



**OHIO GRATINGS, INC.**

**PRODUCT CATALOG**

# INDUSTRIAL GRATING SOLUTIONS

## Light Duty Steel Grating

*Ohio Gratings offers a wide variety of light duty steel grating styles including electro forge welded, dove tail pressure locked, riveted and swaged...*



Organic Tech. OH - Lt. Duty

Electro forge welded grating is the more traditional industrial product while dove tail pressure locked, riveted and swaged offer smoother lines and a more pleasing appearance than the typical welded grating. These

products appeal to the architectural market and offer a different look and can be used not only for industrial applications but also commercial applications where a higher profile product might be desired. The dove tail and swaged products are also part of our **Grater Access** line of products conforming to ADA standards.

## Aluminum Plank

Aluminum plank is a very versatile product. It is available unpunched or in a variety of punch patterns. Slip resistant surfaces are also available. Aluminum plank is ideal for multiple industrial applications, everything from wastewater treatment plants to ADA compliant walkways (shown right) and platforms.



Grosse Ile Bridge, MI - Aluminum Plank Walkway

## Heavy Duty Steel Grating

*Welded carbon heavy duty steel grating is the most popular choice where high strength is the primary grating requirement. Another option that meets ADA standards is **Wheels n' Heels**...*



Tree grate - Wheels n' Heels

The main bars are slotted and assembled with cross bars which are welded with one fillet weld at every joint. Stainless steel can also be provided for those high corrosive applications. This

product meets the demanding vehicle loading requirements of AASHTO and is geared to handle heavy rolling loads. Slip resistant surfaces are available.

The typical markets for heavy duty steel grating include: ramps, docks, industrial flooring, industrial cover trenches, airfield ramps & trenches, airplane landing mats, machinery support trenches, bridge decking, bridge sidewalks, bridge trenches and many more applications.



▲ Grosse Ile Bridge in Michigan - Heavy Duty Riveted

# THE OHIO GRATINGS STORY

OGi has rallied around one key principle over the years  
...**“Make it Right & Ship When Promised”**

Since 1970, our motto has allowed us to expand successfully over the years. OGi began as a light duty steel grating fabricator and expanded into the manufacturing of heavy duty welded steel and stainless steel grating. That early success led to other expansions including the manufacturing of aluminum swaged and dovetail bar grating. A few years later we added aluminum plank to our line of flooring products and then finally fiberglass to round out our product offerings.



OGi HOME OFFICE IN CANTON, OH ▲

This experience has led us into other markets in addition to the traditional industrial flooring market. OGi now has the ability to provide a myriad of aluminum and steel architectural products to the marketplace. Our manufacturing capabilities and engineering “know-how” allow us to work with owners, suppliers, architectural and engineering firms.



## Our special support team can help you meet all your unique design requirements, quickly and professionally...

- ▶ **Detailing Support** - Working from customer supplied drawings, our detailing group provides professional detailed shop drawings to insure a successful grating project.
- ▶ **Value Engineering** - Our on-staff engineers & detailers check & double check all the calculations to make sure the grating for your project meets or exceeds your structural expectations.
- ▶ **Custom Fabrication** - All types of custom fabrication are required on industrial projects. OGi has built grating panels and fabricated these projects for well over 25 years. Typical fabrication consists of straight cut, straight band, circular cut, circular band, end band, toe plate attachment and adding checker plate to the top of the grating.
- ▶ **Design & Custom Layout** - Our sales and detailing department can help with the grating design and layout to optimize and value engineer the grating on any type of project. We provide solutions not just grating. Call today to let us help with your next opportunity.



INTERSTATE GRATINGS, UT ▲



RIDGELAND, SC ▲



▲ HOUSTON, TX

## Our recent expansions in South Carolina, Utah and Texas demonstrate our commitment to service...

All three facilities are strategically located to help us reach out beyond the midwest and provide faster service to all of our current and future customers throughout the U.S.



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# ALUMINUM FEATURES & BENEFITS

## Aluminum Provides a Unique Combination of Properties

*...which makes it one of the most versatile engineering & construction materials available today!!*

As a natural resource, aluminum is our most abundant metallic element. It's light weight mass (about a third the weight of copper or steel), unmatched strength-to-weight ratio and excellent corrosion resistance under the majority of service conditions makes it an excellent material for the manufacturing of bar grating.

Aluminum can be recycled and as a result, makes it an environmentally friendly material unlike some other grating material. Aluminum is durable and will offer years of service without showing wear or decay. It is also non-toxic so it can be easily cleaned and does not absorb bacteria sustaining particles. As a result it is a good candidate for food processing facilities. The material is also resilient; it can deflect under loads and then spring back.

All these attributes make aluminum grating an ideal solution for many special grating applications such as: sewage and waste water treatment plants, off-shore drilling rigs, the chemical process industry, the paper mill industry and marine superstructure applications. Because of its natural attractiveness, aluminum grating is also used in many architectural and commercial applications including sun screens, ceiling tiles, vent grilles, fencing, building facades, fountains, nature and wildlife walkways, and entranceways.



## Aluminum is the “Lightweight Champion” ...Here are the Reasons Why:

- Aluminum is our Most Abundant Metallic Element
- Aluminum has Excellent Corrosion Resistance
- Aluminum has High Strength-to-Weight Ratio
- Aluminum can be Customized in the Field
- Aluminum can be Easily Recycled
- Aluminum is Naturally Attractive
- Aluminum is Light Weight
- Aluminum is Non-Toxic
- Aluminum is Resilient
- Aluminum is Versatile
- Aluminum is Durable



Toll Free: 800-321-9800



# ALUMINUM PRODUCTS



## Aluminum Rectangular, I Bar and LITEBAR®

SG Series - SGI Series - SGLi Series

A type of pressure locked grating made by permanently attaching cross bars to bearing bars through a pressure applied swaging process. Bearing bars are either rectangular or "I" shaped and range in size from 1" through 2 1/2". Both Rectangular Bar and I-Bar are offered in 1 3/16" and 1 5/16" spacings, as well as ADA (July 1991) compliant spacings. Cross bars are available on 4" and 2" centers. A serrated surface (rectangular bar) or striated surface (I-Bar) is available for skid resistance.



## Aluminum Flush Top - SGF Series

A type of pressure locked grating in which the cross bars are in the same plane relative to the top surface of the grating. Bearing bar sizes range from 1" x 1/8" through 2 1/2" x 3/16" in 1/4" increments. Bearing bar spacing of 1 1/16", 1 3/16", 1 1/2" and 1 5/8" c.c. and cross bar spacing of 4" or 2" are available. Where skid resistance is desired, a serrated surface can be provided. ALUMINUM FLUSH TOP is available in spacings which provide a 1/4" or 1/2" opening in conformance with provisions of the Americans With Disabilities Act (July 1991) for grating products.



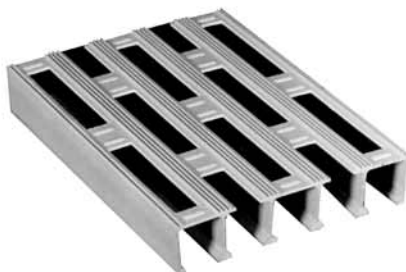
## Aluminum Dove Tail - ADT Series

A type of pressure locked grating whereby bearing bars and cross bars are precision slotted, assembled in egg-crate fashion, and hydraulically pressed together to form a panel grid. Bearing bars range from 1" x 1/8" through 2 1/2" x 3/16" in 1/4" increments. Grating spacings for Aluminum Dove Tail include the standards, as well as the ADA (July 1991) compliant spacings. Many engineers prefer the bi-directional, rectilinear look and feel of Aluminum Dove Tail grating.



## Aluminum Riveted - AR Series

A type of aluminum grating which combines straight bearing bars and bent connecting bars riveted together at their contact points. Riveted grating, although being the oldest style of industrial footwalk, is still the choice of many engineers due to its reliability and durability. All popular sizes and spacings of riveted grating are manufactured by Ohio Gratings with an emphasis on quality and service.



## Aluminum Plank

A type of aluminum grating which is available in 6" wide sections, and either plain sided or interlocking. Plank can be provided in sections up to 26' 0" in length, or fabricated per plans and specs. Plank grating is available unpunched as an economical and structurally superior substitute for aluminum checker-plate, or with a variety of punch/patterns.



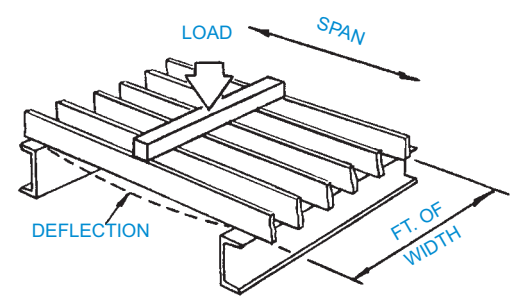
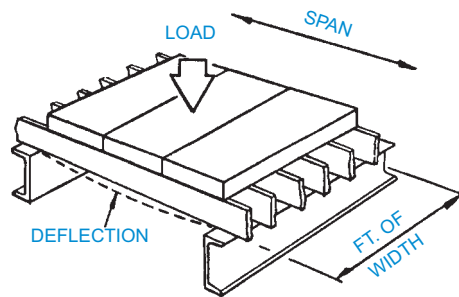
# ALUMINUM DESIGN CRITERIA

The tables of safe loads which follow have been computed using the following design parameters:

- U** = Uniform Load – lbs/ft<sup>2</sup>
- C** = Concentrated Load – lbs/ft of grating width
- S** = Section Modulus – in<sup>3</sup>/ft of grating width
- I** = Moment of Inertia – in<sup>4</sup>/ft of grating width
- L** = Simple Clear Span – feet
- D** = Deflection – inches
- E** = Modulus of Elasticity (10,000,000 psi)
- F** = Allowable Bending Stress (12,000 psi) – See note below.
- M** = Bending Moment

## Design Service

Available at no charge to the specifying architect/engineer or fabricator, is access to a computer program which provides uniform load and deflection (actual or fraction of span) analysis of grating products. Just call, write or fax your design criteria – loading, span, allowable deflection, or grating size desired – and we will provide you with the information you require.



### Uniform Load

### Concentrated Load

|                                  |   |                                      |
|----------------------------------|---|--------------------------------------|
| <b>Step 1. Determine M:</b>      | $M = \frac{FS}{12}$                     | $M = \frac{FS}{12}$                  |
| <b>Step 2. Determine U or C:</b> | $U = \frac{8M}{L^2}$                    | $C = \frac{4M}{L}$                   |
| <b>Step 3. Check D*:</b>         | $D = \frac{5UL(L \times 12)^3}{384 EI}$ | $D = \frac{C(L \times 12)^3}{48 EI}$ |

\*Deflection should be limited to 1/4" under 100# uniform load to afford pedestrian comfort.

**NOTE:** Quite often there is some question as to whether alloy 6063-T6 or 6061-T6 should be the preferred alloy for grating products. The design of aluminum grating for pedestrian loads is deflection limited, rather than strength limited. Although al-

loy 6061-T6 is stronger than alloy 6063-T6, the Modulus of Elasticity for both alloys is the same: 10,000,000 psi. As a result, equal loads will produce the same deflection, provided, of course that the yield strength is not exceeded.

Aluminum Grating is best suited for use in conjunction with pedestrian traffic, and for very light, rubber pneumatic tired rolling traffic (carts, dollies and hand trucks). For other rolling loads (forklifts, cars, trucks, etc.) see the Heavy Duty Steel Grating section, page 73.

Information of a technical nature contained herein is intended only for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. Such information is reliable when evaluated in the proper manner under conditions as described herein. Ohio Gratings, Inc. shall have no responsibility or liability for results obtained or damages resulting from improper evaluation or use.



# ALUMINUM RECTANGULAR BAR

## SG SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

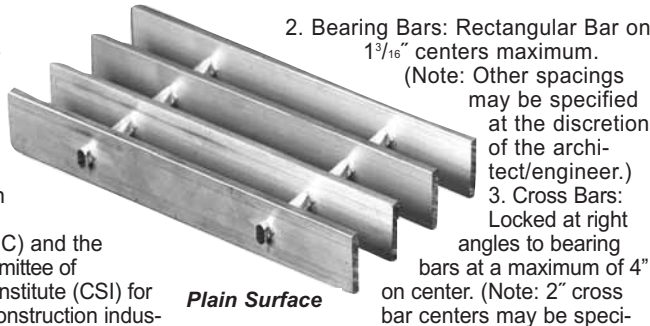
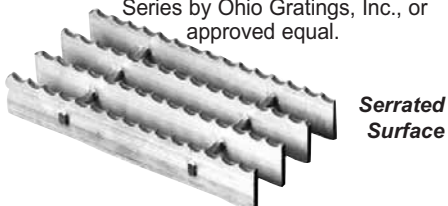
B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

#### PART 2: PRODUCT...

1. Grating: Aluminum Rectangular Bar SG Series by Ohio Gratings, Inc., or approved equal.



2. Bearing Bars: Rectangular Bar on  $1\frac{3}{16}$ " centers maximum.

(Note: Other spacings may be specified at the discretion of the architect/engineer.)

3. Cross Bars: Locked at right angles to bearing bars at a maximum of 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)

4. Surface: Plain. (Note: A serrated surface may be specified for maximum skid resistance.)

5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: Alternate loading requirements may be specified at the discretion of the architect/engineer.)

6. Finish: Mill finished.

7. Fabrication and Tolerances: In accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.

2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.

4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.

5. Utilize standard panel widths wherever possible.

#### D. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.

2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

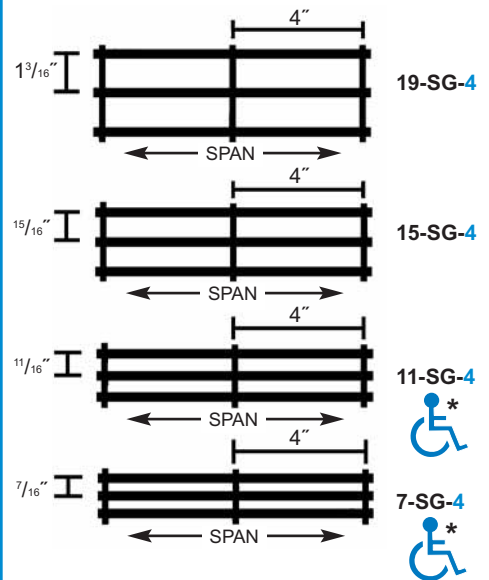
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

### Grating Profiles Available...

#### SG Series - Aluminum Rectangular Bar

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-SG-2, 15-SG-2, 11-SG-2 and 7-SG-2



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines





# ALUMINUM RECTANGULAR BAR

**SG** SERIES

## Product Applications...

The most widely used aluminum pressure locked grating is the rectangular bar SG series. The square cross bars are assembled through punched diamond shaped holes in rectangular bearing bars and are permanently locked into place by a swaging process. It provides clean crisp lines using recessed cross bar and eliminates the need for any type of welding to form the panels. By using the

most modern technology available, swaged bar grating allows for a variety of spacings including those that conform to the "Americans with Disabilities Act". Because of its aesthetic appeal and the ability to meet tight tolerances, this product is often used for architectural applications. Slip resistant surfaces are available.



▲ Dept. of Workers Compensation  
- Columbus, OH



◀ 4th Street Live  
- Louisville, KY



▲ LeMay WWTP  
- St. Louis, MO

Toll Free: 800-321-9800



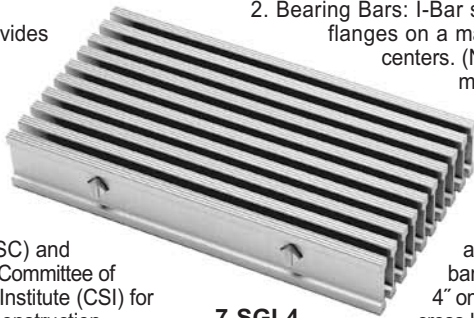
# ALUMINUM I-BAR

## SGI SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



2. Bearing Bars: I-Bar section with  $\frac{1}{4}$ " flanges on a maximum of  $1\frac{3}{16}$ " centers. (Note: other spacings may be specified at the discretion of the architect /engineer.)
3. Cross Bars: Locked at right angles to bearing bars at a maximum of 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect /engineer.)

#### 7-SGI-4

4. Surface: Flanges to have a striated surface.
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: alternate loading requirements may be specified at the discretion of the architect /engineer.)
6. Finish: Mill finished.
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

### PART 3: EXECUTION...

#### 3.1 Installation

**A.** Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

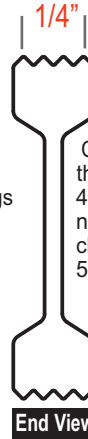
**B.** Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

#### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction.

*Where economy is a major consideration, the I-Bar SGI Series offers a popular and reasonably priced alternative to rectangular bar grating. Extruded I-Bar sections have the same load carrying capacity with less weight per square foot than rectangular bars. The striated top and bottom flanges provide a "built-in" skid resistance feature without the added cost of serrating.*

**Note:** The .031" striations top and bottom are in addition to the standard grating depth. For example, a 1" I-Bar section has an overall depth of 1.062"



- Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

#### D. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.
2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

### PART 1: GENERAL...

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The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

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2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

**B.1.** Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

#### 1.3 Submittals

- A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.
- B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

### PART 2: PRODUCT...

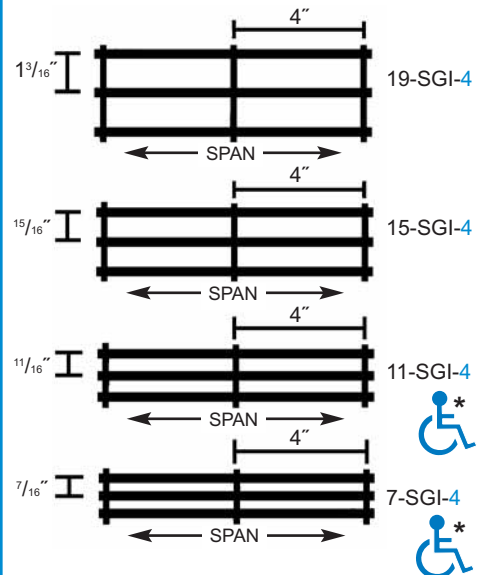
1. Grating: Aluminum I-Bar SGI Series by Ohio Gratings, Inc., or approved equal.



**Our Closest Mesh!**

### Grating Profiles Available... SGI Series - Aluminum I-Bar

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-SGI-2, 15-SGI-2, 11-SGI-2 and 7-SGI-2



**\*Note:** Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines



# ALUMINUM I- BAR

## SGI SERIES

### Product Applications...

The I-Bar SGI Series offers a popular and reasonably priced alternative to rectangular bar grating. Extruded I-Bar sections have the same load carrying capacity with

less weight per square foot than rectangular bars. The striated top and bottom flanges provide a "built-in" skid resistance feature without the added cost of serration.



▲ WWTP  
- Youngstown, OH



◀ Airport  
- Minneapolis, MN



▲ Steps  
- Corning, NY



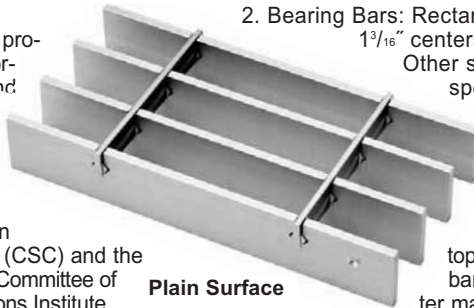
# ALUMINUM FLUSH TOP

## SGF SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



Plain Surface

2. Bearing Bars: Rectangular Bar on  $1\frac{3}{16}$ " centers maximum. (Note: Other spacings may be specified at the discretion of the architect/engineer.)
3. Cross Bars: Locked at right angles to, and in the same plane as, the top surface of bearing bars. Spacing: 4" on center maximum. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)
4. Surface: Plain. (Note: A serrated surface may be specified for maximum skid resistance.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: Alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: Mill finished.
7. Fabrication and Tolerances: In accordance with the NAAMM Metal Bar Grating Manual.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

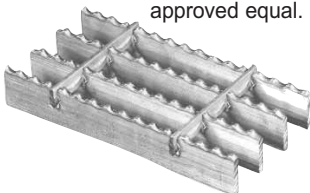
B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

#### PART 2: PRODUCT...

1. Grating: ALUMINUM FLUSH TOP SGF Series by Ohio Gratings, Inc., or approved equal.



Serrated Surface

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

- D. Protection of Aluminum from Dissimilar Materials:
1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.
  2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

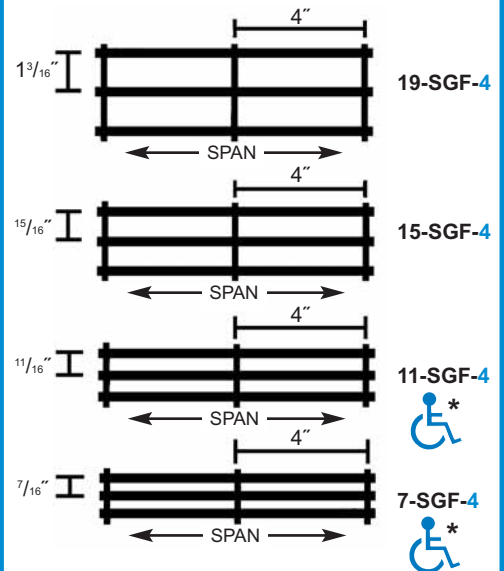
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

##### SGF Series - Aluminum Rectangular Bar

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-SGF-2, 15-SGF-2, 11-SGF-2 and 7-SGF-2



\* Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines



# ALUMINUM FLUSH TOP

## SGF SERIES

### Product Applications...

Maximum walking surface, cosmetic appeal, economy of shop fabrication and ease of field alteration make the aluminum flush top series the premier choice when pressure locked aluminum grating is being specified. This series offers a type of pressure locked grating in which the cross bars are in the same plane relative to the top surface of

the grating. For those areas that receive a great deal of pedestrian traffic, our 1/4" opening 7-SGF-4 close space product is available which conforms with the provisions of the Americans with Disabilities Act. Slip resistant surfaces are available. Flush top grating is also suitable for projects in the architectural market including screens, grilles and fences.

Mounting Detail ▶



◀ Fence Detail



International Airport ▲  
- Minneapolis - St. Paul, MN



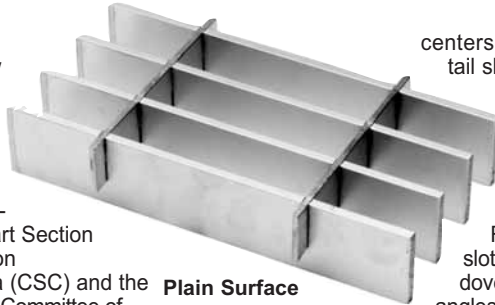
# ALUMINUM DOVE TAIL

## ADT SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



Plain Surface

centers maximum with dove tail slots to accept cross bars. (Note: Other spacings may be specified at the discretion of the architect/engineer.)

#### 3. Cross Bars:

Rectangular bars, slotted and locked in dove tail fashion at right angles, and in the same

plane as, the top surface of bearing

bars. Spacing: 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)

4. Surface: Plain (Note: A serrated surface may be specified at the discretion of the architect/engineer.)

5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed 1/4". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)

6. Finish: Mill finished.

7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

### PART 1: GENERAL...

#### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

#### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

#### 1.3 Submittals

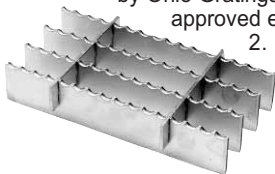
A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.

B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

### PART 2: PRODUCT...

1. Grating: Aluminum Dove Tail ADT Series by Ohio Gratings, Inc., or approved equal.

2. Bearing Bars: Rectangular Bar on 1 3/16"



Serrated Surface

### PART 3: EXECUTION...

#### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

#### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.

2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.

4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.

5. Utilize standard panel widths wherever possible.

#### D. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.

2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

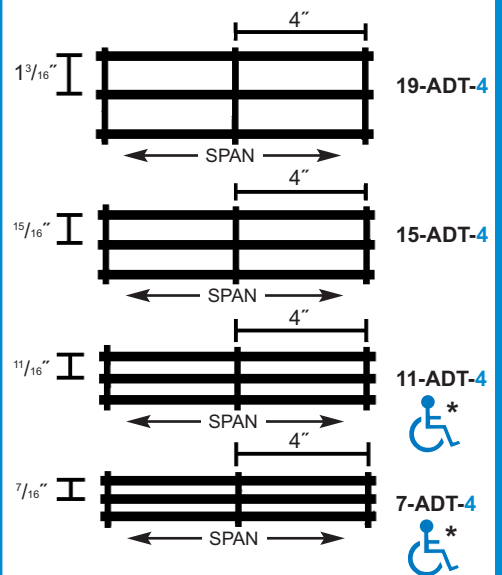
### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

### Grating Profiles Available...

#### ADT Series - Aluminum Dove Tail

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-ADT-2, 15-ADT-2, 11-ADT-2 and 7-ADT-2



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines



# ALUMINUM DOVE TAIL

## ADT SERIES

### Product Applications...

Traditionally designed, aluminum Dove Tail slot pressure locked grating offers a smooth, clean line of a flush top rectangular cross bar. Bearing bars and cross bars are precision slotted, assembled in egg-crate fashion and hydraulically pressed together to form a tightly locked, rigidly stable panel grid. This grating is available in spacings, which provide a 1/4" or 1/2" opening in conformance

with provisions for the "American With Disabilities Act" (July 1991). These products are part of our Grater Access line and are available with cross bars on 2" or 4" centers. This is also a popular style in the architectural community because of the aesthetic eye appeal of the product and the ability to maintain tighter tolerances. This style is also available in steel and stainless steel. Slip resistant surfaces are available.



▲ Waterfront  
- Louisville, KY



◀ Waterfront (detail)  
- Louisville, KY



▲ Alum Creek (detail)  
- Delaware, OH

▲ Alum Creek  
- Delaware, OH

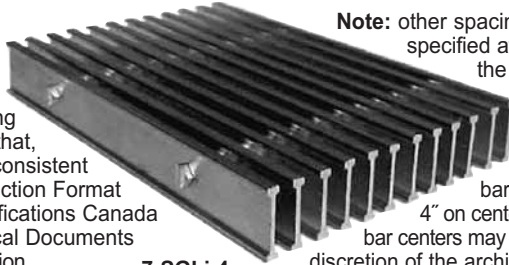


## SGLi SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



7-SGLi-4

**Note:** other spacings may be specified at the discretion of the architect/engineer.

3. Cross Bars: Locked at right angles to bearing bars at a maximum of 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)
4. Surface: Flanges to have a striated surface.
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed 1/4". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: Mill finished.
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

#### PART 2: PRODUCT...

1. Grating: Aluminum Lite I-Bar SGLi Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: I-Bar section with 3/16" flanges on a maximum of 1 3/16" centers.



End View

D. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.
2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

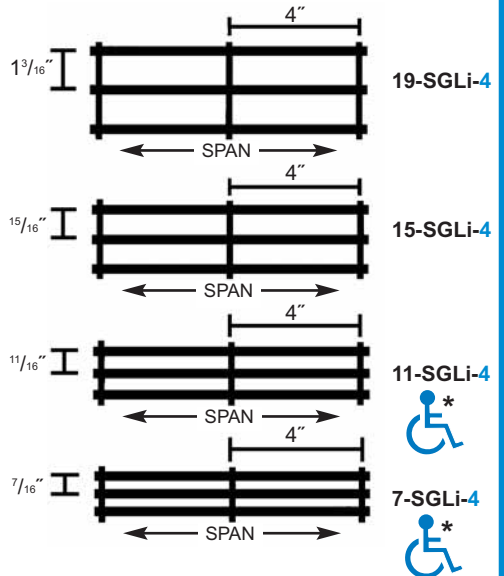
C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

### Grating Profiles Available...

#### SGLi Series - Aluminum LITEBAR

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-SGLi-2, 15-SGLi-2, 11-SGLi-2 and 7-SGLi-2



\* Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines





## SGLi SERIES



▲ Arundel Mills Building  
- Baltimore, MD

Arundel Mills (detail) ►

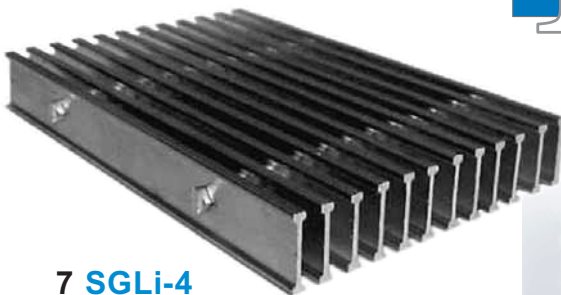
### APPLICATIONS:

- Walkways
- Entranceways
- Vents / Air Grilles
- Ceiling Tiles
- Sun Screens
- Material Screens
- Security Screens

### BENEFITS:

- 20% lighter
- Reduces Freight Cost
- Meets ADA Requirements
- More Economical
- Meets NAAMM Standards
- Easy Field Installation

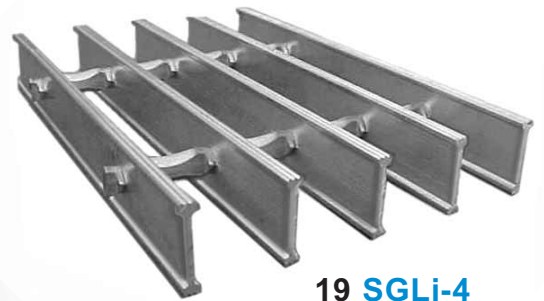
# LITEBAR®



7 SGLi-4



ALUMINUM



19 SGLi-4

# ALUMINUM

THE LIGHTWEIGHT CHAMPION



## 19 & 15 SPACE

### Load Table 19 SGLi-4 • 19 SGLi-2

| Bar Size (inches) | Ped Span (inches) | Wt. Lbs. (sq. ft.) | Sec.Prop Sx, in <sup>2</sup> - lx, in <sup>4</sup> |       | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 6'-6" | 7'-0" | 8'-0" |     |  |  |
|-------------------|-------------------|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|--|--|
| 3/4"              | 33                | 1.36               | .119   | U     | 954   | 424   | 238   | 153   | 106   | 78    | 60    |       |       |       |       |       |       |       |     |  |  |
|                   |                   |                    |  | D     | .043  | .098  | .173  | .271  | .39   | .531  | .694  |       |       |       |       |       |       |       |     |  |  |
|                   |                   |                    |  | .050  | C     | 477   | 318   | 238   | 191   | 159   | 136   | 119   |       |       |       |       |       |       |     |  |  |
| 1"                | 40                | 1.66               | .211   | U     | 1657  | 737   | 414   | 265   | 184   | 135   | 104   | 82    |       |       |       |       |       |       |     |  |  |
|                   |                   |                    |  | D     | .034  | .076  | .135  | .212  | .305  | .415  | .542  | .686  |       |       |       |       |       |       |     |  |  |
|                   |                   |                    |  | .112  | C     | 829   | 552   | 414   | 331   | 276   | 237   | 207   | 184   |       |       |       |       |       |     |  |  |
| 1-1/4"            | 48                | 1.97               | .339   | U     | 2538  | 1128  | 635   | 406   | 282   | 207   | 159   | 125   | 102   |       |       |       |       |       |     |  |  |
|                   |                   |                    |  | D     | .027  | .062  | .11   | .171  | .247  | .336  | .439  | .556  | .686  |       |       |       |       |       |     |  |  |
|                   |                   |                    |  | .222  | C     | 1269  | 846   | 635   | 508   | 423   | 363   | 317   | 282   | 254   |       |       |       |       |     |  |  |
| 1-1/2"            | 54                | 2.27               | .464   | U     | 3662  | 1628  | 916   | 586   | 407   | 299   | 229   | 181   | 146   | 121   |       |       |       |       |     |  |  |
|                   |                   |                    |  | D     | .023  | .052  | .092  | .144  | .207  | .282  | .369  | .466  | .576  | .697  |       |       |       |       |     |  |  |
|                   |                   |                    |  | .363  | C     | 1831  | 1221  | 916   | 732   | 610   | 523   | 458   | 407   | 366   | 333   |       |       |       |     |  |  |
| 2"                | 67                | 2.95               | .845   | U     | 6760  | 3004  | 1690  | 1082  | 751   | 552   | 423   | 334   | 180   | 223   | 188   | 160   | 138   | 106   |     |  |  |
|                   |                   |                    |  | D     | .017  | .039  | .070  | .109  | .157  | .214  | .279  | .354  | .291  | .528  | .629  | .738  | .856  | 1.118 |     |  |  |
|                   |                   |                    |  | .871  | C     | 3380  | 2253  | 1690  | 1352  | 1127  | 966   | 845   | 751   | 450   | 615   | 563   | 520   | 483   | 423 |  |  |
| 2-1/2"            | 79                | 3.59               | 1.322  | U     | 10577 | 4701  | 2644  | 1692  | 1175  | 863   | 661   | 522   | 423   | 350   | 294   | 250   | 216   | 165   |     |  |  |
|                   |                   |                    |  | D     | .014  | .032  | .056  | .088  | .126  | .172  | .225  | .285  | .351  | .425  | .506  | .594  | .689  | 0.899 |     |  |  |
|                   |                   |                    |  | 1.694 | C     | 5288  | 3526  | 2644  | 2115  | 1763  | 1511  | 1322  | 1175  | 1058  | 962   | 881   | 814   | 755   | 661 |  |  |
|                   |                   |                    |  | D     | .011  | .025  | .045  | .070  | .101  | .138  | .180  | .228  | .281  | .340  | .405  | .475  | .551  | 0.719 |     |  |  |

**% Open Area**  
 4" cc **80%**  
 2" cc **77%**

▶ See Panel Width Charts on page 21

### Load Table 15 SGLi-4 • 15 SGLi-2

| Bar Size (inches) | Ped Span (inches) | Wt. Lbs. (sq. ft.) | Sec.Prop Sx, in <sup>2</sup> - lx, in <sup>4</sup> |       | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 6'-6" | 7'-0" | 8'-0" |     |  |
|-------------------|-------------------|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|--|
| 3/4"              | 35                | 1.62               | .151   | U     | 1208  | 537   | 302   | 193   | 134   | 99    | 76    |       |       |       |       |       |       |       |     |  |
|                   |                   |                    |  | D     | .043  | .098  | .173  | .271  | .39   | .531  | .694  |       |       |       |       |       |       |       |     |  |
|                   |                   |                    |  | .063  | C     | 604   | 403   | 302   | 242   | 201   | 173   | 151   |       |       |       |       |       |       |     |  |
| 1"                | 43                | 2.00               | .268   | U     | 2099  | 933   | 525   | 336   | 233   | 171   | 131   | 104   |       |       |       |       |       |       |     |  |
|                   |                   |                    |  | D     | .034  | .076  | .135  | .212  | .305  | .415  | .542  | .686  |       |       |       |       |       |       |     |  |
|                   |                   |                    |  | .142  | C     | 1050  | 700   | 525   | 420   | 350   | 300   | 262   | 233   |       |       |       |       |       |     |  |
| 1-1/4"            | 50                | 2.38               | .429   | U     | 3215  | 1429  | 804   | 514   | 357   | 262   | 201   | 159   | 129   |       |       |       |       |       |     |  |
|                   |                   |                    |  | D     | .027  | .062  | .11   | .171  | .247  | .336  | .439  | .556  | .686  |       |       |       |       |       |     |  |
|                   |                   |                    |  | .282  | C     | 1608  | 1072  | 804   | 643   | 536   | 459   | 402   | 357   | 322   |       |       |       |       |     |  |
| 1-1/2"            | 57                | 2.77               | .588   | U     | 4639  | 2062  | 1160  | 742   | 515   | 379   | 290   | 229   | 186   | 153   |       |       |       |       |     |  |
|                   |                   |                    |  | D     | .023  | .052  | .092  | .144  | .207  | .282  | .369  | .466  | .576  | .697  |       |       |       |       |     |  |
|                   |                   |                    |  | .460  | C     | 2319  | 1546  | 1160  | 928   | 773   | 663   | 580   | 515   | 464   | 422   |       |       |       |     |  |
| 2"                | 71                | 3.63               | 1.070  | U     | 8560  | 3804  | 2140  | 1370  | 951   | 699   | 535   | 423   | 180   | 283   | 238   | 203   | 175   | 134   |     |  |
|                   |                   |                    |  | D     | .017  | .039  | .070  | .109  | .157  | .214  | .279  | .354  | .229  | .528  | .629  | .738  | .856  | 1.118 |     |  |
|                   |                   |                    |  | 1.103 | C     | 4280  | 2853  | 2140  | 1712  | 1427  | 1223  | 1070  | 951   | 450   | 778   | 713   | 658   | 611   | 535 |  |
| 2-1/2"            | 84                | 4.45               | 1.675  | U     | 13398 | 5954  | 3349  | 2144  | 1489  | 1094  | 837   | 662   | 536   | 443   | 372   | 317   | 273   | 209   |     |  |
|                   |                   |                    |  | D     | .014  | .032  | .056  | .088  | .126  | .172  | .225  | .285  | .351  | .425  | .506  | .594  | .689  | 0.899 |     |  |
|                   |                   |                    |  | 2.145 | C     | 6699  | 4466  | 3349  | 2680  | 2233  | 1914  | 1675  | 1489  | 1340  | 1218  | 1116  | 1031  | 957   | 837 |  |
|                   |                   |                    |  | D     | .011  | .025  | .045  | .070  | .101  | .138  | .180  | .228  | .281  | .340  | .405  | .475  | .551  | 0.719 |     |  |

**% Open Area**  
 4" cc **76%**  
 2" cc **73%**

▶ See Panel Width Charts on page 23

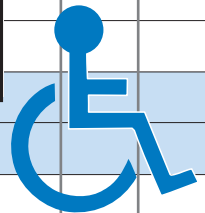


## 11 & 7 SPACE

### Load Table 11 SGLi-4 • 11 SGLi-2

| Bar Size (inches) | Ped Span (inches) | Wt. Lbs. (sq. ft.) | Sec.Prop Sx, in <sup>2</sup> -lx, in <sup>4</sup> |   | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 6'-6" | 7'-0" | 8'-0" |  |  |  |
|-------------------|-------------------|--------------------|---|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|
| 3/4"              | 38                | 2.06               | .206  | U | 1648  | 732   | 412   | 264   | 183   | 135   | 103   |       |       |       |       |       |       |       |  |  |  |
|                   |                   |                    |   | D | .043  | .098  | .173  | .271  | .390  | .531  | .694  |       |       |       |       |       |       |       |  |  |  |
|                   |                   |                    |   | C | 824   | 549   | 412   | 330   | 275   | 235   | 206   |       |       |       |       |       |       |       |  |  |  |
|                   |                   |                    |   | D | .035  | .078  | .139  | .217  | .312  | .425  | .555  |       |       |       |       |       |       |       |  |  |  |
| 1"                | 46                | 2.58               | .365  | U | 2863  | 1272  | 716   | 458   | 318   | 234   | 179   | 141   | 115   |       |       |       |       |       |  |  |  |
|                   |                   |                    |   | D | .034  | .076  | .135  | .212  | .305  | .415  | .542  | .686  | .846  |       |       |       |       |       |  |  |  |
|                   |                   |                    |   | C | 1431  | 954   | 716   | 573   | 477   | 409   | 358   | 318   | 286   |       |       |       |       |       |  |  |  |
|                   |                   |                    |   | D | .027  | .061  | .108  | .169  | .244  | .332  | .433  | .548  | .677  |       |       |       |       |       |  |  |  |
| 1-1/4"            | 55                | 3.11               | .585  | U | 4385  | 1949  | 1096  | 702   | 487   | 358   | 274   | 217   | 175   | 145   |       |       |       |       |  |  |  |
|                   |                   |                    |   | D | .027  | .062  | .11   | .171  | .247  | .336  | .439  | .556  | .686  | .83   |       |       |       |       |  |  |  |
|                   |                   |                    |   | C | 2192  | 1462  | 1096  | 877   | 731   | 626   | 548   | 487   | 438   | 399   |       |       |       |       |  |  |  |
|                   |                   |                    |   | D | .022  | .049  | .088  | .137  | .198  | .269  | .351  | .444  | .549  | .664  |       |       |       |       |  |  |  |
| 1-1/2"            | 62                | 3.63               | .802  | U | 6326  | 2811  | 1581  | 1012  | 703   | 516   | 395   | 312   | 253   | 209   | 176   | 150   |       |       |  |  |  |
|                   |                   |                    |   | D | .023  | .052  | .092  | .144  | .207  | .282  | .369  | .466  | .576  | .697  | .829  | .973  |       |       |  |  |  |
|                   |                   |                    |   | C | 3163  | 2109  | 1581  | 1265  | 1054  | 904   | 791   | 703   | 633   | 575   | 527   | 487   |       |       |  |  |  |
|                   |                   |                    |   | D | .018  | .041  | .074  | .115  | .166  | .226  | .295  | .373  | .461  | .557  | .663  | .779  |       |       |  |  |  |
| 2"                | 77                | 4.81               | 1.459   | U | 11672 | 5188  | 2918  | 1868  | 1297  | 953   | 730   | 576   | 460   | 386   | 324   | 276   | 238   | 182   |  |  |  |
|                   |                   |                    |   | D | .017  | .039  | .070  | .109  | .157  | .214  | .279  | .353  | .438  | .528  | .628  | .737  | .855  | 1.117 |  |  |  |
|                   |                   |                    |   | C | 5836  | 3891  | 2918  | 2334  | 1945  | 1667  | 1459  | 1297  | 1148  | 1006  | 898   | 834   | 730   |       |  |  |  |
|                   |                   |                    |   | D | .014  | .031  | .056  | .087  | .126  | .171  | .223  | .283  | .351  | .422  | .503  | .590  | .684  | .893  |  |  |  |
| 2-1/2"            | 91                | 5.92               | 2.284   | U | 18270 | 8120  | 4567  | 2923  | 2030  | 1491  | 1142  | 902   | 731   | 604   | 507   | 432   | 373   | 285   |  |  |  |
|                   |                   |                    |   | D | .014  | .032  | .056  | .088  | .126  | .172  | .225  | .285  | .351  | .425  | .506  | .594  | .689  | .899  |  |  |  |
|                   |                   |                    |   | C | 9135  | 6090  | 4567  | 3654  | 3045  | 2610  | 2284  | 2030  | 1827  | 1661  | 1522  | 1405  | 1305  | 1142  |  |  |  |
|                   |                   |                    |   | D | .011  | .025  | .045  | .070  | .101  | .138  | .180  | .228  | .281  | .340  | .405  | .475  | .551  | .719  |  |  |  |

% Open Area  
4" cc 69%  
2" cc 66%

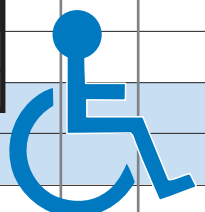


▶ See Panel Width Charts on page 25

### Load Table 7 SGLi-4 • 7 SGLi-2

| Bar Size (inches) | Ped Span (inches) | Wt. Lbs. (sq. ft.) | Sec.Prop Sx, in <sup>2</sup> -lx, in <sup>4</sup> |   | 1'-0" | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 6'-6" | 7'-0" | 8'-0" |  |
|-------------------|-------------------|--------------------|---|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| 3/4"              | 42                | 3.01               | .323  | U | 2588  | 1150  | 647   | 414   | 288   | 211   | 162   | 128   |       |       |       |       |       |       |  |
|                   |                   |                    |   | D | .043  | .097  | .173  | .271  | .390  | .531  | .693  | .877  |       |       |       |       |       |       |  |
|                   |                   |                    |   | C | 1294  | 863   | 647   | 518   | 431   | 370   | 323   | 288   |       |       |       |       |       |       |  |
|                   |                   |                    |   | D | .035  | .078  | .139  | .217  | .312  | .425  | .555  | .702  |       |       |       |       |       |       |  |
| 1"                | 51                | 3.83               | .573  | U | 4584  | 2037  | 1146  | 733   | 509   | 374   | 287   | 226   | 180   |       |       |       |       |       |  |
|                   |                   |                    |   | D | .034  | .076  | .136  | .212  | .305  | .416  | .543  | .687  | .833  |       |       |       |       |       |  |
|                   |                   |                    |   | C | 2292  | 1528  | 1146  | 917   | 764   | 655   | 573   | 509   | 450   |       |       |       |       |       |  |
|                   |                   |                    |   | D | .027  | .061  | .109  | .170  | .244  | .332  | .434  | .550  | .666  |       |       |       |       |       |  |
| 1-1/4"            | 61                | 4.65               | .920  | U | 7360  | 3271  | 1840  | 1178  | 818   | 601   | 460   | 363   | 294   | 243   | 204   |       |       |       |  |
|                   |                   |                    |   | D | .027  | .062  | .110  | .172  | .247  | .336  | .439  | .556  | .687  | .831  | .989  |       |       |       |  |
|                   |                   |                    |   | C | 3680  | 2453  | 1840  | 1472  | 1227  | 1051  | 920   | 818   | 736   | 669   | 613   |       |       |       |  |
|                   |                   |                    |   | D | .022  | .049  | .088  | .137  | .198  | .269  | .352  | .445  | .549  | .665  | .791  |       |       |       |  |
| 1-1/2"            | 69                | 5.47               | 1.261   | U | 10088 | 4484  | 2522  | 1614  | 1121  | 824   | 631   | 498   | 404   | 333   | 280   | 239   |       |       |  |
|                   |                   |                    |   | D | .023  | .052  | .092  | .144  | .207  | .282  | .369  | .467  | .576  | .697  | .830  | .974  |       |       |  |
|                   |                   |                    |   | C | 5044  | 3363  | 2522  | 2018  | 1681  | 1441  | 1261  | 1121  | 1009  | 917   | 841   | 776   |       |       |  |
|                   |                   |                    |   | D | .018  | .041  | .074  | .115  | .166  | .226  | .295  | .373  | .461  | .558  | .664  | .779  |       |       |  |
| 2"                | 86                | 7.33               | 2.293   | U | 18344 | 8153  | 4586  | 2935  | 2038  | 1497  | 1147  | 906   | 731   | 606   | 510   | 434   | 374   | 287   |  |
|                   |                   |                    |   | D | .017  | .039  | .070  | .109  | .157  | .214  | .279  | .354  | .438  | .528  | .629  | .738  | .856  | 1.117 |  |
|                   |                   |                    |   | C | 9172  | 6115  | 4586  | 3669  | 3057  | 2621  | 2293  | 2038  | 1827  | 1668  | 1529  | 1411  | 1310  | 1147  |  |
|                   |                   |                    |   | D | .014  | .031  | .056  | .087  | .126  | .171  | .223  | .283  | .351  | .422  | .503  | .590  | .684  | .894  |  |
| 2-1/2"            | 101               | 9.07               | 3.589   | U | 28709 | 12760 | 7177  | 4594  | 3190  | 2344  | 1794  | 1418  | 1148  | 949   | 797   | 680   | 586   | 449   |  |
|                   |                   |                    |   | D | .014  | .032  | .056  | .088  | .126  | .172  | .225  | .285  | .351  | .425  | .506  | .594  | .689  | .899  |  |
|                   |                   |                    |   | C | 14355 | 9570  | 7177  | 5742  | 4785  | 4101  | 3589  | 3190  | 2871  | 2610  | 2392  | 2208  | 2051  | 1794  |  |
|                   |                   |                    |   | D | .011  | .025  | .045  | .070  | .101  | .138  | .180  | .228  | .281  | .340  | .405  | .475  | .551  | .719  |  |

% Open Area  
4" cc 54%  
2" cc 51%



▶ See Panel Width Charts on page 27

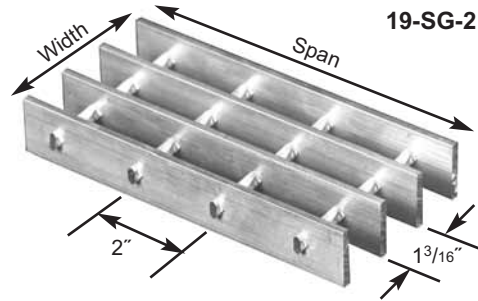
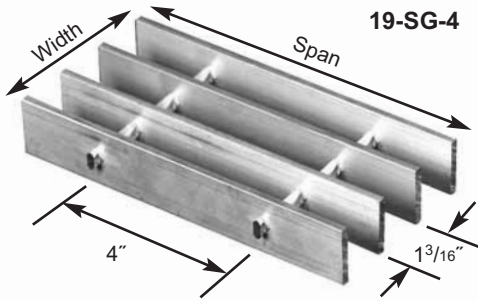
Products listed above conform with ADA Standards



# ALUMINUM PROFILES

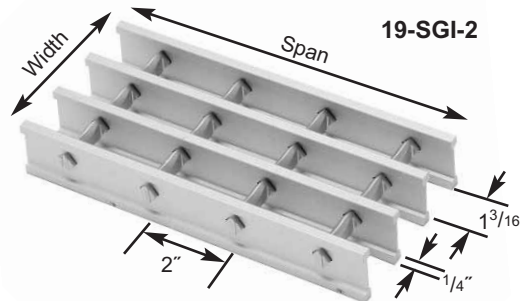
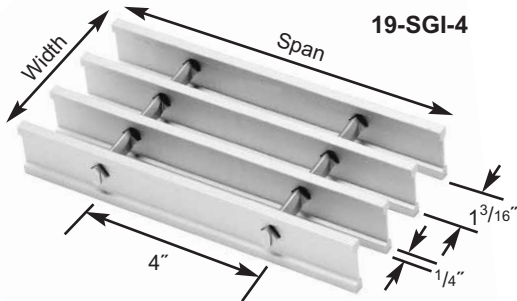
## 19 SPACE

### ALUMINUM RECTANGULAR BAR – 19-SG-4 ▪ 19-SG-2



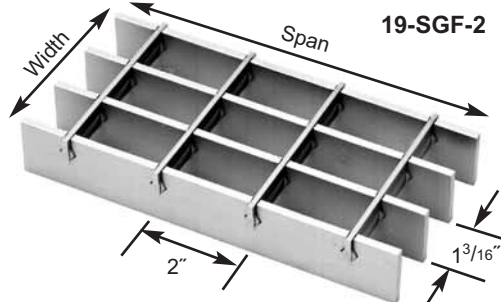
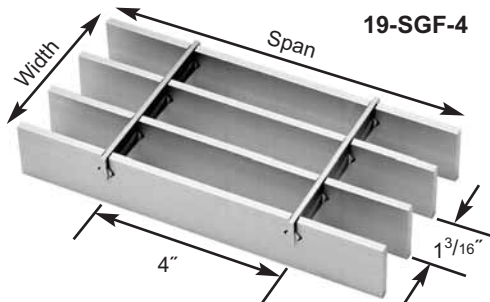
| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 85%  | 80%   |
| 2" cc        | 81%  | 77%   |

### ALUMINUM I-BAR – 19-SGI-4 ▪ 19-SGI-2



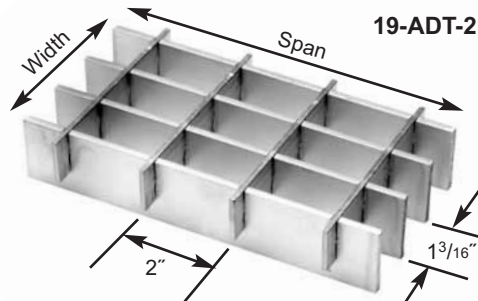
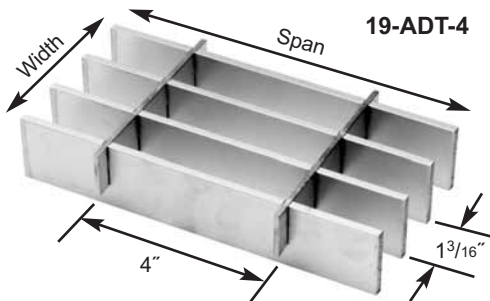
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 80% |
| 2" cc        | 77% |

### ALUMINUM FLUSH TOP – 19-SGF-4 ▪ 19-SGF-2



| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 85%  | 80%   |
| 2" cc        | 81%  | 77%   |

### ALUMINUM DOVE TAIL – 19-ADT-4 ▪ 19-ADT-2



| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 86%  | 81%   |
| 2" cc        | 84%  | 79%   |



# ALUMINUM LOAD TABLES

## 19 SPACE

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | Clear Span |       |       |       |       |       |       |       |       |       |       |       |       |  |
|------------------|------------------|-------------------|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                  |                  |                   |   | 2'-0"      | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 6'-6" | 7'-0" | 8'-0" |       |  |
| 1 x 1/8          | 39               | 1.71              | 0.211   | U          | 421   | 269   | 187   | 137   |       |       |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.144 | 0.225 | 0.324 | 0.439 |       |       |       |       |       |       |       |       |  |
|                  |                  |                   | 0.105   | C          | 421   | 337   | 281   | 241   |       |       |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.115 | 0.180 | 0.259 | 0.353 |       |       |       |       |       |       |       |       |  |
| 1 x 3/16         | 44               | 2.46              | 0.316   | U          | 632   | 404   | 281   | 206   | 158   |       |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.144 | 0.225 | 0.324 | 0.441 | 0.576 |       |       |       |       |       |       |       |  |
|                  |                  | 1.99              | 0.158   | C          | 632   | 505   | 421   | 361   | 316   |       |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 |       |       |       |       |       |       |       |  |
| 1 1/4 x 1/8      | 47               | 2.08              | 0.329   | U          | 658   | 421   | 292   | 215   | 164   |       |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.115 | 0.180 | 0.259 | 0.353 | 0.459 |       |       |       |       |       |       |       |  |
|                  |                  | 0.206             | 0.158   | C          | 658   | 526   | 439   | 376   | 329   |       |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.092 | 0.144 | 0.208 | 0.282 | 0.369 |       |       |       |       |       |       |       |  |
| 1 1/4 x 3/16     | 52               | 3.01              | 0.493   | U          | 987   | 632   | 439   | 322   | 247   | 195   |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 | 0.583 |       |       |       |       |       |       |  |
|                  |                  | 2.34              | 0.308   | C          | 987   | 789   | 658   | 564   | 493   | 439   |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.092 | 0.144 | 0.207 | 0.282 | 0.368 | 0.467 |       |       |       |       |       |       |  |
| 1 1/2 x 1/8      | 53               | 2.46              | 0.474   | U          | 947   | 606   | 421   | 309   | 237   | 187   |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.096 | 0.150 | 0.216 | 0.294 | 0.384 | 0.486 |       |       |       |       |       |       |  |
|                  |                  | 0.355             | 0.263   | C          | 947   | 758   | 632   | 541   | 474   | 421   |       |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.077 | 0.120 | 0.173 | 0.235 | 0.307 | 0.389 |       |       |       |       |       |       |  |
| 1 1/2 x 3/16     | 59               | 3.56              | 0.711   | U          | 1421  | 909   | 632   | 464   | 355   | 281   | 227   |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.096 | 0.150 | 0.216 | 0.294 | 0.384 | 0.487 | 0.599 |       |       |       |       |       |  |
|                  |                  | 2.70              | 0.533   | C          | 1421  | 1137  | 947   | 812   | 711   | 632   | 568   |       |       |       |       |       |  |
|                  |                  |                   |   | D          | 0.077 | 0.120 | 0.173 | 0.235 | 0.307 | 0.389 | 0.480 |       |       |       |       |       |  |
| 1 3/4 x 3/16     | 66               | 4.12              | 0.967   | U          | 1934  | 1238  | 860   | 632   | 484   | 382   | 309   | 256   | 215   |       |       |       |  |
|                  |                  |                   |   | D          | 0.082 | 0.129 | 0.185 | 0.252 | 0.329 | 0.417 | 0.514 | 0.623 | 0.741 |       |       |       |  |
|                  |                  | 3.06              | 0.846   | C          | 1934  | 1547  | 1289  | 1105  | 967   | 860   | 774   | 703   | 645   |       |       |       |  |
|                  |                  |                   |   | D          | 0.066 | 0.103 | 0.148 | 0.202 | 0.263 | 0.333 | 0.412 | 0.498 | 0.593 |       |       |       |  |
| 2 x 3/16         | 73               | 4.68              | 1.263   | U          | 2526  | 1617  | 1123  | 825   | 632   | 499   | 404   | 334   | 281   | 239   |       |       |  |
|                  |                  |                   |   | D          | 0.072 | 0.113 | 0.162 | 0.221 | 0.288 | 0.364 | 0.450 | 0.544 | 0.649 | 0.760 |       |       |  |
|                  |                  | 3.43              | 1.263   | C          | 2526  | 2021  | 1684  | 1444  | 1263  | 1123  | 1011  | 919   | 842   | 777   |       |       |  |
|                  |                  |                   |   | D          | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360 | 0.436 | 0.518 | 0.608 |       |       |  |
| 2 1/4 x 3/16     | 80               | 5.24              | 1.599   | U          | 3197  | 2046  | 1421  | 1044  | 799   | 632   | 512   | 423   | 355   | 303   | 261   |       |  |
|                  |                  |                   |   | D          | 0.064 | 0.100 | 0.144 | 0.196 | 0.256 | 0.324 | 0.400 | 0.484 | 0.576 | 0.677 | 0.784 |       |  |
|                  |                  | 3.75              | 1.798   | C          | 3197  | 2558  | 2132  | 1827  | 1599  | 1421  | 1279  | 1163  | 1066  | 984   | 914   |       |  |
|                  |                  |                   |   | D          | 0.051 | 0.080 | 0.115 | 0.157 | 0.205 | 0.259 | 0.320 | 0.387 | 0.461 | 0.541 | 0.628 |       |  |
| 2 1/2 x 3/16     | 87               | 5.79              | 1.974   | U          | 3947  | 2526  | 1754  | 1289  | 987   | 780   | 632   | 522   | 439   | 374   | 322   | 247   |  |
|                  |                  |                   |   | D          | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360 | 0.436 | 0.519 | 0.609 | 0.705 | 0.823 |  |
|                  |                  | 4.15              | 2.467   | C          | 3947  | 3158  | 2632  | 2256  | 1974  | 1754  | 1579  | 1435  | 1316  | 1215  | 1128  | 987   |  |
|                  |                  |                   |   | D          | 0.046 | 0.072 | 0.104 | 0.141 | 0.184 | 0.233 | 0.288 | 0.348 | 0.415 | 0.487 | 0.565 | 0.737 |  |

U - Safe uniform load in pounds/sq. ft.

C - Safe concentrated load in pounds/ft. grating width

D - Deflection in inches

Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi.

\*Based on 10.105 bars/ft. of grating width. Bearing bars 1 1/8" c.c. Add .3 lbs./sq. ft. for 19-SG-2.

Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### Panel Width Chart (in.) - 19-SG-4 19-SG-2, 19-SGLi-4 19-SGLi-2, 19-SGF-4 19-SGF-2, 19-ADT-4 19-ADT-2

#### Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3      | 4       | 5       | 6        | 7      | 8       | 9       | 10       | 11      | 12      | 13      | 14      | 15       | 16       |
|-------------|---------|--------|---------|---------|----------|--------|---------|---------|----------|---------|---------|---------|---------|----------|----------|
| 3/16" Bars  | 1 3/8   | 2 9/16 | 3 3/4   | 4 15/16 | 6 1/8    | 7 5/16 | 8 1/2   | 9 11/16 | 10 7/8   | 12 1/16 | 13 1/4  | 14 7/16 | 15 5/8  | 16 13/16 | 18       |
| No. of Bars | 17      | 18     | 19      | 20      | 21       | 22     | 23      | 24      | 25       | 26      | 27      | 28      | 29      | 30       | 31       |
| 3/16" Bars  | 19 3/16 | 20 3/8 | 21 9/16 | 22 3/4  | 23 15/16 | 25 1/8 | 26 5/16 | 27 1/2  | 28 11/16 | 29 7/8  | 31 1/16 | 32 1/4  | 33 7/16 | 34 5/8   | 35 13/16 |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

### Panel Width Chart (in.) - 19-SGI-4 19-SGI-2 Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2      | 3       | 4       | 5        | 6      | 7       | 8      | 9       | 10       | 11       | 12      | 13      | 14       | 15       | 16      |
|-------------|--------|---------|---------|----------|--------|---------|--------|---------|----------|----------|---------|---------|----------|----------|---------|
| 1/4" Flange | 1 7/16 | 2 5/8   | 3 13/16 | 5        | 6 3/16 | 7 3/8   | 8 9/16 | 9 3/4   | 10 15/16 | 12 1/8   | 13 5/16 | 14 1/2  | 15 11/16 | 16 7/8   | 18 1/16 |
| No. of Bars | 17     | 18      | 19      | 20       | 21     | 22      | 23     | 24      | 25       | 26       | 27      | 28      | 29       | 30       | 31      |
| 1/4" Flange | 19 1/4 | 20 7/16 | 21 5/8  | 22 13/16 | 24     | 25 3/16 | 26 3/8 | 27 9/16 | 28 3/4   | 29 15/16 | 31 1/8  | 32 5/16 | 33 1/2   | 34 11/16 | 35 7/8  |

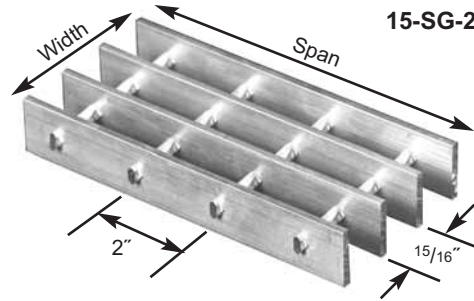
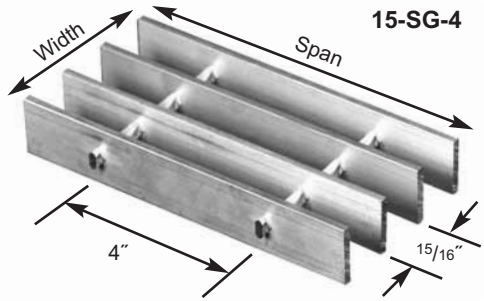
\*\*Bar thickness is 1/4" at top and bottom. Add 1/4" for extended cross bars. Standard panel widths indicated in blue.



