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FARWEST STEEL CORPORATION

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Springfield, OR 97477
Local Phone: 541.686.2000
Toll Free: 800.452.5091

Steel Division

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4421 Enterprise St
Boise, ID 83705
Local Phone: 208.336.2410
Toll Free: 800.632.5951

EUGENE STEEL OFFICE AND WAREHOUSE
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Eugene, OR 97403
Local Phone: 541.686.2000
Toll Free: 800.452.5091

MEDFORD STEEL OFFICE AND WAREHOUSE
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Medford, OR 97501
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Renton, WA 98055
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Toll Free: 800.548.6623

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Spokane Valley, WA 99216
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Stockton, CA 95215
Local Phone: 209.235.4659
Toll Free: 866.706.5404

LOCATIONS

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VANCOUVER STEEL OFFICE AND WAREHOUSE
3703 NW Gateway Avenue
Vancouver, WA 98660
Local Phone: 360.619.4760
Toll Free: 855.246.5052

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Ogden, UT 84404
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FARWEST STEEL CORPORATION

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FARWEST STEEL CORPORATION

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- Chemical Analysis
- Mechanical Properties
- Tolerances
- Straightness
- Sizes
- Weights and Measures
- Textual Information
- Charts and Tables
- Schedules
- Illustrations and Pictures
- Other data described herein

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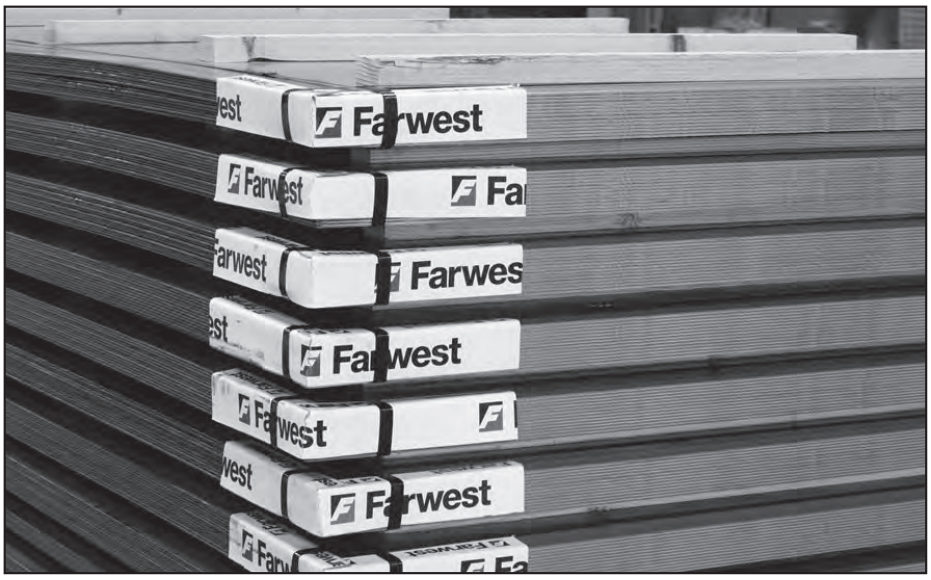
February, 2023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FARWEST STEEL CORPORATION

ANGLE — SPECIFICATIONS

Chemical Analysis:

ASTM	Carbon	Phosphorus	Sulphur
A-36	.26 max	.04 max	.05 max

Mechanical Properties:

ASTM	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8˝
A-36	36,000 Min[A]	58,000/80,000[A]	20 Min[B]

Tolerances:

Size[C]	Thickness Over or Under Inch			Length of Leg	
	To 3 /16	Over 3/16 to 3/8	Over 3/8	Over	Under
To 1″	.008	.010	—	1/32	1/32
Over 1″ to 2″	.010	.010	.012	3/64	3/64
Over 2″ to, excluding 3″	.012	.015	.015	1/16	1/16
3″ to 4″, incl.	—	—	—	1/8	3/32
Over 4″ to 6″, incl.	—	—	—	1/8	1/8
Over 6″	—	—	—	3/16	1/8

Straightness:

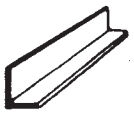
Out of square — $1\frac{1}{2}$ degrees per inch of leg

Camber — 1/4″ in any 5″ or 1/4″ $\times \frac{\text{(length in feet)}}{5}$

[A] Shapes less than 1 inch square (6.45 mm^2) in cross section need not be subject to tension tests by the manufacturer.

[B] Shapes less than 5/16 inch (8 mm) in thickness or diameter a deduction from the percentage of elongation in 8 inches (203 mm), of 1.25% shall be made for each decrease of 1/32 inch (0.8 mm) of the specified thickness or diameter below 5/16 inch (8mm).

[C] For unequal leg angles, longer leg determines classification.

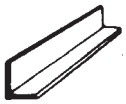


BAR SIZE ANGLE

Standard Lengths — 20′, 40′

Size	Weight in Pounds		
	Foot	20′	40′
1/2 x 1/2 x 1/8	.38	7.6	—
5/8 x 5/8 x 1/8	.48	9.6	—
3/4 x 3/4 x 1/8	.59	11.8	—
7/8 x 7/8 x 1/8	.70	14.0	—
1 x 1 x 1/8	.80	16.0	—
3/16	1.16	23.2	—
1/4	1.49	29.8	—
1 1/4 x 1 1/4 x 1/8	1.01	20.2	—
3/16	1.48	29.6	—
1/4	1.92	38.4	—
1 1/2 x 1 1/2 x 1/8	1.23	24.6	—
3/16	1.80	36.0	72.0
1/4	2.34	46.8	93.6
5/16	2.86	57.2	—
3/8	3.35	67.0	—
1 3/4 x 1 1/4 x 1/8	1.23	24.6	—
3/16	1.80	36.0	—
1 3/4 x 1 3/4 x 1/8	1.44	28.8	57.6
3/16	2.12	42.4	84.8
1/4	2.77	55.4	110.8
2 x 1 1/4 x 3/16	1.96	39.2	—
1/4	2.55	51.0	—
2 x 1 1/2 x 1/8	1.44	28.8	—
3/16	2.12	42.4	—
1/4	2.77	55.4	110.8
2 x 2 x 1/8	1.65	33.0	66.0
3/16	2.44	48.8	97.6
1/4	3.19	63.8	127.6
5/16	3.92	78.4	156.8
3/8	4.70	94.0	188.0
2 1/2 x 1 1/2 x 3/16	2.44	48.8	97.6
1/4	3.19	63.8	127.6
5/16	3.92	78.4	156.8

