



ELAF GULF INDUSTRIAL FACTORY FOR STEEL FABRICATION

www.elafgulf.com info@elafgulf.com



**“STEEL IS NOT
JUST OUR
MATERIAL-IT’S
OUR PROMISE OF
STRENGTH,
PRECISION AND
TRUST.”**



***Elaf Gulf* is a trusted name in steel fabrication, delivering precision-engineered solutions for industrial, commercial, and custom projects. With expertise, innovation, and commitment at our core, we fabricate structures that stand strong against time — building a future forged in steel.**

ELAF GULF with its inception in 2008, underlying focus is on the creation & incubation of growth business ventures.

The combination of Elaf Alhifthi strong management team's expertise of several decades of successfully delivering industrial projects and group's synergy is the essence to reach par excellence in its performance; committed to serve the all-industrial sectors (Oil & Gas, Petrochemical, Fertilizer, Power & allied process industry) in Saudi Arabia.

Built on strong ethical values, quality and entrepreneurial spirit, we are ready to undertake any challenge and niche emerging opportunity on the horizon while maintaining Highest Safety & Quality.

EAL is a progressive company and provides one windows solution i.e. Engineering, Procurement and Construction of Mechanical & Electrical - also has very effective management & business processes tools, equipment & machinery for addressing all types of Electro-mechanical General Construction and Plant Maintenance, Turnarounds & Retrofit needs.

Elaf-Alhifthi has two well equipped production facilities which are located at Hay Al Jawhara, Jazan Road Jeddah, KSA.

The Industries... We Serve

- ❖ Oil and Gas Projects, Power and Desalination Projects, Airports, Wastewater treatment Plants, Petro chemical projects, Cement and Sugar Industries, Infra structure projects, etc.

The Products.. We supply

- ❖ Manufacturing of Storage Tanks, Anchor Bolts, Embedded Plates, Etc.
- ❖ Handrail, Rung and Monkey Ladders.
- ❖ Duct, Chimneys, Water Cooled Duct
- ❖ Pipe spooling and Related Fittings
- ❖ Conveyors
- ❖ Louvers, Chain link Fence
- ❖ Hatch covers, Clamps and Supports
- ❖ Cable Trays
- ❖ Stud bolt, Fasteners, and Nut, bolt, Washers.
- ❖ Fire Alarm System and Emergency Lighting.
- ❖ Maintenance Contract, Data Wiring, Access Control, CCTV

INDUSTRIAL SECTORS UNDER FOCUS

Oil and Gas



Chemical / Petrochemical



Power



Fertilizer



Cement

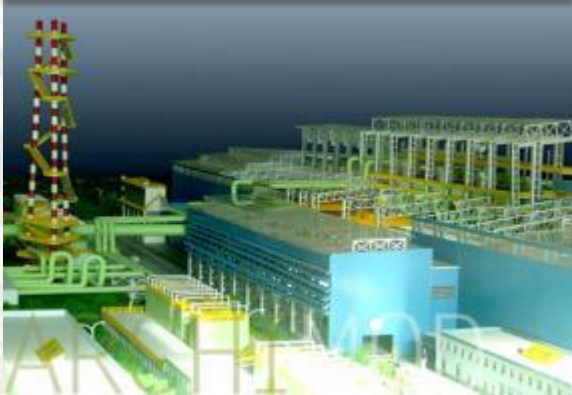


Water Treatment



AREAS OF SERVICES

Engineering



Construction



Manufacturing



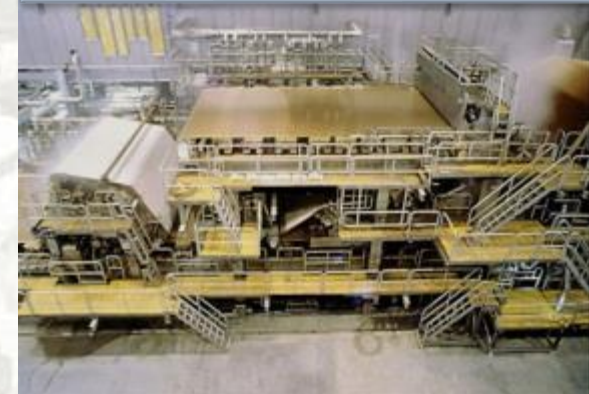
Cement Plant



Maintenance



Paper & Pulp



An embedded plate refers to a structural element, often a flat, rigid surface, that is integrated into another material or structure. This integration typically occurs within a composite material, concrete, or soil, providing additional strength, stability, or functionality.

In engineering contexts, embedded plates are used to:

1.Reinforce Structures: They can enhance the load-bearing capacity of beams, slabs, or walls.

2.Provide Anchoring: In concrete structures, embedded plates can serve as anchors for other components, such as equipment or structural elements.

3.Distribute Loads: They help in spreading loads over a wider area, reducing stress concentrations.

Applications can be found in civil engineering, mechanical systems, and even in certain types of machinery where structural integrity is crucial.



ELECTRO FORGED GRATINGS

GRATING with load bearing bars @ 30 mm centers Cross bars @ 100 mm Safe Uniformly distributed loads (U. D. L.) in kilonewtons per square meter on simply supported panels with deflections (D) in mm. Load table is made considering a maximum permissible stress of 165 N/mm² which allows for a safety factor of 1:6.

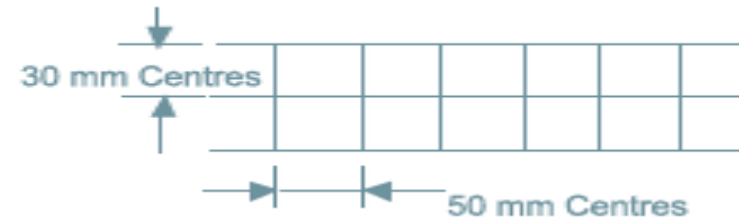
Safe Working Loads & Deflection Tables for 30mm Pitch Note :

For pedestrian traffic there are three loading categories which are (a) light duty. (b) normal duty and heavy duty. These categories are described as (a) access limited to one person only, (b) regular two way traffic and (c) high density traffic, BS 4592, part one 1987.

Add 2.99kg/m² approx. finished weight for cross bars @ 50 mm centers.

Note

- For 3mm load bars subtract 2 mm from widths
- width dimensions can vary due to manufacturing process
- In addition to 30 and 41 mm pitch we also manufacture the gratings with 22mm c/c, 33mm c/c, 34mm c/c, 44mm c/c and 60mm c/c



