Part 1 – General

1. Scope of Work

A. Work following under this section should include design, fabrication, supply, erection, and warranty of aluminum composite panels with an air barrier (and subgirts if required).

2. Related Work

A. Contract Documents – Drawings, General Conditions, and Supplementary Conditions

B. Section 054000 Cold Formed Metal Framing

C. Section 061000 Rough Carpentry

D. Section 077620 Flashing

E. Section 092500 Light Gauge Metal and Exterior Gypsum Sheathing

3. Quality Assurance

A. Fabricator and Installer shall have 5 years minimum proven experience in aluminum composite panel systems.

4. Performance Requirements

A. Provide a rear ventilated, equal pressurized, Rainscreen System that meets the following requirements:

1. Water Penetration: Design system to prevent rain penetration through wall system and maintain avenue for water to weep back to exterior of panel system.

2. Wind Load: Design system to withstand wind loads positive and negative without excessive permanent set deflection, shaking, or vibration.

3. Structural Performance: Design system that allows for effects of loads and stresses from live loads, dead loads, snow loads, and normal thermal movements so as to not permanently damage or defect ant components of the panel system.

4. Thermal Movement: Design system that allows for thermal movement from acceptable ambient and surface temperature as not to allow joint expansion, buckling or permanent damage of components, oil canning, or failure of fasteners.

B. Design system allowing for 1/8” +/- tolerance for framing and substrate.

C. During expansion and contraction joints should not allow uncontrolled water penetration while allowing for panel movement.

D. Panel system should be designed to allow for removal of individual panel within the system itself.

E. Fabricate panels within the tolerances set forth by the Material Manufacture.

F. The following testing shall be certified by an independent testing laboratory:

1. Static Air Infiltration: No more than .06 CFM per square foot of fixed specimen or 8.2 CFM gross leakage when tested at 6.24 PSF (50 MPH wind and 1.2" H20) in accordance with (ASTM E 283).

2. Static Water Infiltration: No uncontrolled water infiltration to the interior side of the fixed specimen at 15.0 PSF (77.5 MPH wind and 2.88" H20) with a water spray rate of five (5) gallons per hour per square foot minimum for fifteen (15) minutes in accordance with (ASTM E 331).

3. Dynamic Water Infiltration: No uncontrolled water infiltration to the interior side of the fixed specimen at 100 MPH slipstream velocity at the prop creating an equivalent pressure at the wall of 15.0 PSF and 77.5 MPH wind. Water is applied at a rate of five (5) gallons per hour per square foot for fifteen (15) minutes in accordance with (AAMA 501).

4. Structural Design Load: No member of the panel system shall deflect greater than L/175 of clear span with a maximum allowable vertical deflection of 0.55"when held for ten (10) seconds duration for both 50% and 100% loads at a design pressure of 61 PSF in accordance with (ASTM E 330).

G. Erected panel alignment both vertical and horizontal should not exceed a maximum deviation of ¼" in 20'-0".

5. Submittals

A. Shop Drawings: Provide plans, elevations, wall sections, details, and accessories for all area's shown on contract documents and submit to Architect for approval.

B. Panel Calculations: Submit structural calculations that have been prepared with comprehensive analysis from a licensed engineer that indicate thermal movement, wind loads, live and dead loads.

C. Product Data: Provide Manufacture's product literature showing physical properties, technical data, and test information.

D. Samples: Provide Manufacture's standard color chart for Architects color selection. Once color is selected submit 3 samples of each color selected.

E. Mock Up: Erect mock up on the building in location designated by the Architect. Once the mock up has been approved by the Architect it can be incorporated into scope of work.

6. Panel Delivery, Storage, & Handling

A. Store materials in accordance with Manufacture's recommendations.

B. Act in accordance with Manufacture's lead times and ordering instructions to avoid construction delays.

C. Deliver materials with protective film to site and do not remove until panel is secured to structure.

D. Handle panels with care to ensure that there is no damage to material or finishes.

7. Quality Assurance

A. All work shall be installed by a Fabricator Certified Installer.

B. All material shall be provided by a single source manufacture to eliminate dissimilar finishes.

C. Manufacture should have no less than five (5) years' experience in manufacturing material similar to those specified in this section.

D. Have a pre-installation meeting with the owner's representative, architect, GC project manager, manufacture representative, and installer.

8. Project Conditions

A. Field Measurements: Field verify dimensions of framing members and substrate in location necessary to establish correct sizing of panels and indicate both field dimensions and panel dimensions on final shop drawings. When field dimensions cannot be established without delaying the work the GC is to guarantee dimensions so that fabrication can proceed to meet the schedule requirements.

B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal-faced composite wall panels to be performed according to manufacturer's written instructions and warranty requirements.

9. Warranties

A. Provide Manufacture's written warranty protecting any failure (outside the standard NBS fading units) of the panel finish within the warranty period.

B. Warranty period for material finish shall be ten (10) years after the substantial completion date.

C. Workmanship warrants against defects and deficiencies in installation for one (1) year from the material purchase date.

