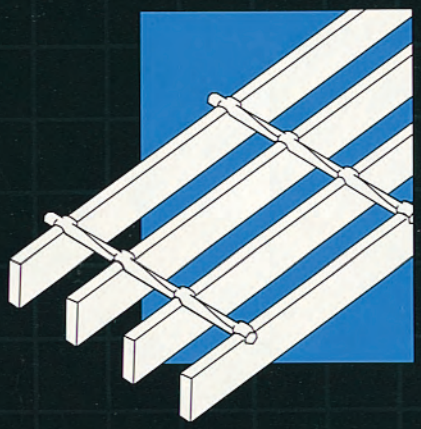
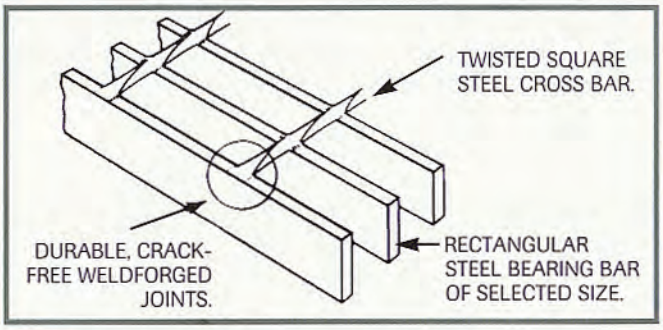
Weldforged® Steel Gratings



IKG BORDEN®
a harsco company

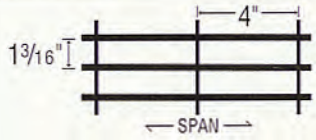
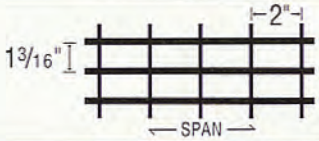
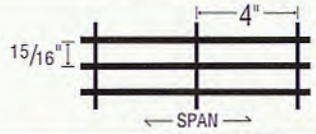
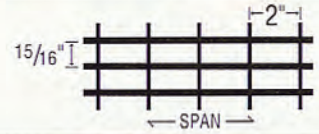
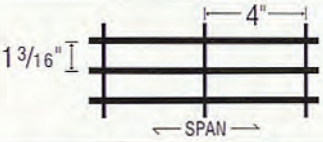
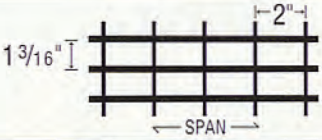
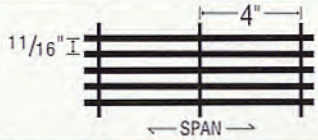
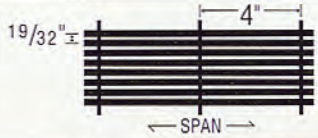
Weldforged Steel Grating
Available in steel, stainless steel* and CorTen steel

Weldforged is the recommended style for general installation. It is economical, durable and the most versatile of the various types of metal grating. Precise, automated production equipment combines hydraulic pressure with a powerful electric welding current to electro forge the cross bars and bearing bars into a single rigid panel. This method eliminates cracks or open joints which might harbor moisture or other corrosive material. The twisted steel cross bars of IKG Borden Weldforged grating provide excellent traction and a flush surface. IKG grating conforms to all grating industry requirements and standards as established by the National Association of Architectural Metal Manufacturers – NAAMM. Weldforged grating, in standard sizes and styles, is usually available for same day shipment.



NOTE: When selecting Weldforged grating for other than general purpose pedestrian traffic, care should be taken to review the standard tolerances. For mezzanine grating, where rolling carts or dollies may be used, standard tolerances may not be acceptable. In these cases, the owner, architect, or engineer should contact IKG Borden to arrive at standards that are acceptable for your project.

****NOTE:*** Welded Stainless Steel will show discolored welded joints as a result of the process. We recommend stainless steel grating be made by the pressure locked method. For more information on Stainless Steel Finishes, ask for our Product Bulletin #104.

STANDARD	Type **W/B**		Approved for all general purposes.
SPECIAL ORDER	Type **W/F**		Same as Type W/B but with close cross bars for conditions where more steel area is required.
SPECIAL ORDER	Type **W/D**		Close bearing bars. Best for heavy public traffic, or where smaller openings or increased carrying capacity are required.
SPECIAL ORDER	Type **W/DF**		With closer cross bar and bearing bars. For conditions requiring greatly reduced net opening.
SPECIAL ORDER	Type **W/BA**		Same as W/B above except furnished in ¼" bar thickness. Used where intermediate loading is required.
SPECIAL ORDER	Type **W/FA**		Same as W/F above except furnished in ¼" bearing bar thickness. Used where intermediate loading is required.
SPACING CONFORMS TO ADA REQUIREMENTS	Type **W/CM4***		Designed with 3/16" bearing bar thickness to provide a maximum ½" clear opening as required by ADA.
SPACING CONFORMS TO ADA REQUIREMENTS	Type **W/BB***		Same as W/CM4 above except with 13/32" clear opening to satisfy most commercial needs.

*Also available with 2" cross bar spacing.

IKG Borden Weldforged grating is available in eight types and a wide range of sizes to meet any requirement.

W/BA and W/FA have larger bearing bars for intermediate loadings. Other, heavier bearing bars and larger sizes are available for heavy duty applications. (See Heavy Duty Grating Catalog.) Consult the IKG Borden engineering department for design and product selection assistance.

Welded Steel Grating Weights per Sq. Ft.