ELECTRO FORGED GRATINGS

Max clear span for pedestrian Load (mm)		'D' (mm)	Bearing Bar (mm)	UNITS	MAXIMUM UNIFORMLY DISTRIBUTED LOAD IN kN/m2 AND MAXIMUM DEFLECTION IN mm @ INDIVIDUAL CLEAR SPANS SHOWN IN mm													Theoretical Finish Weight
					300	450	600	750	900	1000	1200	1350	1500	1650	1800	1950	2000	kg/m2
a	1526	7.63	25x3	kn/m2	171.67	76.30	42.92	25.25	14.61	10.65	6.16	4.33	3.16	2.37	1.83	1.44	1.33	25.46
b	1287	6.43		D (mm)	0.65	1.47	2.61	3.75	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1124	5.62																
a	1831	9.15	30x3	kn/m2	247.20	109.87	61.80	39.55	25.25	18.41	10.65	7.48	5.45	4.10	3.16	2.48	2.30	29.95
b	1544	7.72		D (mm)	0.54	1.22	2.18	3.40	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1349	6.74																
a	2101	10.00	35x3	kn/m2	367.47	149.54	84.12	53.83	37.39	29.23	16.92	11.88	8.66	6.51	5.01	3.94	3.65	34.44
b	1801	9.01		D (mm)	0.47	1.05	1.86	2.91	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1574	7.87																
a	2322	10.00	40x3	kn/m2	439.47	195.32	109.87	70.31	48.83	39.55	25.25	17.73	12.93	9.71	7.48	5.88	5.45	38.94
b	2044	10.00		D (mm)	0.41	0.92	1.63	2.55	3.67	4.53	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1799	8.99																
a	2490	10.00	40x4	kn/m2	583.00	259.00	145.00	92.70	64.50	52.20	33.34	23.40	17.10	12.82	9.88	7.77	7.21	50.92
b	2191	10.00		D (mm)	0.41	0.92	1.63	2.55	3.67	4.53	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1950	9.41																
a	1809	9.04	25x5	kn/m2	286.11	127.16	71.53	42.08	24.35	17.75	10.27	7.22	5.26	3.95	3.04	2.39	2.22	40.44
b	1526	7.63		D (mm)	0.65	1.47	2.61	3.75	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1333	6.66																
a	2127	10.00	30x5	kn/m2	412.00	183.11	103.00	65.92	42.08	30.68	17.75	12.47	9.09	6.83	5.26	4.14	3.83	47.92
b	1831	9.15		D (mm)	0.54	1.22	2.18	3.40	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1599	8.00																
a	2227	10.00	32x5	kn/m2	455.00	198.00	114.50	75.00	47.20	37.00	21.35	14.99	10.95	8.21	6.35	4.97	4.61	50.92
b	1900	8.84		D (mm)	0.50	1.10	2.01	3.21	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1700	8.50																
a	2387	10.00	35x5	kn/m2	560.78	249.23	140.19	89.72	62.31	48.72	28.19	19.80	14.43	10.84	8.35	6.57	6.09	55.42
b	2101	10.00		D (mm)	0.47	1.05	1.86	2.91	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1866	9.33																
a	2639	10.00	40x5	kn/m2	732.44	325.53	183.11	117.19	81.38	65.92	42.08	29.56	21.55	16.19	12.47	9.81	9.09	62.90
b	2322	10.00		D (mm)	0.41	0.92	1.63	2.55	3.67	4.53	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	2098	10.00																
a	3119	10.00	50x5	kn/m2	1144.44	508.64	286.11	183.11	127.16	103.00	71.53	56.52	42.08	31.62	24.35	19.15	17.75	77.88
b	2745	10.00		D (mm)	0.33	0.73	1.31	2.04	2.94	3.63	5.22	6.61	7.50	8.25	9.00	9.75	10.00	
c	2481	10.00																
a	3567	10.00	60x5	kn/m2	1496.00	664.00	374.00	239.00	166.00	122.30	93.50	73.88	59.84	54.10	41.67	32.77	25.00	92.86
b	3140	10.00		D (mm)	0.25	0.56	1.00	1.56	2.24	3.05	4.00	5.05	6.23	8.25	9.00	9.75	10.00	
c	2837	10.00																
a	4005	10.00	70 x 5	kn/m2	2036.00	904.00	509.00	325.00	226.00	166.50	127.00	100.00	81.45	67.31	66.00	52.00	39.70	107.84
b	3525	10.00		D (mm)	0.21	0.48	0.85	1.34	1.92	2.62	3.42	4.33	5.34	6.46	9.00	9.75	10.00	
c	3185	10.00																

ELECTRO FORGED GRATINGS

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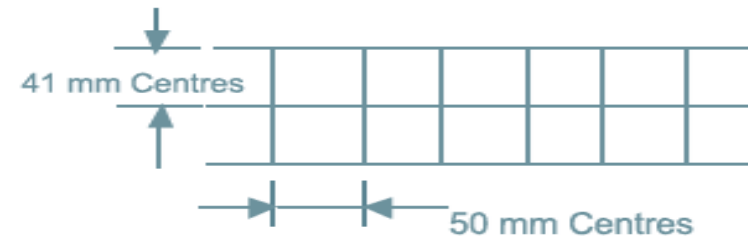
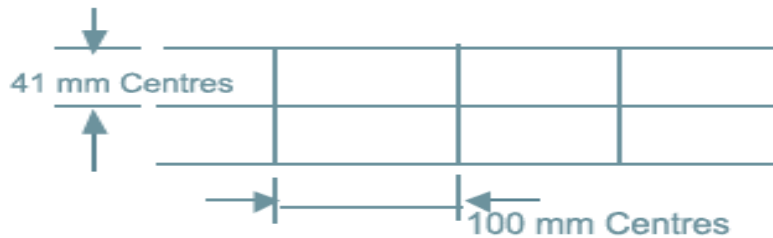
GRATING with load bearing bars @ 41mm centers Cross bars @ 100 mm Safe Uniformly distributed loads (U. D. L.) in kilonewtons per square meter on simply supported panels with deflections (D) in mm. Load table is made considering a maximum permissible stress of 165 N/mm² which allows for a safety factor of 1:6.

Safe Working Loads & Deflection Tables for 41mm Pitch Note :

For pedestrian traffic there are three loading categories which are (a) light duty. (b) normal duty and heavy duty. These categories are described as (a) access limited to one person only, (b) regular two way traffic and (c) high density traffic, BS 4592, part one 1987.

Add 2.99kg/m² approx. finished weight for cross bars @ 50 mm centers.

Serrated Conversion Factor: Calculating UDL and deflection for serrated gratings, allowance should be kept for the material removed from the load bearing bar to form the serration profile. Typically this is 0.9 % of the UDL and 1.05 % of the deflection. This figures vary depending on the type of serration. (TO be confirmed during the design process.)



LOADING CONSIDERED		
a=	3.0	kN/m ²
b=	5.0	kN/m ²
c=	7.5	kN/m ²



ELECTRO FORGED GRATINGS

Max clear span for pedestrian Load (mm)		'D' (mm)	Bearing Bar (mm)	UNITS	MAXIMUM UNIFORMLY DISTRIBUTED LOAD IN kN/m2 AND MAXIMUM DEFLECTION IN mm @ INDIVIDUAL CLEAR SPANS SHOWN IN mm													Theoretical Finish Weight
					300	450	600	750	900	1000	1200	1350	1500	1650	1800	1950	2000	kg/m2
a	1380	6.90	25x3	kn/m2	126.95	56.42	31.74	18.67	10.81	7.88	4.56	3.20	2.33	1.75	1.35	1.06	0.98	19.84
b	1164	5.82		D (mm)	0.65	1.47	2.61	3.75	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1017	5.08																
a	1656	8.28	30x3	kn/m2	182.81	81.25	45.70	29.25	18.67	13.61	7.88	5.53	4.03	3.03	2.33	1.84	1.70	23.21
b	1396	6.98		D (mm)	0.54	1.22	2.18	3.40	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1220	6.10																
a	1931	9.66	35x3	kn/m2	248.82	110.59	62.21	39.81	27.65	21.62	12.51	8.79	6.40	4.81	3.71	2.92	2.70	26.59
b	1639	8.15		D (mm)	0.47	1.05	1.86	2.91	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1423	7.12																
a	2154	10.00	40x3	kn/m2	325.00	143.00	81.25	52.00	36.11	29.25	18.67	13.11	9.56	7.18	5.53	4.35	4.03	29.95
b	1862	9.31		D (mm)	0.41	0.92	1.63	2.55	3.67	4.53	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1626	8.13																
a	2305	10.00	40x4	kn/m2	429.00	190.00	106.50	68.30	47.40	38.40	24.55	17.22	12.56	9.43	7.27	5.71	5.30	38.94
b	2029	10.00		D (mm)	0.41	0.92	1.63	2.55	3.67	4.53	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1700	7.40																
a	1636	8.18	25x5	kn/m2	211.59	94.04	52.90	31.12	18.01	13.13	7.60	5.34	3.89	2.92	2.25	1.77	1.64	31.08
b	1380	6.90		D (mm)	0.65	1.47	2.61	3.75	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1205	6.03																
a	1963	9.81	30x5	kn/m2	304.68	135.41	76.17	48.75	31.12	22.69	13.13	9.22	6.72	5.05	3.89	3.06	2.84	36.69
b	1656	8.28		D (mm)	0.54	1.22	2.18	3.40	4.50	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1446	7.23																
a	2062	10.00	32x5	kn/m2	335.00	146.00	84.00	55.00	34.70	27.15	15.70	11.02	8.04	6.04	4.65	3.66	3.39	38.94
b	1750	8.65		D (mm)	0.50	1.10	2.01	3.21	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1500	7.00																
a	2214	10.00	35x5	kn/m2	414.71	184.31	103.68	66.35	46.08	36.03	20.85	14.64	10.67	8.02	6.18	4.86	4.50	42.31
b	1931	9.66		D (mm)	0.47	1.05	1.86	2.91	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1687	8.44																
a	2447	10.00	40x5	kn/m2	541.66	240.74	135.41	86.67	60.18	48.75	31.12	21.86	15.93	11.97	9.22	7.25	6.72	47.92
b	2154	10.00		D (mm)	0.41	1.05	1.86	2.91	4.20	5.00	6.00	6.75	7.50	8.25	9.00	9.75	10.00	
c	1928	9.64																
a	2893	10.00	50x5	kn/m2	846.34	376.15	211.59	135.41	94.04	76.17	52.90	41.79	31.12	23.38	18.01	14.17	13.13	59.16
b	2546	10.00		D (mm)	0.33	0.73	1.31	2.04	2.94	3.63	5.22	6.61	7.50	8.25	9.00	9.75	10.00	
c	2301	10.00																
a	3303	10.00	60x5	kn/m2	1100.00	488.89	275.00	176.00	122.00	90.00	68.75	54.32	44.00	39.78	30.64	24.10	19.00	70.39
b	2907	10.00		D (mm)	0.25	0.56	1.00	1.56	2.24	3.05	3.99	5.05	6.23	8.25	9.00	9.75	10.00	
c	2627	10.00																
a	3709	10.00	70 x 5	kn/m2	1498.00	665.00	374.00	239.00	166.00	123.00	93.00	74.00	60.00	49.50	48.00	38.00	29.50	81.62
b	3264	10.00		D (mm)	0.21	0.48	0.85	1.34	1.92	2.62	3.42	4.33	5.34	6.46	9.00	9.75	10.00	
c	2949	10.00																

HEAVY DUTY GRATINGS

Heavy duty gratings are press locked gratings. The bearing bars and the cross bars are inter-locked with one another and then processed at a pressure of 12,000 kN.