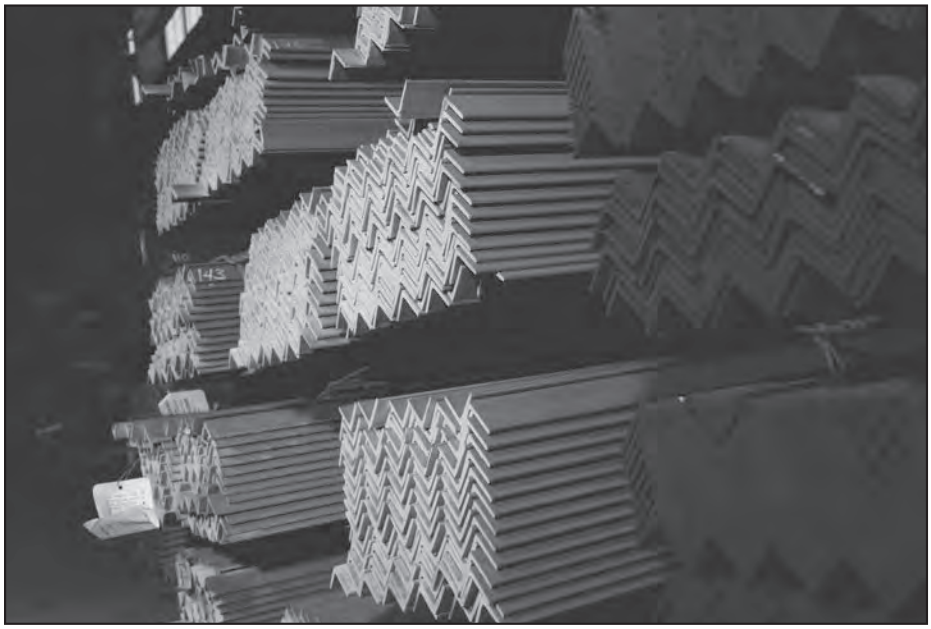
FARWEST STEEL CORPORATION

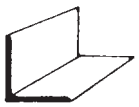


BAR SIZE ANGLE

Standard Lengths — 20′, 40′

Size		Weight in Pounds		
		Foot	20′	40′
2 1/2 x 2	x 3/16	2.75	55.0	110.0
	1/4	3.62	72.4	144.8
	5/16	4.50	90.0	180.0
	3/8	5.30	106.0	212.0
2 1/2 x 2 1/2	x 3/16	3.07	61.4	122.8
	1/4	4.10	82.0	164.0
	5/16	5.00	100.0	200.0
	3/8	5.90	118.0	236.0
	1/2	7.70	154.0	308.0





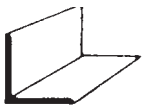
STRUCTURAL ANGLE

Standard Lengths — 20′, 40′

Size	Foot	Weight in Pounds 20′	40′
3 x 2 x 3/16	3.0	61.4	122.8
1/4	4.1	82.0	164.0
5/16	5.0	100.0	200.0
3/8	5.9	118.0	236.0
1/2	7.7	154.0	308.0
3 x 2 1/2 x 1/4	4.5	90.0	180.0
5/16	5.6	112.0	224.0
3/8	6.6	132.0	264.0
1/2	8.5	170.0	340.0
3 x 3 x 3/16	3.7	74.2	148.4
1/4	4.9	98.0	196.0
5/16	6.1	122.0	244.0
3/8	7.2	144.0	288.0
1/2	9.4	188.0	376.0
3 1/2 x 2 1/2 x 1/4	4.9	98.0	196.0
5/16	6.1	122.0	244.0
3/8	7.2	144.0	288.0
1/2	9.4	188.0	376.0
3 1/2 x 3 x 1/4	5.4	108.0	216.0
5/16	6.6	132.0	264.0
3/8	7.9	158.0	316.0
7/16	9.1	182.0	364.0
1/2	10.2	204.0	408.0
3 1/2 x 3 1/2 x 1/4	5.8	116.0	232.0
5/16	7.2	144.0	288.0
3/8	8.5	170.0	340.0
1/2	11.1	222.0	444.0
4 x 3 x 1/4	5.8	116.0	232.0
5/16	7.2	144.0	288.0
3/8	8.5	170.0	340.0
7/16	9.8	196.0	392.0
1/2	11.1	222.0	444.0
5/8	13.6	272.0	544.0

Processing: See pages 95, 96

FARWEST STEEL CORPORATION

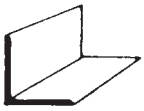


STRUCTURAL ANGLE

Standard Lengths — 20′, 40′

Size	Foot	Weight in Pounds 20′	40′
4 x 3 1/2 x 1/4	6.2	124.0	248.0
5/16	7.7	154.0	308.0
3/8	9.1	182.0	364.0
7/16	10.6	212.0	424.0
1/2	11.9	238.0	476.0
5/8	14.7	294.0	588.0
4 x 4 x 1/4	6.6	132.0	264.0
5/16	8.2	164.0	328.0
3/8	9.8	196.0	392.0
7/16	11.3	226.0	452.0
1/2	12.8	256.0	512.0
5/8	15.7	314.0	628.0
3/4	18.5	370.0	740.0
5 x 3 x 1/4	6.6	132.0	264.0
5/16	8.2	164.0	328.0
3/8	9.8	196.0	392.0
1/2	12.8	256.0	512.0
5/8	16.8	336.0	672.0
5 x 3 1/2 x 1/4	7.0	140.0	280.0
5/16	8.7	174.0	348.0
3/8	10.4	208.0	416.0
7/16	12.0	240.0	480.0
1/2	13.6	272.0	544.0
5/8	16.8	336.0	672.0
3/4	19.8	396.0	792.0
5 x 5 x 5/16	10.3	206.0	412.0
3/8	12.3	246.0	492.0
1/2	16.2	324.0	648.0
5/8	20.0	400.0	800.0
3/4	23.6	472.0	944.0
7/8	27.2	544.0	1088.0

