

1200 SERIES "TECH CLAD" TECHNICAL SUPPORT SPECIFICATIONS

SECTION 07400 - ALUMINUM CLADDING PANELS

PART 1 - GENERAL

1.01 GENERAL

- A. Included in this Section is the furnishing and installation of exterior pre-formed aluminum wall panels.
- B. Included shall be the coordination with all related construction, including entrances, doors, window walls and all other adjacent and adjoining construction.
- C. The Contractor shall furnish to the Engineer complete data by an independent testing laboratory to substantiate that his system meets the non-combustibility, thermal and design criteria herein.

1.02 CERTAIN RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Window Wall
- B. Light-gage Structural Steel Studs
- C. Miscellaneous Metals
- D. Glass and Glazing
- E. Flashing
- F. Dry Wall Construction
- G. Thermal Insulation

1.03 DESIGN CRITERIA

- A. Wall panels, fastenings, anchorage, bracing and supports shall be designed to accommodate:
 - 1. Sustained, positive and negative wind pressures as specified herein.
 - 2. Joint design shall be such that the movement of panels, as a result of thermal changes or other causes, shall be noiseless and shall meet all requirements thereof for exclusion of air and water.
 - 3. The wall panels under full design load shall not deflect in the plane of the wall, more than 75% of the design clearance dimensions between the panels and the inside or outside structural members adjacent to them.
 - 4. The Contractor shall furnish the wall panels with horizontal, hairline joints as shown on the Contract Drawings.
 - 5. Regardless of the details of the exterior aluminum wall panels as shown on the Contract Drawings, it shall be the Contractor's responsibility to design a system whereby the panels shall be individually removable and replaceable without damage to adjacent panels or construction.

B. The Contractor shall verify all existing environmental conditions and variations at the site.

C. Anticipated Thermal Factors:

1. Provide for expansion and/or contraction of all component materials that could cause buckling, opening of joints, undue stress on fastenings and damage to weather seals.
2. Determine and adequately provide for ambient temperature changes for the various materials (and finishes) and manufacture all components to eliminate the possibility of detrimental effects on the wall panel system or adjoining construction.
3. Design for the following temperature range:
 - a) Exterior surface temperature range of minus 10 degrees F to plus 160 degrees F
 - b) Interior temperature, a constant 70 degrees F
4. Provide a positive thermal break, so positioned that no member will induce uncontrolled condensation when the exterior of the system is exposed to an ambient temperature of minus 18 degrees C (-0.4F), and interior ambient temperature of 22 degrees C (71.6F) and an interior ambient relative humidity of 50%.
5. Uncontrolled condensation shall be defined as when water will condense on the interior metal surface and run down, following the exposure to the above conditions for a period of at least eight (8) hours and then followed by the raising of the exterior ambient temperature of 10 degrees C (50F).

D. Wind Loads:

1. Design for wind load normal to the plane of the panel system of 30 (Thirty) PSF positive (acting inward) and negative (acting outward).
2. Maximum allowable deflection in a direction normal to the plane of the wall panels shall be 1/360 of the clear span of the member.
3. Maximum deflection in a direction parallel to the plane of the wall panels, under full load, shall not exceed 75% of the design clearance between the individual member and its mating part, directly below it.
4. Air infiltration through the panel system shall not exceed 0.025 CFM per square foot of wall footage and maximum 0.04 CFM per linear foot of joints and seams (other than continuously welded joints and seams) under inward (positive) pressure of 1.56 PSF acting normal to plane of wall panels.

E. Water Infiltration:

No water shall be permitted to infiltrate from the exterior to the interior side of the wall panel system when subjected to the following conditions:

1. Positive (inward) pressures normal to the plane of the wall panels over a minimum period of 30 minutes, both static and dynamic 10 PSF.
2. With water spray discharged at 10 PSF, minimum 10 gallons per hour at the frontal areas

F. Fire resistance:

1. All materials and components shall be certified by the manufacturers to be non-combustible, as defined in ASTM E - 176 and tested in accordance with ASTM designations.
2. Materials that have been previously tested by an approved testing laboratory and can be required to be re-tested.

1.04 SUBMITTALS

A. Submittals as follows, shall be made in accordance with the provisions of the Section of Division I entitled "Working Drawings and Catalog Cuts".