Due to their high stability and safety, heavy duty gratings are used where large support widths and high wheel loads are required.

Heavy duty gratings can be also produced in stainless-steel

Support width – clearance between the supports.

Point load in kN

F_P

Bridge class	Colour key	Wheel load	Load carrying area
3/3	☐ Vehicle up to 3 t	10 kN	200 x 200 mm
9/9	☐ Vehicle up to 9 t	30 kN	200 x 260 mm
30/30	☐ Vehicle up to 30 t	50 kN	200 x 400 mm
60/30	☐ Vehicle up to 60 t	100 kN	200 x 600 mm

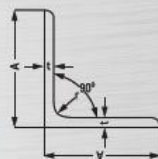
Bearing bars (mm) other bearing bars upto 200x12 on request.												
Support width * (mm)	80 x 8	90 x 8	100 x 8	110 x 8	120 x 8	130 x 8	140 x 8	150 x 8	80 x 10	90 x 10	100 x 10	110 x 10
	F_P	F_P	F_P	F_P	F_P	F_P	F_P	F_P	F_P	F_P	F_P	F_P
300	163,84	207,36	256,00	309,76	368,64	432,64	501,76	576,00	204,80	259,20	320,00	387,20
400	122,88	155,52	192,00	232,32	276,48	324,43	376,32	432,00	153,60	194,40	240,00	290,40
500	81,92	124,42	153,60	185,86	221,18	259,58	301,06	345,60	122,88	155,52	192,00	232,32
600	61,44	103,68	128,00	154,88	184,32	216,32	250,88	288,00	102,40	129,60	160,00	193,60
700	43,12	62,21	76,80	116,16	138,24	162,24	188,16	216,00	61,44	77,76	120,00	145,20
800	36,68	51,84	64,00	77,44	110,59	129,79	150,53	172,80	51,20	64,80	80,00	116,16
900	31,92	40,39	54,86	66,38	78,99	108,16	125,44	144,00	39,90	55,54	68,57	82,97
1000	27,31	35,75	44,14	58,08	69,12	81,12	107,52	123,43	35,31	44,69	60,00	72,60
1100	24,58	32,07	39,59	51,63	61,44	72,11	83,63	108,00	31,67	40,08	53,33	64,53
1200	22,34	28,28	35,89	43,42	55,30	64,90	75,26	86,40	27,93	36,34	44,86	58,08
1300	20,48	25,92	32,82	39,71	50,27	59,00	68,42	78,55	25,60	33,23	41,03	52,80
1400	18,90	23,93	30,24	36,59	43,54	54,08	62,72	72,00	23,63	30,61	37,80	45,73
1500	17,55	22,22	27,43	33,92	40,36	47,37	57,90	66,46	21,94	27,77	35,04	42,39
1600	16,38	20,74	25,60	31,61	37,62	44,15	53,76	61,71	20,48	25,92	32,65	39,51
1700	15,36	19,44	24,00	29,04	35,22	41,34	50,18	57,60	19,20	24,30	30,57	36,99
1800	14,46	18,30	22,59	27,33	33,11	38,86	45,07	54,00	18,07	22,87	28,24	34,78
1900	13,65	17,28	21,33	25,81	31,24	36,66	42,52	50,82	17,07	21,60	26,67	32,81
2000	12,93	16,37	20,21	24,45	29,10	34,70	40,25	46,20	16,17	20,46	25,26	31,06

Bearing bar	Cross bar
80x8	15x6
90x8	25x6
100x8	25x6
110x8	25x6
120x8	25x6
130x8	25x6
140x8	40x6
150x8	40x6
80x10	40x8
90x10	40x8
100x10	40x8
110x10	40x8
120x10	40x8
130x10	40x8
140x10	40x8
150x10	40x8
100x12	40x10
110x12	40x10
120x12	40x10
130x12	40x10
140x12	40x10
150x12	40x10
160x12	40x10
170x12	40x10
180x12	40x10
bearing bar length max. 2500 mm	

Addition to above heavy duty tailor made gratings can be fabricated based on specific load requirement.

ANGLES DATA SHEET

Designation	Mass per unit length	Designation	Mass per unit length
M	kg/m	M	kg/m
L 20 x 20 x 2.3mm	0.74	L 65 x 65 x 5mm	4.47
L 20 x 20 x 3mm	0.88	L 65 x 65 x 6mm	5.91
		L 65 x 65 x 8mm	7.66
		L 65 x 65 x 9mm	8.62
L 25 x 25 x 2.5mm	0.94		
L 25 x 25 x 3mm	1.12	L 70 x 70 x 5mm	5.37
L 25 x 25 x 4mm	1.45	L 70 x 70 x 6mm	6.38
L 25 x 25 x 5mm	1.76	L 70 x 70 x 7mm	7.38
		L 70 x 70 x 8mm	8.36
L 30 x 30 x 2.5mm	1.13	L 70 x 70 x 9mm	9.32
L 30 x 30 x 3mm	1.36	L 70 x 70 x 10mm	10.26
L 30 x 30 x 4mm	1.78		
L 30 x 30 x 5mm	2.18		
		L 75 x 75 x 5mm	5.76
L 38 x 38 x 2.5mm	1.44	L 75 x 75 x 6mm	6.85
		L 75 x 75 x 7mm	8.065
L 40 x 40 x 3mm	1.84	L 75 x 75 x 8mm	9.13
L 40 x 40 x 4mm	2.42	L 75 x 75 x 9mm	9.96
L 40 x 40 x 5mm	2.97	L 75 x 75 x 10mm	11.07
L 40 x 40 x 6mm	3.52	L 75 x 75 x 12mm	13.00
L 45 x 45 x 3mm	2.09	L 80 x 80 x 6mm	7.34
L 45 x 45 x 4mm	2.74	L 80 x 80 x 7mm	8.49
L 45 x 45 x 5mm	3.38	L 80 x 80 x 8mm	9.66
L 45 x 45 x 6mm	4.00	L 80 x 80 x 10mm	11.90
L 50 x 50 x 3mm	2.33	L 90 x 90 x 6mm	8.30
L 50 x 50 x 4mm	3.06	L 90 x 90 x 7mm	9.61
L 50 x 50 x 5mm	3.77	L 90 x 90 x 8mm	10.90
L 50 x 50 x 6mm	4.47	L 90 x 90 x 9mm	12.20
L 50 x 50 x 8mm	5.82	L 90 x 90 x 10mm	13.40
		L 90 x 90 x 12mm	15.90
L 60 x 60 x 5mm	4.63		
L 60 x 60 x 6mm	5.42		
L 60 x 60 x 8mm	7.09		
L 60 x 60 x 10mm	8.69		



ALUMINUM GRATING MANHOLE & Access Cover



Aluminum Gratings Manhole & Access Covers

ELAF GULF Aluminum Gratings are preferred over others, due to the advantage of Light weight, Corrosion resistant, aesthetic, non sparking and easy maintenance.

ELAF GULF aluminum Gratings are the perfect solutions for walkways, Drainage trench covers in highly corrosive Chemical, Pharma industry, Food Processing, Dairy farms, Breweries, Waste Water Treatment and District cooling plants, Oil & Gas, Petro chemical Industry and in Marine, Ship Building industry. It is also extensively used for facade, cladding applications in Architectural projects.

In Our Production programmed, we can manufacture two types of Aluminium Gratings.

a) Induro Type Aluminium Gratings:

Induro Type Aluminum Bar Gratings are produced by Unique interlocking technology which joins the Load Bearing Bars and Cross Rods together. Every connection of Bearing Bar and Cross Bar will be fixed under high pressure, so that they are connected unloosable.

b) Press Locked Aluminium Gratings.

In Press Lock Type Aluminium Gratings, both the Load Bearing and Transverse Bars are Flat Materials. Presslock Gratings are manufactured by Notching the Load Bearing Bars and then Interlocking with cross Bars at Very High Pressure and then tack welded.

