

## SECTION 12 48 16

### ENTRANCE FLOOR GRILLES ALUMINUM BAR GRATING

#### PART 1. GENERAL

**1.01 SUMMARY:** This section includes Entrance Floor Grilles (Aluminum Bar Grating) with aluminum frames. The Aluminum Bar Grating is designed for use in level bed or drainage pit applications.

#### 1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM B221 – Standard Specification for Aluminum and Aluminum Alloy Extrudes Bars, Rods, Wire, Shapes and Tubes.
  - 2. ASTM A193 Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
  - 3. ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
  - 4. ASTM B209 Standard Specification for Aluminum and Aluminum- Alloy Sheet and Plate
- B. National Association of Architectural Metals Manufacturers (NAAMM)
  - 1. NAAMM - Metal Finishes Manual for Architectural and Metal Products
  - 2. ANSI/NAAMM A202.1 (MBG-531) Metal Bar Grating Manual
- C. U.S. Architectural & Transportation Barriers Compliance Board's Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)
- D. American Concrete Institute (ACI) ACI 302 Guide for Concrete Floor and Slab Construction
- E. U.S. Green Building Council (USGBC) LEED 2009 for New Construction and Major Renovations
- F. California Department of Health Services, California Specification 01350
- G. Ceilings and Interior Systems Construction Association (CISCA) Recommended Test Procedure for Access Flooring

#### 1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate size and location of recess in concrete to receive Entrance Floor Grilles and frames.
- B. Defer frame installation until building enclosure is complete and related interior work is in progress.

#### 1.04 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for Entrance Floor Grilles and frames.
- B. Shop Drawings: Show the following:
  - 1. Items penetrating Entrance Floor Grilles and frames.
  - 2. Divisions between mat sections.
  - 3. Perimeter frames

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4. Show layout and types of Entrance Floor Grilles and frames, details of patterns, anchors and accessories, and field measurements of slab recess to receive Entrance Floor Grilles and frames (if applicable).
- C. Samples: For each type of product indicated, not less than 6 inch square sections of entrance mat and 6 inch length of frame material
- D. Sustainable Design Submittals:
  1. Provide product documentation certifying the percentage by weight of pre-consumer and postconsumer recycled content of materials based on the cost of the total materials value. (LEED MR Credit 4)
  2. All flooring elements installed in the building interior must meet the testing and product requirements of the California Department of Health and Services, California Specification 01350, "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers". (LEED IEQ Credit 4.3)
  3. Provide Entrance Floor Grilles at least 10 feet long in the primary direction of travel. Provide documentation certifying that the Entrance Floor Grilles and frames provide a permanent entryway system that allows cleaning underneath (LEED IEQ Credit 5).

**1.05 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: Submit Manufacturer's maintenance instructions for Entrance Floor Grilles and frames to be included in maintenance manuals.
- B. Warranty Documentation: Submit Manufacturer's limited warranty that products are free from defects in materials and workmanship and shall perform as specified for a period of not less than 2 years when installed and maintained in accordance with the manufacturers instructions.

**1.06 QUALITY ASSURANCE:** Obtain Entrance Floor Grilles and frames from a single manufacturer

**1.07 DELIVERY, STORAGE AND HANDLING**

- A. Deliver Materials to the project site ready for use and fabricated in as large of sections and assemblies as practical, in unopened original factory packaging clearly labeled to identify the manufacturer.
- B. Store Materials in original factory packaging, under cover in dry, well-ventilated spaces.

**1.08 SITE CONDITIONS**

- A. Field Measurements [*as required*]: Installer shall check actual openings for Entrance Floor Grilles and frames by accurate field measurements prior to fabrication. Record field measurements on final shop drawings.
- B. Coordinate frame installation with concrete construction to ensure recess and frame anchorage are accurate and that the base is level and flat.
- C. Defer installation of Entrance Floor Grilles until the time of substantial completion of the project.

**1.09 WARRANTY:** Entrance Floor Grilles and frames shall be fabricated free of defects in material and workmanship, and the manufacturer shall offer a 2 year warranty against defects in material and workmanship.

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**PART 2. PRODUCTS**

**2.01 MANUFACTURED UNITS**

- A. Manufacturer: Provide products by Kadee Industries, Inc., Walton Hills, OH 44146 Phone: 800-321-3827 Fax: 440-439-6889; email: sales@kadeeindustries.com
- B. Basis of Design: Kadee Industries Bar Clean Tread Model KDAL

**2.02 DESCRIPTION**

- A. Accessibility requirements: Provide and install Entrance Floor Grilles and frames compliant with Section 4.5 in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)
- B. Sustainability Characteristics: Provide Entrance Floor Grilles and frames manufactured from extruded aluminum comprised of no less than 32% post consumer recycled content and 32% pre-consumer recycled content.

**2.03 PERFORMANCE REQUIREMENTS:**

- A. Provide Entrance Floor Grilles capable of withstanding a uniform load of 1,000 lbf/sq. ft.
- B. Provide Entrance Floor Grilles capable of withstanding a rolling load of 350 lbs. per wheel for 1,000 passes with no visible damage or permanent deflection.

