FAIRWAY
ALUMINUM SOLUTIONS

SECTION 055913

METAL BALCONIES

Specifier's Note: This section specifies custom fabricated architectural balcony decks and railings as indicated on architectural drawings and details. Refer to the manufacturer's product data, details, and installation instructions for designer's selections and additional information.

PART 1 GENERAL

1.1 SUMMARY

Specifier's Note: Select either Paragraphs A and B OR Paragraph C depending on the formatting on the Project Specification.

A. Work Results:
   1. Installation of prefabricated aluminum balconies.

B. Principal Products:
   1. Aluminum decking.
   2. Aluminum railing.
   3. Aluminum supports.

C. Section Includes:
   1. Prefabricated aluminum balconies.
   2. Stainless steel fasteners.

Specifier's Note: If using this Paragraph, select which sections are included in the Project Specification and delete the ones that are not. Sections not listed may be added by the Specifier.

D. Related Requirements:
   1. Section 042000 "Unit Masonry."
   2. Section 054000"Cold-Formed Metal Framing."
   3. Section 061000 "Rough Carpentry."
   4. Section 061053 "Miscellaneous Rough Carpentry."
   5. Section 071300 "Sheet Waterproofing."
   6. Section 071400 "Fluid-Applied Waterproofing."
   7. Section 072500 "Weather Barriers."
   8. Section 074213.16 "Metal Plate Wall Panels."
   9. Section 074213.19 "Insulated Metal Wall Panels."
   10. Section 07 4213.23 "Metal Composite Material Wall Panels."
   11. Section 074646 "Fiber Cement Siding."

1.2 REFERENCES

A. Reference Standards:
   1. Architectural Aluminum Manufacturers Association (AAMA):
      a. AAMA 2604 "Voluntary Specification, Performance Requirements, and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels."
      b. AAMA 2605"Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performance Organic Coatings on Aluminum Extrusions and Panels."
   2. American Society of Testing and Materials (ASTM):
      a. ASTM B25 "Specification for Aluminum Alloy Sheet and Plate."
      b. ASTM B209 "Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate."
      c. ASTM B210/B210M " Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes
      d. ASTM B221 "Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes."
      e. ASTM B633 "Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel."
      f. ASTM D2244 "Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates."
      g. ASTM F593 "Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Stud Bolts."
      h. ASTM F594 "Standard Specification for Stainless Steel Nuts."
      i. ASTM F1941 "Standard Specification for Electrodeposited Coatings on Mechanical Fasteners, Inch and Metric."
   3. North Association of Architectural Metal Manufacturers (NAAMM):
      a. AMP 500 "Metal Finishes Manual for Architectural and Metal Products."

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination Procedures:
   1. Coordinate installation of prefabricated metal balconies with the construction of structural framing and architectural finishes of walls.
      a. Schedule project specific meeting during or after submittal review.
   2. Provide ~~templates or~~ layout drawings and manufacturer's instructions for anchorage, including anchor bolts and sleeves that are imbedded in concrete.

B. Preinstallation Meeting Attendees and Procedures:
   1. Conduct meeting during or after initial submittal review.
   2. Additional Attendees: Architect, Contractor's Supervisor, Manufacturer’s Representative, and Product Installer.
   3. Additional Agenda Items:
      a. [Agenda item.]

1.4 ACTION SUBMITTALS

A. Product Data: Submit technical data on the following:
   1. Aluminum material making up structural elements.
   2. aluminum material making up architectural railing assemblies.
   3. Initial selection color charts.

B. Shop Drawings:
   1. Signed and sealed drawings and calculations by a professional engineer licensed in the State, Commonwealth, or Province that the Work is located in.
      a. Submit drawings showing sizes of structural members, decking, and railing system components.

C. Calculations:
   1. Signed and sealed by a professional engineer licensed in the State, Commonwealth, or Province that the Work is located in.
      a. Submit calculations indicating compliance with structural codes and regulations.

D. Schedules:
   1. Submit schedule listing differing types and sizes of balconies.

E. Samples:
   1. Railing: 6 inch long section, minimum, of top rail, bottom rail, and picket showing color and finish.
   2. Infill Panel: 24 inch by 24 inch, minimum, showing design, color, and finish.
   3. Finish coatings on metal substrate: 2 inches by 4 inches in size, minimum.

