



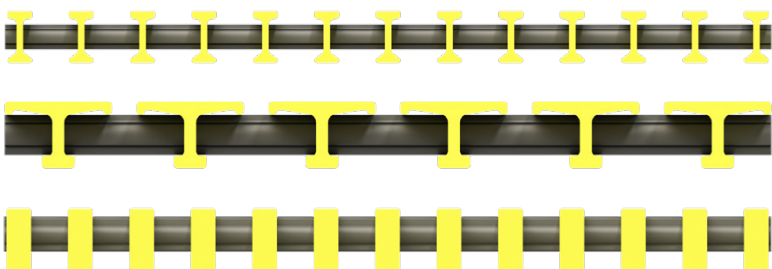
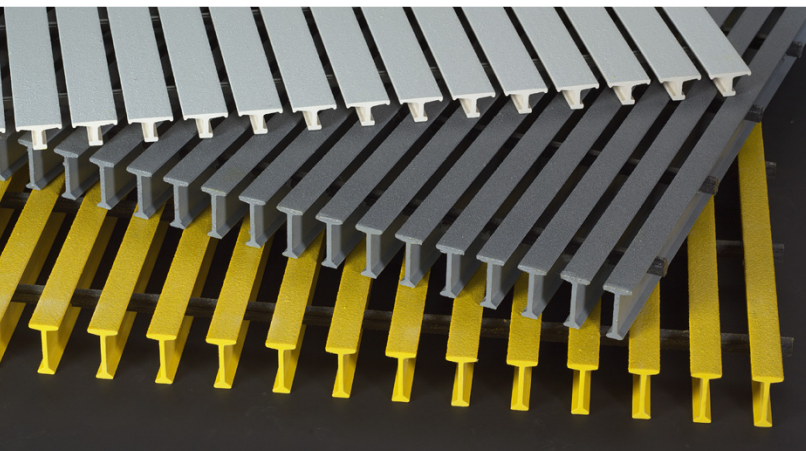
 **STRONGWELL®**

**EXCLUSIVELY**  
 **MADE IN THE USA**

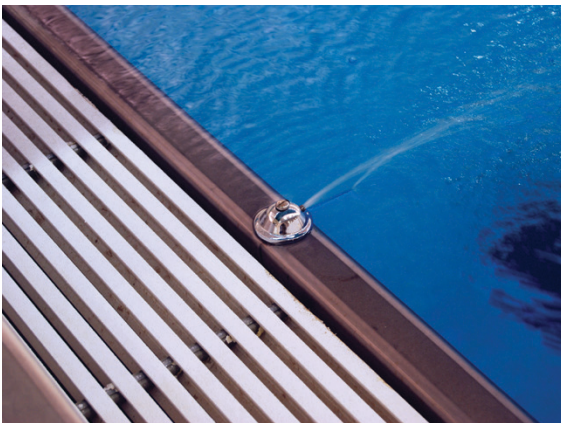
**DURAGRID®**

**PULTRUDED FIBERGLASS GRATING**

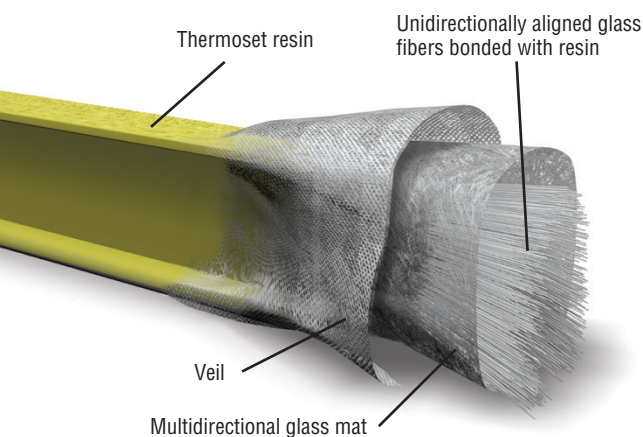
**METRIC**



# HIGH STRENGTH PULTRUDED FIBERGLASS GRATING



Multiple series of DURAGRID® were used for slip-resistant walkways at the Bismarck Aquatic Center in Bismarck, North Dakota.



## Three-Piece Cross-Rod Assembly

The 3-piece cross-rod assembly used in DURAGRID® grating forms a strong, unified panel that can be cut and fabricated like a solid sheet.