# ALUMINUM PROFILES

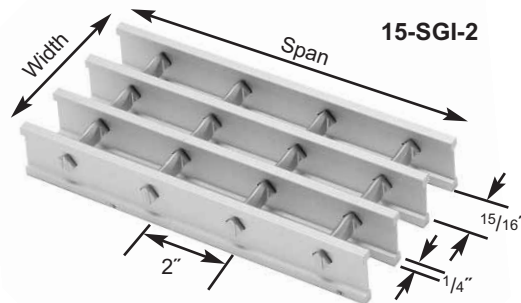
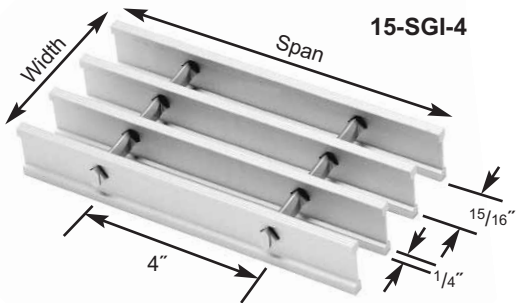
## 15 SPACE

### ALUMINUM RECTANGULAR BAR – 15-SG-4 ▪ 15-SG-2



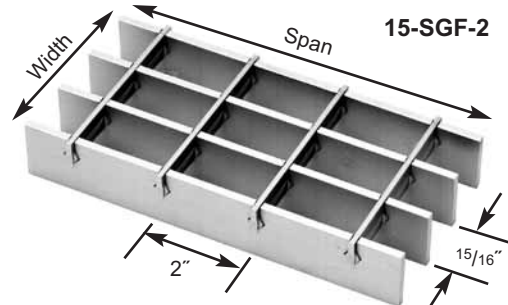
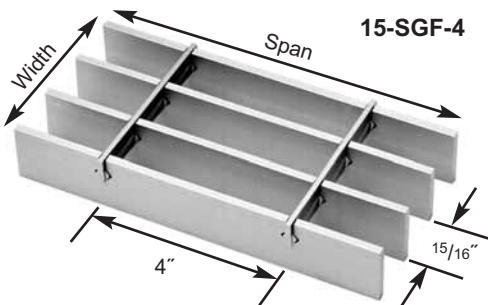
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 76% |
| 2" cc        | 73% |

### ALUMINUM I-BAR – 15-SGI-4 ▪ 15-SGI-2



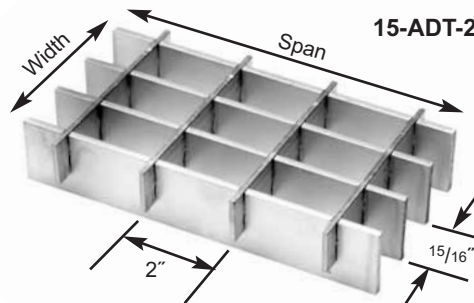
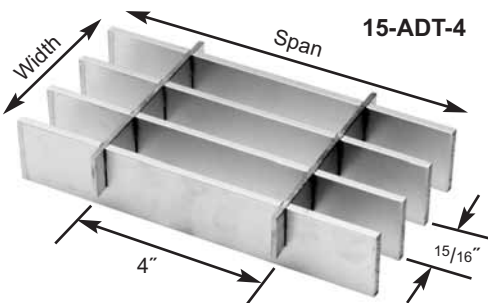
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 76% |
| 2" cc        | 73% |

### ALUMINUM FLUSH TOP – 15-SGF-4 ▪ 15-SGF-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 76% |
| 2" cc        | 73% |

### ALUMINUM DOVE TAIL – 15-ADT-4 ▪ 15-ADT-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 77% |
| 2" cc        | 75% |



# ALUMINUM LOAD TABLES

## 15 SPACE

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> | Ix*, in <sup>4</sup> | ClearSpan |        |        |        |        |        |        |        |        |        |   |  |
|------------------|------------------|-------------------|--------------------------------|----------------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|--|
|                  |                  |                   |                                |                      | 2'- 0"    | 2'- 6" | 3'- 0" | 3'- 6" | 4'- 0" | 4'- 6" | 5'- 0" | 5'- 6" | 6'- 0" | 6'- 6" | 7'- 0"  | 8'- 0"   |
| 1 x 3/16         | 46               | 3.06              | 0.400                          | U                    | 800       | 512    | 356    | 261    | 200    |        |        |        |        |        | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches |  |
|                  |                  |                   |                                | D                    | 0.144     | 0.225  | 0.324  | 0.441  | 0.576  |        |        |        |        |        |   |  |
| I-Bar            |                  | 2.42              | 0.200                          | C                    | 800       | 640    | 533    | 457    | 400    |        |        |        |        |        |   |  |
|                  |                  |                   |                                | D                    | 0.115     | 0.180  | 0.259  | 0.353  | 0.461  |        |        |        |        |        |   |  |
| 1 1/4 x 3/16     | 55               | 3.75              | 0.625                          | U                    | 1250      | 800    | 556    | 408    | 313    | 247    | 200    |        |        |        |   | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |
|                  |                  |                   |                                | D                    | 0.115     | 0.180  | 0.259  | 0.353  | 0.462  | 0.583  | 0.720  |        |        |        |   |  |
| I-Bar            |                  | 2.87              | 0.391                          | C                    | 1250      | 1000   | 833    | 714    | 625    | 556    | 500    |        |        |        |   |  |
|                  |                  |                   |                                | D                    | 0.092     | 0.144  | 0.207  | 0.282  | 0.369  | 0.467  | 0.576  |        |        |        |   |  |
| 1 1/2 x 3/16     | 63               | 4.45              | 0.900                          | U                    | 1800      | 1152   | 800    | 588    | 450    | 356    | 288    | 238    |        |        |   |  |
|                  |                  |                   |                                | D                    | 0.096     | 0.150  | 0.216  | 0.294  | 0.384  | 0.487  | 0.600  | 0.726  |        |        |   |  |
| I-Bar            |                  | 3.33              | 0.675                          | C                    | 1800      | 1440   | 1200   | 1029   | 900    | 800    | 720    | 655    |        |        |   |  |
|                  |                  |                   |                                | D                    | 0.077     | 0.120  | 0.173  | 0.235  | 0.307  | 0.389  | 0.480  | 0.581  |        |        |   |  |
| 1 3/4 x 3/16     | 70               | 5.16              | 1.225                          | U                    | 2450      | 1568   | 1089   | 800    | 613    | 484    | 392    | 324    | 272    |        |   |  |
|                  |                  |                   |                                | D                    | 0.082     | 0.129  | 0.185  | 0.252  | 0.329  | 0.417  | 0.514  | 0.622  | 0.740  |        |   |  |
| I-Bar            |                  | 3.78              | 1.072                          | C                    | 2450      | 1960   | 1633   | 1400   | 1225   | 1089   | 980    | 891    | 817    |        |   |  |
|                  |                  |                   |                                | D                    | 0.066     | 0.103  | 0.148  | 0.202  | 0.263  | 0.333  | 0.411  | 0.498  | 0.593  |        |   |  |
| 2 x 3/16         | 78               | 5.87              | 1.600                          | U                    | 3200      | 2048   | 1422   | 1045   | 800    | 632    | 512    | 423    | 356    | 303    | 261   |  |
|                  |                  |                   |                                | D                    | 0.072     | 0.113  | 0.162  | 0.221  | 0.288  | 0.364  | 0.450  | 0.544  | 0.649  | 0.761  | 0.881   |  |
| I-Bar            |                  | 4.25              | 1.600                          | C                    | 3200      | 2560   | 2133   | 1829   | 1600   | 1422   | 1280   | 1164   | 1067   | 985    | 914   |  |
|                  |                  |                   |                                | D                    | 0.058     | 0.090  | 0.130  | 0.176  | 0.230  | 0.292  | 0.360  | 0.436  | 0.519  | 0.609  | 0.705   |  |
| 2 1/4 x 3/16     | 85               | 6.57              | 2.025                          | U                    | 4050      | 2592   | 1800   | 1322   | 1013   | 800    | 648    | 536    | 450    | 383    | 331   | 253  |
|                  |                  |                   |                                | D                    | 0.064     | 0.100  | 0.144  | 0.196  | 0.256  | 0.324  | 0.400  | 0.484  | 0.576  | 0.675  | 0.785   | 1.023  |
| I-Bar            |                  | 4.66              | 2.278                          | C                    | 4050      | 3240   | 2700   | 2314   | 2025   | 1800   | 1620   | 1473   | 1350   | 1246   | 1157  | 1013   |
|                  |                  |                   |                                | D                    | 0.051     | 0.080  | 0.115  | 0.157  | 0.205  | 0.259  | 0.320  | 0.387  | 0.461  | 0.541  | 0.627   | 0.820  |
| 2 1/2 x 3/16     | 92               | 7.27              | 2.500                          | U                    | 5000      | 3200   | 2222   | 1633   | 1250   | 988    | 800    | 661    | 556    | 473    | 408   | 313  |
|                  |                  |                   |                                | D                    | 0.058     | 0.090  | 0.130  | 0.176  | 0.230  | 0.292  | 0.360  | 0.435  | 0.519  | 0.608  | 0.705   | 0.923  |
| I-Bar            |                  | 5.16              | 3.125                          | C                    | 5000      | 4000   | 3333   | 2857   | 2500   | 2222   | 2000   | 1818   | 1667   | 1538   | 1429  | 1250   |
|                  |                  |                   |                                | D                    | 0.046     | 0.072  | 0.104  | 0.141  | 0.184  | 0.233  | 0.288  | 0.348  | 0.415  | 0.487  | 0.565   | 0.737  |

\*Based on 12.8 bars/ft. of grating width. Bearing bars 3/16", c.c. Add 3 lbs./sq. ft. for 15-SG-2, 1/4" bearing bars available by inquiry. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### Panel Width Chart (in.) - 15-SG-4 15-SG-2, 19-SGLi-4 19-SGLi-2, 15-SGF-4 15-SGI-2, 15-ADT-4 15-ADT-2

#### Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6        | 7        | 8        | 9        | 10       | 11     | 12      | 13      | 14      | 15      | 16      |
|-------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|--------|---------|---------|---------|---------|---------|
| 3/16" Bars  | 1 1/8   | 2 1/16  | 3       | 3 15/16 | 4 7/8    | 5 13/16  | 6 3/4    | 7 11/16  | 8 5/8    | 9 9/16 | 10 1/2  | 11 7/16 | 12 3/8  | 13 5/16 | 14 1/4  |
| No. of Bars | 17      | 18      | 19      | 20      | 21       | 22       | 23       | 24       | 25       | 26     | 27      | 28      | 29      | 30      | 31      |
| 3/16" Bars  | 15 3/16 | 16 1/8  | 17 1/16 | 18      | 18 15/16 | 19 7/8   | 20 13/16 | 21 3/4   | 22 11/16 | 23 5/8 | 24 9/16 | 25 1/2  | 26 7/16 | 27 3/8  | 28 5/16 |
| No. of Bars | 32      | 33      | 34      | 35      | 36       | 37       | 38       | 39       |          |        |         |         |         |         |         |
| 3/16" Bars  | 29 1/4  | 30 3/16 | 31 1/8  | 32 1/16 | 33       | 33 15/16 | 34 7/8   | 35 13/16 |          |        |         |         |         |         |         |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

### Panel Width Chart (in.) - 15-SGI-4 15-SGF-2 Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6       | 7        | 8        | 9        | 10      | 11       | 12      | 13      | 14      | 15      | 16     |
|-------------|---------|---------|---------|---------|---------|----------|----------|----------|---------|----------|---------|---------|---------|---------|--------|
| 1/4" Flange | 1 3/16  | 2 1/8   | 3 1/16  | 4       | 4 15/16 | 5 7/8    | 6 13/16  | 7 3/4    | 8 11/16 | 9 5/8    | 10 9/16 | 11 1/2  | 12 7/16 | 13 3/8  | 14 1/4 |
| No. of Bars | 17      | 18      | 19      | 20      | 21      | 22       | 23       | 24       | 25      | 26       | 27      | 28      | 29      | 30      | 31     |
| 1/4" Flange | 15 1/4  | 16 3/16 | 17 1/8  | 18 1/16 | 19      | 19 15/16 | 20 7/8   | 21 13/16 | 22 3/4  | 23 11/16 | 24 5/8  | 25 9/16 | 26 1/2  | 27 7/16 | 28 3/8 |
| No. of Bars | 32      | 33      | 34      | 35      | 36      | 37       | 38       | 39       |         |          |         |         |         |         |        |
| 1/4" Flange | 29 5/16 | 30 1/4  | 31 3/16 | 32 1/8  | 33 1/16 | 34       | 34 15/16 | 35 7/8   |         |          |         |         |         |         |        |

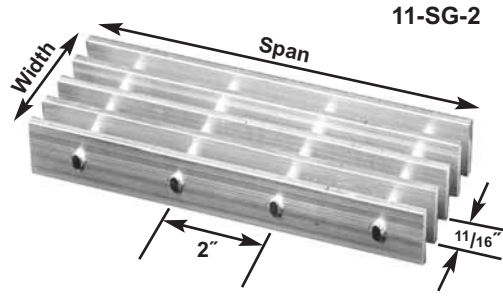
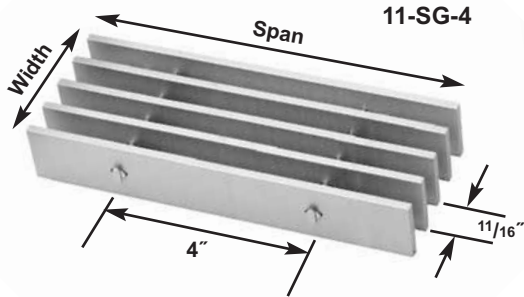
\*\*Bar thickness is 1/4" at top and bottom. Add 1/4" for extended cross bars. Standard panel widths indicated in blue.



# ALUMINUM PROFILES

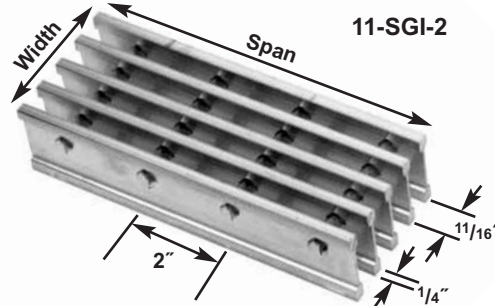
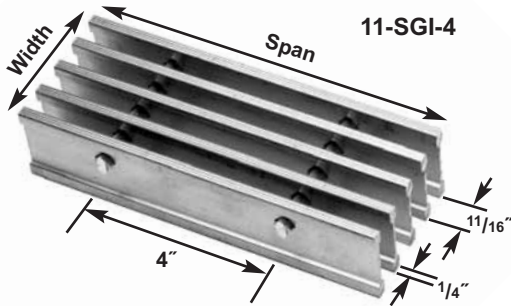
## 11 SPACE

### ALUMINUM RECTANGULAR BAR – 11-SG-4 ▪ 11-SG-2



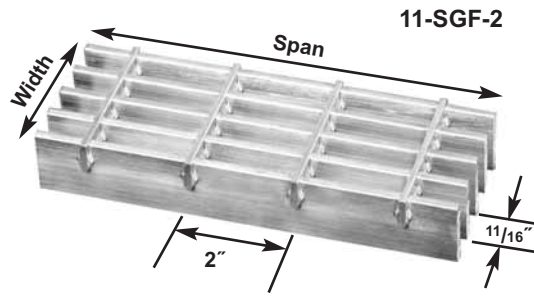
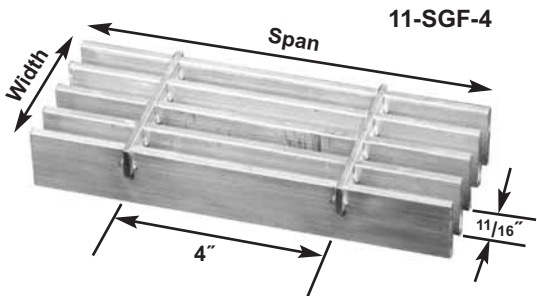
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 69% |
| 2" cc        | 66% |

### ALUMINUM I-BAR – 11-SGI-4 ▪ 11-SGI-2



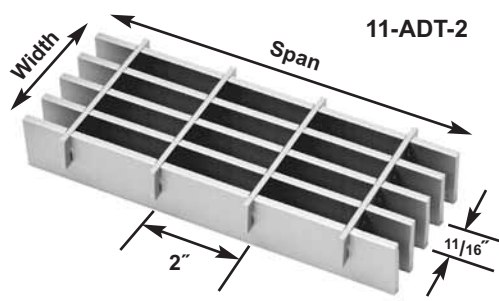
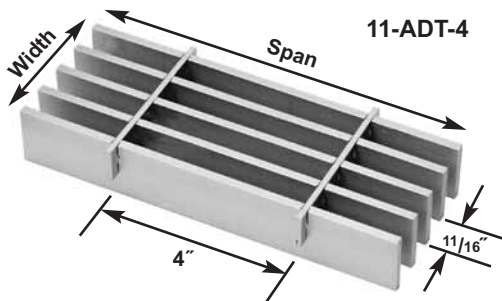
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 69% |
| 2" cc        | 66% |

### ALUMINUM FLUSH TOP – 11-SGF-4 ▪ 11-SGF-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 76% |
| 2" cc        | 73% |

### ALUMINUM DOVE TAIL – 11-ADT-4 ▪ 11-ADT-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 70% |
| 2" cc        | 68% |

The above products conform to ADA specifications





# ALUMINUM LOAD TABLES

## 11 SPACE

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | Clear Span |         |         |         |         |         |         |   |  |         |  |  |       |  |  |  |
|------------------|------------------|-------------------|---|------------|---------|---------|---------|---------|---------|---------|---|--|---------|--|--|-------|--|--|--|
|                  |                  |                   |   | 2' - 0"    | 2' - 6" | 3' - 0" | 3' - 6" | 4' - 0" | 4' - 6" | 5' - 0" | 5' - 6"   | 6' - 0"  | 6' - 6" | 7' - 0"  | 8' - 0"  |       |  |  |  |
| 1 x 3/16         | 50               | 4.13              | 0.545   | U          | 1091    | 698     | 485     | 356     | 273     | 215     | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br><br>Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |  |         |  |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.144   | 0.225   | 0.324   | 0.441   | 0.577   | 0.727   |   |  |         |  |  |       |  |  |  |
| I-Bar            |                  | 3.18              | 0.273   | C          | 1091    | 873     | 727     | 623     | 545     | 485     |   |  |         |  |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.115   | 0.180   | 0.259   | 0.353   | 0.460   | 0.583   |   |  |         |  |  |       |  |  |  |
| 1 1/4 x 3/16     | 59               | 5.13              | 0.852   | U          | 1705    | 1091    | 758     | 557     | 426     | 337     | 273   | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |         |  |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.115   | 0.180   | 0.259   | 0.353   | 0.461   | 0.584   | 0.721   |  |         |  |  |       |  |  |  |
| I-Bar            |                  | 3.79              | 0.533   | C          | 1705    | 1364    | 1136    | 974     | 852     | 758     | 682   |  |         |  |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.092   | 0.144   | 0.207   | 0.282   | 0.369   | 0.467   | 0.576   |  |         |  |  |       |  |  |  |
| 1 1/2 x 3/16     | 68               | 6.21              | 1.227   | U          | 2455    | 1571    | 1091    | 802     | 614     | 485     | 393   | 325  | 273     | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.096   | 0.150   | 0.216   | 0.294   | 0.384   | 0.486   | 0.600   | 0.727  | 0.865   |  |  |       |  |  |  |
| I-Bar            |                  | 4.42              | 0.920   | C          | 2455    | 1964    | 1636    | 1403    | 1227    | 1091    | 982   | 893  | 818     |  |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.077   | 0.120   | 0.173   | 0.235   | 0.307   | 0.389   | 0.480   | 0.581  | 0.691   |  |  |       |  |  |  |
| 1 3/4 x 3/16     | 76               | 7.18              | 1.670   | U          | 3341    | 2138    | 1485    | 1091    | 835     | 660     | 535   | 442  | 371     | 316  | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |       |  |  |  |
|                  |                  |                   |   | D          | 0.082   | 0.129   | 0.185   | 0.252   | 0.329   | 0.417   | 0.515   | 0.623  | 0.740   | 0.868  |  |       |  |  |  |
| I-Bar            |                  | 5.03              | 1.462   | C          | 3341    | 2673    | 2227    | 1909    | 1670    | 1485    | 1336  | 1215   | 1114    | 1028   |  |       |  |  |  |
|                  |                  |                   |   | D          | 0.066   | 0.103   | 0.148   | 0.202   | 0.263   | 0.333   | 0.411   | 0.498  | 0.593   | 0.695  |  |       |  |  |  |
| 2 x 3/16         | 84               | 8.14              | 2.182   | U          | 4364    | 2793    | 1939    | 1425    | 1091    | 862     | 698   | 577  | 485     | 413  | 356  | 273   | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |  |  |
|                  |                  |                   |   | D          | 0.072   | 0.113   | 0.162   | 0.221   | 0.288   | 0.365   | 0.450   | 0.544  | 0.648   | 0.760  | 0.881  | 1.153 |  |  |  |
| I-Bar            |                  | 5.67              | 2.182   | C          | 4364    | 3491    | 2909    | 2494    | 2182    | 1939    | 1746  | 1587   | 1455    | 1343   | 1247   | 1091  |  |  |  |
|                  |                  |                   |   | D          | 0.058   | 0.090   | 0.130   | 0.176   | 0.230   | 0.292   | 0.360   | 0.436  | 0.519   | 0.609  | 0.706  | 0.922 |  |  |  |
| 2 1/4 x 3/16     | 92               | 9.10              | 2.761   | U          | 5523    | 3535    | 2455    | 1803    | 1381    | 1091    | 884   | 730  | 614     | 523  | 451  | 345   | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |  |  |
|                  |                  |                   |   | D          | 0.064   | 0.100   | 0.144   | 0.196   | 0.256   | 0.324   | 0.400   | 0.484  | 0.576   | 0.676  | 0.784  | 1.023 |  |  |  |
| I-Bar            |                  | 6.23              | 3.107   | C          | 5523    | 4418    | 3682    | 3156    | 2761    | 2455    | 2209  | 2008   | 1841    | 1699   | 1578   | 1381  |  |  |  |
|                  |                  |                   |   | D          | 0.051   | 0.080   | 0.115   | 0.157   | 0.205   | 0.259   | 0.320   | 0.387  | 0.461   | 0.541  | 0.627  | 0.819 |  |  |  |
| 2 1/2 x 3/16     | 100              | 10.06             | 3.409   | U          | 6818    | 4364    | 3030    | 2226    | 1705    | 1347    | 1091  | 902  | 758     | 646  | 557  | 426   | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |  |  |
|                  |                  |                   |   | D          | 0.058   | 0.090   | 0.130   | 0.176   | 0.230   | 0.292   | 0.360   | 0.436  | 0.519   | 0.609  | 0.706  | 0.921 |  |  |  |
| I-Bar            |                  | 6.91              | 4.261   | C          | 6818    | 5455    | 4546    | 3896    | 3409    | 3030    | 2727  | 2479   | 2273    | 2098   | 1948   | 1705  |  |  |  |
|                  |                  |                   |   | D          | 0.046   | 0.072   | 0.104   | 0.141   | 0.184   | 0.233   | 0.288   | 0.348  | 0.415   | 0.487  | 0.564  | 0.737 |  |  |  |

\*Based on 17,455 bars/ft. of grating width. Bearing bars 3/16" c.c. Add 4 lbs./sq. ft. for 11-SGF-2, 1/2" bearing bars available by inquiry. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### Panel Width Chart (in.) - 11-SGF-4 11-SGF-2, 11-SGLi-4 11-SGLi-2, 11-SG-4 11-SG-2, 11-ADT-4 11-ADT-2

#### Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2        | 3       | 4       | 5       | 6        | 7        | 8        | 9       | 10       | 11       | 12      | 13      | 14      | 15      | 16       |
|-------------|----------|---------|---------|---------|----------|----------|----------|---------|----------|----------|---------|---------|---------|---------|----------|
| 3/16" Bars  | 7/8      | 19/16   | 2 1/4   | 2 5/16  | 3 5/8    | 4 5/16   | 5        | 5 11/16 | 6 3/8    | 7 1/16   | 7 3/4   | 8 7/16  | 9 1/8   | 9 13/16 | 10 1/2   |
| No. of Bars | 17       | 18      | 19      | 20      | 21       | 22       | 23       | 24      | 25       | 26       | 27      | 28      | 29      | 30      | 31       |
| 3/16" Bars  | 11 3/16  | 11 7/8  | 12 9/16 | 13 1/4  | 13 15/16 | 14 5/8   | 15 5/16  | 16      | 16 11/16 | 17 3/8   | 18 1/16 | 18 3/4  | 19 7/16 | 20 1/8  | 20 13/16 |
| No. of Bars | 32       | 33      | 34      | 35      | 36       | 37       | 38       | 39      | 40       | 41       | 42      | 43      | 44      | 45      | 46       |
| 3/16" Bars  | 21 1/2   | 22 3/16 | 22 7/8  | 23 9/16 | 24 1/4   | 24 15/16 | 25 5/8   | 26 5/16 | 27       | 27 11/16 | 28 3/8  | 29 1/16 | 29 3/4  | 30 7/16 | 31 1/8   |
| No. of Bars | 47       | 48      | 49      | 50      | 51       | 52       | 53       |         |          |          |         |         |         |         |          |
| 3/16" Bars  | 31 13/16 | 32 1/2  | 33 3/16 | 33 7/8  | 34 9/16  | 35 1/4   | 35 15/16 |         |          |          |         |         |         |         |          |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

### Panel Width Chart (in.) - 11-SGI-4 11-SGI-2 Dimensions Are Out-to-Out of Bearing Bars\*\*

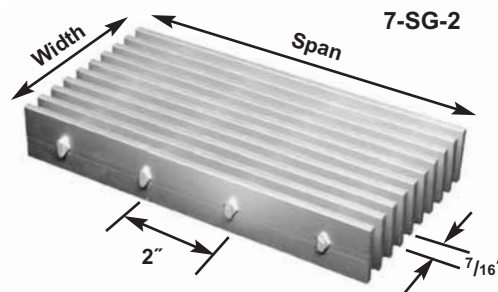
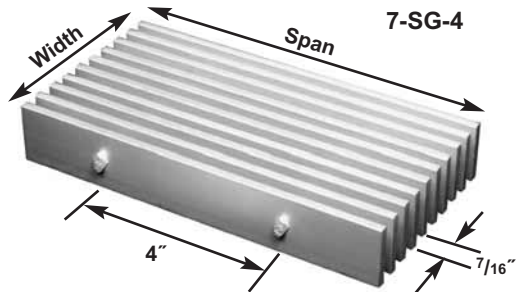
| No. of Bars | 2       | 3        | 4        | 5        | 6       | 7        | 8        | 9       | 10      | 11      | 12      | 13       | 14       | 15      | 16      |
|-------------|---------|----------|----------|----------|---------|----------|----------|---------|---------|---------|---------|----------|----------|---------|---------|
| 1/4" Flange | 15/16   | 1 5/8    | 2 5/16   | 3        | 3 11/16 | 4 3/8    | 5 1/16   | 5 3/4   | 6 7/16  | 7 1/8   | 7 13/16 | 8 1/2    | 9 3/16   | 9 7/8   | 10 9/16 |
| No. of Bars | 17      | 18       | 19       | 20       | 21      | 22       | 23       | 24      | 25      | 26      | 27      | 28       | 29       | 30      | 31      |
| 1/4" Flange | 11 1/4  | 11 15/16 | 12 5/8   | 13 5/16  | 14      | 14 11/16 | 15 3/8   | 16 1/16 | 16 3/4  | 17 7/16 | 18 1/8  | 18 13/16 | 19 1/2   | 20 3/16 | 20 7/8  |
| No. of Bars | 32      | 33       | 34       | 35       | 36      | 37       | 38       | 39      | 40      | 41      | 42      | 43       | 44       | 45      | 46      |
| 1/4" Flange | 21 9/16 | 22 1/4   | 22 15/16 | 23 5/8   | 24 5/16 | 25       | 25 11/16 | 26 3/8  | 27 1/16 | 27 3/4  | 28 7/16 | 29 1/8   | 29 13/16 | 30 1/2  | 31 3/16 |
| No. of Bars | 47      | 48       | 49       | 50       | 51      | 52       | 53       |         |         |         |         |          |          |         |         |
| 1/4" Flange | 31 7/8  | 32 9/16  | 33 1/4   | 33 15/16 | 34 5/8  | 35 5/16  | 36       |         |         |         |         |          |          |         |         |

\*\*Bar thickness is 1/4" at top and bottom. Add 1/4" for extended cross bars. Standard panel widths indicated in blue.

# ALUMINUM PROFILES

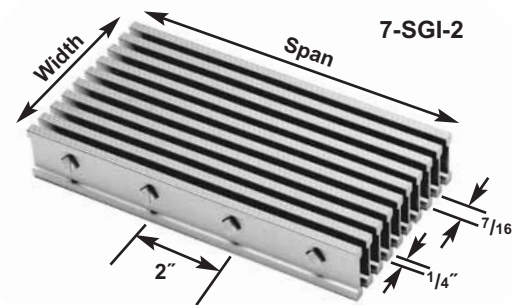
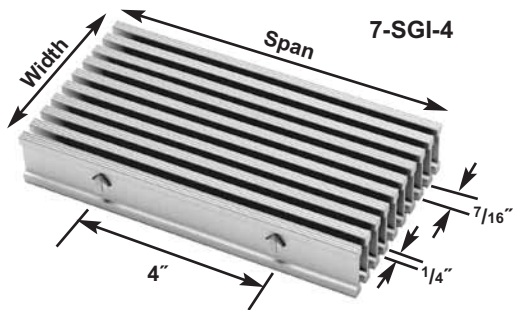
## 7 SPACE

### ALUMINUM RECTANGULAR BAR – 7-SG-4 ▪ 7-SG-2



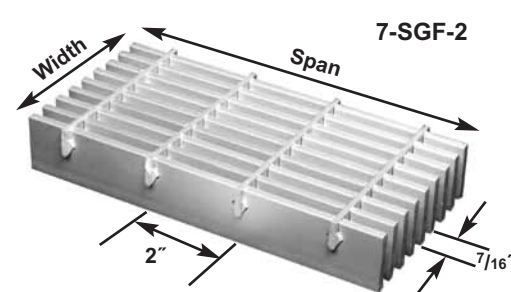
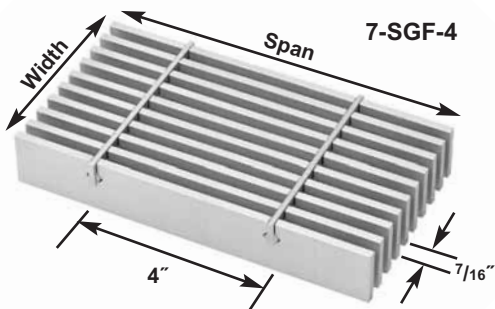
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 54% |
| 2" cc        | 51% |

### ALUMINUM I-BAR – 7-SGI-4 ▪ 7-SGI-2



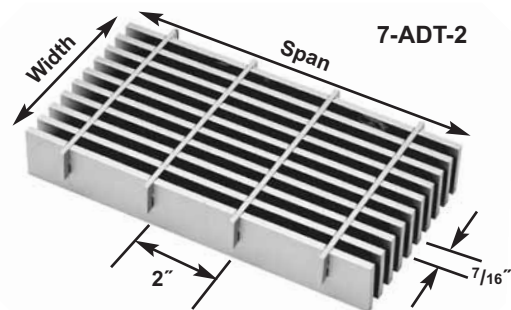
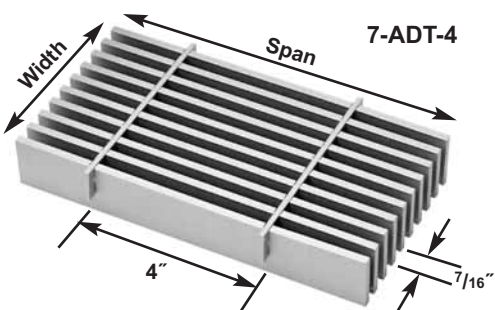
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 39% |
| 2" cc        | 36% |

### ALUMINUM FLUSH TOP – 7-SGF-4 ▪ 7-SGF-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 54% |
| 2" cc        | 51% |

### ALUMINUM DOVE TAIL – 7-ADT-4 ▪ 7-ADT-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 55% |
| 2" cc        | 53% |

The above products conform to ADA specifications



# ALUMINUM LOAD TABLES

7 SPACE

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |       |   |       |       |       |       |
|------------------|------------------|-------------------|--------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|-------|
|                  |                  |                   |                                | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0"   | 6'-6" | 7'-0" | 8'-0" |       |
| 1 x 3/16         | 56               | 6.30              | 0.857                          | U         | 1714  | 1097  | 762   | 560   | 429   | 339   | 274   | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches |       |       |       |       |
|                  |                  |                   |                                | D         | 0.144 | 0.225 | 0.324 | 0.441 | 0.577 | 0.730 | 0.899 |   |       |       |       |       |
| I-Bar            | 56               | 4.79              | 0.429                          | C         | 1714  | 1371  | 1143  | 980   | 857   | 762   | 686   | Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi.                      |       |       |       |       |
|                  |                  |                   |                                | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 | 0.583 | 0.720 |   |       |       |       |       |
| 1 1/4 x 3/16     | 66               | 7.78              | 1.339                          | U         | 2679  | 1714  | 1190  | 875   | 670   | 529   | 429   | 354   | 298   |       |       |       |
|                  |                  |                   |                                | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 | 0.583 | 0.721 | 0.871   | 1.038 |       |       |       |
| I-Bar            | 66               | 5.75              | 0.837                          | C         | 2679  | 2143  | 1786  | 1531  | 1339  | 1190  | 1071  | 974   | 893   |       |       |       |
|                  |                  |                   |                                | D         | 0.092 | 0.144 | 0.207 | 0.282 | 0.369 | 0.466 | 0.576 | 0.697   | 0.830 |       |       |       |
| 1 1/2 x 3/16     | 76               | 9.28              | 1.929                          | U         | 3857  | 2469  | 1714  | 1259  | 964   | 762   | 617   | 510   | 429   | 365   |       |       |
|                  |                  |                   |                                | D         | 0.096 | 0.150 | 0.216 | 0.294 | 0.384 | 0.486 | 0.600 | 0.726   | 0.865 | 1.014 |       |       |
| I-Bar            | 76               | 6.74              | 1.446                          | C         | 3857  | 3086  | 2571  | 2204  | 1929  | 1714  | 1543  | 1403  | 1286  | 1187  |       |       |
|                  |                  |                   |                                | D         | 0.077 | 0.120 | 0.173 | 0.235 | 0.307 | 0.389 | 0.480 | 0.581   | 0.691 | 0.811 |       |       |
| 1 3/4 x 3/16     | 85               | 10.80             | 2.625                          | U         | 5250  | 3360  | 2333  | 1714  | 1313  | 1037  | 840   | 694   | 583   | 497   | 429   | 328   |
|                  |                  |                   |                                | D         | 0.082 | 0.129 | 0.185 | 0.252 | 0.329 | 0.417 | 0.514 | 0.622   | 0.740 | 0.869 | 1.009 | 1.136 |
| I-Bar            | 85               | 7.70              | 2.297                          | C         | 5250  | 4200  | 3500  | 3000  | 2625  | 2333  | 2100  | 1909  | 1750  | 1615  | 1500  | 1313  |
|                  |                  |                   |                                | D         | 0.066 | 0.103 | 0.148 | 0.202 | 0.263 | 0.333 | 0.411 | 0.498   | 0.592 | 0.695 | 0.806 | 0.921 |
| 2 x 3/16         | 94               | 12.32             | 3.429                          | U         | 6857  | 4389  | 3048  | 2239  | 1714  | 1355  | 1097  | 907   | 762   | 649   | 560   | 429   |
|                  |                  |                   |                                | D         | 0.072 | 0.113 | 0.162 | 0.220 | 0.288 | 0.365 | 0.450 | 0.545   | 0.648 | 0.760 | 0.882 | 1.015 |
| I-Bar            | 94               | 8.71              | 3.429                          | C         | 6857  | 5486  | 4572  | 3918  | 3429  | 3048  | 2743  | 2494  | 2286  | 2110  | 1959  | 1714  |
|                  |                  |                   |                                | D         | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360 | 0.436   | 0.518 | 0.608 | 0.706 | 0.819 |
| 2 1/4 x 3/16     | 103              | 13.83             | 4.339                          | U         | 8679  | 5554  | 3857  | 2834  | 2170  | 1714  | 1389  | 1148  | 964   | 822   | 708   | 542   |
|                  |                  |                   |                                | D         | 0.064 | 0.100 | 0.144 | 0.196 | 0.256 | 0.324 | 0.400 | 0.484   | 0.576 | 0.676 | 0.783 | 0.902 |
| I-Bar            | 103              | 9.59              | 4.882                          | C         | 8679  | 6943  | 5786  | 4959  | 4339  | 3857  | 3471  | 3156  | 2893  | 2670  | 2480  | 2170  |
|                  |                  |                   |                                | D         | 0.051 | 0.080 | 0.115 | 0.157 | 0.205 | 0.259 | 0.320 | 0.387   | 0.461 | 0.541 | 0.627 | 0.719 |
| 2 1/2 x 3/16     | 111              | 15.33             | 5.357                          | U         | 10714 | 6857  | 4762  | 3499  | 2679  | 2116  | 1714  | 1417  | 1190  | 1014  | 875   | 670   |
|                  |                  |                   |                                | D         | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360 | 0.436   | 0.518 | 0.608 | 0.706 | 0.819 |
| I-Bar            | 111              | 10.66             | 6.697                          | C         | 10714 | 8572  | 7143  | 6123  | 5357  | 4762  | 4286  | 3896  | 3571  | 3297  | 3061  | 2679  |
|                  |                  |                   |                                | D         | 0.046 | 0.072 | 0.104 | 0.141 | 0.184 | 0.233 | 0.288 | 0.348   | 0.415 | 0.487 | 0.564 | 0.647 |

\*Based on 27-429 bars/ft. of grating width. Bearing bars 3/8" c.c. Add .3 lbs./sq. ft. for 7-SG-2, 1/2" bearing bars available by inquiry. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

| 7-SG-4 7-SG-2, 7-SGLi-4 7-SGLi-2, 7-SGF-4 7-SGF-2, 7-ADT-4 7-ADT-2 Panel Width Chart (in.) Out-to-Out of Bearing Bars ** |         |         |         |         |         |          |          |          |          |          |          |          |         |         |         |
|--|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|---------|---------|---------|
| No. of Bars  | 2       | 3       | 4       | 5       | 6       | 7        | 8        | 9        | 10       | 11       | 12       | 13       | 14      | 15      | 16      |
| 3/16" Bars   | 5/8     | 1 1/16  | 1 1/2   | 1 5/16  | 2 3/8   | 2 13/16  | 3 1/4    | 3 11/16  | 4 1/8    | 4 9/16   | 5        | 5 7/16   | 5 7/8   | 6 3/16  | 6 3/4   |
| No. of Bars  | 17      | 18      | 19      | 20      | 21      | 22       | 23       | 24       | 25       | 26       | 27       | 28       | 29      | 30      | 31      |
| 3/16" Bars   | 7 3/16  | 7 5/8   | 8 1/16  | 8 1/2   | 8 15/16 | 9 3/8    | 9 13/16  | 10 1/4   | 10 11/16 | 11 1/8   | 11 9/16  | 12       | 12 7/16 | 12 7/8  | 13 5/16 |
| No. of Bars  | 32      | 33      | 34      | 35      | 36      | 37       | 38       | 39       | 40       | 41       | 42       | 43       | 44      | 45      | 46      |
| 3/16" Bars   | 13 3/4  | 14 3/16 | 14 5/8  | 15 1/16 | 15 1/2  | 15 15/16 | 16 3/8   | 16 13/16 | 17 1/4   | 17 11/16 | 18 1/8   | 18 9/16  | 19      | 19 7/16 | 19 7/8  |
| No. of Bars  | 47      | 48      | 49      | 50      | 51      | 52       | 53       | 54       | 55       | 56       | 57       | 58       | 59      | 60      | 61      |
| 3/16" Bars   | 20 5/16 | 20 3/4  | 21 3/16 | 21 5/8  | 22 1/16 | 22 1/2   | 22 15/16 | 23 3/8   | 23 13/16 | 24 1/4   | 24 11/16 | 25 1/8   | 25 9/16 | 26      | 26 7/16 |
| No. of Bars  | 62      | 63      | 64      | 65      | 66      | 67       | 68       | 69       | 70       | 71       | 72       | 73       | 74      | 75      | 76      |
| 3/16" Bars   | 26 7/8  | 27 5/16 | 27 3/4  | 28 3/16 | 28 5/8  | 29 1/16  | 29 1/2   | 29 15/16 | 30 3/8   | 30 13/16 | 31 1/4   | 31 11/16 | 32 1/8  | 32 9/16 | 33      |
| No. of Bars  | 77      | 78      | 79      | 80      | 81      | 82       | 83       |          |          |          |          |          |         |         |         |
| 3/16" Bars   | 33 7/16 | 33 7/8  | 34 5/16 | 34 3/4  | 35 3/16 | 35 5/8   | 36 1/16  |          |          |          |          |          |         |         |         |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

| 7-SGI-4 7-SGI-2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars** |          |          |          |          |          |          |         |         |         |         |         |         |         |          |          |
|---|----------|----------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
| No. of Bars   | 2        | 3        | 4        | 5        | 6        | 7        | 8       | 9       | 10      | 11      | 12      | 13      | 14      | 15       | 16       |
| 1/4" Flange   | 1 1/16   | 1 1/8    | 1 9/16   | 2        | 2 7/16   | 2 7/8    | 3 5/16  | 3 3/4   | 4 3/16  | 4 5/8   | 5 1/16  | 5 1/2   | 5 15/16 | 6 3/8    | 6 13/16  |
| No. of Bars   | 17       | 18       | 19       | 20       | 21       | 22       | 23      | 24      | 25      | 26      | 27      | 28      | 29      | 30       | 31       |
| 1/4" Flange   | 7 1/4    | 7 11/16  | 8 1/8    | 8 9/16   | 9        | 9 7/16   | 9 7/8   | 10 5/16 | 10 3/4  | 11 3/16 | 11 5/8  | 12 1/16 | 12 1/2  | 12 15/16 | 13 3/8   |
| No. of Bars   | 32       | 33       | 34       | 35       | 36       | 37       | 38      | 39      | 40      | 41      | 42      | 43      | 44      | 45       | 46       |
| 1/4" Flange   | 13 13/16 | 14 1/4   | 14 11/16 | 15 1/8   | 15 9/16  | 16       | 16 7/16 | 16 7/8  | 17 5/16 | 17 3/4  | 18 3/16 | 18 5/8  | 19 1/16 | 19 1/2   | 19 15/16 |
| No. of Bars   | 47       | 48       | 49       | 50       | 51       | 52       | 53      | 54      | 55      | 56      | 57      | 58      | 59      | 60       | 61       |
| 1/4" Flange   | 20 3/8   | 20 13/16 | 21 1/4   | 21 11/16 | 22 1/8   | 22 9/16  | 23      | 23 7/16 | 23 7/8  | 24 5/16 | 24 3/4  | 25 3/16 | 25 5/8  | 26 1/16  | 26 1/2   |
| No. of Bars   | 62       | 63       | 64       | 65       | 66       | 67       | 68      | 69      | 70      | 71      | 72      | 73      | 74      | 75       | 76       |
| 1/4" Flange   | 26 15/16 | 27 3/8   | 27 13/16 | 28 1/4   | 28 11/16 | 29 1/8   | 29 9/16 | 30      | 30 7/16 | 30 7/8  | 31 3/16 | 31 3/4  | 32 3/16 | 32 5/8   | 33 1/16  |
| No. of Bars   | 77       | 78       | 79       | 80       | 81       | 82       | 83      |         |         |         |         |         |         |          |          |
| 1/4" Flange   | 33 1/2   | 33 15/16 | 34 3/8   | 34 13/16 | 35 1/4   | 35 11/16 | 36 1/8  |         |         |         |         |         |         |          |          |

\*\*Bar thickness is 1/4" at top and bottom. Add 1/4" for extended cross bars. Standard panel widths indicated in blue.

# ALUMINUM RIVETED

## AR SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction

Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

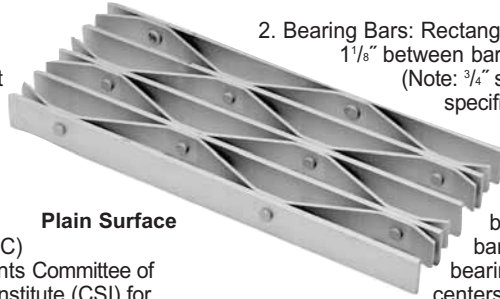
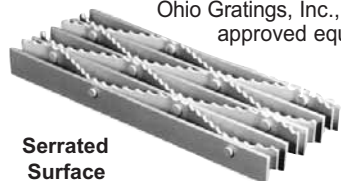
B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

#### PART 2: PRODUCT...

1. Grating: Aluminum Riveted AR Series by Ohio Gratings, Inc., or approved equal.



2. Bearing Bars: Rectangular Bar spaced  $1\frac{1}{8}$ " between bar faces maximum. (Note:  $\frac{3}{4}$ " spacing may be specified at the discretion of the architect/engineer.)

3. Connecting Bars: Extending between bearing bars and riveted to bearing bars at 7" centers. (Note:  $3\frac{1}{2}$ " rivet centers may be specified for maximum lateral stability.)

4. Surface: Plain (Note: A serrated connecting bar may be specified for maximum skid resistance.)

5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)

6. Finish: Mill finished.

7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.

2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.

4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.

5. Utilize standard panel widths wherever possible.

D. Protection of Aluminum from Dissimilar Materials:  
1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.

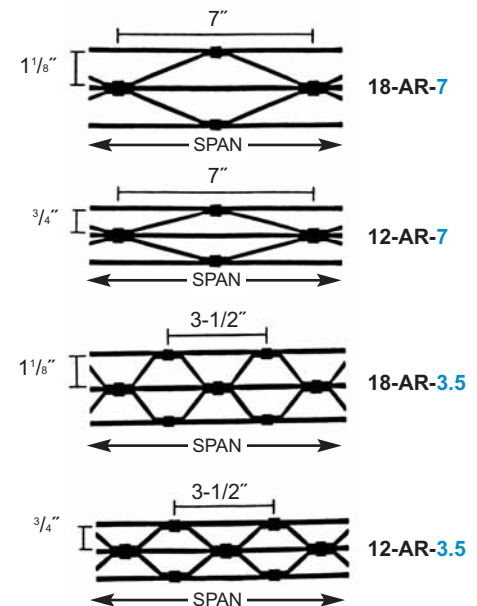
2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

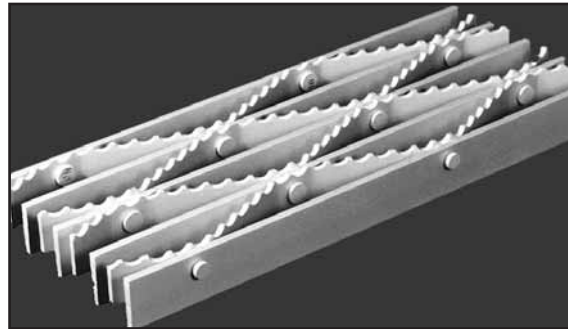
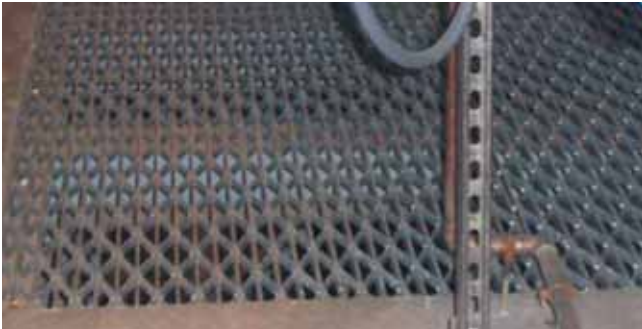
##### AR Series - Aluminum Riveted



### Product Applications...

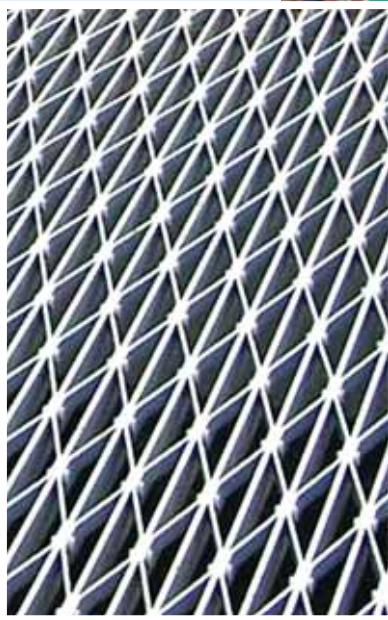
Riveted grating is the oldest style of industrial footwalk, but still the choice of many engineers due to its ruggedness, reliability and durability. This grating is composed of straight bearing bars, and bent connecting bars, which are joined at their contact points by rivets. Since the connecting bars extend continuously between bearing bars along the

grating spans, they not only serve to join the bearing bars together, but also contribute to the load carrying capability and lateral stability of the grating panels. This added dimension makes riveted grating an ideal choice where high strength and stiffness are required. Slip resistant surfaces are available.



◀ Aluminum Riveted Grating (serrated)

▲ Franklin WWTP  
- Charlotte, NC



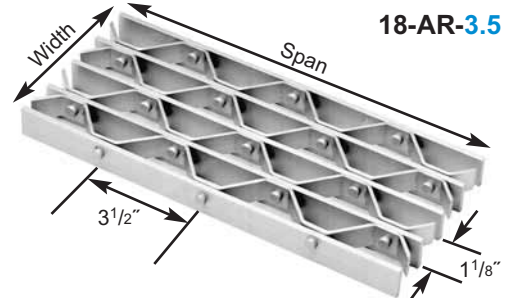
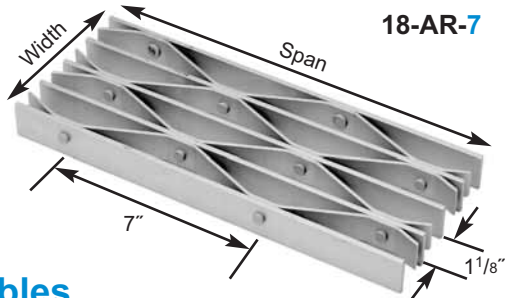
▲ Franklin (detail)  
- Charlotte, NC

▲ Franklin WWTP  
- Charlotte, NC



# ALUMINUM RIVETED

## 18-AR-7 / 18-AR-3-1/2



### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>2</sup> lx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |       |       |       |       |   |       |
|------------------|------------------|-------------------|---|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|-------|
|                  |                  |                   |   | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 6'-6" | 7'-0" | 8'-0"   |       |
| 1 x 1/8          | 41               | 2.70              | 0.242   | U         | 484   | 310   | 215   | 158   |       |       |       |       |       |       | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches |       |
|                  |                  |                   |   | D         | 0.144 | 0.225 | 0.324 | 0.441 |       |       |       |       |       |       |   |       |
|                  |                  |                   | 0.121   | C         | 484   | 387   | 323   | 277   |       |       |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.115 | 0.180 | 0.259 | 0.353 |       |       |       |       |       |       |   |       |
| 1 x 3/16         | 45               | 3.30              | 0.363   | U         | 726   | 465   | 323   | 237   | 182   |       |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.144 | 0.225 | 0.324 | 0.441 | 0.577 |       |       |       |       |       |   |       |
|                  |                  |                   | 0.182   | C         | 726   | 581   | 484   | 415   | 363   |       |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 |       |       |       |       |       |   |       |
| 1 1/4 x 1/8      | 48               | 3.10              | 0.378   | U         | 757   | 484   | 336   | 247   | 189   | 149   |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.460 | 0.581 |       |       |       |       |   |       |
|                  |                  |                   | 0.236   | C         | 757   | 605   | 504   | 432   | 378   | 336   |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.092 | 0.144 | 0.207 | 0.282 | 0.368 | 0.466 |       |       |       |       |   |       |
| 1 1/4 x 3/16     | 53               | 3.80              | 0.567   | U         | 1135  | 726   | 504   | 371   | 284   | 224   |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 | 0.583 |       |       |       |       |   |       |
|                  |                  |                   | 0.355   | C         | 1135  | 908   | 757   | 648   | 567   | 504   |       |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.092 | 0.144 | 0.207 | 0.282 | 0.368 | 0.466 |       |       |       |       |   |       |
| 1 1/2 x 1/8      | 55               | 3.40              | 0.545   | U         | 1089  | 697   | 484   | 356   | 272   | 215   | 174   |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.096 | 0.150 | 0.216 | 0.294 | 0.383 | 0.486 | 0.599 |       |       |       |   |       |
|                  |                  |                   | 0.409   | C         | 1089  | 872   | 726   | 623   | 545   | 484   | 436   |       |       |       |   |       |
|                  |                  |                   |   | D         | 0.077 | 0.120 | 0.173 | 0.235 | 0.307 | 0.389 | 0.480 |       |       |       |   |       |
| 1 1/2 x 3/16     | 61               | 4.40              | 0.817   | U         | 1634  | 1046  | 726   | 534   | 409   | 323   | 261   | 216   |       |       |   |       |
|                  |                  |                   |   | D         | 0.096 | 0.150 | 0.216 | 0.294 | 0.384 | 0.486 | 0.599 | 0.726 |       |       |   |       |
|                  |                  |                   | 0.613   | C         | 1634  | 1307  | 1089  | 934   | 817   | 726   | 654   | 594   |       |       |   |       |
|                  |                  |                   |   | D         | 0.077 | 0.120 | 0.173 | 0.235 | 0.307 | 0.389 | 0.480 | 0.581 |       |       |   |       |
| 1 3/4 x 3/16     | 69               | 4.90              | 1.112   | U         | 2224  | 1424  | 989   | 726   | 556   | 439   | 356   | 294   | 247   |       |   |       |
|                  |                  |                   |   | D         | 0.082 | 0.129 | 0.185 | 0.252 | 0.329 | 0.416 | 0.514 | 0.622 | 0.740 |       |   |       |
|                  |                  |                   | 0.973   | C         | 2224  | 1779  | 1483  | 1271  | 1112  | 989   | 890   | 809   | 741   |       |   |       |
|                  |                  |                   |   | D         | 0.066 | 0.103 | 0.148 | 0.202 | 0.263 | 0.333 | 0.412 | 0.498 | 0.592 |       |   |       |
| 2 x 3/16         | 76               | 5.80              | 1.453   | U         | 2905  | 1859  | 1291  | 949   | 726   | 574   | 465   | 384   | 323   | 275   |   |       |
|                  |                  |                   |   | D         | 0.072 | 0.112 | 0.162 | 0.221 | 0.288 | 0.365 | 0.450 | 0.544 | 0.648 | 0.760 |   |       |
|                  |                  |                   | 1.453   | C         | 2905  | 2324  | 1937  | 1660  | 1453  | 1291  | 1162  | 1056  | 968   | 894   |   |       |
|                  |                  |                   |   | D         | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360 | 0.435 | 0.518 | 0.608 |   |       |
| 2 1/4 x 3/16     | 83               | 6.40              | 1.838   | U         | 3677  | 2353  | 1634  | 1201  | 919   | 726   | 588   | 486   | 409   | 348   | 300   |       |
|                  |                  |                   |   | D         | 0.064 | 0.100 | 0.144 | 0.196 | 0.256 | 0.324 | 0.400 | 0.484 | 0.577 | 0.676 | 0.784   |       |
|                  |                  |                   | 2.068   | C         | 3677  | 2942  | 2451  | 2101  | 1838  | 1634  | 1471  | 1337  | 1226  | 1131  | 1051  |       |
|                  |                  |                   |   | D         | 0.051 | 0.080 | 0.115 | 0.157 | 0.205 | 0.259 | 0.320 | 0.387 | 0.461 | 0.541 | 0.627   |       |
| 2 1/2 x 3/16     | 90               | 6.90              | 2.270   | U         | 4539  | 2905  | 2018  | 1482  | 1135  | 897   | 726   | 600   | 504   | 430   | 371   | 284   |
|                  |                  |                   |   | D         | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360 | 0.435 | 0.518 | 0.609 | 0.706   | 0.823 |
|                  |                  |                   | 2.837   | C         | 4539  | 3632  | 3026  | 2594  | 2270  | 2018  | 1816  | 1651  | 1513  | 1397  | 1297  | 1135  |
|                  |                  |                   |   | D         | 0.046 | 0.072 | 0.104 | 0.141 | 0.184 | 0.233 | 0.288 | 0.349 | 0.415 | 0.487 | 0.564   | 0.737 |

| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 7" cc        | 78%  | 74%   |
| 3 1/2" cc    | 77%  | 73%   |

| BB Size, Inches | CB Size, in. All Spacings |
|-----------------|---------------------------|
| Thru 1 3/4      | 3/4 x 1/8                 |
| 2 - 2 1/2       | 1 x 1/8                   |

\*Based on 11,621 bars/ft. of grating width. Bearing bars 1 1/2" face-to-face, connecting bars riveted 7" c.c. Add .2 lbs./sq. ft. for 18-AR-3 1/2. Note: Grating for spans to the left of the heavy line have a deflection less than 1/16" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating.

### 18-AR-7 18-AR-3-1/2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

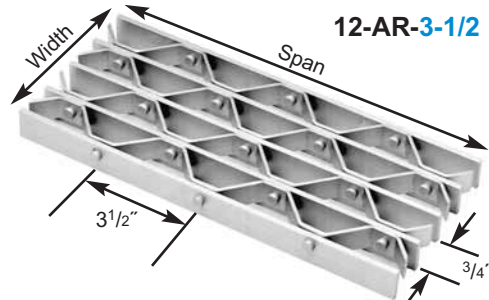
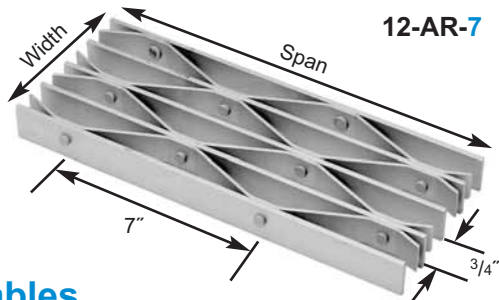
| No. of Bars | 2       | 3       | 4        | 5      | 6       | 7      | 8       | 9        | 10       | 11      | 12      | 13       | 14     | 15      | 16     |
|-------------|---------|---------|----------|--------|---------|--------|---------|----------|----------|---------|---------|----------|--------|---------|--------|
| 3/16" Bars  | 1 1/2   | 2 13/16 | 4 1/8    | 5 7/16 | 6 3/4   | 8 1/16 | 9 3/8   | 10 11/16 | 12       | 13 5/16 | 14 5/8  | 15 15/16 | 17 1/4 | 18 9/16 | 19 7/8 |
| No. of Bars | 17      | 18      | 19       | 20     | 21      | 22     | 23      | 24       | 25       | 26      | 27      | 28       |        |         |        |
| 3/16" Bars  | 2 13/16 | 22 1/2  | 23 13/16 | 25 1/8 | 26 7/16 | 27 3/4 | 29 1/16 | 30 3/8   | 31 11/16 | 33      | 34 5/16 | 35 5/8   |        |         |        |

\*\*Add 1/4" for rivet heads. Deduct 1/16" for each 1/8" bearing bar. Standard panel widths indicated in blue.



# ALUMINUM RIVETED

## 12-AR-7 / 12-AR-3-1/2



### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>2</sup><br>Ix*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |  |  |       |   |       |       |  |
|------------------|------------------|-------------------|--|-----------|-------|-------|-------|-------|-------|-------|--|--|-------|---|-------|-------|--|
|                  |                  |                   |  | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6"  | 6'-0"  | 6'-6" | 7'-0"   | 8'-0" |       |  |
| 1 x 3/16         | 49               | 4.50              | 0.508  | U         | 1017  | 651   | 452   | 332   | 254   | 201   | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br><br><b>Loads and deflections</b><br>given in this table are theoretical and are based on a unit stress of 12,000 psi. |  |       |   |       |       |  |
|                  |                  |                   |  | D         | 0.144 | 0.225 | 0.324 | 0.441 | 0.576 | 0.730 |  |  |       |   |       |       |  |
|                  |                  |                   | 0.254  | C         | 1017  | 813   | 678   | 581   | 508   | 452   |  |  |       |   |       |       |  |
|                  |                  |                   |  | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.460 | 0.583 |  |  |       |   |       |       |  |
| 1 1/4 x 3/16     | 58               | 5.30              | 0.794  | U         | 1589  | 1017  | 706   | 519   | 397   | 314   | 254  | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br><br><b>Loads and deflections</b><br>given in this table are theoretical and are based on a unit stress of 12,000 psi. |       |   |       |       |  |
|                  |                  |                   |  | D         | 0.115 | 0.180 | 0.259 | 0.353 | 0.461 | 0.584 | 0.719  |  |       |   |       |       |  |
|                  |                  |                   | 0.496  | C         | 1589  | 1271  | 1059  | 908   | 794   | 706   | 636  |  |       |   |       |       |  |
|                  |                  |                   |  | D         | 0.092 | 0.144 | 0.207 | 0.282 | 0.368 | 0.466 | 0.576  |  |       |   |       |       |  |
| 1 1/2 x 3/16     | 67               | 6.10              | 1.144  | U         | 2288  | 1464  | 1017  | 747   | 572   | 452   | 366  | 303  | 254   | <b>% Open Area*</b><br>7" cc 65%<br>3 1/2" cc 64% |       |       |  |
|                  |                  |                   |  | D         | 0.096 | 0.150 | 0.216 | 0.294 | 0.384 | 0.486 | 0.600  | 0.727  | 0.863 |   |       |       |  |
|                  |                  |                   | 0.858  | C         | 2288  | 1830  | 1525  | 1307  | 1144  | 1017  | 915  | 832  | 763   |   |       |       |  |
|                  |                  |                   |  | D         | 0.077 | 0.120 | 0.173 | 0.235 | 0.307 | 0.389 | 0.480  | 0.581  | 0.692 |   |       |       |  |
| 1 3/4 x 3/16     | 75               | 6.80              | 1.557  | U         | 3114  | 1993  | 1384  | 1017  | 778   | 615   | 498  | 412  | 346   | 295   |       |       |  |
|                  |                  |                   |  | D         | 0.082 | 0.129 | 0.185 | 0.252 | 0.329 | 0.416 | 0.514  | 0.623  | 0.741 | 0.870   |       |       |  |
|                  |                  |                   | 1.362  | C         | 3114  | 2491  | 2076  | 1779  | 1557  | 1384  | 1246   | 1132   | 1038  | 958   |       |       |  |
|                  |                  |                   |  | D         | 0.066 | 0.103 | 0.148 | 0.202 | 0.263 | 0.333 | 0.412  | 0.498  | 0.592 | 0.695   |       |       |  |
| 2 x 3/16         | 83               | 8.10              | 2.034  | U         | 4067  | 2603  | 1808  | 1328  | 1017  | 803   | 651  | 538  | 452   | 385   | 332   |       |  |
|                  |                  |                   |  | D         | 0.072 | 0.112 | 0.162 | 0.220 | 0.288 | 0.364 | 0.450  | 0.545  | 0.648 | 0.760   | 0.882 |       |  |
|                  |                  |                   | 2.034  | C         | 4067  | 3254  | 2712  | 2324  | 2034  | 1808  | 1627   | 1479   | 1356  | 1251  | 1162  |       |  |
|                  |                  |                   |  | D         | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360  | 0.436  | 0.518 | 0.608   | 0.706 |       |  |
| 2 1/4 x 3/16     | 90               | 8.90              | 2.574  | U         | 5148  | 3294  | 2288  | 1681  | 1287  | 1017  | 824  | 681  | 572   | 487   | 420   | 322   |  |
|                  |                  |                   |  | D         | 0.064 | 0.100 | 0.144 | 0.196 | 0.256 | 0.324 | 0.400  | 0.484  | 0.576 | 0.676   | 0.784 | 1.025 |  |
|                  |                  |                   | 2.896  | C         | 5148  | 4118  | 3432  | 2941  | 2574  | 2288  | 2059   | 1872   | 1716  | 1584  | 1471  | 1287  |  |
|                  |                  |                   |  | D         | 0.051 | 0.080 | 0.115 | 0.157 | 0.205 | 0.259 | 0.320  | 0.387  | 0.461 | 0.541   | 0.627 | 0.819 |  |
| 2 1/2 x 3/16     | 98               | 9.60              | 3.178  | U         | 6355  | 4067  | 2824  | 2075  | 1589  | 1255  | 1017   | 840  | 706   | 602   | 519   | 397   |  |
|                  |                  |                   |  | D         | 0.058 | 0.090 | 0.130 | 0.176 | 0.230 | 0.292 | 0.360  | 0.435  | 0.518 | 0.609   | 0.706 | 0.921 |  |
|                  |                  |                   | 3.972  | C         | 6355  | 5084  | 4237  | 3631  | 3178  | 2824  | 2542   | 2311   | 2118  | 1955  | 1816  | 1589  |  |
|                  |                  |                   |  | D         | 0.046 | 0.072 | 0.104 | 0.141 | 0.184 | 0.233 | 0.288  | 0.348  | 0.415 | 0.487   | 0.565 | 0.737 |  |

\*Based on 16,269 bars/ft. of grating width. Bearing bars 1/2" face-to-face, connecting bars riveted 7" c.c. Add .2 lbs./sq. ft. for 12-AR-3/4" by inquiry. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating.

### 12-AR-7 12-AR-3-1/2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6        | 7        | 8        | 9        | 10       | 11     | 12      | 13      | 14      | 15      | 16      |
|-------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|--------|---------|---------|---------|---------|---------|
| 3/16" Bars  | 1 1/8   | 2 1/16  | 3       | 3 15/16 | 4 7/8    | 5 13/16  | 6 3/4    | 7 11/16  | 8 5/8    | 9 9/16 | 10 1/2  | 11 7/16 | 12 3/8  | 13 5/16 | 14 1/4  |
| No. of Bars | 17      | 18      | 19      | 20      | 21       | 22       | 23       | 24       | 25       | 26     | 27      | 28      | 29      | 30      | 31      |
| 3/16" Bars  | 15 3/16 | 16 1/8  | 17 1/16 | 18      | 18 15/16 | 19 7/8   | 20 13/16 | 21 3/4   | 22 11/16 | 23 5/8 | 24 9/16 | 25 1/2  | 26 7/16 | 27 3/8  | 28 5/16 |
| No. of Bars | 32      | 33      | 34      | 35      | 36       | 37       | 38       | 39       |          |        |         |         |         |         |         |
| 3/16" Bars  | 29 1/4  | 30 3/16 | 31 1/8  | 32 1/16 | 33       | 33 15/16 | 34 7/8   | 35 13/16 |          |        |         |         |         |         |         |

\*\*Add 1/4" for rivet heads. Deduct 1/16" for each 1/8" bearing bar. Standard panel widths indicated in blue.



# ALUMINUM PLANK

## Product Applications...

As an alternative to bar grating, aluminum plank is structurally sound and cosmetically attractive. Made from extruded aluminum, plank grating is relatively maintenance free and has no parts to work loose or splinter. The surface can be provided unpunched or with a variety of punch patterns for the passage of air, light, heat or moisture. A diagonal pattern is also available which meets the ADA requirements for wheelchair accessibility and high heel foot traffic.

The interconnecting webs offer a flush top walking surface for maximum foot contact and comfort. Plank can be used as an alternative to those applications requiring open grating with plate attached to the top surface. This is a typical application for waste water treatment plants to help reduce the odor which is inherent at these facilities.

Aluminum Plank is also used for entranceways and walkways for bridges, trails, marine refrigeration, stadiums and more.



▲ Orangeburg WWTP  
- Orangeburg, SC



◀ River Lock



▲ Harrison WWTP (detail)  
- Charlotte, NC

▲ Grosse ile Bridge  
- Grosse ile, MI

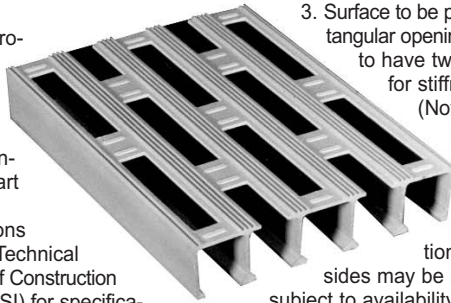




## PRODUCT SPECIFICATION GUIDE

### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



3. Surface to be punched with 3" x 1<sup>9</sup>/<sub>32</sub>" rectangular openings, and connecting webs to have two raised transverse ribs for stiffness and skid resistance. (Note: alternate punch/patterns may be specified at the discretion of the architect/engineer.)
4. Sides of 6" plank sections to be plain. (Note: sides may be specified as interlocking, subject to availability, at the discretion of the architect/engineer.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed 1/4". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: Mill finished.
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

### PART 1: GENERAL...

#### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

#### 1.2 Quality Assurance

- A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

#### 1.3 Submittals

- A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.
- B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

### PART 2: PRODUCT...

1. Grating to be Heavy Duty Aluminum Plank Grating by Ohio Gratings, Inc., or approved equal.
2. Grating panels to be made from 6" wide extruded sections and banded to form standard panel widths.

### PART 3: EXECUTION...

#### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

#### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

D. Protection of Aluminum from Dissimilar

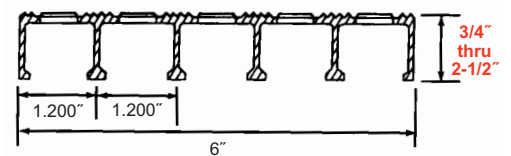
### Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.
2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

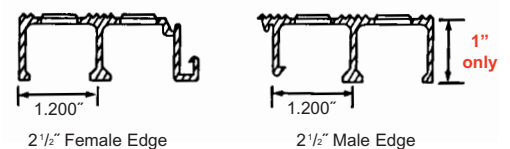
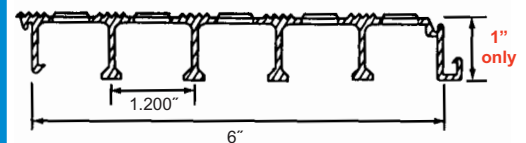
### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

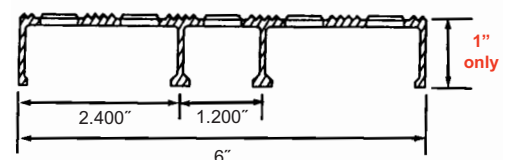
#### Heavy Duty (Plain Sides)



#### Heavy Duty (Interlocking Sides)



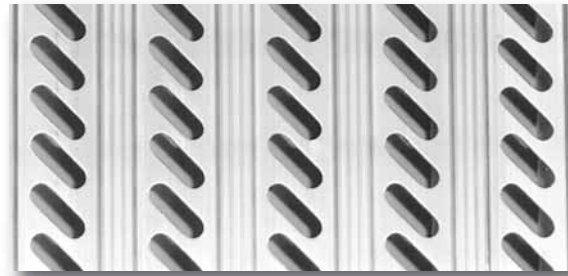
#### Light Series (Plain Sides)



# PUNCH PATTERN GUIDE

Aluminum plank grating is available unpunched or with a variety of punch / patterns as shown. Rectangular or square punched holes are most commonly used for water and waste treatment plants and in marine applications. The surface of plank grating can be specified as plain or with one of two styles of upsets (OGI or WACO) designed to promote a slip resistant walkway, especially in the presence of moisture, oil or other spilled substances.

