



serviacero[®]
electroforjados



Product Catalog



Light
Duty

Heavy
Duty

Perimeter
Fences

Architectural
Elements

Stair
Treads



At **Serviacero Electroforjados**, we specialize in manufacturing and fabrication of metal bar gratings for light-duty and heavy-duty usage, perimeter fences, architectural elements and stair treads for the following sectors: infrastructure, construction, warehouses, mining, power and energy industries.

We guarantee the reliability of our processes under quality and continuous improvement systems; we are focused on meeting the needs of our customers. We are active members of the NAAMM (National Association of Architectural Metal Manufacturers) association that represents manufacturing standards and electro-forged bar grating engineering designs.

We continually make investments to keep us at the forefront and expand our range of products and services.



Houston, Texas Warehouse

The information contained in this book is only for reference and can change without previous notice.

INDEX

Introduction

Spacing
Types

Machinery and
Technology

Grating Types

Light Duty

Load
Tables

Treads

Heavy Duty

General
Installation
Requirements

Bar Grating
Fasteners

NAAMM

Who we are

- 1966** "**Comercial y Aceros de León**" starts operations, a company dedicated to satisfy the industrial necessity for building materials.
- 1974** "**Metales y Aceros**" emerges as a supplier of specialty steel products for machinery and tools used in the footwear and food sector of León, Guanajuato.
- 1980** "**Serviacero de León**" is formed to provide cut and tailored sheets.
- 2000** In order to support the industry and to satisfy the steel necessity of its customers, these three companies are united under the name "**Serviacero**".
- 2005** "**Serviacero Planos**" opens its doors to its second Steel service center in the city of Querétaro. "**Serviacero Comercial**" opens a new Service Center in the city of Celaya, Guanajuato.
- 2006** We complete **40 years** of providing customers with the widest range of steel and service in the country. "**Serviacero Comercial**", opens its doors to its largest distribution center in the city of León, Guanajuato.
- 2007** "**Serviacero Planos**" forms a Joint Venture with **Worthington Industries** to create "**Serviacero Worthington**", projecting them as one of the main suppliers of steel at a national level. "Serviacero Comercial" opens a new Service Center in the city of Morelia, Michoacan.
- 2009** "**Serviacero Comercial**" opens the Morelos Service Center in Leon Guanajuato. In July of the same year, "**Serviacero Worthington**" starts its third new plant in the city of Monterrey, N.L.
- 2013** **Serviacero Comercial** opens its distribution center located in the metropolitan area of Monterrey, with this new distribution center we respond more quickly to our customers in the north of the country and position ourselves in the market as your dependable supplier.
- 2014** **Serviacero Especiales** opened a new service center, located in the city of Monterrey, Nuevo Leon. In this way the company extends its presence in the North of the country. Offering its clients various products and services with the quality and professionalism that has always characterized us.
- 2016** "**Serviacero Gratings**" starts operations. They offer the highest quality in electro-forged welded products along with the highest technology.
- 2017** "**Serviacero Comercial**" adds the service of slitter cutting at the Distribution Center. Cutting capacity of up to 31 simultaneous slits.
- 2019** Grand opening of the new **Serviacero Gratings** plant, the largest one in Latin America.

Leon, Gto. Plant

Introduction

Definition

Electro-forged grating is the metallic formation composed by the union of bearing bars placed in parallel and cross bars. A combination of an electric arc and hydraulic pressure create the electro-forged which ensures the fusion of the components at each intersection.

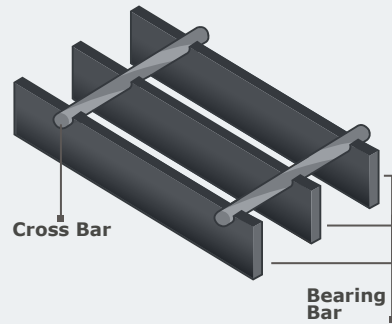


Elements

Electro-forged grating is formed by two elements:

Bearing Bar

Metal bearing bar with low silicon content. It is the element that supports the loads to which the grating is subjected.



Cross Bar

Twisted or flat cross bar. It is arranged transversally with respect to the load bearing bar. It has the function to join and keep the constant distance between the supporting plates.

Identification System

The code used by "Serviacero Grating", is designed for its easy detection of spaces and understanding of the product.