This unique system consists of two continuous, pultruded spacer bars and a center core wedge. The spacers are notched at each bearing bar so that the bars are both mechanically locked and chemically bonded to the web of each bearing bar.

This separates and affixes bearing bars firmly in position and distributes concentrated loads to adjacent bars. The resulting panel can be easily fabricated with standard carpenters' tools with abrasive cutting edges. Ask for the detailed *Grating Field Fabrication Guide* for further details.

## What is DURAGRID®?

DURAGRID® is high strength pultruded bar grating made exclusively in the U.S.A. that can be used like traditional metal grates or fiberglass molded grating while offering the inherent benefits of pultrusion. DURAGRID® is an ideal replacement for steel, aluminum, or molded fiberglass gratings anywhere frequent grating and walkway replacement costs are unacceptable.

DURAGRID® custom grid or grating systems are designed to accommodate specific applications that cannot effectively be met by a standard fiberglass grating. DURAGRID® offers options such as selection of open space, bar shape, cross-rod placement, custom fabrication, custom resin or color.

## Why Use DURAGRID®?

DURAGRID® is lightweight, which saves on freight and makes installation easier compared to metal grating. The unique cross-bar construction of DURAGRID® allows the panels to be easily cut and modified to fit almost any requirement. A full listing of features is shown below.

## Features

- Corrosion Resistant
- Structurally Strong
- High Impact and Fatigue Strength
- Lightweight
- Fire Retardant
- Easy to Fabricate and Install
- Low Maintenance
- Low Electrical and Thermal Conductivity
- Resistant to Chipping and Cracking
- Aesthetically Pleasing Appearance
- Skid Resistant
- Non-Sparking

## Materials of Construction

DURAGRID® fiberglass gratings are a composite of fiberglass reinforcements (fibers and mat) and a thermosetting resin system, produced by the pultrusion process. The pultrusion manufacturing process produces the outstanding characteristics of the product.

The bearing bars use both longitudinal (glass roving) and multidirectional (glass mat) reinforcements, as well as a synthetic surfacing veil to provide unequalled strength and corrosion resistance. The densely packed core of continuous glass rovings gives the bar strength and stiffness in the longitudinal direction while the continuous glass mat provides strength in the transverse direction and prevents chipping, cracking and lineal fracturing. The synthetic surfacing veil provides a 100% pure resin surface for added corrosion resistance and UV protection.



## Bar Profiles and Grating Series

A wide variety of bearing bar shapes along with various bearing bar and cross-rod spacings are available depending on the design requirements. Refer to the load/deflection tables in this catalog for selection.

The traditional “I” bar shape provides maximum flexibility in design. It is available in 25mm, 32mm, and 38mm depths.

The “T” bar shape provides a more solid walking surface, generally used for pedestrian applications. It is available in 25mm, 38mm and 51mm depths. The Economy series offers a lighter weight T-shaped bearing bar.

Strongwell's DURAGRID® Heavy Duty (HD) solid bar grating has been designed to handle heavy wheel traffic such as forklifts, tow motors and truck traffic. Because of the variety of wheel types and loading, please contact Strongwell's engineering department to determine the series of heavy duty grating to use. It is available in 25mm, 32mm, 38mm, 44mm, 51mm, 57mm and 64mm depths.

Strongwell also offers a 25mm “R” bar grating, a rectangular bar, in several different series. Visit our website to view the “R” bar information and load tables.

## Panel Sizes and Shape

Panels can be made to exact sizes to eliminate waste and fabrication costs in the field. The maximum panel weight is 227 kg and the maximum panel size is 1.5m x 6m.

## UV Coatings

Bearing bars can be UV coated for added protection and color stability for outdoor applications.

## Color

The two standard bearing bar colors are light gray or yellow; the two standard cross rod colors are light gray (polyester) or black (vinyl ester). Other bearing bar colors can be quoted upon request. A small inventory is also maintained of 25mm and 38mm “I” and “T” bearing bars in white fire retardant polyester resin.