1.5 INFORMATIONAL SUBMITTALS

A. Test and Evaluation Reports: [Manufacturer] and [Independent testing agency] test results showing: Provided upon requests
   1. <Performance report>

B. Manufacturer’s instructions.

C. Source Quality Control Submittals: Shop ~~[test]~~ and [inspection] reports.

D. Field Quality Control Submittals: Field ~~[test]~~ and [inspection] reports.

E. Manufacturer Reports: Field [instruction], ~~[test],~~ and [inspection] reports.

F. Special Procedure Submittals: <Describe Procedure>.

G. Qualification Statements: Manufacturer, installer, and professional engineer.

1.6 SUSTAINABILITY SUBMITTALS

Specifier's Note: Keep paragraph if sustainability requirements apply to the Project. Delete if such requirements do not.

A. Building Product Disclosure and Optimization: Sourcing of raw materials documentation.
   1. Domestic sources of materials.
   2. Recycled content of materials.
   3. Recyclability at end of life.

1.7 CLOSEOUT SUBMITTALS

A. Warranty Documentation: For product finishes.

1.8 QUALITY ASSURANCE

Specifier's Note: Edit the manufacturer, installer, and professional qualifications as required by the prevailing building code and Project requirements.

A. Qualifications:
   1. Manufacturers: Five years of experience, minimum, in the manufacture of components making up prefabricated balconies.
   2. Installers: A qualified exterior finish trade contractor with three years of experience, minimum, in the installation of prefabricated balconies that are specified in this Section.
   3. Licensed Professionals: Engineer specializing in design of Work specified in this Section, licensed in the State, Commonwealth, or Province that the Work is located in.
   4. Welding Qualifications:
      a. Aluminum Fabrications: AWS D1.2.

Specifier's Note: Delete the paragraphs below if mockups will not be provided as part of the Quality Assurance requirements of the Project Specifications. If mockups are required select between Paragraph B and Paragraph C.

B. Mockups: Per Special Requests Construct mockup of prefabricated balcony as part of overall mockup of the exterior wall assembly. Demonstrate product interfaces, intersections, and terminations.
   1. Mockups Location: Field.

C. Mockups: Construct element specified in this Section in exterior wall mockup specified in Section 014341.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Delivery Requirements:
   1. Deliver products in undamaged manufacturer's original packaging with legible and readable labels.
      a. Labels to include project name, project address, name of contractor or installation subcontractor, and contents.

B. Storage Requirements:
   1. Store materials in an area protected from the weather and raised above the ground.

1.10 WARRANTY

Specifier's Note: For Paragraph A, select the warranty period as provided by the manufacturer. For Paragraph B, select the appropriate Warranty Period for the finish type specified later in this Section.

A. Manufacturer Warranty:
   1. Prefabricated Balcony: Warrant against product and installation failure.
      a. Failure includes deterioration of metal due to excessive exposure to salt in the air.
      b. Warranty Period: 10 years.
         1) Warranty period for installations within one mile of salt water: One year.

B. Finish Warranty: Repair deteriorated finishes or replace components.
   1. Deterioration includes the following:
      a. Color Fading: More than 5 Hunter units per ASTM D2244.
      b. Chalking: More than No. 8 rating per ASTM D4214.
      c. Paint cracking, peeling, or checking.
   2. Warranty Period: Ten years for AAMA 2604 finish.
   3. Warranty Period: 20 years for AAMA 2605 to finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

A. Manufacturers and Products:
   1. Fairway Aluminum Solutions; as basis of design.
   2. Or approved equal.

B. Substitutions: [Permitted] [Not Permitted]

2.2 SYSTEM DESCRIPTION

A. Aluminum balcony supported by diagonal metal struts attached to building structure.
   1. Aluminum decking.

2. Aluminum railing.
3. Aluminum struts.
4. Aluminum ledger

2.3 ALUMINUM DECKING

A. Perimeter Supports: Aluminum tube, 8 inches by 2 inches by 1/4 inches thick or 12 inches by 2 inches by 3/16 inches
   1. Perimeter Support at Wall: Ledger Aluminum angle, Size determined by Structural details

B. Infill Supports: Aluminum tube, 6 inches by 2 inches by 1/8 inches thick or 8 inches by 2 inches by 1/8 inches

C. Deck Support at Wall: Aluminum tube, 2 inch by 2 inch by 1/8 inch thick.

D. Decking Material: Interlocking proprietary extruded aluminum panel, [[XX inches long] [YY inches long] by TT inches thick] [See Drawings].