All of our Diagonal Punched Patterns meet ADA Specifications for high heel and wheelchair traffic.



| UNPUNCHED                                     | SQUARE PUNCHED   |  | RECTANGULAR PUNCHED  |   |  |
|---|--|--|--|---|--|
| <p>6" Typ</p> <p>HEAVY DUTY, LIGHT SERIES</p> | <p>Upset Pattern</p> <p>6" Typ</p> <p>19/32" Typ</p> <p>HEAVY DUTY, LIGHT SERIES</p> | <p>Plain Pattern</p> <p>HEAVY DUTY, LIGHT SERIES</p> | <p>Upset Pattern (OGI)</p> <p>6" Typ</p> <p>3" Typ</p> <p>1" Typ</p> <p>19/32" Typ</p> <p>HEAVY DUTY, LIGHT SERIES</p> | <p>Upset Pattern (WACO)</p> <p>HEAVY DUTY, LIGHT SERIES</p> | <p>Plain Pattern</p> <p>HEAVY DUTY, LIGHT SERIES</p> |

\*Alternate for plate covered aluminum grating



Upset Pattern (OGI)

### DIAGONAL PUNCHED

| AIPlank 8*                 | AIPlank 15*               | AIPlank 22*              |
|----------------------------|---------------------------|--------------------------|
| <p>6.000"</p> <p>1.50"</p> | <p>6.000"</p> <p>.75"</p> | <p>6.000"</p> <p>.5"</p> |

\* number indicates % open area



# ALUMINUM PLANK

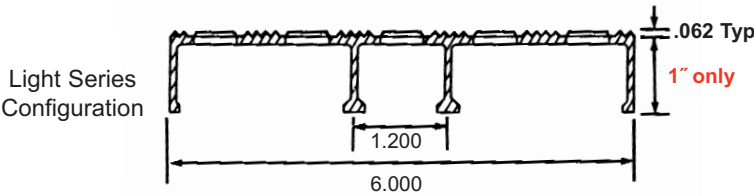
Aluminum plank grating is available in 20' or 26' lengths for customer fabrication, or as fabricated by Ohio Gratings according to customer plans and specifications. Individual 6" plank sections can be banded together to form standard panel widths for ease of handling and installation. When the width of the total grating "run" (number of continuous

series of panels) does not result in a total measurement evenly divisible by the six-inch sections, the last panel can be fabricated from several whole sections and a partial section according to the panel width chart shown. In order to meet flatness tolerances, fabricated panels must always be end banded, and should not exceed 36" in width.

## HEAVY DUTY

| Plank Size, Inches | Ped Span, Inches | Sec. Prop Sx*, in <sup>3</sup><br>Ix*, in <sup>4</sup> | Weight Per Sq. Ft. |               |                | ClearSpan |       |       |       |       |       |       |       |   |       |       |       |       |       |       |       |       |       |
|--------------------|------------------|--|--------------------|---------------|----------------|-----------|-------|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                    |                  |  | Non Punched        | Rect. Punched | Square Punched | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0"   | 6'-6" | 7'-0" | 8'-0" |       |       |       |       |       |       |
| 3/4                | 39               | 0.217  | 2.2                | 1.8           | 2.0            | U         | 435   | 278   | 193   | 142   | 108   | 85    | 69    | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br>Loads and deflections given in this table are theoretical, and are based on a unit stress of 12,000 psi. |       |       |       |       |       |       |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.121 | 0.237 | 0.342 | 0.465 | 0.608 | 0.770 | 0.950 |   |       |       |       |       |       |       |       |       |       |
|                    |                  | C  |                    |               |                | 435       | 348   | 290   | 248   | 217   | 193   | 174   |       |   |       |       |       |       |       |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.121     | 0.190 | 0.273 | 0.371 | 0.485 | 0.614 | 0.760 |       |   |       |       |       |       |       |       |       |       |       |
| 1                  | 49               | 0.416  | 2.6                | 2.2           | 2.4            | U         | 833   | 533   | 370   | 272   | 208   | 164   | 133   |   |       |       |       |       | 110   | 92    |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.124 | 0.193 | 0.279 | 0.380 | 0.496 | 0.628 | 0.775 |   |       |       |       |       | 0.938 | 1.117 |       |       |       |
|                    |                  | C  |                    |               |                | 833       | 666   | 555   | 476   | 416   | 370   | 333   | 302   |   |       |       |       |       | 277   |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.099     | 0.155 | 0.223 | 0.304 | 0.396 | 0.502 | 0.620 | 0.748 |   |       |       |       |       | 0.891 |       |       |       |       |
| 1 1/4              | 58               | 0.732  | 3.2                | 2.8           | 3.0            | U         | 1464  | 936   | 650   | 478   | 366   | 289   | 234   |   |       |       |       |       | 193   | 162   | 138   | 119   | 91    |
|                    |                  |  |                    |               |                | D         | 0.107 | 0.167 | 0.241 | 0.328 | 0.428 | 0.542 | 0.669 |   |       |       |       |       | 0.810 | 0.964 | 1.131 | 1.312 | 1.714 |
|                    |                  | C  |                    |               |                | 1464      | 1171  | 976   | 836   | 732   | 650   | 585   | 532   |   |       |       |       |       | 488   | 450   | 418   | 366   |       |
|                    |                  | D  |                    |               |                | 0.085     | 0.133 | 0.192 | 0.262 | 0.342 | 0.433 | 0.535 | 0.647 |   |       |       |       |       | 0.771 | 0.904 | 1.049 | 1.371 |       |
| 1 1/2              | 67               | 1.083  | 3.8                | 3.4           | 3.6            | U         | 2167  | 1387  | 963   | 707   | 541   | 428   | 346   | 286   | 240   | 205   | 176   | 135   |       |       |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.090 | 0.141 | 0.203 | 0.277 | 0.362 | 0.458 | 0.566 | 0.684   | 0.815 | 0.956 | 1.109 | 1.449 |       |       |       |       |       |
|                    |                  | C  |                    |               |                | 2167      | 1734  | 1445  | 1238  | 1083  | 963   | 867   | 788   | 722   | 666   | 619   | 541   |       |       |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.072     | 0.113 | 0.163 | 0.221 | 0.289 | 0.366 | 0.452 | 0.547 | 0.651   | 0.764 | 0.887 | 1.157 |       |       |       |       |       |       |
| 1 3/4              | 75               | 1.496  | 4.4                | 4.0           | 4.2            | U         | 2992  | 1915  | 1330  | 977   | 748   | 591   | 478   | 395   | 332   | 283   | 244   | 187   |       |       |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.078 | 0.123 | 0.177 | 0.241 | 0.315 | 0.398 | 0.492 | 0.595   | 0.708 | 0.832 | 0.964 | 1.260 |       |       |       |       |       |
|                    |                  | C  |                    |               |                | 2992      | 2394  | 1995  | 1710  | 1496  | 1330  | 1197  | 1088  | 997   | 920   | 855   | 748   |       |       |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.062     | 0.098 | 0.141 | 0.192 | 0.251 | 0.318 | 0.393 | 0.476 | 0.566   | 0.664 | 0.771 | 1.007 |       |       |       |       |       |       |
| 2                  | 83               | 1.987  | 4.9                | 4.5           | 4.7            | U         | 3975  | 2544  | 1766  | 1298  | 993   | 785   | 636   | 525   | 441   | 376   | 324   | 248   |       |       |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.069 | 0.108 | 0.156 | 0.212 | 0.277 | 0.351 | 0.433 | 0.524   | 0.624 | 0.732 | 0.849 | 1.109 |       |       |       |       |       |
|                    |                  | C  |                    |               |                | 3975      | 3180  | 2650  | 2271  | 1987  | 1766  | 1590  | 1445  | 1325  | 1223  | 1135  | 993   |       |       |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.055     | 0.086 | 0.124 | 0.169 | 0.221 | 0.280 | 0.346 | 0.419 | 0.499   | 0.586 | 0.679 | 0.887 |       |       |       |       |       |       |
| 2 1/4              | 91               | 2.554  | 5.5                | 5.0           | 5.3            | U         | 5109  | 3270  | 2270  | 1668  | 1277  | 1009  | 817   | 675   | 567   | 483   | 417   | 319   |       |       |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.061 | 0.095 | 0.137 | 0.187 | 0.244 | 0.309 | 0.382 | 0.462   | 0.550 | 0.646 | 0.749 | 0.979 |       |       |       |       |       |
|                    |                  | C  |                    |               |                | 5109      | 4087  | 3406  | 2919  | 2554  | 2270  | 2043  | 1858  | 1703  | 1572  | 1459  | 1277  |       |       |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.048     | 0.076 | 0.110 | 0.149 | 0.195 | 0.247 | 0.305 | 0.370 | 0.440   | 0.517 | 0.599 | 0.783 |       |       |       |       |       |       |
| 2 1/2              | 97               | 2.985  | 5.9                | 5.5           | 5.7            | U         | 5971  | 3821  | 2654  | 1949  | 1492  | 1179  | 955   | 789   | 663   | 565   | 487   | 373   |       |       |       |       |       |
|                    |                  |  |                    |               |                | D         | 0.055 | 0.086 | 0.124 | 0.169 | 0.221 | 0.279 | 0.345 | 0.418   | 0.497 | 0.584 | 0.677 | 0.884 |       |       |       |       |       |
|                    |                  | C  |                    |               |                | 5971      | 4777  | 3981  | 3412  | 2985  | 2654  | 2388  | 2171  | 1990  | 1837  | 1706  | 1492  |       |       |       |       |       |       |
|                    |                  | D  |                    |               |                | 0.044     | 0.069 | 0.099 | 0.135 | 0.176 | 0.223 | 0.276 | 0.334 | 0.398   | 0.467 | 0.541 | 0.707 |       |       |       |       |       |       |

\*Based on punched plank



| % Open Area* |     |
|--------------|-----|
| Rectangular  | 37% |
| Square       | 23% |

## LIGHT SERIES

| Plank Size, Inches | Sec. Prop Sx*, in <sup>3</sup><br>Ix*, in <sup>4</sup> | Weight Per Sq. In. |               |                | ClearSpan |       |       |       |       |       |       |
|--------------------|--|--------------------|---------------|----------------|-----------|-------|-------|-------|-------|-------|-------|
|                    |  | Non Punched        | Rect. Punched | Square Punched | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" |       |
| 1                  | 0.273  | 2.1                | 1.7           | 1.9            | U         | 546   | 349   | 242   | 178   | 136   | 107   |
|                    |  |                    |               |                | D         | 0.113 | 0.177 | 0.254 | 0.347 | 0.452 | 0.570 |
|                    | C  |                    |               |                | 546       | 436   | 364   | 312   | 273   | 242   |       |
|                    | D  |                    |               |                | 0.090     | 0.141 | 0.204 | 0.278 | 0.363 | 0.458 |       |
| 1                  | 0.173  | 2.1                | 1.7           | 1.9            | U         | 546   | 436   | 364   | 312   | 273   | 242   |
|                    |  |                    |               |                | D         | 0.090 | 0.141 | 0.204 | 0.278 | 0.363 | 0.458 |

| Panel Width Chart (in.) |        |          |        |        |
|-------------------------|--------|----------|--------|--------|
|                         | 1 1/2  | 2 11/16  | 3 7/8  | 5 1/8  |
| 6                       | 7 1/2  | 8 11/16  | 9 7/8  | 11 1/8 |
| 12                      | 13 1/2 | 14 11/16 | 15 7/8 | 17 1/8 |
| 18                      | 19 1/2 | 20 11/16 | 21 7/8 | 23 1/8 |
| 24                      | 25 1/2 | 26 11/16 | 27 7/8 | 29 1/8 |
| 30                      | 31 1/2 | 32 11/16 | 33 7/8 | 35 1/8 |
| 36                      |        |          |        |        |

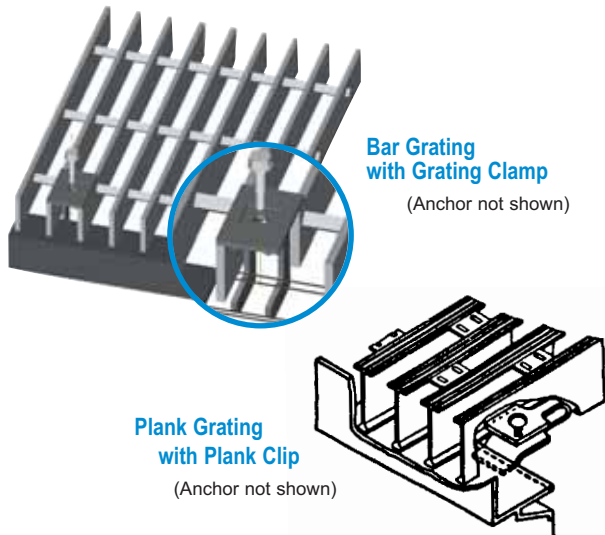
Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. This grating conforms to MIL-G-18015 (SHIPS).



# ALUMINUM GRATING FRAMES

## Aluminum Grating Frames...

In conjunction with aluminum grating, Ohio Gratings offers an extruded aluminum grating frame for embedded concrete applications. This frame features a continuous ledge to accommodate plank fasteners, grating clamps, or self-tapping screws for



other types of fasteners. The continuous anchor can be used alone or with supplementary anchor straps. Angle frame is available fabricated per drawings with mitred and welded corners or in long lengths with prefabricated corners for installation in the field. Frames can be provided in the mill finished condition or with a coat of bituminous paint on surfaces which will come into contact with concrete.

## Fabrication Guidelines...

Frame sections can be purchased in stock lengths for customer fabrication or can be fabricated by Ohio Gratings for immediate installation in the field.

## The following Guidelines apply to Fabricated Frames...

1. All corners are mitred at 45 degrees and welded on the back side. Welds are not ground.
2. Nominal small frames (i.e. 1'0" x 1'0" through 5 x 10'0") are made in one piece.
3. Extended trench frames are provided with prefabricated end sections and long lengths shipped loose for field butt joining.
4. Stock lengths are 20' 0". Longer lengths are available by request.

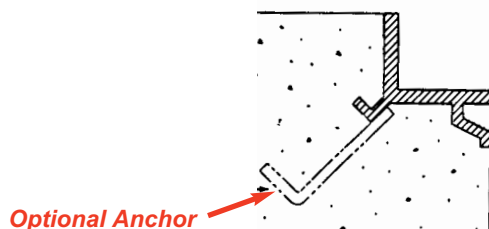


## Massillon, Ohio Wastewater Treatment Plant

The city began a major expansion project in 2002. Once again, aluminum was specified for the walkways

in and around the plant. We provided our aluminum plank and "I-Bar" along with our aluminum angle frame.

Angle frame is available (see diagram) with mitred and welded corners. Long lengths are available with prefabricated corners for handy installations in the field (miscellaneous steel fabricators prefer aluminum for this reason in addition to the fact that it is lightweight, flexible and easily altered in the field). Frames can be provided in mill finish or with a coat of bituminous paint on surfaces that are in direct contact with concrete.

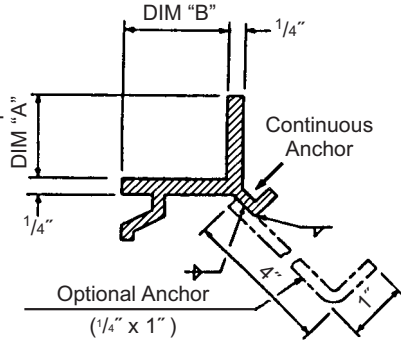


# ALUMINUM GRATING FRAMES

## PRODUCT SPECIFICATION GUIDE

### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.

**B.** The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

### PART 2: PRODUCT...

1. Angle frames to be extruded design, alloy 6063-T6, by Ohio Gratings, Inc., or approved equal.
2. Frames shall have mitred corners and welded joints and shall be sized to match grating depth.
3. Vertical and horizontal legs of frame shape shall have 1/4" wall thickness. Frame shall be designed to provide a continuous slot to accommodate fasteners, and shall have a continuous extruded anchor. (Note: Additional anchor straps may be specified at the discretion of the architect/engineer.)
4. Surfaces coming into contact with concrete shall be painted with one coat of bituminous paint.

### PART 1: GENERAL...

#### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

#### 1.2 Quality Assurance

**A.** 1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

**B.** 1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

#### 1.3 Submittals

**A.** The contractor shall submit for approval shop drawings for the fabrication and erection

### PART 3: EXECUTION...

#### 3.1 Installation

**A.** Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

**B.** Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

**C.** Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross

bars align.

2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.

4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.

5. Utilize standard panel widths wherever possible.

#### D. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material. This is not a permanent surface and may chip off during transit.
2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Fabrication Guidelines

*Frame sections can be purchased in stock lengths for customer fabrication, or can be fabricated by Ohio Gratings for immediate installation in the field. The following guidelines apply to fabricated frames:*

1. All corners are mitred at 45 degrees and welded on the back side. Welds are not ground.

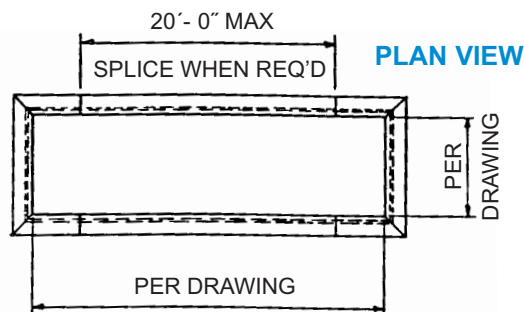
2. Nominal small frames (i.e., 1'0" x 1'0" through 5'0" x 10'0") are made in one piece.

3. Extended trench frames are provided with pre-fabricated end sections and long lengths shipped loose for field butt joining.

4. Stock lengths are 20'0". Longer lengths are available by request.

### FRAME DIMENSIONS

| GR. SIZE | DIM "A" | DIM "B" |
|----------|---------|---------|
| 1"       | 1"      | 1 1/4"  |
| 1 1/4"   | 1 1/4"  | 1 1/2"  |
| 1 1/2"   | 1 1/2"  | 1 3/4"  |
| 1 3/4"   | 1 3/4"  | 2"      |
| 2"       | 2"      | 2"      |
| 2 1/4"   | 2 1/4"  | 2"      |
| 2 1/2"   | 2 1/2"  | 2"      |



# ALUMINUM STAIR TREADS

## Product Applications...

Fabricated Aluminum stair treads are available in Aluminum Flush Top SGF, Aluminum Rectangular Bar SG, Aluminum I-Bar SGI, Aluminum Dove Tail ADT, Aluminum Riveted AR and Aluminum Plank. Treads can be ordered with a plain or serrated surface.

Nosings for aluminum treads include a standard extruded grooved nose or cast aluminum abrasive nose. **Slip-Not**<sup>®</sup> nosings are also available in aluminum. Carrier end plates or angles (in the case of close mesh, 7/16" c.c. or 11/16" c.c., grating treads) are provided with a hole and slot for attachment to stringers. **Note:** *Bolts for mounting to stringers not supplied.*



◀ Brigham Young University (detail)  
- Provo, UT

▲ Brigham Young University  
- Provo, UT



▲ Villamare - (detail)  
- Hilton Head, SC

▲ Villamare  
- Hilton Head, SC



## PRODUCT SPECIFICATION GUIDE

### How to Specify:

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### PART 1: GENERAL...

#### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

#### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Aluminum: ASTM B221, Aluminum Alloy, Extruded Bars, Rods, Wire, Shapes and Tubing.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

#### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and

details of sections and connections. Show type and location of all fasteners.

B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

### PART 2: PRODUCT...

1. Stair treads shall be of the same type and spacing as grating being specified. Stair treads shall be by Ohio Gratings, Inc. or approved equal.
2. Bearing Bar Size shall be based on tread length and shall be selected in accordance with the NAAMM Metal Bar Grating Manual.
3. Nosing: Grooved nosing (aluminum treads) or checkerplate nosing (steel treads). (Note: A cast aluminum abrasive nosing or a Slip-Not nosing for maximum skid resistance may be specified at the discretion of the architect/engineer.)
4. Carrier End Plates: Attached by welding in accordance with the NAAMM Metal Bar Grating Manual. (Note: Carrier angles should be specified in conjunction with close mesh grating treads.)

### PART 3: EXECUTION...

#### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

#### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

#### D. Protection of Aluminum from Dissimilar Materials:

1. Where aluminum surfaces come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with one coat of bituminous paint or other approved insulating material.
2. Where aluminum surfaces come into contact with dissimilar materials such as concrete, masonry or lime mortar, exposed aluminum surfaces shall be painted with one coat of bituminous paint or other approved insulating material.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

### SG Series - Grooved Nosing



**Grooved Nosing**

Standard on Aluminum Treads



**Slip-Not® Nosing**

Optional on Aluminum Treads

### Plank Series - Cast Aluminum Abrasive Nosing



**Abrasive Nosing**

Optional on Aluminum Treads



# ALUMINUM APPLICATIONS

## Product Applications



▲ Woodward Parking Garage  
- Detroit, MI



▲ Woodward - (detail)  
- Detroit, MI



▲ ASLA - (detail)  
- Washington, DC

▲ ASLA Headquarters  
- Washington, DC





## Features & Benefits...

Light Duty Steel grating is the workhorse of the industrial flooring market, finding applications in conveyor systems, operating plants, highways and bridge platforms and walkways, machinery floors, refineries, tank stairways and walkways, and power plants. The open grid construction of steel grating provides maximum passage for light, air circulation and drainage, while offering low installation and maintenance costs.

Ohio Gratings prides itself on offering the widest selection of Light Duty Steel grating available in the industry. As a stocking, fabricating distributor of electro forge welded steel grating, we inventory a wide variety of sizes and spacings for shipment in panel form, or for fabrication per plans and specs. Ohio Gratings specializes in engineering those tough jobs requiring intricate layout and fabrication.

In addition to fabricating standard electro forge welded steel grating, Ohio Gratings manufactures and fabricates Dove Tail pressure locked grating, Riveted Steel grating, and Swaged Carbon and Stainless Steel grating. Dove Tail pressure locked, Riveted and Swaged grating offer smoother lines and a more pleasing appearance than the typical welded grating. While still industrial in nature, these grating types may be more appropriate than welded grating for some applications. Please contact the factory for assistance in choosing the right Light Duty Steel grating for your particular application.



***“Light Duty Steel Grating  
is the Workhorse of the  
Industrial Flooring Market.”***

*Whether the requirement is for stock panels or custom fabrication “Made Right and Shipped When Promised”, Ohio Gratings is the choice of a nationwide base of customers whose primary criteria are quality and service.*



◀ Organic Technologies ▲  
- Coshocton, OH



# LIGHT DUTY STEEL GRATING



## Light Duty Welded Steel

Electroforging, a machine process combining hydraulic pressure and heat fusion, is the most popular and most economical method for manufacturing steel grating panels. Ohio Gratings maintains a generous inventory of 24" and 36" wide panels in standard bearing bar/cross bar spacings, and in special spacings, available for next day shipment or custom fabrication.



## Steel Dove Tail

Traditionally designed, Dove Tail slot pressure locked grating, offers the high strength and stiffness of welded steel grating, along with the smooth, clean lines of a flush top rectangular cross bar. This grating is available in spacings which provide a  $\frac{1}{4}$ " or  $\frac{1}{2}$ " opening in conformance with provisions for the Americans With Disabilities Act (July 1991) for grating products.



## Swaged Carbon Steel

By taking advantage of the most modern technology available, Ohio Gratings is able to offer Swaged Carbon Steel grating similar in construction to our aluminum bar grating products. Rectangular bearing bars and tubular cross bars are joined together via the swaging process. This manufacturing method offers smooth surfaces and clean lines, free from the warping and weld flash inherent in the electroforging process. ADA (July 1991) compliant spacings are also available.



## Swaged Stainless Steel

For those applications requiring the corrosion resistance of stainless steel, Ohio Gratings offers a Swaged Stainless Steel grating in Types 304 and 316. As with our Swaged Carbon, this product is manufactured free of the warping, twisting and burn marks which are characteristic of electro forge welded stainless steel grating. Swaged Stainless is suitable for many industrial caustic and acidic environments. Please contact the factory for the suitability of Swaged Stainless in food service applications. ADA (July 1991) compliant spacings are also available.



## Light Duty Riveted Steel

Riveted grating is the oldest style of industrial footwalk, but still the choice of many engineers due to its reliability and durability. Ohio Gratings manufactures and fabricates all popular sizes and spacings of riveted steel grating. As with all of its grating products, Riveted Steel grating by Ohio Gratings is produced with the emphasis on quality and timely service.



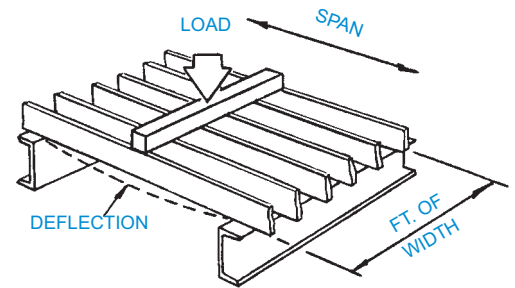
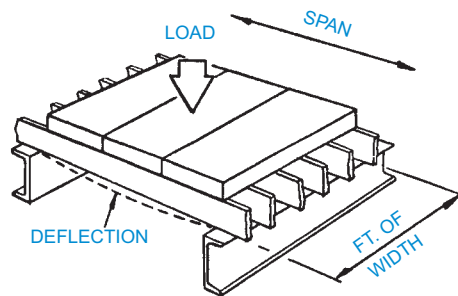
# LIGHT DUTY DESIGN CRITERIA

The tables of safe loads which follow have been computed using the following design parameters:

- U = Uniform Load** – lbs/ft<sup>2</sup>
- C = Concentrated Load** – lbs/ft of grating width
- S = Section Modulus** – in<sup>3</sup>/ft of grating width
- I = Moment of Inertia** – in<sup>4</sup>/ft of grating width
- L = Simple Clear Span** – feet
- D = Deflection** – inches
- E = Modulus of Elasticity** (29,000,000 psi - carbon steel  
28,000,000 psi - T-304 and T-316 stainless steel)
- F = Allowable Bending Stress** (18,000 psi - carbon steel  
20,000 psi - T-304 and T-316 stainless steel)
- M = Bending Moment**

## Design Service

Available at no charge to the specifying architect/engineer or fabricator, is access to a computer program which provides uniform load and deflection (actual or fraction of span) analysis of grating products. Just call, write or fax your design criteria – loading, span, allowable deflection, or grating size desired – and we will provide you with the information you require.



|                                  | Uniform Load                             | Concentrated Load                     |
|----------------------------------|--|---------------------------------------|
| <b>Step 1. Determine M:</b>      | $M = \frac{FS}{12}$                      | $M = \frac{FS}{12}$                   |
| <b>Step 2. Determine U or C:</b> | $U = \frac{8M}{L^2}$                     | $C = \frac{4M}{L}$                    |
| <b>Step 3. Check D*:</b>         | $D = \frac{5UL (L \times 12)^3}{384 EI}$ | $D = \frac{C (L \times 12)^3}{48 EI}$ |

\*Deflection should be limited to 1/4" under 100# uniform load to afford pedestrian comfort.

*Light Duty Steel Grating is best suited for use in conjunction with pedestrian traffic, and for light, rubber pneumatic tire-rolling traffic (carts, dollies and hand trucks). For other rolling loads (forklifts, cars, trucks, etc.) see the Heavy Duty Steel Grating section, page 71.*

Information of a technical nature contained herein is intended only for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. Such information is reliable when evaluated in the proper manner under conditions as described herein. Ohio Gratings, Inc. shall have no responsibility or liability for results obtained or damages resulting from improper evaluation or use.



# LIGHT DUTY WELDED STEEL

## W SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

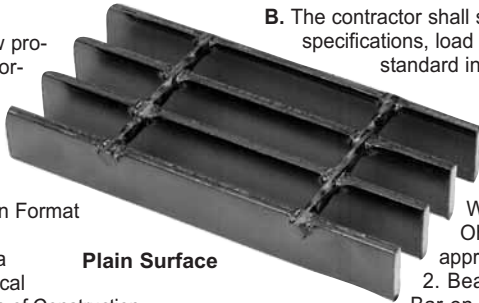
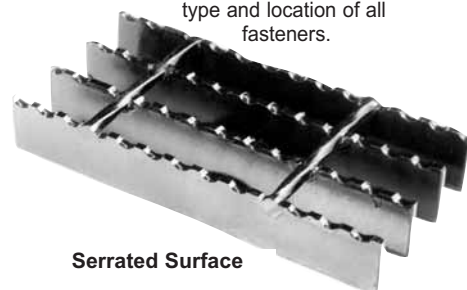
##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Light Duty Steel: ASTM A1011 for hot rolled carbon steel sheet and strip. ASTM A510 for carbon steel wire rods and coarse round wire. ASTM A666 for stainless steel.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.



B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

#### PART 2: PRODUCT...

1. Grating: Light Duty Welded Steel W Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: Rectangular Bar on 1<sup>3</sup>/<sub>16</sub>" centers maximum with dove tail slots to accept cross bars. (Note: Other spacings may be specified at the discretion of the architect /engineer.)
3. Cross Bars: Electroforge welded at right angles to bearing bars at 4" centers maximum. (Note: 2" cross bar centers may be specified at the discretion of the architect /engineer.)
4. Surface: Plain (Note: A serrated surface may be specified at the discretion of the architect /engineer.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed 1/4". (Note: alternate loading requirements may be specified at the discretion of the architect /engineer.)
6. Finish: (Galvanized or manufacturer's standard black paint at the discretion of the architect /engineer.)
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

#### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

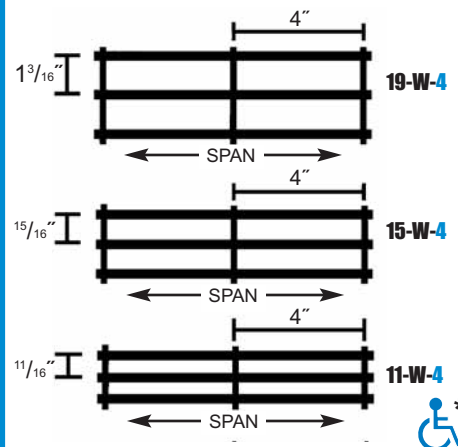
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

##### W Series - Light Duty Welded Steel

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-W-2, 15-W-2 and 11-W-2



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines



# LIGHT DUTY WELDED STEEL APPLICATIONS

## Product Applications...

Light duty steel grating is the workhorse of the industrial flooring market and is used for many different types of pedestrian (walking) applications. The open grid construction provides maximum passage for light, air circulation and drainage.

Electro forging, a machine process combining hydraulic pressure and heat fusion, is readily available and an economical method for manufacturing steel grating panels. The bearing bar surface can be ordered smooth or with a serrated surface for maximum skid resistance.



Tygart Dam ▲  
- Grafton, WV



◀ Detail -North Carolina State Feed Mill  
- Raleigh, NC



▲ Virginia Tech University  
- Blacksburg, VA



# STEEL DOVE TAIL

## DT SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

**A.1.** Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
**2.** Light Duty Steel: ASTM A1011 for hot rolled carbon steel sheet and strip. ASTM A510 for carbon steel wire rods and coarse round wire. ASTM A666 for stainless steel.

**B.1.** Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

**A.** The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
**B.** The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



Plain Surface

#### PART 2: PRODUCT...

1. Grating: Steel Dove Tail DT Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: Rectangular Bar on  $1\frac{3}{16}$ " centers maximum with dove tail slots to accept cross bars. (Note: Other spacings may be specified at the discretion of the architect/engineer.)
3. Cross Bars: Rectangular bars, slotted and locked in dove tail fashion at right angles, and in the same plane as, the top surface of bearing bars. Spacing: 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)
4. Surface: Plain (Note: A serrated surface may be specified at the discretion of the architect/engineer.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: (galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

**A.** Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

**B.** Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and

- accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

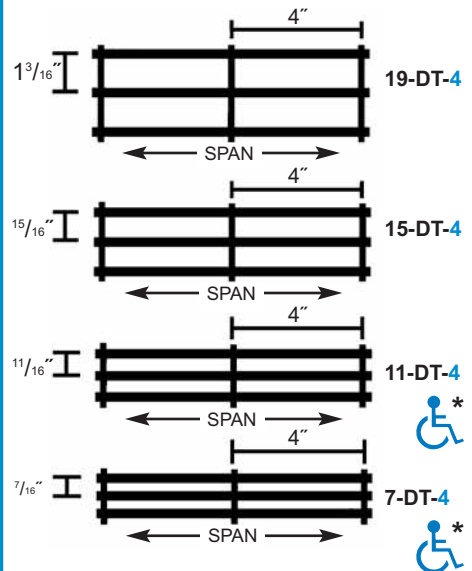
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

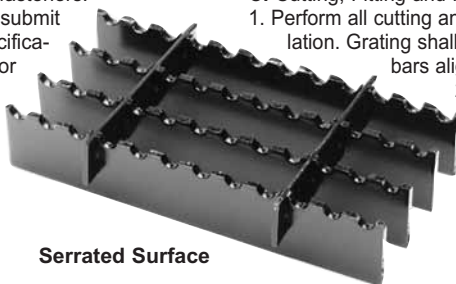
### Grating Profiles Available...

#### DT Series - Steel Dove Tail

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-DT-2, 15-DT-2, 11-DT-2 and 7-DT-2



\* Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines



Serrated Surface



# STEEL DOVE TAIL

## DT SERIES

### Product Applications...

Traditionally designed, Dove Tail slot pressure locked grating offers the high strength and stiffness of welded grating, along with the smooth, clean lines of a flush top rectangular cross bar. Bearing bars and cross bars are precision slotted, assembled in egg-crate fashion and hydraulically pressed together to form a tightly locked, rigidly stable panel grid. This grating is available in a wide variety of spacings including a 1/4" or 1/2" opening product, which conforms with provisions for the

“Americans With Disabilities Act” (July 1991). These products are part of our Grater Access line and are available with cross bars on 2" or 4" centers. This is also a popular style in the architectural community because of the aesthetic eye appeal of the product and the ability to maintain tighter tolerances. This style is also available in stainless steel. Slip resistant surfaces are available upon request.



Bear Creek ▲  
- Louisville, KY



◀ St. Louis, MO



▲ Bear Creek  
- Louisville, KY



# SWAGED CARBON STEEL

## SGCS SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

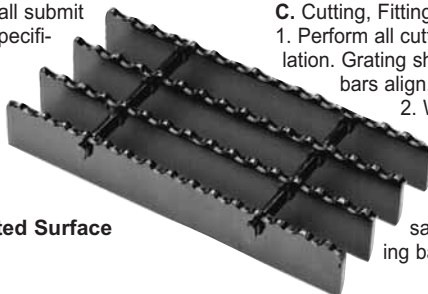
##### 1.2 Quality Assurance

**A.1.** Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
**2.** Light Duty Steel: ASTM A1011 for hot rolled carbon steel sheet and strip. ASTM A510 for carbon steel wire rods and coarse round wire. ASTM A666 for stainless steel.

**B.1.** Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

**A.** The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
**B.** The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



Serrated Surface

#### PART 2: PRODUCT...



Plain Surface

1. Grating: Swaged Carbon Steel SGCS Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: Rectangular Bar on  $1\frac{3}{16}$ " centers maximum with dove tail slots to accept cross bars. (Note: Other spacings may be specified at the discretion of the architect/engineer.)

3. Cross Bars: Carbon steel tubing mechanically locked by swaging at right angles to bearing bars at a maximum of 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)
4. Surface: Plain (Note: A serrated surface may be specified at the discretion of the architect/engineer.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: (galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

**A.** Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

**B.** Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

- C. Cutting, Fitting and Placement.**
1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
  2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

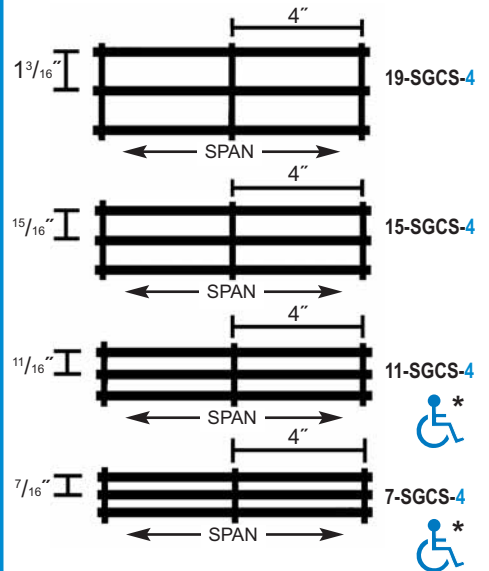
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

##### SGCS Series - Swaged Carbon Steel

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-SGCS-2, 15-SGCS-2, 11-SGCS-2 & 7-SGCS-2



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines





# SWAGED CARBON STEEL

## Product Applications...

The swaging process allows the assembly of bar grating panels by mechanically locking the cross bars at right angles to the bearing bars. It provides the clean crisp lines of a recessed cross bar and eliminates the jagged weld flash inherent with welded bar grating.

Additionally, the heat generated as part of the electro-forging process, limits how close together the bars may be placed. By using the most modern technology available, swaged bar grating is available in a wide variety of spacings including a 1/4" or 1/2" opening product, which conforms with provisions for the "Americans With Disabilities Act" (July 1991). Because of its aesthetic appeal and the ability to meet tight tolerances, this product is often used for architectural applications. Slip resistance surfaces are available upon request.



◀ Detail -  
- New York, NY

Washington Square ▲  
- New York, NY



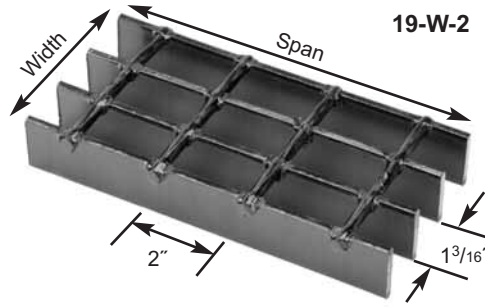
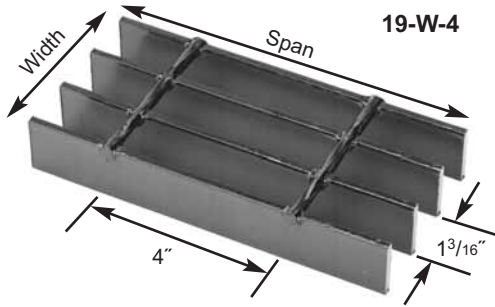
▲ Washington Square  
- New York, NY



# STEEL PROFILES

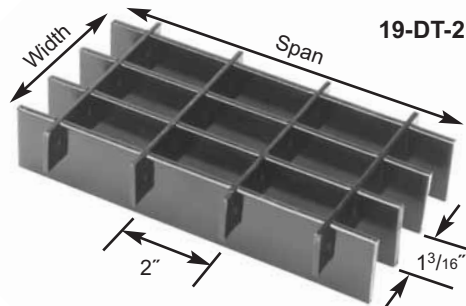
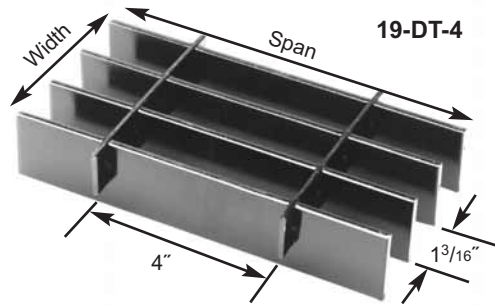
## 19 SPACE

### STEEL LIGHT DUTY WELDED – 19-W-4 ▪ 19-W-2



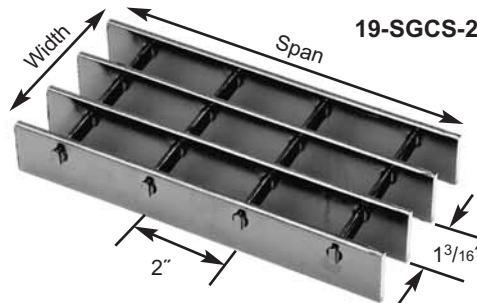
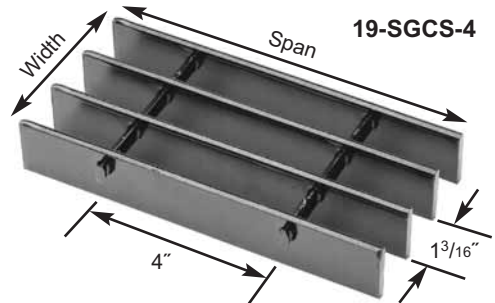
| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 83%  | 77%   |
| 2" cc        | 76%  | 71%   |

### STEEL DOVE TAIL – 19-DT-4 ▪ 19-DT-2



| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 86%  | 81%   |
| 2" cc        | 84%  | 79%   |

### STEEL SWAGED CARBON – 19-SGCS-4 ▪ 19-SGCS-2



| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 83%  | 78%   |
| 2" cc        | 76%  | 72%   |

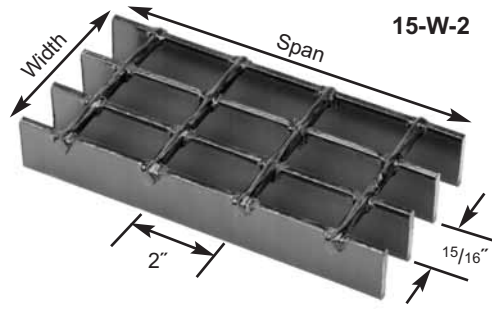
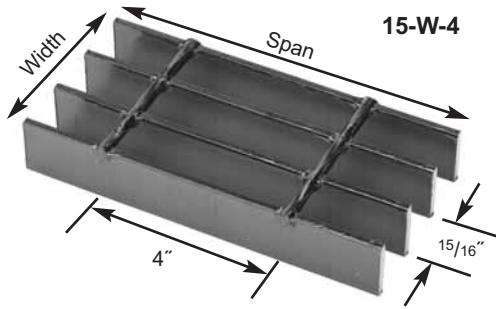




# STEEL PROFILES

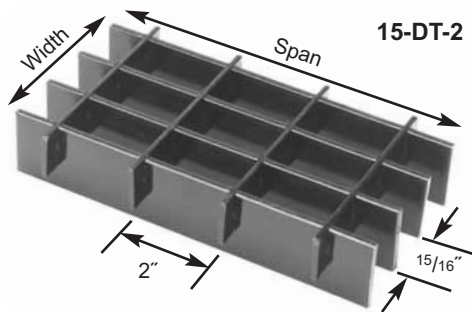
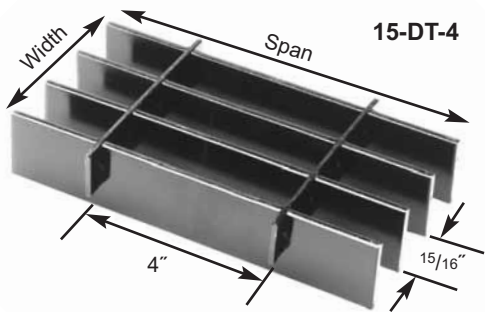
## 15 SPACE

### STEEL LIGHT DUTY WELDED – 15-W-4 ▪ 15-W-2



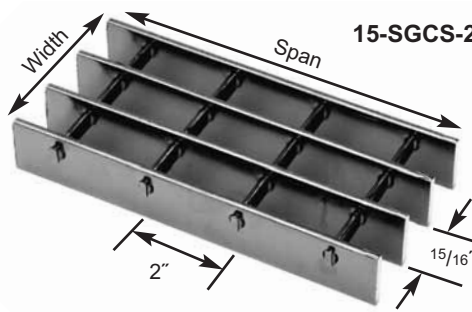
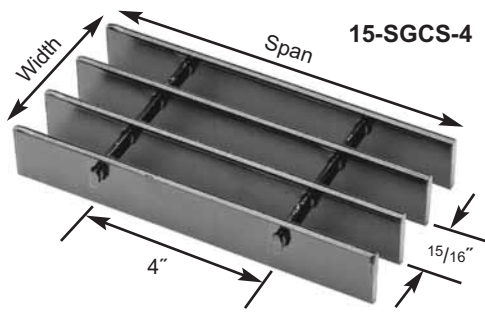
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 73% |
| 2" cc        | 67% |

### STEEL DOVE TAIL – 15-DT-4 ▪ 15-DT-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 77% |
| 2" cc        | 75% |

### STEEL SWAGED CARBON – 15-SGCS-4 ▪ 15-SGCS-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 74% |
| 2" cc        | 68% |



### Load Tables - Light Duty Welded, Dove Tail & Swaged Carbon Steel

| Bar Size, Inches | Ped Span, Inches | Wt. Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | Clear Span |        |        |        |        |        |        |   |        |        |        |        |       |       |       |
|------------------|------------------|------------------|---|------------|--------|--------|--------|--------|--------|--------|---|--------|--------|--------|--------|-------|-------|-------|
|                  |                  |                  |   | 2'- 0"     | 2'- 6" | 3'- 0" | 3'- 6" | 4'- 0" | 4'- 6" | 5'- 0" | 5'- 6"  | 6'- 0" | 6'- 6" | 7'- 0" | 8'- 0" |       |       |       |
| 3/4 x 3/16       | 49               | 7.11             | 0.225   | U          | 675    | 432    | 300    | 220    | 169    | 133    | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br><br>Loads and deflections given in this table are theoretical, and are based on a unit stress of 18,000 psi. |        |        |        |        |       |       |       |
|                  |                  |                  |   | D          | 0.099  | 0.155  | 0.223  | 0.304  | 0.398  | 0.502  |   |        |        |        |        |       |       |       |
|                  |                  |                  | 0.084   | C          | 675    | 540    | 450    | 386    | 338    | 300    |   |        |        |        |        |       |       |       |
|                  |                  |                  |   | D          | 0.079  | 0.124  | 0.179  | 0.243  | 0.318  | 0.402  |   |        |        |        |        |       |       |       |
| 1 x 3/16         | 60               | 9.27             | 0.400   | U          | 1200   | 768    | 533    | 392    | 300    | 237    |   |        |        |        |        |       | 192   | 159   |
|                  |                  |                  |   | D          | 0.074  | 0.116  | 0.167  | 0.228  | 0.298  | 0.377  |   |        |        |        |        |       | 0.466 | 0.564 |
|                  |                  |                  | 0.200   | C          | 1200   | 960    | 800    | 686    | 600    | 533    |   |        |        |        |        |       | 480   | 436   |
|                  |                  |                  |   | D          | 0.060  | 0.093  | 0.134  | 0.183  | 0.238  | 0.301  |   |        |        |        |        |       | 0.372 | 0.450 |
| 1 1/4 x 3/16     | 71               | 11.43            | 0.625   | U          | 1875   | 1200   | 833    | 612    | 469    | 370    | 300   | 248    | 208    |        |        |       |       |       |
|                  |                  |                  |   | D          | 0.060  | 0.093  | 0.134  | 0.182  | 0.238  | 0.301  | 0.372   | 0.451  | 0.535  |        |        |       |       |       |
|                  |                  |                  | 0.391   | C          | 1875   | 1500   | 1250   | 1071   | 938    | 833    | 750   | 682    | 625    |        |        |       |       |       |
|                  |                  |                  |   | D          | 0.048  | 0.074  | 0.107  | 0.146  | 0.191  | 0.241  | 0.298   | 0.361  | 0.429  |        |        |       |       |       |
| 1 1/2 x 3/16     | 82               | 13.82            | 0.900   | U          | 2700   | 1728   | 1200   | 882    | 675    | 533    | 432   | 357    | 300    | 256    | 220    |       |       |       |
|                  |                  |                  |   | D          | 0.050  | 0.078  | 0.112  | 0.152  | 0.199  | 0.251  | 0.310   | 0.375  | 0.447  | 0.525  | 0.607  |       |       |       |
|                  |                  |                  | 0.675   | C          | 2700   | 2160   | 1800   | 1543   | 1350   | 1200   | 1080  | 982    | 900    | 831    | 771    |       |       |       |
|                  |                  |                  |   | D          | 0.040  | 0.062  | 0.089  | 0.122  | 0.159  | 0.201  | 0.248   | 0.300  | 0.358  | 0.420  | 0.486  |       |       |       |
| 1 3/4 x 3/16     | 92               | 15.98            | 1.225   | U          | 3675   | 2352   | 1633   | 1200   | 919    | 726    | 588   | 486    | 408    | 348    | 300    | 230   |       |       |
|                  |                  |                  |   | D          | 0.043  | 0.067  | 0.096  | 0.130  | 0.170  | 0.215  | 0.266   | 0.322  | 0.383  | 0.450  | 0.521  | 0.682 |       |       |
|                  |                  |                  | 1.072   | C          | 3675   | 2940   | 2450   | 2100   | 1838   | 1633   | 1470  | 1336   | 1225   | 1131   | 1050   | 919   |       |       |
|                  |                  |                  |   | D          | 0.034  | 0.053  | 0.077  | 0.104  | 0.136  | 0.172  | 0.213   | 0.257  | 0.306  | 0.360  | 0.417  | 0.545 |       |       |
| 2 x 3/16         | 102              | 18.14            | 1.600   | U          | 4800   | 3072   | 2133   | 1567   | 1200   | 948    | 768   | 635    | 533    | 454    | 392    | 300   |       |       |
|                  |                  |                  |   | D          | 0.037  | 0.058  | 0.084  | 0.114  | 0.149  | 0.189  | 0.233   | 0.282  | 0.335  | 0.393  | 0.456  | 0.596 |       |       |
|                  |                  |                  | 1.600   | C          | 4800   | 3840   | 3200   | 2743   | 2400   | 2133   | 1920  | 1745   | 1600   | 1477   | 1371   | 1200  |       |       |
|                  |                  |                  |   | D          | 0.030  | 0.047  | 0.067  | 0.091  | 0.119  | 0.151  | 0.186   | 0.225  | 0.268  | 0.315  | 0.365  | 0.477 |       |       |
| 2 1/4 x 3/16     | 111              | 20.16            | 2.025   | U          | 6075   | 3888   | 2700   | 1984   | 1519   | 1200   | 972   | 803    | 675    | 575    | 496    | 380   |       |       |
|                  |                  |                  |   | D          | 0.033  | 0.052  | 0.074  | 0.101  | 0.132  | 0.168  | 0.207   | 0.250  | 0.298  | 0.350  | 0.406  | 0.530 |       |       |
|                  |                  |                  | 2.278   | C          | 6075   | 4860   | 4050   | 3471   | 3038   | 2700   | 2430  | 2209   | 2025   | 1869   | 1736   | 1519  |       |       |
|                  |                  |                  |   | D          | 0.026  | 0.041  | 0.060  | 0.081  | 0.106  | 0.134  | 0.166   | 0.200  | 0.238  | 0.280  | 0.324  | 0.424 |       |       |
| 2 1/2 x 3/16     | 120              | 22.32            | 2.500   | U          | 7500   | 4800   | 3333   | 2449   | 1875   | 1481   | 1200  | 992    | 833    | 710    | 612    | 469   |       |       |
|                  |                  |                  |   | D          | 0.030  | 0.047  | 0.067  | 0.091  | 0.119  | 0.151  | 0.186   | 0.225  | 0.268  | 0.315  | 0.365  | 0.477 |       |       |
|                  |                  |                  | 3.125   | C          | 7500   | 6000   | 5000   | 4286   | 3750   | 3333   | 3000  | 2727   | 2500   | 2308   | 2143   | 1875  |       |       |
|                  |                  |                  |   | D          | 0.024  | 0.037  | 0.054  | 0.073  | 0.095  | 0.121  | 0.149   | 0.180  | 0.215  | 0.252  | 0.292  | 0.381 |       |       |

\*Based on 12.8 bars/ft. of grating width. Bearing bars 15/16" c.c. Add .8 lbs./sq. ft. for 15-W-2. 1/8" bearing bars available by inquiry.

**Note:** Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. **When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.**

### 15-W-4 / 15-W-2 - 15-SGCS-4 / 15-DT-4 - 15-SGCS-2 / 15-DT-2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6        | 7        | 8        | 9        | 10       | 11     | 12      | 13      | 14      | 15      | 16      |
|-------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|--------|---------|---------|---------|---------|---------|
| 3/16" Bars  | 1 1/8   | 2 1/16  | 3       | 3 15/16 | 4 7/8    | 5 13/16  | 6 3/4    | 7 11/16  | 8 5/8    | 9 9/16 | 10 1/2  | 11 7/16 | 12 3/8  | 13 5/16 | 14 1/4  |
| 3/16" Bars  | 17      | 18      | 19      | 20      | 21       | 22       | 23       | 24       | 25       | 26     | 27      | 28      | 29      | 30      | 31      |
| 3/16" Bars  | 15 3/16 | 16 1/8  | 17 1/16 | 18      | 18 15/16 | 19 7/8   | 20 13/16 | 21 3/4   | 22 11/16 | 23 5/8 | 24 9/16 | 25 1/2  | 26 7/16 | 27 3/8  | 28 5/16 |
| 3/16" Bars  | 32      | 33      | 34      | 35      | 36       | 37       | 38       | 39       |          |        |         |         |         |         |         |
| 3/16" Bars  | 29 1/4  | 30 3/16 | 31 1/8  | 32 1/16 | 33       | 33 15/16 | 34 7/8   | 35 13/16 |          |        |         |         |         |         |         |

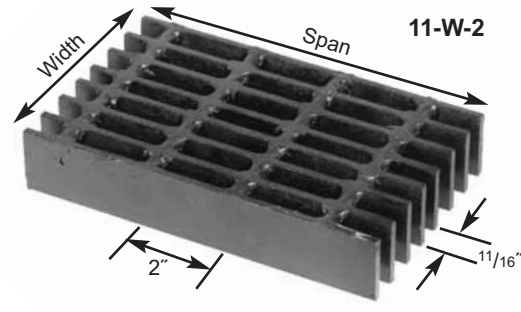
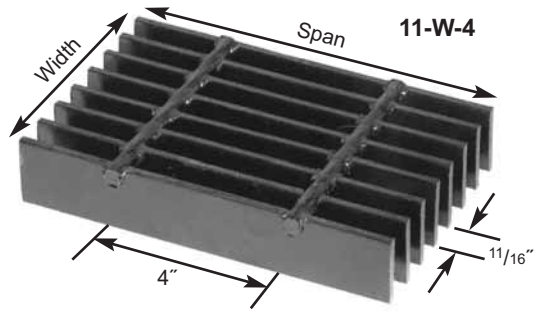
\*\*Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.



# STEEL PROFILES

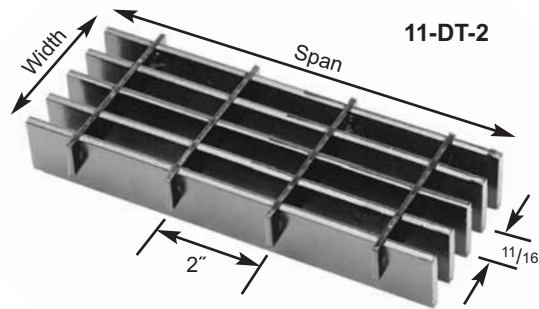
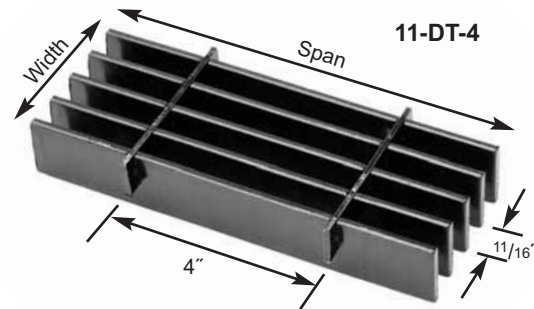
## 11 SPACE

### STEEL LIGHT DUTY WELDED – 11-W-4 ▪ 11-W-2



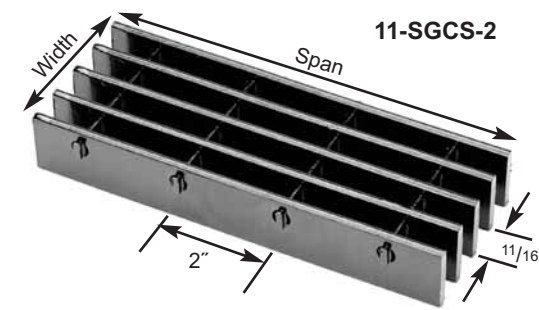
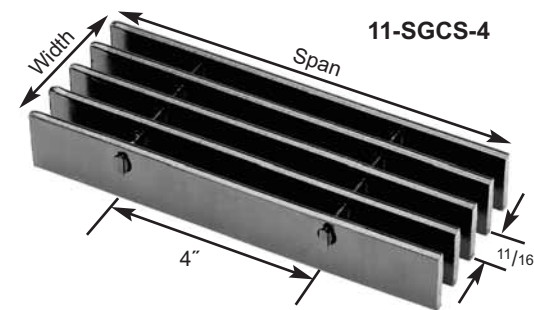
| % Open Area* |     |
|--------------|-----|
| 4" cc        | 66% |
| 2" cc        | 57% |

### STEEL DOVE TAIL – 11-DT-4 ▪ 11-DT-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 70% |
| 2" cc        | 68% |

### STEEL SWAGED CARBON – 11-SGCS-4 ▪ 11-SGCS-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 67% |
| 2" cc        | 62% |



### Load Tables - Light Duty Welded, Dove Tail & Swaged Carbon Steel

| Bar Size, Inches | Ped Span, Inches | Wt. Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |  |       |  |       |       |       |
|------------------|------------------|------------------|---|-----------|-------|-------|-------|-------|-------|-------|--|-------|--|-------|-------|-------|
|                  |                  |                  |   | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6"  | 6'-0" | 6'-6"                                  | 7'-0" | 8'-0" |       |
| 3/4 x 3/16       | 53               | 9.28             | 0.307   | U         | 920   | 589   | 409   | 301   | 230   | 182   | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br><br>Loads and deflections are theoretical and based on a unit stress of 18,000 psi. |       |  |       |       |       |
|                  |                  |                  |   | D         | 0.099 | 0.155 | 0.223 | 0.305 | 0.397 | 0.503 |  |       |  |       |       |       |
|                  |                  |                  | 0.115   | C         | 920   | 736   | 614   | 526   | 460   | 409   |  |       |  |       |       |       |
|                  |                  |                  |   | D         | 0.079 | 0.124 | 0.179 | 0.243 | 0.318 | 0.402 |  |       |  |       |       |       |
| 1 x 3/16         | 65               | 12.16            | 0.545   | U         | 1636  | 1047  | 727   | 534   | 409   | 323   | 262  | 216   | % Open Area*<br>4" cc 66%<br>2" cc 57% |       |       |       |
|                  |                  |                  |   | D         | 0.074 | 0.116 | 0.168 | 0.228 | 0.298 | 0.377 | 0.466  | 0.562 |  |       |       |       |
|                  |                  |                  | 0.273   | C         | 1636  | 1309  | 1091  | 935   | 818   | 727   | 655  | 595   |  |       |       |       |
|                  |                  |                  |   | D         | 0.060 | 0.093 | 0.134 | 0.182 | 0.238 | 0.302 | 0.373  | 0.451 |  |       |       |       |
| 1 1/4 x 3/16     | 77               | 15.04            | 0.852   | U         | 2557  | 1636  | 1136  | 835   | 639   | 505   | 409  | 338   | 284                                    | 242   |       |       |
|                  |                  |                  |   | D         | 0.060 | 0.093 | 0.134 | 0.183 | 0.238 | 0.302 | 0.372  | 0.450 | 0.536                                  | 0.629 |       |       |
|                  |                  |                  | 0.533   | C         | 2557  | 2046  | 1705  | 1461  | 1278  | 1136  | 1023   | 930   | 852                                    | 787   |       |       |
|                  |                  |                  |   | D         | 0.048 | 0.075 | 0.107 | 0.146 | 0.191 | 0.241 | 0.298  | 0.361 | 0.429                                  | 0.504 |       |       |
| 1 1/2 x 3/16     | 89               | 18.28            | 1.227   | U         | 3682  | 2356  | 1636  | 1202  | 920   | 727   | 589  | 487   | 409                                    | 349   | 301   | 230   |
|                  |                  |                  |   | D         | 0.050 | 0.078 | 0.112 | 0.152 | 0.199 | 0.251 | 0.310  | 0.376 | 0.447                                  | 0.525 | 0.609 | 0.794 |
|                  |                  |                  | 0.920   | C         | 3682  | 2946  | 2455  | 2104  | 1841  | 1636  | 1473   | 1339  | 1227                                   | 1133  | 1052  | 920   |
|                  |                  |                  |   | D         | 0.040 | 0.062 | 0.089 | 0.122 | 0.159 | 0.201 | 0.248  | 0.300 | 0.357                                  | 0.420 | 0.487 | 0.635 |
| 1 3/4 x 3/16     | 99               | 21.16            | 1.670   | U         | 5011  | 3207  | 2227  | 1636  | 1253  | 990   | 802  | 663   | 557                                    | 474   | 409   | 313   |
|                  |                  |                  |   | D         | 0.043 | 0.066 | 0.096 | 0.130 | 0.170 | 0.215 | 0.266  | 0.322 | 0.383                                  | 0.449 | 0.521 | 0.681 |
|                  |                  |                  | 1.462   | C         | 5011  | 4009  | 3341  | 2864  | 2506  | 2227  | 2005   | 1822  | 1670                                   | 1542  | 1432  | 1253  |
|                  |                  |                  |   | D         | 0.034 | 0.053 | 0.077 | 0.104 | 0.136 | 0.172 | 0.213  | 0.257 | 0.306                                  | 0.360 | 0.417 | 0.545 |
| 2 x 3/16         | 110              | 24.04            | 2.182   | U         | 6546  | 4189  | 2909  | 2137  | 1636  | 1293  | 1047   | 866   | 727                                    | 620   | 534   | 409   |
|                  |                  |                  |   | D         | 0.037 | 0.058 | 0.084 | 0.114 | 0.149 | 0.189 | 0.233  | 0.282 | 0.335                                  | 0.394 | 0.456 | 0.596 |
|                  |                  |                  | 2.182   | C         | 6546  | 5237  | 4364  | 3740  | 3273  | 2909  | 2618   | 2380  | 2182                                   | 2014  | 1870  | 1636  |
|                  |                  |                  |   | D         | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186  | 0.225 | 0.268                                  | 0.315 | 0.365 | 0.477 |
| 2 1/4 x 3/16     | 120              | 26.74            | 2.761   | U         | 8284  | 5302  | 3682  | 2705  | 2071  | 1636  | 1325   | 1095  | 920                                    | 784   | 676   | 518   |
|                  |                  |                  |   | D         | 0.033 | 0.052 | 0.074 | 0.101 | 0.132 | 0.168 | 0.207  | 0.250 | 0.298                                  | 0.350 | 0.405 | 0.530 |
|                  |                  |                  | 3.107   | C         | 8284  | 6627  | 5523  | 4734  | 4142  | 3682  | 3314   | 3012  | 2761                                   | 2549  | 2367  | 2071  |
|                  |                  |                  |   | D         | 0.026 | 0.041 | 0.060 | 0.081 | 0.106 | 0.134 | 0.166  | 0.200 | 0.238                                  | 0.280 | 0.324 | 0.424 |
| 2 1/2 x 3/16     | 130              | 29.62            | 3.409   | U         | 10228 | 6546  | 4546  | 3340  | 2557  | 2020  | 1636   | 1352  | 1136                                   | 968   | 835   | 639   |
|                  |                  |                  |   | D         | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186  | 0.225 | 0.268                                  | 0.315 | 0.365 | 0.477 |
|                  |                  |                  | 4.261   | C         | 10228 | 8182  | 6818  | 5844  | 5114  | 4546  | 4091   | 3719  | 3409                                   | 3147  | 2922  | 2557  |
|                  |                  |                  |   | D         | 0.024 | 0.037 | 0.054 | 0.073 | 0.095 | 0.121 | 0.149  | 0.180 | 0.214                                  | 0.252 | 0.292 | 0.381 |

\*Based on 17,455 bars/ft. of grating width. Bearing bars 1 1/16" c.c. Add .8 lbs./sq. ft. for 11-W-2, 1/8" bearing bars available by inquiry.  
 Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. **When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.**

#### 11-W-4 / 11-W-2 Panel Width Chart (in.)

#### Dimensions Are Out-to-Out of Bearing Bars\*\*

|             |         |         |         |         |          |        |         |         |          |        |         |        |         |         |          |
|-------------|---------|---------|---------|---------|----------|--------|---------|---------|----------|--------|---------|--------|---------|---------|----------|
| No. of Bars | 2       | 3       | 4       | 5       | 6        | 7      | 8       | 9       | 10       | 11     | 12      | 13     | 14      | 15      | 16       |
| 3/16" Bars  | 7/8     | 1 9/16  | 2 1/4   | 2 15/16 | 3 5/8    | 4 5/16 | 5       | 5 11/16 | 6 3/8    | 7 1/16 | 7 3/4   | 8 7/16 | 9 1/8   | 9 13/16 | 10 1/2   |
| No. of Bars | 17      | 18      | 19      | 20      | 21       | 22     | 23      | 24      | 25       | 26     | 27      | 28     | 29      | 30      | 31       |
| 3/16" Bars  | 11 3/16 | 11 7/8  | 12 9/16 | 13 1/4  | 13 15/16 | 14 5/8 | 15 5/16 | 16      | 16 11/16 | 17 3/8 | 18 1/16 | 18 3/4 | 19 7/16 | 20 1/8  | 20 13/16 |
| No. of Bars | 32      | 33      | 34      | 35      |          |        |         |         |          |        |         |        |         |         |          |
| 3/16" Bars  | 21 1/2  | 22 3/16 | 22 7/8  | 23 9/16 |          |        |         |         |          |        |         |        |         |         |          |

\*\*Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

#### 11-SGCS-4 / 11-SGCS-2 & 11-DT-4 / 11-DT-2 Panel Width Chart (in.)

#### Dimensions Are Out-to-Out of Bearing Bars\*\*

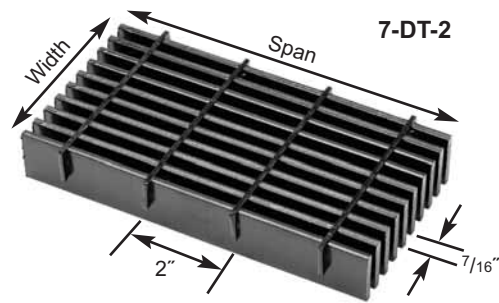
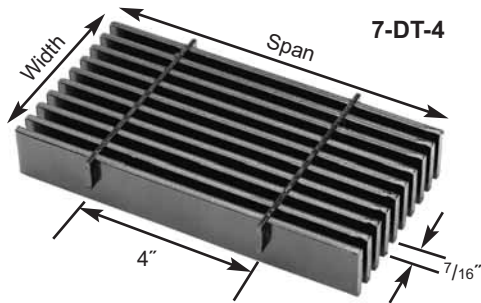
|             |          |         |         |         |          |          |          |         |          |          |         |         |         |         |          |
|-------------|----------|---------|---------|---------|----------|----------|----------|---------|----------|----------|---------|---------|---------|---------|----------|
| No. of Bars | 2        | 3       | 4       | 5       | 6        | 7        | 8        | 9       | 10       | 11       | 12      | 13      | 14      | 15      | 16       |
| 3/16" Bars  | 7/8      | 1 9/16  | 2 1/4   | 2 15/16 | 3 5/8    | 4 5/16   | 5        | 5 11/16 | 6 3/8    | 7 1/16   | 7 3/4   | 8 7/16  | 9 1/8   | 9 13/16 | 10 1/2   |
| No. of Bars | 17       | 18      | 19      | 20      | 21       | 22       | 23       | 24      | 25       | 26       | 27      | 28      | 29      | 30      | 31       |
| 3/16" Bars  | 11 3/16  | 11 7/8  | 12 9/16 | 13 1/4  | 13 15/16 | 14 5/8   | 15 5/16  | 16      | 16 11/16 | 17 3/8   | 18 1/16 | 18 3/4  | 19 7/16 | 20 1/8  | 20 13/16 |
| No. of Bars | 32       | 33      | 34      | 35      | 36       | 37       | 38       | 39      | 40       | 41       | 42      | 43      | 44      | 45      | 46       |
| 3/16" Bars  | 21 1/2   | 22 3/16 | 22 7/8  | 23 9/16 | 24 1/4   | 24 15/16 | 25 5/8   | 26 5/16 | 27       | 27 11/16 | 28 3/8  | 29 1/16 | 29 3/4  | 30 7/16 | 31 1/8   |
| No. of Bars | 47       | 48      | 49      | 50      | 51       | 52       | 53       |         |          |          |         |         |         |         |          |
| 3/16" Bars  | 31 13/16 | 32 1/2  | 33 3/16 | 33 7/8  | 34 9/16  | 35 1/4   | 35 15/16 |         |          |          |         |         |         |         |          |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

# STEEL PROFILES

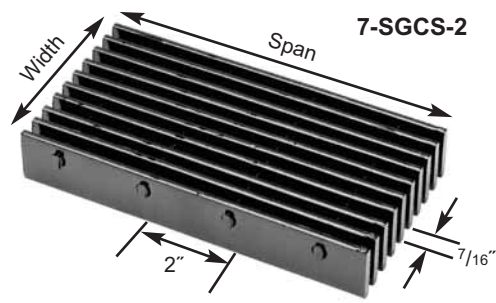
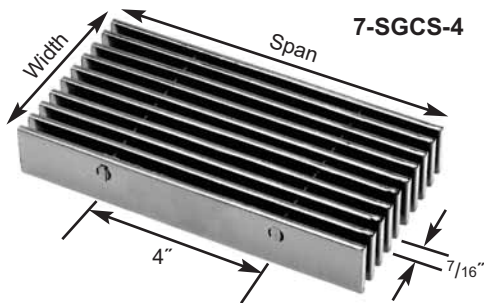
## 7 SPACE

### STEEL DOVE TAIL – 7-DT-4 ▪ 7-DT-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 55% |
| 2" cc        | 53% |

### STEEL SWAGED CARBON – 7-SGCS-4 ▪ 7-SGCS-2



| % Open Area* |     |
|--------------|-----|
| 4" cc        | 52% |
| 2" cc        | 48% |





### Load Tables - Dove Tail & Swaged Carbon Steel

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |       |  |       |       |       |       |       |       |  |       |       |
|------------------|------------------|-------------------|---|-----------|-------|-------|-------|-------|-------|-------|-------|--|-------|-------|-------|-------|-------|-------|--|-------|-------|
|                  |                  |                   |   | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0"  | 6'-6" | 7'-0" | 8'-0" |       |       |       |  |       |       |
| 3/4 x 3/16       | 59               | 13.73             | 0.482   | U         | 1446  | 926   | 643   | 472   | 362   | 286   | 231   | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br>Loads and deflections are theoretical and based on a unit stress of 18,000 psi. |       |       |       |       |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.099 | 0.155 | 0.223 | 0.304 | 0.398 | 0.503 | 0.620 |  |       |       |       |       |       |       |  |       |       |
|                  |                  |                   | 0.181   | C         | 1446  | 1157  | 964   | 827   | 723   | 643   | 579   |  |       |       |       |       |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.079 | 0.124 | 0.179 | 0.243 | 0.318 | 0.402 | 0.497 |  |       |       |       |       |       |       |  |       |       |
| 1 x 3/16         | 73               | 18.09             | 0.857   | U         | 2571  | 1646  | 1143  | 840   | 643   | 508   | 411   |  |       |       |       |       | 340   | 286   | % Open Area*<br>4" cc 52%<br>2" cc 48% |       |       |
|                  |                  |                   |   | D         | 0.074 | 0.116 | 0.168 | 0.228 | 0.298 | 0.377 | 0.465 |  |       |       |       |       | 0.563 | 0.671 |  |       |       |
|                  |                  |                   | 0.429   | C         | 2571  | 2057  | 1714  | 1469  | 1286  | 1143  | 1029  |  |       |       |       |       | 935   | 857   |  |       |       |
|                  |                  |                   |   | D         | 0.060 | 0.093 | 0.134 | 0.182 | 0.238 | 0.302 | 0.373 |  |       |       |       |       | 0.451 | 0.536 |  |       |       |
| 1 1/4 x 3/16     | 86               | 22.45             | 1.339   | U         | 4018  | 2571  | 1786  | 1312  | 1004  | 794   | 643   |  |       |       |       |       | 531   | 446   | 380                                    | 328   | 251   |
|                  |                  |                   |   | D         | 0.060 | 0.093 | 0.134 | 0.182 | 0.238 | 0.302 | 0.372 |  |       |       |       |       | 0.450 | 0.536 | 0.629                                  | 0.730 | 0.953 |
|                  |                  |                   | 0.837   | C         | 4018  | 3214  | 2679  | 2296  | 2009  | 1786  | 1607  |  |       |       |       |       | 1461  | 1339  | 1236                                   | 1148  | 1004  |
|                  |                  |                   |   | D         | 0.048 | 0.074 | 0.107 | 0.146 | 0.191 | 0.241 | 0.298 |  |       |       |       |       | 0.360 | 0.429 | 0.503                                  | 0.584 | 0.762 |
| 1 1/2 x 3/16     | 99               | 26.81             | 1.929   | U         | 5786  | 3703  | 2571  | 1889  | 1446  | 1143  | 926   | 765  | 643   | 548   | 472   | 362   |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.050 | 0.078 | 0.112 | 0.152 | 0.199 | 0.251 | 0.310 | 0.375  | 0.447 | 0.525 | 0.608 | 0.795 |       |       |  |       |       |
|                  |                  |                   | 1.446   | C         | 5786  | 4629  | 3857  | 3306  | 2893  | 2571  | 2314  | 2104   | 1929  | 1780  | 1653  | 1446  |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.040 | 0.062 | 0.089 | 0.122 | 0.159 | 0.201 | 0.248 | 0.300  | 0.358 | 0.420 | 0.487 | 0.635 |       |       |  |       |       |
| 1 3/4 x 3/16     | 111              | 31.20             | 2.625   | U         | 7875  | 5040  | 3500  | 2571  | 1969  | 1556  | 1260  | 1041   | 875   | 746   | 643   | 492   |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.043 | 0.067 | 0.096 | 0.130 | 0.170 | 0.216 | 0.266 | 0.322  | 0.383 | 0.450 | 0.521 | 0.681 |       |       |  |       |       |
|                  |                  |                   | 2.297   | C         | 7875  | 6300  | 5250  | 4500  | 3938  | 3500  | 3150  | 2864   | 2625  | 2423  | 2250  | 1969  |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.034 | 0.053 | 0.077 | 0.104 | 0.136 | 0.172 | 0.213 | 0.258  | 0.306 | 0.360 | 0.417 | 0.545 |       |       |  |       |       |
| 2 x 3/16         | 123              | 35.59             | 3.429   | U         | 10286 | 6583  | 4572  | 3359  | 2571  | 2032  | 1646  | 1360   | 1143  | 974   | 840   | 643   |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.037 | 0.058 | 0.084 | 0.114 | 0.149 | 0.189 | 0.233 | 0.282  | 0.335 | 0.393 | 0.456 | 0.596 |       |       |  |       |       |
|                  |                  |                   | 3.429   | C         | 10286 | 8229  | 6857  | 5878  | 5143  | 4572  | 4114  | 3740   | 3429  | 3165  | 2939  | 2571  |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186 | 0.225  | 0.268 | 0.315 | 0.365 | 0.477 |       |       |  |       |       |
| 2 1/4 x 3/16     | 134              | 39.92             | 4.339   | U         | 13018 | 8332  | 5786  | 4251  | 3255  | 2571  | 2083  | 1721   | 1446  | 1232  | 1063  | 814   |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.033 | 0.052 | 0.074 | 0.101 | 0.132 | 0.168 | 0.207 | 0.250  | 0.298 | 0.350 | 0.406 | 0.530 |       |       |  |       |       |
|                  |                  |                   | 4.882   | C         | 13018 | 10414 | 8679  | 7439  | 6509  | 5786  | 5207  | 4734   | 4339  | 4006  | 3719  | 3255  |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.026 | 0.041 | 0.060 | 0.081 | 0.106 | 0.134 | 0.166 | 0.200  | 0.238 | 0.280 | 0.324 | 0.424 |       |       |  |       |       |
| 2 1/2 x 3/16     | 145              | 44.31             | 5.357   | U         | 16072 | 10286 | 7143  | 5248  | 4018  | 3175  | 2571  | 2125   | 1786  | 1522  | 1312  | 1004  |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186 | 0.225  | 0.268 | 0.315 | 0.365 | 0.476 |       |       |  |       |       |
|                  |                  |                   | 6.697   | C         | 16072 | 12857 | 10714 | 9184  | 8036  | 7143  | 6429  | 5844   | 5357  | 4945  | 4592  | 4018  |       |       |  |       |       |
|                  |                  |                   |   | D         | 0.024 | 0.037 | 0.054 | 0.073 | 0.095 | 0.121 | 0.149 | 0.180  | 0.215 | 0.252 | 0.292 | 0.381 |       |       |  |       |       |

\*Based on 27.429 bars/ft. of grating width. Bearing bars 3/16" c.c. Add .6 lbs./sq. ft. for 7-SGCS-2. 1/8" bearing bars available by inquiry.