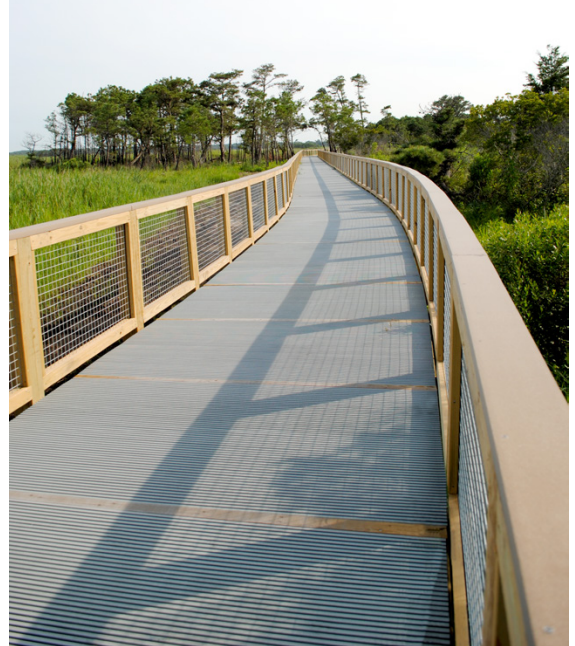
## Resin Selection

The standard polyester resin used in DURAGRID® is fire retardant and meets the requirements for a Class 1 flame rating of 25 or less per ASTM E-84 and meets the self-extinguishing requirements of ASTM D-635. The resin also contains a UV inhibitor.

DURAGRID® offers a wide selection of resin options including polyester, vinyl ester, phenolic, modar, etc. Other options feature UV inhibitors, various colors and specialized additives.

## Surface Texture

Grids can be ordered with or without an anti-skid grit surface. A variety of grit material and textures can be ordered.



Almost 5,000 panels of I-4000 25mm were used to create a nearly half-mile walking and biking path at Cape Henlopen State Park near Lowes, Delaware.



HD-5000 38mm was used at a high-end condominium complex in Miami Beach, Florida to cover drainage channels at parking garage entryways.

# APPLICATIONS

DURAGRID® grating systems are designed to accommodate a wide variety of applications, such as:

- General Industry
- Consumer/Recreation
- Marine/Offshore
- Cellular Communications
- Mining/Processing
- Food and Beverage Operations
- Plating Operations
- Water/Wastewater Treatment
- Transportation
- Agricultural
- Chemical Plants
- Pulp and Paper Plants
- Electrical
- Railroad - AAR Approval
- Power Plants
- Fire Equipment



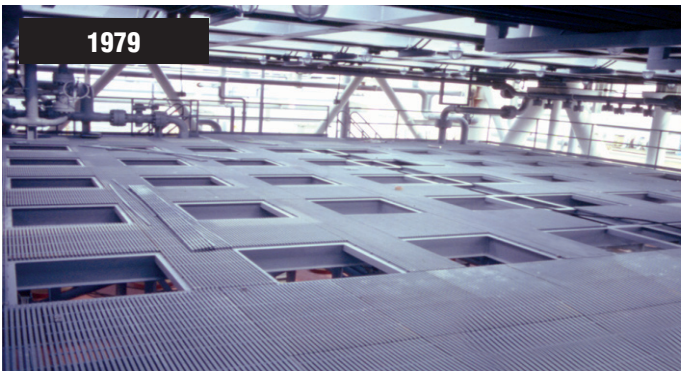
The Muirfield Village Golf Club, designed by Jack Nicklaus, offers an outside patio deck for players to relax and have a snack between nines. After years of constant moisture and the steady pounding of golf shoes, the wood deck had become a safety hazard and required replacement. Strongwell manufactured T-1800 using a custom pigmented resin to replace the wooden deck to offer both the aesthetic and structural benefits the club desired.



T-1700 was used to replace wood planks on a large walkway at Dinner Key Marina in Miami, Florida. The grating allows for easy accessibility to utilities below the walkway and will not rot like the previous wooden walkway.



