

## **42-WH-4 Grade 50 Carbon Steel Galvanized Wheels n' Heels® Metro® Gratings**

Model Specification for type 42-WH-4 Grade 50 Carbon Steel Galvanized Grating 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 05 53 00 Metal Fabrications – Metal Gratings**

#### **Part 1: General**

##### **1.1 Section Includes**

- A. Prefabricated heavy duty ADA compliant steel bar gratings.
- B. Prefabricated Support Frames for gratings.
- C. Miscellaneous installation hardware and accessories.

##### **1.2 References**

- A. ASTM A-1011 Structural Grade 50 Steel Strip Hot-Rolled Carbon
- B. ASTM A-1011 CS Type B Steel Strip Hot-Rolled Carbon
- C. ASTM A-513 Carbon Steel Mechanical Tubing
- D. ASTM A-36 Hot-Rolled Carbon Steel
- E. ANSI/NAAMM- MBG-532-09 Heavy Duty Metal Bar Grating Manual
- F. US Dept. of Justice Americans with Disabilities Act- 2010 Design Standards Section 302 for bar spacing and slip resistance.
- G. ANSI-NFSI B101.3-2012 Test Method for Measuring Wet Dynamic Coefficient of Friction (Wet DCOF) of Common Hard-Surface Floor Materials

##### **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 532-09 Metal Bar Grating Manual.

## **Part 2: Products**

### **2.1 Source Requirements:**

Design is based upon use of gratings as manufactured by Ohio Gratings 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, 5299 Southway St. SW, Canton, Ohio 44706, 800-321-9800 [www.ohiogratings.com](http://www.ohiogratings.com) , or approved equal.

### **2.3 Manufactured Units:**

**A. Description:** Grating: Type **42-WH-4** Wheels n' Heels® Metro® Heavy Duty Grade 50 Carbon Steel Grating with OnGrip™ Spray Traction Surface, and Galvanized finish. Fabricated by assembling tubular steel cross bars through round holes in rectangular bearing bars and filler bars that are then permanently locked in place by swaging. Heavy duty 1" deep x 1/8" thick cross bars are inserted in slots in the main bars beneath the filler bars and fillet welded at each main bearing bar / heavy cross bar intersection.

1. Bar Spacing: **7/16"** on center at top surface.
2. Bearing bars and filler bars thickness: **3/16" to provide 1/4"** space between bars.
3. Main Bearing Bars spaced **2-5/8"** on center and their depth is to be based on loading requirements and the clear span shown on the drawings.
4. Cross Bar Spacing: 4" on center.
5. All Top Surface bars shall have OnGrip™ Spray Traction Surface.

**B. Fabrication:** Load Band ends of grating with bars **1/4"** thick welded flush with the top surface of the grating and **1/2"** less than the depth of the main bearing bars as shown on the drawings. Include welded anchor blocks flush with the top surface with counter sunk hole to accept washer and attachment bolts.

**C. Steel Frames:** Carbon Steel ASTM A-36 frames shall be provided as shown on the contract drawings to support and attach the gratings. Include anchors as shown for locking frame into concrete as shown on the plans. Galvanize frames after fabrication per ASTM A123.

**D. Design Criteria:**

1. **Loading:** Unless shown otherwise on the contract drawings, gratings shall be designed and manufactured to meet the live load conditions of **AASHTO HS 20 with 30% impact factor**. Main Bearing bar depth shall be as shown on the contract drawings or as recommended by the manufacturer to meet the loading requirements, and clear span conditions.
  2. **Traction / Slip Resistance:** When tested per ANSI-NFSI B101.3-2012, the top surface shall provide a minimum Wet Dynamic Coefficient of Friction (Wet DCOF) of 0.45 to meet High Traction classification. Also, per ADA section 302.1, walking surfaces shall provide a slip-resistant surface with sufficient frictional counterforce to the forces exerted in walking to permit safe ambulation.
  3. **Top Surface Bar Orientation:** Per ADA section 302.3, the gratings shall be oriented with the top surface bearing bars perpendicular to the predominate direction of pedestrian travel.
- E. Materials:** Main Bearing bars are Carbon Steel type ASTM A-1011 Structural Steel Grade 50. Banding is Carbon Steel type ASTM Grade-36. Top surface filler bars and heavy cross bars are Carbon Steel ASTM A-1011 CS Type B and Steel Tube Cross Bars are type ASTM A-513.
- F. Fabrication Tolerances** shall be in accordance with ANSI/NAAMM MBG 532-09 Metal Bar Grating Manual.
- G. Top Surface:** OnGrip™ Spray Traction Surface shall be supplied in order to meet or exceed the Wet Dynamic COF requirements of paragraph 2.3 D.2 above.
- H. Finish:** Gratings and frames shall be **Hot-Dip Galvanized per ASTM A123**.

#### **2.4 Accessories:**

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

### **Part 3: Execution**

**3.1 Field Verification:** Contractor is to provide 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. 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-532-09 Metal Bar Grating Manual.

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