

PW40 Carbon Steel Ornamental Fencing

Model Specification for type PW40 Carbon Steel PressWeld Gratings as Manufactured by Ohio Gratings, Inc. 5299 Southway St. SW, Canton, Ohio 44706 or approved equal.

NOTE: The specifier will need to edit this specification to reflect the options in this document shown in **Red**. Some editing can be accomplished by deleting unnecessary requirements.

SECTION 32 31 20 Ornamental Steel Fencing

Part 1: General

1.1 Section Includes

- A. Prefabricated custom-designed steel bar gratings
- B. Miscellaneous installation hardware and accessories

1.2 References

- A. ASTM A36 / A36M – Standard Specification for Carbon Structural Steel.
- B. ASTM A123 / A123M – Standard Specification for Zinc Coating via Hot-Dip on Iron and Steel Products.
- C. ASTM A500 / A500M – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- D. ASTM B117 – Standard Practice for Operating Salt Spray Apparatus.
- E. ASTM D 1186 – Standard Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings applied to a Ferrous Base.
- F. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
- G. NACE No. 3/SSPCS-SP 6 – Commercial Blast Cleaning.

1.3 Action Submittals

- A. Product Data: The contractor shall submit the manufacturer's catalog pages including load tables, anchor details and standard installation details.
- B. Shop drawings: The contractor shall submit for approval shop drawings for the fabrication and erection of all gratings, based on construction drawings of current issue. Include plans, elevations, and details of sections and connections as required. Show type and location of all fasteners.
- C. Samples of Grating and Anchorage system shall be submitted for approval.

1.4 Quality Assurance

- A. Manufacturer Qualification: A company specializing in the manufacture of metal bar gratings with not less than 10 years of documented experience.

B. Fabrication tolerances shall be in accordance with applicable provisions and recommendations of ANSI/NAAMM 531-09 Metal Bar Grating Manual.

Part 2: Products

2.1 Source Requirements:

Design is based upon use of gratings as manufactured by Ohio Gratings, Inc. and terminology used herein may include reference to the specific performance or product of this manufacturer. Such reference shall be construed only as establishing the quality of materials, operational features and workmanship to be used under this section and shall not, in any way, be construed as limiting competition.

2.2 Manufacturers:

Acceptable Manufacturers include Ohio Gratings, Inc. 5299 Southway St. SW, Canton, Ohio 44706, 800.321.9800 www.ohiogratings.com , or approved equal.

2.3 Manufactured Units:

A. **Description:** Carbon Steel PressWeld Grating type **PW40**. The rectangular bearing bars aligned and pressure-welded to smooth round rods in a grid pattern.

1. Bearing Bar Spacing: 1-3/4" on center.
2. Bearing Bar Depth: 1".
3. Bearing Bar Thickness: 1/8".
4. Cross Bar Spacing: 1-3/4" on center.

B. Fabrication:

- a. Trim band ends with steel member as indicated on architectural drawings.
- b. Fabricate cutouts in grating sections for penetrations as indicated on architectural drawings. Band ends and cuts in grating with bars of same size and material as bearing bars.

C. Design Criteria:

1. **Loading:** Grating Products shall be designed and manufactured to meet any applicable live load conditions by local code with a maximum deflection of L/180 for the clear spans shown on the drawings. Bearing bar depth shall be as shown on the contract drawings or as recommended by the manufacturer to meet the loading requirements, clear span conditions and maximum deflections specified.

2. **Bearing Bar Orientation:** Per architectural drawings.

D. **Materials:** Bearing bars and banding are mild carbon steel.

E. **Fabrication Tolerances** shall be in accordance with ANSI/NAAMM MBG 531-09 Metal Bar Grating Manual.

2.4 Finishes:

- A. Galvanized Finish:**
 - a. Apply 3-5 mil coating of zinc to welded steel grille work in accordance with ASTM A123 after fabrication.

- B. Galvanized and Powder Coat Finish:**
 - a. Hot-dip galvanize welded steel grille work to provide 3-5 mil coating of zinc in accordance with ASTM A123.
 - b. Mechanical Surface Preparation: Lightly abrasive blast galvanized metal surface to remove surface oxidation and contamination in accordance with NACE No. 3/SSPC-SP 6 to 0.001 to 0.002-inch surface profile.
 - c. Chemical Surface Preparation: Treat galvanized and abrasive-blasted surface with multi-metal phosphate-chemical-conversion coating process.
 - d. Powder Coat:
 - i. Apply polyester powder in accordance with ASTM D 1186.
 - ii. Heat cure in accordance with powder manufacturer's cure instructions.
 - iii. Minimum Hardness, ASTM D 3363: H2
 - iv. Direct impact Resistance, ASMT D 2794: withstand 160 inch-pounds.
 - v. Salt Spray Resistance, ASTM B 117: No undercutting, rusting, or blistering after 1000 hours in 5 percent salt spray at 95 degrees F and 95 percent relative humidity, and after 2,000 hours less than 3/16" undercutting.
 - vi. Color of Powder Coat Finish: To be selected from Grating Manufacturer Standard Range of Architectural Colors.

2.5 Accessories:

- A. Steel Posts:** Support welded steel grille work infill panels.
 - a. Flat Bar Posts: As indicated on Architectural Drawings.
 - b. Round Posts: As indicated on Architectural Drawings.
 - c. Square Posts: As indicated on Architectural Drawings.
 - d. Rectangular Posts: As indicated on Architectural Drawings.

- B. Steel Cap Rails:** Welded to edge of welded steel grille work infill panels.
 - a. Trim band: Flat bar as indicated on drawings.
 - b. Channel Edge: As indicated on drawings.
 - c. Square Tube Frame: As indicated on drawings.
 - d. Rectangular Tube Frame: As indicated on drawings.

- C. Steel Post Caps:** Welded to top of posts:
 - a. Flush: Flush plate, dimensions determined by post size.
 - b. Domed: Rounded cap, dimensions determined by post size.
 - c. Pressed: Formed pyramidal cap, dimensions determined by post size.

- D. Hardware:**
 - a. Provide appropriate fasteners for type, grade, and class required for the approved anchorage system.

Part 3: Execution

3.1 Field Verification: Take field measurements prior to preparation of final shop drawings and fabrication where required to ensure proper fitting of the work.

3.2 Installation

Prior to grating installation, contractor shall inspect supports for correct alignment and conditions for proper attachment and support of the gratings. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to placement.

A. Install grille work plumb, level, square, straight, accurately aligned, and to proper elevation.

B. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint, powder coat paint, or other approved insulating material.

2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint, powder coat paint, or other approved insulating material.

3.3 Attachment: Use approved attachment system and fasteners to secure grating to supporting members as shown on plans.