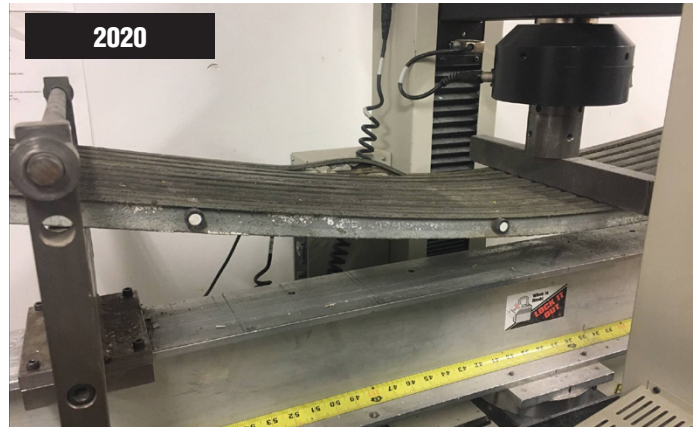
Copper processing facilities such as the Ammonia Leach/Solvent Extraction/Electrowinning plant for Minera Escondida Limitada in Chile found I-6000 38mm to be the perfect solution.



In 1979, I-4000 grating was installed on Shell's offshore platform Ellen (now owned by Beta Offshore). Decades of exposure on Ellen has had little to no effect on the nearly 10,000 square feet of grating. Even accidental sandblasting and paint overspray has not degraded the anti-skid surface.

When asked in 2010 about the lifespan of the grating on the platform, Facility Superintendent Yohn Rosqui stated, "The grating looks to be in great shape. The surface shows very little wear and tear."

In 2020, Strongwell was able to acquire and examine a portion of the original grating for flexural testing. With over 40 years of daily exposure to weather and pedestrian traffic, the grating still retained over 80% of its flexural modulus and 80% of its maximum load capability from its published load tables.



# APPLICATIONS



Chicago Transit maintenance walkways alongside elevated train tracks constitute one of the largest fiberglass grating installations in history. This project used T-5000 51mm with a custom polyester resin.



Low maintenance fiberglass grating provides trouble free operations for the covers and walkways in the Lakewood, Colorado Wastewater Treatment Plant Headworks. I-6000 38mm was used.



Mill Ruins Park in downtown Minneapolis, Minnesota utilized T-1800 25mm for new pedestrian walkways in the beautiful historical district.



Strongwell I-6000 grating was installed at this School of Business and Information Systems in Hong Kong as air-conditioning platforms when placed horizontally and as louver when placed vertically (as shown here).



HD-4000 64mm was used as a trench cover to protect wireless electromagnetic charging devices built into the roadway at the Utah State University Electric Vehicle and Roadway research facility in Logan, Utah.

# TECHNICAL DATA

## How to Specify DURAGRID®

Fiberglass grating shall be DURAGRID® Series ( ) as manufactured by Strongwell. Grating shall be pultruded and assembled in the U.S.A. Resin shall be fire retardant ( ) meeting the requirements of a Class 1 rating of 25 or less per ASTM E-84 and the self-extinguishing requirements of ASTM D-635. Bearing bar color shall be ( ). Resin shall be UV inhibited and the composite shall include a veil on all exposed surfaces. Panels shall be assembled into the sizes ordered using a 3-piece pultruded cross-rod system with color correlating with chosen resin system: polyester = light gray, vinyl ester = black.

The cross-roads shall consist of a center core wedge and two spacer bars that are notched at each bearing bar so that each bearing bar is both mechanically locked and chemically bonded to the web of each bearing bar. The spacer bars shall be continually bonded to the center core wedge. The cross-roads shall be spaced a maximum of ( mm) in the panel. The top of the panels (shall) (shall not) be covered with a bonded grit anti-skid surface.

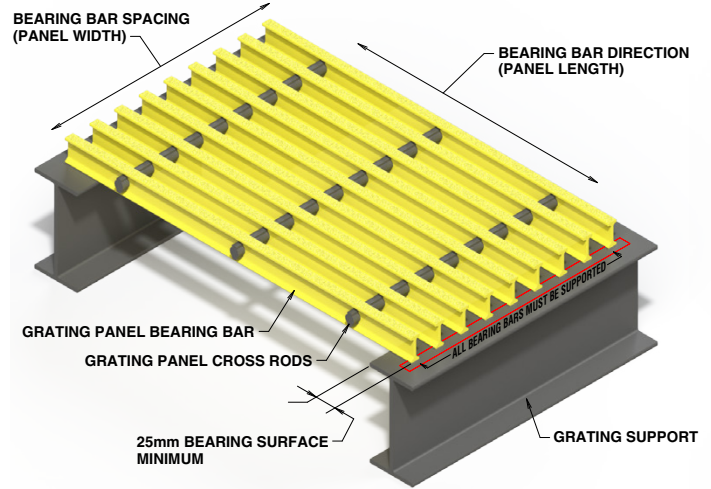
NOTE: If special options are required that are not stated in the above specification, fill in your special requirement in the appropriate section.

