

Model Specification: 22-W-4 Heavy-Duty Steel Bar Gratings

September 14, 2022

Specifier Notes: Architect or engineer should carefully review and edit this section to meet the requirements of the project and local building codes. Coordinate this section with other specification sections and the drawings and delete any unused "Specifier Notes" and options shown in "red" after editing.

This section covers Pleasant Mount Welding, Inc.'s "22-W-4 Heavy-Duty Steel Bar Gratings." Consult PMWI (www.pmwi.net) for assistance in editing this section for specific applications. Call 570.282.6164 or email sales@pmwi.net with any questions.

SECTION 055300 - Metal Fabrications: Metal Gratings

Part 1: General

1.1 Section Includes

- A. Prefabricated, heavy-duty carbon steel bar gratings.
- B. Prefabricated support frames for gratings.
- C. Miscellaneous installation hardware and accessories.

1.2 Reference Standards

- A. ANSI A326.3-2017: American National Standard Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Flooring Materials.
- B. ASTM Grade-36 Carbon Steel.
- C. ASTM A-510: Carbon Steel Wire Rods.
- D. ANSI/NAAMM MBG 532-19: Heavy-Duty Metal Bar Grating Manual.

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 5 years of documented experience.

- B. Fabrication tolerances shall be in accordance with applicable provisions and recommendations of ANSI/NAAMM MBG 532-19: Heavy-Duty Metal Bar Grating Manual.

Part 2: Products

2.1 Source Requirements:

Design is based upon use of gratings as manufactured by Pleasant Mount Welding, 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 used under this section and shall not, in any way, be construed as limiting competition.

2.2 Manufacturers:

Acceptable manufacturers include Pleasant Mount Welding, Inc. (45 Dundaff Street, Carbondale, PA 18407, 570-282-6164, www.pmwi.net) or approved equal.

2.3 Manufactured Units:

A. **Description:** Heavy-Duty Carbon Steel Bar Grating type **22-W-4 with a Galvanized finish**. Heavy-duty cross bars are welded perpendicular to heavy-duty main bearing bars.

1. Main Bearing Bar Spacing: **1-3/8"** on center.
2. Main Bearing Bar Depth: based on loading requirements and clear span as shown on drawings.
3. Main Bearing Bar Thickness: **1/4" | 5/16" | 3/8" | 1/2"** as shown on drawings.
4. Cross Bar Spacing: **4"** on center.
5. Top Surface of Main Bearing Bars: **Smooth | Serrated | SlipNOT® Slip Resistance Coating**

B. **Fabrication:** Load Band ends of grating with bars of the same thickness as main bearing bars. Weld banding flush with the top surface of grating. Depth of banding is to be 1/2" less than the depth of the main bearing bars (as shown in drawings). **Include welded anchor blocks 1/4" from the bottom surface with hole to accept washer and attachment bolts.**

C. **Steel Frames: Carbon Steel ASTM Grade-36 frames shall be provided as shown on contract drawings to support and attach gratings. Include anchors as shown for locking frame into concrete as shown on the plans. Galvanize frames after fabrication per ASTM A-123.**

D. Design Criteria:

1. **Loading:** Unless shown otherwise on the contract drawings, gratings shall be designed and manufactured to meet live load conditions of **AASHTO HS-20 with 30% impact factor**. Main bearing bar depth shall be as shown in contract drawings or as recommended by the manufacturer to meet loading requirements and clear span conditions.

2. **Traction / Slip-Resistance:** When a traction surface is required, it is to be tested per ANSI A326.3-2017. Top surface shall provide a minimum Wet Dynamic Coefficient of Friction (Wet DCOF) of 0.45 to meet high traction classification.
- E. **Materials:** Main bearing bars and rectangular cross bars are to be type ASTM Grade-36 Carbon Steel. Round cross bars are to be per ASTM A-510. Banding is to be carbon steel per ASTM Grade-36.
- F. **Fabrication Tolerances** shall be in accordance with ANSI/NAAMM MBG 532-19: Heavy-Duty Metal Bar Grating Manual.
- G. **Top Surface:** When required, **SlipNOT® Slip Resistance Coating** will be included in order to meet or exceed Wet Dynamic COF requirements of paragraph 2.3 D.2 above.
- H. **Finish:** Gratings and frames shall be **Hot-Dip Galvanized per ASTM A-123 or Powder Coated Black [or other color] as shown on drawings.**

2.4 Accessories:

Provide appropriate fasteners for type, grade, and class required for approved anchorage system. **Include lifting devices and all other accessories as shown on the drawings.**

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

- A. Prior to grating installation, contractor shall inspect supports for correct alignment and conditions for proper attachment and support of the gratings. Metal shall be used for all grating supports and provide the minimum bearing surface for the depth of grating per ANSI/NAAMM MBG 532-19: Heavy-Duty Metal Bar Grating Manual. Ends of all bearing bars at cutouts for penetrations are to be supported in like manner. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the engineer, architect or owner's agent prior to placement.
- B. Install grating in accordance with shop drawings and standard installation clearances as recommended by ANSI/NAAMM MBG 532-19: Heavy-Duty Metal Bar Grating Manual.

3.3 Grating Attachment:

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