W19-4

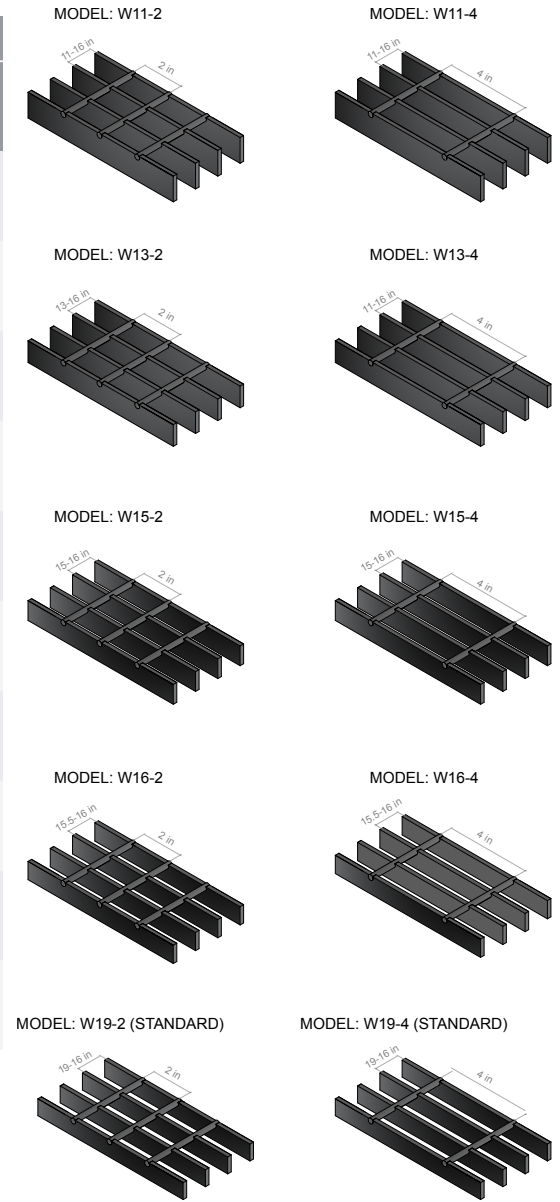
- W: Welded
- 19: Bearing bars spaced 19/16" center to center
- 4: Cross bars spaced 4 in center to center

W13-2

- W: Welded
- 13: Bearing bars spaced 13/16" center to center
- 2: Cross bars spaced 2 in center to center

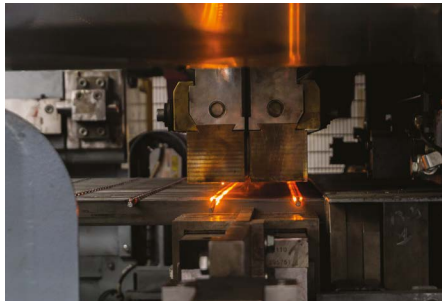
Spacing Types of Electro-forged Grating

MODEL	Spacing	
	SPACE BETWEEN BEARING BARS	SPACE BETWEEN CROSS BARS
W11-2	11/16in	2in
W11-4	11/16in	4in
W13-2	13/16in	2in
W13-4	13/16in	4in
W15-2	15/16in	2in
W15-4	15/16in	4in
W16-2	15.5/16in	2in
W16-4	15.5/16in	4in
W19-2	19/16in	2in
W19-4	19/16in	4in



Dimensions:
 * Standard grating board of:
 2 x 20 ft 3 x 20 ft
 2 x 24 ft 3 x 24 ft
 * Board cut to special measurements only with plans and subsequently authorized with the engineering area.

Machinery And Technology



At Serviacero Electroforjados...

We have the best manufacturing technology, as a result, we produce safe and durable grating. Our team has the capacity to create a correct fusion component through different pressures and electric arcs in the process of electro-forging.



The electro-forged gratings of Serviacero...

They are manufactured in Width (2 and 3 ft) and length (20 and 24 ft), thanks to the size of the machine bed we can offer more largest panel until 4 ft x 30 ft.



The electro-forged gratings of Serviacero...

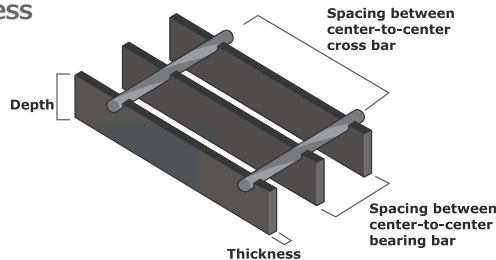
Can be manufactured in 5 different bearing bar spaces.