## How to Order

When ordering DURAGRID®, ensure the bearing bars for installation will be oriented in the correct direction for the application. Bearing bars shall traverse from support to support. Cross-roads are not intended to be applied in the span direction. The adjacent drawing will help specify the width and length of panels.

NOTE: Width is the measurement from end to end of the cross-roads. Length is always the bearing bar length.

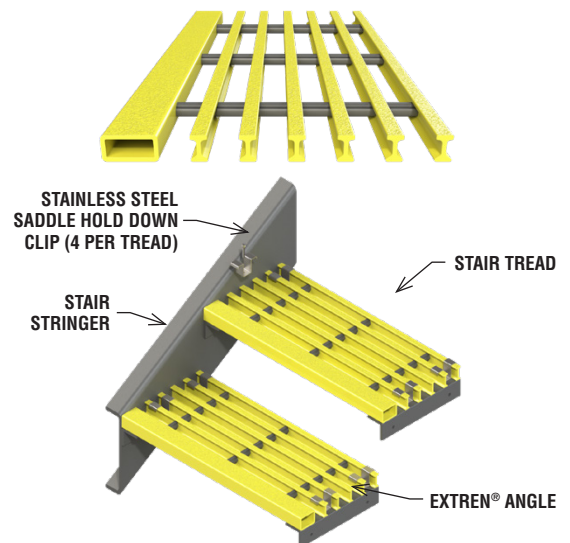
**Panel Sizes Are Specified: Width x Length**



## NOSINGS FOR STAIR TREADS AND LANDINGS

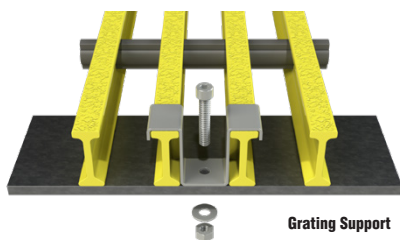
DURAGRID® pultruded stair treads and landings are produced by attaching a 51mm deep nosing to the leading edge. This gives added strength and rigidity to the area that takes the most impact and abuse. In addition, the nosing provides more surface area for skid resistance, wear and better visibility. Light gray stair treads with yellow nosing are available at additional cost.

TREAD WIDTH & COLOR	STAIR TREAD SERIES	MAXIMUM SPAN FOR 136 KG AT MIDSPAN	
		3mm OR LESS DEFLECTION	6mm OR LESS DEFLECTION
280mm Light Gray or Yellow	I-6000 25mm	736mm	940mm
280mm Light Gray or Yellow	I-6000 38mm	1016mm	1320mm
305mm Light Gray or Yellow	T-5000 51mm	1194mm	1499mm



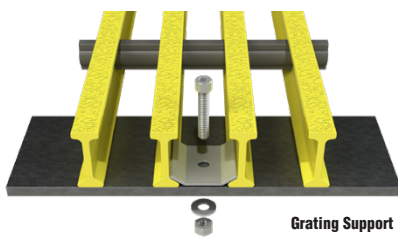
# ACCESSORIES

## Panel Hold Downs



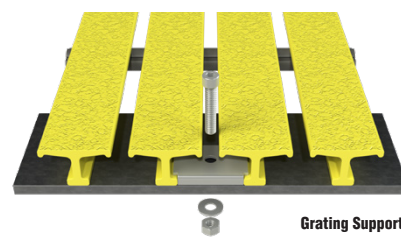
The weldable 316L stainless steel saddle clips above are available for some DURAGRID® grating series.

\*Bolts are priced separately from the saddle clips.



The weldable 316L stainless steel insert clips above are available for some DURAGRID® grating series.

\*Bolts are priced separately from the hold-down.

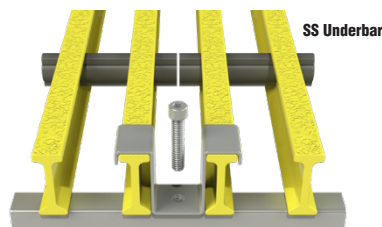


The weldable 316L stainless steel insert clips above are available for series T-1800 and T-3500 only.