Processing: See pages 95, 96



STRUCTURAL ANGLE

Standard Lengths — 20′, 40′

Size	Weight in Pounds		
	Foot	20′	40′
6 x 4 x 5/16	10.3	206.0	412.0
3/8	12.3	246.0	492.0
7/16	14.3	286.0	572.0
1/2	16.2	324.0	648.0
5/8	20.0	400.0	800.0
3/4	23.6	472.0	944.0
7/8	27.2	544.0	1088.0
6 x 6 x 5/16	12.4	248.0	496.0
3/8	14.9	298.0	596.0
7/16	17.2	344.0	688.0
1/2	19.6	392.0	784.0
5/8	24.2	484.0	968.0
3/4	28.7	574.0	1148.0
7/8	33.1	662.0	1324.0
1	37.4	748.0	1496.0
7 x 4 x 3/8	13.6	272.0	554.0
7/16	15.8	316.0	632.0
1/2	17.9	358.0	716.0
5/8	22.1	442.0	884.0
3/4	26.2	524.0	1048.0
8 x 4 x 7/16	17.2	344.0	688.0
1/2	19.6	392.0	784.0
5/8	24.2	484.0	968.0
3/4	28.7	574.0	1148.0
1	37.4	748.0	1496.0
8 x 6 x 1/2	23.0	460.0	920.0
9/16	25.7	514.0	1028.0
5/8	28.5	570.0	1140.0
3/4	33.8	676.0	1352.0
1	44.2	884.0	1768.0
8 x 8 x 1/2	26.4	528.0	1056.0
5/8	32.7	654.0	1308.0
3/4	38.9	778.0	1556.0
7/8	45.0	900.0	1800.0
1	51.0	1020.0	2040.0
9 x 4 x 1/2	21.3	426.0	852.0
5/8	26.3	526.0	1052.0
3/4	31.3	626.0	1252.0

CHANNEL — SPECIFICATIONS

Chemical Analysis:

ASTM	Carbon	Phosphorus	Sulphur
A-36	.26 max	.04 max	.05 max

Mechanical Properties:

Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8˝
36,000 min[A]	58,000/80,000[A]	20 min[B]

Tolerances:

Size	Channel Depth		Flange Width		Thickness of Web over or under, Inch	
	over	under	over	under	3/16 and under	over 3/16
To 1 1/2″ incl.	±1/32	±1/32	±1/32	±1/32	0.010	0.015
Over 1 1/2″ to 3″, excl.	±1/16	±1/16	±1/16	±1/16	0.015	0.020
3″ to 7″, incl.	3/32	1/16	1/8	1/8	–	–
over 7″ to 14″, incl.	1/8	3/32	1/8	5/32	–	–
over 14″	3/16	1/8	1/8	3/16	–	–

Straightness:

Camber

— For channels under 3″ = 1/4″ in any 5′ or 1/4″ x $\frac{\text{(length in feet)}}{5}$

— For channels 3″ and over = 1/8″ x $\frac{\text{(length in feet)}}{5}$

[A] Shapes less than 1 inch square (6.45 mm^2) in cross section need not be subject to tension tests by the manufacturer.

[B] Shapes less than 5/16 inch (8 mm) in thickness or diameter a deduction from the percentage of elongation in 8 inches (203 mm), of 1.25% shall be made for each decrease of 1/32 inch (0.8 mm) of the specified thickness or diameter below 5/16 inch (8mm).

BAR SIZE CHANNEL

Standard Length — 20′

Size	Weight in Pounds	
	Foot	20′
¾ x ⅜ x ⅛	.56	11.2
1 x ⅜ x ⅛	.68	13.6
1 x ½ x ⅛	.84	16.8
1¼ x ½ x ⅛	1.00	20.0
1½ x ½ x ⅛	1.12	22.4
1½ x 9⁄16 x 3⁄16	1.44	28.8
1½ x ¾ x ⅛	1.17	23.4
1¾ x ½ x 3⁄16	1.55	31.0
2 x ½ x ⅛	1.43	28.0
2 x 9⁄16 x 3⁄16	1.76	35.2
2 x 1 x ⅛	1.60	32.0
2 x 1 x 3⁄16	2.32	46.4
2½ x ⅝ x 3⁄16	2.27	45.4

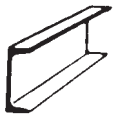
JUNIOR CHANNEL

(Stair Stringer)

Standard Lengths — 20′, 40′

Size	Weight Per Foot	Flange Width	Flange Thickness	Web Thickness	Weight 20′	Weight 40′
8	8.5	1.875	.321	.180	170	340
10	6.5	1.125	.188	.150	130	260
10	8.4	1.500	.250	.170	168	336
12	10.6	1.500	.313	.190	212	424

Processing: See pages 95, 96



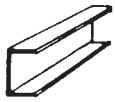
STRUCTURAL CHANNEL

Standard Lengths — 20′, 40′

Size	Weight Per Foot	Flange Width	Flange Thickness	Web Thickness	Weight 20′	Weight 40′
* 3	3.50	1.38	.246	.135	70	140
	4.10	1.41	.273	.170	82	164
	5.00	1.50	.273	.258	100	200
	6.00	1.60	.273	.356	120	240
* 4	4.50	1.56	.263	.140	90	180
	5.40	1.58	.296	.180	108	216
	6.25	1.65	.296	.247	125	250
	7.25	1.72	.296	.320	145	290
5	6.70	1.75	.320	.190	134	268
	9.00	1.89	.320	.325	180	360
6	8.20	1.92	.343	.200	164	328
	10.50	2.03	.343	.314	210	420
	13.00	2.16	.343	.437	260	520
7	9.80	2.09	.366	.210	196	392
	12.25	2.19	.366	.314	245	490
	14.75	2.30	.366	.419	295	590
8	11.50	2.26	.390	.220	230	460
	13.75	2.34	.390	.303	275	550
	18.75	2.53	.390	.487	375	750
9	13.40	2.43	.413	.230	268	536
	15.00	2.49	.413	.285	300	600
	20.00	2.65	.413	.448	400	800
10	15.30	2.60	.436	.240	306	612
	20.00	2.74	.436	.379	400	800
	25.00	2.89	.436	.526	500	1000
	30.00	3.03	.436	.673	600	1200
12	20.70	2.94	.501	.280	414	828
	25.00	3.05	.501	.387	500	1000
	30.00	3.17	.501	.510	600	1200
15	33.90	3.40	.650	.400	678	1356
	40.00	3.52	.650	.520	800	1600
	50.00	3.72	.650	.716	1000	2000

*** Ordered to ASTM A-529 50,000 min yield.**

FARWEST STEEL CORPORATION



SHIP CHANNEL

Standard Lengths — 20′, 40′

Size	Weight Per Foot	Flange Width	Web Thickness	Weight 20′	Weight 40′
3	7.1	1.94	.312	142	284
	9.0	2.13	.500	180	360
4	13.8	2.51	.510	276	552
6	12.0	2.50	.310	240	480
	15.1	2.94	.313	302	604
	15.3	3.50	.340	306	612
	16.3	3.00	.375	326	652
	18.0	3.50	.379	360	720
7	17.6	3.00	.375	352	704
	19.1	3.45	.352	382	764
	22.7	3.60	.503	454	908
8	18.7	2.99	.353	374	748
	20.0	3.03	.400	400	800
	21.4	3.45	.375	428	856
	22.8	3.50	.427	456	912
9	23.9	3.45	.400	478	956
	25.4	3.50	.450	508	1016
10	22.0	3.32	.290	440	880
	25.0	3.41	.380	500	1000
	28.5	3.95	.425	570	1140
	33.6	4.10	.575	672	1344
	41.1	4.32	.796	822	1644
12	31.0	3.67	.370	620	1240
	35.0	3.77	.465	700	1400
	40.0	3.89	.590	800	1600
	45.0	4.01	.710	900	1800
	50.0	4.14	.835	1000	2000
13	31.8	4.00	.375	636	1272
	35.0	4.07	.447	700	1400
	40.0	4.19	.560	800	1600
	50.0	4.41	.787	1000	2000
18	42.7	3.95	.450	854	1708
	45.8	4.00	.500	916	1832
	51.9	4.10	.600	1038	2076
	58.0	4.20	.700	1160	2320