Equipment Capacities



Bearing bars, thickness and depth

Production capacity in thickness:
1/8" to 3/8 in
Depth: 3/4 to 5 in



Panels



Max span: 4 ft
Max length: 30 ft

Grating Types



Light Duty

Used for...

Construction of offshore platforms, light duty floors, industrial maintenance, mezzanines, mining, boilers, and water treatment plants.

Treads:

We manufacture stair treads from light duty grating that are applicable to: offshore platforms, petroleum and power industry facilities, industrial facilities, among others.



Heavy Duty

There are applications in...

Concrete reinforcements, bridges, drains, vaults, etc.



Architectural Elements

Some applications...

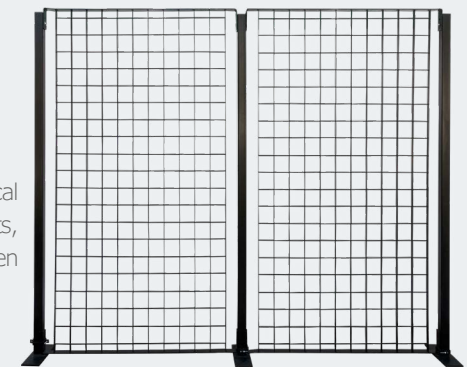
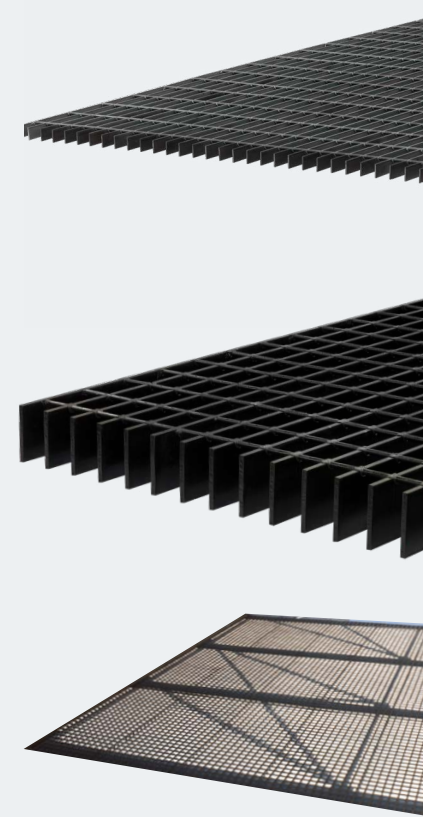
Facades, louvers, architectural lattices, decorative elements in floors, ceilings, among others.



Perimeter Fences

Designed for the usage as...

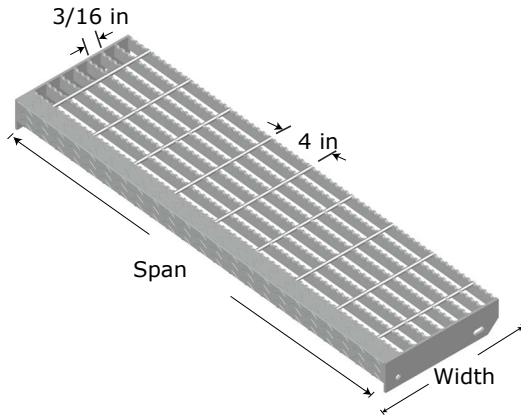
Perimeter and mobile fences, lattices, ecological protections, in addition to applications in airports, shopping centers, hotels, maintenance, green areas, etc.



Stair treads

Surface and Finish

SURFACE	FINISH	MODEL
FLAT	Mill (bearing bar and cross bar uncoated)	W19-4
SERRATED	Paint (water based coating)	
	Galvanized (galvanized standard ASTM A-123)	



Surface and Finish

Width (in)/(mm)	Maximum Tread Length*			
	1 3/16 (in)/ 30.16 (mm)		15/16 (in)/ 24 (mm)	
	Flat	Serrated	Flat	Serrated
3/4 x 3/16 (19 x 5)	2' - 4" (.71m)	-	2' - 8" (.81m)	-
1 x 3/16 (25 x 5)	3' - 5" (1.04m)	2' - 10" (.86m)	4' - 0" (1.22m)	3' - 4" (1.02m)
1 1/4 x 3/16 (32 x 5)	4' - 8" (1.42m)	4' - 2" (1.27m)	5' - 1" (1.55m)	4' - 6" (1.37m)
1 1/2 x 3/16 (38 x 5)	5' - 6" (1.67m)	5' - 3" (1.60m)	5' - 6" (1.67m)	5' - 6" (1.67m)