Bar Size #	Bearing Bar Dimensions (inches)	Weight – Lbs./Sq. Ft. Grating Types							
		W/B	W/B-A	W/F	W/F-A	W/D	W/DF	W/CM4	W/BB
1	3/4" x 1/8"	4.1	–	5.0	–	5.0	5.9	6.3	7.1
2	3/4" x 3/16"	5.8	–	6.7	–	7.2	8.1	9.0	10.3
3	1" x 1/8"	5.2	–	6.1	–	6.4	7.3	8.1	9.2
4	1" x 3/16"	7.5	–	8.4	–	9.3	10.2	11.9	13.6
4A	1" x 1/4"	–	9.8	–	10.7	–	–	–	–
5	1 1/4" x 1/8"	6.3	–	7.2	–	7.9	8.8	10.0	11.4
6	1 1/4" x 3/16"	9.1	–	10.0	–	11.3	12.2	14.7	16.9
6A	1 1/4" x 1/4"	–	12.0	–	12.9	–	–	–	–
7	1 1/2" x 1/8"	7.4	–	8.3	–	9.3	10.2	11.9	13.6
8	1 1/2" x 3/16"	10.8	–	11.7	–	13.5	14.4	17.5	20.1
8A	1 1/2" x 1/4"	–	14.3	–	15.1	–	–	–	–
9	1 3/4" x 3/16"	12.5	–	13.4		15.6	16.5	20.3	23.4
9A	1 3/4" x 1/4"	–	16.5		17.4	–	–	–	–
10	2" x 3/16"	14.1	–	15.0	–	17.7	18.6	23.1	26.6
10A	2" x 1/4"	–	18.7	–	19.6	–	–	–	–
11	2 1/4" x 3/16"	15.8	–	16.7	–	19.8	20.7	25.9	29.8
12	2 1/2" x 3/16"	17.4	–	18.3	–	21.9	22.8	28.8	33.0
12A	2 1/2" x 1/4"	–	23.2	–	24.0	–	–	–	–
14A	3" x 1/4"	–	28.1	–	29.0	–	–	–	–
16A	3 1/2" x 1/4"	–	32.8	–	33.7	–	–	–	–
18A	4" x 1/4"	–	37.4	–	38.3	–	–	–	–

Stocked sizes are in blue tint - call first.

Other Bar Spacing

In addition to the spacings shown on page 1 Weldforged Steel Grating is also available in 1 3/8", 1 7/8", and 2 3/8" bearing bar centers. For complete information contact any IKG Borden sales office (see back cover).

Additional Weldforged Information:

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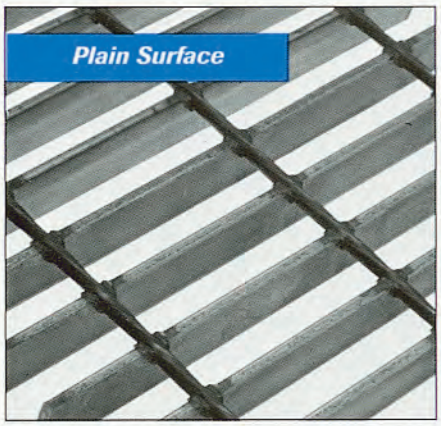
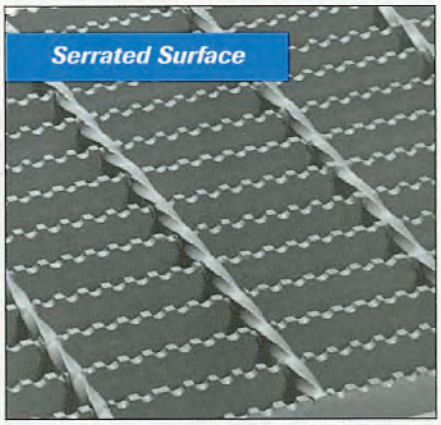
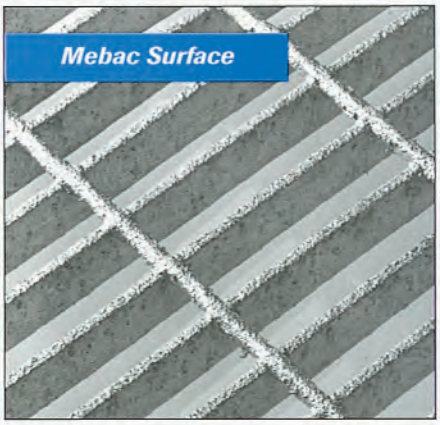
Load Tables.....8-9

Stair Treads.....6-7

Other Engineering Data.....10-11







Only from IKG Borden - Mebac Slip Resistant Surfaces now available on grating.

For many years Mebac Slip Resistant Surfaces have been the most durable and slip resistant solution to the problem of slippery metal plate walking surfaces. Now, using a special grit, Mebac can be applied to metal bar grating. The Mebac process employs molten metal to bond the grit to the walking surface. The result is an exceptionally durable surface with an extremely high coefficient of friction.

Mebac surfacing is ideal for industrial applications where a durable slip resistant surface is required. Please note, however, that the bearing bars will have some random application of the Mebac surface on their sides, which might be considered objectionable if the grating were used for architectural purposes.

IKG Railroad Safety Grating

Running Boards—Brake Steps—End Platforms—for covered hopper, tank, and box cars...

Anti-Skid, Foot-Sure Safety

Weldforged Running Boards and Brake Steps are made from extra heavy, steel stock, fused bar to bar by electrical weld forging. This rugged assembly acts as one unit to give maximum strength and high resistance to torsional stresses and strains. They are designed to last the life of the car without maintenance. Extra safety for the man on top is provided by serrated top surface bearing bars. And maximum open area minimizes the hazards of ice, sleet and snow. Available in either our exclusive "hot dip" galvanized or painted coatings to resist corrosion. Installation on saddles on car roof is simple and fast. Both Boards and Steps can be attached by rivets or bolts.

Weldforged Running Boards and Brake Steps meet all test and safety requirements of the Interchange Rules of the Association of American Railroads. They are engineered to exact specifications for all types of general and special purpose rail cars.

Group #1: Steel

Unsupported span not to exceed 4'0". IKG Weldforged Grating. Type W/RR3BC. Bearing bars 1" x 1/8" on 1.583" centers. Cross bars 1/4" twisted on 4" centers.

Group #2: Steel

Unsupported span not to exceed 7'0". IKG Weldforged Grating. Type W/RR8. Bearing bars 1 1/2" x 3/16" on 1.643" centers. Cross bars 1/4" twisted on 4" centers.

Group #3: Steel

Unsupported span not to exceed 10'0". IKG Weldforged Grating. Type W/RR10. Bearing bars 2" x 3/16 " on 1.643" centers. Cross bars 1/4" twisted on 4" centers.

