

SECTION 05530
METAL GRATING, TRENCH COVERS, AND FLOOR PLATES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Technical requirements for metal grating, trench covers, and floor plates.

1.2 REFERENCES

- A. General: References to standards, specifications, manuals, or codes of any technical society, organization or association, or to the Laws or Regulations of any government authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
- B. ANSUNAAM Standards
 - 1. ANSUNAAM MGB 53 1 Metal Bar Grating Manual

1.3 SYSTEM DESCRIPTION

- A. Furnish and install metal grating, trench covers, floor plates, and appurtenances required to complete work shown and specified.
- B. Furnish and install metal grating, trench covers, floor plates, and appurtenances as shown on the Drawings and specified in this Section.
- C. New aluminum grating shall be same type as existing aluminum grating.

1.4 SUBMITTALS

- A. Submit the following:
- B. Product data for manufactured products.

- C. Shop drawings showing plans, elevations and details of sections and connections. Show type and location of fasteners.

PART 2 PRODUCTS

2.1 GRATING

A. Grating, General.

1. Grating bar section, depth and spacing shall be based upon a uniformly applied load of 200 pounds per square foot over the full span unless a greater loading is noted on the Drawings. Grating deflection shall not exceed L360 or 1/4 inch whichever is less. Provide stiffener angles as required to meet load requirements specified in this Section.
2. Bearing bars and cross bars shall be continuous.
3. Exposed ends of grating bearing bar and cut outs shall be banded with a bar of the same depth and thickness as the main bearing bars. When welded construction is used, weld cut bar to band bar. When crimped or swaged construction is used, limit protrusion of bars at edges to 1/16-inch, maximum, and peen or grind protruding bars to a smooth surface.
4. Provide cutouts in grating for valve operators, conduits, pipes, and other penetrations. Band edges of cutouts.
5. Grind rough weld beads and sharp metal edges smooth.
6. Punch bolt holes 1/16-inch larger than nominal size of bolts, unless otherwise specified. Whenever needed, because of metal thickness, sub-punch and ream holes, or drill holes.
7. Fabricate grating in sections, which do not exceed 75 pounds each.

B. Aluminum Grating

1. Aluminum Grating Manufacturers
 - a. IKGBORDEN;
 - b. McNichols Co.;
 - c. Ohio Gratings, Inc.;

- d. Or approved equal.
2. Aluminum Grating Material
- a. Aluminum grating bearing and crossbars shall be 6063-T6 aluminum alloy.
 - b. Aluminum grating shall have mill finished.
3. Aluminum Grating Fabrications
- a. Aluminum grating fabrications and tolerances shall meet the requirements of NAAMM Metal Bar Grating Manual.
 - b. Maximum allowable deflection for aluminum grating specified in this Section shall be based on an allowable stress of 12,000 pounds per square inch.
 - c. Grating depth shall be not less than the depth indicated on the Drawings. In no case shall aluminum grating depth be less than 1-1/2 inches.
4. Aluminum I-Bar Grating
- a. Aluminum I-Bar grating shall have extruded aluminum I-shaped bearing bars with square cross bars swage-locked at right angles to bearing bars.
 - b. Bearing bars and cross bars shall be spaced as follows, unless otherwise shown on the Drawings.
 - (1) Bearing Bar Spacing: 1-3/16 inches center-to-center.
 - (2) Cross Bar Spacing: 4 inches center-to-center.
 - c. Surface shall have a no skid finish.
5. Aluminum Rectangular Bar Grating
- a. Aluminum rectangular bar grating shall be pressure backed grating with rectangular bearing bars and square, or rectangular, cross bars swage-locked at right angles to bearing bars.
 - b. Bearing bars and cross bars shall be spaced as follows, unless otherwise shown on the Drawings.

- (1) Bearing Bar Spacing: 1-3/16 inches center-to-center.
 - (2) Cross Bar Spacing: 4 inches center-to-center.
- c. Surface shall have a no skid finish.
6. Aluminum Grating Frame
- a. Aluminum grating set in concrete floor shall be furnished with aluminum grating frame. Aluminum grating manufacturer shall furnish angle frame.
 - b. Grating frames shall be mitered and welded flush at comers for a finish appearance.
 - c. Furnish angle frames with AISI 316 stainless steel anchor straps.
7. Aluminum Grating Accessories
- a. Provide saddle clips and grating clamps necessary to secure grating.
 - b. Clamps and bolts used for attaching the grating to supporting members shall be stainless steel, and as recommended by the manufacturer.

2.2 TRENCH COVERS

A. Trench Covers, General

1. Trench covers shall designed for a uniformly applied load of 300 pounds per square foot over the full span unless a greater loading is noted on the Drawings.
2. Trench cover deflection shall not exceed $L/360$ or 1/4 inch whichever is less.
3. Provide stiffener angles as required to meet load requirements specified in this Section.

B. Aluminum Trench Covers

1. Aluminum Trench Cover Material
 - a. Aluminum trench covers shall be 6063-T6 aluminum alloy, unless otherwise shown or specified.