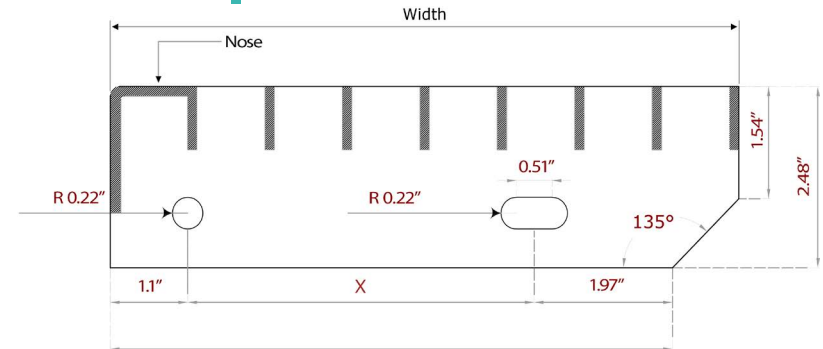
Note: When tread length exceeds 5' - 6" (1.67m), design tread for 300 lb (1.33kN) concentrated loads at one-third points

In case you need any other combination not mentioned, please consult your sales representative.

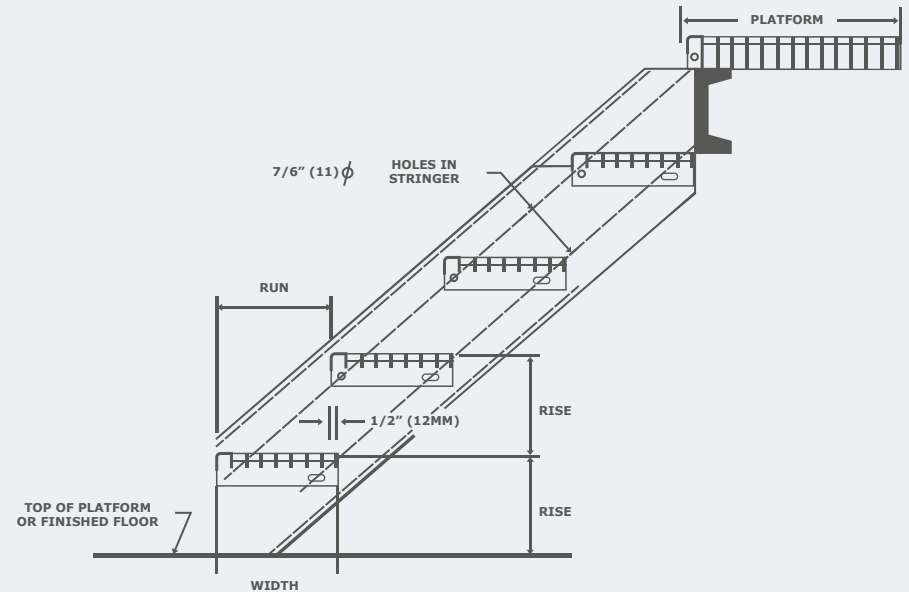
Stair treads

AVAILABLE WIDTH	8 2/3"	9 5/6"	11"	12 1/5"
"X" DISTANCE BETWEEN HOLE CENTERS	4 1/2"	7"	7"	7"
WIDTH RECOMMENDED TO TREAD				
MOD	W19			
WIDTH	8 2/3"	220 mm		
	9 5/6"	250 mm		
	11"	280 mm		
	12 1/5"	310 mm		

Side Plate Detail



Installation Recommendation

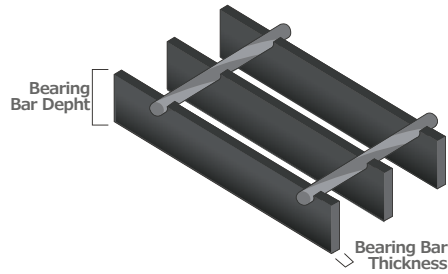


Heavy Duty

Type of Bearing Bar

DEPTH			THICKNESS		
	(inch)	(mm)		(inch)	(mm)
(MIN)	1	25.4	(MIN)	1/4	6.35
(MAX)	5	127	(MAX)	3/8	9.525

BEARING BAR THICKNESS		BEARING BAR DEPTH		CROSS BAR	
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
14	6.35	1	25.4	0.2874	7.3
		1 1/4	31.75		
		1 1/2	38.1		
		2	50.8		
		2 1/2	63.5		
38	9.52	3	76.2	0.3748	9.52
		4	101.6		



Finished Panel

- Mill:** bearing bar and cross bar uncoated
- Paint:** water-based coating or powder coat
- Galvanized:** galvanized standard ASTM A-123.

