**SECTION 05 53 15**

 **ALUMINUM BAR GRATINGS**

**\*\*\*\*\* Ametco® Manufacturing Corporation manufacturers several basic construction materials including perforated metal and plastic panels, expanded metal panels, wire cloth, steel and aluminum bar gratings, safety gratings, stair treads, and ladder rungs. Ametco® Manufacturing Corporation also manufactures several types of ornamental metal fencing.**

**This guide specification can be used to specify various aluminum bar gratings and stair treads. These can be used for platforms, stairs, trench covers, and many other applications. Aluminum bar gratings can be specified as a separate section or as part of another building element. For the later, paragraphs from this guide would be inserted into the section specifying the element constructed with aluminum gratings. \*\*\*\*\***

**The specifier will need to edit this guide specification to reflect the options and applications being used. Most editing can be accomplished by deleting unnecessary requirements. Options are indicated by [ ]. Notes to assist the specifier in selecting options and editing the specification guide are printed in bold and indicated with \*\*\*\*\*. For final editing, all brackets and notes will need to be deleted from the guide.**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**PART 1 - GENERAL**

**1.1 SUMMARY**

 A. Section includes: Aluminum, pressure-locked bar [gratings] [stair treads] used to fabricate [elevated platforms] [catwalks] [stairs] [\_\_\_\_\_] [specified in Section [\_\_\_\_\_] - [\_\_\_\_\_]].

**1.2 REFERENCES**

**\*\*\*\* List by number and full title reference standards referred to in remainder of the specification section. Delete non-applicable references. \*\*\*\*\***

 A. ASTM International (ASTM):

 1. ASTM B221 – Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

**1.3 PERFORMANCE REQUIREMENTS**

**\*\*\*\*\* Edit the following to reflect project structural design requirements. \*\*\*\*\***

 A. [Gratings] [stair treads] shall be provided in accordance with manufacturer's standard load tables to withstand design loads [as required by applicable codes.] [as follows:]

 1. Minimum uniform load: [\_\_\_\_\_] [pounds per square foot] [kilograms per square meter].

 2. Minimum concentrated load: [\_\_\_\_\_] [pounds per linear foot] [kilograms per linear meter] of grating width.

 3. Maximum deflection: [\_\_\_\_\_] [inches] [mm].

**1.4 SUBMITTALS**

 A. Provide in accordance with Section 01 33 00 - Submittal Procedures:

 1. Product data for aluminum bar [gratings] [stair treads] [perimeter frames] [fasteners] and finish.

 2. Manufacturer's standard load tables annotated to identify project selections and conditions. Indicate type, size, and span of grating being provided to accommodate performance requirements specified in Paragraph 1.3.

 3. Shop drawings: Indicate layout, dimensions, fastener locations, and fabrication and installation details.

**PART 2 - PRODUCTS**

**2.1 ACCEPTABLE MANUFACTURERS**

 A. Ametco Manufacturing Corporation, 4326 Hamann Parkway, P.O. Box 1210, Willoughby, Ohio 44096; 800-362-1360.

 B. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 13 - Product Substitution Procedures.

**2.2 MATERIAL**

 A. Fabricate [bar gratings] [stair treads] [perimeter frames] from extruded aluminum bars, rods, and shapes complying with ASTM B221.

 B. Finish: Aluminum mill finish.

**2.3 ALUMINUM BAR GRATINGS**

**\*\*\*\*\* Ametco® Manufacturing Corporation fabricates pressure-locked aluminum bar gratings consisting of bearing bars connected by cross bars. Load capacity is determined by type, size, and spacing of bars, and grating span. Numerous types of aluminum bar gratings are available in two series:**

 **AG Series: Rectangular bearing bars which can be supplied with either a smooth, plain top surface or a serrated, slip-resistant surface.**

 **I Bar Series: Extruded I-shaped bearing bars with a striated, slip-resistant top surface.**

**Refer to Ametco® product literature for types, bar sizes, bar spacing, configurations, and load capacity. Select required grating type from the following paragraphs and edit to indicate bar sizes. \*\*\*\*\***

**\*\*\*\*\* Include the following paragraph for Type 19AG4 with either plain or serrated surface. \*\*\*\*\***

 A. Type: Pressure-locked aluminum grating with [plain] [serrated] surface; Type 19AG4 as manufactured by Ametco Manufacturing Corporation.

 1. Bearing bars: Rectangular shaped with [plain smooth] [anti-slip serrated] top surface, [\_\_\_\_\_] by [\_\_\_\_\_] [inches] [mm] spaced at [1-3/16 inches] [30 mm].

 2. Cross bars: Square aluminum bars spaced at [4 inches] [102 mm].

**\*\*\*\*\* Include the following paragraph for Type 19AG2 with either plain or serrated surface. \*\*\*\*\***

 B. Type: Pressure-locked aluminum grating with [plain] [serrated] surface; Type 19AG2 as manufactured by Ametco Manufacturing Corporation.

 1. Bearing bars: Rectangular shaped with [plain smooth] [anti-slip serrated] top surface, [\_\_\_\_\_] by [\_\_\_\_\_] [inches] [mm] spaced at [1-3/16 inches] [30 mm].

 2. Cross bars: Square aluminum bars spaced at [2 inches] [51 mm].

**\*\*\*\*\* Include the following paragraph for Type 19AGI4 aluminum grating with extruded I-shaped bearing bars. \*\*\*\*\***

 C. Type: Pressure-locked aluminum grating with I-shaped bearing bars; Type 19AGI4 as manufactured by Ametco Manufacturing Corporation.

 1. Bearing bars: Extruded I-shaped bars with striated flanges to provide slip resistance, [\_\_\_\_\_] by [\_\_\_\_\_] [inches] [mm] spaced at [1-3/16 inches] [30 mm].