ALUMINIUM MANHOLE COVER

ELAF GULF manufactures aluminum manhole covers that are widely used in shopping malls, commercial complex, residential units, etc. Manhole covers are usually manufactured in standard sizes. Custom made sizes is also available upon request.

ALUMINIUM ACCESS COVERS

ELAF GULF manufactures aluminum access covers that are widely used in roof access, residential units etc.

Types : Roof Type/ Up-Stand Type Flushed Type/ Glazed Type/Drop-in Type

Standard Sizes 300 x 300 mm/ 600 x 600 mm/ 900 x 900 mm

Thickness As Per Specification

Recess Depth 100 MM

Type of Seal Double Seal

Load Type Light/ Medium Heavy Duty

Material Aluminium 6063/6082



CABLE TRAYS



CABLE TRAYS

MANUFACTURING STANDARDS: Our products are manufactured as per the international standards BS50085, NEMA VE 1, BS/IEC 61537, ASTM & UL.

MANUFACTURED IN

- a) Mild Steel (Finish Hot Dip Galvanized, Painted & Powder Coated)
- b) Pre Galvanized Steel
- c) Aluminum
- d) Stainless Steel
- e) FRP/GRP

Cable trays & Ladders supplied in standard lengths of 2.44 & 3.00 Meters.



LADDER TYPE

Cable Ladders Fabricated with Outside & Inside flange C - Type

Specifications : Width : 50/75/100./125/150/200/225/250/300/400 UPTO 1200 mm

Height : 50/75/100/125 & 150 mm

Thickness : 1/1.2/1.5/2 & 2.5 & 3 mm

Rung type: Slotted C Section / Pipe Rung

Rung spacing : 150/250 & 300

Fittings :- Horizontal cross, Horizontal Bend (30 • ,45•.60 • & 90 Horizontal TEE, Vertical TEE,90• Internal & External Riser, Left Hand Reducer, Right Hand Reducer, Adjustable Bend etc

Accessories:- Standard Connectors, Adjustable / Expansion Connectors, Vertical & Horizontal Adjustable Connectors, Hold Down Clamp, Guide Clamp, Bonding jumper

Cover Type:- plain Cover, Flanged plain Cover, Louvered Cover & Flanged Louvered Cover(Thickness 1.0,1.2,1.5 & 2.0 mm)



CABLE TRAY & STEEL LADDER

PERFORATED TYPE

Types:- Plain Flange Type, Inside Return Flange, Outside Return Flange, "C"- Profile Flange

Specifications:

Width : 50/75/100/125/150/200, 225/250/300/400 UPTO 1200 mm

Height : 50/75/100mm

Thickness : 1/1.2/1.5/2/2.5 & 3 mm

Fittings :- Horizontal Bend (90 & 45), 90 Inside & Outside Riser, Straight Reducer, Right Hand Reducer, Left Hand Reducer, Horizontal Cross, Horizontal TEE, Unequal Cross & TEE.

Accessories:- Standard Connectors, Vertical & Horizontal Adjustable Connectors , Hold Down Clamp, Fish Plate, Side Cover Connector, Neck Screw, Connector, Bonding Jumper

Covered Type:- Plain Cover, Flanged Plain Cover, Louvered Cover & Flanged Louvered Cover
(Thickness 1.0, 1.2, 1.6 & 2.0mm)

STEEL LADDERS WITH OR WITHOUT SAFETY CAGES.:

Our Steel Ladders are Constructed as per European or American Standards. The ladder and cage can be supplied as per special client requirement or standard off the shelf ladder, fully welded or bolted to enable self-assembly on site.

Finish can be self color, primed, galvanized or painted to the client's specification.

Our steel caged or uncaged fixed access ladders provide safe, easy and economical access for applications in many different environments such as Oil Rigs, Petrochemical Plants, Sewage Works, Ships, Harbour Walls, Airports, Aero plane Hangars, Manhole access and provide an ideal solution for maintenance access in most buildings.



STEP IRON (RUNGS)

STEP IRON (RUNGS)

STEP IRON (RUNGS) ELAF GULF is a world leading manufacturer of infrastructure access equipment for the water and wastewater industries. We designs & manufactures quality access equipment with Cast Iron with GI Finish, Stainless Steel, Aluminium, Galvanized Steel, encapsulated and FRP.

Step Irons generally used in Sewer man holes, Storm Water, Inspection Man holes, Water line man holes etc -In old days steel rings fixed to concrete structure used to enter and come out of the man holes.

Our Step Irons are produced as per the standard BSI 247:

BS 1247-1 - Manhole steps. Specification for galvanized ELAF GULF us or stainless steel manhole steps

BS 1247-2 - Manhole steps. Specification for plastics encapsulated manhole steps

BS 1247-3 - Manhole steps. Specification for aluminium manhole steps

Features

Spark Proof

Corrosion protection

High impact polymer coating.

Easy to install and cost effective

Anti Slip Surface - ergonomically designed grip

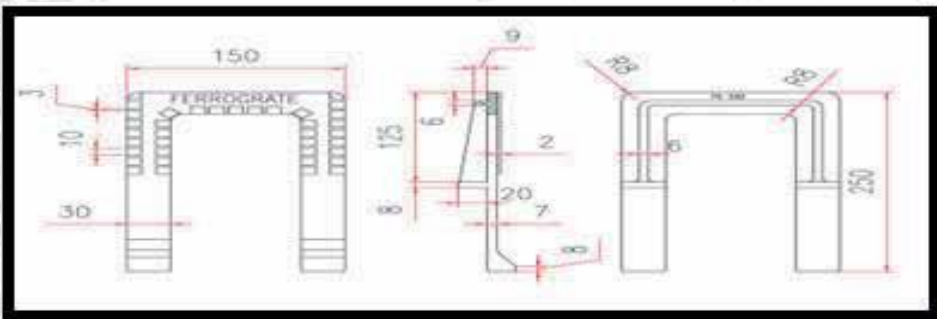
The design incorporates a non slip tread and resistance to side sippage

Comprehensive product range

Colour : Standard colour is yellow, can be change upon customer request for bulk orders.

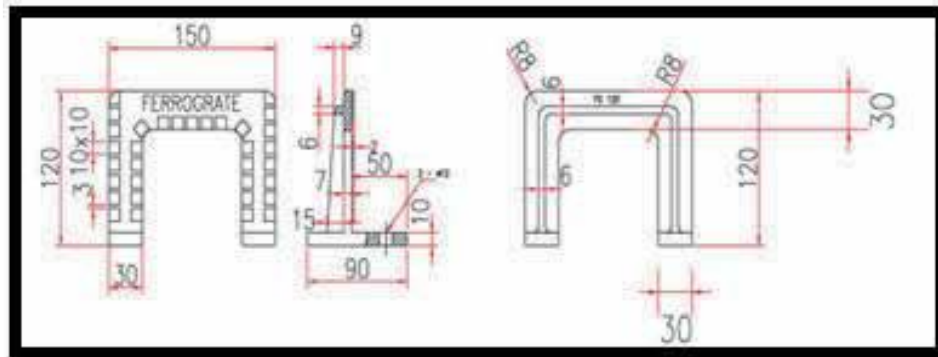
Our most common Sizes are:

FG250 : Cast Iron, Anti Slip top, Hot Dip Galvanized

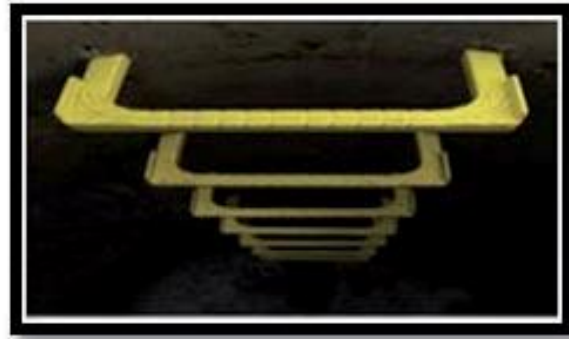
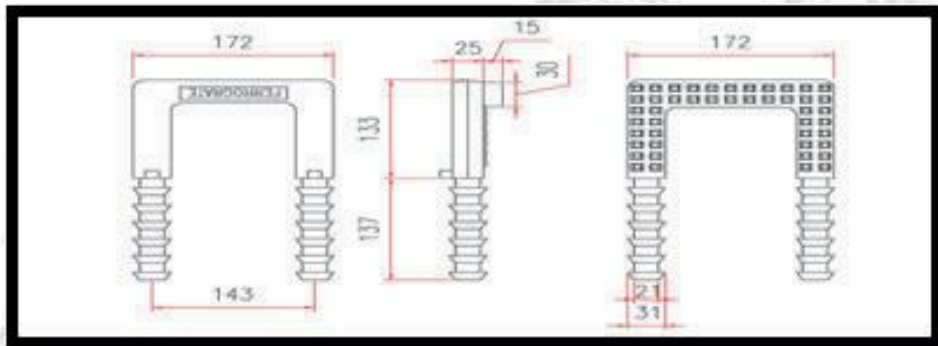


STEP IRON (RUNGS)

FG120 : Cast Iron, Anti Slip top, Hot Dip Galvanized



PVCFG250 : PVC encapsulated Steps - Recommended for use in chemically aggressive locations such as sewer access chambers.