**2.04 MATERIALS**

- A. Provide colors, patterns and profiles of materials, including metals and metal finishes indicated or specified.
- B. Furnish and install Bar Clean Tread Model KDAL Aluminum Bar Grating Entrance Floor Grilles and frames as manufactured by Kadee Industries, Walton Hills, OH. Grille thickness shall be 1-3/16"
  - 1. Tread Bars shall be manufactured from extruded aluminum alloy 6063-T6 with 1.175" x .25" tread bars. Tread bar surface is provided with round groove contours for improved cleaning action, running the length of the bar.
  - 2. Tread bars shall be assembled with stainless steel threaded rods and ASTM A194 stainless steel nuts and Nylon 66 spacers. Tread Bars shall be assembled with a .25" maximum slot opening.
  - 3. Hidden Lockdowns: Entrance Floor Grilles shall include hidden locking devices manufactured from ASTM B209 Aluminum- Alloy Plate tab 1-1/4" x 1-1/8" x 1/8" slotted to receive an ASTM A193 Grade B8 18-8 stainless steel machine screw. Hidden Lockdowns shall be spaced no greater than 2'0" on center.
  - 4. Frames [*select from options as listed*]
    - a. Level Bed Frames: Provide 1-5/8" deep embedded frames for permanent recessed installation manufactured from extruded aluminum alloy 6063-T6, complete with corner connectors, splice plates and anchorage devices. Entrance Floor Grille must rest directly on the recessed floor.
    - b. Drainage Pit Frames: Provide 1-5/8" deep perimeter embedded frames for permanent recessed installation manufactured from extruded aluminum alloy 6063-T6, complete with welded corner connections, splice plates and anchorage devices. Provide welded

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intermediate framing supports manufactured from 1-1/2" x 1-1/2" x 3/16" aluminum spaced no greater than 2'-0" on center.

5. Drain Pans *[optional]*: Manufacture will provide .050" thick [16 gage] aluminum sheet pit liners or drain pan assemblies as shown on the approved shop drawings. *[2" drain, pipe, stainless steel strainer, and drain trap shall be furnished under the plumbing contract.]*

**2.05 ASSEMBLY**

- A. Shop Fabrication:
  1. Shop Fabricate Entrance Floor Grilles and frames to the greatest extent possible in the sizes as indicated. Unless otherwise indicated, provide each grille as a single unit. Do not exceed the manufacturer's recommended size for units that are removed for maintenance and cleaning.
  2. Fabricate frame members in single lengths or, where frame dimensions exceed maximum available lengths, provide pieces with hairline joints spliced together.
- B. Fabricate Entrance Floor Grilles and frames in accordance with the final shop drawings. Manufacturing tolerance shall not exceed +0" /-1/8" as indicated on the final shop drawings.

**2.06 FINISHES**

- A. Comply with NAAMM'S "Metals Finishes Manual for Architectural and Metal Products".
- B. Tread Rails and Frames *[select from options as listed]*
  1. Mill Finish
  2. Anodized Finish
    - a. Class 1 Anodized AA-M12C22A41. Color Clear
    - b. Class 1 Anodized AA-M12C22A42. Color Bronze
- C. Drain Pans and Pit Liners: Aluminum Mill Finish M10

**PART 3. EXECUTION**

**3.01 EXAMINATION**

- A. Products must be installed on a flat and level substrate, not more than 1/8 inch in 10 feet out of plumb per ACI 302.
- B. Examine substrates and floor conditions for compliance with requirements for location, size, recess depth and other conditions affecting installation of the Entrance Floor Grilles and frames.
- C. Proceed with installation only after all unsatisfactory conditions have been corrected.

**3.02 INSTALLATION**

- A. Install frames to comply with the Manufacturer's written instructions. Install frames level and tightly fitted together to prevent units from bowing, warping, moving or slipping.
- B. Install Entrance Floor Grilles to comply with the Manufacturer's written instructions. Coordinate top of entrance mat surface with doors that swing across the Entrance Floor Grilles to provide clearances under the door.
- C. Use all of the lockdowns as provided by the Manufacturer. Ensure that all of the lockdown machine screws are tight, and the Entrance Floor Grilles are level, coplanar with the adjacent floor and obstruction free.

**3.03 PROTECTION**

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- A. After completing frame installations, provide temporary filler of plywood or fiberboard in Entrance Floor Grille recesses and cover frames with protective flooring. Maintain protection until construction traffic has ended and project is near substantial completion.
- B. Install Entrance Floor Grilles when no further wheeled construction traffic will occur and all wet type operations, including painting are complete.

**3.04 MAINTENANCE**

- A. After installation, inspect the Entrances Floor Grilles regularly to ensure that all of the lockdown machine screws are tight, and the Entrance Floor Grilles are level, coplanar with the adjacent floor and obstruction free.
- B. Maintain Entrance Floor Grilles and frames to comply with the Manufacturer's written instructions.