E. Flashing Angle: Aluminum, 1 inch by 2 inches by 1/16 inch thick.

F. Flashing at building by others

2.4 ALUMINUM SUPPORT STRUTS

A. Bottom Arm Plate: ASTM B209 Alloy 6061, Temper T6, 4 inches wide by 16-5/8 inches high by 3/8 inch thick with two 5/8 inch diameter holes for bolt attachments.

B. Top Arm Plate: ASTM B209 Alloy 6061 Temper T6 plate, 5 inches by 5 inches by 3/8 inch thick with 1/2 inch thick, 4 inch long knife plate welded to plate.

C. Support Rods:
   1. Upper Rod: 30 inches long with 9 inch long bracket slotted to fit wall-mounted knife blade fitting and provided with single bolted attachment point.
   2. Lower Rod: ~~30-13/16~~ up to 72 inches long with a 12 ½ inch long bracket slotted to fit balcony deck knife blade and provided with two bolted attachment points.

Specifier's Note: There are six styles of railing, each with a different shape of top rail with the bottom rail similar in size and shape. The specifier, in consultation with the designer, shall select one of the six.

2.5 ALUMINUM RAILING

A. Post Base: ASTM B209 Alloy 6061, Temper T6, extruded aluminum, size varies depending on post size.

B. Railing Styles:
   1. Top Rail:

a. Coronado: Aluminum extrusion, 3 inch by 2-9/16 inches
b. Del Mar: Aluminum extrusion, 2-15/16 inch by 2-1/4 inch.
c. Huntington: Aluminum extrusion, 1-1/2 inch by 2-3/16 inch.
d. Laguna: Aluminum extrusion, 1-1/2 inch by 2-5/8 inch.
e. Monteray: Aluminum extrusion, 1-5/8 inch by 3 inch.:
f. Newport: Aluminum extrusion, 4 inch by 2-1/4 inch.

2. Bottom Rail: Aluminum extrusion, 1-1/2 inch by 1-1/2 inch.
3. Posts and Intermediate Posts:
   a. 2 inch square post with 5 inch by 5 inch flange baseplate.
   b. 3 inch square post with 5 inch by 6 inch baseplate.
   c. 4 inch square post with 5 inch by 7 inch baseplate.
4. Post Caps:
   a. Standard: Flat cap.
   b. Custom: Ball cap.
5. Pickets:
   a. Standard: Aluminum extrusion, 3/4 inch square.
   b. Custom:
      1) Vertical:
         a) Aluminum extrusion, 1 inch square.
         b) Aluminum extrusion, 3/4 inch by 1 inch rectangle.
         c) Aluminum extrusion, 3/4 inch diameter.
      2) Horizontal: Schedule 40 aluminum extrusion, 3.4 inch diameter.
6. Vertical to Horizontal Members: Punched and concealed internal welds.

C. Infill Panels:
   1. Woven Mesh: Crimp lock type using 1/4 inch aluminum wire.
      a. Mesh size: 2 inch by 2 inch.

Specifier Note: Railings are designed to withstand the specified loads in accordance with the structural criteria specified in the International Building Code (IBC) editions 2012, 2015, 20,18, 2021, and 2024.

b. Openness: 79 percent.

2.6 PERFORMANCE

A. Delegated Design:
   1. Delegate prefabricated balcony design to licensed manufacturer [professional engineer].

Specifier Note: Include Paragraph A.2 when design criteria is indicated or listed on the Drawings. Include Paragraph A.4 to specify design criteria when design criteria is NOT indicated or listed on the drawings.

2. Structural Design Criteria: See Structural Drawings.
3. Structural Loads: See Drawings.

4. Handrail Structural Design:
   a. Live Loads: Design handrail to resist the following loads. These loads are not assumed to act concurrently.
      1) 50 plf uniform along the length of the handrail.
      2) 200 lbf concentrated at any point along the handrail, in any direction.
   b. Guard Structural Design: Design guardrail to resist the following loads. These loads are not assumed to act concurrently.
      1) Top Rail:
         a) 50 plf uniform along the length of the handrail.
         b) 200 lbf concentrated at any point along the handrail, in any direction.
      2) Infill: Design to withstand a 50 lbf load applied horizontally on an ares not to exceed 12 inches by 12 inches.
5. Allowable Deflection: at midspan, maximum L = distance between vertical supports
   a. H/24 plus L/96 where H equals the height of the railing assembly and L equals the top railing span.

Specifier's Note: Select one or more text items below for accessibility requirements. Typically select either the Department of Justice requirements or the ICC/ANSI A117.1. Confirm that the accessibility code of the State where the project is located applies to the Project. Delete text that does not apply to the Project.