 2. Cross bars: Square aluminum bars spaced at [4 inches] [102 mm].

**\*\*\*\*\* Include the following paragraph for Type 19AGI4 aluminum grating with extruded I-shaped bearing bars. \*\*\*\*\***

 D. Type: Pressure-locked aluminum grating with I-shaped bearing bars; Type 19AGI4 as manufactured by Ametco Manufacturing Corporation.

 1. Bearing bars: Extruded I-shaped bars with striated flanges to provide slip resistance, [\_\_\_\_\_] by [\_\_\_\_\_] [inches] [mm] spaced at [1-3/16 inches] [30 mm].

 2. Cross bars: Square aluminum bars spaced at [2 inches] [51 mm].

**\*\*\*\*\* Ametco® Manufacturing Corporation inventories aluminum bar gratings in standard panel sizes of 24 by 288 and 36 by 288 inches (610 by 7,315 and 914 by 7,315 mm). Special sized panels can be custom cut. \*\*\*\*\***

 E. Grating panel size: [Factory cut grating into] [\_\_\_\_\_] by [\_\_\_\_\_] [inches] [mm] panels.

**\*\*\*\*\* Openings can be factory cut in grating panels to accommodate structural members, pipes, conduit, ductwork, and other items penetrating grating. It is recommended that openings less than 4 inches (102 mm) be field cut to ensure proper alignment. \*\*\*\*\***

 F. Penetrations: Factory cut openings for structural members, pipes, conduit, ductwork, and other penetrations. Allow sufficient tolerances for installation of penetrating items. Weld flat bars to form flush perimeter frame around openings.

**2.4 ACCESSORIES**

**\*\*\*\*\* Various types of fastening hardware can be provided for attachment of grating panels to support framing. Gratings can be permanently attached to framing installed to be removable. \*\*\*\*\***

 A. Fastening hardware: Provide [aluminum] [stainless steel] fasteners and attachment hardware of type, size, and spacing as recommended by the manufacturer for substrate and project conditions and as required to securely attach gratings.

**\*\*\*\*\* Grating panels used for trench drains and pit covers can be provided with aluminum angle frames to embed in concrete and retain grating sections. Include the following paragraph if angle frames are required. \*\*\*\*\***

 B. Perimeter frames: Provide aluminum angle perimeter frames with mitered corners to embed in concrete support and retain grating sections. Equip frame with anchors at [18 inches] [457 mm] [\_\_\_\_\_] as detailed on shop drawings. Frame depth shall match grating depth and allow flush installation.

**2.5 STAIR TREADS**

**\*\*\*\*\* Individual stair treads fabricated from aluminum bar gratings with integral nosing are available in several standard lengths and widths. Lengths vary from 16 to 55 inches (660 to 1,397 mm) and widths from 5 to 12-1/8 inches (127 to 308 mm). Special tread sizes can be custom fabricated. Include this article to specify aluminum bar grating stair treads. \*\*\*\*\***

 A. Type: Pressure-locked aluminum grating stair tread with integral nosing; Aluminum Bar Grating Stair Tread as manufactured by Ametco Manufacturing Corporation.

 B. Size: [[5] [6-3/16] [7-3/8] [8-9/16] [9-3/4] [10-15/16] [12-1/8] inches] [[127] [ 173] [187] [217] [248] [278] [308] mm] wide by [[26] [33] [39] [55] inches] [[660] [838] [990] [1,397] mm] long.

**\*\*\*\*\* Bearing bar size is determined by tread length. Refer to Ametco® product literature for appropriate dimensions. \*\*\*\*\***

 C. Bearing bars: [\_\_\_\_\_] by [\_\_\_\_\_] [inches] [mm] spaced at [1-3/16 inches] [30 mm].

 D. Cross bars: Square aluminum bars spaced at [4 inches] [102 mm].

**\*\*\*\*\* Standard nosing for aluminum grating stair tread is corrugated aluminum. As an option, an abrasive coated tread can be provided. \*\*\*\*\***

 E. Nosing: [1-3/4 inches] [44 mm] deep formed from [corrugated aluminum plate] [abrasive coated cast aluminum].

 F. Provide treads with holes and slots for attachment to stair stringers.

**PART 3 - EXECUTION**

**\*\*\*\*\* Aluminum bar gratings manufactured by Ametco® Manufacturing Corporation have many uses and applications. Gratings can be specified separately in this section. As an alternative, the material requirements in this section can be inserted into the section specifying the aluminum grating application. \*\*\*\*\***

**3.1 INSTALLATION**

 A. Preparation: Prior to grating fabrication, field verify required dimensions.

 B. Provide aluminum bar [gratings] [stair treads] specified in this Section for fabrication of [elevated platforms] [catwalks] [stairs] [\_\_\_\_\_] as specified in Section [05 50 00 [\_\_\_\_\_] - [Metal Fabrications] [\_\_\_\_\_].

**\*\*\*\*\* Include the following paragraph if aluminum angle frames are required for grating installation. \*\*\*\*\***

 C. Perimeter aluminum angle frames: Coordinate installation with casting or concrete [trenches] [slabs] [\_\_\_\_\_]. Provide frames in time for embedment in concrete.

 1. Coat surfaces in contact with cementitious materials with protective coating.

 2. Install with upper frame edge flush with finished floor. Accurately position frame. Ensure corners are square, and sides straight.

 D. Install gratings in accordance with manufacturer's installation instructions and approved shop drawings.

 E. Attach gratings [to allow for future removal] [permanently] with fasteners and attachment hardware of type, size, and spacing as recommended by manufacturer and detailed on approved shop drawings.

 F. Position gratings such that cross bars align.

 **END OF SECTION**