Heavy Duty Maximum Clearance

INFORMATION CHART FOR BEARING BARS TYPE W19-50, W19-100																	
Types of bearing bars	Section Modulus per ft. of width	Moment of Inertia per ft. Of width	*Approx Weight lbs./sq. Ft.	H-25 Load		H-20 Load		H-15 Load		For car traffic		5 Ton Lift truck		3 Ton Lift truck		1 Ton Lift truck	
				(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
				1 X 1/4	0.421	0.211	9.7	12	304	10	254	9	228	12	304	7	177
1 X 3/8	0.632	0.316	14.0	14	355	13	330	11	279	16	406	9	228	8	203	9	228
1 1/4 X 1/4	0.658	0.411	11.9	15	381	13	330	12	304	17	431	9	228	8	203	10	254
1 1/4 X 3/8	0.987	0.617	17.2	18	457	16	406	14	355	23	584	12	304	10	254	14	355
1 1/2 X 1/4	0.947	0.711	14.0	18	457	16	406	14	355	23	584	11	279	10	254	13	330
1 1/2 X 3/8	1.421	1.066	20.5	22	558	20	508	18	457	30	762	14	355	13	330	19	482
1 3/4 X 1/4	1.289	1.128	16.2	21	533	19	482	17	431	29	736	14	355	12	304	17	431
1 3/4 X 3/8	1.934	1.692	23.7	26	660	23	584	21	533	38	965	18	457	17	431	25	635
2 X 1/4	1.684	1.684	18.3	24	609	22	558	20	508	37	939	16	406	15	381	22	558
2 X 3/8	2.526	2.526	26.9	30	762	28	711	26	660	46	1168	22	558	21	533	33	838
2 1/4 X 1/4	2.132	2.398	20.5	27	685	25	635	23	584	45	1143	19	482	18	457	28	711
2 1/4 X 3/8	3.197	3.597	30.1	34	863	32	812	31	787	53	1346	26	660	26	660	41	1041
2 1/2 X 1/4	2.632	3.289	22.6	30	762	28	711	27	685	52	1320	22	558	22	558	34	863
2 1/2 X 3/8	3.947	4.934	33.3	40	1016	38	965	36	914	59	1498	31	787	31	787	50	1270
3 X 1/4	3.789	5.684	26.9	39	990	37	939	35	889	62	1574	30	762	30	762	49	1244
3 X 3/8	5.684	8.526	39.8	52	1320	50	1270	49	1244	71	1803	43	1092	44	1117	61	1549
3 1/2 X 1/4	5.158	9.026	31.2	48	1219	46	1168	45	1143	72	1828	39	990	40	1016	62	1574
3 1/2 X 3/8	7.737	13.539	46.2	60	1524	60	1524	60	1524	83	2108	56	1422	58	1473	71	1803
4 X 1/4	6.737	13.474	35.5	59	1498	58	1473	57	1447	83	2108	50	1270	51	1295	71	1803
4 X 3/8	10.105	20.211	52.7	68	1727	68	1727	69	1752	95	2413	66	1676	68	1727	81	2057
4 1/2 X 1/4	8.526	19.184	39.8	69	1752	69	1752	70	1778	96	2438	61	1549	64	1625	82	2082
4 1/2 X 3/8	12.789	28.776	59.1	71	1803	71	1803	72	1828	96	2438	69	1752	71	1803	84	2133
5 X 1/4	10.526	26.316	44.1	75	1905	75	1905	75	1905	96	2438	72	1828	74	1879	89	2260
5 X 3/8	15.789	39.474	65.5	85	2159	85	2159	86	2184	96	2438	83	2108	85	2159	96	2438