Processing: See pages 95, 96

BEAM — SPECIFICATIONS

Chemical Analysis:

ASTM	Carbon	Phosphorus	Sulphur
A-992	.23 max	.035 max	.045 max

Mechanical Properties:

ASTM	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8˝
A-992	50,000 min	65,000 min	18 min

Tolerances: Wide Flange & Junior

Nominal Depth	Depth	Flange Width	Web off Center	Out of Square Max.	Max. Overall Depth
To 12″ incl.	±⅛	+¼–3/16	3/16	3/16	1/4
Over 12″	±⅛	+¼–3/16	3/16	5/16	1/4

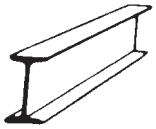
Tolerances: I Beams

Size	*Depth*	*Flange*	*Out of Square Parallel per Inch of Flange*
3″ to 7″	+3/32–1/16	±1/8	1/32
Over 7″ to 14″, inc.	+⅛–3/32	±5/32	1/32
Over 14″	+3/16–1/8	±1/16	1/32

Straightness:

Camber — 1/8″ x $\frac{\text{(total length in feet)}}{5}$

Processing: See pages 95, 96

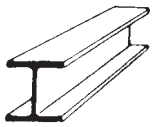


STANDARD I BEAM

Standard Lengths — 20′, 40′

Size	Weight Per Foot	Flange Width	Flange Thickness	Web Thickness	Weight 20′	Weight 40′
3	5.7	2.33	.260	.170	114	228
	7.5	2.51	.260	.349	150	300
4	7.7	2.66	.293	.190	154	308
	9.5	2.80	.293	.326	190	380
5	10.0	3.00	.326	.210	200	400
	14.75	3.28	.326	.494	295	590
6	12.5	3.33	.359	.230	250	500
	17.25	3.57	.359	.465	345	690
7	15.3	3.66	.392	.250	306	612
	20.0	3.86	.392	.450	400	800
8	18.4	4.00	.425	.270	368	736
	23.0	4.17	.425	.441	460	920
10	25.4	4.66	.491	.310	508	1016
	35.0	4.94	.491	.594	700	1400
12	31.8	5.00	.544	.350	636	1272
	35.0	5.08	.544	.428	700	1400
	40.8	5.25	.659	.460	816	1632
	50.0	5.48	.659	.687	1000	2000
15	42.9	5.50	.622	.410	858	1716
	50.0	5.64	.622	.550	1000	2000
18	54.7	6.00	.691	.460	1094	2188
	70.0	6.25	.691	.711	1400	2800
20	66.0	6.26	.795	.505	1320	2640
	75.0	6.39	.795	.635	1500	3000
	86.0	7.06	.920	.660	1720	3440
	96.0	7.20	.920	.800	1920	3840
24	80.0	7.00	.870	.500	1600	3200
	90.0	7.13	.870	.625	1800	3600
	100.0	7.25	.870	.745	2000	4000
	106.0	7.87	1.090	.620	2120	4240
	121.0	8.05	1.090	.800	2420	4840

Processing: See pages 95, 96

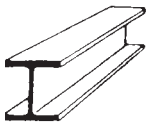


WIDE FLANGE BEAM

Standard Lengths: 20′ to 60′ in 5′ mults
(Many sizes in 65′)

Size (Profile)	Weight Per Foot	Depth of Section	Web Thickness	Flange Width	Flange Thickness
4 x 4	13.0	4.16	.280	4.060	.345
5 x 5	16.0	5.01	.240	5.000	.360
	19.0	5.15	.270	5.030	.430
6 x 4	9.0	5.90	.170	3.940	.215
	12.0	6.03	.230	4.000	.280
	16.0	6.28	.260	4.030	.405
6 x 6	15.0	5.99	.230	5.990	.260
	20.0	6.20	.260	6.020	.365
	25.0	6.38	.320	6.080	.455
8 x 4	10.0	7.89	.170	3.940	.205
	13.0	7.99	.230	4.000	.255
	15.0	8.11	.245	4.015	.315
8 x 5¼	18.0	8.14	.230	5.250	.330
	21.0	8.28	.250	5.270	.400
8 x 6½	24.0	7.93	.245	6.500	.400
	28.0	8.24	.285	6.540	.465
8 x 8	31.0	8.00	.285	7.995	.435
	35.0	8.12	.310	8.020	.495
	40.0	8.25	.360	8.070	.560
	48.0	8.50	.400	8.110	.685
	58.0	8.75	.510	8.220	.810
	67.0	9.00	.570	8.280	.935
10 x 4	12.0	9.87	.190	3.960	.210
	15.0	9.99	.230	4.000	.270
	17.0	10.11	.240	4.010	.330
	19.0	10.24	.250	4.020	.395
10 x 5¾	22.0	10.17	.240	5.750	.360
	26.0	10.33	.260	5.770	.440
	30.0	10.47	.300	5.810	.510
10 x 8	33.0	9.73	.290	7.960	.435
	39.0	9.92	.315	7.985	.530
	45.0	10.10	.350	8.020	.620
10 x 10	49.0	9.98	.340	10.000	.560
	54.0	10.09	.370	10.030	.615
	60.0	10.22	.420	10.080	.680
	68.0	10.40	.470	10.130	.770
	77.0	10.60	.530	10.190	.870
	88.0	10.84	.605	10.265	.990
	100.0	11.10	.680	10.340	1.120
	112.0	11.36	.755	10.415	1.250

Saw cutting available for all sizes

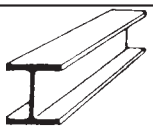


WIDE FLANGE BEAM

Standard Lengths: 20′ to 60′ in 5′ mults
(Many sizes in 65′)