ELAF GULF hoard Steel Hoarding & CHAIN LINK FENCE



ELAF GULF hoard Steel Hoarding

ELAF GULF Hoard Steel hoarding provides site security and is a durable alternative to timber hoarding.

Hoarding heights (Overall) available in 2.0 and 2.4 m with a width of 2.15 c/c. Vertical Posts & Stabilizer Posts are made out of GI Pipes. Top & Bottom frame made out of GI "C" channels of 2 mm thick with profile sheet 0.4mm, GI polyester coater, Off white color or can be painted in your Corporate Colors (Subject to availability and quantity)



Chain Link Fence

Chain Link Fence Material for chain link fence: Low carbon steel wire, stainless steel wire, aluminum alloy wire. Weaving of chain link fence: Woven diamond pattern provides strong, durable and flexible construction. The closely spaced diamond mesh construction gives your fence linear strength and springy texture to protect horses from injury and prevent predators from entering paddocks and pastures



Uses: Diamond mesh is used as fencing for sports field, river banks, construction and residence, also animal fencing.

Benefits: Low carbon steel diamond mesh has a heavy galvanized coating to ensure a long life. The Diamond Mesh wire construction is:

Strong, Safe & flexible, does not break, does not sag or roll up at the bottom.

Opening	1"	1.5 "	2"	2.25"	2.4"	2.5"	3"	4"
	25mm	40mm	50mm	55mm	60mm	65mm	76mm	100mm

Wire Dia 18#-7#
120mm-5.00mm

Length of the roll 1.0m - 50m

Width pf the roll 0.5m - 50m

Material and specification can be made according to customer specific requirements



WELDED WIRE MESH

WELDED WIRE MESH

Galvanized Welded Mesh Panel is made of superior quality welded Mesh, with flat even surface. firm structure, be used extensively in building, food, agriculture and so on.

Assortments available :

Hot-dip galvanized after welding , Hot-dip galvanized before welding , Electro galvanized after welding,

Electro galvanized before welding , PVC coated before welding , PVC coated after welding , SS welded wire mesh Crimped wire mesh,

Woven wire mesh, Hex. wire netting in normal twist, Hex. wire netting in reverse twist

Specification List of Welded Wire Mesh		
Opening		Wire Diameter <BWG>
In inch	In metric unit(mm)	
1/4" x 1/4"	6.4mm x 6.4mm	22,23,24
3/8" x 3/8"	10.6mm x 10.6mm	19,20,21,22
1/2" x 1/2"	12.7mm x 12.7mm	16,17,18,19,20,21,22,23
5/8" x 5/8"	16mm x 16mm	18,19,20,21
3/4" x 3/4"	19.1mm x 19.1mm	16,17,18,19,20,21
1" x 1/2"	25.4mm x 12.7mm	16,17,18,19,20,21
1-1/2" x 1-1/2"	38mm x 38mm	14,15,16,17,18,19
1" x 1"	25.4mm x 25.4mm	8,9,10,11,12,13,14
1" x 2"	25.4mm x 50.8mm	14,15,16
2" x 2"	50.8mm x 50.8mm	3,4,5,6,8,10,12
Technical Note: 1, Standard Sheet size: 1.2 x 3.0mm 2, Standard roll length: 30m; width: 0.5m to 1.8m, Special sizes available at request, packing: in waterproof paper in rolls. Custom packing available at request.		

Galvanized Fencing Mesh		
Opening		Wire Diameter <BWG>
In inch	In metric unit(mm)	
2" x 3"	50mm x 75mm	2.0mm,2.5mm,1.65mm
3" x 3"	75mm x 75mm	2.67mm,2.41mm,2.11mm,1.83mm,1.65mm
2" x 4"	50mm x 100mm	2.11mm,2.5mm
4" x 4"	100mm x 100mm	2.0mm,2.5mm - 8.0mm
8" x 8"	200mm x 200mm	6.0mm - 12.0mm
Technical Note. 1, Standard Sheet size 1.2 x 3.0mm 2, Standard roll length:30m;width: 0.5m to 2.1m 3, Special sizes available at request. 3, Packing: in waterproof paper in rolls. Custom packing available at request.		

PVC Coated Welded Mesh		
Opening		Wire Diameter <BWG>
In inch	In metric unit(mm)	
1/2" X 1/2"	12.7mm x 12.7mm	16,17,18,19,20,21
3/4" X 3/4"	19mm x 19mm	16,17,18,19,20,21
1" X 1"	25.4mm x 25.4mm	10,12,14,16,18,20
Technical Note: 1,Standard roll length: 30m;width: 0.5m to 2.0m 2,Special sizes available at request 3,Packing: in waterproof paper in rolls. Custom packing available at request.		



Stainless Steel Fabrication

Stainless Steel Fabrication

ELAF GULF Specializes in Fabrication and Supplying of Heavy/Small fabrication as per international standards to suit any application. Our Fabrication are widely used in WTPIS/STPIS, Shopping Malls, Commercial Complex, Hotel, etc.,

ELAF GULF Fabrication free major product ranges as listed below:

- Heavy Structure Fabrication
- SS Bollards
- SS handrails
- SS Ladders
- SS Skirting
- SS Tile Strips
- Tactile Indicator
- SS Mashreba Panels



Anchor Bolt

STANDARD ANCHOR BOLTS AND SLEEVES - BOLT DATA TABLE

- Anchor bolt assembly material shall to SES B55-S01 except as otherwise specified on design drawing.
- Leveling nuts on anchor bolts shall not be used unless otherwise noted on the design drawings.
- Plastic sleeves shall be Wilson anchor bolt sleeves as manufactured by Sinco Products. Inc., or SABIC approved equal.
- Headed bolts of at least the same length above the bottom nut are an acceptable substitution.
- Unless otherwise specified, all bolts and nuts shall be hot dipped galvanized after fabrication.
- Excess galvanizing material shall be removed from the thread portions of the bolts by the use of a centrifuge or by mechanical chasing
- of the bolt thread.
- Fit of nuts on threads of anchor bolts shall be verified before shipment.
- Type “H” bolt assembly shall consist of anchor bolt with tack welded nuts at top as specified unless noted otherwise. Type “HSL” and
- “VSL” bolt assemblies shall consist of anchor bolt with tack welded nut at bottom, sleeve and nuts at top as specified unless noted
- otherwise. Type “HSL” is recommended for equipment where as type “VSL” is recommended for vertical vessels only.
- Unless noted otherwise, tolerance will be as follows:
 - a. Bolt projection +6 mm, -0 mm
 - b. Center to center of any 2 bolts within a bolt group 3 mm (such as an equipment foundation or base plate)
 - c. Center to center between bolt groups 6 mm (such as a series of columns)
 - d. Plumpness 3 mm IN 900 mm

Sample Anchor Bolt Call out:

	8	32Ø	X	950	HSL	P=95	W/2 NUTS
quantity	8						
Diameter		32Ø					
Bolt length			X	950			
Type					HSL		
Projection from top of grout						P=95	
Nut quantity							W/2 NUTS

Anchor Bolt

VARIOUS TYPES ANCHOR BOLTS



FORMAT FOR ANCHOR BOLT CALL OUT ON DRAWINGS

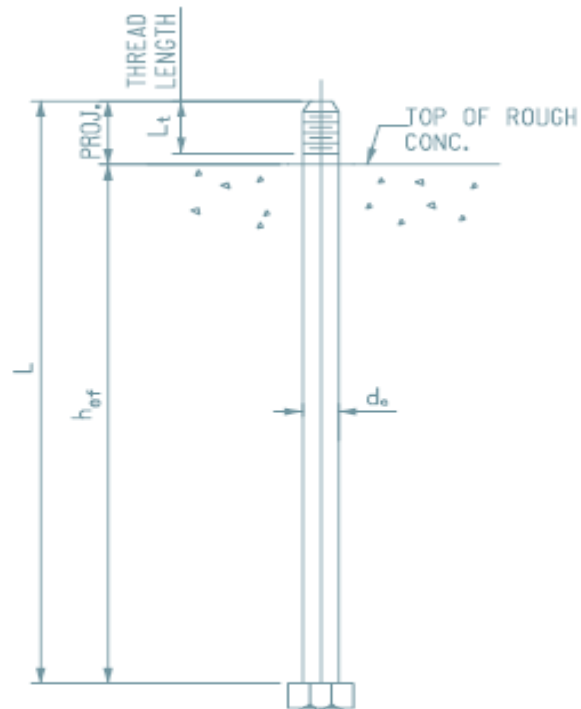
ANCHOR BOLT TYPE
BOLT DIAMETER (d.)
AB 3S-1-1/2"-100-600-(2)
NUMBER OF NUTS
BOLT LENGTH (L)
PROJECTION
INCH SIZES