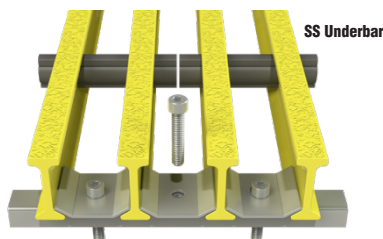
\*Bolts are priced separately from the hold-down.  
(All bolts are 6.35mm-20 x 31.75mm, cap head, 316L stainless steel.)

## Panel Connectors

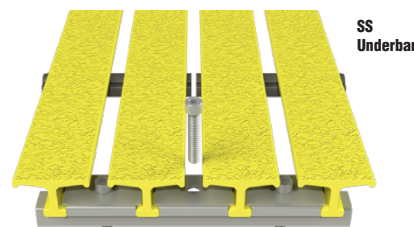
Panel Connectors are generally only used at midspan to assist in transferring load from section to section.



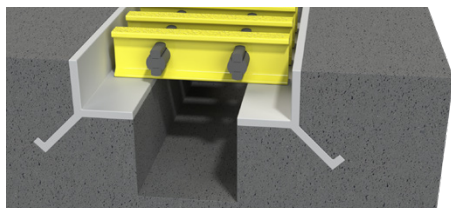
The 316L stainless steel saddle clips above are available as panel connectors for some DURAGRID® grating series.



The 316L stainless steel insert clips above are available for some DURAGRID® grating series.



The 316L stainless steel insert clips above are available for T-1800 and T-3500 grating only.  
(All bolts are 6.35mm-20 x 31.75mm, cap head, 316L stainless steel.)



## Curb Angle

Fiberglass Curb Angle provides a strong, firm base for bearing bars and is pultruded from the same material and in the same manner as other DURAGRID® products. Corrosion resistant Fiberglass Curb Angles are available for 25mm, 38mm and 51mm grating panel thicknesses in gray fire retardant vinyl ester.

## USING THE LOAD/ DEFLECTION TABLES

### Series Designation

The series designation indicates the bar size and shape and the percent of open area. For example: T-3500 38mm means 38mm T-bar spaced to give a 35% open area.

### Load Table Data

The following pages are a quick reference for various grating options based on pedestrian loads and maximum spans to have 6.35mm maximum deflection.

### Minimum Value

A value that is a specified distance from the average. The most common specified distance is three standard deviations.

### Characteristic Value

As defined by ASTM D7290, a value that is normally between two and three standard deviations from the average.

### Average Value

The sum of a list of values divided by the number of values in the list, without consideration for standard deviations.

### Typical Value

No definition. Not recommended for use by Professional Engineers. Can be any value the manufacturer chooses.

*NOTE: Strongwell recommends the use of minimum or characteristic values for design calculations.*

\* For full load tables, visit <http://www.strongwell.com/gratingloadtables-metric>. For special conditions or additional information, contact us.

# DURAGRID® I-BAR PULTRUDED GRATING

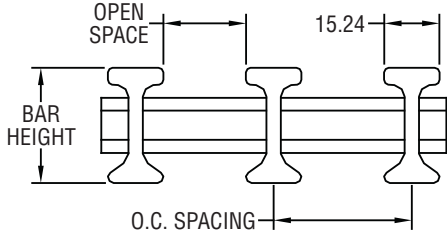
<sup>1</sup> 4.78 kN/sq.m load, simple span (dimensions shown), 6.35mm deflection.

<sup>2</sup> Weight per square foot is based upon cross rods 152.4mm on center. Deduct 0.908 kg/m<sup>2</sup> for 304.8mm on center.

## NOTES:

N/A : Not intended for pedestrian applications.