AAR Group #	Size of Bearing Bar	IKG Symbol	Weight Per Sq. Ft.
1	1 x 1/8	W/RR3BC	3.18
2	1 1/2 x 3/16	W/RR8	8.33
3	2 x 3/16	W/RR10	10.55

Group #1 W/RR3BC 1.583" c/c	Group #2 & 3 W/RR8 W/RR10 1.643" c/c	No. Bars
1 11/16"	1 13/16	2
3 9/32"	3 15/32"	3
4 7/8"	5 1/8"	4
6 15/32"	6 3/4"	5
8 1/32"	8 13/32"	6
9 5/8"	10 1/16"	7
11 7/32"	11 11/16"	8
1' 0 25/32"	1' 1 3/16"	9
1' 2 3/8"	1' 2 31/32"	10
1' 3 31/32"	1' 4 5/8	11
1' 5 17/32"	1' 6 1/4"	12
1' 7 1/8"	1' 7 7/8"	13
1' 8 23/32"	1' 9 17/32"	14
1' 10 9/32"	1' 11 3/16"	15
1' 11 7/8"	2' 0 13/16"	16
2' 1 7/16"	2' 2 1/2"	17
2' 3"	2' 4 1/8"	18
2' 4 5/8"	2' 5 3/4"	19
2' 6 3/16"	2' 7 13/32"	20
2' 7 25/32	2' 9 1/16	21
2' 9 3/8"	2' 10 11/16"	22
2' 10 15/16"	3' 0 11/32"	23
3' 0 17/32"	3' 1 31/32"	24

Widths shaded are the most commonly used panel widths. These widths are normally kept in stock. Panels for group #1 are carried in 26' lengths. Panels for groups #2 & 3 are carried in 20' and 24' lengths

IKG Borden Grating Means Sure-footed Safety in the Long Run. Why?

Unsurpassed Strength

The strength of steel, FUSED bar to bar by electrical WELDFORGING to give the maximum strength and high resistance to freight car stresses and strains.

Unsurpassed Safety

"Foot-friction" is provided by serrated top surface bearing bars. Assured SAFE and SLIP-RESISTANT footing under virtually every condition.

Unsurpassed Construction

Open grating and fused construction make IKG Running Boards snow, sleet and water free. Under average conditions they are self-cleaning due to the open type construction.

Longevity

IKG Weldforged Running Boards will last as long as the car. Hot-dip galvanized finish serves as excellent protection against corrosion and reduces maintenance. Can be painted to meet your specific requirements.

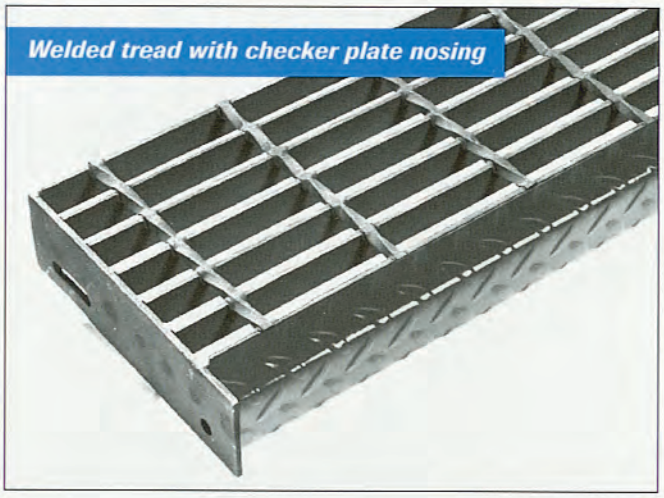
Unsurpassed Ease in Installation

Low cost, easy installation makes IKG WELDFORGED steel running boards the most modern and economical way to achieve safe footing for all box cars, covered hopper cars, tank cars and house cars. All lug bars can be supplied by IKG.

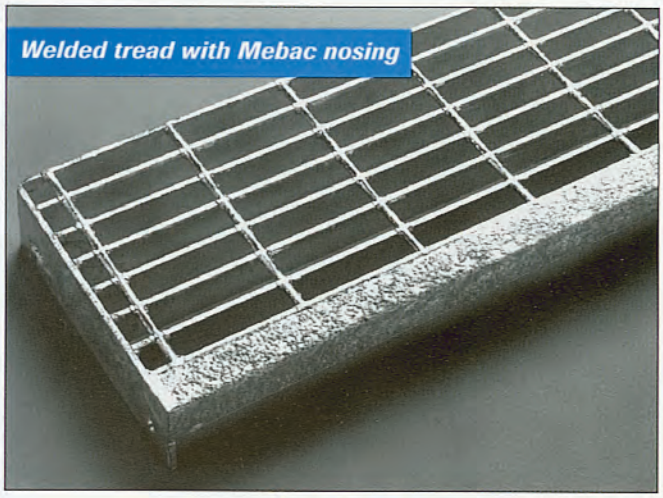
Stair Treads

Steel

IKG Borden stair treads are available in all materials and styles to match the full range of IKG Borden Weldforged grating. Treads are available with a selection of nosings, and all are available with standard and custom coatings as well as Mebac surfaces.



Welded tread with checker plate nosing

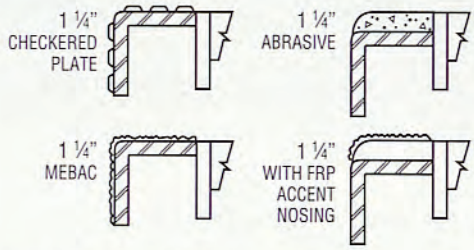


Welded tread with Mebac nosing

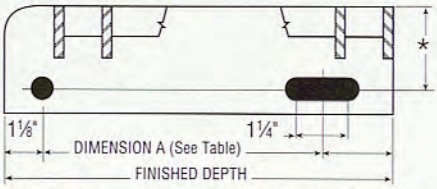
Welded tread with accent nosing

Nosing Types

Table of Standard Tread Depths for 3/16 thick Bearing Bars	
W/F, W/BB W/B	(Dimension A) Hole Centers
6 3/16	2 1/2
7 3/8	4 1/2
8 9/16	4 1/2
9 3/4	7
10 15/16	7
12 1/8	7



Note: Bolts for mounting to stringers not supplied.



* STEEL TREADS: 1 3/4" UP TO AND INCLUDING 1 1/4" DEEP TREADS. 2 1/4" FOR OTHERS

* ALUMINUM TREADS: 2 1/4" ALL DEPTHS

7/16" ϕ HOLE & SLOT FOR 3/8" ϕ BOLT.