ANCHOR BOLT TYPE
BOLT DIAMETER (d.)
AB 3S-M24-100-600-(2)
NUMBER OF NUTS
BOLT LENGTH (L)
PROJECTION
METRIC SIZES

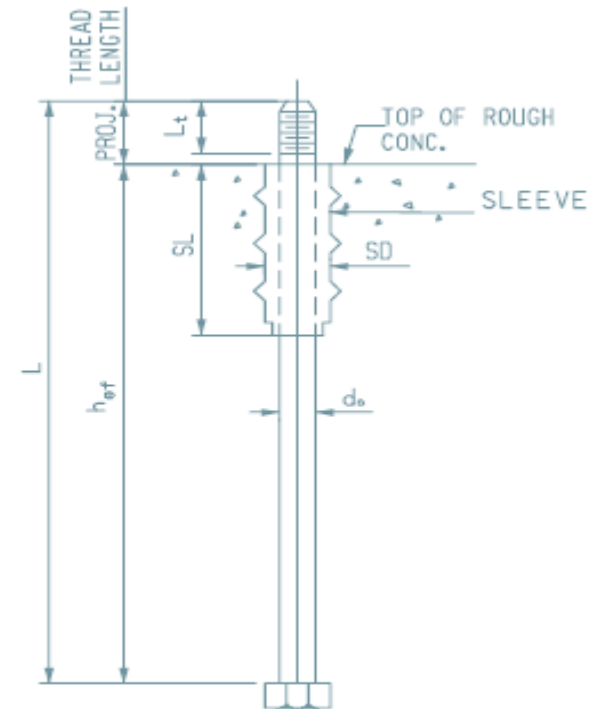
Anchor Material Specification	Sizes	Profile	Thread Profile	Nut Material Specification	Coating Type
ASTM A307, Grade A	1/2" thru 1-1/2"	Hex Bolt	ASME B18.2.1, UNC	ASTM A563, Gr. A Heavy Hex	Galvanized to ASTM A153, Class C or ASTM B695, Class 50
	over 1-1/2"	Heavy Hex Bolt			
ASTM A36/A36M	1/2" thru 3"	Rod	ASME B1.1, UNC, Class 2 ASME B1.13M	ASTM A563, Gr. A Heavy Hex	Galvanized to ASTM A153, Class C or ASTM B695, Class 50
	M12 thru M72				
ASTM F1554, Gr.36	1/2" thru 3"	Rod	ASME B1.1, UNC, Class 2	ASTM A563, Gr. A Heavy Hex	Galvanized to ASTM A153, Class C or ASTM B695, Class 50
ASTM A193/A193M, Gr. B7	3/4" thru 3"	Bolts/Rods	ASME B1.1, 8 UN, Class 2	ASTM A563, DH Heavy Hex or ASTM A194/A 194M	Painted per APCS-IC or APCS-IF per SAES-H-001
	M20 thru M72		ASME B1.13M		
ASTM F1554 Gr. 105	3/4" thru 3"	Rod	ASME B1.1, 8 UN, Class 2	ASTM A563, DH Heavy Hex or ASTM A194/A 194M	Galvanized to ASTM A153, Class C or ASTM B695, Class 50
	M20 thru M72				

Anchor Bolt

SPECIAL ANCHOR BOLTS



TYPE I
ASTM A307



TYPE IS
ASTM A307

Anchor Bolt

Table 1- ASTM A307, Grade A Bolt Sizes-Inch Series

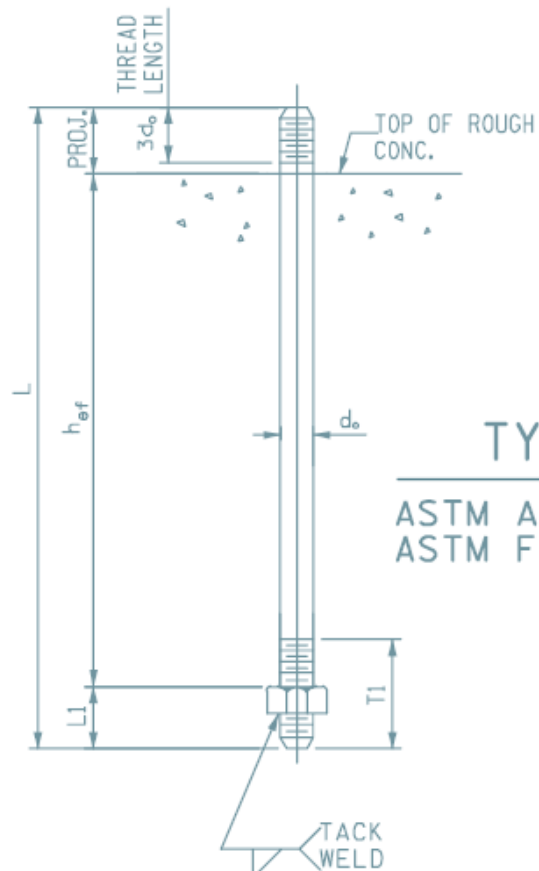
Bolt Properties						Type I				Type IS					
Size d_b	Type	L_t	TPI	Stress Area	Max. Proj. (note c)	h_{ef} min.	Length (L)	Edge Dist.	Spacing	h_{ef} min.	Length (L)	Edge Dist.	Spacing	Sleeve	
(in)		(in)		(in ²)	(mm)	$12d_b$	Proj.+ h_{ef}	$4d_b \geq 100 + d_b/2$	$6d_b$	SL+150	Proj.+ h_{ef}	(note d)	(note e)	SD	SL
						(mm)	(in)	(mm)	(mm)	(mm)	(in)	(mm)	(mm)	(mm)	(mm)
1/2	Hex	1.50	13	0.142	107	152	10	108	76	275	15	127	114	50	125
5/8	Hex	1.75	11	0.226	115	191	12	110	95	325	17 1/2	127	129	50	175
3/4	Hex	2.00	10	0.334	123	229	14	111	114	325	17 1/2	127	145	50	175
7/8	Hex	2.25	9	0.462	131	267	15 1/2	113	133	325	18	127	161	50	175
1	Hex	2.50	8	0.606	139	305	17 1/2	114	152	400	21	139	202	75	250
1-1/8	Hex	2.75	7	0.763	146	343	19 1/2	116	171	421	22 1/2	139	218	75	250
1-1/4	Hex	3.00	7	0.969	154	381	21	127	191	441	23 1/2	149	234	75	250
1-3/8	Hex	3.25	6	1.155	162	419	23	140	210	460	24 1/2	160	250	75	250
1-1/2	Hex	3.50	6	1.405	170	457	24 1/2	152	229	604	30 1/2	183	291	100	375
1-3/4	Heavy Hex	4.00	5	1.899	186	533	28 1/2	178	267	642	32 1/2	206	322	100	375
2	Heavy Hex	4.50	4.5	2.498	202	610	32	203	305	755	37 1/2	228	354	100	450
2-1/4	Heavy Hex	5.00	4.5	3.248	218	686	35 1/2	229	343	793	40	250	386	100	450
2-1/2	Heavy Hex	5.50	4	3.999	234	762	39	254	381	981	48	297	468	150	600
2-3/4	Heavy Hex	6.00	4	4.934	250	838	43	279	419	1019	50	319	499	150	600
3	Heavy Hex	6.50	4	5.967	266	914	46 1/2	305	457	1057	52	342	531	150	600

NOTE:

- A. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.
- B. ASTM A307 BOLT LENGTHS MAY NOT BE AVAILABLE FOR THE LARGER DIAMETER TYPE IS BOLT.
- C. IF THE REQUIRED PROJECTION EXCEED THE MAXIMUM PROJECTION IN THE TABLE ABOVE, USE A TYPE 2 ANCHOR BOLT.
- D. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D.) / 2
- E. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D.)
- F. TPI= THREADS PER INCH