**Note:** Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating.

When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables. 3/4" x 3/16" serrated grating is not available.

### 7-SGCS-4 / 7-SGCS-2 & 7-DT-4 / 7-DT-2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6       | 7        | 8        | 9        | 10       | 11       | 12       | 13       | 14      | 15      | 16      |
|-------------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|---------|---------|---------|
| 3/16" Bars  | 5/8     | 1 1/16  | 1 1/2   | 1 5/16  | 2 3/8   | 2 13/16  | 3 1/4    | 3 11/16  | 4 1/8    | 4 9/16   | 5        | 5 7/16   | 5 7/8   | 6 5/16  | 6 3/4   |
| No. of Bars | 17      | 18      | 19      | 20      | 21      | 22       | 23       | 24       | 25       | 26       | 27       | 28       | 29      | 30      | 31      |
| 3/16" Bars  | 7 3/16  | 7 5/8   | 8 1/16  | 8 1/2   | 8 15/16 | 9 3/8    | 9 13/16  | 10 1/4   | 10 11/16 | 11 1/8   | 11 9/16  | 12       | 12 7/16 | 12 7/8  | 13 5/16 |
| No. of Bars | 32      | 33      | 34      | 35      | 36      | 37       | 38       | 39       | 40       | 41       | 42       | 43       | 44      | 45      | 46      |
| 3/16" Bars  | 13 3/4  | 14 3/16 | 14 5/8  | 15 1/16 | 15 1/2  | 15 15/16 | 16 3/8   | 16 13/16 | 17 1/4   | 17 11/16 | 18 1/8   | 18 9/16  | 19      | 19 7/16 | 19 7/8  |
| No. of Bars | 47      | 48      | 49      | 50      | 51      | 52       | 53       | 54       | 55       | 56       | 57       | 58       | 59      | 60      | 61      |
| 3/16" Bars  | 20 5/16 | 20 3/4  | 21 3/16 | 21 5/8  | 22 1/16 | 22 1/2   | 22 15/16 | 23 3/8   | 23 13/16 | 24 1/4   | 24 11/16 | 25 1/8   | 25 9/16 | 26      | 26 7/16 |
| No. of Bars | 62      | 63      | 64      | 65      | 66      | 67       | 68       | 69       | 70       | 71       | 72       | 73       | 74      | 75      | 76      |
| 3/16" Bars  | 26 7/8  | 27 5/16 | 27 3/4  | 28 3/16 | 28 5/8  | 29 1/16  | 29 1/2   | 29 15/16 | 30 3/8   | 30 13/16 | 31 1/4   | 31 11/16 | 32 1/8  | 32 9/16 | 33      |
| No. of Bars | 77      | 78      | 79      | 80      | 81      | 82       | 83       |          |          |          |          |          |         |         |         |
| 3/16" Bars  | 33 7/16 | 33 7/8  | 34 5/16 | 34 3/4  | 35 3/16 | 35 5/8   | 36 1/16  |          |          |          |          |          |         |         |         |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.



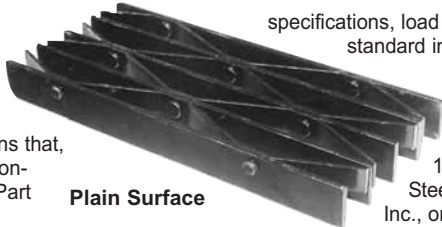
# LIGHT DUTY RIVETED STEEL

## R SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



Plain Surface

specifications, load tables, anchor details and standard installation details.

#### PART 2: PRODUCT...

1. Grating: Light Duty Riveted Steel R Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: Rectangular Bar spaced  $1\frac{1}{8}$ " between bar faces maximum. (Note:  $\frac{3}{4}$ " spacing may be specified at the discretion of the architect/engineer.)
3. Connecting Bars: Extending between bearing bars and riveted to bearing bars at 7" centers. (Note:  $3\frac{1}{2}$ " rivet centers may be specified for maximum lateral stability.)
4. Surface: Plain (Note: a serrated connecting bar may be specified for maximum skid resistance.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: Galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

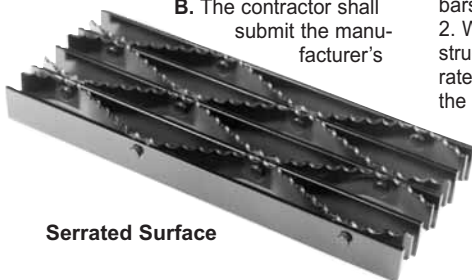
##### 1.2 Quality Assurance

- A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).
2. Light Duty Steel: ASTM A1011 for hot rolled carbon steel sheet and strip. ASTM A510 for carbon steel wire rods and coarse round wire. ASTM A666 for stainless steel.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

- A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.
- B. The contractor shall submit the manufacturer's



Serrated Surface

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### PART 3: EXECUTION...

##### 3.1 Installation

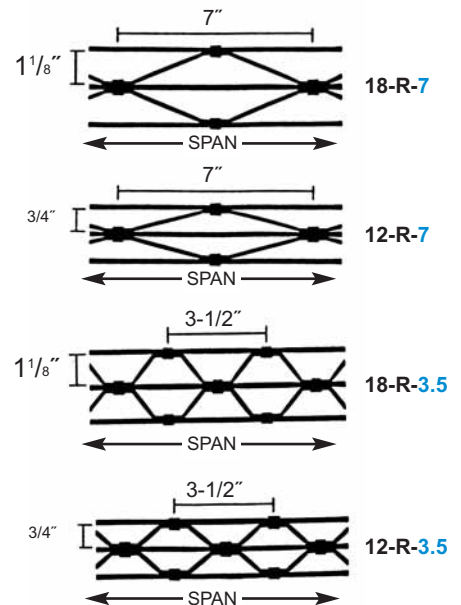
A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

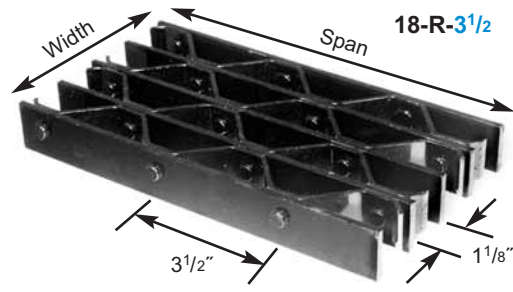
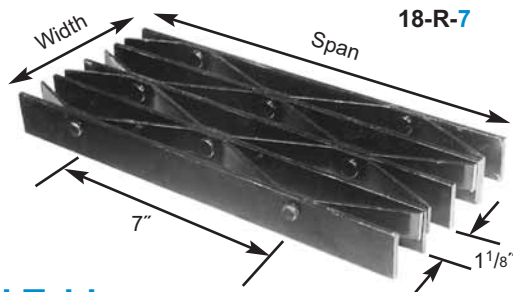
1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

#### Grating Profiles Available... R Series - Light Duty Riveted Steel



# LIGHT DUTY RIVETED STEEL

## 18 SPACE



### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt. Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>2</sup><br>Ix*, in <sup>4</sup> | Clear Span |       |       |       |       |       |       |  |       |       |       |       |       |       |
|------------------|------------------|------------------|--|------------|-------|-------|-------|-------|-------|-------|--|-------|-------|-------|-------|-------|-------|
|                  |                  |                  |  | 2'-0"      | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6"  | 6'-0" | 6'-6" | 7'-0" | 8'-0" |       |       |
| 3/4 x 3/16       | 48               | 7.80             | 0.204  | U          | 613   | 392   | 272   | 200   | 153   | 121   | U - Safe uniform load in pounds/sq. ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches<br><br>Loads and deflections are theoretical and are based on a unit stress of 18,000 psi. |       |       |       |       |       |       |
|                  |                  |                  |  | D          | 0.099 | 0.155 | 0.223 | 0.304 | 0.397 | 0.503 |  |       |       |       |       |       |       |
|                  |                  |                  | 0.077  | C          | 613   | 490   | 409   | 350   | 306   | 272   |  |       |       |       |       |       |       |
|                  |                  |                  |  | D          | 0.079 | 0.124 | 0.179 | 0.243 | 0.317 | 0.402 |  |       |       |       |       |       |       |
| 1 x 1/8          | 53               | 7.60             | 0.242  | U          | 726   | 465   | 323   | 237   | 182   | 143   |  |       |       |       |       |       |       |
|                  |                  |                  |  | D          | 0.074 | 0.116 | 0.168 | 0.228 | 0.299 | 0.376 |  |       |       |       |       |       |       |
|                  |                  |                  | 0.121  | C          | 726   | 581   | 484   | 415   | 363   | 323   |  |       |       |       |       |       |       |
|                  |                  |                  |  | D          | 0.060 | 0.093 | 0.134 | 0.182 | 0.238 | 0.302 |  |       |       |       |       |       |       |
| 1 x 3/16         | 59               | 9.40             | 0.363  | U          | 1089  | 697   | 484   | 356   | 272   | 215   |  |       |       |       |       |       | 174   |
|                  |                  |                  |  | D          | 0.074 | 0.116 | 0.168 | 0.228 | 0.298 | 0.377 |  |       |       |       |       |       | 0.465 |
|                  |                  |                  | 0.182  | C          | 1089  | 872   | 726   | 623   | 545   | 484   |  |       |       |       |       |       | 436   |
|                  |                  |                  |  | D          | 0.060 | 0.093 | 0.134 | 0.183 | 0.238 | 0.302 |  |       |       |       |       |       | 0.373 |
| 1 1/4 x 1/8      | 63               | 8.70             | 0.378  | U          | 1135  | 726   | 504   | 371   | 284   | 224   | 182  | 150   |       |       |       |       |       |
|                  |                  |                  |  | D          | 0.060 | 0.093 | 0.134 | 0.183 | 0.239 | 0.301 | 0.373  | 0.450 |       |       |       |       |       |
|                  |                  |                  | 0.236  | C          | 1135  | 908   | 757   | 648   | 567   | 504   | 454  | 413   |       |       |       |       |       |
|                  |                  |                  |  | D          | 0.048 | 0.074 | 0.107 | 0.146 | 0.191 | 0.241 | 0.298  | 0.361 |       |       |       |       |       |
| 1 1/4 x 3/16     | 70               | 11.00            | 0.567  | U          | 1702  | 1089  | 757   | 556   | 426   | 336   | 272  | 225   | 189   |       |       |       |       |
|                  |                  |                  |  | D          | 0.060 | 0.093 | 0.134 | 0.183 | 0.239 | 0.301 | 0.372  | 0.450 | 0.536 |       |       |       |       |
|                  |                  |                  | 0.355  | C          | 1702  | 1362  | 1135  | 973   | 851   | 757   | 681  | 619   | 567   |       |       |       |       |
|                  |                  |                  |  | D          | 0.048 | 0.074 | 0.107 | 0.146 | 0.191 | 0.241 | 0.298  | 0.360 | 0.429 |       |       |       |       |
| 1 1/2 x 1/8      | 72               | 9.90             | 0.545  | U          | 1634  | 1046  | 726   | 534   | 409   | 323   | 261  | 216   | 182   | 155   |       |       |       |
|                  |                  |                  |  | D          | 0.050 | 0.078 | 0.112 | 0.152 | 0.199 | 0.252 | 0.310  | 0.375 | 0.448 | 0.525 |       |       |       |
|                  |                  |                  | 0.409  | C          | 1634  | 1307  | 1089  | 934   | 817   | 726   | 654  | 594   | 545   | 503   |       |       |       |
|                  |                  |                  |  | D          | 0.040 | 0.062 | 0.089 | 0.122 | 0.159 | 0.201 | 0.248  | 0.300 | 0.358 | 0.420 |       |       |       |
| 1 1/2 x 3/16     | 80               | 12.50            | 0.817  | U          | 2451  | 1569  | 1089  | 800   | 613   | 484   | 392  | 324   | 272   | 232   | 200   |       |       |
|                  |                  |                  |  | D          | 0.050 | 0.078 | 0.112 | 0.152 | 0.199 | 0.251 | 0.310  | 0.375 | 0.446 | 0.524 | 0.608 |       |       |
|                  |                  |                  | 0.613  | C          | 2451  | 1961  | 1634  | 1401  | 1226  | 1089  | 981  | 891   | 817   | 754   | 700   |       |       |
|                  |                  |                  |  | D          | 0.040 | 0.062 | 0.089 | 0.122 | 0.159 | 0.201 | 0.248  | 0.300 | 0.357 | 0.419 | 0.486 |       |       |
| 1 3/4 x 3/16     | 90               | 14.20            | 1.112  | U          | 3336  | 2135  | 1483  | 1089  | 834   | 659   | 534  | 441   | 371   | 316   | 272   | 209   |       |
|                  |                  |                  |  | D          | 0.043 | 0.066 | 0.096 | 0.130 | 0.170 | 0.215 | 0.266  | 0.322 | 0.383 | 0.450 | 0.521 | 0.683 |       |
|                  |                  |                  | 0.973  | C          | 3336  | 2669  | 2224  | 1907  | 1668  | 1483  | 1335   | 1213  | 1112  | 1027  | 953   | 834   |       |
|                  |                  |                  |  | D          | 0.034 | 0.053 | 0.077 | 0.104 | 0.136 | 0.172 | 0.213  | 0.257 | 0.306 | 0.360 | 0.417 | 0.545 |       |
| 2 x 3/16         | 99               | 16.80            | 1.453  | U          | 4358  | 2789  | 1937  | 1423  | 1089  | 861   | 697  | 576   | 484   | 413   | 356   | 272   |       |
|                  |                  |                  |  | D          | 0.037 | 0.058 | 0.084 | 0.114 | 0.149 | 0.189 | 0.233  | 0.282 | 0.335 | 0.394 | 0.457 | 0.595 |       |
|                  |                  |                  | 1.453  | C          | 4358  | 3486  | 2905  | 2490  | 2179  | 1937  | 1743   | 1585  | 1453  | 1341  | 1245  | 1089  |       |
|                  |                  |                  |  | D          | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186  | 0.225 | 0.268 | 0.315 | 0.365 | 0.476 |       |
| 2 1/4 x 3/16     | 108              | 18.30            | 1.838  | U          | 5515  | 3530  | 2451  | 1801  | 1379  | 1089  | 882  | 729   | 613   | 522   | 450   | 345   |       |
|                  |                  |                  |  | D          | 0.033 | 0.052 | 0.074 | 0.101 | 0.132 | 0.168 | 0.207  | 0.250 | 0.298 | 0.350 | 0.405 | 0.530 |       |
|                  |                  |                  | 2.068  | C          | 5515  | 4412  | 3677  | 3152  | 2758  | 2451  | 2206   | 2006  | 1838  | 1697  | 1576  | 1379  |       |
|                  |                  |                  |  | D          | 0.026 | 0.041 | 0.060 | 0.081 | 0.106 | 0.134 | 0.166  | 0.200 | 0.238 | 0.280 | 0.324 | 0.424 |       |
| 2 1/2 x 3/16     | 117              | 19.90            | 2.270  | U          | 6809  | 4358  | 3026  | 2223  | 1702  | 1345  | 1089   | 900   | 757   | 645   | 556   | 426   |       |
|                  |                  |                  |  | D          | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186  | 0.225 | 0.268 | 0.315 | 0.365 | 0.477 |       |
|                  |                  |                  | 2.837  | C          | 6809  | 5447  | 4539  | 3891  | 3405  | 3026  | 2724   | 2476  | 2270  | 2095  | 1945  | 1702  |       |
|                  |                  |                  |  | D          | 0.024 | 0.037 | 0.054 | 0.073 | 0.095 | 0.121 | 0.149  | 0.180 | 0.215 | 0.252 | 0.292 | 0.381 |       |

| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 7" cc        | 78%  | 74%   |
| 3 1/2" cc    | 77%  | 73%   |

| BB Size, Inches | CB Size, in. All Spacings |
|-----------------|---------------------------|
| Thru 1 3/4"     | 3/4 x 1/8                 |
| 2 - 2 1/2"      | 1 x 1/8                   |

\*Based on 11.621 bars/ft. of grating width. Bearing bars 1 1/8" face-to-face, connecting bars riveted 7" c.c. Add .4 lbs./sq. ft. for 18-R-3 1/2. Note: Grating for spans to the left of the heavy line have a deflection less than 1/16" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating.

### 18-R-7 / 18-R-3 1/2 Panel Width Chart (in.)

Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4        | 5      | 6       | 7      | 8       | 9        | 10       | 11      | 12      | 13       | 14     | 15      | 16     |
|-------------|---------|---------|----------|--------|---------|--------|---------|----------|----------|---------|---------|----------|--------|---------|--------|
| 3/16" Bars  | 1 1/2   | 2 13/16 | 4 1/8    | 5 7/16 | 6 3/4   | 8 1/16 | 9 3/8   | 10 11/16 | 12       | 13 5/16 | 14 5/8  | 15 15/16 | 17 1/4 | 18 9/16 | 19 7/8 |
| No. of Bars | 17      | 18      | 19       | 20     | 21      | 22     | 23      | 24       | 25       | 26      | 27      | 28       |        |         |        |
| 3/16" Bars  | 2 13/16 | 2 21/2  | 2 313/16 | 2 51/8 | 2 67/16 | 2 73/4 | 2 91/16 | 3 03/8   | 3 111/16 | 3 3     | 3 45/16 | 3 55/8   |        |         |        |

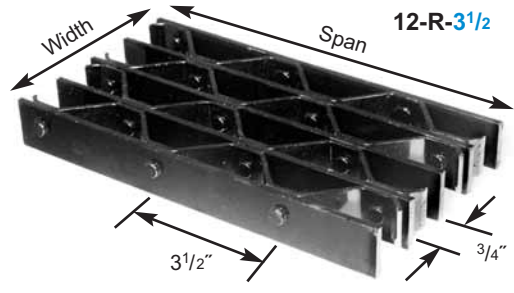
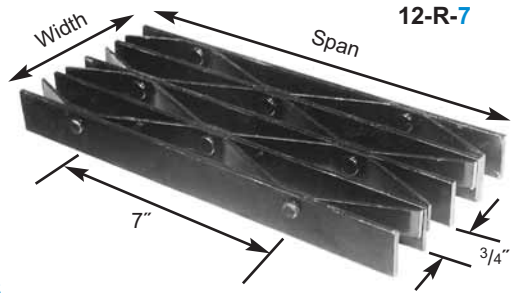
\*\*Add 1/4" for rivet heads. Deduct 1/16" for each 1/8" bearing bar. Standard panel widths indicated in blue.

Toll Free: 800-321-9800



# LIGHT DUTY RIVETED STEEL

## 12 SPACE



### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt. Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |   |       |   |       |       |       |   |  |
|------------------|------------------|------------------|---|-----------|-------|-------|-------|-------|-------|-------|---|-------|---|-------|-------|-------|---|--|
|                  |                  |                  |   | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6"   | 6'-0" | 6'-6"   | 7'-0" | 8'-0" |       |   |  |
| 3/4 x 3/16       | 52               | 10.70            | 0.286   | U         | 858   | 549   | 381   | 280   | 214   | 169   | U - Safe uniform load in pounds/ sq.ft.<br>C - Safe concentrated load in pounds/ft. grating width<br>D - Deflection in inches |       |   |       |       |       | % Open Area<br>Bars 3/16"<br>7" cc 65%<br>3 1/2" cc 64% |  |
|                  |                  |                  |   | D         | 0.099 | 0.155 | 0.223 | 0.304 | 0.396 | 0.501 |   |       |   |       |       |       |   |  |
|                  |                  |                  | 0.107   | C         | 858   | 686   | 572   | 490   | 429   | 381   |   |       |   |       |       |       |   |  |
|                  |                  |                  |   | D         | 0.079 | 0.124 | 0.179 | 0.243 | 0.318 | 0.402 |   |       |   |       |       |       |   |  |
| 1 x 3/16         | 64               | 12.80            | 0.508   | U         | 1525  | 976   | 678   | 498   | 381   | 301   | 244   | 202   | Loads and deflections are theoretical and are based on a unit stress of 18,000 psi. |       |       |       |   |  |
|                  |                  |                  |   | D         | 0.074 | 0.116 | 0.168 | 0.228 | 0.298 | 0.377 | 0.465   | 0.564 |   |       |       |       |   |  |
|                  |                  |                  | 0.254   | C         | 1525  | 1220  | 1017  | 872   | 763   | 678   | 610   | 555   |   |       |       |       |   |  |
|                  |                  |                  |   | D         | 0.060 | 0.093 | 0.134 | 0.183 | 0.238 | 0.302 | 0.372   | 0.451 |   |       |       |       |   |  |
| 1 1/4 x 3/16     | 76               | 15.00            | 0.794   | U         | 2383  | 1525  | 1059  | 778   | 596   | 471   | 381   | 315   | 265   | 226   |       |       |   |  |
|                  |                  |                  |   | D         | 0.060 | 0.093 | 0.134 | 0.182 | 0.238 | 0.302 | 0.372   | 0.450 | 0.537   | 0.630 |       |       |   |  |
|                  |                  |                  | 0.496   | C         | 2383  | 1907  | 1589  | 1362  | 1192  | 1059  | 953   | 867   | 794   | 733   |       |       |   |  |
|                  |                  |                  |   | D         | 0.048 | 0.075 | 0.107 | 0.146 | 0.191 | 0.241 | 0.298   | 0.361 | 0.429   | 0.503 |       |       |   |  |
| 1 1/2 x 3/16     | 87               | 17.10            | 1.144   | U         | 3432  | 2196  | 1525  | 1121  | 858   | 678   | 549   | 454   | 381   | 325   | 280   | 214   |   |  |
|                  |                  |                  |   | D         | 0.050 | 0.078 | 0.112 | 0.152 | 0.199 | 0.251 | 0.310   | 0.376 | 0.447   | 0.525 | 0.608 | 0.793 |   |  |
|                  |                  |                  | 0.858   | C         | 3432  | 2745  | 2288  | 1961  | 1716  | 1525  | 1373  | 1248  | 1144  | 1056  | 980   | 858   |   |  |
|                  |                  |                  |   | D         | 0.040 | 0.062 | 0.089 | 0.122 | 0.159 | 0.201 | 0.248   | 0.300 | 0.358   | 0.420 | 0.486 | 0.636 |   |  |
| 1 3/4 x 3/16     | 98               | 19.40            | 1.557   | U         | 4671  | 2989  | 2076  | 1525  | 1168  | 923   | 747   | 618   | 519   | 442   | 381   | 292   |   |  |
|                  |                  |                  |   | D         | 0.043 | 0.066 | 0.096 | 0.130 | 0.170 | 0.216 | 0.266   | 0.322 | 0.383   | 0.449 | 0.521 | 0.681 |   |  |
|                  |                  |                  | 1.362   | C         | 4671  | 3737  | 3114  | 2669  | 2335  | 2076  | 1868  | 1699  | 1557  | 1437  | 1335  | 1168  |   |  |
|                  |                  |                  |   | D         | 0.034 | 0.053 | 0.077 | 0.104 | 0.136 | 0.172 | 0.213   | 0.258 | 0.306   | 0.360 | 0.417 | 0.545 |   |  |
| 2 x 3/16         | 108              | 22.90            | 2.034   | U         | 6101  | 3905  | 2712  | 1992  | 1525  | 1205  | 976   | 807   | 678   | 578   | 498   | 381   |   |  |
|                  |                  |                  |   | D         | 0.037 | 0.058 | 0.084 | 0.114 | 0.149 | 0.189 | 0.233   | 0.282 | 0.335   | 0.394 | 0.456 | 0.595 |   |  |
|                  |                  |                  | 2.034   | C         | 6101  | 4881  | 4067  | 3486  | 3050  | 2712  | 2440  | 2219  | 2034  | 1877  | 1743  | 1525  |   |  |
|                  |                  |                  |   | D         | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186   | 0.225 | 0.268   | 0.315 | 0.365 | 0.477 |   |  |
| 2 1/4 x 3/16     | 118              | 25.00            | 2.574   | U         | 7721  | 4942  | 3432  | 2521  | 1930  | 1525  | 1235  | 1021  | 858   | 731   | 630   | 483   |   |  |
|                  |                  |                  |   | D         | 0.033 | 0.052 | 0.074 | 0.101 | 0.132 | 0.168 | 0.207   | 0.250 | 0.298   | 0.350 | 0.405 | 0.530 |   |  |
|                  |                  |                  | 2.896   | C         | 7721  | 6177  | 5148  | 4412  | 3861  | 3432  | 3089  | 2808  | 2574  | 2376  | 2206  | 1930  |   |  |
|                  |                  |                  |   | D         | 0.026 | 0.041 | 0.060 | 0.081 | 0.106 | 0.134 | 0.166   | 0.200 | 0.238   | 0.280 | 0.324 | 0.424 |   |  |
| 2 1/2 x 3/16     | 128              | 27.20            | 3.178   | U         | 9533  | 6101  | 4237  | 3113  | 2383  | 1883  | 1525  | 1261  | 1059  | 902   | 778   | 596   |   |  |
|                  |                  |                  |   | D         | 0.030 | 0.047 | 0.067 | 0.091 | 0.119 | 0.151 | 0.186   | 0.225 | 0.268   | 0.315 | 0.365 | 0.477 |   |  |
|                  |                  |                  | 3.972   | C         | 9533  | 7626  | 6355  | 5447  | 4766  | 4237  | 3813  | 3466  | 3178  | 2933  | 2724  | 2383  |   |  |
|                  |                  |                  |   | D         | 0.024 | 0.037 | 0.054 | 0.073 | 0.095 | 0.121 | 0.149   | 0.180 | 0.215   | 0.252 | 0.292 | 0.381 |   |  |

\*Based on 16,269 bars/ft. of grating width. Bearing bars 3/4" face-to-face, connecting bars riveted 7" c.c. Add .4 lbs./sq. ft. for 12-R-3 1/2. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating.

### 12-R-7 / 12-R-3 1/2 Panel Width Chart (in.)

### Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6        | 7        | 8        | 9        | 10       | 11     | 12      | 13      | 14      | 15      | 16      |
|-------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|--------|---------|---------|---------|---------|---------|
| 3/16" Bars  | 1 1/8   | 2 1/16  | 3       | 3 15/16 | 4 7/8    | 5 13/16  | 6 3/4    | 7 11/16  | 8 5/8    | 9 9/16 | 10 1/2  | 11 7/16 | 12 3/8  | 13 5/16 | 14 1/4  |
| No. of Bars | 17      | 18      | 19      | 20      | 21       | 22       | 23       | 24       | 25       | 26     | 27      | 28      | 29      | 30      | 31      |
| 3/16" Bars  | 15 3/16 | 16 1/8  | 17 1/16 | 18      | 18 15/16 | 19 7/8   | 20 13/16 | 21 3/4   | 22 11/16 | 23 5/8 | 24 9/16 | 25 1/2  | 26 7/16 | 27 3/8  | 28 5/16 |
| No. of Bars | 32      | 33      | 34      | 35      | 36       | 37       | 38       | 39       |          |        |         |         |         |         |         |
| 3/16" Bars  | 29 1/4  | 30 3/16 | 31 1/8  | 32 1/16 | 33       | 33 15/16 | 34 7/8   | 35 13/16 |          |        |         |         |         |         |         |

\*\*Add 1/4" for rivet heads. Deduct 1/16" for each 1/8" bearing bar. Standard panel widths indicated in blue.



# STEEL GRATING FRAMES

*In conjunction with both Light and Heavy Duty steel grating, Ohio Gratings offers a welded steel grating frame for embedded concrete applications.*

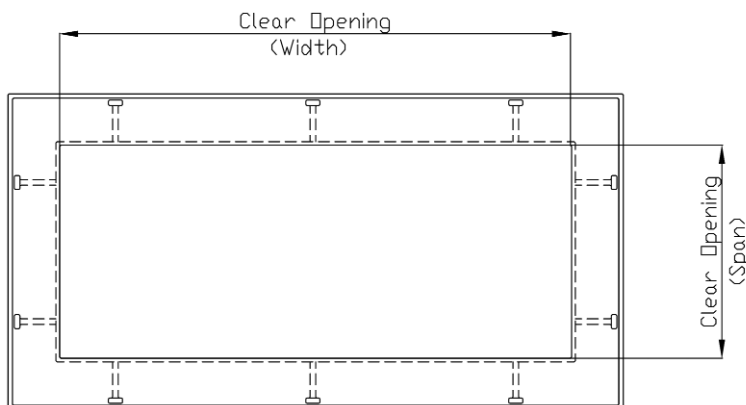
Embed frames cast into concrete floors and substructures serve a multitude of purposes that extend the life of any project where open flooring is required. Steel frames form a permanent shield for concrete lead edges and perimeters which are subject to cracking and chipping when left unprotected. During construction these rigid frames expedite forming and provide a welded structure that assures accuracy in the concrete pour. Frames provide a uniform bearing surface for all our grating products and help eliminate the potential for rocking or irregular elevations experienced when only covers are installed on poured concrete.

All frames are available in four sided, one piece construction units and can accommodate any clear opening. Long lengths can be provided with fabricated corners for field installation when required. Frames can be provided mill finished, galvanized or with a coat of standard black paint. All our steel frames are provided with 3/8" x 4" headed concrete stud anchors welded within 6" of each corner and at a maximum of 24" on center.

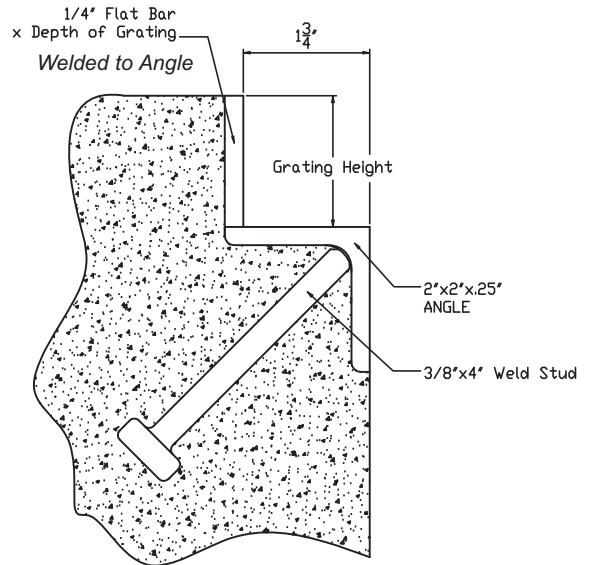
## Fabrication Guidelines...

Frame sections can be purchased in stock lengths for customer fabrication, or can be fabricated by Ohio Gratings for immediate installation in the field. The following guidelines apply to fabricated frames:

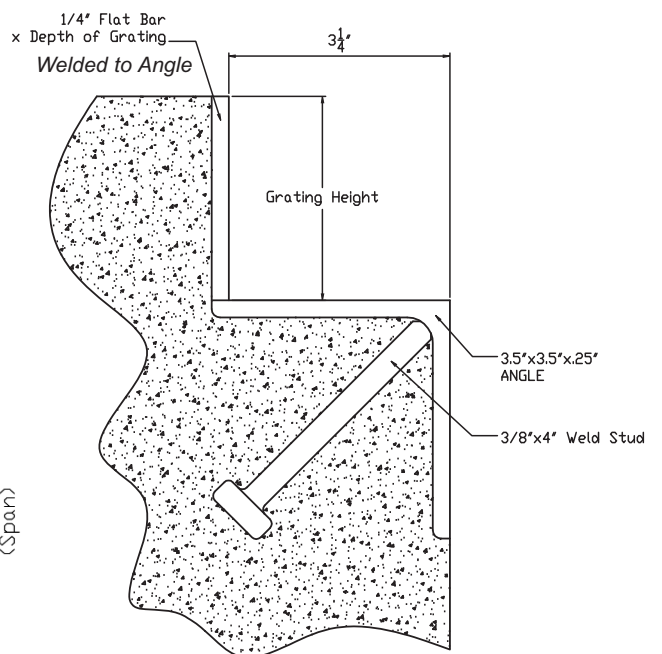
1. All corners are welded at 45 degrees and welded on the back side. Welds are not ground.
2. Nominal small frames (i.e., 1'-0" x 1'-0" through 5'-0" x 10'-0") are made in one piece
3. Extended trench frames provided with prefabricated end sections and long lengths shipped loose for field butt joining.
4. Stock lengths are 20'-0".



Frames are available as one piece welded construction or individual pieces



**Light Duty Grating Frame**



**Heavy Duty Grating Frame**



## PRODUCT SPECIFICATION GUIDE

### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

### PART 1: GENERAL...

#### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

#### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).

2. Light Duty Steel: ASTM A1011 for hot rolled carbon steel sheet and strip. ASTM A510 for carbon steel wire rods and coarse round wire. ASTM A666 for stainless steel.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

#### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.

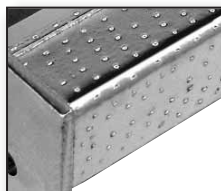
B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.

### PART 2: PRODUCT...

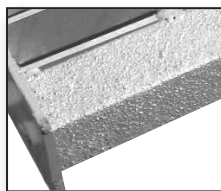
1. Stair treads shall be of the same type and spacing as grating being specified. Stair treads shall be by Ohio Gratings, Inc. or approved equal.
2. Bearing Bar size shall be based on tread length and shall be selected in accordance with the NAAMM Metal Bar



**Checkerplate Nosing**  
(Standard on Steel Treads)



**Algrip™ Nosing**  
(Recommended on Steel)



**Slip-Not® Nosing**  
(Available on Steel)



**Cast Aluminum Abrasive Nosing**  
(Available but not recommended)

Grating Manual.

3. Nosing: Checkerplate nosing (steel treads). (Note: An **Algrip™** nosing or a **Slip-Not®** nosing for maximum skid resistance may be specified at the discretion of the architect/engineer.)
4. Carrier End Plates: Attached by welding in accordance with the NAAMM Metal Bar Grating Manual. (Note: Carrier angles should be specified in conjunction with close mesh grating treads.)

### PART 3: EXECUTION...

#### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.



# STEEL TREADS

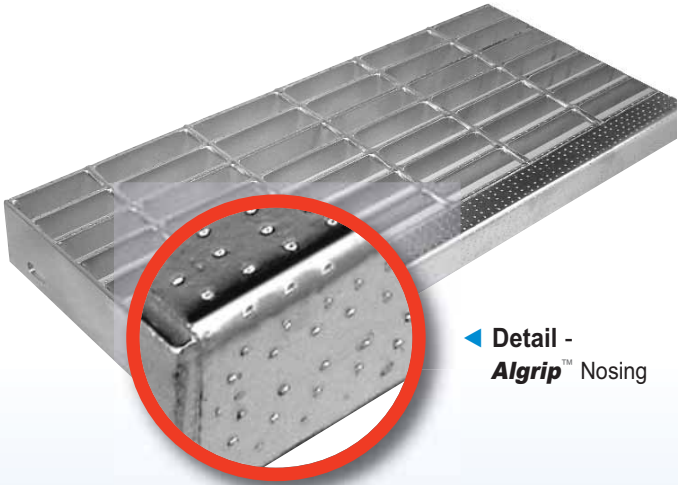
### Product Applications...

Fabricated carbon and stainless steel grating stair treads are available in three different profiles including our light duty welded steel, carbon steel dove tail and swaged carbon or stainless. Treads can be ordered with a plain (smooth) or serrated surface.

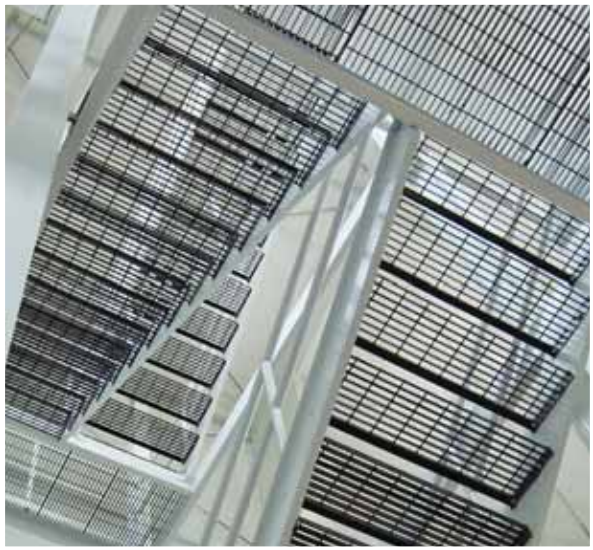
Nosings for steel treads include the standard checkerplate nose, **Slip-Not**® and **Algrip**™ nosing for maximum skid resistance (cast aluminum abrasive nose is available but not recommended).



- Wilmington, NC ▲



◀ Detail - **Algrip**™ Nosing



▲ NC State Feed Mill  
- Raleigh, NC



# SWAGED STAINLESS STEEL

## SGSS SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

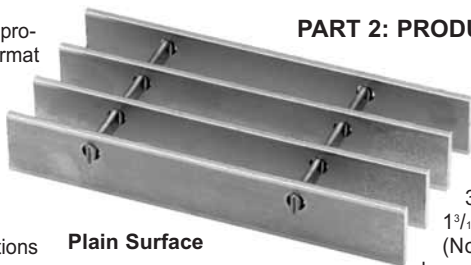
A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual (designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating)).  
2. Light Duty Stainless Steel: Bearing bars and cross bars shall be type 304, 304L, 316 or 316L alloy conforming to ASTM A666 for stainless steel.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.

B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



Plain Surface

#### PART 2: PRODUCT...

1. Grating: Swaged Stainless Steel SGSS Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: Type 304 Stainless Steel on  $1\frac{3}{16}$ " centers maximum. (Note: Other spacings may be specified at the discretion of the architect/engineer.)
3. Cross Bars: Type 304 stainless steel tubing mechanically locked by swaging at right angles to bearing bars at a maximum of 4" on center. (Note: 2" cross bar centers may be specified at the discretion of the architect/engineer.)
4. Surface: Plain (Note: A serrated surface may be specified at the discretion of the architect/engineer.)
5. Loading: Grating to carry a pedestrian loading equal to a uniform load of 100# per square foot over the required clear span with deflection not to exceed  $\frac{1}{4}$ ". (Note: alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. Finish: Mill finished, suitable for industrial applications.
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.

2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and

- weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
  4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
  5. Utilize standard panel widths wherever possible.

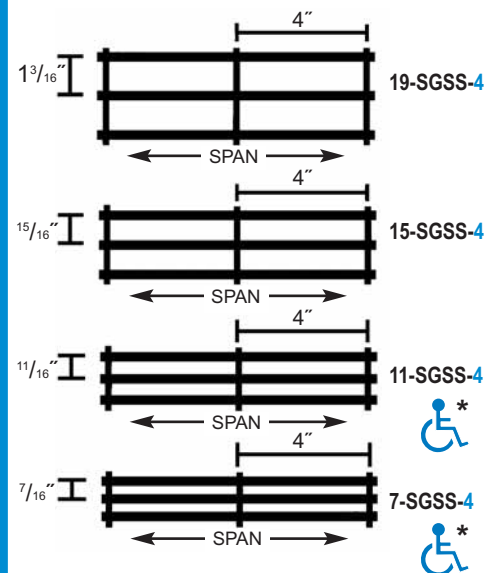
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

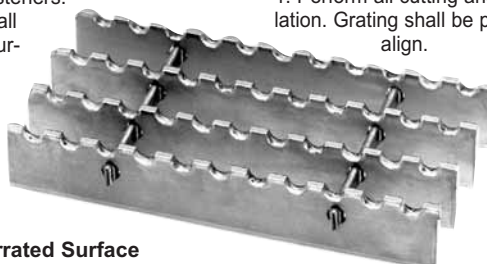
### Grating Profiles Available...

#### SGSS Series - Swaged Stainless Steel

All profiles shown below are also available with 2" cross bar centers. Product numbers would be 19-SGSS-2, 15-SGSS-2, 11-SGSS-2 & 7-SGSS-2



\* Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See ADA Guidelines



Serrated Surface





# SWAGED STAINLESS STEEL

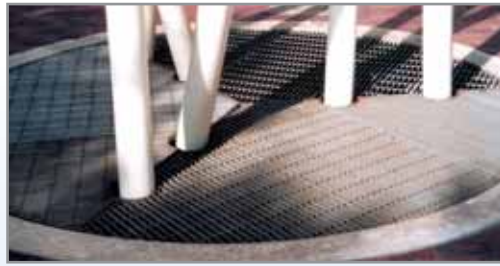
## Product Applications...

The swaging process allows the assembly of bar grating panels by mechanically locking the cross bars at right angles to the bearing bars at a maximum of 4" on center. This process provides the clean crisp lines of a recessed cross bar and eliminates the discoloration inherent with welded bar grating. As with swaged carbon, this product is manufactured free of the warping, twisting and burn marks, which are characteristic of electro forge welded stainless steel grating. Additionally, the heat generated as part of that process, limits how close together the bars may be placed. By using the most modern technology available, swaged bar grating allows for a variety of spacings including close spacings of 7/16" cc between bearing bars which have been approved by the "Americans With Disabilities Act".

Stainless steel grating has been the standard industrial footwalk product for severe corrosive environments and has been a popular grating choice for many years. OGI manufactures stainless swaged bar grating from type 304 stainless steel bar. Type 316 is also available (limited stock) along with other special alloys by special order. Special finishes are available depending on the requirements set forth by the architect. Stainless steel grating is used at chemical plants, food processing facilities, oil and gas producers, metal and mining facilities, pulp and paper plants and is also used in many other commercial and architectural applications.



Millennium Park ▶  
- Chicago, IL



◀ Star Plaza  
- Cleveland, OH

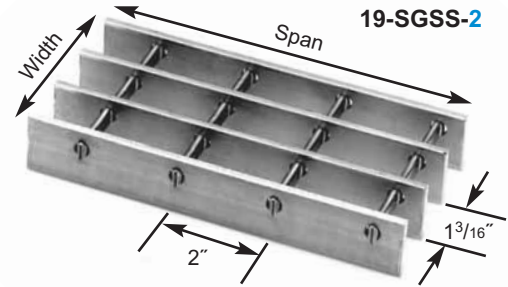
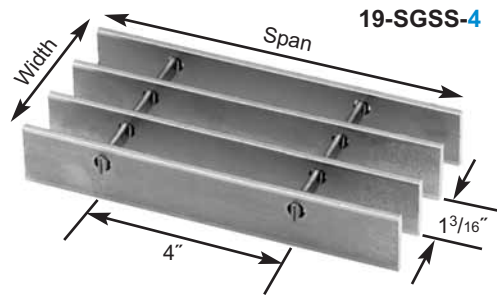


▲ General Motors Riverfront Park  
- Detroit, MI



# SWAGED STAINLESS STEEL

## 19 SPACE



### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | ClearSpan |        |        |        |        |        |        |        |        |        |        |        |       |  |  |  |  |  |
|------------------|------------------|-------------------|---|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--|--|--|--|--|
|                  |                  |                   |   | 2'- 0"    | 2'- 6" | 3'- 0" | 3'- 6" | 4'- 0" | 4'- 6" | 5'- 0" | 5'- 6" | 6'- 0" | 6'- 6" | 7'- 0" | 8'- 0" |       |  |  |  |  |  |
| 3/4 x 3/16       | 46               | 5.64              | 0.178   | U         | 592    | 379    | 263    | 193    | 148    |        |        |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.114  | 0.179  | 0.257  | 0.349  | 0.457  |        |        |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   | 0.067   | C         | 592    | 474    | 395    | 338    | 296    |        |        |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.091  | 0.143  | 0.206  | 0.280  | 0.366  |        |        |        |        |        |        |       |  |  |  |  |  |
| 1 x 1/8          | 51               | 4.99              | 0.211   | U         | 702    | 449    | 312    | 229    | 175    | 139    |        |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.086  | 0.134  | 0.193  | 0.262  | 0.342  | 0.435  |        |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   | 0.105   | C         | 702    | 561    | 468    | 401    | 351    | 312    |        |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.069  | 0.107  | 0.154  | 0.210  | 0.274  | 0.347  |        |        |        |        |        |       |  |  |  |  |  |
| 1 x 3/16         | 56               | 7.19              | 0.316   | U         | 1053   | 674    | 468    | 344    | 263    | 208    | 168    |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.086  | 0.134  | 0.193  | 0.263  | 0.343  | 0.434  | 0.534  |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   | 0.158   | C         | 1053   | 842    | 702    | 601    | 526    | 468    | 421    |        |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.069  | 0.107  | 0.154  | 0.210  | 0.274  | 0.347  | 0.429  |        |        |        |        |       |  |  |  |  |  |
| 1 1/4 x 1/8      | 60               | 6.09              | 0.329   | U         | 1096   | 702    | 487    | 358    | 274    | 217    | 175    | 145    |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.069  | 0.107  | 0.154  | 0.210  | 0.274  | 0.348  | 0.428  | 0.519  |        |        |        |       |  |  |  |  |  |
|                  |                  |                   | 0.206   | C         | 1096   | 877    | 731    | 627    | 548    | 487    | 439    | 399    |        |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.055  | 0.086  | 0.123  | 0.168  | 0.219  | 0.278  | 0.343  | 0.415  |        |        |        |       |  |  |  |  |  |
| 1 1/4 x 3/16     | 67               | 8.84              | 0.493   | U         | 1645   | 1053   | 731    | 537    | 411    | 325    | 263    | 217    | 183    |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.069  | 0.107  | 0.154  | 0.210  | 0.274  | 0.347  | 0.428  | 0.517  | 0.618  |        |        |       |  |  |  |  |  |
|                  |                  |                   | 0.308   | C         | 1645   | 1316   | 1096   | 940    | 822    | 731    | 658    | 598    | 548    |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.055  | 0.086  | 0.123  | 0.168  | 0.219  | 0.278  | 0.343  | 0.415  | 0.494  |        |        |       |  |  |  |  |  |
| 1 1/2 x 1/8      | 69               | 7.19              | 0.474   | U         | 1579   | 1011   | 702    | 516    | 395    | 312    | 253    | 209    | 175    |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.057  | 0.089  | 0.129  | 0.175  | 0.229  | 0.289  | 0.358  | 0.433  | 0.513  |        |        |       |  |  |  |  |  |
|                  |                  |                   | 0.355   | C         | 1579   | 1263   | 1053   | 902    | 789    | 702    | 632    | 574    | 526    |        |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.046  | 0.071  | 0.103  | 0.140  | 0.183  | 0.232  | 0.286  | 0.346  | 0.411  |        |        |       |  |  |  |  |  |
| 1 1/2 x 3/16     | 77               | 10.48             | 0.711   | U         | 2368   | 1516   | 1053   | 773    | 592    | 468    | 379    | 313    | 263    | 224    |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.057  | 0.089  | 0.129  | 0.175  | 0.229  | 0.289  | 0.357  | 0.432  | 0.514  | 0.603  |        |       |  |  |  |  |  |
|                  |                  |                   | 0.533   | C         | 2368   | 1895   | 1579   | 1353   | 1184   | 1053   | 947    | 861    | 789    | 729    |        |       |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.046  | 0.071  | 0.103  | 0.140  | 0.183  | 0.232  | 0.286  | 0.346  | 0.411  | 0.483  |        |       |  |  |  |  |  |
| 1 3/4 x 3/16     | 86               | 11.71             | 0.967   | U         | 3224   | 2063   | 1433   | 1053   | 806    | 637    | 516    | 426    | 358    | 305    | 263    | 201   |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.049  | 0.077  | 0.110  | 0.150  | 0.196  | 0.248  | 0.306  | 0.370  | 0.441  | 0.517  | 0.600  | 0.782 |  |  |  |  |  |
|                  |                  |                   | 0.846   | C         | 3224   | 2579   | 2149   | 1842   | 1612   | 1433   | 1289   | 1172   | 1075   | 992    | 921    | 806   |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.039  | 0.061  | 0.088  | 0.120  | 0.157  | 0.198  | 0.245  | 0.296  | 0.353  | 0.414  | 0.480  | 0.627 |  |  |  |  |  |
| 2 x 3/16         | 95               | 13.78             | 1.263   | U         | 4210   | 2695   | 1871   | 1375   | 1053   | 832    | 674    | 557    | 468    | 399    | 344    | 263   |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.043  | 0.067  | 0.096  | 0.131  | 0.171  | 0.217  | 0.268  | 0.324  | 0.386  | 0.453  | 0.525  | 0.685 |  |  |  |  |  |
|                  |                  |                   | 1.263   | C         | 4210   | 3368   | 2807   | 2406   | 2105   | 1871   | 1684   | 1531   | 1403   | 1296   | 1203   | 1053  |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.034  | 0.054  | 0.077  | 0.105  | 0.137  | 0.174  | 0.214  | 0.259  | 0.308  | 0.362  | 0.420  | 0.549 |  |  |  |  |  |
| 2 1/4 x 3/16     | 104              | 15.49             | 1.599   | U         | 5329   | 3410   | 2368   | 1740   | 1332   | 1053   | 853    | 705    | 592    | 505    | 435    | 333   |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.038  | 0.060  | 0.086  | 0.117  | 0.152  | 0.193  | 0.238  | 0.288  | 0.343  | 0.403  | 0.467  | 0.609 |  |  |  |  |  |
|                  |                  |                   | 1.798   | C         | 5329   | 4263   | 3553   | 3045   | 2664   | 2368   | 2132   | 1938   | 1776   | 1640   | 1523   | 1332  |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.030  | 0.048  | 0.069  | 0.093  | 0.122  | 0.154  | 0.191  | 0.231  | 0.274  | 0.322  | 0.373  | 0.488 |  |  |  |  |  |
| 2 1/2 x 3/16     | 112              | 17.08             | 1.974   | U         | 6579   | 4210   | 2924   | 2148   | 1645   | 1300   | 1053   | 870    | 731    | 623    | 537    | 411   |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.034  | 0.054  | 0.077  | 0.105  | 0.137  | 0.174  | 0.214  | 0.259  | 0.309  | 0.362  | 0.420  | 0.548 |  |  |  |  |  |
|                  |                  |                   | 2.467   | C         | 6579   | 5263   | 4386   | 3759   | 3289   | 2924   | 2632   | 2392   | 2193   | 2024   | 1880   | 1645  |  |  |  |  |  |
|                  |                  |                   |   | D         | 0.027  | 0.043  | 0.062  | 0.084  | 0.110  | 0.139  | 0.171  | 0.207  | 0.247  | 0.290  | 0.336  | 0.439 |  |  |  |  |  |

U - Safe uniform load in pounds /sq.ft.  
 C - Safe concentrated load in pounds /ft. grating width  
 D - Deflection in inches  
 Loads and deflections are theoretical and based on a unit stress of 20,000 psi.

| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | 83%  | 78%   |
| 2" cc        | 76%  | 72%   |

\*Based on 10.105 bars/ft. of grating width. Bearing bars 1 1/2" c.c. Add .6 lbs./sq. ft. for 19-SGSS-2.  
 Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. **When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables. 3/4" x 3/16" serrated grating is not available.**

### 19-SGSS-4 / 19-SGSS-2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

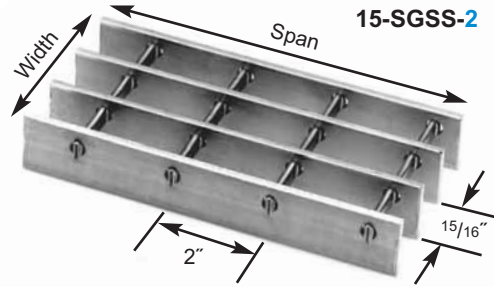
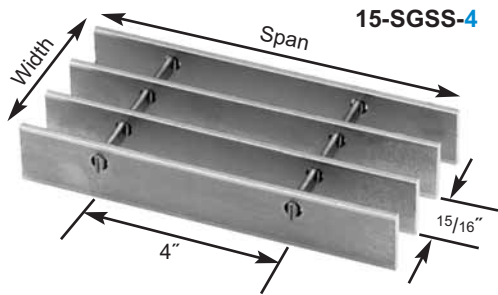
| No. of Bars | 2       | 3      | 4       | 5       | 6        | 7      | 8       | 9       | 10       | 11      | 12      | 13      | 14      | 15       | 16       |
|-------------|---------|--------|---------|---------|----------|--------|---------|---------|----------|---------|---------|---------|---------|----------|----------|
| 3/16" Bars  | 1 3/8   | 2 9/16 | 3 3/4   | 4 15/16 | 6 1/8    | 7 5/16 | 8 1/2   | 9 11/16 | 10 7/8   | 12 1/16 | 13 1/4  | 14 7/16 | 15 5/8  | 16 13/16 | 18       |
| No. of Bars | 17      | 18     | 19      | 20      | 21       | 22     | 23      | 24      | 25       | 26      | 27      | 28      | 29      | 30       | 31       |
| 3/16" Bars  | 19 3/16 | 20 3/8 | 21 9/16 | 22 3/4  | 23 15/16 | 25 1/8 | 26 5/16 | 27 1/2  | 28 11/16 | 29 7/8  | 31 1/16 | 32 1/4  | 33 7/16 | 34 5/8   | 35 13/16 |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.



# SWAGED STAINLESS STEEL

## 15 SPACE



| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | %    | 74%   |
| 2" cc        | %    | 68%   |

### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>3</sup> lx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |  |       |   |       |       |       |
|------------------|------------------|-------------------|---|-----------|-------|-------|-------|-------|-------|-------|--|-------|---|-------|-------|-------|
|                  |                  |                   |   | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6"  | 6'-0" | 6'-6"   | 7'-0" | 8'-0" |       |
| 3/4 x 3/16       | 48               | 6.99              | 0.225   | U         | 750   | 480   | 333   | 245   | 188   | 148   | U - Safe uniform load in pounds /sq.ft.<br>C - Safe concentrated load in pounds /ft. grating width<br>D - Deflection in inches |       |   |       |       |       |
|                  |                  |                   |   | D         | 0.114 | 0.179 | 0.257 | 0.350 | 0.458 | 0.578 |  |       |   |       |       |       |
|                  |                  |                   | 0.084   | C         | 750   | 600   | 500   | 429   | 375   | 333   |  |       |   |       |       |       |
|                  |                  |                   |   | D         | 0.091 | 0.143 | 0.206 | 0.280 | 0.366 | 0.462 |  |       |   |       |       |       |
| 1 x 3/16         | 60               | 8.95              | 0.400   | U         | 1333  | 853   | 593   | 435   | 333   | 263   | 213  | 176   | Loads and deflections are theoretical and based on a unit stress of 20,000 psi. |       |       |       |
|                  |                  |                   |   | D         | 0.086 | 0.134 | 0.193 | 0.262 | 0.343 | 0.433 | 0.535  | 0.647 |   |       |       |       |
|                  |                  |                   | 0.200   | C         | 1333  | 1067  | 889   | 762   | 667   | 593   | 533  | 485   |   |       |       |       |
|                  |                  |                   |   | D         | 0.069 | 0.107 | 0.154 | 0.210 | 0.274 | 0.347 | 0.428  | 0.519 |   |       |       |       |
| 1 1/4 x 3/16     | 71               | 11.03             | 0.625   | U         | 2083  | 1333  | 926   | 680   | 521   | 412   | 333  | 275   | 231   |       |       |       |
|                  |                  |                   |   | D         | 0.069 | 0.107 | 0.154 | 0.210 | 0.274 | 0.348 | 0.428  | 0.518 | 0.616   |       |       |       |
|                  |                  |                   | 0.391   | C         | 2083  | 1667  | 1389  | 1190  | 1042  | 926   | 833  | 758   | 694   |       |       |       |
|                  |                  |                   |   | D         | 0.055 | 0.086 | 0.123 | 0.168 | 0.219 | 0.278 | 0.343  | 0.415 | 0.493   |       |       |       |
| 1 1/2 x 3/16     | 81               | 13.12             | 0.900   | U         | 3000  | 1920  | 1333  | 980   | 750   | 593   | 480  | 397   | 333   | 284   | 245   |       |
|                  |                  |                   |   | D         | 0.057 | 0.089 | 0.129 | 0.175 | 0.229 | 0.289 | 0.357  | 0.432 | 0.514   | 0.604 | 0.700 |       |
|                  |                  |                   | 0.675   | C         | 3000  | 2400  | 2000  | 1714  | 1500  | 1333  | 1200   | 1091  | 1000  | 923   | 857   |       |
|                  |                  |                   |   | D         | 0.046 | 0.071 | 0.103 | 0.140 | 0.183 | 0.231 | 0.286  | 0.346 | 0.411   | 0.483 | 0.560 |       |
| 1 3/4 x 3/16     | 91               | 14.67             | 1.225   | U         | 4083  | 2613  | 1815  | 1333  | 1021  | 807   | 653  | 540   | 454   | 387   | 333   | 255   |
|                  |                  |                   |   | D         | 0.049 | 0.077 | 0.110 | 0.150 | 0.196 | 0.248 | 0.306  | 0.370 | 0.441   | 0.518 | 0.599 | 0.783 |
|                  |                  |                   | 1.072   | C         | 4083  | 3267  | 2722  | 2333  | 2042  | 1815  | 1633   | 1485  | 1361  | 1256  | 1167  | 1021  |
|                  |                  |                   |   | D         | 0.039 | 0.061 | 0.088 | 0.120 | 0.157 | 0.198 | 0.245  | 0.296 | 0.353   | 0.414 | 0.480 | 0.627 |
| 2 x 3/16         | 101              | 17.29             | 1.600   | U         | 5333  | 3413  | 2370  | 1741  | 1333  | 1053  | 853  | 705   | 593   | 505   | 435   | 333   |
|                  |                  |                   |   | D         | 0.043 | 0.067 | 0.096 | 0.131 | 0.171 | 0.217 | 0.268  | 0.324 | 0.386   | 0.453 | 0.525 | 0.685 |
|                  |                  |                   | 1.600   | C         | 5333  | 4267  | 3556  | 3048  | 2667  | 2370  | 2133   | 1939  | 1778  | 1641  | 1524  | 1333  |
|                  |                  |                   |   | D         | 0.034 | 0.054 | 0.077 | 0.105 | 0.137 | 0.174 | 0.214  | 0.259 | 0.309   | 0.362 | 0.420 | 0.548 |
| 2 1/4 x 3/16     | 110              | 19.47             | 2.025   | U         | 6750  | 4320  | 3000  | 2204  | 1688  | 1333  | 1080   | 893   | 750   | 639   | 551   | 422   |
|                  |                  |                   |   | D         | 0.038 | 0.060 | 0.086 | 0.117 | 0.152 | 0.193 | 0.238  | 0.288 | 0.343   | 0.402 | 0.467 | 0.610 |
|                  |                  |                   | 2.278   | C         | 6750  | 5400  | 4500  | 3857  | 3375  | 3000  | 2700   | 2455  | 2250  | 2077  | 1929  | 1688  |
|                  |                  |                   |   | D         | 0.030 | 0.048 | 0.069 | 0.093 | 0.122 | 0.154 | 0.190  | 0.231 | 0.274   | 0.322 | 0.373 | 0.488 |
| 2 1/2 x 3/16     | 119              | 21.48             | 2.500   | U         | 8333  | 5333  | 3704  | 2721  | 2083  | 1646  | 1333   | 1102  | 926   | 789   | 680   | 521   |
|                  |                  |                   |   | D         | 0.034 | 0.054 | 0.077 | 0.105 | 0.137 | 0.174 | 0.214  | 0.259 | 0.309   | 0.362 | 0.420 | 0.549 |
|                  |                  |                   | 3.125   | C         | 8333  | 6667  | 5556  | 4762  | 4167  | 3704  | 3333   | 3030  | 2778  | 2564  | 2381  | 2083  |
|                  |                  |                   |   | D         | 0.027 | 0.043 | 0.062 | 0.084 | 0.110 | 0.139 | 0.171  | 0.207 | 0.247   | 0.290 | 0.336 | 0.439 |

\*Based on 12.8 bars/ft. of grating width. Bearing bars 3/16" c.c. Add .6 lbs./sq. ft. for 15-SGSS-2, 1/8" bearing bars available by inquiry. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads and 1/4" for concentrated loads under the condition shown above for each size of grating. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables. 3/4" x 3/16" serrated grating is not available.