Part 2 - Products

2.1 Manufacture

A. Provided by: Cynergy Systems Inc.1851 Chespark Dr., Gastonia, NC 28052. (Phone: (704) 864-2999 Fax: (704) 867-2009, E-mail: sales@cynergysystemsinc.com, Web: cynergysystemsinc.com)

1. Cynergy RS Aluminum Panel System
2. Alternate systems by other manufactures/fabricators are to be submitted to the architect within 10 days of the bid date.

2.2 Panels

A. Aluminum Composite Material (ACM)

1. Composition: two sheets of aluminum sandwiching a core of extruded thermoplastic, formed in a continues process without the use of glues or adhesives between dissimilar materials. Bond integrity testing to adhere to ASTM D1781-76
2. Aluminum face sheets: aluminum alloy 3003, thickness: 0.020
3. Panel thickness: 4 mm (.157)
4. Panel weight: 1.12 lbs/square foot.
5. Tolerances:
   a. Panel bow: Maximum 0.8% of panel dimension vertical or horizontal
   b. Panel dimensions: Field measure structure before proceeding with any fabrication unless dimensions are guaranteed by General Contractor.
   c. Panel lines are to be sharp and true.
   d. Panel surfaces are to be free from warp or buckle.
6. Composite panels shall have a Class (Select A or B) building material rating when tested in accordance with ASTM E84 (Steiner Tunnel Test).
7. Acceptable material manufactures:

a. Alucobond – 3A Composites

b. Alpolic – Mitsubishi Chemical America, Inc.

c. Reynobond – Alco Architectural Products

3. Fasteners

A. All exposed rivets must be counter sunk and shall be aluminum or stainless steel

B. All concealed fasteners shall be weather coated or stainless steel.

4. Finishes

A. Coating should be a PVDF (Polyvinylidene Fluoride Finishes) (or FEVE (Fluoroethylene Vinyl Ether) on bright and high gloss levels) coatings utilizing 70% Kynar 500 resins.

B. Colors: as selected by owner from manufactures standard colors.

C. Other color options that can be chosen if specified from Architect:

1. Color: as selected by Architect from manufactures full range of colors and densities.

2. Color: match Architects sample.

3. Anodized Finish (if specified)

a. Class I, Clear Anodic Finish: AA-M12C22A41; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker; complying with AAMA 607.1.

b. Class I, Color Anodic Finish: AA-M12C22A42/A44; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker; complying with AAMA 606.1 or AAMA 608.1

5. Accessories

A. Provide continues aluminum extrusions full length around perimeter for panel reinforcement and alignment. Intermittent clips are unacceptable except at radius conditions.

B. Joint filler strips to be same material and color as panels unless color is specifically noted by Owner/Architect to be different. Use of caulk at joint is unacceptable.

C. Plastic shims shall be used as thermal separators between extrusions and dissimilar materials.

D. Sub-girts if required shall be of hat or Z configuration and be able to expansion and contraction, dynamic movements, and design load required.

E. Flashings shall be mill finish aluminum or match finish of aluminum composite panels (as close as possible) where exposed as directed by Architect; secured with concealed fastening method.

Part 3 – Execution

3.1.Preparation

A. Before proceeding, examine work of other sections under related work.

B. Coordinate drawings, scheduling, deliveries, installation, and close out documents.

C. Panel substructure shall be plumb, level, and square before commencement of panel installation as agreed upon with GC.

D. Panel substructure shall be free of defects and erected in accordance with established building tolerances and local building codes.

E. Panel substrate shall be structurally sound as determined by a certified registered engineer or building official.

F. If substrate areas are deemed harmful to the panel system or will constitute an improper installation do not proceed with the panel installation until the defected conditions have been corrected.

3.2.Installation

A. Install air barrier and subgirts as required.

B. Air barrier to be installed per manufactures written instructions before installation of panel system commences.

C. Building is required to be watertight prior to installation of panel system.

D. Work off GC established control lines and bench marks to insure that the panels are in the correct location.

E. Erect panel system in accordance with approved shop drawings as to meet specified design criteria and performance.

F. Erect panels level, plumb, and square in relation to the substrate framing and GC established working lines.

G. Panels shall be securely anchored and per engineering recommendations.

H. Panels shall be free of distortion, surface imperfections, and uniform in color within the hunter measurement standards.

I. Use concealed fasteners only as specified by this section.

3.3.Clean-up and Protection

A. Remove protective film from panels when complete unless directed otherwise.

B. Repair and touchup minor abrasions with an air dried Kynar or high grade enamel coating that matches color of damaged panel.

C. Protect panels from damage during construction as much as possible. Once completed GC to insure protection continues.

D. Replace damaged panels and components which cannot be satisfactorily repaired.

E. Dispose of all trash, containers, and crating during and at completion of work.

F. A final walk through with GC for acceptance of workmanship is required at completion of scope of work under this section.