1. Shop Drawings:

- a) Shop Drawings shall clearly show at large scale (full size cross-section, jointing and other critical details) all connections, construction, adjoining construction, materials, insulation and backing.
- b) Installation drawings, at large scale, showing method and sequence of installation.
- c) Furnish full scale details of all openings that are to be made in the panel system that are to receive equipment such as vents, scuppers, etc.,
- d) Structural systems, components, connections and details for the support of the wall panel system and its components.

2. Samples:

- a) Furnish samples in quadruplicate (more if required by Engineer), minimum 12" x 12" of panels.
- b) Furnish samples of all related materials such as adhesives, sealants and hardware.
- c) Furnish color chips for approval, for each color prior to applying paint to samples.

3. Certification:

- a) The Contractor shall submit a certification stating that all materials provided for this Contract conform to the requirements specified in the Section.

1.05 COORDINATION

A. The Contractor shall coordinate the work of the Section with the work of all other Sections so that all mating parts, inserts and cutouts are properly provided for whether they are for shop or field installation.

B. All panels that are to be installed around existing (previously erected) items or items that are to be installed after the installation of the wall panels etc., shall be coordinated by the contractor. All cutting, fitting and other such preparation shall be performed in the shop, where possible.

PART 2 - PRODUCTS

2.01 GENERAL

A. Preformed aluminum wall panels shall be Series 1200 "Tech Clad" as manufactured by Industrial Building Panels, Troy, MI approved equal, and shall conform to the following requirements:

1. Components shall be shop fabricated and wherever practical furnished in large assemblies. They shall be carefully wrapped and crated at the factory, or protected by other means, identified for erection and shipped to the site for installation.
2. All panels both at factory and field shall be stored on edge, in a vertical, upright position until ready for erection, not flat.

B. Panel Flatness:

1. Panels shall be formed in such a way as to maintain their inherent flatness regardless of expansion, building movement, ambient temperature changes or any other factors that might affect their flatness.
2. Panels shall be considered flat when no portion of the panel exceeds 0.2% of panel dimensions in

width and length up to 0.1875" maximum, at an ambient temperature of 100 degrees F (38 degrees centigrade).

C. Panel Imperfections:

1. Dimples, lines recesses or any other imperfections in the visible surface such as may be caused by welding, tool marks or any other reason will not be acceptable.
2. Oil canning, warping, sagging or bellying will not be acceptable.

D. Panel Joints:

Joints will be permitted only where shown on the Contract Drawings and/or as approved by the Engineer.

E. Fasteners:

1. Fasteners in finished construction shall be concealed. Where permitted to be exposed in the final construction, the heads shall be permanently coated to match the finished material.
2. Connections to dissimilar metals shall be protected by approved means.

F. Corners:

All corners of exposed aluminum shall be sharp except where radius (rounded) corners are shown on the Contract Drawings.

2.02 PANEL CONSTRUCTION

A. All panels shall have concealed built-in, adequate stiffening and bracing.

B. All panel edges and corners shall be closed full length and sealed.

C. Provide all back-up plates, closures, flashing, insulation, drips, and accessories.

D. Assemblies shall be provided with adequate concealed weep holes to remove all moisture, condensations and spillages to the exterior. Provide two weep holes in the bottom of each panel.

E. All joints in wall panels shall be air and water tight.

F. Coping face panel shall be formed (or extruded) with joints properly backed up with battens and flashing gutters.

G. All openings in wall panels for vents, scuppers etc. shall be made in the factory and provided with proper closures and accessories to receive same.

2.03 METALS

A. Aluminum for Panels:

Panels shall be custom fabricated from minimum .120" (3.04mm) thick aluminum solid plate of 303H134 or 5005H2AQ alloy, in accordance with architectural drawings and manufacturer's approved shop drawings including verified field dimensions.

B. Aluminum (other panels):**Principal Extrusions:**

1. Minimum thickness 0.125" alloy 6030 Temper T5 ASTM B221.
2. Removable glazing stops minimum thickness 0.062".

C. Comply with the applicable practices of the Aluminum Industry and NAAMM (National Association of Metal Manufacturers).**D. Welding:**

1. Comply with recommendation of AWS and NAAMM for electrodes and methods, and producers of metals.
2. Qualify welders and welding procedures in accordance with ASME Section 9.
3. Aluminum panels and/or flashing requiring welding shall have a weld seam continuously welded on both sides. The exposed exterior surface shall be ground and sanded smooth prior to finishing.
4. The edges of heavy gauge aluminum shall be beveled prior to welding to allow for the welding seam to be ground smooth in the same plane as the base metal.
5. Welding seams shall not crack, pit, corrode or otherwise fail as a result of defect in materials and workmanship, and further promising to repair or replace defective work during a 10 day period following substantial completion of the work.