### 15-SGSS-4 / 15-SGSS-2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3       | 4       | 5       | 6        | 7        | 8        | 9        | 10       | 11     | 12      | 13      | 14      | 15      | 16      |
|-------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|--------|---------|---------|---------|---------|---------|
| 3/16" Bars  | 1 1/8   | 2 1/16  | 3       | 3 15/16 | 4 7/8    | 5 13/16  | 6 3/4    | 7 11/16  | 8 5/8    | 9 9/16 | 10 1/2  | 11 7/16 | 12 3/8  | 13 5/16 | 14 1/4  |
| No. of Bars | 17      | 18      | 19      | 20      | 21       | 22       | 23       | 24       | 25       | 26     | 27      | 28      | 29      | 30      | 31      |
| 3/16" Bars  | 15 3/16 | 16 1/8  | 17 1/16 | 18      | 18 15/16 | 19 7/8   | 20 13/16 | 21 3/4   | 22 11/16 | 23 5/8 | 24 9/16 | 25 1/2  | 26 7/16 | 27 3/8  | 28 5/16 |
| No. of Bars | 32      | 33      | 34      | 35      | 36       | 37       | 38       | 39       |          |        |         |         |         |         |         |
| 3/16" Bars  | 29 1/4  | 30 3/16 | 31 1/8  | 32 1/16 | 33       | 33 15/16 | 34 7/8   | 35 13/16 |          |        |         |         |         |         |         |

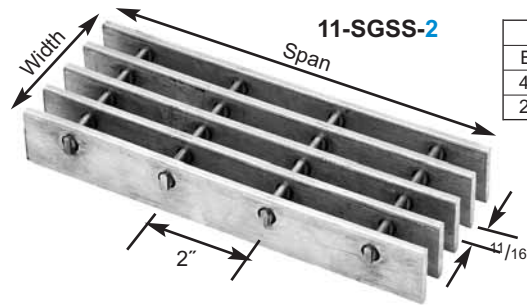
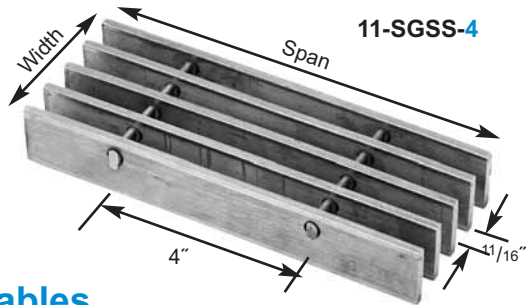
\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.

Toll Free: 800-321-9800



# SWAGED STAINLESS STEEL

## 11 SPACE



| % Open Area* |      |       |
|--------------|------|-------|
| Bars         | 1/8" | 3/16" |
| 4" cc        | %    | 67%   |
| 2" cc        | %    | 62%   |

### Load Tables

| Bar Size, Inches | Ped Span, Inches | Wt.* Lbs. Sq. Ft. | Sec. Prop Sx*, in <sup>2</sup> lx*, in <sup>4</sup> | ClearSpan |       |       |       |       |       |       |  |       |   |       |       |       |
|------------------|------------------|-------------------|---|-----------|-------|-------|-------|-------|-------|-------|--|-------|---|-------|-------|-------|
|                  |                  |                   |   | 2'-0"     | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6"  | 6'-0" | 6'-6"   | 7'-0" | 8'-0" |       |
| 3/4 x 3/16       | 52               | 9.32              | 0.307   | U         | 1023  | 655   | 455   | 334   | 256   | 202   | U - Safe uniform load in pounds/ sq.ft.<br>C - Safe concentrated load in pounds/ ft. grating width<br>D - Deflection in inches |       |   |       |       |       |
|                  |                  |                   |   | D         | 0.114 | 0.179 | 0.257 | 0.350 | 0.458 | 0.578 |  |       |   |       |       |       |
|                  |                  |                   | 0.115   | C         | 1023  | 818   | 682   | 584   | 511   | 455   |  |       |   |       |       |       |
|                  |                  |                   |   | D         | 0.091 | 0.143 | 0.206 | 0.280 | 0.365 | 0.463 |  |       |   |       |       |       |
| 1 x 3/16         | 65               | 11.99             | 0.545   | U         | 1818  | 1164  | 808   | 594   | 455   | 359   | 291  | 240   | Loads and deflections are theoretical and are based on a unit stress of 20,000 psi. |       |       |       |
|                  |                  |                   |   | D         | 0.086 | 0.134 | 0.193 | 0.263 | 0.343 | 0.434 | 0.536  | 0.647 |   |       |       |       |
|                  |                  |                   | 0.273   | C         | 1818  | 1455  | 1212  | 1039  | 909   | 808   | 727  | 661   |   |       |       |       |
|                  |                  |                   |   | D         | 0.069 | 0.107 | 0.154 | 0.210 | 0.274 | 0.347 | 0.428  | 0.518 |   |       |       |       |
| 1 1/4 x 3/16     | 77               | 14.83             | 0.852   | U         | 2841  | 1818  | 1263  | 928   | 710   | 561   | 455  | 376   | 316   | 269   |       |       |
|                  |                  |                   |   | D         | 0.069 | 0.107 | 0.154 | 0.210 | 0.274 | 0.347 | 0.429  | 0.519 | 0.618   | 0.724 |       |       |
|                  |                  |                   | 0.533   | C         | 2841  | 2273  | 1894  | 1623  | 1420  | 1263  | 1136   | 1033  | 947   | 874   |       |       |
|                  |                  |                   |   | D         | 0.055 | 0.086 | 0.123 | 0.168 | 0.219 | 0.278 | 0.343  | 0.415 | 0.494   | 0.579 |       |       |
| 1 1/2 x 3/16     | 88               | 17.68             | 1.227   | U         | 4091  | 2618  | 1818  | 1336  | 1023  | 808   | 655  | 541   | 455   | 387   | 334   | 256   |
|                  |                  |                   |   | D         | 0.057 | 0.089 | 0.129 | 0.175 | 0.229 | 0.289 | 0.357  | 0.432 | 0.515   | 0.603 | 0.700 | 0.915 |
|                  |                  |                   | 0.920   | C         | 4091  | 3273  | 2727  | 2338  | 2046  | 1818  | 1636   | 1488  | 1364  | 1259  | 1169  | 1023  |
|                  |                  |                   |   | D         | 0.046 | 0.071 | 0.103 | 0.140 | 0.183 | 0.231 | 0.286  | 0.346 | 0.412   | 0.483 | 0.560 | 0.732 |
| 1 3/4 x 3/16     | 99               | 19.79             | 1.670   | U         | 5568  | 3564  | 2475  | 1818  | 1392  | 1100  | 891  | 736   | 619   | 527   | 455   | 348   |
|                  |                  |                   |   | D         | 0.049 | 0.077 | 0.110 | 0.150 | 0.196 | 0.248 | 0.306  | 0.370 | 0.441   | 0.517 | 0.601 | 0.784 |
|                  |                  |                   | 1.462   | C         | 5568  | 4455  | 3712  | 3182  | 2784  | 2475  | 2227   | 2025  | 1856  | 1713  | 1591  | 1392  |
|                  |                  |                   |   | D         | 0.039 | 0.061 | 0.088 | 0.120 | 0.157 | 0.198 | 0.245  | 0.296 | 0.353   | 0.414 | 0.480 | 0.627 |
| 2 x 3/16         | 109              | 23.37             | 2.182   | U         | 7273  | 4655  | 3232  | 2375  | 1818  | 1437  | 1164   | 962   | 808   | 689   | 594   | 455   |
|                  |                  |                   |   | D         | 0.043 | 0.067 | 0.096 | 0.131 | 0.171 | 0.217 | 0.268  | 0.324 | 0.386   | 0.453 | 0.525 | 0.686 |
|                  |                  |                   | 2.182   | C         | 7273  | 5818  | 4849  | 4156  | 3636  | 3232  | 2909   | 2645  | 2424  | 2238  | 2078  | 1818  |
|                  |                  |                   |   | D         | 0.034 | 0.054 | 0.077 | 0.105 | 0.137 | 0.174 | 0.214  | 0.259 | 0.309   | 0.362 | 0.420 | 0.549 |
| 2 1/4 x 3/16     | 119              | 26.34             | 2.761   | U         | 9205  | 5891  | 4091  | 3006  | 2301  | 1818  | 1473   | 1217  | 1023  | 871   | 751   | 575   |
|                  |                  |                   |   | D         | 0.038 | 0.060 | 0.086 | 0.117 | 0.152 | 0.193 | 0.238  | 0.288 | 0.343   | 0.402 | 0.466 | 0.609 |
|                  |                  |                   | 3.107   | C         | 9205  | 7364  | 6137  | 5260  | 4602  | 4091  | 3682   | 3347  | 3068  | 2832  | 2630  | 2301  |
|                  |                  |                   |   | D         | 0.030 | 0.048 | 0.069 | 0.093 | 0.122 | 0.154 | 0.190  | 0.230 | 0.274   | 0.322 | 0.373 | 0.488 |
| 2 1/2 x 3/16     | 129              | 29.08             | 3.409   | U         | 11364 | 7273  | 5051  | 3711  | 2841  | 2245  | 1818   | 1503  | 1263  | 1076  | 928   | 710   |
|                  |                  |                   |   | D         | 0.034 | 0.054 | 0.077 | 0.105 | 0.137 | 0.174 | 0.214  | 0.259 | 0.309   | 0.362 | 0.420 | 0.548 |
|                  |                  |                   | 4.261   | C         | 11364 | 9091  | 7576  | 6494  | 5682  | 5051  | 4546   | 4132  | 3788  | 3497  | 3247  | 2841  |
|                  |                  |                   |   | D         | 0.027 | 0.043 | 0.062 | 0.084 | 0.110 | 0.139 | 0.171  | 0.207 | 0.247   | 0.290 | 0.336 | 0.439 |

\*Based on 17.45 bars/ft. of grating width. Bearing bars 1/16" c.c. Add .6 lbs./sq. ft. for 11-SGSS-2. 1/8" bearing bars available by inquiry. Note: Grating for spans to the left of the heavy line have a deflection less than 1/4" for uniform loads of 100 lbs./sq. ft. This is the maximum deflection to afford pedestrian comfort and can be exceeded for other types of load at the discretion of the engineer. The actual Ped (pedestrian) Span under this condition is shown above for each size of grating. When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables. 3/4" x 3/16" serrated grating is not available.

### 11-SGSS-4 / 11-SGSS-2 Panel Width Chart (in.) Dimensions Are Out-to-Out of Bearing Bars\*\*

|             |          |         |         |         |          |          |          |         |          |          |         |         |         |         |          |
|-------------|----------|---------|---------|---------|----------|----------|----------|---------|----------|----------|---------|---------|---------|---------|----------|
| No. of Bars | 2        | 3       | 4       | 5       | 6        | 7        | 8        | 9       | 10       | 11       | 12      | 13      | 14      | 15      | 16       |
| 3/16" Bars  | 7/8      | 19/16   | 2 1/4   | 2 15/16 | 3 5/8    | 4 5/16   | 5        | 5 11/16 | 6 3/8    | 7 1/16   | 7 3/4   | 8 7/16  | 9 1/8   | 9 13/16 | 10 1/2   |
| No. of Bars | 17       | 18      | 19      | 20      | 21       | 22       | 23       | 24      | 25       | 26       | 27      | 28      | 29      | 30      | 31       |
| 3/16" Bars  | 11 3/16  | 11 7/8  | 12 3/16 | 13 1/4  | 13 15/16 | 14 5/8   | 15 5/16  | 16      | 16 11/16 | 17 3/8   | 18 1/16 | 18 3/4  | 19 7/16 | 20 1/8  | 20 13/16 |
| No. of Bars | 32       | 33      | 34      | 35      | 36       | 37       | 38       | 39      | 40       | 41       | 42      | 43      | 44      | 45      | 46       |
| 3/16" Bars  | 21 1/2   | 22 3/16 | 22 7/8  | 23 9/16 | 24 1/4   | 24 15/16 | 25 5/8   | 26 5/16 | 27       | 27 11/16 | 28 3/8  | 29 1/16 | 29 3/4  | 30 7/16 | 31 1/8   |
| No. of Bars | 47       | 48      | 49      | 50      | 51       | 52       | 53       |         |          |          |         |         |         |         |          |
| 3/16" Bars  | 31 13/16 | 32 1/2  | 33 3/16 | 33 7/8  | 34 9/16  | 35 1/4   | 35 15/16 |         |          |          |         |         |         |         |          |

\*\*Add 1/4" for extended cross bars. Deduct 1/16" for 1/8" bearing bars. Standard panel widths indicated in blue.





# HEAVY DUTY STEEL GRATING

## Ohio Gratings has been manufacturing heavy duty carbon steel grating since 1971...

This type of grating is used in areas where heavy static or rolling loads are encountered including heavy vehicular truck traffic up to H-20 loading. Calculations for vehicular loadings are based on AASHTO Standard Specifications for Highway Bridges and can be calculated by our Engineering department for your specific applications. Welded carbon steel is the most popular choice where high strength is required and is available using #304 or #316 stainless steel. For those applications

requiring an ADA type product, our **Wheels n' Heels**® product offers the strength of the standard welded grating along with a spacing which allows 1/4" opening between bearing bars which conforms to the provisions with the "Americans With Disabilities Act" for pedestrian and wheelchair accessibility. To round out our heavy duty line, Ohio Gratings offers our heavy duty riveted product which is the oldest grating product on the market and continues to be popular with the engineering community.

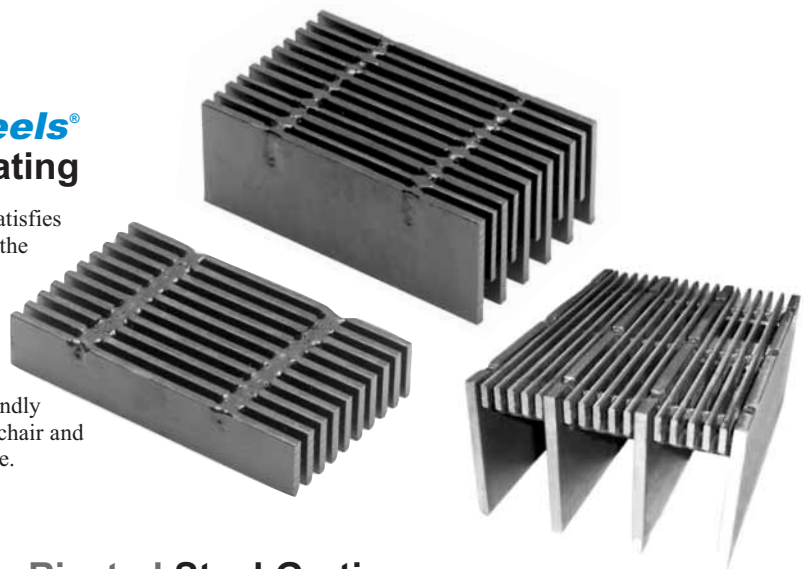
## Heavy Duty Welded Steel Grating



Welded carbon heavy duty steel grating is the most popular choice where high strength is the primary grating requirement. The main bars are slotted and assembled with cross bars which are welded with the one fillet weld at every joint. Stainless steel can also be provided for those high corrosive applications. This product meets the demanding vehicle loading requirements of AASHTO and is geared to handle heavy rolling loads. Slip resistant surfaces are available. The typical markets for heavy duty steel grating include airfields, highway bridges, ramps, docks, industrial flooring and trenches.

## Wheels n' Heels® Heavy Duty Steel Grating

**Wheels n' Heels**® is the first grating product which satisfies both the vehicle loading requirements of AASHTO and the pedestrian comfort requirements of the Americans With Disabilities Act. Made from 3/8" or 1/4" thick ASTM A36 steel bar, this product will clear span up to 8' under H15 and H20 wheel loads and can be provided in piece sizes up to 3' wide by 20' long. In addition, the close spacing of the bearing bars offers a pedestrian friendly 1/4" or 1/2" opening which allows easy access to wheelchair and high heel traffic. Slip resistant surfaces are also available.



## Heavy Duty Riveted Steel Grating



The most traditional of the grating products, is our heavy duty riveted grating. It continues to be the choice of many engineers due to its reliability and durability. Bearing bars are connected with a reticuline bar to form a truss-like grid which is best suited to handle the high impact and lateral forces encountered in bridge deck applications. Riveted grating is widely used in areas which experience the dynamics of partially distributed wheel loadings. Because of its light weight and simple installation as compared to other surfaces, metal riveted bar grating permits resurfacing to handle heavier loads without the need for expensive sub-structure work. This material can be stocked in inventory by municipalities for quick installation. Slip resistant surfaces are available.



### Design Criteria...

The following pages show capacities on the basis of vehicular load distribution and concentrated loading per foot of grating width for a given span. Calculations for concentrated load are similar in format to those for Light

Duty Steel grating shown on page 43, except F = 20,000 psi. Calculations for vehicular loadings are based on AASHTO Standard Specifications for Highway Bridges and utilize the following formulas:

- M** = Bending Moment
- S** = Section Modulus - in<sup>3</sup>/ft. of grating width
- I** = Moment of Inertia - in<sup>4</sup>/bar
- E** = Modulus of Elasticity (29,000,000 psi)
- F** = Allowable Bending Stress (20,000 psi)
- L** = Clear, Simple Span - inches
- D** = Deflection - inches

- a** = Partial Load Contact Parallel to Span - inches
- s** = Center-to-Center Spacing Between Bearing Bars - in.
- b** = Partial Load Contact Dimension at 90° to Span - in.
- b** = a + (2s)
- P** = Total Wheel or Partial Load Including Impact - lbs.
- P'** = P per bearing bar
- P'** = P x (s/b)

**Step 1. Determine M:**  $M = FS/12$






**Step 2. Substituting for M,** solve for **I** :

(i)  $a > l$  (ii)  $a < l$

$M = \frac{P l^2}{8ab}$   $M = \frac{P(.25 l - .125a)}{b}$

**Step 3. Check D\*:**  $D = \frac{P'[(2 l^3) - (a^2 l) + (a^3/4)]}{96EI}$

\* Deflection should be limited to 1/400 span.

| Maximum Traffic Conditions   | Wheel Load (lbs.)<br>(1/2 of Axle Load + 30% Impact) | Loading | Load Distribution** |            |
|--|--|---------|---------------------|------------|
|  |  |         | a                   | b          |
| <b>Truck Traffic</b><br>32,000 Lb. Axle Load<br>Dual Wheels<br>   | 20,800   | H-20    | 20"                 | 20" + (2s) |
| <b>Truck Traffic</b><br>24,000 Lb. Axle Load<br>Dual Wheels<br>   | 15,600   | H-15    | 15"                 | 15" + (2s) |
| <b>10,000 Lb. Capacity Lift Truck</b><br>14,400 Lb. Vehicle<br>24,400 Lb. Total Load<br>85% Drive Axle Load<br>(Rubber Tires)<br> | 13,480   | 5 Ton   | 11"                 | 11" + (2s) |
| <b>6,000 Lb. Capacity Lift Truck</b><br>9,800 Lb. Vehicle<br>15,800 Lb. Total Load<br>85% Drive Axle Load<br>(Rubber Tires)<br>   | 8,730  | 3 Ton   | 7"                  | 7" + (2s)  |
| <b>2,000 Lb. Capacity Lift Truck</b><br>4,200 Lb. Vehicle<br>6,200 Lb. Total Load<br>85% Drive Axle Load<br>(Rubber Tires)<br>    | 3,425  | 1 Ton   | 4"                  | 4" + (2s)  |

- NOTES:** (1) For continuous spans, use continuity factor = .80.  
 \*\* (2) This distribution results in larger grating sizes for lighter trucks on shorter spans. Spans shown for H15/H20 reflect the more critical condition.  
 (3) The fork lift wheel loads and load distribution patterns depicted above, generally, and only partially, represent the broad range of rubber-tired lift trucks available. For those applications falling outside of these examples, please contact the factory.  
 (4) Wheeled vehicles with urethane tires should NEVER be used in conjunction with open grid bar grating.  
 (5) HS20 is the same as H20 and HS15 is the same as H15. The "S" stands for semi-trailer.

Information of a technical nature contained herein is intended only for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. Such information is reliable when evaluated in the proper manner under conditions as described herein. Ohio Gratings, Inc. shall have no responsibility or liability for results obtained or damages resulting from improper evaluation or use



# HEAVY DUTY WELDED STEEL

## W SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

**A.1.** Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
**2.** Heavy Duty Steel: ASTM A36 for hot rolled structural steel bars. ASTM A510 for carbon steel wire rods and coarse round wire.

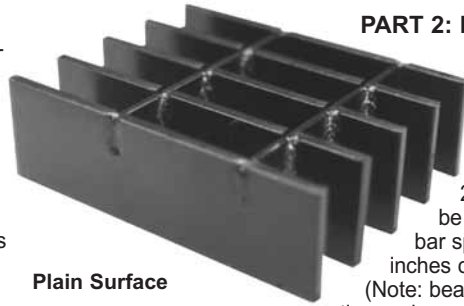
**B.1.** Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

**A.** The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
**B.** The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



Serrated Surface



Plain Surface

#### PART 2: PRODUCT...

1. Grating: Heavy Duty Welded Steel W Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: To be (size) rectangular bar spaced (as specified) inches center-to-center. (Note: bearing bar size selection and spacing must be coordinated with the load and span conditions.)
3. Cross Bars: To be (size) spaced 4" center-to-center and welded at right angles to bearing bars with one fillet at each bearing bar/cross bar intersection. (Note: 2" cross bar spacing may be specified for maximum lateral stability.)
4. Surface: Plain. (Note: a serrated surface may be specified for maximum skid resistance.)
5. Loading: (Shall be specified by the architect/engineer in terms of uniform load/sq. ft., concentrated load/ft. of grating width, or by AASHTO wheel load designation. Loading, bearing bar size, bearing bar spacing and span conditions must be coordinated.)
6. Finish: (Galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

**A.** Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

**B.** Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are

- to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.  
 4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.  
 5. Utilize standard panel widths wherever possible.

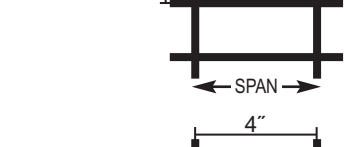
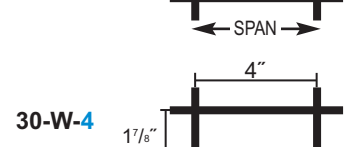
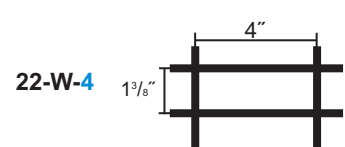
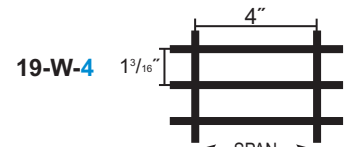
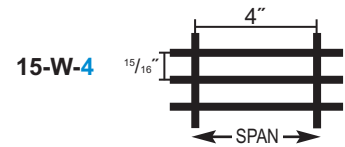
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

### Grating Profiles Available...

#### W Series - Heavy Duty Welded Steel

All profiles shown below are also available with 2" cross bar centers. Product numbers would be **15-W-2, 19-W-2, 22-W-2, 30-W-2 and 38-W-2**





# HEAVY DUTY WELDED STEEL

## Product Applications...

Welded carbon heavy duty steel grating is the most popular choice where high strength is the primary grating requirement. The main bars are slotted and assembled with cross bars which are welded with one fillet weld at every joint. Stainless steel can also be provided for those high corrosive applications. This product meets the demanding vehicle

loading requirements of AASHTO and is geared to handle heavy rolling loads. Slip resistant surfaces are available. The typical applications for our heavy duty steel products include airfield landing mats and trenches, airplane unloading ramps, highway bridge decking, sidewalks, concrete reinforcements, vault covers, ramps, docks, industrial flooring, trenches, off-shore drilling rigs and paper mills.



Bayloff ►  
Machine & Die  
- Van Buren, MI



◀ Detail  
Bayloff

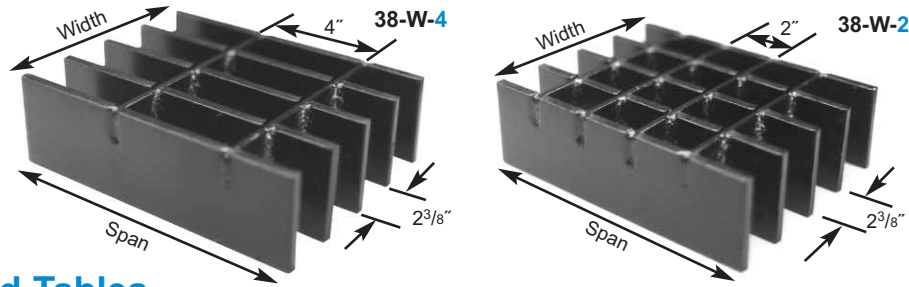


▲ Benson Park  
- Washington, DC



# HEAVY DUTY WELDED STEEL

## 38 SPACE



| BB Size | CB Ctrs | % Open Area* |       |      |      |
|---------|---------|--------------|-------|------|------|
|         |         | 1/4"         | 5/16" | 3/8" | 1/2" |
| Thru    | 4" cc   | 82%          | 80%   | 77%  | —    |
| 2 1/2"  | 2" cc   | 76%          | 73%   | 71%  | —    |
| 3" to   | 4" cc   | 84%          | 82%   | 79%  | 74%  |
| 6"      | 2" cc   | 80%          | 78%   | 75%  | 71%  |

### Load Tables

| Bar Size, Inches | Wt.** Lbs. Sq. Ft. | Section Properties              |                                 | Cross Bar Size, Inches | Maximum Safe Clear Span, Inches- Partially Distributed Load |       |       |         |
|------------------|--------------------|---------------------------------|---------------------------------|------------------------|---|-------|-------|---------|
|                  |                    | Sx**, in <sup>3</sup> Ft. Width | Ix**, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H15/H20 |
| 1 x 1/4          | 5.42               | 0.211                           | 0.105                           | 3/8 Dia                | 5   | 5     | 6     | 7       |
| 1 x 3/8          | 7.57               | 0.316                           | 0.158                           | 3/8 Dia                | 7   | 6     | 7     | 8       |
| 1 1/4 x 1/4      | 6.50               | 0.329                           | 0.206                           | 3/8 Dia                | 7   | 6     | 7     | 9       |
| 1 1/4 x 3/8      | 9.18               | 0.493                           | 0.308                           | 3/8 Dia                | 10  | 7     | 9     | 11      |
| 1 1/2 x 1/4      | 7.57               | 0.474                           | 0.355                           | 3/8 Dia                | 10  | 7     | 9     | 10      |
| 1 1/2 x 5/16     | 9.18               | 0.592                           | 0.444                           | 3/8 Dia                | 12  | 8     | 10    | 12      |
| 1 1/2 x 3/8      | 10.79              | 0.711                           | 0.533                           | 3/8 Dia                | 14  | 9     | 11    | 13      |
| 1 3/4 x 1/4      | 8.64               | 0.645                           | 0.564                           | 3/8 Dia                | 12  | 9     | 10    | 12      |
| 1 3/4 x 3/8      | 12.40              | 0.967                           | 0.846                           | 3/8 Dia                | 18  | 12    | 13    | 15      |
| 2 x 1/4          | 9.72               | 0.842                           | 0.842                           | 3/8 Dia                | 16  | 11    | 12    | 14      |
| 2 x 5/16         | 11.86              | 1.053                           | 1.053                           | 3/8 Dia                | 19  | 12    | 13    | 16      |
| 2 x 3/8          | 14.01              | 1.263                           | 1.263                           | 3/8 Dia                | 23  | 14    | 15    | 18      |
| 2 1/4 x 1/4      | 10.79              | 1.066                           | 1.199                           | 3/8 Dia                | 20  | 13    | 13    | 16      |
| 2 1/4 x 3/8      | 15.62              | 1.599                           | 1.799                           | 3/8 Dia                | 29  | 17    | 17    | 20      |
| 2 1/2 x 1/4      | 11.86              | 1.316                           | 1.645                           | 3/8 Dia                | 24  | 15    | 15    | 18      |
| 2 1/2 x 5/16     | 14.55              | 1.645                           | 2.056                           | 3/8 Dia                | 30  | 18    | 18    | 21      |
| 2 1/2 x 3/8      | 17.23              | 1.974                           | 2.467                           | 3/8 Dia                | 35  | 21    | 20    | 24      |
| 3 x 1/4          | 15.44              | 1.895                           | 2.842                           | 1 x 1/4                | 34  | 20    | 20    | 23      |
| 3 x 5/16         | 18.66              | 2.369                           | 3.553                           | 1 x 1/4                | 42  | 24    | 23    | 27      |
| 3 x 3/8          | 21.88              | 2.842                           | 4.263                           | 1 x 1/4                | 50  | 29    | 27    | 31      |
| 3 x 1/2          | 28.32              | 3.790                           | 5.685                           | 1 x 1/4                | 64*   | 37    | 35    | 39      |
| 3 1/2 x 1/4      | 17.58              | 2.579                           | 4.513                           | 1 x 1/4                | 45  | 26    | 25    | 29      |
| 3 1/2 x 3/8      | 25.10              | 3.869                           | 6.770                           | 1 x 1/4                | 67  | 38    | 35    | 40      |
| 3 1/2 x 1/2      | 32.62              | 5.158                           | 9.027                           | 1 x 1/4                | 81*   | 49    | 45    | 50      |
| 4 x 1/4          | 19.73              | 3.369                           | 6.737                           | 1 x 1/4                | 59  | 33    | 31    | 35      |
| 4 x 5/16         | 24.03              | 4.211                           | 8.422                           | 1 x 1/4                | 73  | 41    | 38    | 43      |
| 4 x 3/8          | 28.32              | 5.053                           | 10.106                          | 1 x 1/4                | 86*   | 48    | 44    | 50      |
| 4 x 1/2          | 36.91              | 6.737                           | 13.475                          | 1 x 1/4                | 96  | 63    | 57    | 63      |
| 4 1/2 x 1/4      | 21.88              | 4.263                           | 9.593                           | 1 x 1/4                | 74  | 41    | 38    | 43      |
| 4 1/2 x 3/8      | 31.54              | 6.395                           | 14.389                          | 1 x 1/4                | 96  | 60    | 55    | 60      |
| 4 1/2 x 1/2      | 41.21              | 8.527                           | 19.186                          | 1 x 1/4                | 96  | 80    | 71    | 77      |
| 5 x 1/4          | 24.03              | 5.264                           | 13.159                          | 1 x 1/4                | 91  | 50    | 46    | 51      |
| 5 x 5/16         | 29.40              | 6.579                           | 16.449                          | 1 x 1/4                | 96  | 62    | 56    | 62      |
| 5 x 3/8          | 34.76              | 7.895                           | 19.738                          | 1 x 1/4                | 96  | 74    | 66    | 72      |
| 5 x 1/2          | 45.50              | 10.527                          | 26.318                          | 1 x 1/4                | 96  | 96    | 87    | 93      |
| 5 1/2 x 1/4      | 26.17              | 6.369                           | 17.514                          | 1 x 1/4                | 96  | 60    | 55    | 60      |
| 5 1/2 x 3/8      | 37.99              | 9.553                           | 26.272                          | 1 x 1/4                | 96  | 89    | 79    | 85      |
| 5 1/2 x 1/2      | 49.80              | 12.738                          | 35.029                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/4          | 28.32              | 7.580                           | 22.739                          | 1 x 1/4                | 96  | 71    | 64    | 70      |
| 6 x 5/16         | 34.76              | 9.474                           | 28.423                          | 1 x 1/4                | 96  | 88    | 79    | 85      |
| 6 x 3/8          | 41.21              | 11.369                          | 34.108                          | 1 x 1/4                | 96  | 96    | 94    | 96      |
| 6 x 1/2          | 54.09              | 15.159                          | 45.477                          | 1 x 1/4                | 96  | 96    | 96    | 96      |

\*Span limited to 1/40 of span = Deflection. \*\*Based on 5.053 bars/ft of grating width. Bearing bars 2 1/2" c.c.  
 Note: When serrated grating is specified, the depth of grating required for a specified load will be 1/2" greater than that shown in these tables. Weights shown are for 4" cross bar centers. Add 1.13 lbs./sq. ft. (3/8" Dia.) or 2.55 lbs./sq. ft. (1" x 1/4") for 2" cross bar centers.



### Load Tables

| Bar Size<br>Inches | Maximum Safe Concentrated Load*, Lbs. - Clear Span |       |       |       |       |       |       |       |       |       |       |       |       |  |
|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                    | 1'-0"  | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 7'-0" | 8'-0" |  |
| 1 x 1/4            | 1407   | 938   | 703   | 563   | 469   | 402   |       |       |       |       |       |       |       |  |
| 1 x 3/8            | 2107   | 1404  | 1053  | 843   | 702   | 602   |       |       |       |       |       |       |       |  |
| 1-1/4 x 1/4        | 2193   | 1462  | 1097  | 877   | 731   | 627   | 548   |       |       |       |       |       |       |  |
| 1-1/4 x 3/8        | 3287   | 2191  | 1643  | 1315  | 1096  | 939   | 822   |       |       |       |       |       |       |  |
| 1-1/2 x 1/4        | 3160   | 2107  | 1580  | 1264  | 1053  | 903   | 790   | 702   |       |       |       |       |       |  |
| 1-1/2 x 5/16       | 3947   | 2631  | 1973  | 1579  | 1316  | 1128  | 987   | 877   |       |       |       |       |       |  |
| 1-1/2 x 3/8        | 4740   | 3160  | 2370  | 1896  | 1580  | 1354  | 1185  | 1053  |       |       |       |       |       |  |
| 1-3/4 x 1/4        | 4300   | 2867  | 2150  | 1720  | 1433  | 1229  | 1075  | 956   | 860   |       |       |       |       |  |
| 1-3/4 x 3/8        | 6447   | 4298  | 3223  | 2579  | 2149  | 1842  | 1612  | 1433  | 1289  |       |       |       |       |  |
| 2 x 1/4            | 5613   | 3742  | 2807  | 2245  | 1871  | 1604  | 1403  | 1247  | 1123  |       |       |       |       |  |
| 2 x 5/16           | 7020   | 4680  | 3510  | 2808  | 2340  | 2006  | 1755  | 1560  | 1404  |       |       |       |       |  |
| 2 x 3/8            | 8420   | 5613  | 4210  | 3368  | 2807  | 2406  | 2105  | 1871  | 1684  |       |       |       |       |  |
| 2-1/4 x 1/4        | 7107   | 4738  | 3553  | 2843  | 2369  | 2030  | 1777  | 1579  | 1421  | 1292  |       |       |       |  |
| 2-1/4 x 3/8        | 10660  | 7107  | 5330  | 4264  | 3553  | 3046  | 2665  | 2369  | 2132  | 1938  |       |       |       |  |
| 2-1/2 x 1/4        | 8773   | 5849  | 4387  | 3509  | 2924  | 2507  | 2193  | 1950  | 1755  | 1595  | 1462  |       |       |  |
| 2-1/2 x 5/16       | 10967  | 7311  | 5483  | 4387  | 3656  | 3133  | 2742  | 2437  | 2193  | 1994  | 1828  |       |       |  |
| 2-1/2 x 3/8        | 13160  | 8773  | 6580  | 5264  | 4387  | 3760  | 3290  | 2924  | 2632  | 2393  | 2193  |       |       |  |
| 3 x 1/4            | 12633  | 8422  | 6317  | 5053  | 4211  | 3610  | 3158  | 2807  | 2527  | 2297  | 2106  |       |       |  |
| 3 x 5/16           | 15793  | 10529 | 7897  | 6317  | 5264  | 4512  | 3948  | 3510  | 3159  | 2872  | 2632  |       |       |  |
| 3 x 3/8            | 18947  | 12631 | 9473  | 7579  | 6316  | 5413  | 4737  | 4210  | 3789  | 3445  | 3158  |       |       |  |
| 3 x 1/2            | 25267  | 16844 | 12633 | 10107 | 8422  | 7219  | 6317  | 5615  | 5053  | 4594  | 4211  |       |       |  |
| 3-1/2 x 1/4        | 17193  | 11462 | 8597  | 6877  | 5731  | 4912  | 4298  | 3821  | 3439  | 3126  | 2866  | 2456  |       |  |
| 3-1/2 x 3/8        | 25793  | 17196 | 12897 | 10317 | 8598  | 7370  | 6448  | 5732  | 5159  | 4690  | 4299  | 3685  |       |  |
| 3-1/2 x 1/2        | 34387  | 22924 | 17193 | 13755 | 11462 | 9825  | 8597  | 7641  | 6877  | 6252  | 5731  | 4912  |       |  |
| 4 x 1/4            | 22460  | 14973 | 11230 | 8984  | 7487  | 6417  | 5615  | 4991  | 4492  | 4084  | 3743  | 3209  |       |  |
| 4 x 5/16           | 28073  | 18716 | 14037 | 11229 | 9358  | 8021  | 7018  | 6239  | 5615  | 5104  | 4679  | 4010  |       |  |
| 4 x 3/8            | 33687  | 22458 | 16843 | 13475 | 11229 | 9625  | 8422  | 7486  | 6737  | 6125  | 5614  | 4812  |       |  |
| 4 x 1/2            | 44913  | 29942 | 22457 | 17965 | 14971 | 12832 | 11228 | 9981  | 8983  | 8166  | 7486  | 6416  |       |  |
| 4-1/2 x 1/4        | 28420  | 18947 | 14210 | 11368 | 9473  | 8120  | 7105  | 6316  | 5684  | 5167  | 4737  | 4060  | 3553  |  |
| 4-1/2 x 3/8        | 42633  | 28422 | 21317 | 17053 | 14211 | 12181 | 10658 | 9474  | 8527  | 7752  | 7106  | 6090  | 5329  |  |
| 4-1/2 x 1/2        | 56847  | 37898 | 28423 | 22739 | 18949 | 16242 | 14212 | 12633 | 11369 | 10336 | 9474  | 8121  | 7106  |  |
| 5 x 1/4            | 35093  | 23396 | 17547 | 14037 | 11698 | 10027 | 8773  | 7799  | 7019  | 6381  | 5849  | 5013  | 4387  |  |
| 5 x 5/16           | 43860  | 29240 | 21930 | 17544 | 14620 | 12531 | 10965 | 9747  | 8772  | 7975  | 7310  | 6266  | 5483  |  |
| 5 x 3/8            | 52633  | 35089 | 26317 | 21053 | 17544 | 15038 | 13158 | 11696 | 10527 | 9570  | 8772  | 7519  | 6579  |  |
| 5 x 1/2            |  | 46787 | 35090 | 28072 | 23393 | 20051 | 17545 | 15596 | 14036 | 12760 | 11697 | 10026 | 8773  |  |
| 5-1/2 x 1/4        |  | 28307 | 21230 | 16984 | 14153 | 12131 | 10615 | 9436  | 8492  | 7720  | 7077  | 6066  | 5308  |  |
| 5-1/2 x 3/8        |  | 42458 | 31843 | 25475 | 21229 | 18196 | 15922 | 14153 | 12737 | 11579 | 10614 | 9098  | 7961  |  |
| 5-1/2 x 1/2        |  | 56613 | 42460 | 33968 | 28307 | 24263 | 21230 | 18871 | 16984 | 15440 | 14153 | 12131 | 10615 |  |
| 6 x 1/4            |  | 33689 | 25267 | 20213 | 16844 | 14438 | 12633 | 11230 | 10107 | 9188  | 8422  | 7219  | 6317  |  |
| 6 x 5/16           |  | 42107 | 31580 | 25264 | 21053 | 18046 | 15790 | 14036 | 12632 | 11484 | 10527 | 9023  | 7895  |  |
| 6 x 3/8            |  | 50529 | 37897 | 30317 | 25264 | 21655 | 18948 | 16843 | 15159 | 13781 | 12632 | 10828 | 9474  |  |
| 6 x 1/2            |  |       | 50530 | 40424 | 33687 | 28874 | 25265 | 22458 | 20212 | 18375 | 16843 | 14437 | 12633 |  |

\*Based on 5.053 bars / ft. of grating width. Bearing bars 2-3/8" c.c.

Note: When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables. Loads are theoretical and are based on a unit stress of 20,000 psi.

### Panel Width Chart (in.) 38-W-4 / 38-W-2

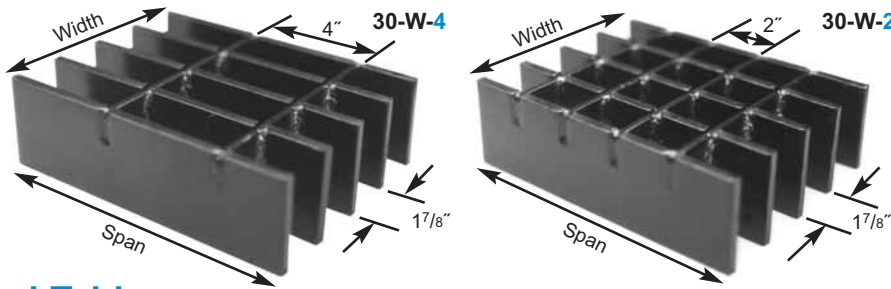
Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2                  | 3                 | 4                 | 5                  | 6                  | 7                  | 8                   | 9                  | 10                  | 11                 | 12                 | 13                  | 14                 | 15                 | 16                  |
|-------------|--------------------|-------------------|-------------------|--------------------|--------------------|--------------------|---------------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|
| 1/4" Bars   | 2 <sup>5/8</sup>   | 5                 | 7 <sup>3/8</sup>  | 9 <sup>3/4</sup>   | 12 <sup>1/8</sup>  | 14 <sup>1/2</sup>  | 16 <sup>7/8</sup>   | 19 <sup>1/4</sup>  | 21 <sup>5/8</sup>   | 24                 | 26 <sup>3/8</sup>  | 28 <sup>3/4</sup>   | 31 <sup>1/8</sup>  | 33 <sup>1/2</sup>  | 35 <sup>7/8</sup>   |
| 5/16" Bars  | 2 <sup>11/16</sup> | 5 <sup>1/16</sup> | 7 <sup>7/16</sup> | 9 <sup>13/16</sup> | 12 <sup>3/16</sup> | 14 <sup>9/16</sup> | 16 <sup>15/16</sup> | 19 <sup>9/16</sup> | 21 <sup>11/16</sup> | 24 <sup>1/16</sup> | 26 <sup>7/16</sup> | 28 <sup>13/16</sup> | 31 <sup>3/16</sup> | 33 <sup>9/16</sup> | 35 <sup>15/16</sup> |
| 3/8" Bars   | 2 <sup>3/4</sup>   | 5 <sup>1/8</sup>  | 7 <sup>1/2</sup>  | 9 <sup>7/8</sup>   | 12 <sup>1/4</sup>  | 14 <sup>5/8</sup>  | 17                  | 19 <sup>3/8</sup>  | 21 <sup>3/4</sup>   | 24 <sup>1/8</sup>  | 26 <sup>1/2</sup>  | 28 <sup>7/8</sup>   | 31 <sup>1/4</sup>  | 33 <sup>5/8</sup>  | 36                  |
| 1/2" Bars   | 2 <sup>7/8</sup>   | 5 <sup>1/4</sup>  | 7 <sup>5/8</sup>  | 10                 | 12 <sup>3/8</sup>  | 14 <sup>3/4</sup>  | 17 <sup>1/8</sup>   | 19 <sup>1/2</sup>  | 21 <sup>7/8</sup>   | 24 <sup>1/4</sup>  | 26 <sup>5/8</sup>  | 29                  | 31 <sup>3/8</sup>  | 33 <sup>3/4</sup>  | 36 <sup>1/8</sup>   |



# HEAVY DUTY WELDED STEEL

## 30 SPACE



| BB Size  | CB Ctrs | % Open Area*          |       |      |      |
|----------|---------|-----------------------|-------|------|------|
|          |         | Bearing Bar Thickness |       |      |      |
|          |         | 1/4"                  | 5/16" | 3/8" | 1/2" |
| Thru     | 4" cc   | 79%                   | 76%   | 73%  | -    |
| 2 1/2"   | 2" cc   | 72%                   | 70%   | 67%  | -    |
| 3" to 6" | 4" cc   | 82%                   | 78%   | 75%  | 69%  |
|          | 2" cc   | 77%                   | 74%   | 71%  | 65%  |

### Load Tables

| Bar Size, Inches | Wt.** Lbs. Sq. Ft. | Section Properties              |                                 | Cross Bar Size, Inches | Maximum Safe Clear Span, Inches- Partially Distributed Load |       |       |         |
|------------------|--------------------|---------------------------------|---------------------------------|------------------------|---|-------|-------|---------|
|                  |                    | Sx**, in <sup>3</sup> Ft. Width | Ix**, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H15/H20 |
| 1 x 1/4          | 6.57               | 0.267                           | 0.133                           | 3/8 Dia                | 6   | 5     | 6     | 8       |
| 1 x 3/8          | 9.29               | 0.400                           | 0.200                           | 3/8 Dia                | 8   | 6     | 8     | 9       |
| 1 1/4 x 1/4      | 7.93               | 0.417                           | 0.260                           | 3/8 Dia                | 8   | 6     | 8     | 10      |
| 1 1/4 x 3/8      | 11.33              | 0.625                           | 0.391                           | 3/8 Dia                | 11  | 8     | 10    | 12      |
| 1 1/2 x 1/4      | 9.29               | 0.600                           | 0.450                           | 3/8 Dia                | 11  | 8     | 9     | 12      |
| 1 1/2 x 5/16     | 11.33              | 0.750                           | 0.563                           | 3/8 Dia                | 13  | 9     | 10    | 13      |
| 1 1/2 x 3/8      | 13.37              | 0.900                           | 0.675                           | 3/8 Dia                | 15  | 10    | 12    | 14      |
| 1 3/4 x 1/4      | 10.65              | 0.817                           | 0.715                           | 3/8 Dia                | 14  | 10    | 11    | 14      |
| 1 3/4 x 3/8      | 15.40              | 1.225                           | 1.072                           | 3/8 Dia                | 20  | 13    | 14    | 17      |
| 2 x 1/4          | 12.01              | 1.067                           | 1.067                           | 3/8 Dia                | 18  | 12    | 13    | 16      |
| 2 x 5/16         | 14.73              | 1.333                           | 1.333                           | 3/8 Dia                | 22  | 14    | 15    | 18      |
| 2 x 3/8          | 17.45              | 1.600                           | 1.600                           | 3/8 Dia                | 26  | 16    | 17    | 20      |
| 2 1/4 x 1/4      | 13.37              | 1.350                           | 1.519                           | 3/8 Dia                | 22  | 14    | 15    | 18      |
| 2 1/4 x 3/8      | 19.49              | 2.025                           | 2.278                           | 3/8 Dia                | 32  | 20    | 20    | 23      |
| 2 1/2 x 1/4      | 14.73              | 1.667                           | 2.083                           | 3/8 Dia                | 27  | 17    | 17    | 20      |
| 2 1/2 x 5/16     | 18.12              | 2.083                           | 2.604                           | 3/8 Dia                | 33  | 20    | 20    | 24      |
| 2 1/2 x 3/8      | 21.53              | 2.500                           | 3.125                           | 3/8 Dia                | 39  | 24    | 23    | 27      |
| 3 x 1/4          | 18.87              | 2.400                           | 3.600                           | 1 x 1/4                | 38  | 23    | 23    | 26      |
| 3 x 5/16         | 22.95              | 3.000                           | 4.500                           | 1 x 1/4                | 47  | 28    | 27    | 31      |
| 3 x 3/8          | 27.03              | 3.600                           | 5.400                           | 1 x 1/4                | 56  | 33    | 31    | 36      |
| 3 x 1/2          | 35.19              | 4.800                           | 7.200                           | 1 x 1/4                | 68*   | 42    | 40    | 45      |
| 3 1/2 x 1/4      | 21.59              | 3.267                           | 5.717                           | 1 x 1/4                | 51  | 30    | 29    | 33      |
| 3 1/2 x 3/8      | 31.11              | 4.900                           | 8.575                           | 1 x 1/4                | 75*   | 43    | 41    | 46      |
| 3 1/2 x 1/2      | 40.63              | 6.533                           | 11.433                          | 1 x 1/4                | 86*   | 57    | 53    | 59      |
| 4 x 1/4          | 24.31              | 4.267                           | 8.533                           | 1 x 1/4                | 66  | 38    | 36    | 41      |
| 4 x 5/16         | 29.75              | 5.333                           | 10.667                          | 1 x 1/4                | 82  | 47    | 44    | 50      |
| 4 x 3/8          | 35.19              | 6.400                           | 12.800                          | 1 x 1/4                | 91*   | 56    | 52    | 58      |
| 4 x 1/2          | 46.07              | 8.533                           | 17.067                          | 1 x 1/4                | 96  | 73    | 67    | 74      |
| 4 1/2 x 1/4      | 27.03              | 5.400                           | 12.150                          | 1 x 1/4                | 83  | 47    | 44    | 50      |
| 4 1/2 x 3/8      | 39.27              | 8.100                           | 18.225                          | 1 x 1/4                | 96  | 69    | 64    | 71      |
| 4 1/2 x 1/2      | 51.51              | 10.800                          | 24.300                          | 1 x 1/4                | 96  | 92    | 84    | 90*     |
| 5 x 1/4          | 29.75              | 6.667                           | 16.667                          | 1 x 1/4                | 96  | 58    | 54    | 60      |
| 5 x 5/16         | 36.55              | 8.333                           | 20.833                          | 1 x 1/4                | 96  | 71    | 66    | 73      |
| 5 x 3/8          | 43.35              | 10.000                          | 25.000                          | 1 x 1/4                | 96  | 85    | 78    | 86      |
| 5 x 1/2          | 56.95              | 13.333                          | 33.333                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 1/4      | 32.47              | 8.067                           | 22.183                          | 1 x 1/4                | 96  | 69    | 64    | 71      |
| 5 1/2 x 3/8      | 47.43              | 12.100                          | 33.275                          | 1 x 1/4                | 96  | 96    | 93    | 96      |
| 5 1/2 x 1/2      | 62.39              | 16.133                          | 44.367                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/4          | 35.19              | 9.600                           | 28.800                          | 1 x 1/4                | 96  | 82    | 75    | 83      |
| 6 x 5/16         | 43.35              | 12.000                          | 36.000                          | 1 x 1/4                | 96  | 96    | 93    | 96      |
| 6 x 3/8          | 51.51              | 14.400                          | 43.200                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/2          | 67.83              | 19.200                          | 57.600                          | 1 x 1/4                | 96  | 96    | 96    | 96      |

\*Span limited to 1/400 of span = Deflection. \*\*Based on 6.4 bars/ft of grating width. Bearing bars 1 1/8" c.c.  
 Note: When serrated grating is specified, the depth of grating required for a specified load will be 1/4" greater than that shown in these tables. Weights shown are for 4" cross bar centers. Add 1.13 lbs./sq. ft. (1/8" Dia.) or 2.55 lbs./sq. ft. (1" x 1/2") for 2" cross bar centers.



### Load Tables

| Bar Size<br>Inches | Maximum Safe Concentrated Load*, Lbs. - Clear Span |       |       |       |       |       |       |       |       |       |       |       |       |  |
|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                    | 1'-0"  | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 7'-0" | 8'-0" |  |
| 1 x 1/4            | 1780   | 1187  | 890   | 712   | 593   | 509   |       |       |       |       |       |       |       |  |
| 1 x 3/8            | 2667   | 1778  | 1333  | 1067  | 889   | 762   |       |       |       |       |       |       |       |  |
| 1-1/4 x 1/4        | 2780   | 1853  | 1390  | 1112  | 927   | 794   | 695   |       |       |       |       |       |       |  |
| 1-1/4 x 3/8        | 4167   | 2778  | 2083  | 1667  | 1389  | 1190  | 1042  |       |       |       |       |       |       |  |
| 1-1/2 x 1/4        | 4000   | 2667  | 2000  | 1600  | 1333  | 1143  | 1000  | 889   |       |       |       |       |       |  |
| 1-1/2 x 5/16       | 5000   | 3333  | 2500  | 2000  | 1667  | 1429  | 1250  | 1111  |       |       |       |       |       |  |
| 1-1/2 x 3/8        | 6000   | 4000  | 3000  | 2400  | 2000  | 1714  | 1500  | 1333  |       |       |       |       |       |  |
| 1-3/4 x 1/4        | 5447   | 3631  | 2723  | 2179  | 1816  | 1556  | 1362  | 1210  | 1089  |       |       |       |       |  |
| 1-3/4 x 3/8        | 8167   | 5444  | 4083  | 3267  | 2722  | 2333  | 2042  | 1815  | 1633  |       |       |       |       |  |
| 2 x 1/4            | 7113   | 4742  | 3557  | 2845  | 2371  | 2032  | 1778  | 1581  | 1423  |       |       |       |       |  |
| 2 x 5/16           | 8887   | 5924  | 4443  | 3555  | 2962  | 2539  | 2222  | 1975  | 1777  |       |       |       |       |  |
| 2 x 3/8            | 10667  | 7111  | 5333  | 4267  | 3556  | 3048  | 2667  | 2370  | 2133  |       |       |       |       |  |
| 2-1/4 x 1/4        | 9000   | 6000  | 4500  | 3600  | 3000  | 2571  | 2250  | 2000  | 1800  | 1636  |       |       |       |  |
| 2-1/4 x 3/8        | 13500  | 9000  | 6750  | 5400  | 4500  | 3857  | 3375  | 3000  | 2700  | 2455  |       |       |       |  |
| 2-1/2 x 1/4        | 11113  | 7409  | 5557  | 4445  | 3704  | 3175  | 2778  | 2470  | 2223  | 2021  | 1852  |       |       |  |
| 2-1/2 x 5/16       | 13887  | 9258  | 6943  | 5555  | 4629  | 3968  | 3472  | 3086  | 2777  | 2525  | 2314  |       |       |  |
| 2-1/2 x 3/8        | 16667  | 11111 | 8333  | 6667  | 5556  | 4762  | 4167  | 3704  | 3333  | 3030  | 2778  |       |       |  |
| 3 x 1/4            | 16000  | 10667 | 8000  | 6400  | 5333  | 4571  | 4000  | 3556  | 3200  | 2909  | 2667  |       |       |  |
| 3 x 5/16           | 20000  | 13333 | 10000 | 8000  | 6667  | 5714  | 5000  | 4444  | 4000  | 3636  | 3333  |       |       |  |
| 3 x 3/8            | 24000  | 16000 | 12000 | 9600  | 8000  | 6857  | 6000  | 5333  | 4800  | 4364  | 4000  |       |       |  |
| 3 x 1/2            | 32000  | 21333 | 16000 | 12800 | 10667 | 9143  | 8000  | 7111  | 6400  | 5818  | 5333  |       |       |  |
| 3-1/2 x 1/4        | 21780  | 14520 | 10890 | 8712  | 7260  | 6223  | 5445  | 4840  | 4356  | 3960  | 3630  | 3111  |       |  |
| 3-1/2 x 3/8        | 32667  | 21778 | 16333 | 13067 | 10889 | 9333  | 8167  | 7259  | 6533  | 5939  | 5444  | 4667  |       |  |
| 3-1/2 x 1/2        | 43553  | 29036 | 21777 | 17421 | 14518 | 12444 | 10888 | 9679  | 8711  | 7919  | 7259  | 6222  |       |  |
| 4 x 1/4            | 28447  | 18964 | 14223 | 11379 | 9482  | 8128  | 7112  | 6321  | 5689  | 5172  | 4741  | 4064  |       |  |
| 4 x 5/16           | 35553  | 23702 | 17777 | 14221 | 11851 | 10158 | 8888  | 7901  | 7111  | 6464  | 5926  | 5079  |       |  |
| 4 x 3/8            | 42667  | 28444 | 21333 | 17067 | 14222 | 12190 | 10667 | 9481  | 8533  | 7758  | 7111  | 6095  |       |  |
| 4 x 1/2            | 56887  | 37924 | 28443 | 22755 | 18962 | 16253 | 14222 | 12641 | 11377 | 10343 | 9481  | 8127  |       |  |
| 4-1/2 x 1/4        | 36000  | 24000 | 18000 | 14400 | 12000 | 10286 | 9000  | 8000  | 7200  | 6545  | 6000  | 5143  | 4500  |  |
| 4-1/2 x 3/8        | 54000  | 36000 | 27000 | 21600 | 18000 | 15429 | 13500 | 12000 | 10800 | 9818  | 9000  | 7714  | 6750  |  |
| 4-1/2 x 1/2        |  | 48000 | 36000 | 28800 | 24000 | 20571 | 18000 | 16000 | 14400 | 13091 | 12000 | 10286 | 9000  |  |
| 5 x 1/4            |  | 29631 | 22223 | 17779 | 14816 | 12699 | 11112 | 9877  | 8889  | 8081  | 7408  | 6350  | 5556  |  |
| 5 x 5/16           |  | 37036 | 27777 | 22221 | 18518 | 15872 | 13888 | 12345 | 11111 | 10101 | 9259  | 7936  | 6944  |  |
| 5 x 3/8            |  | 44444 | 33333 | 26667 | 22222 | 19048 | 16667 | 14815 | 13333 | 12121 | 11111 | 9524  | 8333  |  |
| 5 x 1/2            |  | 59258 | 44443 | 35555 | 29629 | 25396 | 22222 | 19753 | 17777 | 16161 | 14814 | 12698 | 11111 |  |
| 5-1/2 x 1/4        |  | 35853 | 26890 | 21512 | 17927 | 15366 | 13445 | 11951 | 10756 | 9778  | 8963  | 7683  | 6723  |  |
| 5-1/2 x 3/8        |  | 53778 | 40333 | 32267 | 26889 | 23048 | 20167 | 17926 | 16133 | 14667 | 13444 | 11524 | 10083 |  |
| 5-1/2 x 1/2        |  |       | 53777 | 43021 | 35851 | 30730 | 26888 | 23901 | 21511 | 19555 | 17926 | 15365 | 13444 |  |
| 6 x 1/4            |  |       | 32000 | 25600 | 21333 | 18286 | 16000 | 14222 | 12800 | 11636 | 10667 | 9143  | 8000  |  |
| 6 x 5/16           |  |       | 40000 | 32000 | 26667 | 22857 | 20000 | 17778 | 16000 | 14545 | 13333 | 11429 | 10000 |  |
| 6 x 3/8            |  |       | 48000 | 38400 | 32000 | 27429 | 24000 | 21333 | 19200 | 17455 | 16000 | 13714 | 12000 |  |
| 6 x 1/2            |  |       |       | 51200 | 42667 | 36571 | 32000 | 28444 | 25600 | 23273 | 21333 | 18286 | 16000 |  |

| % OPEN AREA *         |         |      |       |      |      |
|-----------------------|---------|------|-------|------|------|
| BEARING BAR THICKNESS |         |      |       |      |      |
| BB Size               | CB Ctrs | 1/4" | 5/16" | 3/8" | 1/2" |
| thru 2-1/2"           | 4" cc   | 79%  | 76%   | 73%  | -    |
|                       | 2" cc   | 72%  | 70%   | 67%  | -    |
| 3" - 6"               | 4" cc   | 82%  | 78%   | 75%  | 69%  |
|                       | 2" cc   | 77%  | 74%   | 71%  | 65%  |

Loads are theoretical and are based on a unit stress of 20,000 psi.

\*Based on 6.4 bars / ft. of grating width. Bearing bars 1-7/8" c.c.

Note: When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### 30-W-4 / 30-W-2 Panel Width Chart (in.)

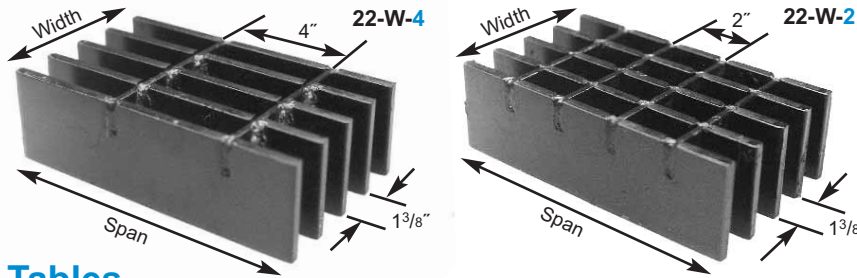
Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2       | 3       | 4       | 5        | 6       | 7       | 8       | 9       | 10      | 11      | 12       | 13       | 14       | 15      | 16      |
|-------------|---------|---------|---------|----------|---------|---------|---------|---------|---------|---------|----------|----------|----------|---------|---------|
| 1/4" Bars   | 2 1/8   | 4       | 5 7/8   | 7 3/4    | 9 5/8   | 11 1/2  | 13 3/8  | 15 1/4  | 17 1/8  | 19      | 20 7/8   | 22 3/4   | 24 5/8   | 26 1/2  | 28 3/8  |
| 5/16" Bars  | 2 3/16  | 4 1/16  | 5 15/16 | 7 13/16  | 9 11/16 | 11 9/16 | 13 7/16 | 15 5/16 | 17 3/16 | 19 1/16 | 20 15/16 | 22 13/16 | 24 11/16 | 26 9/16 | 28 7/16 |
| 3/8" Bars   | 2 1/4   | 4 1/8   | 6       | 7 7/8    | 9 3/4   | 11 5/8  | 13 1/2  | 15 3/8  | 17 1/4  | 19 1/8  | 21       | 22 7/8   | 24 3/4   | 26 5/8  | 28 1/2  |
| 1/2" Bars   | 2 3/8   | 4 1/4   | 6 1/8   | 8        | 9 7/8   | 11 3/4  | 13 5/8  | 15 1/2  | 17 3/8  | 19 1/4  | 21 1/8   | 23       | 24 7/8   | 26 3/4  | 28 5/8  |
| No. of Bars | 17      | 18      | 19      | 20       |         |         |         |         |         |         |          |          |          |         |         |
| 1/4" Bars   | 30 1/4  | 32 1/8  | 34      | 35 7/8   |         |         |         |         |         |         |          |          |          |         |         |
| 5/16" Bars  | 30 5/16 | 32 3/16 | 34 1/16 | 35 15/16 |         |         |         |         |         |         |          |          |          |         |         |
| 3/8" Bars   | 30 3/8  | 32 1/4  | 34 1/8  | 36       |         |         |         |         |         |         |          |          |          |         |         |
| 1/2" Bars   | 30 1/2  | 32 3/8  | 34 1/4  | 36 1/8   |         |         |         |         |         |         |          |          |          |         |         |



# HEAVY DUTY WELDED STEEL

## 22 SPACE



| BB Size     | CB Ctrs | % Open Area*          |       |      |      |
|-------------|---------|-----------------------|-------|------|------|
|             |         | Bearing Bar Thickness |       |      |      |
|             |         | 1/4"                  | 5/16" | 3/8" | 1/2" |
| Thru 2 1/2" | 4" cc   | 75%                   | 70%   | 66%  | —    |
|             | 2" cc   | 68%                   | 64%   | 60%  | —    |
| 3" to 6"    | 4" cc   | 77%                   | 72%   | 68%  | 60%  |
|             | 2" cc   | 72%                   | 68%   | 64%  | 56%  |

## Load Tables

| Bar Size, Inches | Wt.** Lbs. Sq. Ft. | Section Properties              |                                 | Cross Bar Size, Inches | Maximum Safe Clear Span, Inches- Partially Distributed Load |       |       |         |
|------------------|--------------------|---------------------------------|---------------------------------|------------------------|---|-------|-------|---------|
|                  |                    | Sx**, in <sup>3</sup> Ft. Width | Ix**, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H15/H20 |
| 1 x 1/4          | 8.54               | 0.364                           | 0.182                           | 3/8 Dia                | 6   | 6     | 7     | 9       |
| 1 x 3/8          | 12.25              | 0.545                           | 0.273                           | 3/8 Dia                | 9   | 7     | 9     | 11      |
| 1 1/4 x 1/4      | 10.40              | 0.568                           | 0.355                           | 3/8 Dia                | 9   | 7     | 9     | 11      |
| 1 1/4 x 3/8      | 15.04              | 0.852                           | 0.533                           | 3/8 Dia                | 13  | 9     | 11    | 13      |
| 1 1/2 x 1/4      | 12.25              | 0.818                           | 0.614                           | 3/8 Dia                | 12  | 9     | 11    | 13      |
| 1 1/2 x 5/16     | 15.04              | 1.023                           | 0.767                           | 3/8 Dia                | 15  | 11    | 12    | 15      |
| 1 1/2 x 3/8      | 17.82              | 1.227                           | 0.920                           | 3/8 Dia                | 18  | 12    | 13    | 16      |
| 1 3/4 x 1/4      | 14.11              | 1.114                           | 0.974                           | 3/8 Dia                | 16  | 11    | 13    | 15      |
| 1 3/4 x 3/8      | 20.59              | 1.670                           | 1.462                           | 3/8 Dia                | 23  | 15    | 16    | 20      |
| 2 x 1/4          | 15.96              | 1.455                           | 1.455                           | 3/8 Dia                | 21  | 14    | 15    | 18      |
| 2 x 5/16         | 19.67              | 1.818                           | 1.818                           | 3/8 Dia                | 25  | 17    | 17    | 21      |
| 2 x 3/8          | 23.38              | 2.182                           | 2.182                           | 3/8 Dia                | 30  | 19    | 20    | 24      |
| 2 1/4 x 1/4      | 17.82              | 1.841                           | 2.071                           | 3/8 Dia                | 26  | 17    | 18    | 21      |
| 2 1/4 x 3/8      | 26.16              | 2.761                           | 3.106                           | 3/8 Dia                | 38  | 24    | 24    | 28      |
| 2 1/2 x 1/4      | 19.67              | 2.273                           | 2.841                           | 3/8 Dia                | 31  | 20    | 20    | 24      |
| 2 1/2 x 5/16     | 24.30              | 2.841                           | 3.551                           | 3/8 Dia                | 39  | 24    | 24    | 29      |
| 2 1/2 x 3/8      | 28.95              | 3.409                           | 4.261                           | 3/8 Dia                | 46  | 28    | 28    | 33      |
| 3 x 1/4          | 24.80              | 3.273                           | 4.909                           | 1 x 1/4                | 45  | 27    | 27    | 32      |
| 3 x 5/16         | 30.37              | 4.091                           | 6.136                           | 1 x 1/4                | 55  | 33    | 33    | 38      |
| 3 x 3/8          | 35.93              | 4.909                           | 7.363                           | 1 x 1/4                | 64*   | 40    | 38    | 44      |
| 3 x 1/2          | 47.06              | 6.545                           | 9.818                           | 1 x 1/4                | 74*   | 52    | 50    | 57*     |
| 3 1/2 x 1/4      | 28.51              | 4.454                           | 7.795                           | 1 x 1/4                | 60  | 36    | 35    | 41      |
| 3 1/2 x 3/8      | 41.50              | 6.682                           | 11.693                          | 1 x 1/4                | 81*   | 53    | 50    | 58      |
| 3 1/2 x 1/2      | 54.48              | 8.909                           | 15.590                          | 1 x 1/4                | 94*   | 69    | 66    | 71*     |
| 4 x 1/4          | 32.22              | 5.818                           | 11.636                          | 1 x 1/4                | 78  | 46    | 45    | 51      |
| 4 x 5/16         | 39.64              | 7.273                           | 14.545                          | 1 x 1/4                | 91*   | 57    | 54    | 62      |
| 4 x 3/8          | 47.06              | 8.727                           | 17.454                          | 1 x 1/4                | 96  | 68    | 64    | 73      |
| 4 x 1/2          | 61.89              | 11.636                          | 23.272                          | 1 x 1/4                | 96  | 86*   | 83*   | 87*     |
| 4 1/2 x 1/4      | 35.93              | 7.363                           | 16.568                          | 1 x 1/4                | 96  | 58    | 55    | 63      |
| 4 1/2 x 3/8      | 52.63              | 11.045                          | 24.851                          | 1 x 1/4                | 96  | 85    | 80    | 89*     |
| 4 1/2 x 1/2      | 69.31              | 14.727                          | 33.135                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 x 1/4          | 39.64              | 9.091                           | 22.727                          | 1 x 1/4                | 96  | 71    | 67    | 76      |
| 5 x 5/16         | 48.92              | 11.363                          | 28.408                          | 1 x 1/4                | 96  | 88    | 82    | 92      |
| 5 x 3/8          | 58.18              | 13.636                          | 34.090                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 x 1/2          | 76.73              | 18.181                          | 45.453                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 1/4      | 43.35              | 11.000                          | 30.249                          | 1 x 1/4                | 96  | 85    | 80    | 90      |
| 5 1/2 x 3/8      | 63.75              | 16.499                          | 45.374                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 1/2      | 84.15              | 21.999                          | 60.498                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/4          | 47.06              | 13.091                          | 39.272                          | 1 x 1/4                | 96  | 96    | 94    | 96      |
| 6 x 5/16         | 58.18              | 16.363                          | 49.089                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 3/8          | 69.31              | 19.636                          | 58.907                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/2          | 91.57              | 26.181                          | 78.543                          | 1 x 1/4                | 96  | 96    | 96    | 96      |

\*Span limited to 1/100 of span = Deflection. \*\*Based on 8,727 bars/ft of grating width. Bearing bars 1 1/8" c.c.  
 Note: When serrated grating is specified, the depth of grating required for a specified load will be 1/4" greater than that shown in these tables. Weights shown are for 4" cross bar centers. Add 1.13 lbs./sq. ft. (1/8" Dia.) or 2.55 lbs./sq. ft. (1/4" x 1/4") for 2" cross bar centers.