Heavy Duty Maximum Clearance

INFORMATION CHART FOR BEARING BARS MODEL W38-2, W38-4																	
Types of bearing bars	Section Modulus per ft. of width	Moment of Inertia per ft. Of width	*Approx Weight lbs./sq. Ft.	H-25 Load		H-20 Load		H-15 Load		For car traffic		5 Ton Lift truck		3 Ton Lift truck		1 Ton Lift truck	
				(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
				1 X 1/4	0.211	0.105	5.4	8	203	8	203	7	177	9	228	6	152
1 X 3/8	0.316	0.158	7.6	10	254	10	254	8	203	11	279	7	177	6	152	7	177
1 1/4 X 1/4	0.329	0.206	6.5	11	279	10	254	9	228	12	304	8	203	6	152	7	177
1 1/4 X 3/8	0.493	0.308	9.2	13	330	12	304	11	279	16	406	9	228	7	177	10	254
1 1/2 X 1/4	0.474	0.355	7.6	13	330	12	304	10	254	15	381	9	228	7	177	10	254
1 1/2 X 3/8	0.711	0.533	10.8	16	406	15	381	13	330	21	533	11	279	9	228	14	355
1 3/4 X 1/4	0.645	0.564	8.6	16	406	14	355	12	304	19	482	10	254	9	228	12	304
1 3/4 X 3/8	0.967	0.846	12.4	19	482	17	431	15	381	27	685	13	330	12	304	18	457
2 X 1/4	0.842	0.842	9.7	17	431	16	406	14	355	24	609	12	304	11	279	16	406
2 X 3/8	1.263	1.263	14.0	21	533	20	508	18	457	34	863	15	381	14	355	23	584
2 1/4 X 1/4	1.066	1.199	10.8	20	508	18	457	16	406	29	736	13	330	13	330	20	508
2 1/4 X 3/8	1.599	1.799	15.6	24	609	22	558	20	508	42	1066	17	431	17	431	29	736
2 1/2 X 1/4	1.316	1.645	11.9	22	558	20	508	18	457	35	889	15	381	15	381	24	609
2 1/2 X 3/8	1.974	2.467	17.2	27	685	25	635	24	609	50	1270	20	508	21	533	35	889
3 X 1/4	1.895	2.842	14.0	26	660	25	635	23	584	49	1244	20	508	20	508	34	863
3 X 3/8	2.842	4.263	20.5	34	863	32	812	31	787	60	1524	27	685	29	736	50	1270
3 1/2 X 1/4	2.579	4.513	16.2	32	812	30	762	29	736	61	1549	25	635	26	660	45	1143
3 1/2 X 3/8	3.868	6.77	23.7	42	1066	40	1016	40	1016	70	1778	35	889	38	965	63	1600
4 X 1/4	3.368	6.737	18.3	38	965	36	914	35	889	70	1778	31	787	33	838	59	1498
4 X 3/8	5.053	10.105	26.9	51	1295	50	1270	50	1270	80	2032	44	1117	48	1219	72	1828
4 1/2 X 1/4	4.263	9.592	20.5	45	1143	43	1092	43	1092	81	2057	38	965	41	1041	73	1854
4 1/2 X 3/8	6.395	14.388	30.1	61	1549	60	1524	61	1549	83	2108	55	1397	60	1524	75	1905
5 X 1/4	5.263	13.158	22.6	52	1320	51	1295	51	1295	88	2235	46	1168	50	1270	78	1981
5 X 3/8	7.895	19.737	33.3	70	1778	70	1778	71	1803	96	2438	66	1676	72	1828	90	2286



