

CS Platform Solutions - Modular Balcony Systems (MBS)

MBS Series

Suggested Specifications | Section 13 24 00

Part 1 - General

1.01 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 Summary

- A. Section Includes:
 - 1. Prefabricated steel balconies
 - 2. Prefabricated steel balcony railings:
 - a) Steel tube railings attached to steel balconies with infill type:
 - (1) Vertical pickets [AND/OR]
 - (2) Horizontal pickets [AND/OR]
 - (3) Woven wire mesh [AND/OR]
 - (4) Welded wire mesh
- B. Related sections: The following sections contain requirements related to this section:
 - 1. Section 01 33 00 - SUBMITTAL REQUIREMENTS
 - 2. Section 01 74 19 - CONSTRUCTION & DEMOLITION WASTE MANAGEMENT
 - 3. Section 01 81 13 - SUSTAINABLE DESIGN REQUIREMENTS - LEED
 - 4. Section 01 81 17 - LOW EMITTING MATERIAL REQUIREMENTS
 - 5. Section 01 81 33 - SUSTAINABLE DESIGN REQUIREMENTS - EC
 - 6. Section 01 8 119 - CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT
 - 7. Section 05 50 00 - METAL FABRICATIONS
 - 8. Section 06 10 00 - ROUGH CARPENTRY
 - 9. Section 07 42 63 "PREFABRICATED BUILDING SKIN SYSTEM" (PBSS) FOR ATTACHING THE BALCONIES TO THE PBSS PANELS.

1.03 Action Submittals

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data:
 - 1. Manufacturer's data sheets on each product to be used.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Typical installation methods.
- C. Verification Samples: For each material and finish specified, two samples representing actual finishes. *(Delete if not required.)*
- D. Shop Drawings: Architect and manufacturer approved shop drawings showing details including but not limited to locations, components, anchorage requirements, trim details, accessories, tolerances, clearances, and relationship to adjacent construction.

1.04 Quality Assurance

- A. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
- B. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

1.05 Identification, Delivery, Storage, and Handling

- A. All components of the prefabricated metal balcony work shall be identified after fabrication by marks clearly indicating their location in the exterior wall. Packaging of components shall be so selected to protect the components from damage during shipping and handling.
- B. Storage on Site:
 - 1. Store prefabricated metal balcony components in a location directed by the Contractor and in a manner to avoid damage to the components. Stacking shall be done in a way which will prevent bending, excessive pressure, abrasion or other permanent damage of the component and its finished surfaces.

MODULAR PRODUCT SOLUTIONS

2. Store prefabricated metal balcony components and materials in a clean, dry location, away from uncured concrete work, and other construction activities. Cover with non-staining waterproof paper, tarpaulin, or polyethylene sheeting in a manner that will permit circulation of air inside the covering.
- C. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of metals.

Part 2 – Products

2.01 Manufacturers

- A. Basis of Design – Manufactured by Construction Specialties subject to compliance with requirements listed. Modular Balcony Systems and related materials specified herein and indicated on the drawings shall be manufactured by: Construction Specialties, Platform Solutions, LLC, 2340 Interstate 35W, Frontage Rd., Denton, TX 76207. Tel. 800.233.8493. Email: cet@c-sgroup.com. No substitutions.
- A. Drawings and specifications are based on manufacturer's literature from Construction Specialties, Inc., Platform Solutions, LLC, drawings, and specifications unless otherwise indicated. Other manufacturers must be approved equal by Architect/Owner.

2.02 Materials

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Recycled Content of Steel Products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.
- C. Steel
 1. Plates, Shapes, and Bars: ASTM A 36.
 2. Rolled-Steel Floor Plate: ASTM A 786, rolled from plate complying with ASTM A 36 or ASTM A 283, Grade C or D.
 3. Uncoated, Cold-Rolled Steel Sheet: ASTM A 1008, either commercial steel, Type B, or structural steel, Grade 25, unless another grade is required by design loads; exposed.
 4. Galvanized-Steel Sheet: ASTM A 653, G90 coating, either commercial steel, Type B, or structural steel, Grade 33, unless another grade is required by design loads.
 5. Rolled-Steel Floor Plate: ASTM A 786, rolled from plate complying with ASTM A 36 or ASTM A 283, Grade C or D.
 6. Steel Tubing for Railings: ASTM A 500 (cold formed) or ASTM A 513.
 7. Steel Pipe for Railings: ASTM A 53, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

2.03 Performance Requirements

- A. Delegated Design: Design prefabricated metal balconies, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance of Balconies: Metal balconies shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 1. Wind Loads: The prefabricated metal balcony work shall be designed, fabricated, and installed to withstand sideways from maximum inward and outward wind pressures, and the maximum upward/downward wind pressures as indicated on the structural drawings for components and cladding.
 2. Dead Loads: Prefabricated metal balcony dead loads plus deadloads of balcony soffit assemblies.
 3. Prefabricated Metal Balcony Platform Live Loading:
 - a) Uniform load of 60 lb./sq. ft. (293 kg/sq. m).
 - b) Wind Loading: as indicated in structural drawings.
 - c) Snow Loading: As indicated on structural drawings.
- C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 1. Handrails and Top Rails of Guards:
 - a) Uniform load of 50 lb./ft. applied in any direction.
 - b) Concentrated load of 200 lb. applied in any direction.
 - c) Uniform and concentrated loads need not be assumed to act concurrently.
 2. Infill of Guards:
 - a) Concentrated load of 50 lb. applied horizontally on an area of 1 sq. ft.
 - b) Infill load and other loads need not be assumed to act concurrently.
- D. Deflection Limitations:
 1. Base calculations for the following deflections upon the load combinations of ASCE 7, to include dead loads and maximum live, and wind loads, frame deflections, thermal stresses, and erection tolerances.

