

SECTION 05 53 00
Heavy Duty Carbon Steel Welded Bar Grating 2012
 GRATINGS AND METAL TRAFFIC FLOORING
 Meets "Buy American Procurement"

Revise this Section by deleting or inserting text to reflect project specific conditions.

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Divisions 01 Specifications, apply to this Section.

Heavy Duty Welded Bar Grating Descriptions: Bearing bar depth, bar thickness and spacing determine the actual type of grating.

Reference Table 1.

HEAVY DUTY WELDED BAR GRATING DESCRIPTION			
Heavy Duty Welded Bar Grating	Bearing Bar Descriptions		
	Depth Range	Thickness Range	Spacing Range
	(inches)	(inches)	(inches on center)
Heavy Duty	1 through 6	1/4, 5/16 and 3/8	38 Space (2-3/8) through 15 Space (15/16)

1.2 SUMMARY

- A. Section Includes
 - 1. [Standard] [Close-Mesh] [ADA Approved] Carbon Steel Welded Bar Grating
 - 2. Attachment Method and Hardware
 - 3. Stair Treads and Nosing

1.3 RELATED SECTIONS UTILIZING BAR GRATING *Projects are different and this list is meant only as a guide*

- A. 05 12 00 Structural Steel Framing
- B. 05 51 19 Metal Grating Stairs
- C. 05 51 33 Metal Ladders
- D. 05 51 36 Metal Walkways and Ramps
- E. 05 55 00 Metal Stair Treads and Nosing

1.4 REFERENCES *(Select and delete as required)*

- A. American Recovery and Reinvestment Act of 2009; H.R.I, EH Section 1110, (ARRA)

Alabama Metal Industries Corporation, AMICO, also certifies that bar grating and bar grating stair treads will meet any additional "Buy American Procurement" provisions that require any steel used to be melted and manufactured in the United States of America.

- B. ASTM International, (ASTM) *(References for carbon steel grating)*
 - 1. A 36 Standard Specification for Carbon Structural Steel
 - 2. A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 3. A 510 Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
 - 4. A 780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
 - 5. A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
 - 6. D1187 Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal
 - 7. A 780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- C. National Association of Architectural Metal, (NAAMM)
 - 1. NAAMM MBG 531 Metal Bar Grating Manual

- D. Occupational Safety & Health Administration, (OSHA)
 - 1. Fixed Industrial Stairs Subpart D Walking-Working Surfaces 29CFR1910.24; Sec. 1910.24 (c)
- E. Federal Specifications
 - 1. RR-G-1602D Federal Specification for Safety Grating (other than bar type and excluding naval vessels)
 - 2. RR-T-650E Treads, Metallic and Nonmetallic, Nonskid
- F. American Welding Society, (AWS)
 - 1. D1.1-04 Structural Welding Code Steel American Welding Society
 - 2. D1.1-04 Structural Welding Code Steel
 - 3. D1.3-98 Structural Welding Code Sheet Steel

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's literature including load and deflection tables for each product submitted.
- B. LEED Requirements
 - 1. MR Credits 2.1 and 2.2 – Construction Waste Management
 - 2. MR Credits 4.1 and 4.2 – Recycled Content
 - 3. MR Credits 5.1 and 5.2 – Regional Materials
- C. Shop Drawings: Submit shop drawings for all grating materials and fabrications as required.
 - 1. Placement Drawings: Include plans, elevations; sections showing construction, installation and fastenings.
 - 2. Method of joining grating materials.

1.6 DESIGN CRITERIA

- A. Design of grating including the engineering analysis shall be provided by the owner's professional engineer meeting the required performance and design criteria.
- B. Limit deflection to (Select and delete alternate deflection ratios as required) [L/240] [L/360] [Limit deflection of 1/4 - inch] (whichever is less)
- C. Seismic Performance: Metal stairs shall withstand the effects of earthquake motions determined according to [ASCE/SEI 7] [Insert requirement].

1.7 SOURCE QUALITY CONTROL

- A. All bar grating supplied for this application shall be manufactured in the United States of America in order to allow visual verification and documentation for Buy American Procurement and or LEED Building Criteria.
- B. Grating manufacturer shall have documented quality control processes in place to assure meeting ANSI/NAAMM, National Association of Architectural Metal Manufacturers standards.
- C. Grating manufacturer shall comply with ANSI/NAAMM, National Association of Architectural Metal Manufacturers standards.
- D. Steel shall meet requirements of the American Recovery and Reinvestment Act of 2009.

1.8 PACKING AND IDENTIFICATION

- A. Piece mark each fabricated piece as noted on drawings

1.9 SITE CONDITIONS / REQUIREMENTS

- A. Contractor shall verify actual locations of walls and any other construction adjoining the grating work by field measurements and communicate via approved drawings to AMICO prior to the start of order fabrication.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. The grating materials shall be fabricated to meet the drawings and specifications as manufactured by Alabama Metal Industries Corporation, AMICO; Birmingham, Alabama. Telephone 205/787-2611 or 800/366-2642 for assistance. Website www.amico-grating.com
- B. All bearing bars and cross bars shall be made in the United States of America from domestically produced metals.