Recommended Bearing Bar Sizes - Steel Treads

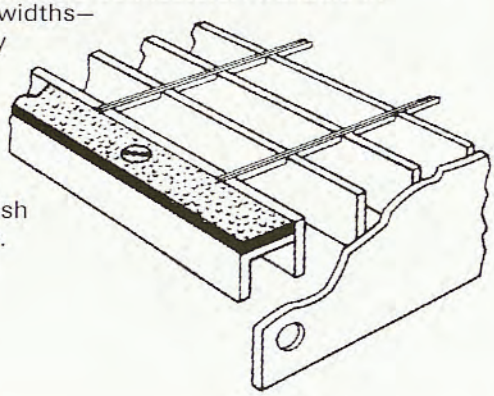
Bar Size	W/B, W/F Max. Length		W/D, W/DF Max. Length		W/CM4 Max. Length		W/BB Max. Length	
	Plain	Serrated	Plain	Serrated	Plain	Serrated	Plain	Serrated
3/4" x 3/16"	2'4"	-	2'8"	-	3'1"	-	3'5"	-
1" x 3/16"	3'5"	2'10"	4'0"	3'4"	4'3"	3'9"	4'6"	3'11"
1 1/4" x 3/16"	4'8"	4'2"	5'1"	4'6"	5'6"	4'10"	5'6"	5'2"
1 1/2" x 3/16	5'6"	5'3"	5'6"	5'6"	6'0"	5'7"	6'6"	6'0"

Recommended tread length is based on a 300 lb. concentrated load on front 5 inches of tread at center of tread length with a deflection limitation of 1/240 of length. When tread length exceeds 5'6" tread is designed to support a 300 lb concentrated load at one third points. This conforms to NAAMM MBG-531-93.

*Mebac® Nosings**

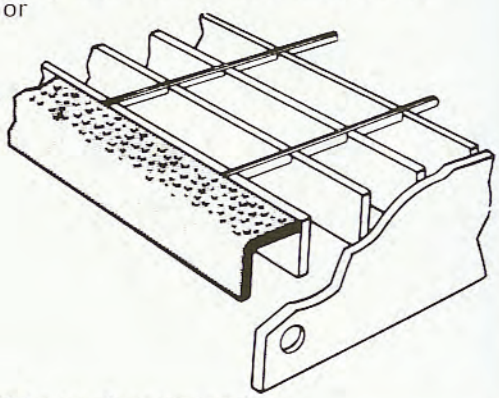
Bolted Nosings

Steel nosing with steel or aluminum Mebac surface. Secure with standard connectors. Available in standard 1¼" widths—special inquiry for 1½". Can be used to replace worn or broken abrasive nosings—furnish hole locations.



Integral Nosings

Mebac slip resistant surface bonded to a 1¼" wide steel angle nosing—can be welded to stair tread, then painted or galvanized one piece construction.



*Trademark for IKG Borden slip resistant surfaces.

How to Specify or Order Stair Treads

Steel

Stair treads to be IKG Borden (material steel Type WIB-4

Bearing Bar size 1" x 3/16" Length of tread 3'0" Depth of tread

10 15/16" Surface serrated Finish galvanized

Nosing Mebac

Steel Safe Load Tables - Bearing Bars Spaced 1 3/16" o.c.

ASTM-A-569 F=18,000 psi, E=29,000,000 psi. For ASTM A570 GR36, F=20,000 psi and tabular values for U, C, and D shall be multiplied by 1.11)

Type W/B & W/F

Recommended max. span (in.) for ¼" deflection under uniform load of 100 psf

U=uniform load, psf
D=deflection, in.
C=concentrated load at mid-span, lb per foot of grating width

All loads and deflections shown are based on engineering computations using gross sections and nominal sizes of bearing bars. The values listed are for design selection only and are not intended to be "absolute" since actual load capacity will be affected slightly by variations which can be expected due to material and manufacturing tolerances.

Conversion Factors: For gratings with other than 1 3/16" bearing bar spacing, or for different design stresses, proportionate conversion factors apply. Refer to the Metal Bar Grating Engineering Design Manual as published by the National Association of Architectural Metal Manufacturing or IKG Engineering Department for the development of such factors.

Note: The carrying capacity of a piece of grating subjected to a concentrated load over only a portion of its width is determined by the stiffness of both the bearing bars and the cross bars, and therefore differs with the type of grating used. To determine the carrying capacity of gratings subject to such loadings, the IKG's engineering department should be consulted.

Note: Spans listed in the blue area produce a deflection of ¼" or less under a uniform load of 100 pounds per sq. ft.. This deflection is recommended as the maximum to provide pedestrian comfort. It can be exceeded at the discretion of the engineer.

Spans listed in the blue area also define those gratings in conformity with NAAMM design standards.