Size (Profile)	Weight Per Foot	Depth of Section	Web Thickness	Flange Width	Flange Thickness
12 x 4	14.0	11.91	.200	3.970	.225
	16.0	11.99	.220	3.990	.265
	19.0	12.16	.235	4.005	.350
	22.0	12.31	.260	4.030	.425
12 x 6½	26.0	12.22	.230	6.490	.380
	30.0	12.34	.260	6.520	.440
	35.0	12.50	.300	6.560	.520
12 x 8	40.0	11.94	.295	8.005	.515
	45.0	12.06	.335	8.045	.575
	50.0	12.19	.370	8.080	.640
12 x 10	53.0	12.06	.345	9.995	.575
	58.0	12.19	.360	10.010	.640
12 x 12	65.0	12.12	.390	12.000	.605
	72.0	12.25	.430	12.040	.670
	79.0	12.38	.470	12.080	.735
	87.0	12.53	.515	12.125	.810
	96.0	12.71	.550	12.160	.900
	106.0	12.89	.610	12.220	.990
	120.0	13.12	.710	12.320	1.105
	136.0	13.41	.790	12.400	1.250
	152.0	13.71	.870	12.480	1.400
	170.0	14.03	.960	12.570	1.560
	190.0	14.38	1.060	12.670	1.735
14 x 5	22.0	13.74	.230	5.000	.335
	26.0	13.91	.255	5.025	.420
14 x 6¾	30.0	13.84	.270	6.730	.385
	34.0	13.98	.285	6.745	.455
	38.0	14.10	.310	6.770	.515
14 x 8	43.0	13.66	.305	7.995	.530
	48.0	13.79	.340	8.030	.595
	53.0	13.92	.370	8.060	.660
14 x 10	61.0	13.89	.375	9.995	.645
	68.0	14.04	.415	10.035	.720
	74.0	14.17	.450	10.070	.785
	82.0	14.31	.510	10.130	.855
14 x 14½	90.0	14.02	.440	14.520	.710
	99.0	14.16	.485	14.565	.780
	109.0	14.32	.525	14.605	.860
	120.0	14.48	.590	14.670	.940
	132.0	14.66	.645	14.725	1.030

Saw cutting available for all sizes

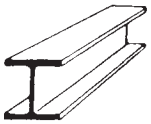


WIDE FLANGE BEAM

Standard Lengths: 20′ to 60′ in 5′ mults
(Many sizes in 65′)

Size (Profile)	Weight Per Foot	Depth of Section	Web Thickness	Flange Width	Flange Thickness
14 x 16	145.0	14.78	.680	15.500	1.090
	159.0	14.98	.745	15.565	1.190
	176.0	15.22	.830	15.650	1.310
	193.0	15.48	.890	15.710	1.440
	211.0	15.72	.980	15.800	1.560
	233.0	16.04	1.070	15.890	1.720
	257.0	16.38	1.175	15.995	1.890
	283.0	16.74	1.290	16.110	2.070
	311.0	17.12	1.410	16.230	2.260
	342.0	17.54	1.540	16.360	2.470
	370.0	17.92	1.655	16.475	2.660
	398.0	18.29	1.770	16.590	2.845
	426.0	18.67	1.875	16.695	3.035
	455.0	19.02	2.015	16.835	3.210
	500.0	19.60	2.190	17.010	3.500
	550.0	20.24	2.380	17.200	3.820
	605.0	20.92	2.595	17.415	4.160
	665.0	21.64	2.830	17.650	4.520
	730.0	22.42	3.070	17.890	4.910
16 x 5½	26.0	15.69	.250	5.500	.345
	31.0	15.88	.275	5.525	.440
16 x 7	36.0	15.86	.295	6.985	.430
	40.0	16.01	.305	6.995	.505
	45.0	16.13	.345	7.035	.565
	50.0	16.26	.380	7.070	.630
	57.0	16.43	.430	7.120	.715
16 x 10¼	67.0	16.33	.395	10.235	.665
	77.0	16.52	.455	10.295	.760
	89.0	16.75	.525	10.365	.875
	100.0	16.97	.585	10.425	.985
18 x 6	35.0	17.70	.300	6.000	.425
	40.0	17.90	.315	6.015	.525
	46.0	18.06	.360	6.060	.605
18 x 7½	50.0	17.99	.355	7.495	.570
	55.0	18.11	.390	7.530	.630
	60.0	18.24	.415	7.555	.695
	65.0	18.35	.450	7.590	.750
	71.0	18.47	.495	7.635	.810
18 x 11	76.0	18.21	.425	11.035	.680
	86.0	18.39	.480	11.090	.770
	97.0	18.59	.535	11.145	.870
	106.0	18.73	.590	11.200	.940
	119.0	18.97	.655	11.265	1.06
	130.0	19.30	.670	11.200	1.200

Saw cutting available for all sizes

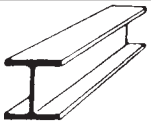


WIDE FLANGE BEAM

Standard Lengths: 20′ to 60′ in 5′ mults
(Many sizes in 65′)

Size (Profile)	Weight Per Foot	Depth of Section	Web Thickness	Flange Width	Flange Thickness
21 x 6½	44.0	20.66	.350	6.500	.450
	50.0	20.83	.380	6.530	.535
	57.0	21.06	.405	6.555	.650
21 x 8¼	48.0	20.60	.350	8.140	.430
	55.0	20.80	.375	8.220	.522
	62.0	20.99	.400	8.240	.615
	68.0	21.13	.430	8.270	.685
	73.0	21.24	.455	8.295	.740
	83.0	21.43	.515	8.355	.835
	93.0	21.62	.580	8.420	.930
21 x 12¼	101.0	21.36	.500	12.290	.800
	111.0	21.51	.550	12.340	.875
	122.0	21.68	.600	12.390	.960
	132.0	21.83	.650	12.440	1.035
	147.0	22.06	.720	12.510	1.150
	166.0	22.50	.750	12.400	1.360
24 x 7	55.0	23.57	.395	7.005	.505
	62.0	23.74	.430	7.040	.590
24 x 9	68.0	23.73	.415	8.965	.585
	76.0	23.92	.440	8.990	.680
	84.0	24.10	.470	9.020	.770
	94.0	24.31	.515	9.065	.875
	103.0	24.50	.550	9.000	.980
24 x 12¾	104.0	24.06	.500	12.750	.750
	117.0	24.26	.550	12.800	.850
	131.0	24.48	.605	12.855	.960
	146.0	24.74	.650	12.900	1.090
	162.0	25.00	.705	12.955	1.220
	176.0	25.20	.750	12.900	1.340
	192.0	25.50	.810	13.000	1.460
27 x 10	84.0	26.71	.460	9.960	.640
	94.0	26.92	.490	9.990	.745
	102.0	27.09	.515	10.015	.830
	114.0	27.29	.570	10.070	.930
	129.0	27.60	.610	10.000	1.10
27 x 14	146.0	27.38	.605	13.965	.975
	161.0	27.59	.660	14.020	1.080
	178.0	27.81	.725	14.085	1.190
	194.0	28.10	.750	14.000	1.340
	217.0	28.40	.830	14.100	1.500

