



## SECTION 05 75 13 - DECORATIVE PERFORATED PANELS

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. Laser cut decorative perforated metal panels.
- B. Component-based, decorative perforated metal panel assemblies:
  - 1. Canopies
  - 2. Juliet balconies
  - 3. Wall screens
  - 4. Green screens
  - 5. Rain screens
  - 6. Balcony guardrails
  - 7. Stair guardrails
  - 8. Fencing and gates
  - 9. Sunshades
  - 10. Flush Balconies
  - 11. Brackets
  - 12. Hardware

#### 1.2 RELATED REQUIREMENTS

- A. Embedded anchor plates and structural connections. Coordinate support sizes and locations.

#### 1.3 SUBMITTALS

- A. Product Data: Supplier's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Description of materials, components, fabrication and finishes.
- B. LEED Submittals:
  - 1. Product Data for Credits EA1, MR 3.1, MR 3.2, MR 4.1, MR 4.2, MR 5.1, MR 5.2, EQ 4.1, EQ 4.2, and EQ 7.1. For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.
- C. Shop Drawings: Supplier's shop drawings, including plans, elevations, sections and details indicating materials, components, sizes, dimensions, tolerances, hardware, fasteners, finishes, options, accessories and installation methods. Provide details of attaching metal panels to supports.
- D. Verification Samples: For each product specified, provide two 3" x 6" samples of powder coat or Kynar color chips, or three 2" x 2" anodized aluminum samples representing supplier's full range of available finishes and colors. If needed, up to six different powder coat samples may be provided for design review.
- E. Pattern Samples: One 12" x 12" flat panel, without finish. Pattern scaling may vary depending on selection.
- F. Closeout Submittals: Supplier's maintenance and cleaning instructions and warranty.

#### 1.4 QUALITY ASSURANCE

- A. Mockup: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockups at client's request as indicated on the Drawings, cost to be determined by design.
  - 2. Demonstrate the proposed range of aesthetic effects and fabrication.
  - 3. Retain and maintain mockup during construction in an undisturbed condition as a standard for judging the completed work.
  - 4. Approved mockup in an undisturbed condition at the time of Substantial Completion may become part of the completed work.
- B. Engineering:
  - 1. Standard railing/guardrails, stair guardrails, wall screen, canopies, sunscreens & rain-screen assemblies to be engineered by supplier for standard loading criteria and geometry layout.
  - 2. Custom railing/guardrails, stair guardrails, wall screen, canopies, sunscreens & rain-screen assemblies' structural design to be prepared by the supplier or registered structural engineer licensed in state in which Project is located. Engineering for panels and panel assembly will be provided; any structural attachments or connections to be provided by the Engineer of Record.
- C. Fabricator Qualifications:
  - 1. Fabricator Qualifications: A firm with a minimum of 8 years experienced in producing decorative formed perforated panels similar to that indicated for this Project and with a record of successful in-service performance as well as sufficient production capacity to produce required units.

## 1.5 PROJECT CONDITIONS

- A. Installer must be a Bok certified installer or pre-approved by BOK Modern.
- B. Installer to verify actual locations of walls and other construction contiguous with metal panels by field measurements before fabrication and indicate measurements on shop drawings. Coordinate construction to ensure that panels conform to built openings.
- C. Where measurements cannot be taken without delaying the Work, Installer to guarantee panel dimensions will fit and proceed with fabrication of product without field verification. Coordinate construction to ensure that panels conform to guaranteed openings.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials in manufacturer's original packaging with corresponding labels and identifying information.
  - 1. Unload, store, and erect panels in a manner to prevent bending, warping, twisting, and surface damage.
- B. Storage and Handling Requirements
  - 1. Store panels vertically, covered with appropriate weathertight and ventilated covering. Store panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.
  - 2. Do not stack pallets. Panels that are stacked need to be protected from each successive panel above and below.
  - 3. Avoid overhandling and excessively moving panels in order maintain protective packaging.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE SUPPLIER

- A. Bok Modern Inc. San Francisco, CA 94109 415-749-6500 [info@bokmodern.com](mailto:info@bokmodern.com)  
[www.bokmodern.com](http://www.bokmodern.com)
- B. Substitutions: None.