Size	Bearing Bar (in)			Span in inches														
				24	30	36	42	48	54	60	66	72	78	84	90	96	102	108
1	¾ x ⅛	42	U	355	227	158	116	89	70									
			D	0.099	0.155	0.223	0.304	0.397	0.503									
			C	355	284	237	203	178	158									
			D	0.079	0.124	0.179	0.243	0.318	0.402									
2	¾ x 3/16	46	U	533	341	237	174	133	105									
			D	0.099	0.155	0.223	0.304	0.397	0.503									
			C	533	426	355	305	266	237									
			D	0.079	0.124	0.179	0.243	0.318	0.402									
3	1 x ⅛	51	U	632	404	281	206	158	125	101	84	70						
			D	0.074	0.116	0.168	0.228	0.298	0.377	0.466	0.563	0.670						
			C	632	505	421	361	316	281	253	230	211						
			D	0.060	0.093	0.134	0.182	0.238	0.302	0.372	0.451	0.536						
4	1 x 3/16	57	U	947	606	421	309	237	187	152	125	105						
			D	0.074	0.116	0.168	0.228	0.298	0.377	0.466	0.563	0.670						
			C	947	758	632	541	474	421	379	344	316						
			D	0.060	0.093	0.134	0.182	0.238	0.302	0.372	0.451	0.536						
5	1¼ x ⅛	61	U	987	632	439	322	247	195	158	130	110	93	81				
			D	0.060	0.093	0.134	0.182	0.238	0.302	0.372	0.451	0.536	0.629	0.730				
			C	987	789	658	564	493	439	395	359	329	304	282				
			D	0.048	0.074	0.107	0.146	0.191	0.241	0.298	0.360	0.429	0.504	0.584				
6	1¼ x 3/16	67	U	1480	947	658	483	370	292	237	196	164	140	121				
			D	0.060	0.093	0.134	0.182	0.238	0.302	0.372	0.451	0.536	0.629	0.730				
			C	1480	1184	987	846	740	658	592	538	493	455	423				
			D	0.048	0.074	0.107	0.146	0.191	0.241	0.298	0.360	0.429	0.504	0.584				
7	1½ x ⅛	70	U	1421	909	632	464	355	281	227	188	158	135	116	101	89	79	70
			D	0.050	0.078	0.112	0.152	0.199	0.251	0.310	0.376	0.447	0.524	0.608	0.698	0.794	0.897	1.006
			C	1421	1137	947	812	711	632	568	517	474	437	406	379	355	334	316
			D	0.040	0.062	0.089	0.122	0.159	0.201	0.248	0.300	0.358	0.420	0.487	0.559	0.636	0.718	0.804
8	1½ x 3/16	77	U	2132	1364	947	696	533	421	341	282	237	202	174	152	133	118	105
			D	0.050	0.078	0.112	0.152	0.199	0.251	0.310	0.376	0.447	0.524	0.608	0.698	0.794	0.897	1.006
			C	2132	1705	1421	1218	1066	947	853	775	711	656	609	568	533	502	474
			D	0.040	0.062	0.089	0.122	0.159	0.201	0.248	0.300	0.358	0.420	0.487	0.559	0.636	0.718	0.804
9	1¾ x 3/16	87	U	2901	1857	1289	947	725	573	464	384	322	275	237	206	181	161	143
			D	0.043	0.067	0.096	0.130	0.170	0.215	0.266	0.322	0.383	0.450	0.521	0.599	0.681	0.769	0.862
			C	2901	2321	1934	1658	1451	1289	1161	1055	967	893	829	774	725	683	645
			D	0.034	0.053	0.077	0.104	0.136	0.172	0.213	0.257	0.306	0.360	0.417	0.479	0.545	0.615	0.689
10	2 x 3/16	96	U	3789	2425	1684	1237	947	749	606	501	421	359	309	269	237	210	187
			D	0.037	0.058	0.084	0.114	0.149	0.189	0.233	0.282	0.335	0.393	0.456	0.524	0.596	0.673	0.754
			C	3789	3032	2526	2165	1895	1684	1516	1378	1263	1166	1083	1011	947	892	842
			D	0.030	0.047	0.067	0.091	0.119	0.151	0.186	0.225	0.268	0.315	0.365	0.419	0.477	0.538	0.603
11	2¼ x 3/16	105	U	4796	3069	2132	1566	1199	947	767	634	533	454	392	341	300	266	237
			D	0.033	0.052	0.074	0.101	0.132	0.168	0.207	0.250	0.298	0.350	0.406	0.466	0.530	0.598	0.670
			C	4796	3837	3197	2741	2398	2132	1918	1744	1599	1476	1370	1279	1199	1128	1066
			D	0.026	0.041	0.060	0.081	0.106	0.134	0.166	0.200	0.238	0.280	0.324	0.372	0.424	0.478	0.536
12	2½ x 3/16	113	U	5921	3789	2632	1933	1480	1170	947	783	658	561	483	421	370	328	292
			D	0.030	0.047	0.067	0.091	0.119	0.151	0.186	0.225	0.268	0.315	0.365	0.419	0.477	0.538	0.603
			C	5921	4737	3947	3383	2961	2632	2368	2153	1974	1822	1692	1579	1480	1393	1316
			D	0.024	0.037	0.054	0.073	0.095	0.121	0.149	0.180	0.215	0.252	0.292	0.335	0.381	0.431	0.483

CONVERSION FACTORS: STEEL

To determine load for types other than types B, F, WB, WF, multiply table value by conversion factor.

D, DF, WD, WDF	x 1.27	BTL	x .33
CM1, CMF1	x 2.7	U, K	x 1.15
CM2, CMF2	x 2.35	UJ, J	x 1.61
CM3, CMF3	x 1.9	W	x .82
CM4, CMF4	x 1.72	N	x .95
CM5, CMF5	x 1.45	RW	x .58
BT	x .5		

CONVERSION DATA: SERRATED GRATING

Grating Size	Multiply U&C By	Multiply Deflection By:
3/4 x 1/8	.70	1.20
3/4 x 3/16	.70	1.20
1 x 1/8	.77	1.14
1 x 3/16	.77	1.14
1 x 1/4	.56	1.33
1 1/4 x 1/8	.81	1.11
1 1/4 x 3/16	.81	1.11
1 1/4 x 1/4	.64	1.25
1 1/2 x 1/8	.84	1.09
1 1/2 x 3/16	.84	1.09
1 1/2 x 1/4	.69	1.20
1 3/4 x 3/16	.85	1.08
1 3/4 x 1/4	.74	1.17
2 x 3/16	.88	1.07
2 x 1/4	.77	1.14
2 1/4 x 3/16	.89	1.06
2 1/4 x 1/4	.79	1.13
2 1/2 x 3/16	.90	1.05
2 1/2 x 1/4	.81	1.09
3 x 1/4	.84	1.10
3 1/2 x 1/4	.86	1.08
4 x 1/4	.88	1.07

Type W/BA & W/FA

Recommended max. span (in.) for 1/4" deflection under uniform load of 100 psf

U=uniform load, psf
D=deflection, in.
C=concentrated load at mid-span, lb per foot of grating width