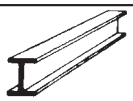
Saw cutting available for all sizes



WIDE FLANGE BEAM

Standard Lengths: 20′ to 60′ in 5′ mults
(Many sizes in 65′)

Size (Profile)	Weight Per Foot	Depth of Section	Web Thickness	Flange Width	Flange Thickness
30 x 10½	90.0	26.40	.470	10.400	.610
	99.0	29.65	.520	10.450	.670
	108.0	29.83	.545	10.475	.760
	116.0	30.01	.565	10.495	.850
	124.0	30.17	.585	10.515	.930
	132.0	30.30	.615	10.545	1.00
	148.0	30.70	.650	10.500	1.08
30 x 15	173.0	30.44	.655	14.985	1.065
	191.0	30.68	.710	15.040	1.185
	211.0	30.94	.775	15.105	1.315
	235.0	31.30	.830	15.000	1.500
	261.0	31.60	.930	15.200	1.650
33 11½	118.0	32.86	.550	11.480	.740
	130.0	33.09	.580	11.510	.855
	141.0	33.30	.605	11.535	960
	152.0	33.49	.635	11.565	1.055
	169.0	33.80	.670	11.500	1.220
33 x 15¾	201.0	33.68	.715	15.745	1.150
	221.0	33.93	.775	15.805	1.275
	241.0	34.18	.830	15.860	1.400
36 x 12	135.0	35.55	.600	11.950	.790
	150.0	35.85	.625	11.975	.940
	160.0	36.01	.650	12.000	1.020
	170.0	36.17	.680	12.030	1.100
	182.0	36.33	.725	12.075	1.180
	194.0	36.49	.765	12.115	1.260
	210.0	36.69	.830	12.180	1.360
	232.0	37.10	.870	12.100	1.570
36 x 16½	231.0	36.50	.760	16.500	1.350
	247.0	36.70	.800	16.550	1.350
	262.0	36.90	.840	16.600	1.440
	282.0	37.10	.885	16.600	1.570
	302.0	37.30	.945	16.700	1.680



JUNIOR BEAM

Standard Lengths — 20′, 40′

Size	Weight Per Foot	Web Thickness	Flange Width	Flange Thickness	Weight 20′	Weight 40′
6	4.4	.114	1.84	.171	88	176
8	6.5	.135	2.28	.189	130	260
10	9.0	.155	2.69	.206	180	360
12	11.8	.175	3.06	.225	236	472

Saw cutting available for all sizes

HOT ROLLED ROUND BAR SPECIFICATIONS

Chemical Analysis: ASTM A36

Thickness	Carbon	Manganese	Phosphorus	Sulphur
to 3/4"	.26 max	—	.04 max	.05 max
over 3/4" to 1 1/2"	.27 max	.60/.90	.04 max	.05 max
over 1 1/2" to 4" *	.28 max	.60/.90	.04 max	.05 max
over 4"	.29 max	.60/.90	.04 max	.05 max

Mechanical Properties:

ASTM	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8˝
A-36	36,000 min[A]	58,000/80,000[A]	20 min[B]

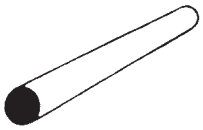
Tolerances:

Size	Variation	Out of Round or Out of Square
5/16	±.005	.008
Over 5/16 to 7/16 inc	±.006	.009
Over 7/16 to 5/8 inc.	±.007	.010
Over 5/8 to 7/8 inc.	±.008	.012
Over 7/8 to 1 inc.	±.009	.013
Over 1 to 1 1/8 inc.	±.010	.015
Over 1 1/8 to 1 1/4 inc.	±.011	.016
Over 1 1/4 to 1 3/8 inc.	±.012	.018
Over 1 3/8 to 1 1/2 inc.	±.014	.021
Over 1 1/2 to 2 inc.	±1/64	.023
Over 2 to 2 1/2 inc.	+1/32 –0	.023
Over 2 1/2 to 3 1/2 inc.	+3/64–0	.035
Over 3 1/2 to 4 1/2 inc.*	+1/16 –0	.096
Over 4 1/2 to 5 1/2 inc.	+5/64–0	.058
Over 5 1/2 to 6 1/2 inc.	+1/8 –0	.070
Over 6 1/2 to 8 1/4 inc.	+5/32–0	.085
Over 8 1/4 to 9 1/2 inc.	+3/16 –0	.100
Over 9 1/2 to 10 inc.	+1/4 –0	.120

Straightness:

1/4 inch in any 5 ft. or 1/4 x $\frac{\text{length in feet}}{5}$

***Farwest Steel stocks up through 3" in A36 material. Larger diameters are stocked in mild steel only.**



HOT ROLLED ROUND BAR

Standard Length — 20′ & Random Length

Size	Theoretical Weight in Pounds Per Foot	20′
1/4	.167	3.34
5/16	.261	5.22
3/8	.376	7.52
7/16	.511	10.22
1/2	668	13.36
9/16	.845	16.90
5/8	1.04	20.80
3/4	1.50	30.00
7/8	2.04	40.80
1	2.67	53.40
1 1/8	3.38	67.60
1 1/4	4.17	83.40
1 3/8	5.05	101.00
1 1/2	6.01	120.20
1 5/8	7.05	141.00
1 3/4	8.18	163.60
1 7/8	9.39	187.80
2	10.68	213.60
2 1/8	12.06	241.20
2 1/4	13.52	270.40
2 3/8	15.06	301.20
2 1/2	16.69	333.80
2 5/8	18.40	368.00
2 3/4	20.19	403.80
3	24.03	480.60
3 1/4	28.21	564.20
3 1/2	32.71	654.20
3 5/8	35.09	701.80
3 3/4	37.55	751.00
4	42.73	854.60
4 1/4	48.23	964.60
4 1/2	54.08	1081.60
4 3/4	60.25	1205.00
5	66.76	1335.20
5 1/4	73.60	1472.00
5 1/2	80.78	1615.60
5 3/4	88.29	1765.80
6	96.13	1922.60
6 1/4	104.31	2086.20
6 1/2	112.82	2256.40
6 3/4	121.67	2433.40
7	130.85	2617.00
7 1/4	140.36	2807.20
7 1/2	150.21	3004.20
7 3/4	160.40	3208.00
8	170.90	3418.00
8 1/4	181.75	3635.00
8 1/2	192.93	3858.60
9	216.30	4326.00
9 1/2	241.00	4820.00
10	267.04	5340.80
10 1/2	294.40	5888.00
12	384.53	7690.60

Note: To find the weight of a large diameter, multiply the weight of a bar half the diameter by 4.