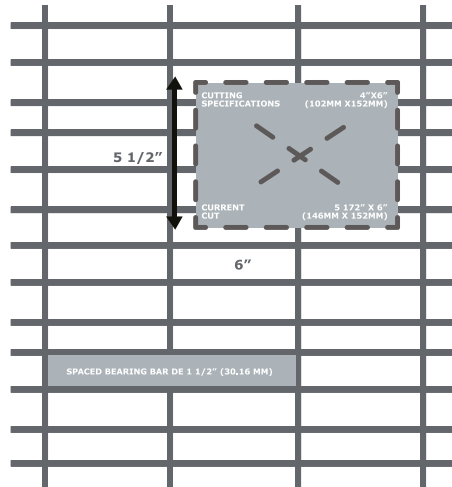
Requirements General Installation

Obstructions

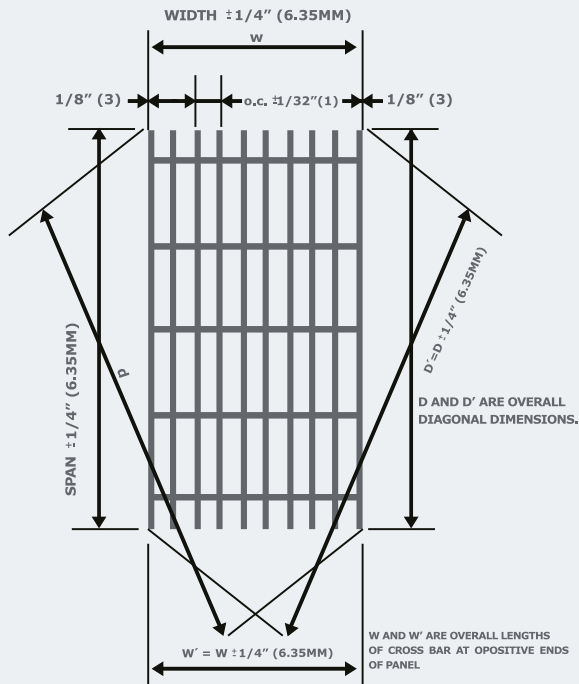
Clearances shown are recommended but, vary in accordance with dimensional tolerances.

Cutouts for circular obstructions are recommended to be at least 2 in. (51 mm) larger in diameter than the obstruction. It is further recommended that cutouts for all piping 4 in. (102 mm) or less in diameter be made in the field.

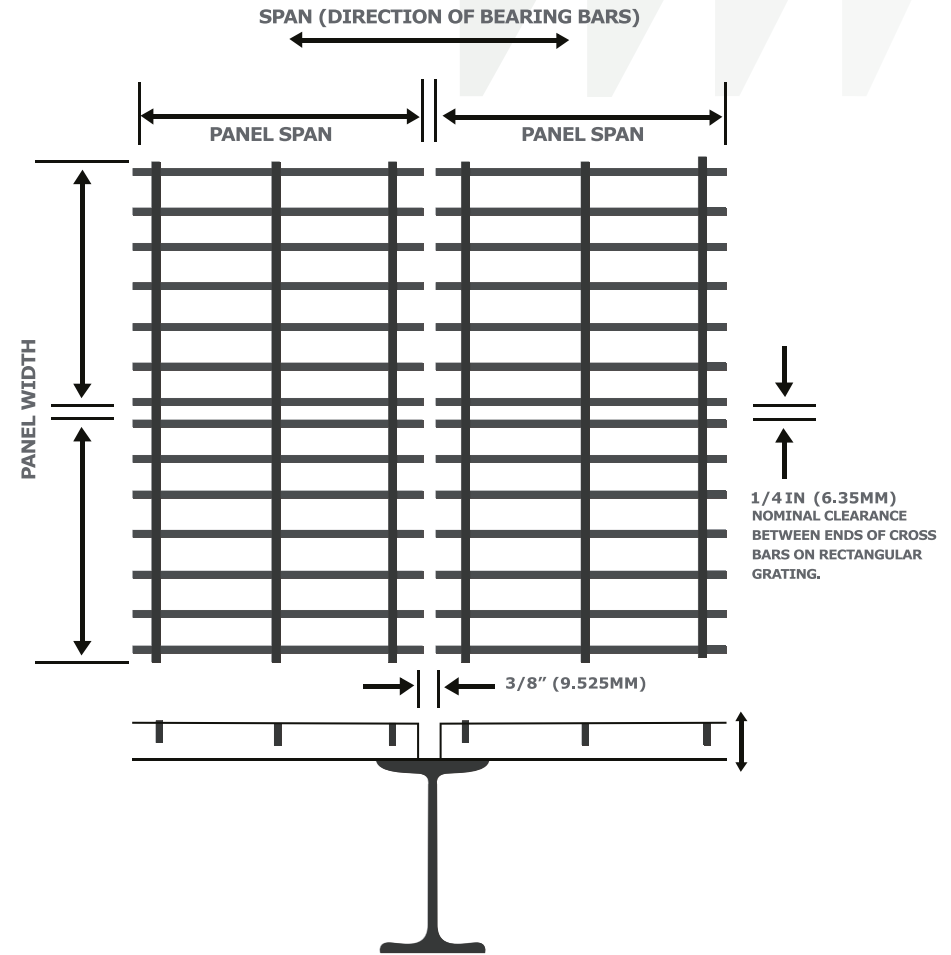
As shown in the drawing below, all rectangular cutouts are made to the next bearing bar beyond the penetration with a clearance not to exceed bearing bar spacing.