B. Accessibility Requirements: Applicable provisions in [Department of Justice Publication 2010 ADA Standards for Accessible Design], [ICC/ANSI A117.1], or [state accessibility code].

C. Environmental Performance:
   1. Expansion and Contraction: Withstand 120 degree F ambient and 180 degree F surface thermal cycling without failure.

2.7 MATERIALS

A. General:
   1. Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view.
   2. Sustainability:
      a. Recycled Content: Not less than 30 percent post-consumer content and not less than 35 percent pre-consumer content.

B. Aluminum Extrusions: ASTM B221, Alloy 6063, Temper T6.

C. Aluminum Plate and Sheet: ASTM B209, manufacturer recommended alloy and temper.

D. Aluminum Castings: ASTM B25, manufacturer recommended alloy and temper.

E. Brackets, Flanges, and Anchors: Same material and finish as supported rails.
   1. Provide formed brackets with predrilled holes for exposed bolt anchorage.

F. Fasteners: Select fasteners of grade, type, and class required to be capable of withstanding design loads, and to produce connections suitable for anchoring handrails and railings to other types of construction indicated.
   1. Fastener Material:
      a. Stainless Steel, Type 304.

Specifier ~~Note~~: Select Type 316 Stainless Steel if the Project is located in coastal, maritime, or other locations that have higher than normal humidity and salt content in the air.

      b. Stainless Steel, Type 316.

G. Post-Installed Anchors: Hilti TZ2 and acceptable to the authorities having jurisdiction.
   1. Exterior Locations:
      a. Stainless Steel, Alloy Group 1.
      b. Stainless Steel, Alloy Group 2
         1) Stainless Steel Bolts: ASTM F593.
         2) Stainless Steel Nuts: ASTM F594.
   2. Interior Locations: Carbon-steel components, zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5.

H. Welding Rods: In accordance with AWS specifications for metal alloy welded.
   1. Aluminum: Provide alloy and type as recommended by the manufacturer as required for color match, strength, and compatibility in fabricated items.

I. Isolation Barrier: Self-adhering window and door flashing. See Division 08 sections for specified product.

2.8 FABRICATION

A. Factory Assembly: Fit and shop assemble components in the largest practical sizes for delivery to the site.

B. Fabricate components with joints tightly fitted and secured. Finish as needed spigots and sleeves to accommodate site assembly in installation.

C. Supply components required for anchorage of fabrications. Fabricate anchor plates and related components of the same material and finish as the railing assembly.

D. Accurately form components to each other and to the building structure.

E. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

F. Railing Ends: Closed, except when railing returns within 1/8 inch of wall face.

2.9 FINISHES

A. Color Coating: Two coat fluoropolymer finish with minimum 70 percent PVDF resin by weight in color coat; AAMA 2605.
   1. Color and Gloss: Architect selected or See Drawings.

Specifier Note: Color and finish appearance may vary upon factory application due to difference in spray equipment, line conditions, or day-to-day process variations. As a result, color uniformity may not be measured against laboratory prepared samples.

B. Powder Coating: Thermoset polyester; AAMA 2604 but 1.5 mil minimum thickness.
   1. Color and Gloss: Architect selected or See Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that construction of architectural substrates and structural members are acceptable to the manufacturer.

3.2 PREPARATION

Specifier's Note: Select the bracketed text that best relates to the Project. Delete the text that does not apply.

A. Supply items to be [cast into concrete] [embedded in masonry] [attached to wood framing].

3.3 INSTALLATION

A. Install prefabricated aluminum balconies. Follow manufacturer's instructions.

B. Install components plumb and level, accurately fitted, and free from distortion or defects.

C. Install prefabricated aluminum balcony assembly to accommodate tight joints and secure installation.

D. Anchor posts to structure. Secure posts in accordance with manufacturer's instructions.

E. Attach Picket / Mesh infill panels to posts.

F. Provide isolation barriers between balcony assembly and substrates.

G. Railing Tolerances:
   1. Posts: Plumb within 1/16 inch in 3 feet.
   2. Rails: Variation from horizontal level and variation from parallel with rake of steps and ramps for sloped rails not to exceed 1.4 inch in 12 feet.

3.4 CLEANING

A. Clean exposed metal surfaces at completion of installation and again prior to the date of Substantial Completion.

3.5 PROTECTION

A. Protect finishes from damage from continued construction activities .
   1. Minor dents and dings may be repaired using manufacturer's touch-up paint.
   2. Damages that cannot be repaired shall be replaced with new undamaged components.

END OF SECTION