2.2 METAL BAR GRATING

- A. Grating type: heavy duty carbon steel welded bar grating.
Thickness and spacing of bearing bars shall be determined by owner's engineer. Select from below and delete unused selections.
- B. Bearing Bar Spacing (center of bar to center of bar): [38 Space (2-3/8 inch)] [30 Space (1-7/8 inch)] [22 Space (1-3/8 inch)] [19 Space (1-3/16 inch)] [15 Space (15/16 inch)] [Insert Custom Spacing] on center.
- C. Bearing Bar Depth: [1-inch] [5/16-inch] [1-1/4 inches] [1-1/2 inches] [1-3/4 inch] [2-inches] [2-1/4 inches] [2-1/2 inches] [2-3/4 inches] [3-inches] [3-1/4 inches] [3-1/2 inches] [4-inches] [4-1/2 inches] [5-inches] [6-inches] to meet structural performance requirements.
- D. Bearing Bar Thickness: [1/4-inch] [5/16-inch] [3/8-inch]
- E. Cross Rod Spacing: [2-inches] [4-inches] on center.
- F. Top Traffic Surface shall be [plain] [serrated slip resistant]
- G. Finish: (Select and delete unused finishes)
 - 1. Mill finish
 - 2. Shop Primed
 - 3. Paint in accordance with NAAMM; Section V. Fabrication, e. Finishes
 - a. Color shall be standard black shop coating
 - b. Custom color shall be [red oxide] [silver] [safety yellow]
 - 3. Hot Dip Galvanized After Fabricating in accordance with ASTM A123
 - 4. Powder Coated 8-mil finish to match owner's color

2.3 FASTENING SYSTEMS

- A. AMICO Type H-3 Saddle Clip
- B. AMICO Type H-1 Anchor Clip
- C. G-Clips
- D. AMICO Weld Lugs and Threaded Fasteners
- E. Welding

2.4 FABRICATED CUTOUTS

- A. Fabricate cutouts in grating sections for penetrations as shown on drawings.
- B. Edge-banding shall be full height of grating.
- C. Edge-band openings in grating that interrupt four or more bearing bars using the same size material as bearing bars.

2.5 REMOVABLE GRATING SECTIONS

- A. Fabricate sections welding banding to entire perimeter of each section.
- B. Provide fasteners, hinges and handle as recommended by manufacturer.

2.6 METAL BAR GRATING STAIR TREADS

- A. Stair Tread Grating type: [Standard] [Close-Mesh] [ADA Approved] carbon steel welded bar grating.
Thickness and spacing of bearing bars shall be determined by owner's engineer. Make selections below and delete unused selections.
- B. Bearing Bar Spacing (center of bearing bar to center of bearing bar): [19 Space (1-13/16 inch)] [15 Space (15/16 inch)] [13 Space (13/16 inch)] [11 Space (11/16 inch)] [10 Space (5/8 inch)] [8Space (1/2 inch)] [7 Space (7/16 inch)] [Insert Custom Spacing] on center.
- C. Bearing Bar Depth: [3/4-inch] [1-inch] [1-1/4 inches] [1-1/2 inches] [1-3/4 inch] [2-inches] [2-1/4 inches] [2-1/2 inches] to meet structural performance requirements.
- D. Bearing Bar Thickness: [1/8-inch] [3/16-inch]
- E. Cross Rod Spacing: [2-inches] [4-inches] on center.
- F. Top Traffic Surface shall be [plain] [serrated slip resistant]
- G. Tread end plates shall be [pre-drilled for direct attachment] [without holes and welded] to the stair tread stringer.
- H. Do not leave exposed fasteners on top of treads or platform surfaces.
- I. Provide {open} [closed flat metal] risers for stairs as shown on drawings.
- J. Finish: (Select and delete unused finishes)
 - 1. Mill finish

2. Shop Primed
3. Paint in accordance with NAAMM; Section V. Fabrication, e. Finishes
 - a. Color shall be standard black shop coating
 - b. Custom color shall be [red oxide] [silver] [safety yellow]
4. Hot Dip Galvanized After Fabricating in accordance with ASTM A123
5. Powder Coated 8-mil finish to match owner's color

2.7 STAIR NOSING [Select and delete unused nosing types.](#)

- A. AMICO Safety Tread Nosing
- B. Checkered Plate Nosing
- C. Cast Aluminum Nosing
- D. Corrugated Aluminum Nosing creating a definitive visible edge for safety.

2.8 LADDER RUNGS ([Select and delete as required](#))

- A. Safety Tread® ladder rungs with small traction buttons.
- B. Rung Description: [2-holes 1-1/4 inch wide x 1-7/16 inch deep] [3-holes 1-5/8 inch wide x 1-1/8 inch deep] [3-holes 2-1/4 inch wide x 1-1/2 inch deep]
- C. Top traffic surface shall be rows of raised slip resistant traction buttons and shall be slip-resistant in all directions.
- D. Material and finish same as grating [and stair treads].

PART 3 EXECUTION

3.1 EXAMINATION

- A. Confirm location of work.
- B. Verify sizes and dimensions.
- C. Verify the location of all grating penetrations.

3.2 ERECTION TOLERANCES

- A. Conform to NAAMM MBG 531.
- B. Maximum space between adjacent sections: 1/4-inch.
- C. Maximum variation from top surface plane of adjacent sections: 1/8-inch.

3.3 INSTALLATION, GENERAL

- A. Install grating in accordance with shop drawings and standard installation clearances as recommended by ANSI/NAAMM MBG-531-09 Metal Bar Grating Manual.
- B. Set and secure structural framing for grating in the correct location, plumb and level.
- C. Perform job site cutting, drilling and placement of panels required for installation.
- D. Mechanically cut finish surfaces. Do not flame cut.
- E. Set panels and secure in location, align in relation to walls and other construction work free of rack.
- F. Attach removable sections using type and size of fasteners indicated or by grating manufacturer.
- G. Attach non-removable sections to same material support members by [welding] [fasteners indicated above].

3.4 STAIR TREAD INSTALLATION

- A. Perform job site welding and bolting as specified for shop fabrication.
- B. Set stairs and other members in position and secure to structure as shown.
- C. Install stairs plumb, level and true to line.
- D. Provide steel closure plate to fill any gap between the stringer and surrounding shaft wall. Weld and finish with prime and paint finish of adjoining steel.

END OF SECTION