Farwest Steel will saw cut to length, Rounds 3″ in diameter and larger.

COLD DRAWN SPECIFICATIONS

Chemical Analysis: ASTM A108 Grade 1018

Carbon	Manganese	Sulphur	Phosphorus
.15/.20	.60/.90	.05 max	.04 max

Mechanical Properties: (Approximate)

Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 2˝	Reduction of Area	Brinell Hardness
54,000	64,000	15	40%	126

Tolerances:

Size	Diameter Variation
to 1 1/2, incl.	+0, –.002
over 1 1/2 to 2 1/2, incl.	+0, –.003
over 2 1/2 to 4, incl.	+0, –.004
over 4 to 6, incl.	+0, –.005

COLD FINISHED TURNED, GROUND AND POLISHED (TGP) ROUND BAR SPECIFICATION

Chemical Analysis: ASTM A108 Grade 1045

Carbon	Manganese	Sulphur	Phosphorus
.43/.50	.60/.90	.05 max	.04 max

Mechanical Properties: (Approximate)

Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 2˝	Reduction of Area	Brinell Hardness
45,000	82,000	16	40%	163

Tolerances:

Size	Diameter Variation
to 1 1/2, inclusive	+0, –.0010
over 1 1/2 to less than 2 1/2	+0, –.0015
2 1/2 to 3, inclusive	+0, –.0020
over 3 to 4, inclusive	+0, –.0030

Chemical Analysis: Stressproof®

Carbon	Manganese	Phosphorus	Sulphur	Silicon	Nitrogen
.40/.48	1.35/1.65	.04 max	.24/.33	.15/.30	.006/.009

Mechanical Properties:

Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation	Reduction of Area
100,000 min	132,300 (mean)	12 (mean)	34 (mean)

Tolerances: Cold drawn-ebony Stressproof®

Size	Diameter Variation
1/4 to 1 1/2, incl.	+0, –.0040
over 1 1/2 to 2 1/2, incl.	+0, –.0050
over 2 1/2 to 4, incl.	+0, –.0060
over 4 to 4 1/2, incl.	+0, –.0070

Tolerances: Cold drawn ground & polished Stressproof®

Size	Diameter Variation
1/4 to 1 1/2, incl.	+0, –.0010
over 1 1/2 to 2 1/2, excl.	+0, –.0015
over 2 1/2 to 3, incl.	+0, –.0020
over 3 to 4, incl.	+0, –.0030

COLD DRAWN ROUND BAR

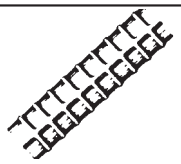
Standard Lengths — 20′, 24′ & Random

Size in inches	Wt. per Ft. in Lbs.	Weight 20′
1/8	0.042	.840
5/32	0.065	1.30
3/16	0.094	1.88
7/32	0.128	2.56
1/4	0.167	3.34
5/16	0.261	5.22
3/8	0.376	7.52
7/16	0.511	10.22
1/2	0.668	13.36
9/16	0.845	16.90
5/8	1.043	20.86
11/16	1.262	25.24
3/4	1.502	30.04
13/16	1.763	35.26
7/8	2.045	40.90
15/16	2.347	46.94
1	2.670	53.40
1 1/16	3.010	60.20
1 1/8	3.380	67.60
1 3/16	3.766	75.32
1 1/4	4.172	83.44
1 5/16	4.600	92.00
1 3/8	5.049	100.98
1 7/16	5.520	110.40
1 1/2	6.010	120.20
1 9/16	6.520	130.40
1 5/8	7.050	141.00
1 11/16	7.600	152.00
1 3/4	8.180	163.60
1 13/16	8.770	175.40
1 7/8	9.390	187.80
1 15/16	10.020	200.40
2	10.680	213.60
2 1/16	11.360	227.20
2 1/8	12.060	241.20
2 3/16	12.780	255.60
2 1/4	13.520	270.40
2 5/16	14.28	285.60
2 3/8	15.06	301.20
2 7/16	15.87	317.40
2 1/2	16.69	333.80
2 9/16	17.53	350.60
2 5/8	18.40	368.00
2 11/16	19.29	385.80
2 3/4	20.19	403.80
2 13/16	21.13	422.60
2 7/8	22.07	441.40
2 15/16	23.04	460.80
3	24.03	480.60
3 1/16	25.05	501.00
3 1/8	26.08	521.60
3 3/16	27.13	542.60
3 1/4	28.21	564.20
3 5/16	29.30	586.00
3 3/8	30.42	608.40
3 7/16	31.55	631.00
3 1/2	32.71	654.20
3 9/16	33.89	677.80
3 5/8	35.09	701.80
3 11/16	36.31	726.20
3 3/4	37.55	751.00
3 13/16	38.81	776.20
3 7/8	40.10	802.00
3 15/16	41.40	828.00
4	42.73	854.60
4 1/8	45.44	908.80
4 3/16	46.83	936.60
4 1/4	48.23	964.60
4 5/16	49.66	993.20
4 3/8	51.11	1022.20
4 7/16	52.58	1051.60
4 1/2	54.07	1081.40
4 9/16	55.59	1111.80
4 5/8	57.12	1142.40

COLD DRAWN ROUND BAR

Standard Lengths — 20′, 24′ & Random

Size in inches	Wt. per Ft. in Lbs.	Weight 20′
$4^{11}/_{16}$	58.68	1173.60
$4^{3}/_{4}$	60.25	1205.00
$4^{7}/_{8}$	63.46	1269.20
$4^{15}/_{16}$	65.10	1302.00
5	66.76	1335.20
$5^{1}/_{16}$	68.44	1368.80
$5^{1}/_{8}$	70.14	1402.80
$5^{3}/_{16}$	71.86	1437.20
$5^{1}/_{4}$	73.60	1472.00
$5^{3}/_{8}$	77.15	1543.00
$5^{7}/_{16}$	78.95	1579.00
$5^{1}/_{2}$	80.78	1615.60
$5^{5}/_{8}$	84.49	1689.80
$5^{3}/_{4}$	88.29	1765.80
$5^{7}/_{8}$	92.17	1843.40
$5^{15}/_{16}$	94.14	1882.80
6	96.13	1922.60
$6^{1}/_{4}$	104.31	2086.20
$6^{1}/_{2}$	112.82	2256.40
$6^{3}/_{4}$	121.67	2433.40
7	130.85	2617.00
$7^{1}/_{2}$	150.21	3004.20
8	170.90	3418.00
9	216.30	4326.00
10	267.04	5340.80



REBAR

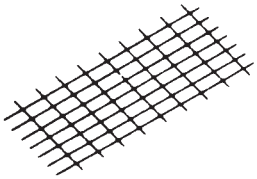
ASTM A615 Grade 60 #3 ~ #18
ASTM A706 Grade 60 #4 ~ #18