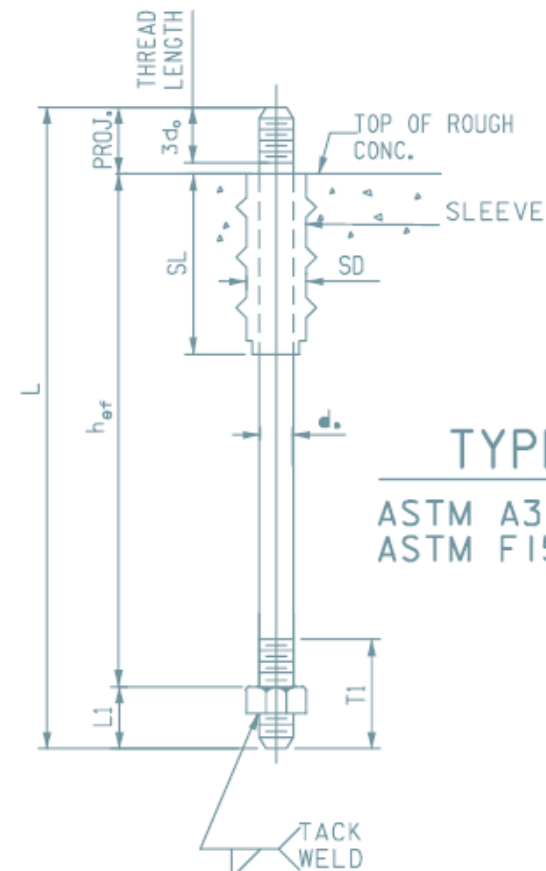
Anchor Bolt

SPECIAL ANCHOR BOLTS



TYPE 2

ASTM A36/A36M or
ASTM F1554, Gr. 36



TYPE 2S

ASTM A36/A36M or
ASTM F1554, Gr. 36

Table 2 - ASTM A36, ASTM F1554 Grade 36 Anchor Rods-Inch Series

Bolt Properties					Type 2			Type 2S				
Size	TPI	Stress Area	LI	TI	$h_{ef} \text{ min.}$	Edge Dist.	Spacing	$h_{ef} \text{ min.}$	Edge Dist.	Spacing	Sleeve	
d_b		(in^2)	$d_b + 13$	$2d_b$	$12d_b$	$4d_b \geq 100 + d_b / 2$	$6d_b$	$SL + 150$	(note b)	(note c)	SD	SL
(in)			(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
1/2	13	0.142	26	25	152	108	76	275	127	114	50	125
5/8	11	0.226	29	32	191	110	95	325	127	129	50	175
3/4	10	0.334	32	38	229	111	114	325	127	145	50	175
7/8	9	0.462	35	44	267	113	133	325	127	161	50	175
1	8	0.606	38	51	305	114	152	400	139	202	75	250
1-1/8	7	0.763	42	57	343	116	171	421	139	218	75	250
1-1/4	7	0.969	45	64	381	127	191	441	149	234	75	250
1-3/8	6	1.155	48	70	419	140	210	460	160	250	75	250
1-1/2	6	1.405	51	76	457	152	229	604	183	291	100	375
1-3/4	5	1.899	57	89	533	178	267	642	206	322	100	375
2	4.5	2.498	64	102	610	203	305	755	228	354	100	450
2-1/4	4.5	3.248	70	114	686	229	343	793	250	386	100	450
2-1/2	4.0	3.999	77	127	762	254	381	981	297	468	150	600
2-3/4	4.0	4.934	83	140	838	279	419	1019	319	499	150	600
3	4.0	5.967	89	152	914	305	457	1057	342	531	150	600

NOTE:

A. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

B. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D)/2

C. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D)

D. TPI= THREADS PER INCH

Table 2M - ASTM A36 Anchor Rods - Metric

Bolt Properties				Type 2			Type 2S				
Nominal Dia. (d_o) & thread pitch	Stress Area	LI $d_o + 13$	TI $2d_o$	h_{ef} min. $12d_o$	Edge Dist. $4d_o \geq 100 + d_o/2$	Spacing $6d_o$	h_{ef} min. $SL + 150$	Edge Dist. (note b)	Spacing (note c)	Sleeve	
(mm)	(mm ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	SD (mm)	SL (mm)
M12x1.75	84.3	25	24	144	106	72	275	125	110	50	125
M16x2	157	29	32	192	108	96	275	125	130	50	125
M20x2.5	245	33	40	240	110	120	325	125	150	50	175
M24x3	353	37	48	288	112	144	400	138	195	75	250
M27x3	459	40	54	324	114	162	400	138	210	75	250
M30x3.5	561	43	60	360	120	180	400	143	225	75	250
M36x4	817	49	72	432	144	216	525	176	280	100	375
M42x4.5	1120	55	84	504	168	252	525	197	310	100	375
M48x5	1470	61	96	576	192	288	600	218	340	100	450
M56x5.5	2030	69	112	672	224	336	672	246	380	100	450
M64x6	2680	77	128	768	256	384	768	299	470	150	600
M72x6	3460	85	144	864	288	432	864	327	510	150	600

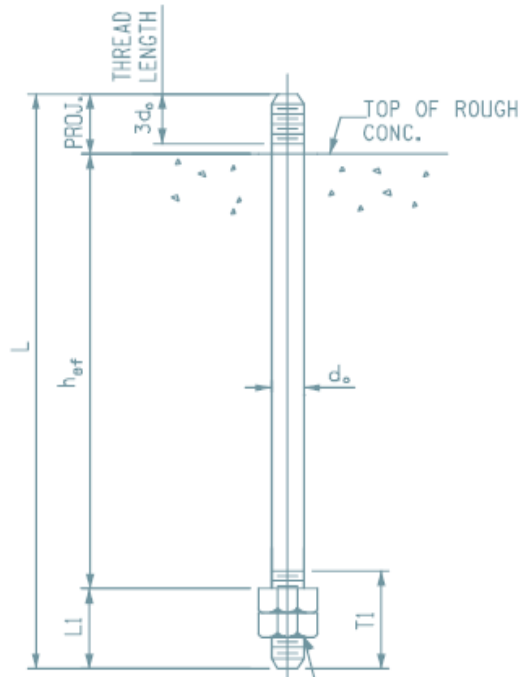
NOTE:

A. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

B. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY $(SD-D_o)/2$

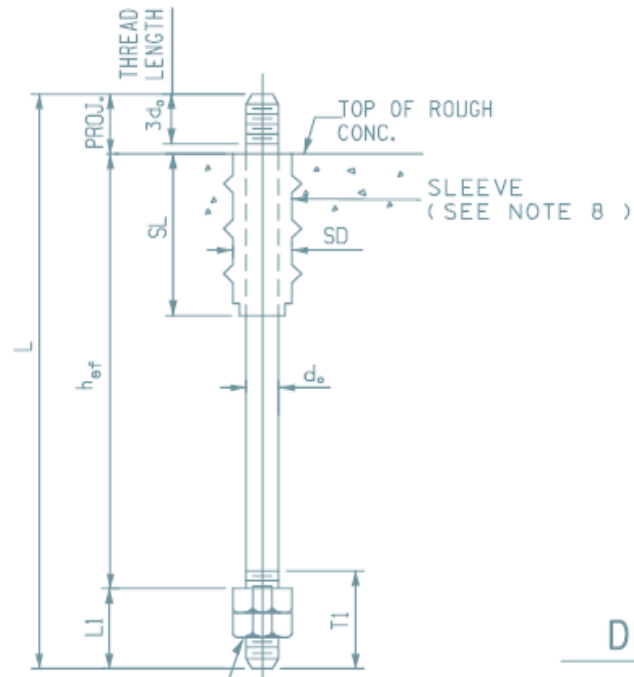
C. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY $(SD-D_o)$

Anchor Bolt



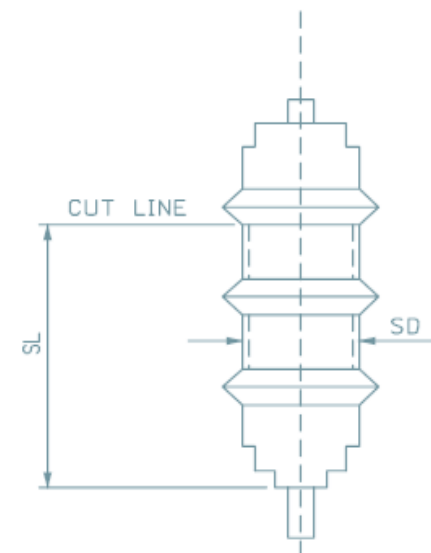
TYPE 3

ASTM A193/A193M or
ASTM F1554, Gr. 105



TYPE 3S

ASTM A193/A193M or
ASTM F1554, Gr. 105



DETAIL OF SLEEVE

PLASTIC ANCHOR BOLT SLEEVES SHALL BE USED WHERE REQUIRED BY DESIGN. TOP OF SLEEVE SHALL BE CUT OFF TO MAINTAIN EMBEDMENT LENGTH.