## Load Tables

## 22 SPACE

| Bar Size<br>Inches | Maximum Safe Concentrated Load*, Lbs. - Clear Span |       |       |       |       |       |       |       |       |       |       |       |       |  |
|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                    | 1'-0"  | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 7'-0" | 8'-0" |  |
| 1 x 1/4            | 2427   | 1618  | 1213  | 971   | 809   | 693   |       |       |       |       |       |       |       |  |
| 1 x 3/8            | 3633   | 2422  | 1817  | 1453  | 1211  | 1038  |       |       |       |       |       |       |       |  |
| 1-1/4 x 1/4        | 3787   | 2524  | 1893  | 1515  | 1262  | 1082  | 947   |       |       |       |       |       |       |  |
| 1-1/4 x 3/8        | 5680   | 3787  | 2840  | 2272  | 1893  | 1623  | 1420  |       |       |       |       |       |       |  |
| 1-1/2 x 1/4        | 5453   | 3636  | 2727  | 2181  | 1818  | 1558  | 1363  | 1212  |       |       |       |       |       |  |
| 1-1/2 x 5/16       | 6820   | 4547  | 3410  | 2728  | 2273  | 1949  | 1705  | 1516  |       |       |       |       |       |  |
| 1-1/2 x 3/8        | 8180   | 5453  | 4090  | 3272  | 2727  | 2337  | 2045  | 1818  |       |       |       |       |       |  |
| 1-3/4 x 1/4        | 7427   | 4951  | 3713  | 2971  | 2476  | 2122  | 1857  | 1650  | 1485  |       |       |       |       |  |
| 1-3/4 x 3/8        | 11133  | 7422  | 5567  | 4453  | 3711  | 3181  | 2783  | 2474  | 2227  |       |       |       |       |  |
| 2 x 1/4            | 9700   | 6467  | 4850  | 3880  | 3233  | 2771  | 2425  | 2156  | 1940  |       |       |       |       |  |
| 2 x 5/16           | 12120  | 8080  | 6060  | 4848  | 4040  | 3463  | 3030  | 2693  | 2424  |       |       |       |       |  |
| 2 x 3/8            | 14547  | 9698  | 7273  | 5819  | 4849  | 4156  | 3637  | 3233  | 2909  |       |       |       |       |  |
| 2-1/4 x 1/4        | 12273  | 8182  | 6137  | 4909  | 4091  | 3507  | 3068  | 2727  | 2455  | 2232  |       |       |       |  |
| 2-1/4 x 3/8        | 18407  | 12271 | 9203  | 7363  | 6136  | 5259  | 4602  | 4090  | 3681  | 3347  |       |       |       |  |
| 2-1/2 x 1/4        | 15153  | 10102 | 7577  | 6061  | 5051  | 4330  | 3788  | 3367  | 3031  | 2755  | 2526  |       |       |  |
| 2-1/2 x 5/16       | 18940  | 12627 | 9470  | 7576  | 6313  | 5411  | 4735  | 4209  | 3788  | 3444  | 3157  |       |       |  |
| 2-1/2 x 3/8        | 22727  | 15151 | 11363 | 9091  | 7576  | 6493  | 5682  | 5050  | 4545  | 4132  | 3788  |       |       |  |
| 3 x 1/4            | 21820  | 14547 | 10910 | 8728  | 7273  | 6234  | 5455  | 4849  | 4364  | 3967  | 3637  |       |       |  |
| 3 x 5/16           | 27273  | 18182 | 13637 | 10909 | 9091  | 7792  | 6818  | 6061  | 5455  | 4959  | 4546  |       |       |  |
| 3 x 3/8            | 32727  | 21818 | 16363 | 13091 | 10909 | 9350  | 8182  | 7273  | 6545  | 5950  | 5454  |       |       |  |
| 3 x 1/2            | 43633  | 29089 | 21817 | 17453 | 14544 | 12467 | 11098 | 9696  | 8727  | 7933  | 7272  |       |       |  |
| 3-1/2 x 1/4        | 29693  | 19796 | 14847 | 11877 | 9898  | 8484  | 7423  | 6599  | 5939  | 5399  | 4949  | 4242  |       |  |
| 3-1/2 x 3/8        | 44547  | 29698 | 22273 | 17819 | 14849 | 12728 | 11137 | 9899  | 8909  | 8099  | 7424  | 6364  |       |  |
| 3-1/2 x 1/2        | 59393  | 39596 | 29697 | 23757 | 19798 | 16970 | 14848 | 13199 | 11879 | 10799 | 9899  | 8485  |       |  |
| 4 x 1/4            | 38787  | 25858 | 19393 | 15515 | 12929 | 11082 | 9697  | 8619  | 7757  | 7052  | 6464  | 5541  |       |  |
| 4 x 5/16           | 48487  | 32324 | 24243 | 19395 | 16162 | 13853 | 12122 | 10775 | 9697  | 8816  | 8081  | 6927  |       |  |
| 4 x 3/8            | 58180  | 38787 | 29090 | 23272 | 19393 | 16623 | 14545 | 12929 | 11636 | 10578 | 9697  | 8311  |       |  |
| 4 x 1/2            |  | 51716 | 38787 | 31029 | 25858 | 22164 | 19393 | 17239 | 15515 | 14104 | 12929 | 11082 |       |  |
| 4-1/2 x 1/4        |  | 32724 | 24543 | 19635 | 16362 | 14025 | 12272 | 10908 | 9817  | 8925  | 8181  | 7012  | 6136  |  |
| 4-1/2 x 3/8        |  | 49089 | 36817 | 29453 | 24544 | 21038 | 18404 | 16363 | 14727 | 13388 | 12272 | 10519 | 9204  |  |
| 4-1/2 x 1/2        |  |       | 49090 | 39272 | 32727 | 28051 | 24545 | 21818 | 19636 | 17851 | 16363 | 14026 | 12273 |  |
| 5 x 1/4            |  |       | 30303 | 24243 | 20202 | 17316 | 15152 | 13468 | 12121 | 11019 | 10101 | 8658  | 7576  |  |
| 5 x 5/16           |  |       | 37877 | 30301 | 25251 | 21644 | 18938 | 16834 | 15151 | 13773 | 12626 | 10822 | 9469  |  |
| 5 x 3/8            |  |       | 45453 | 36363 | 30302 | 25973 | 22727 | 20201 | 18181 | 16528 | 15151 | 12987 | 11363 |  |
| 5 x 1/2            |  |       |       | 48483 | 40402 | 34630 | 30302 | 26935 | 24241 | 22038 | 20201 | 17315 | 15151 |  |
| 5-1/2 x 1/4        |  |       |       | 29333 | 24444 | 20952 | 18333 | 16296 | 14667 | 13333 | 12222 | 10476 | 9167  |  |
| 5-1/2 x 3/8        |  |       |       | 43997 | 36664 | 31427 | 27498 | 24443 | 21999 | 19999 | 18332 | 15713 | 13749 |  |
| 5-1/2 x 1/2        |  |       |       | 58664 | 48887 | 41903 | 36665 | 32591 | 29332 | 26665 | 24443 | 20951 | 18333 |  |
| 6 x 1/4            |  |       |       | 34909 | 29091 | 24935 | 21818 | 19394 | 17455 | 15868 | 14546 | 12468 | 10909 |  |
| 6 x 5/16           |  |       |       | 43635 | 36362 | 31168 | 27272 | 24241 | 21817 | 19834 | 18181 | 15584 | 13636 |  |
| 6 x 3/8            |  |       |       | 52363 | 43636 | 37402 | 32727 | 29090 | 26181 | 23801 | 21818 | 18701 | 16363 |  |
| 6 x 1/2            |  |       |       |       | 58180 | 49869 | 43635 | 38787 | 34908 | 31735 | 29090 | 24934 | 21818 |  |

| % OPEN AREA *         |         |      |       |      |      |
|-----------------------|---------|------|-------|------|------|
| BEARING BAR THICKNESS |         |      |       |      |      |
| BB Size               | CB Ctrs | 1/4" | 5/16" | 3/8" | 1/2" |
| thru 2-1/2"           | 4" cc   | 75%  | 70%   | 66%  | -    |
|                       | 2" cc   | 68%  | 64%   | 60%  | -    |
| 3" - 6"               | 4" cc   | 77%  | 72%   | 68%  | 60%  |
|                       | 2" cc   | 72%  | 68%   | 64%  | 56%  |

Loads are theoretical, and are based on a unit stress of 20,000 psi.

\*Based on 8.727 bars / ft. of grating width. Bearing bars 1-3/8" c.c.

Note: When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### 22-W-4 / 22-W-2 Panel Width Chart (in.)

### Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2                  | 3                 | 4                 | 5                  | 6                 | 7                 | 8                  | 9                  | 10                  | 11                 | 12                 | 13                  | 14                 | 15                 | 16                  |
|-------------|--------------------|-------------------|-------------------|--------------------|-------------------|-------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|
| 1/4" Bars   | 1 <sup>5/8</sup>   | 3                 | 4 <sup>3/8</sup>  | 5 <sup>3/4</sup>   | 7 <sup>1/8</sup>  | 8 <sup>1/2</sup>  | 9 <sup>7/8</sup>   | 11 <sup>1/4</sup>  | 12 <sup>5/8</sup>   | 14                 | 15 <sup>3/8</sup>  | 16 <sup>3/4</sup>   | 18 <sup>1/8</sup>  | 19 <sup>1/2</sup>  | 20 <sup>7/8</sup>   |
| 5/16" Bars  | 1 <sup>11/16</sup> | 3 <sup>1/16</sup> | 4 <sup>7/16</sup> | 5 <sup>13/16</sup> | 7 <sup>3/16</sup> | 8 <sup>9/16</sup> | 9 <sup>15/16</sup> | 11 <sup>5/16</sup> | 12 <sup>11/16</sup> | 14 <sup>1/16</sup> | 15 <sup>7/16</sup> | 16 <sup>13/16</sup> | 18 <sup>3/16</sup> | 19 <sup>9/16</sup> | 20 <sup>15/16</sup> |
| 3/8" Bars   | 1 <sup>3/4</sup>   | 3 <sup>1/8</sup>  | 4 <sup>1/2</sup>  | 5 <sup>7/8</sup>   | 7 <sup>1/4</sup>  | 8 <sup>5/8</sup>  | 10                 | 11 <sup>3/8</sup>  | 12 <sup>3/4</sup>   | 14 <sup>1/8</sup>  | 15 <sup>1/2</sup>  | 16 <sup>7/8</sup>   | 18 <sup>1/4</sup>  | 19 <sup>5/8</sup>  | 21                  |
| 1/2" Bars   | 1 <sup>7/8</sup>   | 3 <sup>1/4</sup>  | 4 <sup>5/8</sup>  | 6                  | 7 <sup>3/8</sup>  | 8 <sup>3/4</sup>  | 10 <sup>1/8</sup>  | 11 <sup>1/2</sup>  | 12 <sup>7/8</sup>   | 14 <sup>1/4</sup>  | 15 <sup>5/8</sup>  | 17                  | 18 <sup>3/8</sup>  | 19 <sup>3/4</sup>  | 21 <sup>1/8</sup>   |

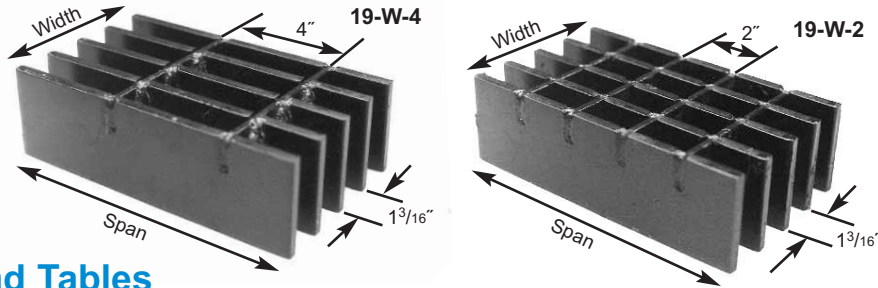
  

| No. of Bars | 17                 | 18                  | 19                 | 20                 | 21                  | 22                 | 23                 | 24                  | 25                 | 26                  | 27                 |  |  |  |
|-------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|--------------------|---------------------|--------------------|--|--|--|
| 1/4" Bars   | 22 <sup>1/4</sup>  | 23 <sup>5/8</sup>   | 25                 | 26 <sup>3/8</sup>  | 27 <sup>3/4</sup>   | 29 <sup>1/8</sup>  | 30 <sup>1/2</sup>  | 31 <sup>7/8</sup>   | 33 <sup>1/4</sup>  | 34 <sup>5/8</sup>   | 36                 |  |  |  |
| 5/16" Bars  | 22 <sup>5/16</sup> | 23 <sup>11/16</sup> | 25 <sup>1/16</sup> | 26 <sup>7/16</sup> | 27 <sup>13/16</sup> | 29 <sup>3/16</sup> | 30 <sup>9/16</sup> | 31 <sup>15/16</sup> | 33 <sup>5/16</sup> | 34 <sup>11/16</sup> | 36 <sup>1/16</sup> |  |  |  |
| 3/8" Bars   | 22 <sup>3/8</sup>  | 23 <sup>3/4</sup>   | 25 <sup>1/8</sup>  | 26 <sup>1/2</sup>  | 27 <sup>7/8</sup>   | 29 <sup>1/4</sup>  | 30 <sup>5/8</sup>  | 32                  | 33 <sup>3/8</sup>  | 34 <sup>3/4</sup>   | 36 <sup>1/8</sup>  |  |  |  |
| 1/2" Bars   | 22 <sup>1/2</sup>  | 23 <sup>7/8</sup>   | 25 <sup>1/4</sup>  | 26 <sup>5/8</sup>  | 28                  | 29 <sup>3/8</sup>  | 30 <sup>3/4</sup>  | 32 <sup>1/8</sup>   | 33 <sup>1/2</sup>  | 34 <sup>7/8</sup>   | 36 <sup>1/4</sup>  |  |  |  |



# HEAVY DUTY WELDED STEEL

## 19 SPACE



| BB Size | CB Ctrs | % Open Area*          |       |      |      |
|---------|---------|-----------------------|-------|------|------|
|         |         | Bearing Bar Thickness |       |      |      |
|         |         | 1/4"                  | 5/16" | 3/8" | 1/2" |
| Thru    | 4" cc   | 72%                   | 67%   | 62%  | —    |
| 2 1/2"  | 2" cc   | 65%                   | 61%   | 56%  | —    |
| 3" to   | 4" cc   | 74%                   | 69%   | 64%  | 54%  |
| 6"      | 2" cc   | 70%                   | 65%   | 60%  | 51%  |

### Load Tables

| Bar Size, Inches | Wt.** Lbs. Sq. Ft. | Section Properties              |                                 | Cross Bar Size, Inches | Maximum Safe Clear Span, Inches- Partially Distributed Load |       |       |         |
|------------------|--------------------|---------------------------------|---------------------------------|------------------------|---|-------|-------|---------|
|                  |                    | Sx**, in <sup>3</sup> Ft. Width | Ix**, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H15/H20 |
| 1 x 1/4          | 9.71               | 0.421                           | 0.211                           | 3/8 Dia                | 7   | 6     | 7     | 9       |
| 1 x 3/8          | 14.01              | 0.632                           | 0.316                           | 3/8 Dia                | 9   | 8     | 9     | 11      |
| 1 1/4 x 1/4      | 11.87              | 0.658                           | 0.411                           | 3/8 Dia                | 10  | 8     | 9     | 12      |
| 1 1/4 x 3/8      | 17.23              | 0.987                           | 0.617                           | 3/8 Dia                | 14  | 10    | 12    | 14      |
| 1 1/2 x 1/4      | 14.01              | 0.947                           | 0.711                           | 3/8 Dia                | 13  | 10    | 11    | 14      |
| 1 1/2 x 5/16     | 17.23              | 1.184                           | 0.888                           | 3/8 Dia                | 16  | 11    | 13    | 16      |
| 1 1/2 x 3/8      | 20.46              | 1.421                           | 1.066                           | 3/8 Dia                | 19  | 13    | 14    | 18      |
| 1 3/4 x 1/4      | 16.16              | 1.289                           | 1.128                           | 3/8 Dia                | 17  | 12    | 14    | 17      |
| 1 3/4 x 3/8      | 23.67              | 1.934                           | 1.692                           | 3/8 Dia                | 25  | 17    | 18    | 21      |
| 2 x 1/4          | 18.30              | 1.684                           | 1.684                           | 3/8 Dia                | 22  | 15    | 16    | 20      |
| 2 x 5/16         | 22.60              | 2.105                           | 2.105                           | 3/8 Dia                | 28  | 18    | 19    | 23      |
| 2 x 3/8          | 26.89              | 2.526                           | 2.526                           | 3/8 Dia                | 33  | 21    | 22    | 26      |
| 2 1/4 x 1/4      | 20.46              | 2.132                           | 2.398                           | 3/8 Dia                | 28  | 18    | 19    | 23      |
| 2 1/4 x 3/8      | 30.12              | 3.197                           | 3.597                           | 3/8 Dia                | 41  | 26    | 26    | 31      |
| 2 1/2 x 1/4      | 22.60              | 2.632                           | 3.289                           | 3/8 Dia                | 34  | 22    | 22    | 27      |
| 2 1/2 x 5/16     | 27.96              | 3.289                           | 4.112                           | 3/8 Dia                | 42  | 27    | 27    | 31      |
| 2 1/2 x 3/8      | 33.34              | 3.947                           | 4.934                           | 3/8 Dia                | 50  | 31    | 31    | 36      |
| 3 x 1/4          | 28.32              | 3.789                           | 5.684                           | 1 x 1/4                | 49  | 30    | 30    | 35      |
| 3 x 5/16         | 34.76              | 4.737                           | 7.105                           | 1 x 1/4                | 60  | 37    | 36    | 42      |
| 3 x 3/8          | 41.20              | 5.684                           | 8.526                           | 1 x 1/4                | 67*   | 44    | 43    | 49      |
| 3 x 1/2          | 54.09              | 7.579                           | 11.368                          | 1 x 1/4                | 78*   | 57    | 55    | 61*     |
| 3 1/2 x 1/4      | 32.61              | 5.158                           | 9.026                           | 1 x 1/4                | 66  | 40    | 39    | 45      |
| 3 1/2 x 3/8      | 47.65              | 7.737                           | 13.539                          | 1 x 1/4                | 85*   | 58    | 56    | 64      |
| 3 1/2 x 1/2      | 62.67              | 10.316                          | 18.052                          | 1 x 1/4                | 96  | 75*   | 72*   | 76*     |
| 4 x 1/4          | 36.91              | 6.737                           | 13.473                          | 1 x 1/4                | 85*   | 51    | 50    | 57      |
| 4 x 5/16         | 45.50              | 8.421                           | 16.842                          | 1 x 1/4                | 95*   | 63    | 61    | 70      |
| 4 x 3/8          | 54.09              | 10.105                          | 20.210                          | 1 x 1/4                | 96  | 75    | 72    | 80*     |
| 4 x 1/2          | 71.26              | 13.473                          | 26.947                          | 1 x 1/4                | 96  | 91*   | 88*   | 92*     |
| 4 1/2 x 1/4      | 41.20              | 8.526                           | 19.184                          | 1 x 1/4                | 96  | 64    | 61    | 70      |
| 4 1/2 x 3/8      | 60.53              | 12.789                          | 28.776                          | 1 x 1/4                | 96  | 94*   | 90    | 95*     |
| 4 1/2 x 1/2      | 79.85              | 17.052                          | 38.367                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 x 1/4          | 45.50              | 10.526                          | 26.315                          | 1 x 1/4                | 96  | 78    | 75    | 85      |
| 5 x 5/16         | 56.24              | 13.158                          | 32.894                          | 1 x 1/4                | 96  | 96    | 92    | 96      |
| 5 x 3/8          | 66.97              | 15.789                          | 39.473                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 x 1/2          | 88.44              | 21.052                          | 52.630                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 1/4      | 49.79              | 12.737                          | 35.025                          | 1 x 1/4                | 96  | 94    | 89    | 96      |
| 5 1/2 x 3/8      | 73.42              | 19.105                          | 52.538                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 1/2      | 97.03              | 25.473                          | 70.051                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/4          | 54.09              | 15.158                          | 45.473                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 5/16         | 66.97              | 18.947                          | 56.841                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 3/8          | 79.85              | 22.736                          | 68.209                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/2          | 105.62             | 30.315                          | 90.945                          | 1 x 1/4                | 96  | 96    | 96    | 96      |

\* Span limited to 1/400 of span = Deflection. \*\*Based on 10,105 bars/ft of grating width. Bearing bars 1 1/16" c.c.  
 Note: When serrated grating is specified, the depth of grating required for a specified load will be 1/4" greater than that shown in these tables.  
 Weights shown are for 4" cross bar centers. Add 1.13 lbs./sq. ft. (3/8" Dia.) or 2.55 lbs./sq. ft. (1" x 1/4") for 2" cross bar centers.





### Load Tables

| Bar Size<br>Inches | Maximum Safe Concentrated Load*, Lbs. - Clear Span |       |       |       |       |       |       |       |       |       |       |       |       |  |
|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|                    | 1'-0"  | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 7'-0" | 8'-0" |  |
| 1 x 1/4            | 2807   | 1871  | 1403  | 1123  | 936   | 802   |       |       |       |       |       |       |       |  |
| 1 x 3/8            | 4213   | 2809  | 2107  | 1685  | 1404  | 1204  |       |       |       |       |       |       |       |  |
| 1-1/4 x 1/4        | 4387   | 2924  | 2193  | 1755  | 1462  | 1253  | 1097  |       |       |       |       |       |       |  |
| 1-1/4 x 3/8        | 6580   | 4387  | 3290  | 2632  | 2193  | 1880  | 1645  |       |       |       |       |       |       |  |
| 1-1/2 x 1/4        | 6313   | 4209  | 3157  | 2525  | 2104  | 1804  | 1578  | 1403  |       |       |       |       |       |  |
| 1-1/2 x 5/16       | 7893   | 5262  | 3947  | 3157  | 2631  | 2255  | 1973  | 1754  |       |       |       |       |       |  |
| 1-1/2 x 3/8        | 9473   | 6316  | 4737  | 3789  | 3158  | 2707  | 2368  | 2105  |       |       |       |       |       |  |
| 1-3/4 x 1/4        | 8593   | 5729  | 4297  | 3437  | 2864  | 2455  | 2148  | 1910  | 1719  |       |       |       |       |  |
| 1-3/4 x 3/8        | 12893  | 8596  | 6447  | 5157  | 4298  | 3684  | 3223  | 2865  | 2579  |       |       |       |       |  |
| 2 x 1/4            | 11227  | 7484  | 5613  | 4491  | 3742  | 3208  | 2807  | 2495  | 2245  |       |       |       |       |  |
| 2 x 5/16           | 14033  | 9356  | 7017  | 5613  | 4678  | 4010  | 3508  | 3119  | 2807  |       |       |       |       |  |
| 2 x 3/8            | 16840  | 11227 | 8420  | 6736  | 5613  | 4811  | 4210  | 3742  | 3368  |       |       |       |       |  |
| 2-1/4 x 1/4        | 14213  | 9476  | 7107  | 5685  | 4738  | 4061  | 3553  | 3159  | 2843  | 2584  |       |       |       |  |
| 2-1/4 x 3/8        | 21313  | 14209 | 10657 | 8525  | 7104  | 6090  | 5328  | 4736  | 4263  | 3875  |       |       |       |  |
| 2-1/2 x 1/4        | 17547  | 11698 | 8773  | 7019  | 5849  | 5013  | 4387  | 3899  | 3509  | 3190  | 2924  |       |       |  |
| 2-1/2 x 5/16       | 21927  | 14618 | 10963 | 8771  | 7309  | 6265  | 5482  | 4873  | 4385  | 3987  | 3654  |       |       |  |
| 2-1/2 x 3/8        | 26313  | 17542 | 13157 | 10525 | 8771  | 7518  | 6578  | 5847  | 5263  | 4784  | 4386  |       |       |  |
| 3 x 1/4            | 25260  | 16840 | 12630 | 10104 | 8420  | 7217  | 6315  | 5613  | 5052  | 4593  | 4210  |       |       |  |
| 3 x 5/16           | 31580  | 21053 | 15790 | 12632 | 10527 | 9023  | 7895  | 7018  | 6316  | 5742  | 5263  |       |       |  |
| 3 x 3/8            | 37893  | 25262 | 18947 | 15157 | 12631 | 10827 | 9473  | 8421  | 7579  | 6890  | 6316  |       |       |  |
| 3 x 1/2            | 50527  | 33684 | 25263 | 20211 | 16842 | 14436 | 12632 | 11228 | 10105 | 9187  | 8421  |       |       |  |
| 3-1/2 x 1/4        | 34387  | 22924 | 17193 | 13755 | 11462 | 9825  | 8597  | 7641  | 6877  | 6252  | 5731  | 4912  |       |  |
| 3-1/2 x 3/8        | 51580  | 34387 | 25790 | 20632 | 17193 | 14737 | 12895 | 11462 | 10316 | 9378  | 8597  | 7369  |       |  |
| 3-1/2 x 1/2        |  | 45849 | 34387 | 27509 | 22924 | 19650 | 17193 | 15283 | 13755 | 12504 | 11462 | 9825  |       |  |
| 4 x 1/4            |  | 29942 | 22457 | 17965 | 14971 | 12832 | 11228 | 9981  | 8983  | 8166  | 7486  | 6416  |       |  |
| 4 x 5/16           |  | 37427 | 28070 | 22456 | 18713 | 16040 | 14035 | 12476 | 11228 | 10207 | 9357  | 8020  |       |  |
| 4 x 3/8            |  | 44911 | 33683 | 26947 | 22456 | 19248 | 16842 | 14970 | 13473 | 12248 | 11228 | 9624  |       |  |
| 4 x 1/2            |  | 59880 | 44910 | 35928 | 29940 | 25663 | 22455 | 19960 | 17964 | 16331 | 14970 | 12831 |       |  |
| 4-1/2 x 1/4        |  | 37893 | 28420 | 22736 | 18947 | 16240 | 14210 | 12631 | 11368 | 10335 | 9473  | 8120  | 7105  |  |
| 4-1/2 x 3/8        |  | 56840 | 42630 | 34104 | 28420 | 24360 | 21315 | 18947 | 17052 | 15502 | 14210 | 12180 | 10658 |  |
| 4-1/2 x 1/2        |  |       | 56840 | 45472 | 37893 | 32480 | 28420 | 25262 | 22736 | 20669 | 18947 | 16240 | 14210 |  |
| 5 x 1/4            |  |       | 35087 | 28069 | 23391 | 20050 | 17543 | 15594 | 14035 | 12759 | 11696 | 10025 | 8772  |  |
| 5 x 5/16           |  |       | 43860 | 35088 | 29240 | 25063 | 21930 | 19493 | 17544 | 15949 | 14620 | 12531 | 10965 |  |
| 5 x 3/8            |  |       | 52630 | 42104 | 35087 | 30074 | 26315 | 23391 | 21052 | 19138 | 17543 | 15037 | 13158 |  |
| 5 x 1/2            |  |       |       | 56139 | 46782 | 40099 | 35087 | 31188 | 28069 | 25518 | 23391 | 20050 | 17543 |  |
| 5-1/2 x 1/4        |  |       |       | 33965 | 28304 | 24261 | 21228 | 18870 | 16983 | 15439 | 14152 | 12130 | 10614 |  |
| 5-1/2 x 3/8        |  |       |       | 50947 | 42456 | 36390 | 31842 | 28304 | 25473 | 23158 | 21228 | 18195 | 15921 |  |
| 5-1/2 x 1/2        |  |       |       |       | 56607 | 48520 | 42455 | 37738 | 33964 | 30876 | 28303 | 24260 | 21228 |  |
| 6 x 1/4            |  |       |       |       | 33684 | 28872 | 25263 | 22456 | 20211 | 18373 | 16842 | 14436 | 12632 |  |
| 6 x 5/16           |  |       |       |       | 42104 | 36090 | 31578 | 28070 | 25263 | 22966 | 21052 | 18045 | 15789 |  |
| 6 x 3/8            |  |       |       |       | 50524 | 43307 | 37893 | 33683 | 30315 | 27559 | 25262 | 21653 | 18947 |  |
| 6 x 1/2            |  |       |       |       |       | 57743 | 50525 | 44911 | 40420 | 36745 | 33683 | 28871 | 25263 |  |

| % OPEN AREA *         |         |      |       |      |      |
|-----------------------|---------|------|-------|------|------|
| BEARING BAR THICKNESS |         |      |       |      |      |
| BB Size               | CB Ctrs | 1/4" | 5/16" | 3/8" | 1/2" |
| thru 2-1/2"           | 4" cc   | 72%  | 67%   | 62%  | -    |
|                       | 2" cc   | 65%  | 61%   | 56%  | -    |
| 3" - 6"               | 4" cc   | 74%  | 69%   | 64%  | 54%  |
|                       | 2" cc   | 70%  | 65%   | 60%  | 51%  |

Loads are theoretical, and are based on a unit stress of 20,000 psi.

\*Based on 10.105 bars / ft. of grating width. Bearing bars 1-3/16" c.c.

Note: When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### 19-W-4 / 19-W-2 Panel Width Chart (in.)

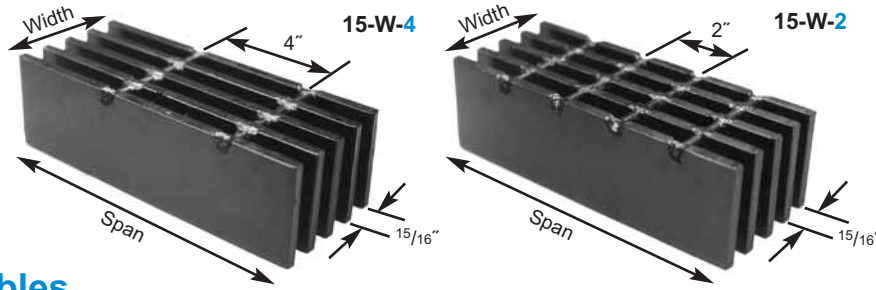
Dimensions Are Out-to-Out of Bearing Bars

|             |                                 |                                  |                                  |                                  |                                 |                                 |                                 |                                  |                                  |                                  |                                 |                                 |                                  |                                  |                                  |
|-------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|
| No. of Bars | 2                               | 3                                | 4                                | 5                                | 6                               | 7                               | 8                               | 9                                | 10                               | 11                               | 12                              | 13                              | 14                               | 15                               | 16                               |
| 1/4" Bars   | 1 <sup>7</sup> / <sub>16</sub>  | 2 <sup>5</sup> / <sub>8</sub>    | 3 <sup>13</sup> / <sub>16</sub>  | 5                                | 6 <sup>3</sup> / <sub>16</sub>  | 7 <sup>3</sup> / <sub>8</sub>   | 8 <sup>9</sup> / <sub>16</sub>  | 9 <sup>3</sup> / <sub>4</sub>    | 10 <sup>15</sup> / <sub>16</sub> | 12 <sup>1</sup> / <sub>8</sub>   | 13 <sup>5</sup> / <sub>16</sub> | 14 <sup>1</sup> / <sub>2</sub>  | 15 <sup>11</sup> / <sub>16</sub> | 16 <sup>7</sup> / <sub>8</sub>   | 18 <sup>1</sup> / <sub>16</sub>  |
| 5/16" Bars  | 1 <sup>1</sup> / <sub>2</sub>   | 2 <sup>11</sup> / <sub>16</sub>  | 3 <sup>7</sup> / <sub>8</sub>    | 5 <sup>1</sup> / <sub>16</sub>   | 6 <sup>1</sup> / <sub>4</sub>   | 7 <sup>7</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>8</sub>   | 9 <sup>13</sup> / <sub>16</sub>  | 11                               | 12 <sup>3</sup> / <sub>16</sub>  | 13 <sup>3</sup> / <sub>8</sub>  | 14 <sup>9</sup> / <sub>16</sub> | 15 <sup>3</sup> / <sub>4</sub>   | 16 <sup>15</sup> / <sub>16</sub> | 18 <sup>1</sup> / <sub>8</sub>   |
| 3/8" Bars   | 1 <sup>9</sup> / <sub>16</sub>  | 2 <sup>3</sup> / <sub>4</sub>    | 3 <sup>15</sup> / <sub>16</sub>  | 5 <sup>1</sup> / <sub>8</sub>    | 6 <sup>5</sup> / <sub>16</sub>  | 7 <sup>1</sup> / <sub>2</sub>   | 8 <sup>11</sup> / <sub>16</sub> | 9 <sup>7</sup> / <sub>8</sub>    | 11 <sup>1</sup> / <sub>16</sub>  | 12 <sup>1</sup> / <sub>4</sub>   | 13 <sup>7</sup> / <sub>16</sub> | 14 <sup>5</sup> / <sub>8</sub>  | 15 <sup>13</sup> / <sub>16</sub> | 17                               | 18 <sup>3</sup> / <sub>16</sub>  |
| 1/2" Bars   | 1 <sup>11</sup> / <sub>16</sub> | 2 <sup>7</sup> / <sub>8</sub>    | 4 <sup>1</sup> / <sub>16</sub>   | 5 <sup>1</sup> / <sub>4</sub>    | 6 <sup>7</sup> / <sub>16</sub>  | 7 <sup>5</sup> / <sub>8</sub>   | 8 <sup>13</sup> / <sub>16</sub> | 10                               | 11 <sup>3</sup> / <sub>16</sub>  | 12 <sup>3</sup> / <sub>8</sub>   | 13 <sup>9</sup> / <sub>16</sub> | 14 <sup>3</sup> / <sub>4</sub>  | 15 <sup>15</sup> / <sub>16</sub> | 17 <sup>1</sup> / <sub>8</sub>   | 18 <sup>5</sup> / <sub>16</sub>  |
| No. of Bars | 17                              | 18                               | 19                               | 20                               | 21                              | 22                              | 23                              | 24                               | 25                               | 26                               | 27                              | 28                              | 29                               | 30                               | 31                               |
| 1/4" Bars   | 19 <sup>1</sup> / <sub>4</sub>  | 20 <sup>7</sup> / <sub>16</sub>  | 21 <sup>5</sup> / <sub>8</sub>   | 22 <sup>13</sup> / <sub>16</sub> | 24                              | 25 <sup>3</sup> / <sub>16</sub> | 26 <sup>3</sup> / <sub>8</sub>  | 27 <sup>9</sup> / <sub>16</sub>  | 28 <sup>3</sup> / <sub>4</sub>   | 29 <sup>15</sup> / <sub>16</sub> | 31 <sup>1</sup> / <sub>8</sub>  | 32 <sup>5</sup> / <sub>16</sub> | 33 <sup>1</sup> / <sub>2</sub>   | 34 <sup>11</sup> / <sub>16</sub> | 35 <sup>7</sup> / <sub>8</sub>   |
| 5/16" Bars  | 19 <sup>5</sup> / <sub>16</sub> | 20 <sup>1</sup> / <sub>2</sub>   | 21 <sup>11</sup> / <sub>16</sub> | 22 <sup>7</sup> / <sub>8</sub>   | 24 <sup>1</sup> / <sub>16</sub> | 25 <sup>1</sup> / <sub>4</sub>  | 26 <sup>7</sup> / <sub>16</sub> | 27 <sup>5</sup> / <sub>8</sub>   | 28 <sup>13</sup> / <sub>16</sub> | 30                               | 31 <sup>3</sup> / <sub>16</sub> | 32 <sup>3</sup> / <sub>8</sub>  | 33 <sup>9</sup> / <sub>16</sub>  | 34 <sup>3</sup> / <sub>4</sub>   | 35 <sup>15</sup> / <sub>16</sub> |
| 3/8" Bars   | 19 <sup>3</sup> / <sub>8</sub>  | 20 <sup>9</sup> / <sub>16</sub>  | 21 <sup>3</sup> / <sub>4</sub>   | 22 <sup>15</sup> / <sub>16</sub> | 24 <sup>1</sup> / <sub>8</sub>  | 25 <sup>5</sup> / <sub>16</sub> | 26 <sup>1</sup> / <sub>2</sub>  | 27 <sup>11</sup> / <sub>16</sub> | 28 <sup>7</sup> / <sub>8</sub>   | 30 <sup>1</sup> / <sub>16</sub>  | 31 <sup>1</sup> / <sub>4</sub>  | 32 <sup>7</sup> / <sub>16</sub> | 33 <sup>5</sup> / <sub>8</sub>   | 34 <sup>13</sup> / <sub>16</sub> | 36                               |
| 1/2" Bars   | 19 <sup>1</sup> / <sub>2</sub>  | 20 <sup>11</sup> / <sub>16</sub> | 21 <sup>7</sup> / <sub>8</sub>   | 23 <sup>1</sup> / <sub>16</sub>  | 24 <sup>1</sup> / <sub>4</sub>  | 25 <sup>7</sup> / <sub>16</sub> | 26 <sup>5</sup> / <sub>8</sub>  | 27 <sup>13</sup> / <sub>16</sub> | 29                               | 30 <sup>3</sup> / <sub>16</sub>  | 31 <sup>3</sup> / <sub>8</sub>  | 32 <sup>9</sup> / <sub>16</sub> | 33 <sup>3</sup> / <sub>4</sub>   | 34 <sup>15</sup> / <sub>16</sub> | 36 <sup>1</sup> / <sub>8</sub>   |



# HEAVY DUTY WELDED STEEL

## 15 SPACE



| BB Size     | CB Ctrs | % Open Area*                  |       |      |
|-------------|---------|-------------------------------|-------|------|
|             |         | Bearing Bar Thickness<br>1/4" | 5/16" | 3/8" |
| Thru 2 1/2" | 4" cc   | 66%                           | 60%   | 54%  |
|             | 2" cc   | 60%                           | 55%   | 49%  |
| 3" to 6"    | 4" cc   | 69%                           | 62%   | 56%  |
|             | 2" cc   | 64%                           | 58%   | 53%  |

## Load Tables

| Bar Size, Inches | Wt.** Lbs. Sq. Ft. | Section Properties              |                                 | Cross Bar Size, Inches | Maximum Safe Clear Span, Inches- Partially Distributed Load |       |       |         |
|------------------|--------------------|---------------------------------|---------------------------------|------------------------|---|-------|-------|---------|
|                  |                    | Sx**, in <sup>3</sup> Ft. Width | Ix**, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H15/H20 |
| 1 x 1/4          | 12.01              | 0.533                           | 0.267                           | 3/8 Dia                | 8   | 7     | 8     | 10      |
| 1 x 3/8          | 17.45              | 0.800                           | 0.400                           | 3/8 Dia                | 11  | 8     | 10    | 13      |
| 1 1/4 x 1/4      | 14.73              | 0.833                           | 0.521                           | 3/8 Dia                | 11  | 9     | 10    | 13      |
| 1 1/4 x 3/8      | 21.53              | 1.250                           | 0.781                           | 3/8 Dia                | 16  | 11    | 13    | 16      |
| 1 1/2 x 1/4      | 17.45              | 1.200                           | 0.900                           | 3/8 Dia                | 15  | 11    | 13    | 16      |
| 1 1/2 x 5/16     | 21.53              | 1.500                           | 1.125                           | 3/8 Dia                | 19  | 13    | 15    | 18      |
| 1 1/2 x 3/8      | 25.61              | 1.800                           | 1.350                           | 3/8 Dia                | 22  | 15    | 16    | 20      |
| 1 3/4 x 1/4      | 20.17              | 1.633                           | 1.429                           | 3/8 Dia                | 20  | 14    | 15    | 19      |
| 1 3/4 x 3/8      | 29.68              | 2.450                           | 2.144                           | 3/8 Dia                | 30  | 20    | 21    | 25      |
| 2 x 1/4          | 22.89              | 2.133                           | 2.133                           | 3/8 Dia                | 26  | 17    | 19    | 22      |
| 2 x 5/16         | 28.33              | 2.667                           | 2.667                           | 3/8 Dia                | 32  | 21    | 22    | 26      |
| 2 x 3/8          | 33.77              | 3.200                           | 3.200                           | 3/8 Dia                | 38  | 25    | 25    | 30      |
| 2 1/4 x 1/4      | 25.61              | 2.700                           | 3.038                           | 3/8 Dia                | 32  | 21    | 22    | 26      |
| 2 1/4 x 3/8      | 37.85              | 4.050                           | 4.556                           | 3/8 Dia                | 47*   | 30    | 31    | 36      |
| 2 1/2 x 1/4      | 28.33              | 3.333                           | 4.167                           | 3/8 Dia                | 40  | 26    | 26    | 31      |
| 2 1/2 x 5/16     | 35.12              | 4.167                           | 5.208                           | 3/8 Dia                | 49  | 31    | 32    | 37      |
| 2 1/2 x 3/8      | 41.93              | 5.000                           | 6.250                           | 3/8 Dia                | 55*   | 37    | 37    | 43      |
| 3 x 1/4          | 35.19              | 4.800                           | 7.200                           | 1 x 1/4                | 56  | 36    | 36    | 42      |
| 3 x 5/16         | 43.36              | 6.000                           | 9.000                           | 1 x 1/4                | 66*   | 44    | 43    | 50      |
| 3 x 3/8          | 51.51              | 7.200                           | 10.800                          | 1 x 1/4                | 73*   | 52    | 51    | 59*     |
| 3 1/2 x 1/4      | 40.63              | 6.533                           | 11.433                          | 1 x 1/4                | 75*   | 47    | 47    | 54      |
| 3 1/2 x 3/8      | 59.68              | 9.800                           | 17.150                          | 1 x 1/4                | 92*   | 69    | 67    | 73*     |
| 4 x 1/4          | 46.07              | 8.533                           | 17.067                          | 1 x 1/4                | 92*   | 61    | 59    | 69      |
| 4 x 5/16         | 56.95              | 10.667                          | 21.333                          | 1 x 1/4                | 96  | 75    | 73    | 81*     |
| 4 x 3/8          | 67.83              | 12.800                          | 25.600                          | 1 x 1/4                | 96  | 87*   | 84*   | 89*     |
| 4 1/2 x 1/4      | 51.51              | 10.800                          | 24.300                          | 1 x 1/4                | 96  | 76    | 74    | 85      |
| 4 1/2 x 3/8      | 76.00              | 16.200                          | 36.450                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 x 1/4          | 56.95              | 13.333                          | 33.333                          | 1 x 1/4                | 96  | 93    | 90    | 96      |
| 5 x 5/16         | 70.56              | 16.667                          | 41.667                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 x 3/8          | 84.15              | 20.000                          | 50.000                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 1/4      | 62.39              | 16.133                          | 44.367                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 5 1/2 x 3/8      | 92.32              | 24.200                          | 66.550                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 1/4          | 67.83              | 19.200                          | 57.600                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 5/16         | 84.15              | 24.000                          | 72.000                          | 1 x 1/4                | 96  | 96    | 96    | 96      |
| 6 x 3/8          | 100.47             | 28.800                          | 86.400                          | 1 x 1/4                | 96  | 96    | 96    | 96      |

\*Span limited to 1/100 of span = Deflection. \*\*Based on 12.8 bars/ft of grating width. Bearing bars 15/16" c.c.  
 Note: When serrated grating is specified, the depth of grating required for a specified load will be 1/4" greater than that shown in these tables. Weights shown are for 4" cross bar centers. Add 1.13 lbs./sq. ft. (3/8" Dia.) or 2.55 lbs./sq. ft. (1" x 1/4") for 2" cross bar centers.



### Load Tables

| Bar Size<br>Inches | Maximum Safe Concentrated Load*, Lbs. - Clear Span |       |       |       |       |       |       |       |       |       |       |       |       |
|--------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                    | 1'-0"  | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 7'-0" | 8'-0" |
| 1 x 1/4            | 3553   | 2369  | 1777  | 1421  | 1184  | 1015  |       |       |       |       |       |       |       |
| 1 x 3/8            | 5333   | 3556  | 2667  | 2133  | 1778  | 1524  |       |       |       |       |       |       |       |
| 1-1/4 x 1/4        | 5553   | 3702  | 2777  | 2221  | 1851  | 1587  | 1388  |       |       |       |       |       |       |
| 1-1/4 x 3/8        | 8333   | 5556  | 4167  | 3333  | 2778  | 2381  | 2083  |       |       |       |       |       |       |
| 1-1/2 x 1/4        | 8000   | 5333  | 4000  | 3200  | 2667  | 2286  | 2000  | 1778  |       |       |       |       |       |
| 1-1/2 x 5/16       | 10000  | 6667  | 5000  | 4000  | 3333  | 2857  | 2500  | 2222  |       |       |       |       |       |
| 1-1/2 x 3/8        | 12000  | 8000  | 6000  | 4800  | 4000  | 3429  | 3000  | 2667  |       |       |       |       |       |
| 1-3/4 x 1/4        | 10887  | 7258  | 5443  | 4355  | 3629  | 3110  | 2722  | 2419  | 2177  |       |       |       |       |
| 1-3/4 x 3/8        | 16333  | 10889 | 8167  | 6533  | 5444  | 4667  | 4083  | 3630  | 3267  |       |       |       |       |
| 2 x 1/4            | 14220  | 9480  | 7110  | 5688  | 4740  | 4063  | 3555  | 3160  | 2844  |       |       |       |       |
| 2 x 5/16           | 17780  | 11853 | 8890  | 7112  | 5927  | 5080  | 4445  | 3951  | 3556  |       |       |       |       |
| 2 x 3/8            | 21333  | 14222 | 10667 | 8533  | 7111  | 6095  | 5333  | 4741  | 4267  |       |       |       |       |
| 2-1/4 x 1/4        | 18000  | 12000 | 9000  | 7200  | 6000  | 5143  | 4500  | 4000  | 3600  | 3273  |       |       |       |
| 2-1/4 x 3/8        | 27000  | 18000 | 13500 | 10800 | 9000  | 7714  | 6750  | 6000  | 5400  | 4909  |       |       |       |
| 2-1/2 x 1/4        | 22220  | 14813 | 11110 | 8888  | 7407  | 6349  | 5555  | 4938  | 4444  | 4040  | 3703  |       |       |
| 2-1/2 x 5/16       | 27780  | 18520 | 13890 | 11112 | 9260  | 7937  | 6945  | 6173  | 5556  | 5051  | 4630  |       |       |
| 2-1/2 x 3/8        | 33333  | 22222 | 16667 | 13333 | 11111 | 9524  | 8333  | 7407  | 6667  | 6061  | 5556  |       |       |
| 3 x 1/4            | 32000  | 21333 | 16000 | 12800 | 10667 | 9143  | 8000  | 7111  | 6400  | 5818  | 5333  |       |       |
| 3 x 5/16           | 40000  | 26667 | 20000 | 16000 | 13333 | 11429 | 10000 | 8889  | 8000  | 7273  | 6667  |       |       |
| 3 x 3/8            | 48000  | 32000 | 24000 | 19200 | 16000 | 13714 | 12000 | 10667 | 9600  | 8727  | 8000  |       |       |
| 3-1/2 x 1/4        | 43553  | 29036 | 21777 | 17421 | 14518 | 12444 | 10888 | 9679  | 8711  | 7919  | 7259  | 6222  |       |
| 3-1/2 x 3/8        | 65333  | 43556 | 32667 | 26133 | 21778 | 18667 | 16333 | 14519 | 13067 | 11879 | 10889 | 9333  |       |
| 4 x 1/4            | 56887  | 37924 | 28443 | 22755 | 18962 | 16253 | 14222 | 12641 | 11377 | 10343 | 9481  | 8127  |       |
| 4 x 5/16           |  | 47409 | 35557 | 28445 | 23704 | 20318 | 17778 | 15803 | 14223 | 12930 | 11852 | 10159 |       |
| 4 x 3/8            |  | 56889 | 42667 | 34133 | 28444 | 24381 | 21333 | 18963 | 17067 | 15515 | 14222 | 12190 |       |
| 4-1/2 x 1/4        |  | 48000 | 36000 | 28800 | 24000 | 20571 | 18000 | 16000 | 14400 | 13091 | 12000 | 10286 | 9000  |
| 4-1/2 x 3/8        |  |       | 54000 | 43200 | 36000 | 30857 | 27000 | 24000 | 21600 | 19636 | 18000 | 15429 | 13500 |
| 5 x 1/4            |  |       | 44443 | 35555 | 29629 | 25396 | 22222 | 19753 | 17777 | 16161 | 14814 | 12698 | 11111 |
| 5 x 5/16           |  |       | 55557 | 44445 | 37038 | 31747 | 27778 | 24692 | 22223 | 20202 | 18519 | 15873 | 13889 |
| 5 x 3/8            |  |       | 66667 | 53333 | 44444 | 38095 | 33333 | 29630 | 26667 | 24242 | 22222 | 19048 | 16667 |
| 5-1/2 x 1/4        |  |       | 53777 | 43021 | 35851 | 30730 | 26888 | 23901 | 21511 | 19555 | 17926 | 15365 | 13444 |
| 5-1/2 x 3/8        |  |       |       |       | 53778 | 46095 | 40333 | 35852 | 32267 | 29333 | 26889 | 23048 | 20167 |
| 6 x 1/4            |  |       |       |       | 42667 | 36571 | 32000 | 28444 | 25600 | 23273 | 21333 | 18286 | 16000 |
| 6 x 5/16           |  |       |       |       | 53333 | 45714 | 40000 | 35556 | 32000 | 29091 | 26667 | 22857 | 20000 |
| 6 x 3/8            |  |       |       |       |       | 54857 | 48000 | 42667 | 38400 | 34909 | 32000 | 27429 | 24000 |

| % OPEN AREA * |         |                       |       |      |
|---------------|---------|-----------------------|-------|------|
| BB Size       | CB Ctrs | BEARING BAR THICKNESS |       |      |
|               |         | 1/4"                  | 5/16" | 3/8" |
| thru 2-1/2"   | 4" cc   | 66%                   | 60%   | 54%  |
|               | 2" cc   | 60%                   | 55%   | 49%  |
| 3" - 6"       | 4" cc   | 69%                   | 62%   | 56%  |
|               | 2" cc   | 64%                   | 58%   | 53%  |

Loads are theoretical and based on a unit stress of 20,000 psi.

\*Based on 12.8 bars / ft. of grating width. Bearing bars 15/16" c.c.

Note: When serrated grating is specified, the depth of grating required for a specific load will be 1/4" greater than that shown in these tables.

### 15-W-4 / 15-W-2 Panel Width Chart (in.)

Dimensions Are Out-to-Out of Bearing Bars

|             |                                 |                                 |                                 |                                 |                                 |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                 |                                 |                                 |
|-------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|
| No. of Bars | 2                               | 3                               | 4                               | 5                               | 6                               | 7                                | 8                                | 9                                | 10                               | 11                               | 12                               | 13                               | 14                              | 15                              | 16                              |
| 1/4" Bars   | 1 <sup>3</sup> / <sub>16</sub>  | 2 <sup>1</sup> / <sub>8</sub>   | 3 <sup>1</sup> / <sub>16</sub>  | 4                               | 4 <sup>15</sup> / <sub>16</sub> | 5 <sup>7</sup> / <sub>8</sub>    | 6 <sup>13</sup> / <sub>16</sub>  | 7 <sup>3</sup> / <sub>4</sub>    | 8 <sup>11</sup> / <sub>16</sub>  | 9 <sup>5</sup> / <sub>8</sub>    | 10 <sup>9</sup> / <sub>16</sub>  | 11 <sup>1</sup> / <sub>2</sub>   | 12 <sup>7</sup> / <sub>16</sub> | 13 <sup>3</sup> / <sub>8</sub>  | 14 <sup>5</sup> / <sub>16</sub> |
| 5/16" Bars  | 1 <sup>1</sup> / <sub>4</sub>   | 2 <sup>3</sup> / <sub>16</sub>  | 3 <sup>1</sup> / <sub>8</sub>   | 4 <sup>1</sup> / <sub>16</sub>  | 5                               | 5 <sup>15</sup> / <sub>16</sub>  | 6 <sup>7</sup> / <sub>8</sub>    | 7 <sup>13</sup> / <sub>16</sub>  | 8 <sup>3</sup> / <sub>4</sub>    | 9 <sup>11</sup> / <sub>16</sub>  | 10 <sup>5</sup> / <sub>8</sub>   | 11 <sup>9</sup> / <sub>16</sub>  | 12 <sup>1</sup> / <sub>2</sub>  | 13 <sup>7</sup> / <sub>16</sub> | 14 <sup>3</sup> / <sub>8</sub>  |
| 3/8" Bars   | 1 <sup>5</sup> / <sub>16</sub>  | 2 <sup>1</sup> / <sub>4</sub>   | 3 <sup>3</sup> / <sub>16</sub>  | 4 <sup>1</sup> / <sub>8</sub>   | 5 <sup>1</sup> / <sub>16</sub>  | 6                                | 6 <sup>15</sup> / <sub>16</sub>  | 7 <sup>7</sup> / <sub>8</sub>    | 8 <sup>13</sup> / <sub>16</sub>  | 9 <sup>3</sup> / <sub>4</sub>    | 10 <sup>11</sup> / <sub>16</sub> | 11 <sup>5</sup> / <sub>8</sub>   | 12 <sup>9</sup> / <sub>16</sub> | 13 <sup>1</sup> / <sub>2</sub>  | 14 <sup>7</sup> / <sub>16</sub> |
| No. of Bars | 17                              | 18                              | 19                              | 20                              | 21                              | 22                               | 23                               | 24                               | 25                               | 26                               | 27                               | 28                               | 29                              | 30                              | 31                              |
| 1/4" Bars   | 15 <sup>1</sup> / <sub>4</sub>  | 16 <sup>3</sup> / <sub>16</sub> | 17 <sup>1</sup> / <sub>8</sub>  | 18 <sup>1</sup> / <sub>16</sub> | 19                              | 19 <sup>15</sup> / <sub>16</sub> | 20 <sup>7</sup> / <sub>8</sub>   | 21 <sup>13</sup> / <sub>16</sub> | 22 <sup>3</sup> / <sub>4</sub>   | 23 <sup>11</sup> / <sub>16</sub> | 24 <sup>5</sup> / <sub>8</sub>   | 25 <sup>9</sup> / <sub>16</sub>  | 26 <sup>1</sup> / <sub>2</sub>  | 27 <sup>7</sup> / <sub>16</sub> | 28 <sup>3</sup> / <sub>8</sub>  |
| 5/16" Bars  | 15 <sup>5</sup> / <sub>16</sub> | 16 <sup>1</sup> / <sub>4</sub>  | 17 <sup>3</sup> / <sub>16</sub> | 18 <sup>1</sup> / <sub>8</sub>  | 19 <sup>1</sup> / <sub>16</sub> | 20                               | 20 <sup>15</sup> / <sub>16</sub> | 21 <sup>7</sup> / <sub>8</sub>   | 22 <sup>13</sup> / <sub>16</sub> | 23 <sup>3</sup> / <sub>4</sub>   | 24 <sup>11</sup> / <sub>16</sub> | 25 <sup>5</sup> / <sub>8</sub>   | 26 <sup>9</sup> / <sub>16</sub> | 27 <sup>1</sup> / <sub>2</sub>  | 28 <sup>7</sup> / <sub>16</sub> |
| 3/8" Bars   | 15 <sup>3</sup> / <sub>8</sub>  | 16 <sup>5</sup> / <sub>16</sub> | 17 <sup>1</sup> / <sub>4</sub>  | 18 <sup>3</sup> / <sub>16</sub> | 19 <sup>1</sup> / <sub>8</sub>  | 20 <sup>1</sup> / <sub>16</sub>  | 21                               | 21 <sup>15</sup> / <sub>16</sub> | 22 <sup>7</sup> / <sub>8</sub>   | 23 <sup>13</sup> / <sub>16</sub> | 24 <sup>3</sup> / <sub>4</sub>   | 25 <sup>11</sup> / <sub>16</sub> | 26 <sup>5</sup> / <sub>8</sub>  | 27 <sup>9</sup> / <sub>16</sub> | 28 <sup>1</sup> / <sub>2</sub>  |
| No. of Bars | 32                              | 33                              | 34                              | 35                              | 36                              | 37                               | 38                               | 39                               |                                  |                                  |                                  |                                  |                                 |                                 |                                 |
| 1/4" Bars   | 29 <sup>5</sup> / <sub>16</sub> | 30 <sup>1</sup> / <sub>4</sub>  | 31 <sup>3</sup> / <sub>16</sub> | 32 <sup>1</sup> / <sub>8</sub>  | 33 <sup>1</sup> / <sub>16</sub> | 34                               | 34 <sup>15</sup> / <sub>16</sub> | 35 <sup>7</sup> / <sub>8</sub>   |                                  |                                  |                                  |                                  |                                 |                                 |                                 |
| 5/16" Bars  | 29 <sup>3</sup> / <sub>8</sub>  | 30 <sup>5</sup> / <sub>16</sub> | 31 <sup>1</sup> / <sub>4</sub>  | 32 <sup>3</sup> / <sub>16</sub> | 33 <sup>1</sup> / <sub>8</sub>  | 34 <sup>1</sup> / <sub>16</sub>  | 35                               | 35 <sup>15</sup> / <sub>16</sub> |                                  |                                  |                                  |                                  |                                 |                                 |                                 |
| 3/8" Bars   | 29 <sup>7</sup> / <sub>16</sub> | 30 <sup>3</sup> / <sub>8</sub>  | 31 <sup>5</sup> / <sub>16</sub> | 32 <sup>1</sup> / <sub>4</sub>  | 33 <sup>3</sup> / <sub>16</sub> | 34 <sup>1</sup> / <sub>8</sub>   | 35 <sup>1</sup> / <sub>16</sub>  | 36                               |                                  |                                  |                                  |                                  |                                 |                                 |                                 |



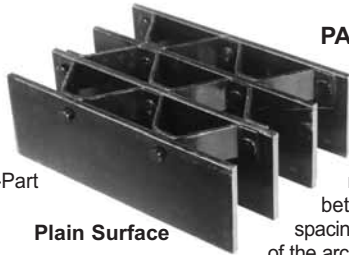
# HEAVY DUTY RIVETED STEEL

## R SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



Plain Surface

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

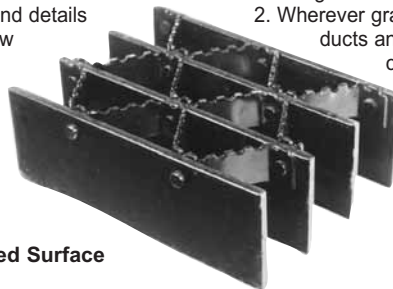
##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Heavy Duty Steel: ASTM A36 for hot rolled structural steel bars. ASTM A510 for carbon steel wire rods and coarse round wire.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



Serrated Surface

#### PART 2: PRODUCT...

1. Grating: Heavy Duty Riveted Steel R Series by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: To be (size) rectangular bar spaced  $2\frac{7}{16}$ " between bearing bar faces. (Note:  $\frac{3}{4}$ " spacing may be specified at the discretion of the architect/engineer.)
3. Connecting Bars: Extending between bearing bars and riveted to bearing bars at 5" centers.
4. Surface: Plain (Note: a serrated connecting bar may be specified for maximum skid resistance.)
5. Loading: (Shall be specified by the architect/engineer in terms of uniform load/sq. ft., concentrated load/ft. of grating width, or by AASHTO wheel load designation. Loading, bearing bar size and span conditions must be coordinated.)
6. Finish: (Galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as

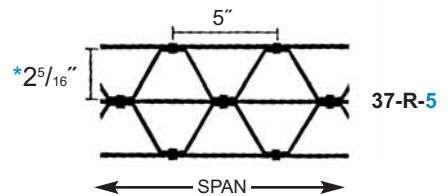
bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

#### 3.2 Grating Attachment

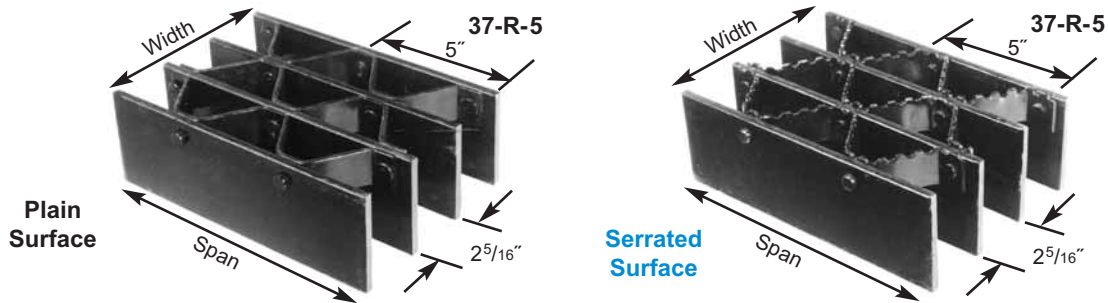
Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available... R Series - Heavy Duty Riveted Steel



\*Note that riveted grating marking indicates space between bearing bars





### Load Tables

| Bar Size, Inches | Wt.* Lbs. Sq. Ft. | Section Properties             |                                | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches- Partially Distributed Load |       |       |         |
|------------------|-------------------|--------------------------------|--------------------------------|------------------------|--|-------|-------|---------|
|                  |                   | Sx*, in <sup>3</sup> Ft. Width | Ix*, in <sup>4</sup> Ft. Width |                        | 1 Ton  | 3 Ton | 5 Ton | H15/H20 |
| 2 1/2 x 1/4      | 17.02             | 1.220                          | 1.524                          | 1 1/2 x 3/16           | 23   | 14    | 15    | 17      |
| 2 1/2 x 5/16     | 19.03             | 1.488                          | 1.860                          | 1 1/2 x 3/16           | 28   | 17    | 17    | 20      |
| 2 1/2 x 3/8      | 20.84             | 1.744                          | 2.180                          | 1 1/2 x 3/16           | 33   | 19    | 19    | 22      |
| 3 x 1/4          | 19.27             | 1.756                          | 2.634                          | 1 1/2 x 3/16           | 33   | 19    | 19    | 22      |
| 3 x 5/16         | 21.75             | 2.143                          | 3.214                          | 1 1/2 x 3/16           | 40   | 23    | 22    | 26      |
| 3 x 3/8          | 23.96             | 2.512                          | 3.767                          | 1 1/2 x 3/16           | 47   | 27    | 25    | 29      |
| 3 1/2 x 1/4      | 21.52             | 2.390                          | 4.183                          | 1 1/2 x 3/16           | 44   | 25    | 24    | 28      |
| 3 1/2 x 3/8      | 27.09             | 3.419                          | 5.982                          | 1 1/2 x 3/16           | 64   | 35    | 33    | 37      |
| 4 x 1/4          | 23.78             | 3.122                          | 6.244                          | 1 1/2 x 3/16           | 57   | 32    | 30    | 34      |
| 4 x 5/16         | 27.16             | 3.809                          | 7.618                          | 1 1/2 x 3/16           | 70   | 39    | 36    | 40      |
| 4 x 3/8          | 30.21             | 4.465                          | 8.930                          | 1 1/2 x 3/16           | 83   | 45    | 41    | 46      |
| 4 1/2 x 1/4      | 26.03             | 3.951                          | 8.890                          | 1 1/2 x 3/16           | 72   | 40    | 37    | 41      |
| 4 1/2 x 3/8      | 33.34             | 5.651                          | 12.715                         | 1 1/2 x 3/16           | 96   | 56    | 51    | 55      |
| 5 x 1/4          | 28.28             | 4.878                          | 12.195                         | 1 1/2 x 3/16           | 88   | 48    | 44    | 49      |
| 5 x 5/16         | 32.58             | 5.952                          | 14.880                         | 1 1/2 x 3/16           | 96   | 59    | 53    | 58      |
| 5 x 3/8          | 36.46             | 6.977                          | 17.441                         | 1 1/2 x 3/16           | 96   | 69    | 62    | 66      |

\*Based on approximately 4.5 bars/ft of grating width. Bearing bars 2 5/16" face-to-face.

| Bar Size, Inches | Maximum Safe Concentrated Load*, Lbs. - <i>ClearSpan</i> |       |       |       |       |       |       |       |       |       |       |       | % Open Area* |  |  |
|------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|--|--|
|                  | 1'-0"  | 1'-6" | 2'-0" | 2'-6" | 3'-0" | 3'-6" | 4'-0" | 4'-6" | 5'-0" | 5'-6" | 6'-0" | 7'-0" |              |  |  |
| 2 1/2 x 1/4      | 8133   | 5422  | 4067  | 3253  | 2711  | 2324  | 2033  | 1807  | 1627  | 1479  |       |       |              |  |  |
| 2 1/2 x 5/16     | 9920   | 6613  | 4960  | 3968  | 3307  | 2834  | 2480  | 2204  | 1984  | 1804  |       |       |              |  |  |
| 2 1/2 x 3/8      | 11627  | 7751  | 5813  | 4651  | 3876  | 3322  | 2907  | 2584  | 2325  | 2114  |       |       |              |  |  |
| 3 x 1/4          | 11707  | 7804  | 5853  | 4683  | 3902  | 3345  | 2927  | 2601  | 2341  | 2128  | 1951  |       |              |  |  |
| 3 x 5/16         | 14287  | 9524  | 7143  | 5715  | 4762  | 4082  | 3572  | 3175  | 2857  | 2598  | 2381  |       |              |  |  |
| 3 x 3/8          | 16747  | 11164 | 8373  | 6699  | 5582  | 4785  | 4187  | 3721  | 3349  | 3045  | 2791  |       |              |  |  |
| 3 1/2 x 1/4      | 15933  | 10622 | 7967  | 6373  | 5311  | 4552  | 3983  | 3541  | 3187  | 2897  | 2656  | 2276  |              |  |  |
| 3 1/2 x 3/8      | 22793  | 15196 | 11397 | 9117  | 7598  | 6512  | 5698  | 5065  | 4559  | 4144  | 3799  | 3256  |              |  |  |
| 4 x 1/4          | 20813  | 13876 | 10407 | 8325  | 6938  | 5947  | 5203  | 4625  | 4163  | 3784  | 3469  | 2973  |              |  |  |
| 4 x 5/16         | 25393  | 16929 | 12697 | 10157 | 8464  | 7255  | 6348  | 5643  | 5079  | 4617  | 4232  | 3628  |              |  |  |
| 4 x 3/8          | 29767  | 19844 | 14883 | 11907 | 9922  | 8505  | 7442  | 6615  | 5953  | 5412  | 4961  | 4252  |              |  |  |
| 4 1/2 x 1/4      | 26340  | 17560 | 13170 | 10536 | 8780  | 7526  | 6585  | 5853  | 5268  | 4789  | 4390  | 3763  | 3293         |  |  |
| 4 1/2 x 3/8      | 37673  | 25116 | 18837 | 15069 | 12558 | 10764 | 9418  | 8372  | 7535  | 6850  | 6279  | 5382  | 4709         |  |  |
| 5 x 1/4          | 32520  | 21680 | 16260 | 13008 | 10840 | 9291  | 8130  | 7227  | 6504  | 5913  | 5420  | 4646  | 4065         |  |  |
| 5 x 5/16         | 39680  | 26453 | 19840 | 15872 | 13227 | 11337 | 9920  | 8818  | 7936  | 7215  | 6613  | 5669  | 4960         |  |  |
| 5 x 3/8          | 46513  | 31009 | 23257 | 18605 | 15504 | 13290 | 11628 | 10336 | 9303  | 8457  | 7752  | 6645  | 5814         |  |  |

\*Based on approximately 4.5 bars/ft of grating width. Bearing bars 2 5/16" face-to-face.

