/cu ft – FireSpan 90]**.
f. Basis of Design: Thermafiber, Inc; Product **[FireSpan 40]** or **[FireSpan 90]** (www.thermafiber.com)

2.06 SUB-GIRTS

A. Sub-Girts: Provide metallic coated steel with G90 (Z275) coating designation, ASTM A653/A653M; structural quality.
1. Size: **[5/8 inch deep hat girt]** or **[1 inch deep hat girt]**.
2. Gage: 16 gage.
3. On Center Spacing: **[24 inch]** or **[48 inch]**.
4. Orientation: **[Horizontal]** or **[Vertical]**.
5. Basis of Design: Architectural Advanced Panels; Product **[AAP 625]** or **[AAP 1000]** Hat Girt (www.smartcisystems.com).

2.07 ASSEMBLY

A. Assemble continuous insulation wall panel support system using manufacturer's standard procedures and processes identical to tested units and as necessary to comply with performance requirements indicated.
1. Comply with exterior wall panel profiles and with dimensional and structural requirements as indicated on the Drawings.
a. Refer to Section 07 4200.
2. Fabricate wall panel support system with joints between exterior wall panels designed to form weathertight seals.
a. Refer to Section 07 4200.
3. Form wall panel support system in a continuous process with no glues or adhesives between dissimilar materials.
4. The CFS and Insulation panels shall create a 3 in 1 Air/Water/Vapor class 1barrier system compliant with requirements for project geographic zone.

2.08 ACCESSORIES

A. Provide accessories necessary for a complete wall panel support system including **[metal closure trim] [transition angle] [strapping] [tie-in brackets]** or **[_____]** and similar items.

B. Fasteners: Corrosion-resistant, self-tapping and self-drilling screws, bolts, nuts, and other fasteners as recommended by panel support system manufacturer for project application.
1. Cladding to Greengirt: Use standard Tek® brand screws.
2. Greengirt to Stud Wall Framing: Use standard Tek® brand screws.
3. Greengirt to Concrete/CMU: Use Tapcon® brand anchors.

C. Flashing and Trim: Match material, finish, and color of adjacent wall panels.
1. Thickness: At least 0.040 inch.
2. Refer to Section 07 6200 for requirements.

D. Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, at least 5/8 inch.
1. Refer to Drawings and Section 06 1000 for requirements.

E. Wall Sheathing: Gypsum, complying with requirements of ASTM C1396/C1396M for gypsum sheathing, V-shaped long edges, 5/8 inch thick, Type X fire-resistant.
1. Refer to Drawings and **[Section 06 1000]** or **[Section 09 2119]** for requirements.

F. Wall Sheathing: Glass mat faced gypsum, ASTM C1177/C1177M, square long edges, 5/8 inch thick, Type X fire-resistant.
1. Refer to Drawings and **[Section 06 1000]** or **[Section 09 2119]** for requirements.

G. Water Resistive Barriers (WRB): Provide climate specific water resistive barrier with performance characteristics for air penetration, water vapor transmission (perms), and water penetration resistance.
1. Refer to Section 07 2500 for requirements.

H. Sealants: Provide sealants as recommended by exterior wall panel manufacturer for openings within wall panels and perimeter conditions.

1. Refer to Section 07 9005 for requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas of this work, and project conditions with installer present for compliance with requirements for installation tolerances, substrates, wall panel support conditions, and other conditions affecting performance of this Work.

B. Examine structural wall framing to ensure that angles, channels, studs, and other structural support members have been installed within alignment tolerances required by continuous insulation wall panel support system manufacturer.

C. Verify that water resistive barrier has been installed over exterior sheathing to control air infiltration or water penetration as indicated for project.

D. Examine rough-in for components and systems penetrating wall panel support system to coordinate actual locations of penetrations relative to exterior wall panel joint locations prior to installation.

E. Verify that mechanical and electrical services for exterior walls have been installed and tested and, if appropriate, verify that adjacent materials and finishes are dry and ready to receive insulation.

F. Proceed with installation only after exterior walls have been properly prepared and unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Prepare sub-girt, base angles, sills, furring, and other wall panel support members and provide anchorage in accordance with ASTM C754 for gypsum panel type substrates and panel manufacturer’s installation instructions.

3.03 INSTALLATION

A. Install wall panel support system in accordance with manufacturer's installation instructions.

B. Install system to fill-in exterior spaces without gaps or voids. Do not compress panel insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.

E. Exposed insulation must be protected from open flame and kept dry at all times.

F. Exterior wall insulation panels are not intended to be left exposed for periods of time in excess of 60 days without adequate protection.
   1. When extended exposure is anticipated, protect exposed insulation surfaces including corners, window and door openings with a compatible waterproof tape.

G. Install wall panel support system in compliance with exterior wall panel orientation, sizes, and locations as indicated on Drawings.
   1. Refer to Section 07 4200.

3.04 TOLERANCES

A. Shim and align wall panel units with installed tolerances of 1/4 inch in 20 feet, non-cumulative, on level, plumb, and location lines as indicated.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: **[Owner will engage]** or **[Engage]** a qualified independent testing agency to perform field tests and inspections.
   1. Refer to section 07 4200 for additional requirements.

3.06 PROTECTION

A. Protect installed products from damage until date of Substantial Completion.

B. Ensure that insulation panels are not exposed to moisture.
   1. Remove wet insulation panels or allow them to completely dry prior to installation of exterior wall panel system.

C. Replace damaged insulation panels prior to date of Substantial Completion.

END OF SECTION