For full load tables, visit [strongwell.com/gratingloadtables-metric](http://strongwell.com/gratingloadtables-metric)

SERIES	ON CENTER SPACING	OPEN SPACE	# BARS PER METER OF WIDTH	% OPEN SPACE	BAR HEIGHT (mm)	SPAN <sup>1</sup> (mm)	kg/m <sup>2</sup>	FIGURE
I-2000	19.1mm	3.8mm	52.36	20%	25	1332	22.0	
					32	1485	24.4	
					38	1708	26.9	
I-3000	21.6mm	6.4mm	46.30	30%	25	1288	19.5	
					32	1439	22.0	
					38	1652	23.9	
I-4000	25.4mm	10.2mm	39.37	40%	25	1237	16.6	
					32	1382	18.8	
					38	1587	21.5	
I-4800	29.5mm	14.3mm	33.90	48%	25	1192	14.6	
					38	1529	18.6	
I-5000	30.5mm	15.2mm	32.79	50%	25	1182	14.2	
					32	1320	16.1	
					38	1516	17.6	
I-5500	33.8mm	18.6mm	29.60	55%	25	1152	13.2	
					38	1475	17.1	
I-6000	38.1mm	22.9mm	26.25	60%	25	1118	11.7	
					32	1241	13.2	
					38	1431	14.7	
I-6500	43.4mm	28.19	23.02	65%	25	1076	10.7	
					32	1201	11.7	
					38	1385	13.2	
I-7000	50.8mm	35.6mm	19.68	70%	25	1034	9.3	
					32	1155	10.3	
					38	1332	11.2	
I-7500	61.0mm	45.7mm	16.39	75%	25	N/A	8.3	
					32	N/A	8.9	
					38	N/A	9.8	
I-8000	76.2mm	61.0mm	13.12	80%	25	N/A	6.8	
					32	N/A	7.5	
					38	N/A	8.1	
I-8300	91.4mm	76.2mm	10.94	83%	25	N/A	6.4	
					32	N/A	6.6	
					38	N/A	7.0	
I-8500	101.6mm	86.4mm	9.84	85%	25	N/A	5.9	
					32	N/A	6.1	
					38	N/A	6.5	
I-9000	152.4mm	137.2mm	6.56	90%	25	N/A	4.4	
					32	N/A	4.6	
					38	N/A	4.9	

# DURAGRID® T-BAR PULTRUDED GRATING

<sup>1</sup> 4.78 kN/sq.m load, simple span (dimensions shown), 6.35mm deflection.

<sup>2</sup> Weight per square foot is based upon cross rods 152.4mm on center. Deduct 0.908 kg/m<sup>2</sup> for 304.8mm on center.

## NOTES:

N/A : Not intended for pedestrian applications.

For full load tables, visit [strongwell.com/gratingloadtables-metric](http://strongwell.com/gratingloadtables-metric)

SERIES	ON CENTER SPACING	OPEN SPACE	# BARS PER METER OF WIDTH	% OPEN SPACE	BAR HEIGHT (mm)	SPAN <sup>1</sup> (mm)	kg/m <sup>2</sup>	FIGURE
ET-3300	38.1mm	12.7mm	26.25	33%	25	998	9.9	
					38	1230	11.7	
ET-5000	50.8mm	25.4mm	19.68	50%	25	929	7.9	
					38	1144	9.3	
ET-7200	66.1mm	40.7mm	15.13	72%	25	794	4.4	
					38	980	5.4	
ET-8300	152.4mm	127.0mm	6.56	83%	25	N/A	3.9	
ET-8800	203.2mm	177.8mm	4.92	88%	25	N/A	3.4	
T-0000	41.3mm	0.0mm	24.21	0%	25	1142	15.3	
T-1000	45.7mm	4.4mm	21.88	10%	25	1113	14.2	
T-1200	47.0mm	5.7mm	21.28	12%	25	1095	13.7	
T-1800	50.8mm	9.5mm	19.68	18%	25	1074	12.7	
T-2500	53.8mm	12.6mm	18.59	25%	25	1059	12.2	
T-3000	59.2mm	17.9mm	16.89	30%	25	1034	11.5	
T-3500	61.0mm	19.7mm	16.39	35%	25	1026	11.2	
T-3800	66.5mm	25.3mm	15.04	38%	25	1004	10.3	
T-0000	41.3mm	0.0mm	24.21	0%	38	1483	18.7	
T-1000	45.7mm	4.4mm	21.88	10%	38	1446	17.1	
T-1200	47.0mm	5.7mm	21.28	12%	38	1436	16.7	
T-1800	50.8mm	9.5mm	19.68	18%	38	1408	15.6	
T-2500	53.8mm	12.6mm	18.59	25%	38	1388	14.8	
T-3500	61.0mm	19.7mm	16.39	35%	38	1346	13.3	
T-3800	66.5mm	25.3mm	15.04	38%	38	1312	12.4	
T-0000	25.4mm	0.0mm	39.37	0%	51	1980	28.0	
T-1700	30.5mm	5.1mm	32.79	17%	51	1884	23.6	
T-3300	38.1mm	12.7mm	26.25	33%	51	1782	19.2	
T-5000	50.8mm	25.4mm	19.68	50%	51	1651	14.9	
T-5800	61.0mm	35.6mm	16.39	58%	51	1578	12.7	
T-6700	76.2mm	50.8mm	13.12	67%	51	1486	10.7	