MODULAR PRODUCT SOLUTIONS

a) Deflection of any framing member in a direction normal to the plane of the prefabricated metal balcony shall not exceed 1/360 of the clear span between structural supports or 1/2 inch, whichever is less.

b) Railing Deflection Criteria: The larger deflections at the top from the horizontal live loads shall be the lesser of 3/4-inch (20 mm) or h/90 for cantilever elements, and h/175 for simple span elements, where h is the distance from the platform level to the top of guardrail. Applied loads shall be allowable stress design loads.

2.04 Prefabricated Metal Balconies General

A. Prefabricated Steel Balconies:

1. Source Limitations: Obtain each type of balcony from single source from single manufacturer.
2. Product and Manufacturers: Provide metal balcony assemblies from one of the following meeting the performance requirements:

a) Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- (1) Basis-of-Design Product: Construction Specialties, Platform Solutions, LLC., Denton, TX

B. Mounting Style:

1. Face-mount [AND/OR]
2. Cantilever

C. Size:

1. 4'-0" x 8'-0" [AND/OR]
2. 4'-0" x 10'-0" [AND/OR]
3. 5'-0" x 10'-0"

D. Support Components: Provide rods with attachment plates.

2.05 Platforms

A. Platforms of pan poured concrete [AND/OR]

B. Platforms of composite decking (See c-sgroup.com for styles and color charts.)

C. Platforms of diamond plate

2.06 Railings

A. General: Comply with the following:

1. Fabricate newels of square steel tubing and provide newel caps of pressed steel.
2. Rails may be bent at corners, rail returns, and wall returns, instead of using prefabricated fittings.
3. Connect posts to balcony framing by direct welding unless otherwise indicated.

B. Steel Railings for Pre-assembled steel balconies: Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.

1. Rails and Posts: 1-1/2-inch square tubing rails and posts.
2. Intermediate Rails Infill Types:
 - a) Vertical picket railing.
 - b) Horizontal picket railing.
 - c) Woven wire mesh panel
 - d) Welded wire mesh panel

C. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose.

D. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of railing members with prefabricated end fittings.

F. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.

1. Connect posts to balcony framing by bolting posts to frame unless otherwise indicated.
2. For galvanized railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.
3. For non-galvanized railings, provide non-galvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.

G. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

MODULAR PRODUCT SOLUTIONS

- H. Where seismic resilience is required, provide railings, connections, and/or components identified in A.-I. which will accommodate movement without permanent inelastic deformation.

2.07 Fasteners

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
 - 1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for exterior stairs.
- D. Machine Screws: ASME B18.6.3.
- E. Plain Washers: Round, ASME B18.22.1.
- F. Lock Washers: Helical, spring type, ASME B18.21.1.
- G. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 194, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.08 Miscellaneous Materials

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal water reducible metal primer in color Gray.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- D. Concrete Materials and Properties: Comply with requirements in Section 033000 "Cast-in- Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi unless otherwise indicated.
- E. "Welded Wire Fabric: ASTM A 185, 6 by 6 inches, W1.4 by W1.4, unless otherwise indicated.

2.09 Finishes

- A. Comply with NAAMM "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal balconies after assembly.
 - 1. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed products:
 - 2. Apply shop primer to uncoated surfaces of metal balcony components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1 "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 - 3. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 4. See Section 099600 "High-Performance Coatings" for surface preparation of metal stairs and railings.
- C. Finish Type:
 - 1. Primed only [AND/OR]
 - 2. Galvanized [AND/OR]
 - 3. Powder Coated (See c-sgroup.com for color chart.)

2.10 Fabrication – General

- A. Provide complete modular balcony units, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor modular balcony units
 - 1. Join modular components by bolting unless otherwise indicated.
 - 2. Use connections that maintain structural value of joined pieces.
 - 3. Fabricate platforms so finished walking surfaces slope to drain.
- B. Preassembled Balconies: Assemble modular balcony units in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

MODULAR PRODUCT SOLUTIONS

- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. Weld connections to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Weld exposed corners and seams continuously unless otherwise indicated.
 - 4. At exposed connections of pre-assembled steel balconies, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.
 - 5. At exposed connections of ornamental steel-framed balconies, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and so contour of welded surface matches that of adjacent surface.
- G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.
- H. Fabricate joints that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

Part 3 – Execution

3.01 Installation – General

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing modular balcony units to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors. Perform cutting, drilling, and fitting required for installing
- B. Perform cutting, drilling, and fitting required for installing metal balconies. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- C. Install modular balcony units by bolting balcony framing to structure or to weld plates cast into concrete unless otherwise indicated.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- F. Field Welding: Comply with requirements for welding in “Fabrication, General” Article.
- G. Place and finish concrete fill for treads and platforms to comply with Section 033000 “Cast- In-Place Concrete.”
- H. Install precast concrete treads with adhesive supplied by manufacturer

3.02 Installing Railings

- A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:
 - 1. Anchor posts to steel by bolting directly to steel supporting members.

3.03 Adjusting and Cleaning

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

END OF SECTION 13 24 00