General Dimensions



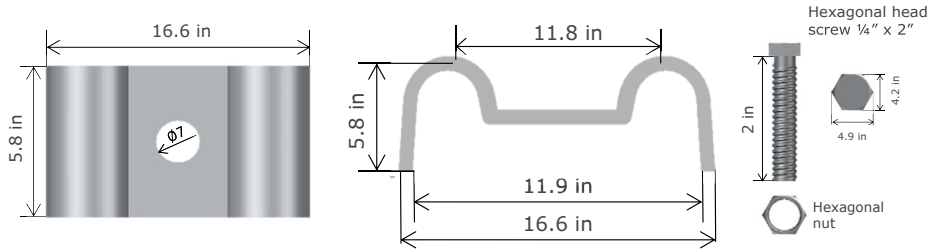
Standard Installation Clearances



Bar Grating Fasteners

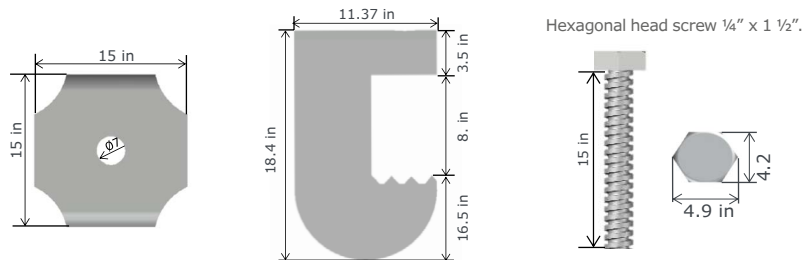
BAR GRATING FASTENERS	
Manufactured in carbon steel sheet, ASTM A-36, gauge 14, with a final finish at your own discretion and selection (either electrolytic galvanized or galvanized by immersion).	
FINISH	G-type and M-Type IRON ELEMENT FOR BAR GRATING GALVANIZED BY IMMERSION
The bar grating clips are very safe and strong, with high response to traffic. You just need a key to install them.	
<ul style="list-style-type: none"> Available for a distance of 30.2 mm among bearing bars (standard bar grating separation "W19") 	
It is necessary to anchor the bar grating to the structure and it is advisable to place 4 clips for each meter. That is to say, in the four corners of each meter, approximately.	

Type M



Clips are used to attach the bar gratings to the structures. They are applied with simple hand tools and no welding is needed.

Type G



Clips are used to attach the bar gratings to the structures. They are applied with simple hand tools and no welding is needed.

National Association of Architectural Metal Manufacturers

Architectural Metal Products Division
 Detention Equipment Manufacturers Association Division
 Expanded Metal Manufacturers Association Division

Hollow Metal Manufacturers Association Division
 Metal Bar Grating Division
 Expanded Metal Lath Association Division

February 27, 2024

To Whom It May Concern:

Please allow this letter to serve as confirmation that *Serviacero Electroforjados SA DE CV* in Mexico is a member in good standing with the National Association of Architectural Metal Manufacturers and its Metal Bar Grating division and is entitled to all rights and privileges of membership.

As such, *Serviacero Electroforjados SA DE CV* endorses the technical product standards and specifications published by the MBG Division.

Should you have any questions, please feel free to contact us.

Sincerely,

Jeff Church
 Executive Vice President



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serviacero[®]
 The most complete group in integral steel solutions in the country



Manufacturing metal bar gratings for light-duty and heavy duty, perimeter fences and architectural elements.



We specialize in the processing and commercialization of carbon steel for the metalworking industry, equipment manufacturing and construction industries.



Dedicated to manufacturing and production of mechanical tubes for the automotive, home appliance, greenhouse and manufacturing industries.



Dedicated to the commercialization and processing of bars and plates of alloy steels, aluminums, stainless steels, dimensional measuring equipment and engineering plastics.



Dedicated to the processing and commercialization of steels and flat aluminum, for the automotive industry, heavy equipment, electronics and appliance amongst others.



We specialize in the manufacturing of metal components for the industry through cutting, bending, machining, welding and painting processes.



We design and manufacture solutions for packaging products which includes racks, containers, baskets, dollies, pin pallets and assembly for the industry.

CONTACT

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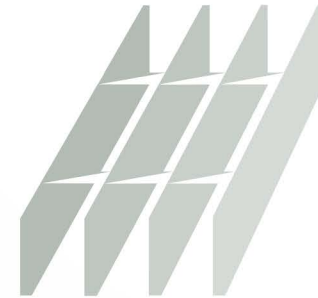
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