# DURAGRID® HD PULTRUDED GRATING

<sup>1</sup> 4.78 kN/sq.m load, simple span (dimensions shown), 6.35mm deflection.

<sup>2</sup> Weight per square foot is based upon cross rods 152.4mm on center. Deduct 0.908 kg/m<sup>2</sup> for 304.8mm on center.

## NOTES:

HD Grating is generally suitable for long spans or heavy wheel loads.

For full load tables, visit [strongwell.com/gratingloadtables-metric](http://strongwell.com/gratingloadtables-metric)

SERIES	ON CENTER SPACING	OPEN SPACE	# BARS PER METER OF WIDTH	% OPEN SPACE	BAR HEIGHT (mm)	SPAN <sup>1</sup> (mm)	kg/m <sup>2</sup>	FIGURE
HD-3000	21.6mm	6.4mm	46.30	30%	25	1424	38.1	
					32	1685	46.4	
					38	1899	55.2	
					44	2160	63.5	
					51	2355	78.6	
					57	2592	84.5	
					63.5	2773	88.9	
HD-4000	25.4mm	10.2mm	39.37	40%	25	1367	34.2	
					32	1618	41.5	
					38	1822	49.3	
					44	2074	56.6	
					51	2261	70.3	
					57	2488	71.8	
					63.5	2663	79.6	
HD-5000	30.5mm	15.2mm	32.79	50%	25	1306	28.8	
					32	1546	35.2	
					38	1743	41.5	
					44	1981	47.9	
					51	2160	54.2	
					57	2378	60.5	
					63.5	2544	66.9	
HD-6000	38.1mm	22.9mm	26.25	60%	25	1234	23.9	
					32	1460	28.8	
					38	1645	34.2	
					44	1865	39.1	
					51	2043	44.0	
					57	2249	49.3	
					63.5	2406	54.2	

# DURAGRID® R-BAR PULTRUDED GRATING

<sup>1</sup> 4.78 kN/sq.m load, simple span (dimensions shown), 6.35mm deflection.

<sup>2</sup> Weight per square foot is based upon cross rods 152.4mm on center. Deduct 0.908 kg/m<sup>2</sup> for 304.8mm on center.

N/A : Not intended for pedestrian applications.

For full load tables, visit [strongwell.com/gratingloadtables-metric](http://strongwell.com/gratingloadtables-metric)

## NOTES:

SERIES	ON CENTER SPACING	OPEN SPACE	# BARS PER METER OF WIDTH	% OPEN SPACE	BAR HEIGHT (mm)	SPAN <sup>1</sup> (mm)	kg/m <sup>2</sup>	FIGURE
R-6200	20.6mm	12.7mm	48.54	62%	25	1179	22.0	<p>The diagram illustrates the cross-section of the grating. It shows three vertical bars with horizontal cross rods. The 'OPEN SPACE' is the gap between the bars. The 'BAR HEIGHT' is the vertical dimension of the bars. The 'O.C. SPACING' is the distance between the centers of the bars. A dimension line indicates a value of 7.9375 for the spacing between the cross rods.</p>
R-7300	30.2mm	22.3mm	33.11	73%	25	1070	15.6	
R-8300	47.6mm	39.7mm	21	83%	25	955	10.7	
R-9000	76.2mm	68.3mm	13.12	90%	25	843	6.8	
R-9500	152.4mm	144.4mm	6.56	95%	25	700	3.4	
R-9700	301.6mm	293.7mm	3.32	97%	25	589	2.0	



**STRONGWELL®**

*ISO 9001 Quality Certified Manufacturing Plants*

**CHATFIELD LOCATION**

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[www.strongwell.com](http://www.strongwell.com)