### 2.2 SYSTEM DESCRIPTION

- A. Structural Performance:
1. Top Rail of Guards: Shall withstand the following loads:
    - a. Concentrated load of 200 lbf (0.89kN) applied at any point and in any direction.
    - b. Uniform load of 50 lbf-ft. (0.07kN-m) applied horizontally and concurrently with uniform load of 100 lbf-ft. (0.14kN-m) applied vertically downward.
    - c. Concentrated and uniform loads above need not be assumed to act concurrently.
  2. Handrails Not Serving As Top Rails: Shall withstand the following loads:
    - a. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.
    - b. Uniform load of 50 lbf-ft. (0.07kN-m) applied in any direction.
    - c. Concentrated and uniform loads above need not be assumed to act concurrently.
  3. Guard Infill Area: Shall withstand the following loads:
    - a. Concentrated horizontal load of 200 lbf (0.89 kN) applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Loads need not be assumed to act concurrently with loads on top rails in determining stress on guard.
    - b. Thermal Movements: Panels shall allow for movements resulting from 120 deg F (49 deg C) changes in ambient and 180 deg F (82 deg C) surface temperatures and base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
    - c. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.

## 2.3 MATERIALS

- A. Fasteners for Anchoring Metal Panels to Other Construction: Select fasteners of type, grade and class required to produce connections suitable for anchoring metal panels to other types of construction indicated and capable of withstanding design loads.
- B. Fasteners for Interconnecting Metal Panel Components: Use fasteners fabricated from same basic metal as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or non-compatible with materials joined. Avoid fastening dissimilar materials, separate with isolating hardware where necessary.
- C. Brackets, Flanges and Anchors: Same metal and finish as supported metal panels, unless otherwise indicated.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

## 2.4 ORNAMENTAL PERFORATED METAL PANELS

- A. Metal Surfaces: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations or blemishes; unless allowed for specific metal types and finishes.
- B. Perforated Aluminum Sheet: AA5052-H32, **[0.125-inch (3.17 mm)] [0.1875-inch (4.76 mm)] [Insert custom thickness]** thick.
- C. Perforated Stainless Steel Sheet: ASTM A240/A240M, **[Type 304] [Type 316L], [0.062-inch (1.57 mm)] [Insert custom thickness]** thick.
- D. Perforated Cold-Rolled Steel Sheet: ASTM A1008/A1008M, commercial steel Type B, **[0.074-inch (1.88 mm)] [Insert custom thickness]** thick.
- E. Perforated Corten Steel Sheet: ASTM A242/A242M, **[0.074-inch (1.88 mm)] [Insert custom thickness]** thick.
- F. Laser Cut Proprietary Pattern: **[As selected by the Architect/Engineer from supplier's full library of designs] [Custom design]**.

## 2.5 FABRICATION

- A. Fabricate metal panel assemblies to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish and anchorage, but not less than required to support structural loads.
- B. Fabricate systems in accordance with approved shop drawings and the supplier's instructions. Form work true to line and level with accurate angles and surfaces.
- C. Assemble metal panels in the shop to greatest extent possible to minimize field splicing and assembly.
- D. Cut, drill and laser cut metals cleanly and accurately. Remove burrs and ease edges; unless allowed for specific metal types and finishes. Remove sharp or rough areas on exposed surfaces.
- E. Cut, reinforce, drill and tap as indicated to receive finish hardware, screws and similar items.
- F. Use grommets, bushings and washers or methods as recommended by the supplier for separation of dissimilar metals.

## 2.6 FINISHES

- A. Comply with NAAMM's MFM for recommendations for applying and designating finishes.
- B. Appearance of Finished Work:
  - 1. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved samples.
  - 2. Noticeable variations in same piece are not acceptable, except for steel and anodized aluminum.
  - 3. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