2.04 PAINTED FINISH**A. All surfaces of exterior aluminum wall panels shall be thoroughly cleaned, pretreated, primed and receive a final baked on coat of paint in accordance with the following. All coats shall be applied in strict compliance with the finish paint manufacturer's recommendations.**

1. Final Coat:
 - a) Final Coat shall contain full strength polyvinylidene fluoride resin system, similar and equal to "Kynar 500", product of Pennwalt Corp. System shall be "Fluorpon", manufactured by Glidden-Durkee Div., SMC Corp., or "Duramar", manufactured by PPG Industries. All such paint systems shall be applied by an application by the paint manufacturers mentioned.
 - b) finish coat shall be applied to an average dry film thickness of 1 mil. and shall sustain a hardness, Pencil test min. "F". Max. chalk No. 7 per ASTM D659.
2. Prime coat:
 - a) Corrosion inhibiting epoxy primer, compatible with and as recommended by final coat manufacturer.
 - b) Prime coat applied to a dry film average thickness of 0.4 mil.
3. Metal pretreatment:
 - a) All surfaces shall be thoroughly cleaned with a mild alkaline cleaner, washed and shall receive a uniform conversion coating of an acid-chromate-fluoride system recommended by the final coat manufacturer.
 - b) Comply with ASTM B449
4. Reverse side coating:
 - a) Wash coat 30 percent floss acrylic paint, as recommended by manufacturer, dry film thickness 0.5 mil.

- b) All paint, finishing systems shall be factory applied.
- c) Finish paint shall be uniform, without flow or applicator marks, streaks, blisters, craze lines or other imperfections.

D. Performance Requirements:

1. Salt spray: 1,000 hour test per ASTM B117.
2. Humidity Resistance: 1,000 hours at 100% relative humidity of 100 degrees F per ASTM D-1735.
3. Acid Alkali Resistance: 15 minute spot test per ASTM D 1308.

2.05 PROTECTION

All surfaces of metals shall be protected as follows:

- A. Dissimilar metals: Zinc-chromate and/or heavy brush coat of bituminous paint.
- B. Masonry, concrete etc.: Heavy brush coat of bituminous paint.
- C. Where movement is anticipated or desirable, separate materials with stainless steel shims or Teflon separators.

2.06 SUBSTRUCTURE

All reinforcing, steel members, bracing shall comply with applicable provisions section _____ Light-gage Structural steel studs.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Single Source Responsibility: Installer shall be under the direct supervision and employment of the wall cladding manufacturer. The manufacturer is to be solely responsible for the workmanship and quality of the finished installation.
- B. Installation of aluminum wall panels and related items shall be in accordance with "Working Drawings" and manufacturer's installation instruction and drawings.
- C. Under no circumstances will on site fabrication of special panels, corners, flashings and other related work be acceptable. All fabrications shall be done under controlled shop conditions.
- D. Panels shall be installed plumb and true, properly aligned, rigid and secure.
- E. Installation shall be performed by skilled workmen, thoroughly experienced in the handling and installation of such materials.
- F. All screws and fittings shall be drawn up tight.
- G. Sealants as specified in the "Sealants" Section of this Contract shall be installed in aluminum wall panels under the requirements of this Section.

H. Panel fabricator/installer shall assume undivided responsibility for all components of the exterior panel system including, but not limited to, attachment to subconstruction, panel to panel joinery, panel to dissimilar material joinery, and joint seal associated with panel system.

3.02 SITE PROTECTION

All panels shall be stored in an upright (on edge) position without permitting furnished materials to come in contact with mud, concrete, chemicals, cement moisture, untreated wood and sun.

3.03 FINAL CLEANUP

It shall be the Contractor's responsibility to clean all surfaces, using proper cleaners and/or solvents and leave entire system clean, free of all debris and completely acceptable to the Engineer/Contractor.