Size	Bearing Bar (in)			Span in inches														
				12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
4A	1 x 1/4	61	U	5615	2495	1404	898	624	458	351	277	225	186	156	133	115	100	88
			D	0.020	0.046	0.082	0.129	0.186	0.253	0.331	0.418	0.518	0.627	0.745	0.875	1.017	1.166	1.328
			C	2807	1872	1404	1123	936	802	702	624	561	510	468	432	401	374	351
			D	0.016	0.037	0.066	0.103	0.149	0.202	0.264	0.335	0.413	0.500	0.596	0.699	0.811	0.930	1.059
6A	1 1/4 x 1/4	72	U	8772	3899	2193	1404	975	716	548	433	351	290	244	208	179	156	137
			D	0.016	0.037	0.066	0.103	0.149	0.202	0.264	0.335	0.413	0.500	0.596	0.700	0.810	0.931	1.058
			C	4386	2924	2193	1754	1462	1253	1097	975	877	797	731	675	627	585	548
			D	0.013	0.029	0.052	0.082	0.119	0.162	0.211	0.268	0.330	0.400	0.476	0.559	0.649	0.745	0.847
8A	1 1/2 x 1/4	83	U	12632	5614	3158	2021	1404	1031	790	624	505	418	351	299	258	225	197
			D	0.013	0.031	0.055	0.086	0.124	0.168	0.220	0.279	0.344	0.417	0.496	0.582	0.676	0.777	0.881
			C	6316	4211	3158	2526	2105	1805	1579	1404	1263	1148	1053	972	902	842	790
			D	0.011	0.024	0.044	0.068	0.099	0.135	0.176	0.223	0.275	0.333	0.397	0.466	0.540	0.620	0.706
9A	1 3/4 x 1/4	93	U	17193	7641	4298	2751	1910	1404	1075	849	688	568	478	407	351	306	269
			D	0.011	0.026	0.047	0.073	0.106	0.144	0.189	0.239	0.295	0.357	0.425	0.499	0.579	0.665	0.757
			C	8597	5731	4298	3439	2866	2456	2149	1910	1719	1563	1433	1323	1228	1146	1075
			D	0.009	0.021	0.037	0.059	0.085	0.115	0.151	0.191	0.236	0.286	0.340	0.399	0.463	0.531	0.605
10A	2 x 1/4	103	U	22456	9980	5614	3593	2495	1833	1404	1109	898	742	624	532	458	399	351
			D	0.010	0.023	0.041	0.064	0.093	0.126	0.165	0.209	0.258	0.312	0.372	0.437	0.506	0.581	0.662
			C	11228	7485	5614	4491	3743	3208	2807	2495	2246	2041	1871	1727	1604	1497	1404
			D	0.008	0.018	0.033	0.051	0.074	0.101	0.132	0.167	0.206	0.250	0.297	0.349	0.405	0.465	0.529
11A	2 1/4 x 1/4	112	U	28421	12632	7105	4547	3158	2320	1776	1404	1137	940	789	673	580	505	444
			D	0.009	0.020	0.036	0.057	0.082	0.112	0.147	0.186	0.229	0.278	0.330	0.388	0.450	0.516	0.588
			C	14211	9474	7105	5684	4737	4060	3553	3158	2842	2584	2368	2186	2030	1895	1776
			D	0.007	0.016	0.029	0.045	0.066	0.090	0.117	0.148	0.183	0.222	0.264	0.310	0.360	0.413	0.470
12A	2 1/2 x 1/4	121	U	35088	15595	8772	5614	3899	2864	2193	1733	1404	1160	975	830	716	624	548
			D	0.008	0.018	0.033	0.051	0.074	0.101	0.132	0.167	0.206	0.250	0.298	0.349	0.405	0.465	0.529
			C	17544	11696	8772	7018	5848	5013	4386	3899	3509	3190	2924	2699	2506	2339	2193
			D	0.006	0.014	0.026	0.041	0.059	0.081	0.105	0.134	0.165	0.200	0.238	0.279	0.324	0.372	0.423
14A	3 x 1/4	139	U	50527	22456	12632	8084	5614	4125	3158	2495	2021	1670	1404	1196	1031	898	789
			D	0.006	0.015	0.027	0.043	0.062	0.084	0.110	0.139	0.172	0.208	0.248	0.291	0.337	0.387	0.441
			C	25263	16842	12632	10105	8421	7218	6316	5614	5053	4593	4211	3887	3609	3368	3158
			D	0.005	0.012	0.022	0.034	0.049	0.067	0.088	0.111	0.137	0.166	0.198	0.233	0.270	0.310	0.353
16A	3 1/2 x 1/4	156	U	68772	30565	17193	11004	7641	5614	4298	3396	2751	2273	1910	1628	1404	1223	1075
			D	0.005	0.013	0.023	0.036	0.053	0.072	0.094	0.119	0.147	0.178	0.212	0.249	0.289	0.332	0.378
			C	34386	22924	17193	13754	11462	9825	8597	7641	6877	6252	5731	5290	4912	4585	4298
			D	0.004	0.010	0.018	0.029	0.042	0.057	0.075	0.095	0.118	0.143	0.170	0.199	0.231	0.266	0.302
18A	4 x 1/4	173	U	89825	39922	22456	14372	9981	7333	5614	4436	3593	2969	2495	2126	1833	1597	1404
			D	0.005	0.011	0.020	0.032	0.046	0.063	0.082	0.104	0.129	0.156	0.186	0.218	0.253	0.290	0.331
			C	44913	29942	22456	17965	14971	12832	11228	9981	8983	8166	7485	6910	6416	5988	5614
			D	0.004	0.009	0.016	0.025	0.037	0.050	0.066	0.083	0.103	0.125	0.148	0.174	0.202	0.232	0.264

Engineering drawings for approval—

When detailing drawings for approval prior to fabrication, IKG Borden's policy is to work from "released" Engineer's or Designer's drawings. When we are requested to prepare our drawings for approval prior to completed or "released", if engineering drawings, and dimensions for vertical bracing, column cutouts or moment connections are missing, and if these dimensions are not supplied to us on the grating approval submission, then an extra charge will be determined for researching the designer's or engineer's drawings for establishing these missing dimensions.

IKG's Standard Finishes

STEEL is available with one of three standard finishes. (1) Bare Steel (2) Galvanized per ASTM-A123 or, upon special request, ASTM-A385 (3) Standard shop coat of Black or Red Oxide. Special finishes are available upon request.

Note: A shop coat of paint is one coat of the manufacturer's selected paint, which is to protect the grating during transit. It is not intended to be a permanent finish.