## 2.7 FINISHES FOR ALUMINUM

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, MIL-A-8625F Type II, Architectural Class 1, 0.7 to 1.2 mil coating thickness.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A44, MIL-A-8625F Type II, Architectural Class 1, 0.7 to 1.2 mil coating thickness.
  - 1. Color: Full range of bronze colors.
- C. Color Anodic Finish: AAMA 611, AA-M12C22, MIL-A-8625F Type III, Class 1, 1.0 to 2.0 mil coating thickness.
  - 1. Color: Dark grey
- D. Powder Coating: Tiger Drylac 38 with primer- 2 coat system. Pretreat according to AAMA 2604; to withstand a minimum of 3000hrs. ASTM B117 or 700hrs ASTM G85 Annex A2. Apply TIGER 60/70000 at minimum of 2.0 mils 50% or less cure to ensure proper inter coat adhesion to topcoat. Apply TIGER Series 38 AAMA 2604 compliant topcoat at a minimum of 2.5 mils and process according to supplier's recommendations.
  - 1. Color and Gloss: **[As selected from supplier's full range of choices] [Custom].**
- E. Fluoropolymer PVDF Coating System: Standard 2-coat, thermocured system composed of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluorocarbon topcoat complying with AAMA 2605 and AA-C12C42R1x using 70% minimum polyvinylidene fluoride resin by weight (either "Kynar 500" or "Hylar 5000" Fluorocarbon Resin by Atofina Chemical or Ausimont USA, Inc.), applied to an average total dry film thickness of 1.6 mils.
  - 1. Color and Gloss: **[As selected from supplier's full range of choices] [10 Year Manufacturer's Warranty].**

## 2.8 FINISHES FOR STEEL

- A. Surface finish options for steel
  - 1. Grain finish (for panels 36" wide or smaller)
  - 2. Orbital finish
  - 3. Mill finish (if available)

- B. Powder Coating: Tiger Drylac 38 with primer- 2 coat system. Pretreat according to AAMA 2604; to withstand a minimum of 3000hrs. ASTM B117 or 700hrs ASTM G85 Annex A2. Apply TIGER 60/70000 at minimum of 2.0 mils 50% or less cure to ensure proper inter coat adhesion to topcoat. Apply TIGER Series 38 AAMA 2604 compliant topcoat at a minimum of 2.5 mils and process according to supplier's recommendations.
  - 1. Color and Gloss: **[As selected from supplier's full range of choices] [Custom].**
- C. Stainless Steel
  - 1. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
  - 2. Run grain of directional finishes with long dimension of each piece.
    - a. Bright, Cold-Rolled, Unpolished Finish: No. 2B.
    - b. Directional Satin Finish: No. 4.
    - c. Dull Satin Finish: No. 6.
    - d. Reflective, Directional Polish: No. 7.
    - e. Mirror-like Reflective, Non-directional Polish: No. 8.
  - 3. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Installer to verify field measurements are acceptable to suit assembly tolerances.
- C. Installer to verify supports and anchors are correctly positioned and set.

### 3.2 PREPARATION

- A. Provide items required to be cast into concrete or embedded in masonry with setting templates.
- B. Installer to take field measurements after permanent end terminations are in place and prior to preparation of shop drawings and fabrication, to ensure fitting of work.
- C. Prepare surfaces using the methods recommended by the supplier for achieving the best result for the substrate under the Project conditions.

### 3.3 INSTALLATION

- A. Installation to be completed by certified Bok Modern Installer with minimum 5 years of experience or pre-approved by Bok Modern.
- B. Install metal panels in accordance with supplier's instructions.
- C. Install metal panels plumb, level, square, true to line and rigid. Fit exposed connections together to form tight, hairline joints.
- D. Adjust metal panels before anchoring to ensure alignment at abutting joints.
- E. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood or dissimilar metals, with a heavy coat of bituminous paint.
- F. Use supplier's supplied hardware for panel-to-panel connections.
- G. Attach metal panels securely in place using anchorage devices and fasteners as indicated by EOR.
- H. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.

### 3.4 ADJUSTING

- A. Touch-up, repair, or replace damaged products before Substantial Completion. Manufacturer to provide proper coating for repainting any exposed steel surfaces.
- B. Return items that cannot be refinished in field.

### 3.5 CLEANING

- A. Clean metal panels with water and light detergent promptly after installation in accordance with supplier's instructions.
- B. Do not use harsh cleaning materials or methods that will damage finish.
- C. Do not use abrasive cleaners.

### 3.6 PROTECTION

- A. Protect finishes of metal panels from damage during construction period with temporary protective coverings approved by metal panel supplier. Remove protective coverings at the time of Substantial Completion.
- B. Replace defective or damaged components. Restore finishes damaged during installation and construction period so no evidence remains of correction work.
- C. Touch-up, repair or replace damaged products before Substantial Completion. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit or provide new unit.

END OF SECTION