- b. Aluminum trench covers shall have mill finished, unless otherwise shown or specified.
2. Aluminum Trench Covers, General
- a. Maximum allowable deflection for aluminum trench covers specified in this Section shall be based on an allowable stress of 12,000 pounds per square inch. Trench cover thickness shall be as shown on the Drawing, but in no case shall trench covers be less than 1/4-inch thick.
 - b. Aluminum trench covers shall be aluminum checkered plate equal to ALCOA C-102 aluminum tread plate and Reynolds diamond tread plate.
 - c. Punch or drill bolt holes in aluminum trench covers for fasteners that secure trench cover to trench cover frame. Punch or drill bolt holes 1/16-inch larger than nominal size of bolts, unless otherwise specified. If holes are punched, sub-punch and ream holes whenever needed because of metal thickness. Counter sink bolt holes for flat head bolts or screws.
3. Aluminum Trench Cover Frame
- a. Aluminum trench covers shall be furnished with fabricated aluminum frames.
 - b. Trench cover frames shall be mitered and welded flush at corners for a finish appearance.
 - c. Furnish trench cover frames with AISI 316 stainless steel anchor straps.
4. Aluminum Trench Cover Accessories
- a. Provide fasteners necessary to trench covers to trench cover frames.
 - b. Fasteners used for attaching aluminum trench covers to trench cover frame shall be AISI 316 stainless steel

2.3 FLOOR PLATES

A. Floor Plates, General

- 1. Floor plates shall be designed for a uniformly applied load of 200 pounds per square-foot over the full span unless a greater loading is

noted on the Drawings. Floor plate deflection shall not exceed L/1360 or 1/4 inch whichever is less. Provide stiffener angles as required to meet load requirements specified in this Section.

2. Provide cutouts in floor plates for valve operators, conduits, pipes, and other penetrations.
3. Grind sharp metal edges smooth.
4. Punch bolt holes 1/16-inch larger than nominal size of bolts, unless otherwise specified. Whenever needed, because of metal thickness, sub-punch and ream holes, or drill holes.
5. Fabricate floor plates in sections, which do not exceed 75 pounds each.

B. Aluminum Floor Plates

1. Aluminum Floor Plate Material

- a. Aluminum floor plates shall be 6063-T6 aluminum alloy: unless otherwise shown or specified.
- b. Aluminum floor plates shall have mill finished, unless otherwise shown or specified.

2. Aluminum Floor Plates, General

- a. Maximum allowable deflection for aluminum floor plates specified in this Section shall be based on an allowable stress of 12,000 pounds per square inch. Floor plates thickness shall be as shown on the Drawing, but in no case shall floor plates be less than 1/4-inch thick.
- b. Aluminum floor plates shall be aluminum checkered plate equal to ALCOA C-102 aluminum tread plate and Reynolds diamond tread plate.
- c. If aluminum floor plates are to be secured to supporting members or frame, punch or drill bolt holes in floor plates for fasteners that secure floor plate to supporting members or frame. Punch or drill bolt holes 1/16-inch larger than nominal size of bolts, unless otherwise specified. If holes are punched, sub-punch and ream holes whenever needed because of metal thickness. Counter sink bolt holes for flat head bolts or screws.

3. Aluminum Floor Plate Frame

- a. Aluminum floor plate set in concrete floor shall be furnished with fabricated aluminum frame.
 - b. Floor plate frame shall be mitered and welded flush at comers for a finish appearance.
 - c. Furnish floor plate frames with AISI 316 stainless steel anchor straps.
4. Aluminum Floor Plate Accessories
- a. If Drawings indicate floor plate is to be secured to supporting members or frame, provide fasteners necessary to secure floor plate. If code, Laws, or Regulations require floor plate to be secured to supporting members or frame, provide fasteners necessary to secure floor plate.
 - b. Fasteners used for attaching aluminum floor plate to supporting members or frame shall be AISI 3 16 stainless steel.

PART 3 – EXECUTION

3.1 INSPECTION

A. Field Measurements

1. Take field measurement prior to preparation of shop drawings.
2. Verify opening locations, opening sites, and dimension tolerances are acceptable.

B. Grating and Floor Plates

1. Verify grating, trench cover, and floor plate dimensions.
2. Check grating, trench covered, and floor plates for damage.

C. Mounting surfaces, supports, and Anchors

1. Inspect surfaces, supports, and anchors on which grating, trench covers, and floor plates are to be mounted and secured.
2. Verify supports and anchors are properly located and oriented.
3. Correct defects prior to installation of grating, trench covers, and floor plates.

3.2 INSTALLATION

A. Install components in accordance with manufacturer's instructions.

B. Place frames in correct position, plumb and level.

C. Set perimeter closure flush with top of grating and surrounding construction.

D. Secure grating to prevent movement.

3.3 CLEANING

A. Clean paint spatter, concrete slobbers, grease, oil, or any other debris from exterior surfaces of grating, trench covers, and floor plates.

END OF SECTION