STAINLESS STEEL, unless otherwise specified, will be mill finish. For the best appearance, IKG Borden recommends the Pressure Lock style of manufacture. If welded stainless steel is chosen, IKG's standard finish is "as welded". There will be welding discoloration and manufacturing oils that may detract from the stainless finish. If a stainless appearance is required, then we suggest you consider the extra cost to chemically clean, electropolish or sandblast to restore the attractive finish of the stainless steel. Ask for the IKG Product Bulletin #104 for more information.

Special Finishes

Special order finishes are available upon request.

IKG Borden can supply numerous paint systems and surface preparations. Treatments comply with paint manufacturers' specifications when required. Epoxy paints, zinc rich paints and other specifications are generally more expensive than a galvanized finish. Because of the cellular configuration of bar grating, electrostatic applied paints or coatings do not adequately receive sufficient coating thicknesses. The best corrosion protection for steel grating is galvanizing, which is generally the most economical choice as well.

Surfaces

Serrated Grating – Serrated surfaces are available on all types of IKG Borden Weldforged grating. They provide more secure footing where oil, water or chemicals are present.

When a serrated surface is desired, the general rule for selecting the size of grating required is to select the size grating needed from the Safe Load Tables and then use the next size deeper grating. This is a safe practice. However, if more exact information is desired, the table on page 9 will give you the conversion data necessary to convert the Safe Load Tables into Safe Load Tables for Serrated Grating.

Slip resistant surface – Mebac the most durable non-slip surface available today.

In the past, Mebac Slip Resistant Surfaces were only available on metal plate. Now Mebac is also applied to metal bar grating. The Mebac process employs molten metal to bond grit to the walking surface. The result is an exceptionally durable surface with an extremely high coefficient of friction.

Mebac surfacing is ideal for industrial grating applications where a durable slip resistant surface is required. Please note, however, that the grating bearing bars will have some random application of the Mebac surface on their sides, which might be considered objectionable if the grating were used for architectural purposes.

NOTE: When selecting Weldforged grating for other than general purpose pedestrian traffic, care should be taken to review the standard tolerances. For mezzanine grating, where rolling carts or dollies may be used, standard tolerances may not be acceptable. In these cases, the owner, architect, or engineer should contact IKG Borden to arrive at standards that are acceptable for your project.

General Recommendations for Grating Installation

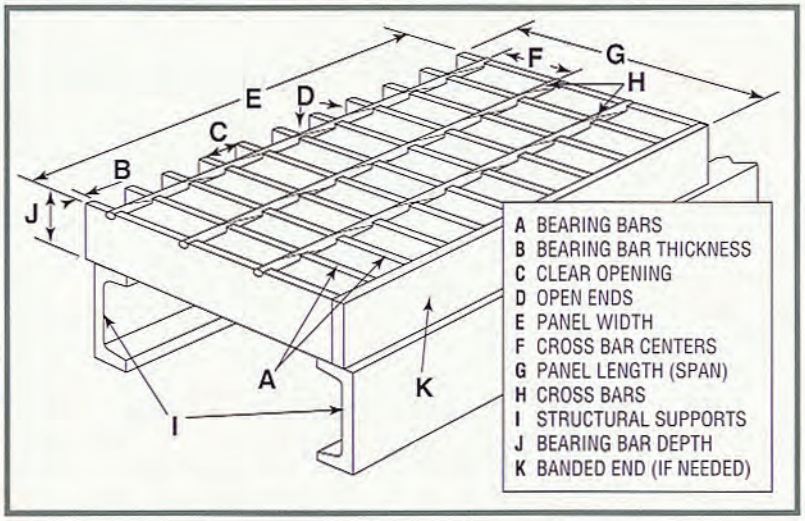
- ***Gratings must be installed with cross bars on top side***
- ***Notching of bearing bars at supports to maintain proper elevation is generally not recommended. If notching is required for installation manufacturer should be consulted.***
- ***Metal should always be used for all grating supports***
- ***1" minimum bearing should be provided for bearing bar depths up to 2 1/4" and 2" bearing for depths of 2 1/2" and over.***

How to Specify Weldforged

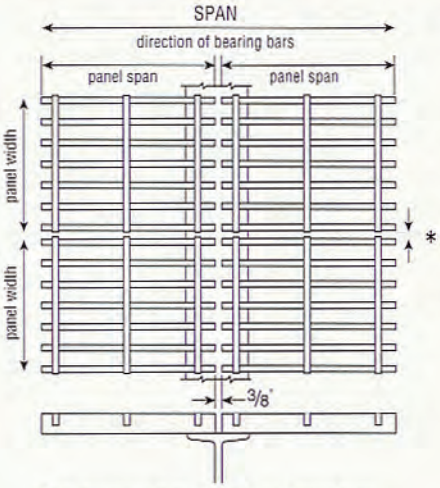
Steel grating to be Weldforged welded rectangular design, type W/B as manufactured by IKG Industries, a division of Harsco Corporation. Main bearing bars to be 1" x 3/16" spaced 1 3/16 inches center-to-center. Cross bars to be resistance welded at right angles to the bearing bars. They shall be spaced 4 inches center-to-center. No notching or cutting of bearing bars before welding is permissible. Surface to be [plain or serrated]. Finish to be [painted or galvanized]. Overall dimensions, details, and direction of bearing bars in accordance with plans (or sketch) attached. (Indicate cutouts for obstructions, banding, fasteners, nosing, etc.).

Fastening Methods

Standard Nomenclature

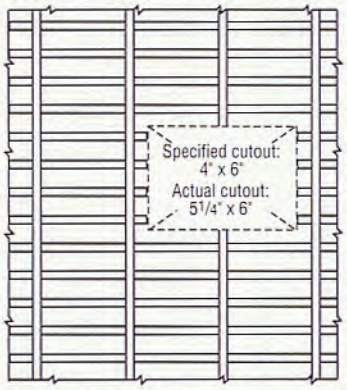


Standard Installation Clearances

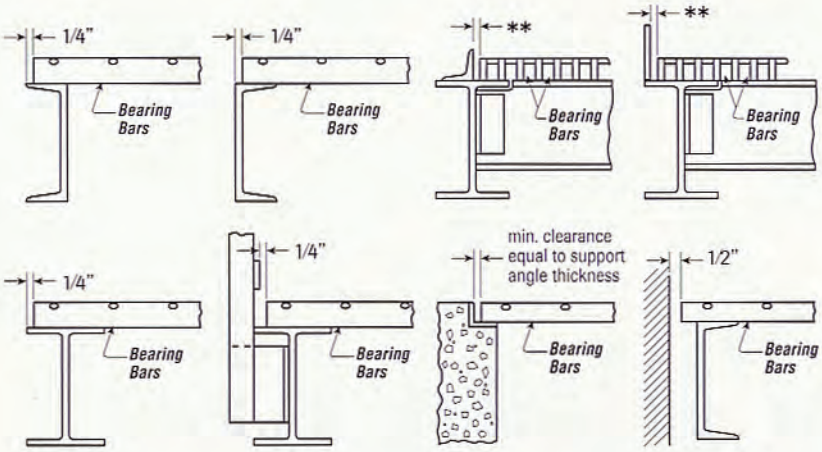


* ¼" clearance between ends of cross bars.