### 37-R-5 Panel Width Chart (in.)

Dimensions Are Out-to-Out of Bearing Bars\*\*

| No. of Bars | 2       | 3      | 4       | 5        | 6        | 7       | 8        | 9       | 10       | 11      | 12       | 13       | 14      | 15      | 16       |
|-------------|---------|--------|---------|----------|----------|---------|----------|---------|----------|---------|----------|----------|---------|---------|----------|
| 1/4" Bars   | 2 13/16 | 5 3/8  | 7 15/16 | 10 1/2   | 13 1/16  | 15 5/8  | 18 3/16  | 20 3/4  | 23 5/16  | 25 7/8  | 28 7/16  | 31       | 33 9/16 | 36 1/8  | 38 11/16 |
| 5/16" Bars  | 2 15/16 | 5 9/16 | 8 3/16  | 10 13/16 | 13 7/16  | 16 1/16 | 18 11/16 | 21 5/16 | 23 15/16 | 26 9/16 | 29 3/16  | 31 13/16 | 34 7/16 | 37 1/16 | 39 11/16 |
| 3/8" Bars   | 3 1/16  | 5 3/4  | 8 7/16  | 11 1/8   | 13 13/16 | 16 1/2  | 19 3/16  | 21 7/8  | 24 9/16  | 27 1/4  | 29 15/16 | 32 5/8   | 35 5/16 | 38      | 40 11/16 |

\*\*Add 3/8" for rivet heads.



# Wheels n' Heels®

## Product Applications...

**Wheels n' Heels®** is the first grating product which satisfies both the vehicle loading requirements of AASHTO and the pedestrian comfort requirements of the Americans With Disabilities Act. Made from 3/8" or 1/4" thick ASTM A36 steel bar, this product will clear span up to 8' under H15 and H20

wheel loads. In addition, the close spacing of the bearing bars offers a pedestrian friendly 1/4" or 1/2" opening which allows easy access to wheel chair and high heel traffic. **Wheels n' Heels®** products can be provided in piece sizes up to 3' wide by 20' long. Slip resistant surfaces are also available. Check with our Sales Representatives for specific piece size limits on each type and size.



▲ **Rochester Gas & Electric**  
- Rochester, NY



◀ **Central Library**  
- Minneapolis, MN



▲ **Thea Foss Waterway**  
- Tacoma, WA



## Short Span SERIES

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

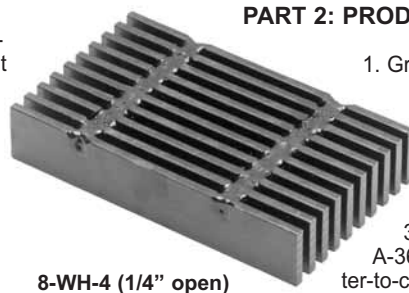
A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Heavy Duty Steel: ASTM A36 for hot rolled structural steel bars. ASTM A510 for carbon steel wire rods and coarse round wire.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.

B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



8-WH-4 (1/4" open)

#### PART 2: PRODUCT...

1. Grating: Wheels n' Heels® Heavy Duty Steel Grating by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: To be 1/4" up through 3/8" x (size) ASTM A-36 bar spaced 1/2" center-to-center, 1/4" open. (Note: 3/4" bar spacing, 1/2" open may be specified at the discretion of the architect/engineer.)
3. Cross Bars: To be 3/8" diameter carbon steel wire rod spaced 4" center-to-center and welded at right angles to bearing bars with one fillet at each bearing bar/cross bar intersection.
4. Surface: Plain. (Note: A slip resistant surface may be specified at the discretion of the architect/engineer.)
5. Loading: AASHTO H15/H20 (Note: other wheel or forklift loading may be specified at the discretion of the architect/engineer.)
6. Finish: (mill finish, galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)
7. Fabrication and Tolerances: in accordance with the NAAMM Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by pipes, ducts and structural mem-



ADA Surface

- bers, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.
3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.
4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.
5. Utilize standard panel widths wherever possible.

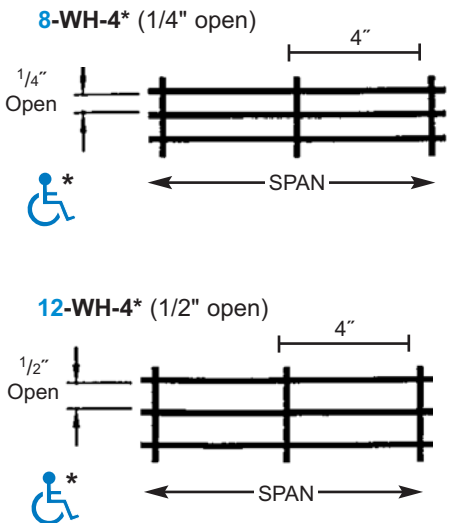
#### 3.2 Grating Attachment

Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

### Wheels n' Heels®

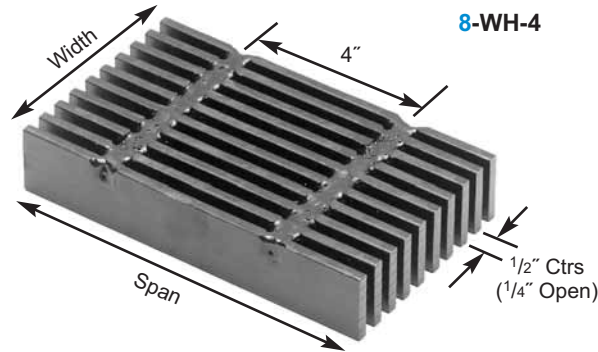
#### WH Series - Short Span Steel



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See Inside Front Cover for further information.



## 8 SPACE



**Note:** 8-WH-4 is available in Plain Surface only. 2" cross bar centers are not available.

**Banding Optional** ▶

| Bar Size, Inches | Wt.* Lbs. Sq. Ft. | Section Properties             |                                | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches- Partially Distributed Load |       |       |         | Maximum Manufactured Spans |
|------------------|-------------------|--------------------------------|--------------------------------|------------------------|--|-------|-------|---------|----------------------------|
|                  |                   | Sx*, in <sup>3</sup> Ft. Width | Ix*, in <sup>4</sup> Ft. Width |                        | 1 Ton  | 3 Ton | 5 Ton | H15/H20 |                            |
| 1 x 1/4          | 21.53             | 1.000                          | 0.500                          | 3/8 Dia.               | 11   | 9     | 11    | 14      | 24                         |
| 1 1/4 x 1/4      | 26.64             | 1.563                          | 0.977                          | 3/8 Dia.               | 17   | 13    | 14    | 18      | 30                         |
| 1 1/2 x 1/4      | 31.73             | 2.250                          | 1.688                          | 3/8 Dia.               | 23   | 17    | 18    | 22      | 36                         |
| 1 3/4 x 1/4      | 36.84             | 3.063                          | 2.680                          | 3/8 Dia.               | 31   | 22    | 23    | 28      | 42                         |
| 2 x 1/4          | 41.93             | 4.000                          | 4.000                          | 3/8 Dia.               | 40   | 27    | 29    | 34      | 48                         |

\*Based on 24 bars/ft of grating width. Bearing bars 1/2" c.c.

| Bar Size, Inches | Maximum Safe Concentrated Load*, Lbs. - <i>ClearSpan</i> |         |         |         |   |         |         |         | % Open Area* |
|------------------|--|---------|---------|---------|---|---------|---------|---------|--------------|
|                  | 0' - 6"  | 1' - 0" | 1' - 6" | 2' - 0" | 2' - 6"   | 3' - 0" | 3' - 6" | 4' - 0" |              |
| 1 x 1/4          | 13333  | 6667    | 4444    | 3333    | Loads given are theoretical and based on a unit stress of 20,000 psi. |         |         |         | 45%          |
| 1 1/4 x 1/4      | 20840  | 10420   | 6947    | 5210    |   |         |         |         |              |
| 1 1/2 x 1/4      | 30000  | 15000   | 10000   | 7500    | 6000  | 5000    |         |         |              |
| 1 3/4 x 1/4      | 40840  | 20420   | 13613   | 10210   | 8168  | 6807    | 5834    |         |              |
| 2 x 1/4          | 53333  | 26667   | 17778   | 13333   | 10667   | 8889    | 7619    | 6667    |              |

\*Based on 24 bars/ft of grating width. Bearing bars 1/2" c.c.

### 8-WH-4 Panel Width Chart (in.)

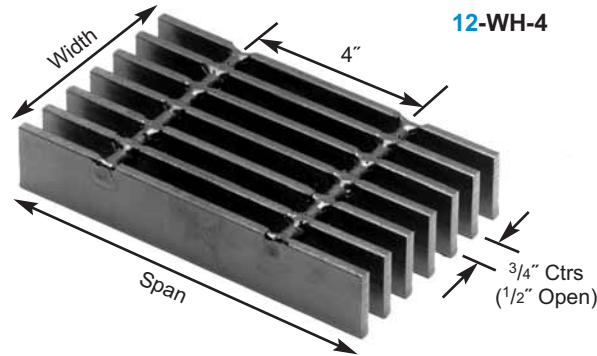
Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1/4" Bars   | 3/4    | 1 1/4  | 1 3/4  | 2 1/4  | 2 3/4  | 3 1/4  | 3 3/4  | 4 1/4  | 4 3/4  | 5 1/4  | 5 3/4  | 6 1/4  | 6 3/4  | 7 1/4  | 7 3/4  |
| No. of Bars | 17     | 18     | 19     | 20     | 21     | 22     | 23     | 24     | 25     | 26     | 27     | 28     | 29     | 30     | 31     |
| 1/4" Bars   | 8 1/4  | 8 3/4  | 9 1/4  | 9 3/4  | 10 1/4 | 10 3/4 | 11 1/4 | 11 3/4 | 12 1/4 | 12 3/4 | 13 1/4 | 13 3/4 | 14 1/4 | 14 3/4 | 15 1/4 |
| No. of Bars | 32     | 33     | 34     | 35     | 36     | 37     | 38     | 39     | 40     | 41     | 42     | 43     | 44     | 45     | 46     |
| 1/4" Bars   | 15 3/4 | 16 1/4 | 16 3/4 | 17 1/4 | 17 3/4 | 18 1/4 | 18 3/4 | 19 1/4 | 19 3/4 | 20 1/4 | 20 3/4 | 21 1/4 | 21 3/4 | 22 1/4 | 22 3/4 |
| No. of Bars | 47     | 48     | 49     | 50     | 51     | 52     | 53     | 54     | 55     | 56     | 57     | 58     | 59     | 60     | 61     |
| 1/4" Bars   | 23 1/4 | 23 3/4 | 24 1/4 | 24 3/4 | 25 1/4 | 25 3/4 | 26 1/4 | 26 3/4 | 27 1/4 | 27 3/4 | 28 1/4 | 28 3/4 | 29 1/4 | 29 3/4 | 30 1/4 |
| No. of Bars | 62     | 63     | 64     | 65     | 66     | 67     | 68     | 69     | 70     | 71     | 72     |        |        |        |        |
| 1/4" Bars   | 30 3/4 | 31 1/4 | 31 3/4 | 32 1/4 | 32 3/4 | 33 1/4 | 33 3/4 | 34 1/4 | 34 3/4 | 35 1/4 | 35 3/4 |        |        |        |        |

Note: 2' maximum panel width suggested for ease of handling.







**Note:** 12-WH-4 is available in Plain Surface only. 2" cross bar centers are not available.

**Banding Optional** ▶

| Bar Size, Inches | Wt.* Lbs. Sq. Ft. | Section Properties             |                                | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches- Partially Distributed Load |       |       |         | Maximum Manufactured Spans |
|------------------|-------------------|--------------------------------|--------------------------------|------------------------|--|-------|-------|---------|----------------------------|
|                  |                   | Sx*, in <sup>3</sup> Ft. Width | Ix*, in <sup>4</sup> Ft. Width |                        | 1 Ton  | 3 Ton | 5 Ton | H15/H20 |                            |
| 1 x 1/4          | 14.73             | 0.667                          | 0.333                          | 3/8 Dia.               | 9  | 7     | 9     | 11      | 24                         |
| 1 1/4 x 1/4      | 18.14             | 1.042                          | 0.651                          | 3/8 Dia.               | 13   | 10    | 11    | 14      | 30                         |
| 1 1/2 x 1/4      | 21.53             | 1.500                          | 1.125                          | 3/8 Dia.               | 18   | 13    | 14    | 18      | 36                         |
| 1 3/4 x 1/4      | 24.94             | 2.042                          | 1.786                          | 3/8 Dia.               | 23   | 16    | 18    | 21      | 42                         |
| 2 x 1/4          | 28.33             | 2.667                          | 2.667                          | 3/8 Dia.               | 30   | 20    | 21    | 26      | 48                         |

\*Based on 16 bars/ft of grating width. Bearing bars 3/4" c.c.

| Bar Size, Inches | Maximum Safe Concentrated Load*, Lbs. - <i>ClearSpan</i> |         |         |         |         |   |         |         | % Open Area* |
|------------------|--|---------|---------|---------|---------|---|---------|---------|--------------|
|                  | 0' - 6"  | 1' - 0" | 1' - 6" | 2' - 0" | 2' - 6" | 3' - 0"   | 3' - 6" | 4' - 0" |              |
| 1 x 1/4          | 8893   | 4447    | 2964    | 2223    | 2779    | Loads given are theoretical and based on a unit stress of 20,000 psi. |         |         | 60%          |
| 1 1/4 x 1/4      | 13893  | 6947    | 4631    | 3473    |         |   |         |         |              |
| 1 1/2 x 1/4      | 20000  | 10000   | 6667    | 5000    | 4000    | 3333  |         |         |              |
| 1 3/4 x 1/4      | 27227  | 13613   | 9076    | 6807    | 5445    | 4538  | 3890    |         |              |
| 2 x 1/4          | 35560  | 17780   | 11853   | 8890    | 7112    | 5927  | 5080    | 4445    |              |

\*Based on 16 bars/ft of grating width. Bearing bars 3/4" c.c.

### 12-WH-4 Panel Width Chart (in.)

Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     | 13     | 14     | 15     | 16     |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1/4" Bars   | 1      | 1 3/4  | 2 1/2  | 3 1/4  | 4      | 4 3/4  | 5 1/2  | 6 1/4  | 7      | 7 3/4  | 8 1/2  | 9 1/4  | 10     | 10 3/4 | 11 1/2 |
| No. of Bars | 17     | 18     | 19     | 20     | 21     | 22     | 23     | 24     | 25     | 26     | 27     | 28     | 29     | 30     | 31     |
| 1/4" Bars   | 12 1/4 | 13     | 13 3/4 | 14 1/2 | 15 1/4 | 16     | 16 3/4 | 17 1/2 | 18 1/4 | 19     | 19 3/4 | 20 1/2 | 21 1/4 | 22     | 22 3/4 |
| No. of Bars | 32     | 33     | 34     | 35     | 36     | 37     | 38     | 39     | 40     | 41     | 42     | 43     | 44     | 45     | 46     |
| 1/4" Bars   | 23 1/2 | 24 1/4 | 25     | 25 3/4 | 26 1/2 | 27 1/4 | 28     | 28 3/4 | 29 1/2 | 30 1/4 | 31     | 31 3/4 | 32 1/2 | 33 1/4 | 34     |
| No. of Bars | 47     | 48     | 49     |        |        |        |        |        |        |        |        |        |        |        |        |
| 1/4" Bars   | 34 3/4 | 35 1/2 | 36 1/4 |        |        |        |        |        |        |        |        |        |        |        |        |

Note: 2' maximum panel width suggested for ease of handling.

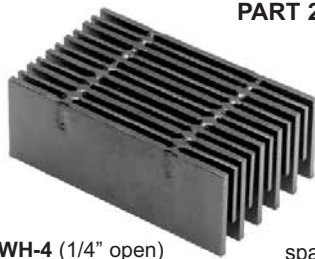


## Long Span SERIES 1

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.



15-WH-4 (1/4" open)

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

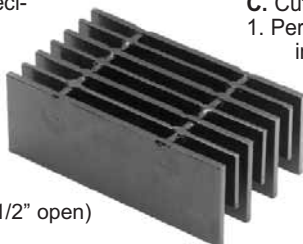
##### 1.2 Quality Assurance

**A.1.** Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
**2.** Heavy Duty Steel: ASTM A36 for hot rolled structural steel bars. ASTM A510 for carbon steel wire rods and coarse round wire.

**B.1.** Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

**A.** The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.  
**B.** The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



23-WH-4 (1/2" open)

#### PART 2: PRODUCT...

1. Grating: Wheels n' Heels® Heavy Duty Steel Grating by Ohio Gratings, Inc., or approved equal.
2. Bearing Bars: To be 1/4" up through 3/8" x (size) ASTM A-36 bars spaced 1- 3/4" or 2-5/8" cc and 3/4" x 3/16" filler bars spaced 7/16" cc - 1/4" open. (Note: bars spaced 2-1/16" or 2-3/4" cc and 3/4" x 3/16" filler bars spaced 11/16" cc - 1/2" open may be specified at discretion of the architect/engineer.)
3. Cross Bars: To be 3/4" x 1/4" bar spaced 4" center-to-center and welded at right angles with one fillet at each bearing bar/cross bar intersection. No change to the following:
4. Surface: Plain. (Note: A serrated or a slip resistant surface may be specified at the discretion of the architect/engineer.)
5. Loading: AASHTO H15/H20 (Note: other wheel or forklift loading may be specified at the discretion of the architect/engineer.)
6. Finish: (Mill finish - as fabricated, galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)
7. Fabrication and Tolerances: In accordance with the NAAMM Heavy Duty Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

**A.** Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

**B.** Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross bars align.
2. Wherever grating is pierced by

pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.

4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.

5. Utilize standard panel widths wherever possible.

#### 3.2 Grating Attachment

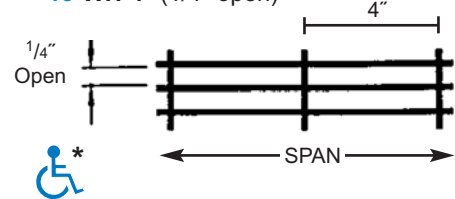
Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

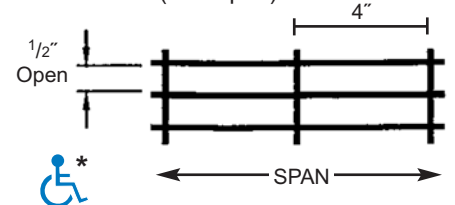
#### Wheels n' Heels®

#### WH Series - Long Span Steel

##### 15-WH-4\* (1/4" open)



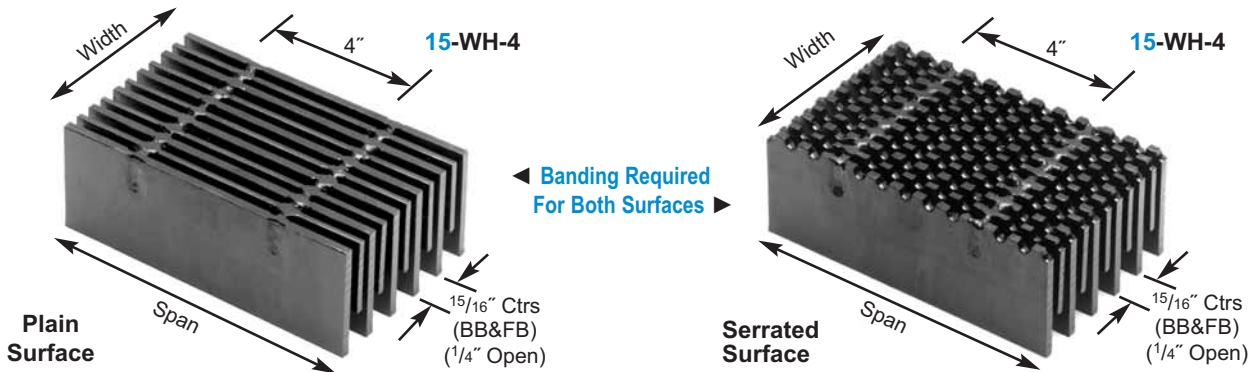
##### 23-WH-4\* (1/2" open)



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See Inside Front Cover for further information.



## 15 SPACE - SERIES 1



| Bar Size, Inches | Wt.* Lbs. Sq. Ft. | Section Properties             |                                | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches- Partially Distributed Load |       |       |         | Maximum Manufactured Spans |
|------------------|-------------------|--------------------------------|--------------------------------|------------------------|--|-------|-------|---------|----------------------------|
|                  |                   | Sx*, in <sup>3</sup> Ft. Width | Ix*, in <sup>4</sup> Ft. Width |                        | 1 Ton  | 3 Ton | 5 Ton | H15/H20 |                            |
| 2 1/2 x 1/4      | 44.81             | 3.333                          | 4.167                          | 1/4 x 1                | 40   | 26    | 26    | 31      | 54                         |
| 3 x 1/4          | 50.25             | 4.800                          | 7.200                          | 1/4 x 1                | 56   | 36    | 36    | 42      | 60                         |
| 3 1/2 x 1/4      | 55.69             | 6.533                          | 11.433                         | 1/4 x 1                | 66   | 47    | 47    | 54      | 66                         |
| 4 x 1/4          | 61.13             | 8.533                          | 17.067                         | 1/4 x 1                | 72   | 61    | 59    | 69      | 72                         |
| 4 1/2 x 1/4      | 66.57             | 10.800                         | 24.300                         | 1/4 x 1                | 84   | 76    | 74    | 84      | 84                         |
| 5 x 1/4          | 72.01             | 13.333                         | 33.333                         | 1/4 x 1                | 96   | 93    | 90    | 96      | 96                         |

\*Based on 12.8 bars/ft of grating width. Bearing bars 15/16" c.c.  
Note: When serrated grating is specified, choose the next larger size.

Note: 15-WH-4 must be trim banded. 2" cross bar centers are not available.

| Bar Size, Inches | Maximum Safe Concentrated Load*, Lbs. - <i>ClearSpan</i> |        |        |        |        |        |   |        |        |        |        |                     |
|------------------|--|--------|--------|--------|--------|--------|---|--------|--------|--------|--------|---------------------|
|                  | 2'- 0"   | 2'- 6" | 3'- 0" | 3'- 6" | 4'- 0" | 4'- 6" | 5'- 0"  | 5'- 6" | 6'- 0" | 7'- 0" | 8'- 0" |                     |
| 2 1/2 x 1/4      | 11110  | 8888   | 7407   | 6349   | 5555   | 4938   | Loads given are theoretical and based on a unit stress of 20,000 psi. |        |        |        |        | % Open Area*<br>51% |
| 3 x 1/4          | 16000  | 12800  | 10667  | 9143   | 8000   | 7111   |   |        |        |        |        |                     |
| 3 1/2 x 1/4      | 21777  | 17421  | 14518  | 12444  | 10888  | 9679   | 8711  | 7919   |        |        |        |                     |
| 4 x 1/4          | 28443  | 22755  | 18962  | 16253  | 14222  | 12641  | 11377   | 10343  |        |        |        | 9481                |
| 4 1/2 x 1/4      | 36000  | 28800  | 24000  | 20571  | 18000  | 16000  | 14400   | 13091  | 12000  | 10286  |        |                     |
| 5 x 1/4          | 44443  | 35555  | 29629  | 25396  | 22222  | 19753  | 17777   | 16161  | 14814  | 12698  |        |                     |

\*Based on 12.8 bars/ft of grating width. Bearing bars 15/16" c.c.  
Note: When serrated grating is specified, choose the next larger size.

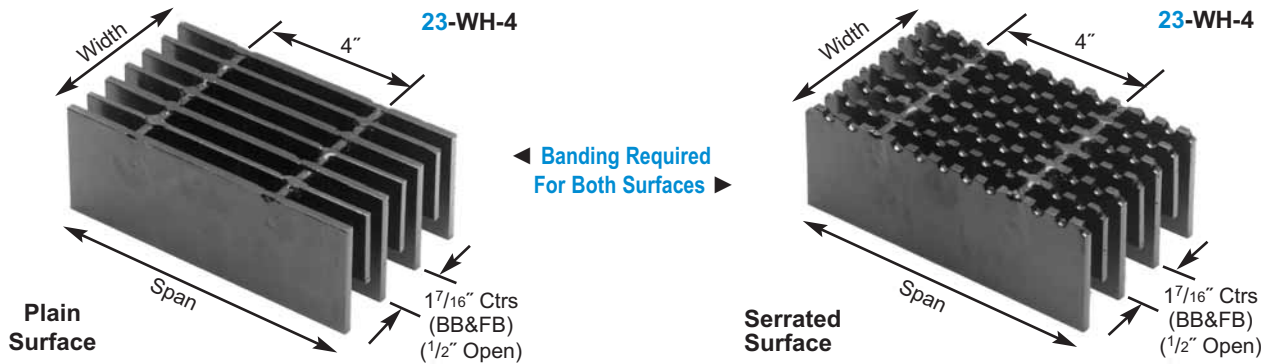
### 15-WH-4 Panel Width Chart (in.)

### Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2                 | 3                  | 4                 | 5                  | 6                  | 7                   | 8                  | 9                   | 10                 | 11                  | 12                 | 13                | 14                 | 15                | 16                 |
|-------------|-------------------|--------------------|-------------------|--------------------|--------------------|---------------------|--------------------|---------------------|--------------------|---------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
| 1/4" Bars   | 1 <sup>3/16</sup> | 2 <sup>1/8</sup>   | 3 <sup>1/16</sup> | 4                  | 4 <sup>15/16</sup> | 5 <sup>7/8</sup>    | 6 <sup>13/16</sup> | 7 <sup>3/4</sup>    | 8 <sup>11/16</sup> | 9 <sup>5/8</sup>    | 10 <sup>9/16</sup> | 11 <sup>1/2</sup> | 12 <sup>7/16</sup> | 13 <sup>3/8</sup> | 14 <sup>5/16</sup> |
| No. of Bars | 17                | 18                 | 19                | 20                 | 21                 | 22                  | 23                 | 24                  | 25                 | 26                  |                    |                   |                    |                   |                    |
| 1/4" Bars   | 15 <sup>1/4</sup> | 16 <sup>3/16</sup> | 17 <sup>1/8</sup> | 18 <sup>1/16</sup> | 19                 | 19 <sup>15/16</sup> | 20 <sup>7/8</sup>  | 21 <sup>13/16</sup> | 22 <sup>3/4</sup>  | 23 <sup>11/16</sup> |                    |                   |                    |                   |                    |



## 23 SPACE - SERIES 1



| Bar Size, Inches | Wt.* Lbs. Sq. Ft. | Section Properties             |                                | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches- Partially Distributed Load |       |       |         | Maximum Manufactured Spans |
|------------------|-------------------|--------------------------------|--------------------------------|------------------------|--|-------|-------|---------|----------------------------|
|                  |                   | Sx*, in <sup>3</sup> Ft. Width | Ix*, in <sup>4</sup> Ft. Width |                        | 1 Ton  | 3 Ton | 5 Ton | H15/H20 |                            |
| 2 1/2 x 1/4      | 29.67             | 2.174                          | 2.717                          | 1/4 x 1                | 31   | 19    | 20    | 24      | 54                         |
| 3 x 1/4          | 33.21             | 3.131                          | 4.696                          | 1/4 x 1                | 43   | 27    | 26    | 31      | 60                         |
| 3 1/2 x 1/4      | 36.76             | 4.261                          | 7.457                          | 1/4 x 1                | 59   | 35    | 34    | 40      | 66                         |
| 4 x 1/4          | 40.31             | 5.565                          | 11.131                         | 1/4 x 1                | 72   | 45    | 43    | 50      | 72                         |
| 4 1/2 x 1/4      | 43.86             | 7.044                          | 15.848                         | 1/4 x 1                | 84   | 56    | 53    | 61      | 84                         |
| 5 x 1/4          | 47.41             | 8.696                          | 21.740                         | 1/4 x 1                | 96   | 69    | 65    | 73      | 96                         |

\*Based on 8.348 bars/ft of grating width. Bearing bars 1 7/16" c.c.  
Note: When serrated grating is specified, choose the next larger size.

Note: 23-WH-4 must be trim banded. 2" cross bar centers are not available.

| Bar Size, Inches | Maximum Safe Concentrated Load*, Lbs.- <i>ClearSpan</i> |        |        |        |        |        |   |        |        |        |        |                     |
|------------------|---|--------|--------|--------|--------|--------|---|--------|--------|--------|--------|---------------------|
|                  | 2'- 0"  | 2'- 6" | 3'- 0" | 3'- 6" | 4'- 0" | 4'- 6" | 5'- 0"  | 5'- 6" | 6'- 0" | 7'- 0" | 8'- 0" |                     |
| 2 1/2 x 1/4      | 7247  | 5797   | 4831   | 4141   | 3623   | 3221   | Loads given are theoretical and based on a unit stress of 20,000 psi. |        |        |        |        | % Open Area*<br>66% |
| 3 x 1/4          | 10437   | 8349   | 6958   | 5964   | 5218   | 4639   |   |        |        |        |        |                     |
| 3 1/2 x 1/4      | 14203   | 11363  | 9469   | 8116   | 7102   | 6313   | 5681  | 5165   |        |        |        |                     |
| 4 x 1/4          | 18550   | 14840  | 12367  | 10600  | 9275   | 8244   | 7420  | 6745   |        |        |        |                     |
| 4 1/2 x 1/4      | 23480   | 18784  | 15653  | 13417  | 11740  | 10436  | 9392  | 8538   | 7827   | 6709   |        |                     |
| 5 x 1/4          | 28987   | 23189  | 19324  | 16564  | 14493  | 12883  | 11595   | 10541  | 9662   | 8282   |        |                     |

\*Based on 8.348 bars/ft of grating width. Bearing bars 1 7/16" c.c.  
Note: When serrated grating is specified, choose the next larger size.

### 23-WH-4 Panel Width Chart (in.)

Dimensions Are Out-to-Out of Bearing Bars

| No. of Bars | 2       | 3        | 4      | 5       | 6      | 7       | 8       | 9       | 10      | 11      | 12      | 13     | 14       | 15     | 16       |
|-------------|---------|----------|--------|---------|--------|---------|---------|---------|---------|---------|---------|--------|----------|--------|----------|
| 1/4" Bars   | 1 11/16 | 3 1/8    | 4 9/16 | 6       | 7 7/16 | 8 7/8   | 10 5/16 | 11 3/4  | 13 3/16 | 14 5/8  | 16 1/16 | 17 1/2 | 18 15/16 | 20 3/8 | 21 13/16 |
| No. of Bars | 17      | 18       | 19     | 20      | 21     | 22      | 23      | 24      | 25      | 26      |         |        |          |        |          |
| 1/4" Bars   | 23 1/4  | 24 11/16 | 26 1/8 | 27 9/16 | 29     | 30 7/16 | 31 7/8  | 33 5/16 | 34 3/4  | 36 3/16 |         |        |          |        |          |



## Long Span SERIES 2

### PRODUCT SPECIFICATION GUIDE

#### How to Specify:

The information below provides a specification format for architectural and engineering specification sections that, when applied, will be consistent with the Three-Part Section Format for Construction Specifications Canada (CSC) and the Technical Documents Committee of Construction Specifications Institute (CSI) for specifications serving the construction industry. These specifications are intended for use as a guide spec for architects and engineers, and may need to be altered or modified to fit the specific conditions of the application in question.

#### PART 1: GENERAL...

##### 1.1 Scope

The contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install grating, stair treads and frames.

##### 1.2 Quality Assurance

A.1. Comply with applicable provisions and recommendations of the following: NAAMM Metal Bar Grating Manual designated ANSI/NAAMM MBG 531 (Aluminum and Light Duty Steel and Stainless Steel Grating) and MBG 532 (Heavy Duty Steel Grating).  
2. Heavy Duty Steel: ASTM A36 for hot rolled structural steel bars. ASTM A510 for carbon steel wire rods and coarse round wire.

B.1. Take field measurements prior to preparation of shop drawings and fabrication where required, to ensure proper fitting of the work.

##### 1.3 Submittals

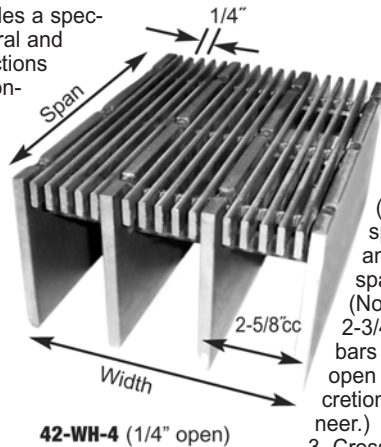
A. The contractor shall submit for approval shop drawings for the fabrication and erection of all work. Include plans, elevations, and details of sections and connections. Show type and location of all fasteners.

B. The contractor shall submit the manufacturer's specifications, load tables, anchor details and standard installation details.



Detail

#### PART 2: PRODUCT...



1. Grating: Wheels n' Heels® Heavy Duty Steel Grating by Ohio Gratings, Inc., or approved equal.

2. Bearing Bars: To be 1/4" up through 3/8" x (size) ASTM A-36 bars spaced 1- 3/4" or 2-5/8" cc and 3/4" x 3/16" filler bars spaced 7/16" cc - 1/4" open. (Note: bars spaced 2-1/16" or 2-3/4" cc and 3/4" x 3/16" filler bars spaced 11/16" cc - 1/2" open may be specified at discretion of the architect/engineer.)

3. Cross Bars: To be 3/4" x 1/4" bar spaced 4" center-to-center and welded at right angles with one fillet at each bearing bar/cross bar intersection. No change to the following:

4. Surface: Plain. (Note: A serrated or a slip resistant surface may be specified at the discretion of the architect/engineer.)

5. Loading: AASHTO H15/H20 (Note: other wheel or forklift loading may be specified at the discretion of the architect/engineer.)

6. Finish: (Mill finish - as fabricated, galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.)

7. Fabrication and Tolerances: In accordance with the NAAMM Heavy Duty Metal Bar Grating Manual.

#### PART 3: EXECUTION...

##### 3.1 Installation

A. Prior to grating installation, contractor shall inspect supports for correct size, layout and alignment. Any inconsistencies between contract drawings and supporting structure deemed detrimental to grating placement shall be reported in writing to the architect or owner's agent prior to grating placement.

B. Install grating in accordance with shop drawings and standard installation clearances as recommended by the NAAMM Metal Bar Grating Manual.

##### C. Cutting, Fitting and Placement.

1. Perform all cutting and fitting required for installation. Grating shall be placed such that cross

bars align.

2. Wherever grating is pierced by pipes, ducts and structural members, cut openings neatly and accurately to size and weld a rectangular band bar of the same height and material as bearing bars.

3. Cutouts for circular obstructions are to be at least 2" larger in diameter than the obstruction. Cutouts for all piping 4" or less shall be made in the field.

4. All rectangular cutouts are to be made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.

5. Utilize standard panel widths wherever possible.

#### 3.2 Grating Attachment

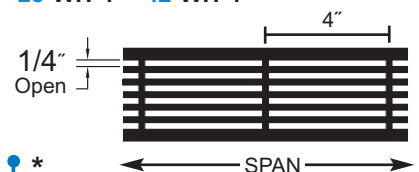
Use anchorage devices (saddle clips) (grating clamps) (plank clips) (plank lugs) (countersunk lands) (Z clips) or (anchor blocks) and fasteners to secure grating to supporting members or prepared openings.

#### Grating Profiles Available...

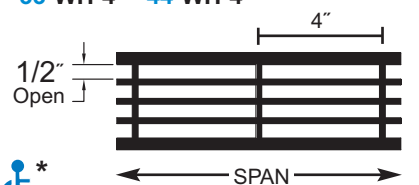
#### Wheels n' Heels®

#### WH Series - Long Span Steel

28-WH-4\* 42-WH-4\*



33-WH-4\* 44-WH-4\*



\*Note: Conforms with the spacing requirements of ADA (July 1991) when installed with the elongated opening perpendicular to the dominant direction of travel. See Inside Front Cover for further information.



## Long Span SERIES 2

### HEAVY DUTY STEEL 28-WH-4 - 50.2% Open Area with 1/4" Max Open Between Bearing or Filler Bars

| Main Bearing Bar Size, Inches | Wt. Lbs. Sq. Ft. | Section Properties            |                               | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches-Partially Distributed Load |       |       |         |
|-------------------------------|------------------|-------------------------------|-------------------------------|------------------------|---|-------|-------|---------|
|                               |                  | Sx, in <sup>3</sup> Ft. Width | Ix, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H20/H15 |
| 3 x 1/4                       | 29.90            | 2.571                         | 3.857                         | 3/4 x 1/4              | 40  | 24    | 24    | 28      |
| 3 1/2 x 1/4                   | 32.82            | 3.500                         | 6.125                         | 3/4 x 1/4              | 53  | 32    | 31    | 35      |
| 4 x 1/4                       | 35.75            | 4.571                         | 9.143                         | 3/4 x 1/4              | 69  | 40    | 38    | 44      |
| 4 1/2 x 1/4                   | 38.67            | 5.786                         | 13.018                        | 3/4 x 1/4              | 86  | 50    | 47    | 53      |
| 5 x 1/4                       | 41.59            | 7.143                         | 17.857                        | 3/4 x 1/4              | 96  | 61    | 57    | 64      |
| 6 x 1/4                       | 47.43            | 10.286                        | 30.857                        | 3/4 x 1/4              | 96  | 86    | 79    | 87      |
| 7 x 1/4                       | 53.27            | 14.000                        | 49.000                        | 3/4 x 1/4              | 96  | 96    | 96    | 96      |

| Main Bearing Bar Size, Inches | Maximum Safe Concentrated Load, Lbs/Ft Width - at <i>ClearSpan</i> |         |         |         |         |         |         |         |         |         |         |
|-------------------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                               | 2' - 0"  | 2' - 6" | 3' - 0" | 3' - 6" | 4' - 0" | 4' - 6" | 5' - 0" | 5' - 6" | 6' - 0" | 7' - 0" | 8' - 0" |
| 3 x 1/4                       | 8,571  | 6,857   | 5,714   | 4,898   | 4,286   | 3,810   | 3,429   | 3,117   | 2,857   | 2,449   | 2,143   |
| 3 1/2 x 1/4                   | 11,667   | 9,333   | 7,778   | 6,667   | 5,833   | 5,185   | 4,667   | 4,242   | 3,889   | 3,333   | 2,917   |
| 4 x 1/4                       | 15,238   | 12,190  | 10,159  | 8,707   | 7,619   | 6,772   | 6,095   | 5,541   | 5,079   | 4,354   | 3,810   |
| 4 1/2 x 1/4                   | 19,286   | 15,429  | 12,857  | 11,020  | 9,643   | 8,571   | 7,714   | 7,013   | 6,429   | 5,510   | 4,821   |
| 5 x 1/4                       | 23,810   | 19,048  | 15,873  | 13,605  | 11,905  | 10,582  | 9,524   | 8,658   | 7,937   | 6,803   | 5,952   |
| 6 x 1/4                       | 34,286   | 27,429  | 22,857  | 19,592  | 17,143  | 15,238  | 13,714  | 12,468  | 11,429  | 9,796   | 8,571   |
| 7 x 1/4                       | 46,667   | 37,333  | 31,111  | 26,667  | 23,333  | 20,741  | 18,667  | 16,970  | 15,556  | 13,333  | 11,667  |

#### Panel Width Chart (in.)

#### Dimensions Are Out-To-Out of Bearing Bars

| No. of Bars | 2     | 3    | 4     | 5    | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
|-------------|-------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|
| 1/4" Bars   | 2     | 3.75 | 5.5   | 7.25 | 9     | 10.75 | 12.5  | 14.25 | 16    | 17.75 | 19.5  |
| No. of Bars | 13    | 14   | 15    | 16   | 17    | 18    | 19    | 20    | 21    | 22    | 23    |
| 1/4" Bars   | 21.25 | 23   | 24.75 | 26.5 | 28.25 | 30    | 31.75 | 33.5  | 35.25 | 37    | 38.75 |

### HEAVY DUTY STEEL 42-WH-4 - 51.3% Open Area with 1/4" Max Open Between Bearing or Filler Bars

| Main Bearing Bar Size, Inches | Wt. Lbs. Sq. Ft. | Section Properties            |                               | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches-Partially Distributed Load |       |       |         |
|-------------------------------|------------------|-------------------------------|-------------------------------|------------------------|---|-------|-------|---------|
|                               |                  | Sx, in <sup>3</sup> Ft. Width | Ix, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H20/H15 |
| 3 x 1/4                       | 25.16            | 1.714                         | 2.571                         | 3/4 x 1/4              | 33  | 20    | 19    | 22      |
| 3 1/2 x 1/4                   | 27.10            | 2.333                         | 4.083                         | 3/4 x 1/4              | 44  | 25    | 24    | 28      |
| 4 x 1/4                       | 29.05            | 3.048                         | 6.095                         | 3/4 x 1/4              | 57  | 32    | 30    | 34      |
| 4 1/2 x 1/4                   | 31.00            | 3.857                         | 8.679                         | 3/4 x 1/4              | 71  | 40    | 36    | 41      |
| 5 x 1/4                       | 32.95            | 4.762                         | 11.905                        | 3/4 x 1/4              | 88  | 48    | 44    | 49      |
| 6 x 1/4                       | 36.84            | 6.857                         | 20.571                        | 3/4 x 1/4              | 125   | 68    | 61    | 65      |
| 7 x 1/4                       | 40.74            | 9.333                         | 32.667                        | 3/4 x 1/4              | 170   | 91    | 81    | 85      |

| Main Bearing Bar Size, Inches | Maximum Safe Concentrated Load, Lbs/Ft Width - at <i>ClearSpan</i> |         |         |         |         |         |         |         |         |         |         |
|-------------------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                               | 2' - 0"  | 2' - 6" | 3' - 0" | 3' - 6" | 4' - 0" | 4' - 6" | 5' - 0" | 5' - 6" | 6' - 0" | 7' - 0" | 8' - 0" |
| 3 x 1/4                       | 5,714  | 4,571   | 3,810   | 3,265   | 2,857   | 2,540   | 2,286   | 2,078   | 1,905   | 1,633   | 1,429   |
| 3 1/2 x 1/4                   | 7,778  | 6,222   | 5,185   | 4,444   | 3,889   | 3,457   | 3,111   | 2,828   | 2,593   | 2,222   | 1,944   |
| 4 x 1/4                       | 10,159   | 8,127   | 6,772   | 5,805   | 5,079   | 4,515   | 4,063   | 3,694   | 3,386   | 2,902   | 2,540   |
| 4 1/2 x 1/4                   | 12,857   | 10,286  | 8,571   | 7,347   | 6,429   | 5,714   | 5,143   | 4,675   | 4,286   | 3,673   | 3,214   |
| 5 x 1/4                       | 15,873   | 12,698  | 10,582  | 9,070   | 7,937   | 7,055   | 6,349   | 5,772   | 5,291   | 4,535   | 3,968   |
| 6 x 1/4                       | 22,857   | 18,286  | 15,238  | 13,061  | 11,429  | 10,159  | 9,143   | 8,312   | 7,619   | 6,531   | 5,714   |
| 7 x 1/4                       | 31,111   | 24,889  | 20,741  | 17,778  | 15,556  | 13,827  | 12,444  | 11,313  | 10,370  | 8,889   | 7,778   |

#### Panel Width Chart (in.)

#### Dimensions Are Out-To-Out of Bearing Bars

| No. of Bars | 2     | 3      | 4     | 5      | 6      | 7      | 8      | 9      | 10     | 11     | 12     |
|-------------|-------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1/4" Bars   | 2.875 | 5.5    | 8.125 | 10.75  | 13.375 | 16     | 18.625 | 21.25  | 23.875 | 26.5   | 29.125 |
| No. of Bars | 13    | 14     | 15    | 16     | 17     | 18     | 19     | 20     | 21     | 22     | 23     |
| 1/4" Bars   | 31.75 | 34.375 | 37    | 39.625 | 42.25  | 44.875 | 47.5   | 50.125 | 52.75  | 55.375 | 58     |

## Long Span SERIES 2

### HEAVY DUTY STEEL 33-WH-4 65.3% Open Area with 1/2" Max Open Between Bearing or Filler Bars

| Main Bearing Bar Size, Inches | Wt. Lbs. Sq. Ft. | Section Properties            |                               | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches-Partially Distributed Load |       |       |         |
|-------------------------------|------------------|-------------------------------|-------------------------------|------------------------|---|-------|-------|---------|
|                               |                  | Sx, in <sup>3</sup> Ft. Width | Ix, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H20/H15 |
| 3 x 1/4                       | 22.97            | 2.182                         | 3.273                         | 3/4 x 1/4              | 37  | 22    | 22    | 25      |
| 3 1/2 x 1/4                   | 25.44            | 2.970                         | 5.197                         | 3/4 x 1/4              | 49  | 29    | 28    | 32      |
| 4 x 1/4                       | 27.92            | 3.879                         | 7.758                         | 3/4 x 1/4              | 63  | 36    | 35    | 39      |
| 4 1/2 x 1/4                   | 30.40            | 4.909                         | 11.045                        | 3/4 x 1/4              | 80  | 45    | 42    | 48      |
| 5 x 1/4                       | 32.88            | 6.061                         | 15.152                        | 3/4 x 1/4              | 96  | 55    | 51    | 57      |
| 6 x 1/4                       | 37.84            | 8.727                         | 26.182                        | 3/4 x 1/4              | 96  | 78    | 71    | 77      |
| 7 x 1/4                       | 42.79            | 11.879                        | 41.576                        | 3/4 x 1/4              | 96  | 96    | 94    | 96      |

| Main Bearing Bar Size, Inches | Maximum Safe Concentrated Load, Lbs/Ft Width - at <i>ClearSpan</i> |         |         |         |         |         |         |         |         |         |         |  |
|-------------------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
|                               | 2' - 0"  | 2' - 6" | 3' - 0" | 3' - 6" | 4' - 0" | 4' - 6" | 5' - 0" | 5' - 6" | 6' - 0" | 7' - 0" | 8' - 0" |  |
| 3 x 1/4                       | 7,273  | 5,818   | 4,848   | 4,156   | 3,636   | 3,232   | 2,909   | 2,645   | 2,242   | 2,078   | 1,818   |  |
| 3 1/2 x 1/4                   | 9,899  | 7,919   | 6,599   | 5,657   | 4,949   | 4,400   | 3,960   | 3,600   | 3,300   | 2,828   | 2,475   |  |
| 4 x 1/4                       | 12,929   | 10,343  | 8,620   | 7,388   | 6,465   | 5,746   | 5,172   | 4,702   | 4,310   | 3,694   | 3,232   |  |
| 4 1/2 x 1/4                   | 16,364   | 13,091  | 10,909  | 9,351   | 8,182   | 7,273   | 6,545   | 5,950   | 5,455   | 4,675   | 4,091   |  |
| 5 x 1/4                       | 20,202   | 16,162  | 13,468  | 11,544  | 10,101  | 8,979   | 9,524   | 7,346   | 6,734   | 5,772   | 5,051   |  |
| 6 x 1/4                       | 29,091   | 23,273  | 19,394  | 16,623  | 14,545  | 12,929  | 13,714  | 10,579  | 9,697   | 8,312   | 7,273   |  |
| 7 x 1/4                       | 39,596   | 31,677  | 26,397  | 22,626  | 19,798  | 17,598  | 18,667  | 14,399  | 13,199  | 11,313  | 9,899   |  |

#### Panel Width Chart (in.)

#### Dimensions Are Out-To-Out of Bearing Bars

| No. of Bars | 2      | 3       | 4      | 5       | 6       | 7       | 8       | 9     | 10      | 11     | 12      |
|-------------|--------|---------|--------|---------|---------|---------|---------|-------|---------|--------|---------|
| 1/4" Bars   | 2.3125 | 4.375   | 6.4375 | 8.5     | 10.5625 | 12.625  | 14.6875 | 16.75 | 18.8125 | 20.875 | 22.9375 |
| No. of Bars | 13     | 14      | 15     | 16      | 17      | 18      | 19      |       |         |        |         |
| 1/4" Bars   | 25     | 27.0625 | 29.125 | 31.1875 | 33.25   | 35.3125 | 37.375  |       |         |        |         |

### HEAVY DUTY STEEL 44-WH-4 66.0% Open Area with 1/2" Max Open Between Bearing or Filler Bars

| Main Bearing Bar Size, Inches | Wt. Lbs. Sq. Ft. | Section Properties            |                               | Cross Bar Size, Inches | Maximum Safe <i>ClearSpan</i> , Inches-Partially Distributed Load |       |       |         |
|-------------------------------|------------------|-------------------------------|-------------------------------|------------------------|---|-------|-------|---------|
|                               |                  | Sx, in <sup>3</sup> Ft. Width | Ix, in <sup>4</sup> Ft. Width |                        | 1 Ton   | 3 Ton | 5 Ton | H20/H15 |
| 3 x 1/4                       | 19.94            | 1.636                         | 2.455                         | 3/4 x 1/4              | 32  | 19    | 19    | 22      |
| 3 1/2 x 1/4                   | 21.80            | 2.227                         | 3.898                         | 3/4 x 1/4              | 43  | 25    | 24    | 27      |
| 4 x 1/4                       | 23.66            | 2.909                         | 5.818                         | 3/4 x 1/4              | 56  | 31    | 29    | 33      |
| 4 1/2 x 1/4                   | 25.52            | 3.682                         | 8.284                         | 3/4 x 1/4              | 70  | 39    | 36    | 40      |
| 5 x 1/4                       | 27.38            | 4.545                         | 11.364                        | 3/4 x 1/4              | 86  | 47    | 43    | 47      |
| 6 x 1/4                       | 31.10            | 6.545                         | 19.636                        | 3/4 x 1/4              | 96  | 66    | 59    | 63      |
| 7 x 1/4                       | 34.82            | 8.909                         | 31.182                        | 3/4 x 1/4              | 96  | 89    | 78    | 83      |

| Main Bearing Bar Size, Inches | Maximum Safe Concentrated Load, Lbs/Ft Width - at <i>ClearSpan</i> |         |         |         |         |         |         |         |         |         |         |  |
|-------------------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
|                               | 2' - 0"  | 2' - 6" | 3' - 0" | 3' - 6" | 4' - 0" | 4' - 6" | 5' - 0" | 5' - 6" | 6' - 0" | 7' - 0" | 8' - 0" |  |
| 3 x 1/4                       | 5,455  | 4,364   | 3,636   | 3,117   | 2,727   | 2,424   | 2,182   | 1,983   | 1,818   | 1,558   | 1,364   |  |
| 3 1/2 x 1/4                   | 7,424  | 5,939   | 4,949   | 4,242   | 3,712   | 3,300   | 2,970   | 2,700   | 2,475   | 2,121   | 1,856   |  |
| 4 x 1/4                       | 9,697  | 7,758   | 6,465   | 5,541   | 4,848   | 4,310   | 3,879   | 3,526   | 3,232   | 2,771   | 2,424   |  |
| 4 1/2 x 1/4                   | 12,273   | 9,818   | 8,182   | 7,013   | 6,136   | 5,455   | 4,909   | 4,463   | 4,091   | 3,506   | 3,068   |  |
| 5 x 1/4                       | 15,152   | 12,121  | 10,101  | 8,658   | 7,576   | 6,734   | 6,061   | 5,510   | 5,051   | 4,329   | 3,788   |  |
| 6 x 1/4                       | 21,818   | 17,455  | 14,545  | 12,468  | 10,909  | 9,697   | 8,727   | 7,934   | 7,273   | 6,234   | 5,455   |  |
| 7 x 1/4                       | 29,697   | 23,758  | 19,798  | 16,970  | 14,848  | 13,199  | 11,879  | 10,799  | 9,899   | 8,485   | 7,424   |  |

#### Panel Width Chart (in.)

#### Dimensions Are Out-To-Out of Bearing Bars

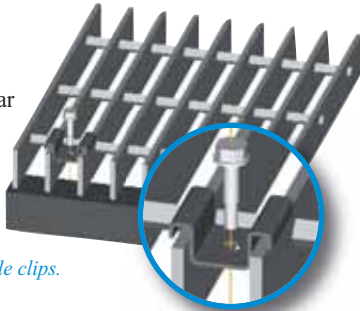
| No. of Bars | 2     | 3    | 4   | 5     | 6  | 7     | 8    | 9     | 10 | 11    | 12   |
|-------------|-------|------|-----|-------|----|-------|------|-------|----|-------|------|
| 1/4" Bars   | 3     | 5.75 | 8.5 | 11.25 | 14 | 16.75 | 19.5 | 22.25 | 25 | 27.75 | 30.5 |
| No. of Bars | 13    | 14   |     |       |    |       |      |       |    |       |      |
| 1/4" Bars   | 33.25 | 36   |     |       |    |       |      |       |    |       |      |

# ANCHORING DEVICES

## Saddle Clip

A special bent-clip type fastener for removable bar grating panels, available in aluminum, stainless steel & galvanized steel.

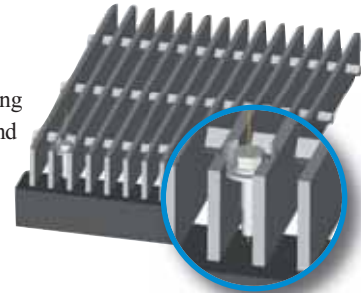
*Note: Cross bars may need to be snipped in the field to facilitate placement of saddle clips.*



## Countersunk Land

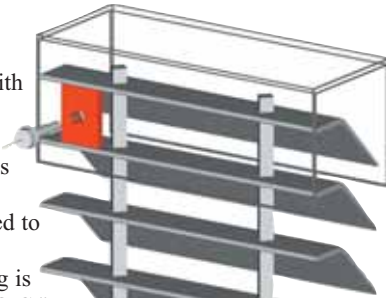
For close-mesh aluminum grating (7/16" or 11/16" bearing bar centers), a countersunk land may be drilled by the grating manufacturer for use with a 1/4" diameter TEK screw.

*Note: Available for aluminum grating and steel.*



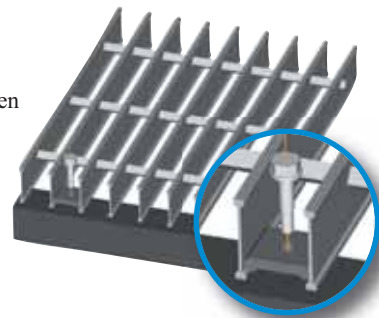
## Channel Frame

A special C-channel frame fastener system used in conjunction with welded anchor blocks between bearing bars. The fabricated frame is held in place by tek screws that are attached to the anchor blocks. Recommended spacing is between 12" and 16" O.C."



## Lug

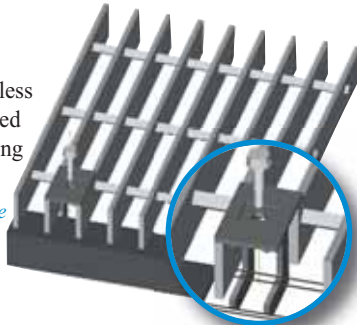
A lug inserted then tack welded between flanges, can serve as an ideal anchor block for plank grating.



## Grating Clamp

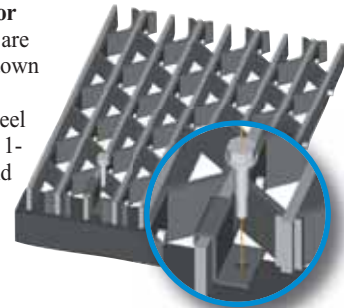
A special friction fastener available in aluminum, stainless steel and galvanized steel used in conjunction with bar grating & embedded grating frames.

*Note: Cross bars may need to be snipped in the field to facilitate placement of grating clamps.*



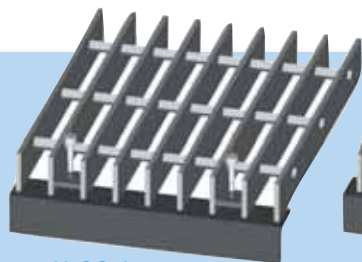
## Z-Clip

The most versatile clip anchor available is the Z-Clip. They are especially helpful in holding down riveted grating. Z-Clips are manufactured from stainless steel and are available in 1" (1" and 1-1/4" grating), 1-1/2" (1-1/2" and 1-3/4" grating), and 2" (2", 2-1/4" and 2-1/2" grating) with a pre-punched hole to accept a 1/4" bolt or TEK screw.

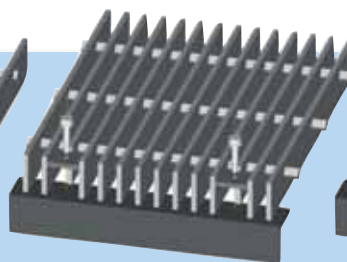


## Anchor Block

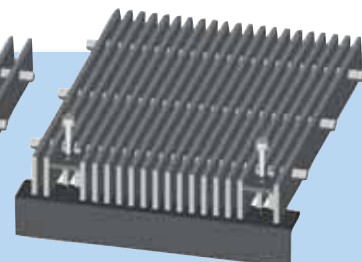
Anchor blocks of 1/4" or 3/16" thick aluminum or steel may be shop welded by the grating manufacturer and used to fasten permanent or removable grating panels. Anchor blocks are recessed thus offering a trip-free surface.



19-SG-4



11-SG-4



7-SG-4

**Note:** For ADA compliant spacings, the lug will typically be installed at the top.

*Tack welding of grating in the field (by others) is also a positive method for anchoring all permanently installed grating.*





*The following information has been excerpted from the NAAMM Metal Bar Grating Manual and represents those practices which are generally accepted to be standard in the metal bar grating industry.*

## Quotations...

Quotations shall be offered on the basis of unit price per square foot (in rectangular sections) and per tread. Plans submitted for bidding shall be fully dimensioned and shall provide the complete product description, including bar spacing, span direction, cutout locations, anchorage devices, and finish required.

## Extras...

A partial list of those items not included in unit price quotations, and which shall be treated as unit price extras, is as follows: straight and circular cutting and banding, toe plates, support plates or angles, hinges, lift handles, locking devices, anchors, hole drilling or punching, grinding of welds, sandblasting, deburring and special bundling.

## Drawings & Specifications...

The Buyer is expected to furnish a set of construction drawings and specifications of current issue showing the layout of supports and floor openings correctly dimensioned, together with the sizes and types of grating and treads required. The Seller shall submit to the Buyer three (3) prints or one reproducible paper copy of detailed drawings in outline form for the latter's approval or desired changes. The Buyer shall return one copy marked with approval or desired changes. Should changes be required which involve work not called for in the original plans and specifications, the Seller shall have the right to charge extra for the engineering work required to make such changes. After all necessary corrections and/or changes are made, the drawings shall be resubmitted to the Buyer for his final approval. The Seller shall not proceed with any shop work until drawings are finally approved.

## Installation Drawings...

If requested, the Seller shall furnish to the Buyer, a maximum of four sets of prints or one reproducible paper copy of all installation drawings.

## Quantity Measurements...

Quantity measurements for gratings ordered to specific dimensions without drawings, shall be based on span times width of each panel, with no deduction made for cutouts. Final calculated grating quantities supplied from drawings shall be on the basis of gross area measured center-to-center of supports, or back to back of supporting angles or channels, or overall dimensions of grating, whichever is larger, with no deduction for clearances. Measurement of cuts shall be on the basis of a minimum of one lineal foot per cut panel. Any cut in excess of one lineal foot shall be measured to the next higher lineal foot. Measurement of banding, toe plates and nosings shall be on the same basis as that of cuts.

## Changes in Scope...

If at any time during the course of the work, the Buyer orders changes made which require materials and/or labor not called for in the original bidding plans, the cost of making such changes shall be paid by the Buyer at a price to be agreed upon.

## Field Work...

The Seller shall not be responsible for taking actual measurements of construction work in the field, nor for erection or installation of the grating.

## Backcharges...

Upon discovery of unsatisfactory material, the Buyer shall immediately notify the Seller, who will initiate an investigation into the complaint. The Seller shall be given the opportunity to inspect the material **PRIOR TO ANY CORRECTIVE WORK BEING DONE**. The Seller is responsible for providing grating in accordance with approved drawings and specifications. The Seller is not responsible for field changes, drawing changes not received and approved by Seller prior to grating fabrication, improper fabrication and/or erection of supporting members. If the investigation and inspection confirm errors in grating fabrication, the Seller agrees to repair and/or replace defective material at no additional charge to Buyer.

## Claims...

All claims are handled independently of all initial orders or invoices.



# SPECIFICATION INFORMATION

Ohio Gratings is a member in good standing with the National Association of Architectural Metal Manufacturers.

All aluminum and steel grating manufactured and fabricated by Ohio Gratings is done so in accordance with the NAAMM Metal Bar Grating Manual, current edition, which is an approved standard of the American National Standards Institute

and designated as ANSI/NAAMM MBG 531 (steel, stainless steel, and aluminum grating and stair treads) and ANSI/NAAMM MBG 532 (structural carbon steel and stainless steel).

The following table outlines the material, Federal, Military and finishing specifications routinely used by the grating industry. In the absence of customer furnished specifications, the following will apply:

| S P E C I F I C A T I O N   |  |  |                     |  |
|---|--|--|---------------------|--|
| PRODUCT   | MATERIAL   | FEDERAL  | MILITARY            | FINISH   |
| Aluminum Flush Top,<br>Aluminum Rectangular Bar,<br>Aluminum I-Bar,<br>Lite Bar,<br>Aluminum Dove Tail,<br>Aluminum Riveted   | 1. Alloy 6063-T6 per ASTM B-221 and QQ -A-200/9.<br>2. Alloy 6061-T6 per ASTM B-221 and QQ -A-200/8 (by inquiry).  | ANSI /NAAMM MBG 531  | MIL-G-18014 (Ships) | 1. Mill Finish<br>2. Clear Anodized AA-A31 (30 min.) or AA-A41 (60 min.) (by inquiry).<br>3. Other (by inquiry).   |
| Aluminum Plank,<br>Aluminum Grating Frames  | 1. Alloy 6063-T6 per ASTM B-221 and QQ -A-200/9.   |  | MIL-G-18015 (Ships) | 1. Mill Finish<br>2. Other (by inquiry).   |
| Heavy Duty Welded Steel,<br>Heavy Duty Riveted Steel  | 1. ASTM A-36 (1/4", 5/16", 3/8", 1/2" carbon steel).<br>2. Other (by inquiry).   | AASHTO (American Association of State Highway and Transportation Officials) Standard Specification For Highway Bridges<br><br>ANSI/NAAMM MBG 532 |                     | 1. One coat manufacturer's standard black paint. This is not a permanent finish system, but is intended to protect the grating in transit only because it will chip. (see page 37)<br>2. Galvanizing per ASTM A-123/A-385. |
| Light Duty Welded Carbon Steel,<br>Light Duty Dove Tail Carbon Steel,<br>Light Duty Swaged Carbon Steel,<br>Light Duty Swaged Stainless Steel,<br>Light Duty Riveted Carbon Steel | 1. ASTM A-1011 (1/8", 3/16", 1/4" carbon steel).<br>2. ASTM A-36 (1/4" carbon steel) by inquiry.<br>3. Type 304 per ASTM A-666 (1/8" and 3/16" stainless steel).<br>4. Other (by inquiry). | ANSI /NAAMM MBG 531  | MIL-G-18014 (Ships) | 1. One coat manufacturer's standard black paint. This is not a permanent finish system, but is intended to protect the grating in transit only because it will chip.(see page 37)<br>2. Galvanizing per ASTM A-123/A-385.  |
| Light Duty Carbon Steel<br>All Aluminum Products  | 1. Alloy 6063-T6 per ASTM B-221 and QQ -A-200/9.   | ANSI /NAAMM MBG 531  | NA                  | 1. TGIC Polyester Systems, a permanent durable finish that resists impact, humidity and salt spray which increases material longevity.   |

\*Effective March 10, 1989, the Naval Facilities Engineering Command adopted the NAAMM Metal Bar Grating Manual for Department of Defense use, replacing Federal Spec RR-G-661 as the specification for carbon steel and aluminum metal bar grating flooring, except for naval vessels.