Table 3 - ASTM A193, ASTM F1554 Grade 105 Anchor Rods-Inch Series

Bolt Properties					Type 3			Type 3S				
Size	TPI	Stress	LI	TI	h_{ef} min.	Edge Dist.	Spacing	h_{ef} min.	Edge Dist.	Spacing	Sleeve	
d_o		Area	$2d_o + 13$	$3d_o$	$12d_o$	$6d_o \geq 100 + d_o/2$	$6d_o$	SL+150	(note b)	(note c)	SD	SL
(in)		(in ²)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
3/4	10	0.334	51	57	229	114	114	325	130	145	50	175
7/8	9	0.462	57	67	267	133	133	325	147	161	50	175
1	8	0.606	64	76	305	152	152	400	177	202	75	250
1-1/8	8	0.790	70	86	343	171	171	421	195	218	75	250
1-1/4	8	1.000	77	95	381	191	191	441	212	234	75	250
1-3/8	8	1.234	83	105	419	210	210	460	230	250	75	250
1-1/2	8	1.492	89	114	457	229	229	604	260	291	100	375
1-3/4	8	2.082	102	133	533	267	267	642	294	322	100	375
2-1/4	8	3.557	127	171	686	343	343	793	364	386	100	450
2-1/2	8	4.442	140	191	762	381	381	981	424	468	150	600
2-3/4	8	5.425	153	210	838	419	419	1019	459	499	150	600
3	8	6.506	165	229	914	457	457	1057	494	531	150	600

NOTE:

A. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

B. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D)/2

C. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D)

D. TPI= THREADS PER INCH

Table 3M - ASTM A193M Anchor Rods - Metric

Bolt Properties				Type 3			Type 3S				
Nominal Dia. (d_o) & thread pitch (mm)	Stress Area (mm ²)	LI	TI	h_{ef} min.	Edge Dist.	Spacing	h_{ef} min.	Edge Dist.	Spacing	Sleeve	
		$2d_o+13$ (mm)	$3d_o$ (mm)	$12d_o$ (mm)	$6d_o \geq 100+d_o/2$ (mm)	$6d_o$ (mm)	$SL+150$ (mm)	(note b) (mm)	(note c) (mm)	SD (mm)	SL (mm)
M12x1.75	84.3	37	36	144	106	72	275	125	110	50	125
M16x2	157	45	48	192	108	96	275	125	130	50	125
M20x2.5	245	53	60	240	120	120	325	135	150	50	175
M24x3	353	61	72	288	144	144	400	170	195	75	250
M27x3	459	67	81	324	162	162	400	186	210	75	250
M30x3.5	561	73	90	360	180	180	400	203	225	75	250
M36x4	817	85	108	432	216	216	525	248	280	100	375
M42x4.5	1120	97	126	504	252	252	525	281	310	100	375
M48x5	1470	109	144	576	288	288	600	314	340	100	450
M56x5.5	2030	125	168	672	336	336	672	358	380	100	450
M64x6	2680	141	192	768	384	384	768	427	470	150	600
M72x6	3460	157	216	864	432	432	864	471	510	150	600

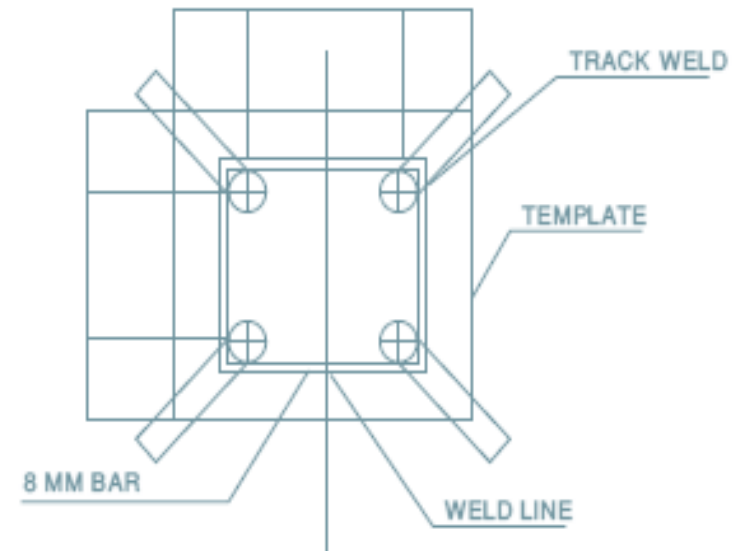
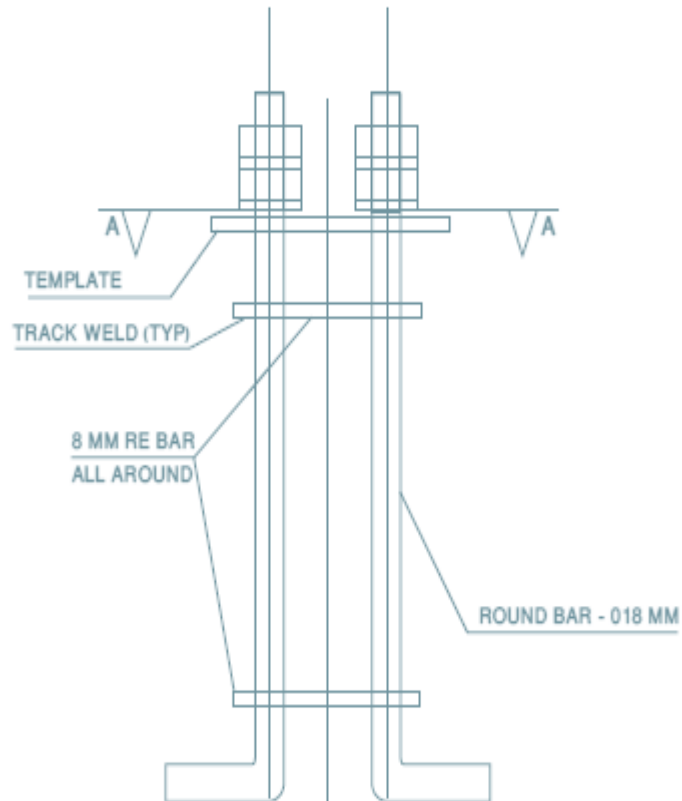
NOTE:

A. MINIMUM EDGE DISTANCE IS MEASURED FROM THE CENTERLINE OF THE ANCHOR BOLT TO THE EDGE OF THE CONCRETE.

B. EDGE DISTANCE FOR BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D.)/2

C. SPACING OF BOLTS WITH SLEEVES MUST BE INCREASED BY (SD-D.)

DETAIL OF TEMPLATE & GAUGE RINGS FOR M18X350 ANCHOR BOLTS, TYPE 1



SECTION A-A

STANDARD ANCHOR BOLTS AND SLEEVES - BOLT DATA TABLE

STANDARD 'H', 'HSL' AND 'VSL' ANCHOR BOLT DATA TABLE								
BOLT DIA d	ALLOWANCE FOR NUTS			(THREAD LENGTH AT TOP)	SHELL SIZE	STRUCTURES AND EQUIPMENT 'H' AND 'HSL' BOLTS	VERTICAL VESSELS ONLY 'VSL' BOLTS	BOLT DIA d
	N1	N2	N3 (THREAD LENGTH AT BOTTOM)		SHELL SIZE	STANDARD LENGTH L	STANDARD LENGTH L	
12	20	35	25	60	50x130	360	610	12
16	25	45	25	70	50x180	410	690	16
20	35	50	35	80	50x180	460	740	20
22	35	60	35	85	50x180	510	870	22
25	40	65	40	90	75x250	590	1040	25
32	50	85	45	110	75x250	660	1120	32
38	60	95	50	120	100x380	790	1400	38
45	70	115	60	140	100x380	870	1480	45
50	80	130	65	155	100x450	990	1810	50
57	90	150	70	175	100x450	1040	1880	57
64	95	85	80	185	Sheet metal sleeve, see sheet 3	1100	1930	64
70	110	180	85	205	Sheet metal sleeve, see sheet 3	1170	2010	70
75	115	190	90	220	Sheet metal sleeve, see sheet 3	1250	2240	75

All dimensions are in mm unless noted otherwise.

A detailed black and white architectural sketch of an industrial facility, likely a steel fabrication plant. The sketch shows various structures including tall chimneys, large storage tanks, conveyor systems, and buildings with complex rooflines. Numerous small figures of people are scattered throughout the scene to provide a sense of scale. The overall style is that of a technical drawing or a conceptual architectural rendering.

Thank You