As shown in the drawing, all rectangular cutouts are made to the next bearing bar past the obstruction.



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 in diameter be made in the field.



**This dimension may vary due to bearing bar spacing but will not exceed bearing bar spacing.

Percentages of Open Area			
Grating Type	Bearing Bar Thickness		
	1/8"	3/16"	1/4"
W/B	82.4%	77.1%	–
W/F	75.9%	70.7%	–
W/D	77.3%	70.4%	–
W/DF	70.9%	64.1%	–
W/BB	74.0%	64.2%	–
W/BBF	69.0%	59.8%	–
W/CM-4	76.7%	68.1%	–
W/CMF-4	71.5%	63.6%	–
W/BA	–	–	72.7%
W/FA	–	–	66.6%

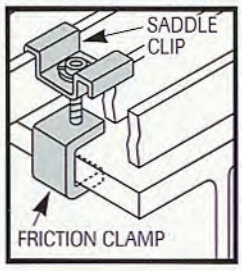
Fastening Methods

All grating must be fastened in place. Welding of the grating panel to the supporting members provides the most rigid, permanent installation. Where panels may have to be removed the plate fastener is recommended for bars ¼" and thicker or 2½" and deeper. On smaller sizes the B Fastener may be used.

Welded Installation

Tack weld the third bearing bar of each panel to the support member with 3/16" fillet weld x ¾" long plus weld in center of panel when appropriate.

Screw Fastening



THE GRABBER™
Clamp-type fastener. No welding or drilling required.

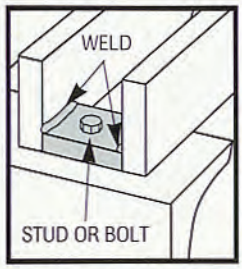
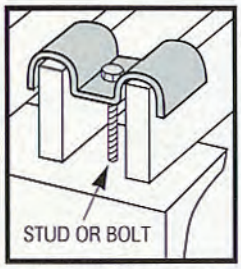
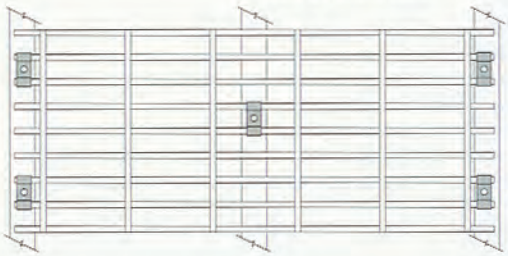
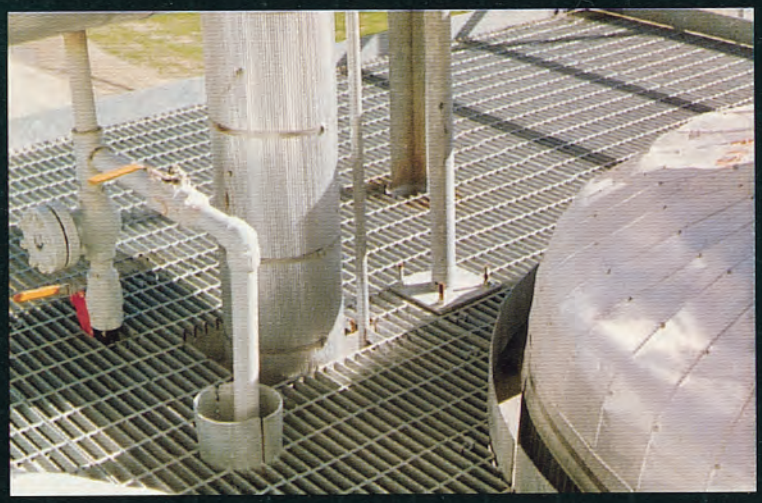


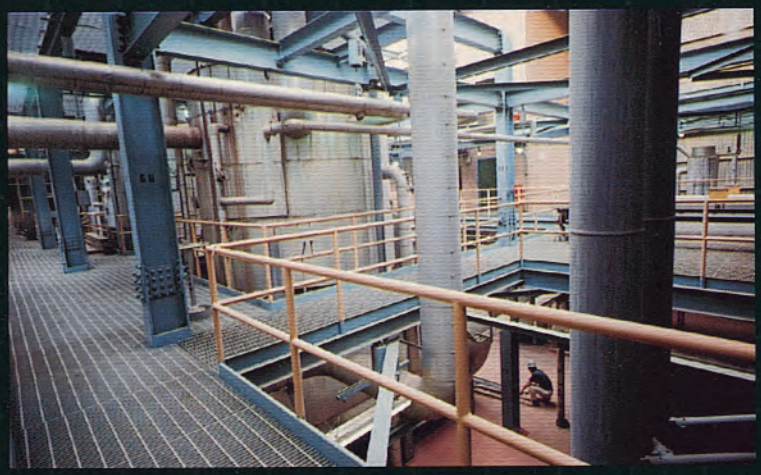
PLATE FASTENER
Plate welded to bearing bars



TYPE "B" FASTENER for 1 3/16" B.B. Centers
Welding studs, self-tapping screws or bolts, nuts and washers supplied by the erector.







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- ***IKG Fiberglass Structures***
- ***IKG Greulich Bridge Flooring Systems***
- ***IKG Borden Mebac — Slip Resistant Surface***
- ***IKG Borden Safe-T-Grid***
- ***IKG Borden Grid Steel Floor Armor***

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