## A Word About Finishing Grating...

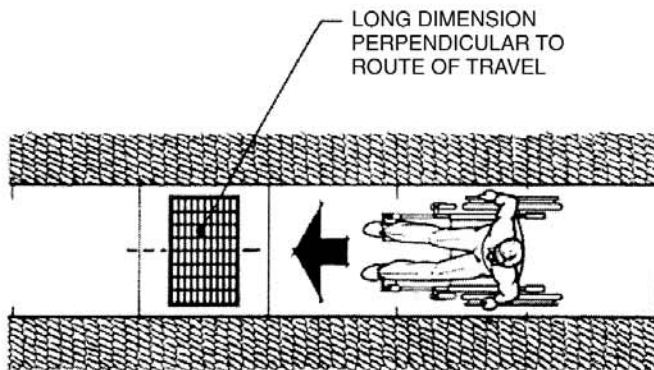
Since the aluminum oxide coating of aluminum bar is relatively inert chemically, and is self-repairing when damaged in the presence of oxygen, aluminum bar grating

possesses a high degree of corrosion resistance in the mill finished condition, and is typically specified without additional coatings or treatment.



## ADA Accessibility Guidelines...

On July 26, 1991 the Architectural and Transportation Barriers Compliance Board (Access Board) published the *Americans with Disabilities Act Accessibility Guidelines* (ADAAG). The ADA establishes accessibility requirements for new construction and alterations of State and local government facilities, and places of public accommodation and commercial facilities. As updated in the November 16, 1999 ADAAG Notice of Proposed Rule making, section 302.3 states that “openings in floor or ground surfaces shall allow passage of a sphere not more than 1/2 inch (13 mm) diameter. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.”

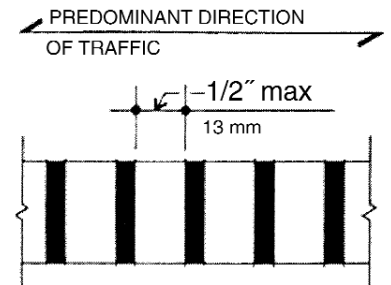


Ohio Gratings manufactures Aluminum, Light Duty Carbon and Stainless Steel and Heavy Duty Carbon Steel grating products which conform with the spacing requirements of the ADA Accessibility Guidelines for Buildings and Facilities. The specification and use of this family of **GRATER ACCESS®** products will ensure that your project is both pedestrian friendly and vehicle safe. Since these Accessibility Guidelines are subject to change, please contact the factory for up-to-date information regarding the use of grating in ADA applications.

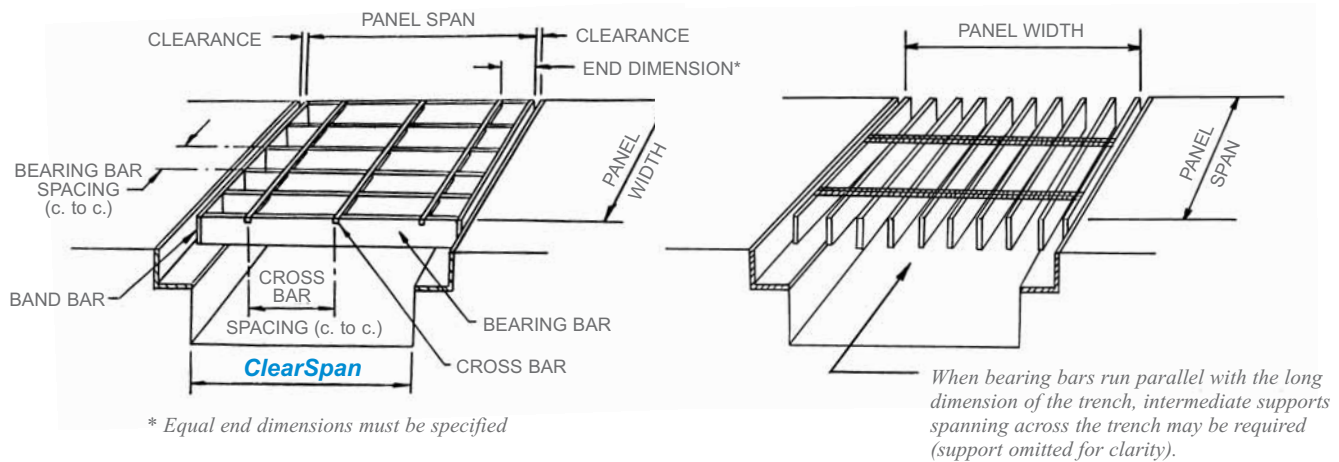
**Note:** Bar grating has historically been an industrial foot walk product, intended for use in catwalks, platforms, stairways, and roadways (Heavy Duty only), and is designed to be installed in a fastened condition. This grating is standardly subject to manufacturing and fabrication tolerances as dictated by the ANSI/NAAMM Metal Bar Grating Manual. While these tolerances and the various finishes available are suitable for most industrial applications, they may not be appropriate for some commercial or architectural uses. Please contact the factory for further specification assistance.



**ADA Note:** As of the publication date of this catalog, Ohio Gratings' products having a 1/2" maximum opening conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG), issued in July 1991, and the ADAAG Notice of Proposed Rule making issued on November 16, 1999, for grating when installed with the elongated opening perpendicular to the dominant direction of travel.



# NOMENCLATURE & VOCABULARY



## Methods of name identification used in this catalog...

This catalog uses a form of the NAAMM alpha-numeric designation for bar spacing and manufacturing identification. The first number signifies center-to-center bearing bar spacing in 1/16ths of an inch\*. A letter designates method of manufacture. The last number details center-to-center cross bar spacing in whole inches (usually 4" or 2"), or rivet spacing (usually 3-1/2", 5" or 7").

## Methods of manufacturing and their letter designations used in this catalog:

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| <b>SG</b> –Swaged Rectangular Bar | <b>W</b> –Welded Steel               |
| <b>SGF</b> –Swaged Flush          | <b>DT</b> –Dove Tail                 |
| <b>SGI</b> –Swaged I-Bar          | <b>ADT</b> –Dove Tail (Aluminum)     |
| <b>SGLi</b> –Swaged Lite Bar      | <b>SGCS</b> –Swaged Carbon Steel     |
| <b>R</b> –Riveted (Steel)         | <b>SGSS</b> –Swaged Stainless Steel  |
| <b>AR</b> –Riveted Aluminum       | <b>WH</b> – <i>Wheels n' Heels</i> ® |
| <b>LG</b> –Louver                 |                                      |

## For Example:

- 19-W-4** Bearing Bars 19/16" (or 1-3/16") c.c.
  - Welded Steel Construction
  - Cross Bars 4" c.c.
- 15-SGI-2** Bearing Bars 15/16" c.c.
  - Swaged I-Bar
  - Cross Bars 2" c.c.

## Other Bearing Bar spacings commonly used throughout the industry are designated this way:

- 38-W-4** (or 2) Bearing Bars 38/16" c.c.(2-3/8" c.c.)
- 30-W-4** (or 2) Bearing Bars 30/16" c.c.(1-7/8" c.c.)
- 22-W-4** (or 2) Bearing Bars 22/16" c.c.(1-3/8" c.c.)
- 11-SG-4** (or 2) Bearing Bars 11/16" c.c.
- 7-SG-4** (or 2) Bearing Bars 7/16" c.c.
- 18-R-7** (or 3-1/2) Bearing Bars 18/16" c.c. face-to-face (1-1/8")\*
- 37-R-5** Bearing Bars 37/16" c.c. face-to-face (2-5/16")\*
- 12-R-7** (or 3-1/2) Bearing Bars 12/16" c.c. face-to-face (3/4")\*



# PRESSURE LOCKED GRATING

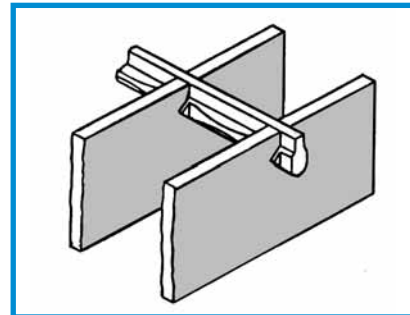
## Pressure Locking...

The most common method of manufacturing aluminum bar grating is through a process known as pressure locking. Pressure locked grating as defined by the NAAMM Metal Bar Grating Manual is grating in which “bearing bars are locked in position by cross bar deformation instead of riveting or welding.” Ohio Gratings manufactures both traditional, dove tail pressure locked grating, and

swaged grating. Both manufacturing processes are used to manufacture, not only aluminum grating, but also carbon steel grating (see pages 81 and 87). Additionally, the swaging process is used to produce stainless steel grating (see page 93). Each method of manufacture is further described below.

## Aluminum Flush Top Grating...

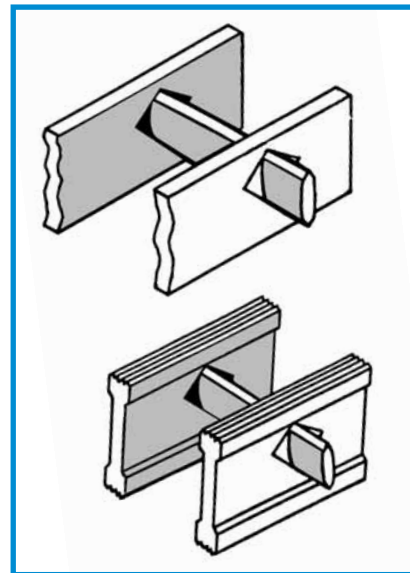
Aluminum Flush Top grating from Ohio Gratings combines the sure lock reliability of swage-locked grating with the cosmetic appeal and added walking surface of traditional pressure locked grating. Best of all, by taking advantage of the swage-lock manufacturing process, Aluminum Flush Top grating offers a cost savings over traditional pressure locked grating while at the same time allowing banding to be an option rather than a requirement. Field cutting is also possible.



## Aluminum Rectangular or I-Bar Grating...

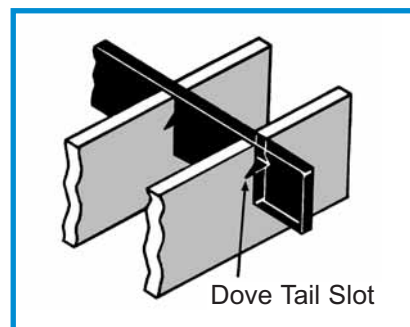
These two grating designs utilize a process by which 1/4” or 5/16” square cross bars are assembled through punched, diamond shaped holes in the bearing bars, and then secured by swaging to prevent turning, twisting, or loosening. Available with either rectangular or I-shaped bearing bar sections, this manufacturing process offers:

- 1) The economy of cutting individual pieces from panels.
- 2) Enables field alteration of grating panels.
- 3) Allows banding as an option rather than as a requirement.



## Dove Tail Pressure Locked Grating...

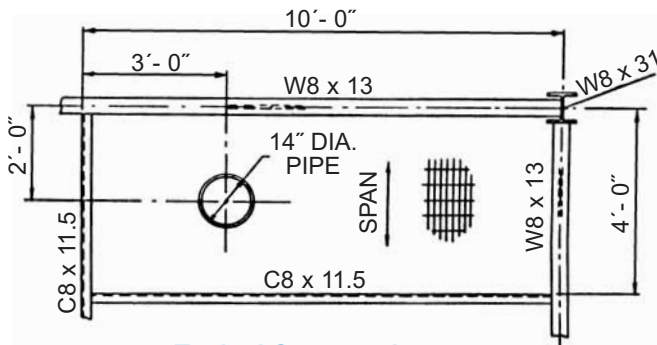
This first generation pressure locked design involves pressing the cross bars into the main bars under hydraulic pressure, forcing 1/16” of cross bar material laterally into “dove tail” slots in the main bars. Each piece is then generally end banded to provide panel stability, and outside bearing bars and cross bars are usually tack welded to ensure integrity. Pieces may be made individually to size, or may be shop cut from panels. Field alteration of this style of grating is typically more difficult than field fabrication of swaged grating, and is generally discouraged.



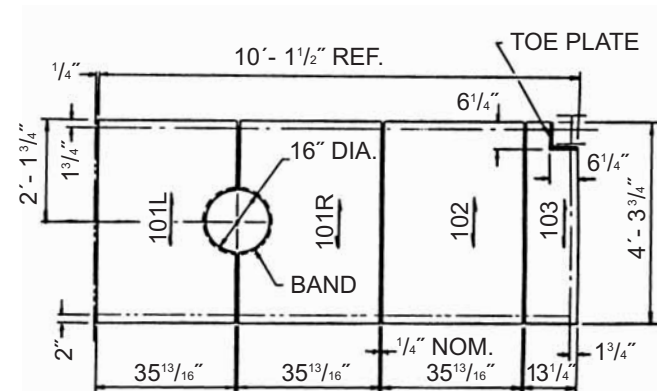
# CUSTOM FABRICATION

All types of fabrication typically associated with the grating industry are performed by experienced and expert craftsmen at Ohio Gratings. Services available include straight and circular cutting and banding, fabrication of radially cut grating panels, toe plate attachment, grating with checker plate, heavy duty grating

with cross bars top and bottom, serrated heavy duty bearing bars and cross bars, egg-crate construction, vault grating, grating with hinges and locks, and heavy duty grating with spacer bars to form an extremely close mesh (see *Wheels n' Heels*® Heavy Duty Steel Grating, pages 61 and 65).



Typical Structural Layout



Typical Panel Layout

*Shown above is an example of a customer supplied structural drawing (top sketch) and the corresponding grating layout drawing as furnished by Ohio Gratings (bottom sketch).*

## Drawings and Templates

The majority of fabrication performed by Ohio Gratings is done in accordance with grating drawings prepared by the Engineering Department. These grating erection drawings are generally produced from the structural drawings, or grating outline drawings, as supplied by the customer.

Each grating panel is tagged with a mark number which corresponds to a mark number on the drawing. This marking system allows grating panels to be identified during the fabrication process, and, when used in conjunction with the grating drawing, facilitates the correct placement of grating panels during erection.

While some grating companies work from floor layouts, Ohio Gratings has chosen to employ personnel thoroughly versed in the trigonometry of grating design, and shop employees who are experts at blueprint reading. This combination has been found to be the most efficient approach to drawing preparation, customer drawing approval, and shop fabrication.

Occasionally, extremely intricate grating areas require that fabrication be accomplished from a template used to supplement the grating drawing. Templates supplied by the customer are usually made from cardboard or plastic. In addition to grating configuration, templates must indicate top and bottom sides, and whether or not they represent the size of the opening or the size of the grating. Grating can be fabricated from templates for a nominal charge, over and above the standard fabrication charge.

*Please contact the factory regarding the electronic transfer of drawings via the Internet.*



## FIBERGLASS FABRICATION

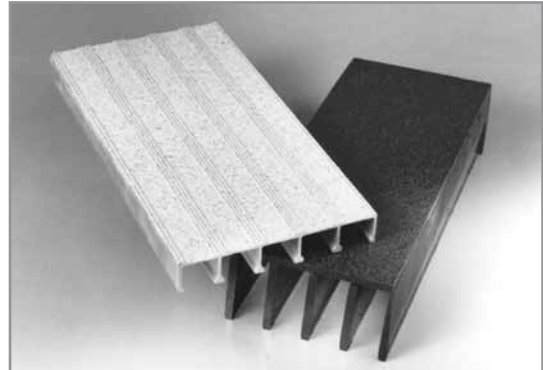
Ohio Gratings stocks and fabricates most major types of fiberglass grating. Molded fiberglass, both square mesh and rectangular mesh, as well as pultruded grating is available in panel form, or cut-to-length and fabricated per customer specifications. Ohio Gratings also has the ability to supply FRP platforms, ladders and handrail. For more information regarding OGI's FRP fabrication capabilities, please contact the factory.



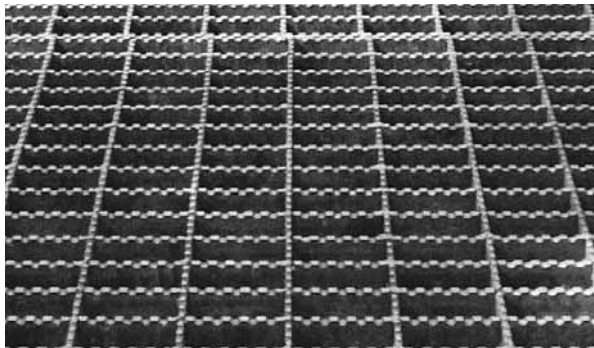
## Grating/Plate Combinations

For those flooring areas requiring the solid surface of plate, and the structural strength and removability of grating, assemblies combining checkered or smooth plate with aluminum, light duty steel, or heavy duty steel can be furnished. Unless otherwise specified, 3/16" welds, one inch long on 12" centers in each direction are used to join grating and plate. Due to the rolled in stresses inherent in plate, and the subsequent stress release and warping which can accompany galvanizing, the following limitations apply to steel grating/checker plate assemblies:

1. Light Duty Steel Grating and Plate combinations will be furnished in the mill finished or painted black conditions only. Deviation from this policy will be at customer risk, i.e., flatness tolerances will not be guaranteed for galvanized material.
2. In addition to the painted or mill finished condition, Heavy Duty Grating/Plate assemblies having bearing bars 2" x 3/8" or larger can be provided with a galvanized finish.
3. All Steel Grating/Plate combinations will be installed with the plate on the BOTTOM of the grating. When installed with the plate facing up, the cross bars will be on the bottom of the grating. This will apply to steel only (not aluminum).
4. All galvanized Steel Grating/Plate will be fabricated with a 1/2" diameter handling/drain hole in one corner of the plate.



*Shown above is a steel grating/solid plate assembly coated with a slip resistant, anti-skid surface. For applications requiring the light weight or corrosion resistance of an aluminum grating / checkerplate combination, unpunched plank (shown above with a slip resistant surface) offers an economical alternative.*

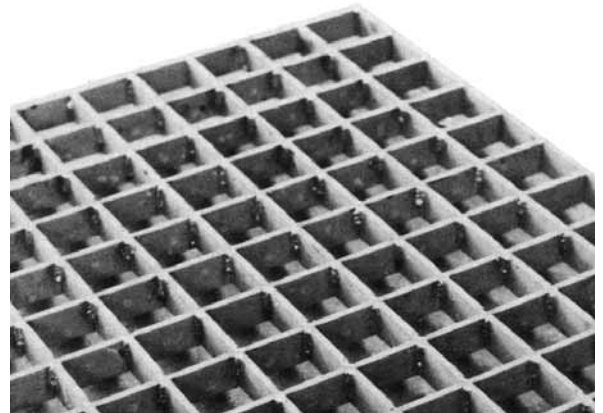


## Serrated Rectangular Bearing Bars and Cross Bars

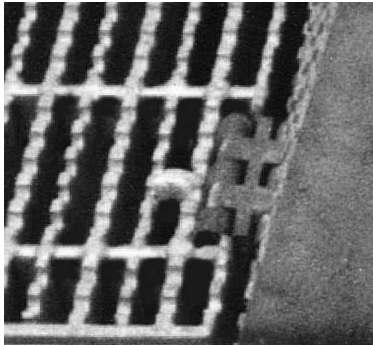
In order to achieve maximum skid resistance for wheel traffic, Ohio Gratings manufactures heavy duty welded steel grating with serrated rectangular bearing bars and cross bars. The rectangular cross bar design is especially suited to this application, providing a skid free surface, while at the same time offering lateral stability which is superior to the round cross rod design most common to the industry. Serrated bearing bars range from 1/4" thru 1/2" thick, while serrated cross bars are available in 1/4" and 3/8" thickness.

## Egg-Crate Construction

Occasionally requirements call for the cross bars to be larger than standard, or in some cases, equal in size to the bearing bars. This condition may necessitate the notching of both the bearing bar and the cross bar resulting in a type of construction known as "egg-crate". Unless otherwise specified, each internal intersection is welded at two of the four corners, while the outside intersection is welded at one of the two corners. Depth of weld can vary depending upon the depth of the grating and the opening between bars. In general, egg-crate construction is limited to bars from 2" to 6" in depth and ranging from 1/4" up to 1" in thickness, with a minimum clear opening ranging from 2" to 4", depending upon bar size. The maximum panel size is typically 50 - 60 SF per piece.



# CUSTOM FABRICATION



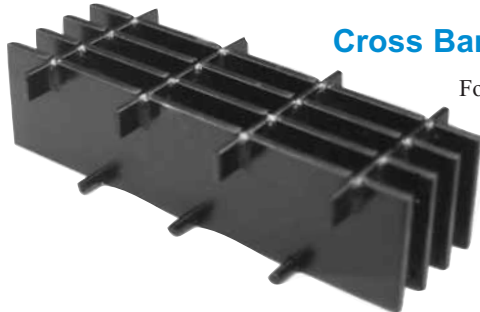
## Hinges, Locks and Lift Handles

Since grating is typically used to provide multiple level flooring, quite often, grating hatches are needed to facilitate access from one level to another. Ohio Gratings has years of experience in fabricating grating panels with hinges and lift handles, and with locking devices for security purposes. Numerous standard details have been developed, and are on file for customer use. Since these details are standard, they represent the most cost effective methods of fabrication, both from a labor, and from a material availability point of view.

## Notching/Welding

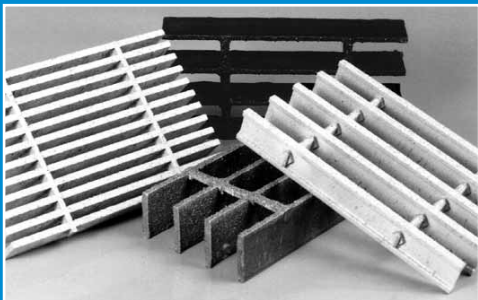
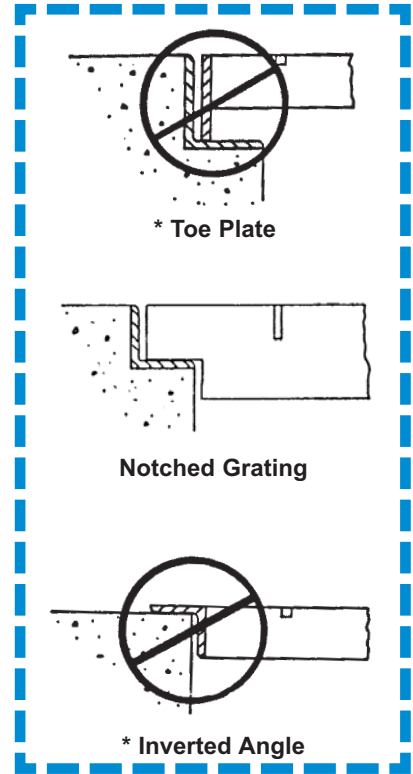
Notching is somewhat common in the industry, however, not recommended under certain conditions. Please consult factory for recommendations.

*\* Grating which is welded to an inverted angle or toe plate, and supported by the weld rather than by a bearing surface, is not recommended and should never be specified.*



## Cross Bars Top and Bottom

For those areas requiring added resistance to lateral forces, Ohio Gratings manufactures heavy duty welded steel grating with cross bars on the bottom, in addition to the standard cross bars which are located on the top. Bottom cross bars can be provided in rectangular or round design, and can be positioned as close together as 2" on center. Bottom cross bars are especially helpful in resisting the lateral impact of accelerating and decelerating wheel loads.



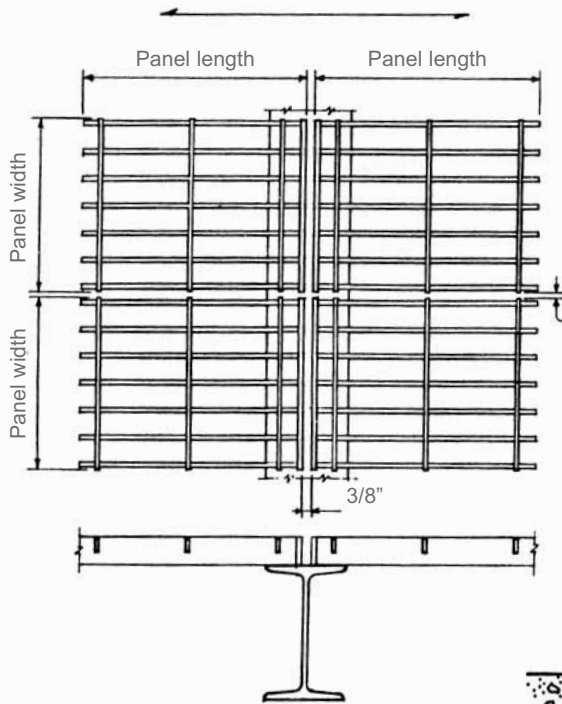
## Slip Resistant Surface

All Ohio Gratings' products are available with a slip resistant, metallic coating for maximum traction. This coating may be in the form of the plasma stream deposition of aluminum-on-aluminum or steel-on-steel, or may be in the form of a CNC laser deposition process. For the most suitable coating for your application, please contact the factory.

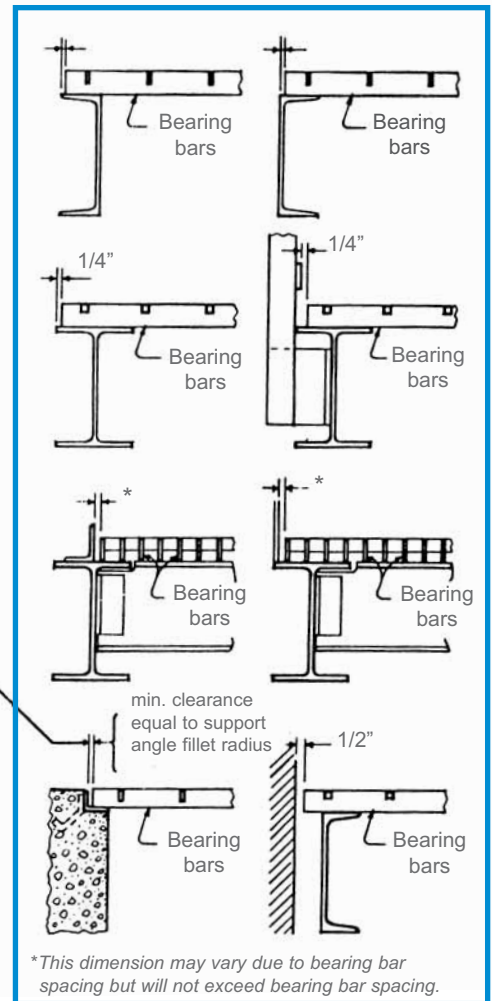
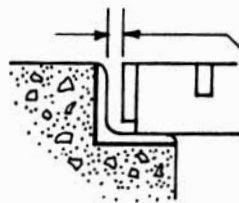




# STANDARD INSTALLATION CLEARANCES



1/4" clearance between ends of cross bars on rectangular grating or rivet heads on riveted grating (3/8" for heavy duty grating).

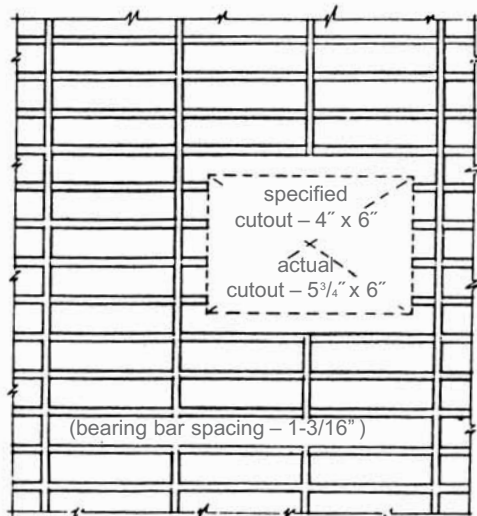


Banding may have less depth than bearing bars for trench grating to allow drainage. Full depth banding will be provided unless otherwise specified.

Clearances shown are recommended, but may vary in accordance with dimensional tolerances.

Heavy duty grating should be designed to have structural support under each bearing bar at cutouts.

As shown in the drawing below, all rectangular cutouts are made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.



Cutouts for circular obstructions are recommended to be at least 2" larger in diameter than the obstruction. It is further recommended that cutouts for all piping 4" or less be made in the field.

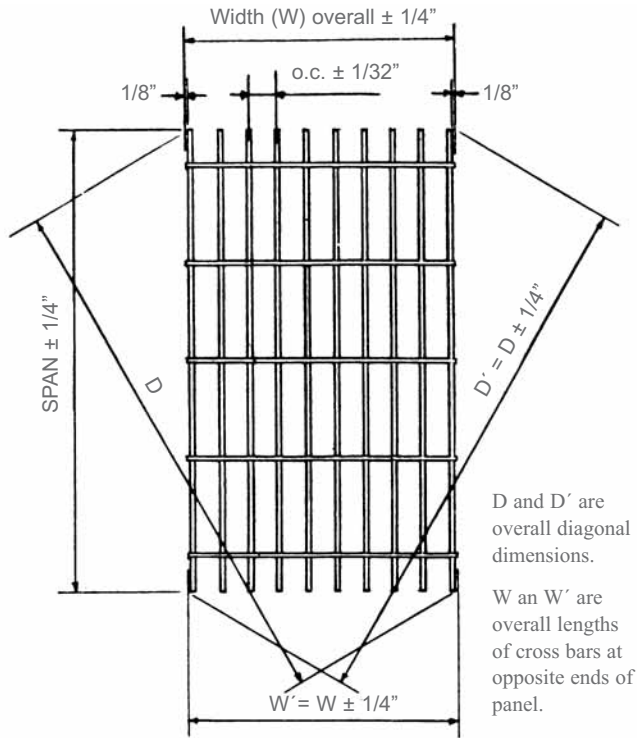
## General Recommendations for Grating Installation

- Gratings must be installed with cross bars on top side.
- Notching of bearing bars at supports to maintain proper elevation is generally not recommended. If notching is required for installation, manufacturer should be consulted.
- Metal should always be used for all grating supports.
- A minimum of 1" bearing shall be provided for Aluminum and Light Duty Steel Grating. For Heavy Duty Steel Grating, 1" minimum bearing shall be provided for bearing bar depths up to 2 1/4", and 2" minimum bearing shall be provided for depths of 2 1/2" and over. This bearing surface does not include the support angle fillet radius noted above.



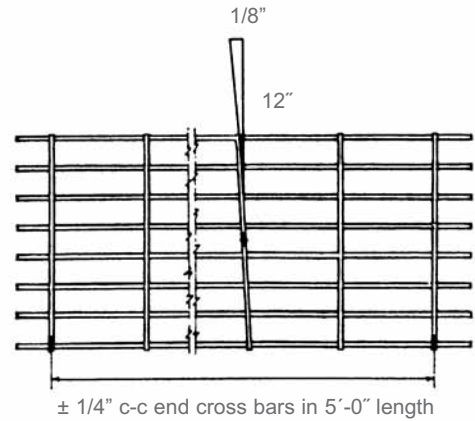
# GRATING TOLERANCES

## Light Duty Steel Grating - Aluminum Grating



**Overall Dimensions and Squareness**

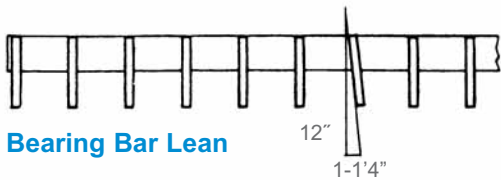
Cross bar shall not vary more than  $1/8"$  in 12" in either direction from perpendicular alignment with bearing bars.



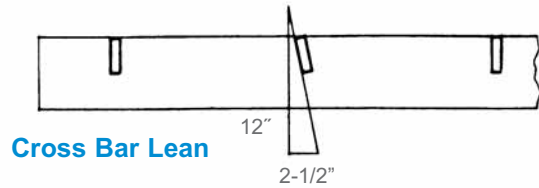
**Cross Bar Alignment and Spacing**



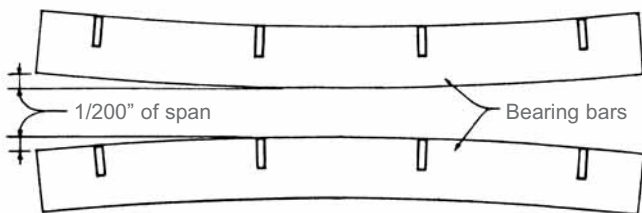
**Cross Bar Location**



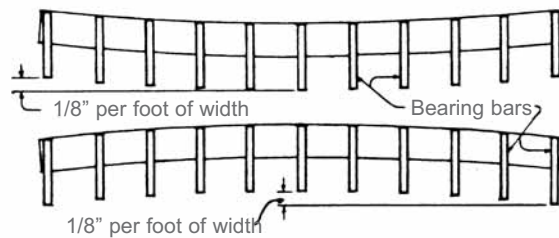
**Bearing Bar Lean**



**Cross Bar Lean**



**Longitudinal Bow**

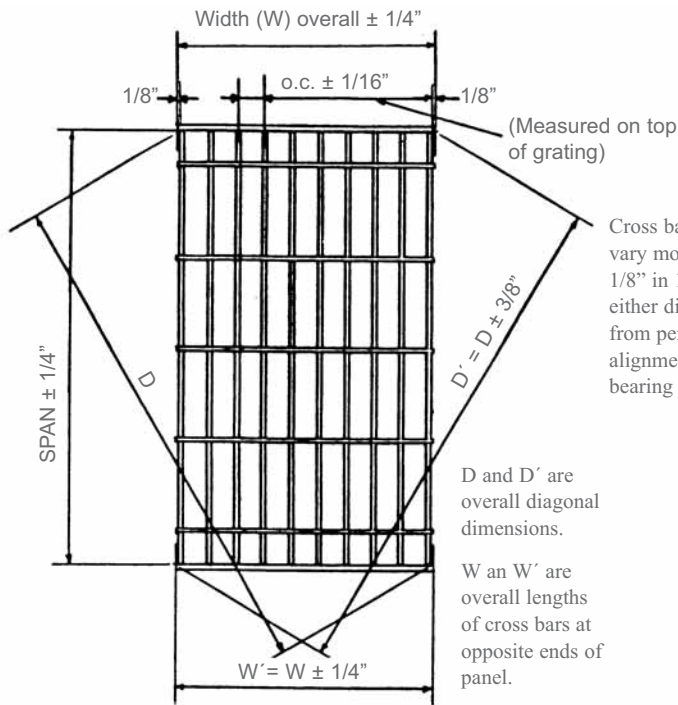


**Transverse Bow**  
 (Before fastening to supports)



# GRATING TOLERANCES

## Heavy Duty Steel Grating

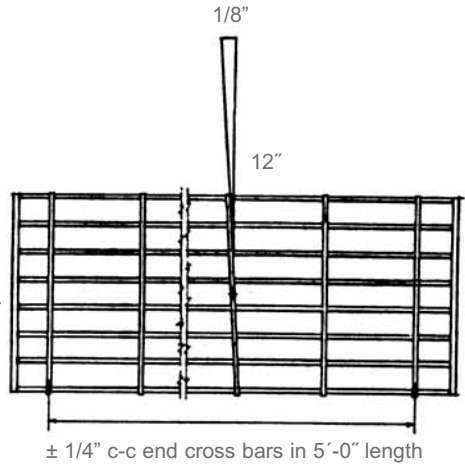


**Overall Dimensions and Squareness**

D and D' are overall diagonal dimensions.

W and W' are overall lengths of cross bars at opposite ends of panel.

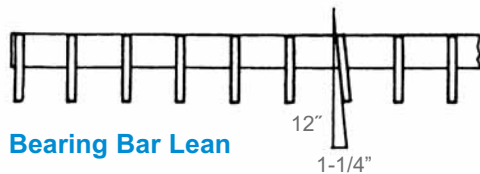
Cross bar shall not vary more than 1/8" in 12" in either direction from perpendicular alignment with bearing bars.



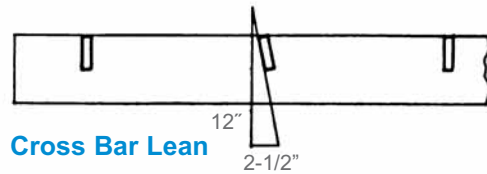
**Cross Bar Alignment and Spacing**



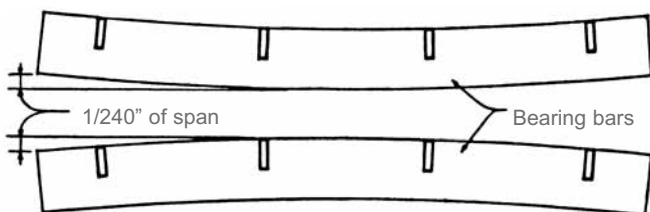
**Cross Bar Location**



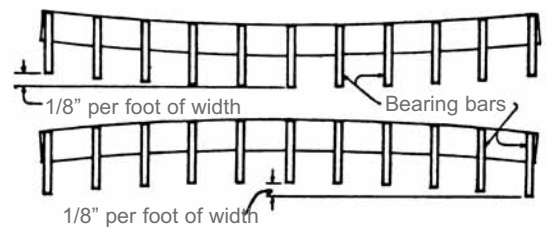
**Bearing Bar Lean**



**Cross Bar Lean**



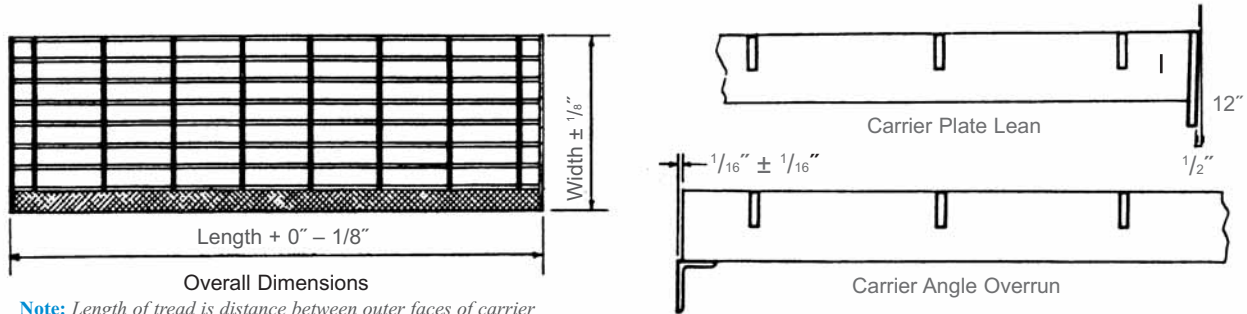
**Longitudinal Bow**  
(Before fastening to supports)



**Transverse Bow**  
(Before fastening to supports)

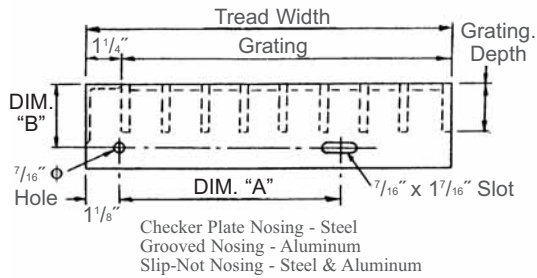


# STAIR TREAD TOLERANCES

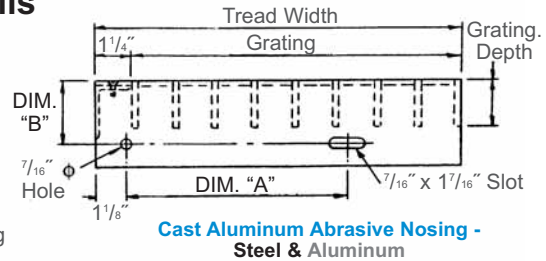
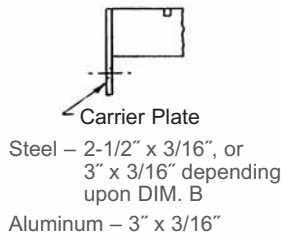


**Note:** Length of tread is distance between outer faces of carrier plates or back to back of carrier angles.

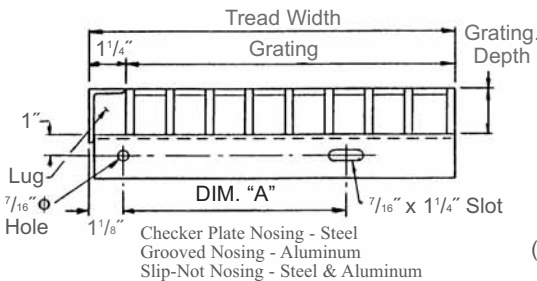
## Stair Tread Details



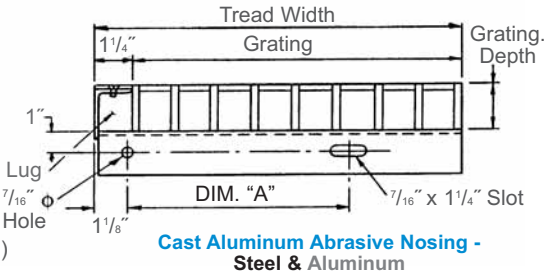
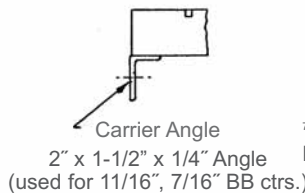
### Tread with Carrier Plate



### Cast Aluminum Abrasive Nosing - Steel & Aluminum



### Tread with Carrier Angle



### Cast Aluminum Abrasive Nosing - Steel & Aluminum

## LiteBar

### Max Tread Length Chart

| Bar Size Inches | 19SGli            | 15SGli            | 11SGli            | 7SGli             |
|-----------------|-------------------|-------------------|-------------------|-------------------|
|                 | Max Length Inches | Max Length Inches | Max Length Inches | Max Length Inches |
| 3/4"            | 18                | 20                | 22                | 27                |
| 1"              | 24                | 28                | 29                | 34                |
| 1-1/4"          | 31                | 34                | 36                | 43                |
| 1-1/2"          | 37                | 40                | 43                | 53                |
| 2"              | 52                | 57                | 62                | 66                |
| 2-1/2"          | 66                | 66                | 66                | 82                |

## Standard Tread Widths and End Plate Dimensions

**Note:** Refer to drawings above for A and B dimensions.

| Number of Bearing Bars | Width (Includes Nosing)*               |            |              |              | End Plate Dimensions |        |        |
|------------------------|--|------------|--------------|--------------|----------------------|--------|--------|
|                        | SGF, SG, ADT, W, DT, SGCS, SGSS Series | SGI Series | R, AR Series | Plank Series | Dim. A               | Dim. B |        |
|                        |  |            |              |              |                      | 1"     | 1 1/2" |
| 5                      | 6 3/16                                 | 6 1/4      | 6 11/16      | 6 3/8        | 2 1/2"               | 1 3/4" | 2 1/4" |
| 6                      | 7 3/8                                  | 7 7/16     | 8            | 7 1/4        | 4 1/2"               | 1 3/4" | 2 1/4" |
| 7                      | 8 9/16                                 | 8 5/8      | 9 9/16       | 8 3/4        | 4 1/2"               | 1 3/4" | 2 1/4" |
| 8                      | 9 3/4                                  | 9 13/16    | 10 5/8       | 9 15/16      | 7"                   | 1 3/4" | 2 1/4" |
| 9                      | 10 15/16                               | 11         | 11 15/16     | 11 1/8       | 7"                   | 1 3/4" | 2 1/4" |
| 10                     | 12 1/8                                 | 12 3/16    | 13 1/4       | 12 3/8       | 7"                   | 1 3/4" | 2 1/4" |

**Note:** DIM. B = 2 1/4" for ALL aluminum treads.

\*Table of widths based on 3/16" thick bearing bars (1/4" I-Bar) and standard 1 3/16" c.c. bar spacing (1/8" face-to-face for riveted grating).

## Suggested Bearing Bar Sizes and Maximum Tread Lengths\*

| ALUMINUM TREADS     |                   |           |                      |                 |                          | STEEL TREADS    |                   |          |                   |
|---------------------|-------------------|-----------|----------------------|-----------------|--------------------------|-----------------|-------------------|----------|-------------------|
| SGF, SG, ADT Series |                   | AR Series | SGI and Plank Series |                 | W, DT, SGCS, SGSS Series |                 |                   | R Series |                   |
| Bar Size, Inches    | Max. Tread Length |           | Max. Tread Length    | Bar Size Inches | Max. Tread Length        | Bar Size Inches | Max. Tread Length |          | Max. Tread Length |
|                     | Plain             | Serrated  |                      |                 |                          |                 | Plain             | Serrated |                   |
| 1 x 3/16            | 2'-4"             | 2'-2"     | 2'-5"                | 1               | 2'-6"                    | 3/4 x 3/16      | 2'-4"             | 1'-11"   | 2'-7"             |
| 1 1/4 x 3/16        | 2'-10"            | 2'-7"     | 3'-0"                | 1 1/4           | 3'-0"                    | 1 x 3/16        | 3'-5"             | 2'-10"   | 3'-10"            |
| 1 1/2 x 3/16        | 3'-6"             | 3'-2"     | 3'-8"                | 1 1/2           | 3'-8"                    | 1 1/4 x 3/16    | 4'-8"             | 4'-2"    | 4'-11"            |
| 1 3/4 x 3/16        | 4'-3"             | 3'-10"    | 4'-6"                | 1 3/4           | 4'-5"                    | 1 1/2 x 3/16    | 5'-6"             | 5'-3"    | 5'-6"             |

\*Maximum tread length based on 300 lb. concentrated load on front 5" of tread at center of tread length and max. D = 1/240" of length. Lengths based on 3/16" thick bearing bars (1/4" I-Bar) and standard 1-3/16" c.c. bar spacing (1-1/8" face-to-face for riveted grating).

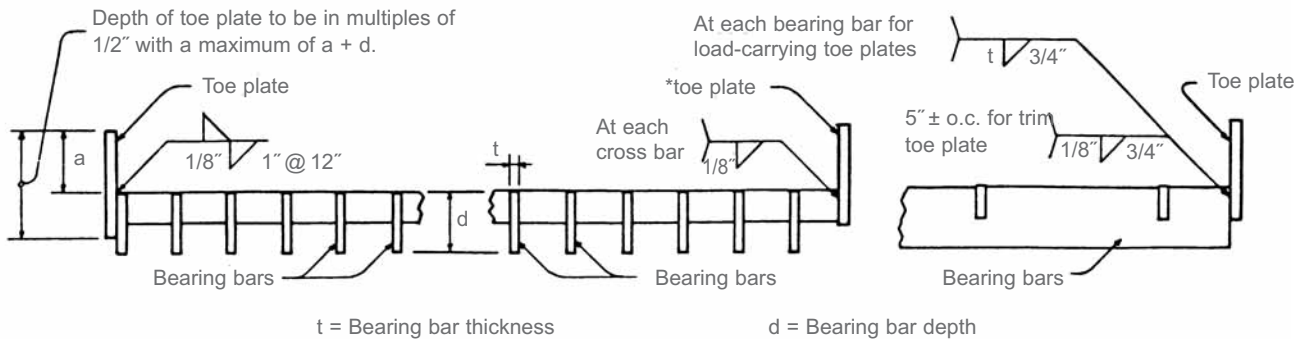
**Note:** Since a serrated connecting bar does not reduce the strength of the AR and R Series, plain and serrated lengths are the same.



## Light Duty Steel Grating - Aluminum Grating

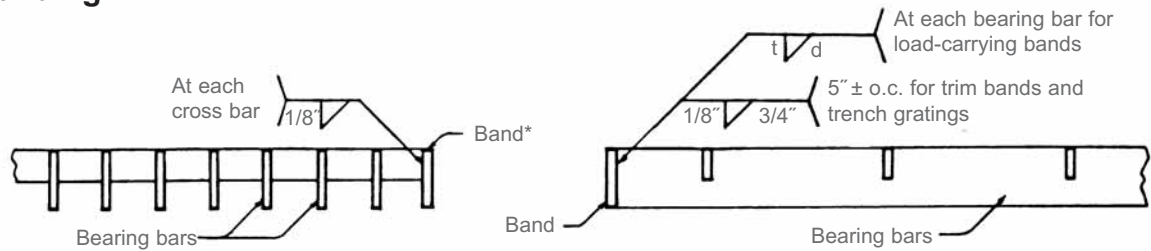
The welding standards shown here apply to those gratings and treads having a clear opening of not less than 5/8" between bearing bars and those galvanized as per ASTM A-123.

### Toe Plates



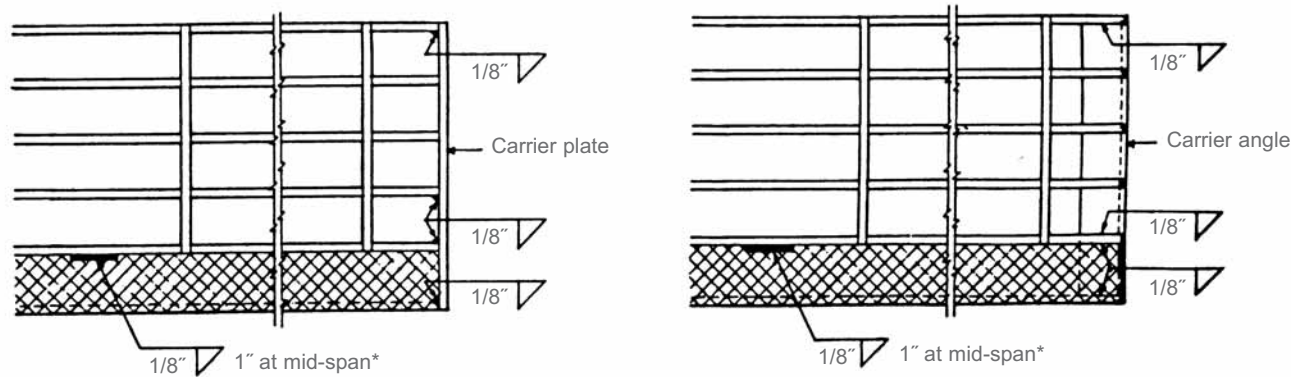
\*Example shown occurs at a diagonal or circular cutout.

### Banding



\*Example shown occurs at a diagonal or circular cutout. Since the outside bearing bar becomes the edge bar of a panel width, side bands are never specified. Full depth banding will be provided unless otherwise specified.

### Stair Treads



Weld 1st, 2nd and last bearing bars as shown.  
On treads over 9-3/4" wide, weld end of center bar also.

On treads over 9-3/4" wide, weld end of center bar also.

\*Treads spanning 4' or more shall have two welds, located at the third points of span.

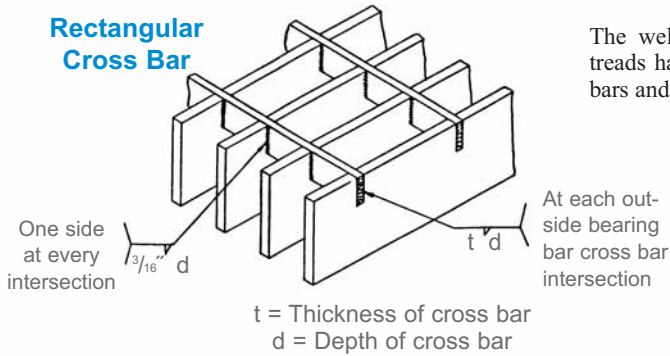


# WELDING STANDARDS

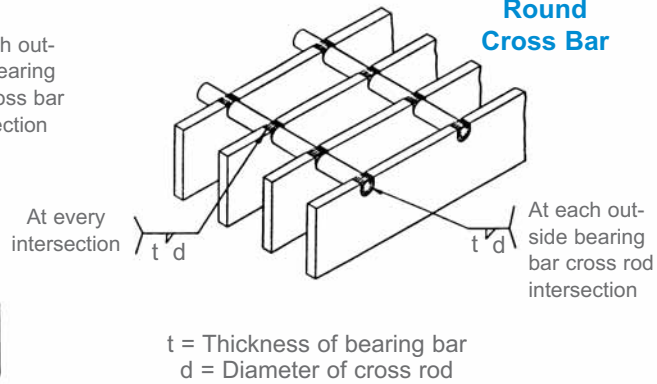
## Heavy Duty Steel Grating

The welding standards shown here apply to those gratings and treads having a clear opening of not less than  $\frac{3}{8}$ " between bearing bars and those galvanized as per ASTM A-123.

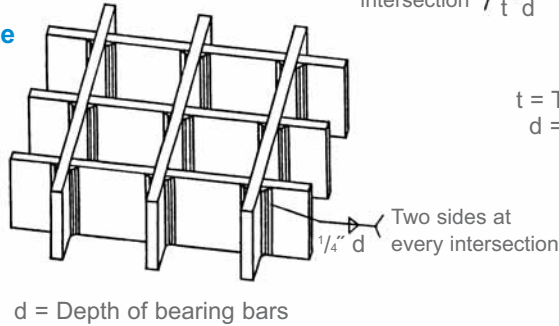
### Rectangular Cross Bar



### Round Cross Bar

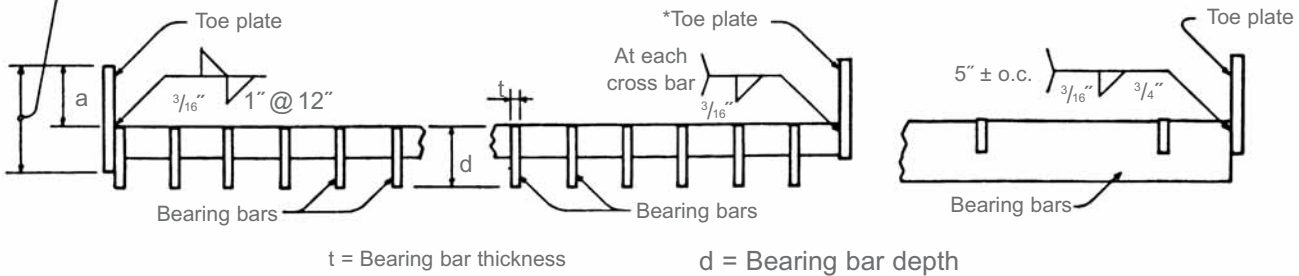


### Egg-Crate



## Toe Plates

Depth of toe plate to be in multiples of  $\frac{1}{2}$ " with a maximum of  $a + d$ .



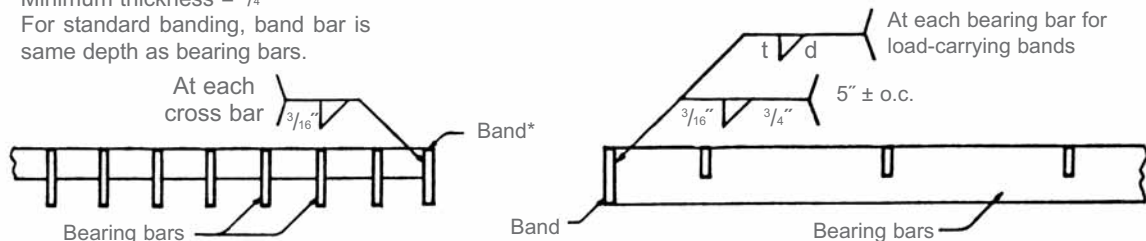
\*Example shown occurs at a diagonal or circular cutout.

## Banding

Minimum thickness =  $\frac{1}{4}$ "

For standard banding, band bar is same depth as bearing bars.

For depth less than  $2\frac{1}{2}$ " weld one side at top. For depth  $2\frac{1}{2}$ " or greater, weld one side at top, opposite side at bottom; or weld exceeding one-half depth on one side only.



**ANCHOR** – A device by which grating is attached to its supports.

**BAND** – A flat bar welded to the end of a grating panel, or along the line of a cutout, and extending neither above nor below the bearing bars.

**Load-Carrying Band:** A band used in a cutout to transfer the load from unsupported bearing bars in the cutout to the supported bearing bars.

**Trim Band:** A band which carries no load, but is used chiefly to improve appearance.

**BEARING BARS** – Load-carrying bars made from steel strip or slit sheet or from rolled or extruded aluminum and extending in the direction of the grating span.

**BEARING BAR CENTERS** – The distance center to center of the bearing bars.

**CARRIERS** – Flats or angles which are welded to the grating panel and nosing of a stair tread and are bolted to a stair stringer to support the tread.

**CLEAR OPENING** – The distance between faces of bearing bars in a rectangular grating, or between a bent connecting bar and a bearing bar in a riveted grating.

**CROSS BARS** – The connecting bars, made from steel strip, slit sheet, or rolled bars, or from rolled or extruded aluminum, which extend across the bearing bars, usually perpendicular to them. They may be bent into a corrugated or sinuous pattern and, where they intersect the bearing bars, are welded, forged or mechanically locked to them.

**CROSS BAR CENTERS** – The distance center to center of the cross bars.

**CURVED CUT** – A cutout following a curved pattern.

**CUTOUT** – An area of grating removed to clear an obstruction or to permit pipes, ducts, columns, etc. to pass through the grating.

**ELECTRO FORGED** – A process combining hydraulic pressure and heat fusion to forge bearing bars and cross bars into a panel grid.

**FINISH** – The coating, usually paint or galvanizing which is applied to the grating.

**FLUSH TOP GRATING** – A type of pressure-locked grating in which the cross bars and bearing bars are in the same plane relative to the top surface of the grating.

**GRATING** – An open grid assembly of metal bars, in which the bearing bars, running in one direction, are spaced by rigid attachment to cross bars running perpendicular to them or by bent connecting bars extending between them.

**HINGED PANELS** – Grating panels which are hinged to their supports or to other grating parts.

**I-BAR** – An extruded aluminum bearing bar having a cross sectional shape resembling the letter “I”.

**LENGTH** – The dimension of a grating panel measured parallel to the bearing bars. Also referred to as span.

**LOAD-CARRYING BAND** – see Band.

**NOSING** – A special L-section member serving as the front or leading edge of a stair tread, or of grating at the head of a stair.

**PRESSURE-LOCKED GRATING** – Pressure-locked means bearing bars are locked in position by cross bar deformation instead of riveting or welding. Several proven methods are:

- Expansion of an extruded or drawn tubular cross bar
- Extruded cross bar deformed or swaged between bearing bars
- Press assembly of rectangular cross bars into slotted bearing bars.

**RADIALLY CUT GRATING** – Rectangular grating which is cut into panels shaped as annular segments, for use in circular or annular areas.

**RETICULINE BAR** – A sinuously bent connecting bar extending between two adjacent bearing bars, alternately contacting and being riveted to each.

**RIVET CENTERS** – The distance center to center of rivets along one bearing bar.

**RIVETED GRATING** – Grating composed of straight bearing bars and bent connecting bars, which are joined, at their contact points, by riveting.

**SERRATED GRATING** – Grating which has the top surfaces of the bearing bars or cross bars, or both, notched.

**SPAN OF GRATING** – The distance between points of grating support, or the direction of this dimension. Also referred to as length.

**STRAIGHT CUT** – That portion of the cut edge or cutout of a grating which follows a straight line.

**SWAGING** – A method of altering the cross-sectional shape of a metal bar by pressure applied through dies.

**TOE PLATE** – A flat bar attached against the outer edge of a grating or rear edge of a tread, and projecting above the top surface of grating or tread to form a lip or curb.

**TREAD** – A panel of grating having carriers and nosing attached by welding, and designed specifically to serve as a stair tread.

**WELDED GRATING** – Grating in which the bearing bars and cross bars are joined at all of their intersections by either a resistance weld or conventional hand welding.

**WIDTH** – The overall dimension of a grating panel, measured perpendicular to the bearing bars, and in the same direction as the cross bars.



# ORDERING INFORMATION

## GRATING...

### 1. Description:

#### a. Aluminum:

- Aluminum Flush Top SGF Series
- Aluminum Rectangular Bar SG Series
- Aluminum I-Bar SGI Series
- Aluminum Lite Bar
- Aluminum Dove Tail ADT Series
- Aluminum Riveted AR Series
- Aluminum Plank Series

#### b. Heavy Duty Steel:

- Heavy Duty Welded Steel W Series
- Heavy Duty Welded Steel WH Series
- Heavy Duty Riveted Steel R Series

#### c. Light Duty Steel:

- Welded Carbon Steel W Series
- Dove Tail Carbon Steel DT Series
- Swaged Carbon Steel SGCS Series
- Swaged Stainless Steel SGSS Series
- Riveted Carbon Steel R Series

### 2. Size and Type: (Bar grating)

- Bearing bar size
- Bearing bar spacing, center-to-center (face-to-face for riveted grating)
- Cross bar or rivet spacing, center-to-center

### 3. Surface:

- Plain
- Serrated
- Striated (I-Bar)
- Slip Resistant Surface

### 4. Size & Punch/Pattern: (Aluminum Plank grating)

- Plank size and type
- Unpunched
- Rectangular Punched
  - Upset Pattern (OGI)
  - Upset Pattern (WACO)
  - Plain Pattern
- Square Punched
  - Upset Pattern
  - Plain Pattern
- Round Punched
  - $\frac{13}{16}$ " Diameter In-Line Pattern
  - 1" Diameter Staggered Pattern
- ADA Diagonal Pattern

### 5. A Drawing Showing: (if layout is complicated)

- Area to be covered
- Span (direction of bearing bars)
- Method of support
- All critical dimensions
- Banding or toe plate

### 6. Type of Anchorage:

- Grating clamp
- Plank clip
- Saddle clip
- Anchor block
- Countersunk land (aluminum only)
- Tack weld
- Z clip
- Plank lug

**Note:** Grating should always be held down by some positive means. (see page 96)

### 7. Finish:

#### a. Aluminum:

- Mill Finish
- Cleaned & Etched
- A-31  $\frac{1}{2}$  hour Clear Anodizing
- A-41 1 hour Clear Anodizing

#### b. Carbon Steel:

- Mill Finish
- Manufacturer's Standard Black Paint
- Galvanized

#### c. Stainless Steel:

- Mill Finish
- Sandblast (used to help minimize the discoloration caused by welding Heavy Duty Stainless Steel grating)

## STAIR TREADS...

### 1. Description: See Grating, Item 1

### 2. Size and Type: (Bar grating) See Grating, Item 2

### 3. Surface: See Grating, Item 3

### 4. Size and Punch/Pattern: (Aluminum Plank grating):

- See Grating, Item 4
- Type "F"

### 5. Type of Nosing:

- Checker plate – standard for carbon steel treads
- Cast aluminum – an abrasive nosing available on aluminum or carbon steel
- Grooved – an extruded aluminum nosing standard on aluminum treads
- Slip-Not – a special nose for aluminum or carbon steel treads by request
- Stainless Steel

### 6. Dimensions:

- Width of tread, including nosing
- Span (length of bearing bars)
- End plate dimensions "A" and "B" (see page 105)

### 7. Number of Treads:

### 8. Finish: See Grating, Item 7

## ALUMINUM GRATING FRAMES...

### 1. Frame Size: (corresponds with grating size)

### 2. Description:

- Stock lengths
- A detailed drawing or accurate measurements for fabricated frames

### 3. Supplementary anchor straps & spacing, if required:

### 4. Finish:

- Mill Finish
- Bituminous Paint

### 5. Nail Holes and Location:, if required





## WHEN GRATING ABSOLUTELY HAS TO BE THERE!

Featuring the following products for shipment in 1 to 3 days!

- Carbon Steel Panels
- Stainless Steel Panels (3 days)
- Aluminum Panels
- Treads
- Light Fabrication

### ALUMINUM & CARBON STEEL PANELS

- Widths 2' and 3'
  - Lengths 6', 8', 10', 12', 20' and 24'
- (See back for details)

### ALUMINUM & LIGHT DUTY CARBON STEEL TREADS

- Aluminum and custom steel sizes with quantities up to 25
  - Stock Steel Treads with 9 sizes available and quantities up to 50
- (See back for stock sizes)

### CUT PIECES & LIGHT FABRICATION

- Cut pieces up to 900 sq. ft.
- Lengths as required
- Fabrication: straight, skew and circle cuts, nosings and trim band

### FINISHES AVAILABLE

- Carbon Steel - Mill, Shop Black & Galvanized (Add 2 additional days for galvanizing)
- Aluminum - Mill
- Stainless Steel - Mill or sandblasted (additional lead time required)

**NEW!**

### #304 SWAGED STAINLESS STEEL PANELS - (WELDED)

- Widths 2' and 3'
- Lengths 8', 10' and 12'
- Heights 1", 1-1/4" and 1-1/2"
- Smooth surface
- Other configurations available

**NOW AVAILABLE  
IN 3 DAYS!**



# KWIK SHIP INFORMATION

## AVAILABLE PRODUCTS

- 19W4 Light Duty Carbon Steel (smooth surface, 1/8" thick) ..... 1", 1-1/4", 1-1/2"  
*(serrated is not available)*
- 19W4 Light Duty Carbon Steel (smooth or serrated surface, 3/16" thick) .... 1", 1-1/4", 1-1/2", 1-3/4", 2"
- 19SG4 Swaged Aluminum (smooth surface, 3/16" thick)..... 1", 1-1/4", 1-1/2", 1-3/4", 2"  
*(serrated surface available in 1", 1-1/4" and 1-1/2" only)*
- 19SGI4 Swaged Aluminum I-Bar..... 1", 1-1/4", 1-1/2", 1-3/4", 2"

## STOCK TREADS - (LIGHT DUTY STEEL)

| BEARING BAR    | WIDTH     | LENGTH | SPACING |
|----------------|-----------|--------|---------|
| 1" x 3/16"     | 9-3/4"    | 2'-6"  | 19W4    |
| 1" x 3/16"     | 12-1/8"   | 2'-6"  | 19W4    |
| 1" x 3/16"     | 10-15/16" | 3'-0"  | 19W4    |
| 1" x 3/16"     | 12-1/8"   | 3'-0"  | 19W4    |
| 1-1/4" x 3/16" | 9-3/4"    | 2'-6"  | 19W4    |
| 1-1/4" x 3/16" | 10-15/16" | 2'-6"  | 19W4    |
| 1-1/4" x 3/16" | 9-3/4"    | 3'-0"  | 19W4    |
| 1-1/4" x 3/16" | 10-15/16" | 3'-0"  | 19W4    |
| 1-1/4" x 3/16" | 12-1/8"   | 3'-0"  | 19W4    |

Black finish available per NAAMM Standards. One shop coat of manufacturer's standard paint which is designed to protect the grating from the elements during transit only.

Galvanized finish available per NAAMM Standards. Gratings specified to be galvanized shall have their exposed surfaces zinc-coated by the hot dip process after fabrication, with a coating of not less than 1.8 oz/sf of coated surface per ASTM123.

WE CAN GET IT THERE... **FAST!**



# Architectural METAL SOLUTIONS



A



B



C



D



F



E



G



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- Sun Screen

**C** Leon Medical, FL  
- Visual Screen Louver

**E** Minneapolis Garage  
- Building Facade Grille

**G** Akron Art Museum, OH  
- Sun Screen & Grille

**B** Blackhawk Deck - Chicago, IL  
- PressLock Grille

**D** Chipotle Restaurant  
- Sun Screen

**F** Michigan Trash Containment  
- Visual Barrier Louver



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