Imperial Standards

Imperial Size	Nom Diam inches	Area in²	Weight Factors	
			lb/ft	lb/m
3	.375	.11	.376	1.234
4	.500	.20	.668	2.192
5	.625	.31	1.043	3.422
6	.750	.44	1.502	4.928
7	.875	.60	2.044	6.706
8	1.000	.79	2.670	8.760
9	1.128	1.00	3.400	11.155
10	1.270	1.27	4.303	14.117
11	1.410	1.56	5.313	17.431
14	1.693	2.25	7.650	25.098
18	2.257	4.00	13.600	44.619

Soft Metric Standards

Soft Metric Size	Nom Diam mm	Area mm²	Weight Factors	
			kg/m	kg/ft
10	9.5	71	.560	.171
13	12.7	129	.994	.303
16	15.9	199	1.552	.473
19	19.1	284	2.235	.681
22	22.2	387	3.042	.927
25	25.4	510	3.973	1.211
29	28.7	645	5.060	1.542
32	32.3	819	6.404	1.952
36	35.8	1006	7.907	2.410
43	43.0	1452	11.384	3.470
57	57.3	2581	20.239	6.169



WELDED WIRE FABRIC

ASTM A 185

New Designation (By W-Number)	Old Designation (By Steel Wire Ga.)	Width	Length	Weight Approx. Lbs. Per 100 S.F.
6 x 6 -W1.4/W1.4	6 x 6 - 10/10	7-6	200-0	21
6 x 6 -W1.4/W1.4	6 x 6 - 10/10	7-6	20-0	21
6 x 6 -W2.9/W2.9	6 x 6 - 6/6	7-6	20-0	42
4 x 4 -W4.0/W4.0	4 x 4 - 4/4	7-0	20-0	85

Rolls and Sheets

Special welded wire fabric styles and sizes are available, on special order, in widths up to 9′-0″ and any length, with wire spacing from 2″ minimum. Deformed wire welded to meet ASTM A497 specifications also available on special order.

Comparison of Steel Grades

Soft Metric		
Grade	**MPa**	**Psi**
300	300	43,511
420	420	60,716
520	520	75,420

Imperial		
Grade	**MPa**	**Psi**
40	257.79	40,000
60	413.69	60,000
80	551.58	80,000

Conversion Factors

To Metric	To Imperial
1/8 inch = 3.175 mm	
1 inch = 25.4 mm	1 mm = 0.0394 inches
1 foot = 304.8 mm	1 meter = 3.2808 feet
1000 ft.^{2} = 92.903 m^2	100 m^2 = 1076.39 ft^2
1000 ft.^{3} = 28.317 m^3	10 m^3 = 353.14 ft^3
1000 gal. = 3.784 m^3	10 m^3 = 2641.73 gal.
1 pound = 0.4536 kg	1 kg = 2.2046 pounds
1 psf = 4.88243 kg/m^2	10 kg/m^2 = 2.048 psf
1 pcf = 16.019 kg/m^3	10 kg/m^3 = 0.624 pcf
short ton = 907.18 kg (2000 lbs.)	0.90718 = 2000 pounds tonne
long ton = 1016 kg (2240 lbs.)	1 tonne = 2204.6 pounds
1000 psi = 6.8948 MPa	1 MPa = 145.0368 psi
Newton (N) = kg·m/s^2 = kilograms x 9.80665 Pascal (Pa) = N/m^2	

SQUARE BAR – SPECIFICATIONS
SQUARE CARBON BARS
HOT ROLLED

Chemical Analysis:

ASTM	Thickness	Carbon	Manganese	Phosphorus	Sulphur
A-36	to 3/4"	.26 max	—	.04 max	.05 max
	Over 3/4" to 1 1/2"	.27 max	.60/.80	.04 max	.05 max
	Over 1 1/2" to 4"	.28 max	.60/.80	.04 max	.05 max
	Over 4"	.29 max	.60/.90	.04 max	.05 max

Mechanical Properties:

ASTM A-36	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8"
	36,000 min[A]	58,000/80,000[A]	20 min[B]

Tolerances:

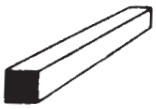
Size	Variation	Out of Round or Out of Square
5/16	±.005	.008
Over 5/16 to 7/16 inc	±.006	.009
Over 7/16 to 5/8 inc.	±.007	.010
Over 5/8 to 7/8 inc.	±.008	.012
Over 7/8 to 1 inc.	±.009	.013
Over 1 to 1 1/8 inc.	±.010	.015
Over 1 1/8 to 1 1/4 inc.	±.011	.016
Over 1 1/4 to 1 3/8 inc.	±.012	.018
Over 1 3/8 to 1 1/2 inc.	±.014	.021
Over 1 1/2 to 2 inc.	±1/64	.023
Over 2 to 2 1/2 inc.	+1/32 –0	.023
Over 2 1/2 to 3 1/2 inc.	+3/64–0	.023
Over 3 1/2 to 4 1/2 inc.	+1/16 –0	.096
Over 4 1/2 to 5 1/2 inc.	+5/64–0	.058
Over 5 1/2 to 6 1/2 inc.	+1/8 –0	.070

Straightness:

1/4 inch in any 5 ft. or $\frac{(1/4" \times \text{length in feet})}{5}$

[A] Shapes less than 1 inch square (6.45 mm^2) in cross section need not be subject to tension tests by the manufacturer.

[B] Shapes less than 5/16 inch (8 mm) in thickness or diameter a deduction from the percentage of elongation in 8 inches (203 mm), of 1.25% shall be made for each decrease of 1/32 inch (0.8 mm) of the specified thickness or diameter below 5/16 inch (8mm).



HOT ROLLED SQUARE BAR

Standard Length 20′

Size	Weight in Pounds Per Foot	20′
1/4	.21	4.26
5/16	.33	6.64
3/8	.47	9.56
7/16	.65	13.02
1/2	.85	17.00
9/16	1.08	21.60
5/8	1.33	26.60
3/4	1.91	38.20
7/8	2.60	52.00
1	3.40	68.00
1 1/8	4.30	86.00
1 1/4	5.31	106.20
1 3/8	6.43	128.60
1 1/2	7.65	153.00
1 5/8	8.98	179.60
1 3/4	10.41	208.20
1 7/8	11.95	239.00
2*	13.60	272.00
2 1/4	17.21	344.20
2 1/2	21.25	425.00
2 5/8	23.43	468.60
2 3/4	25.71	514.20
3	30.60	612.00
3 1/4	35.91	718.20
3 1/2	41.65	833.00
4	54.40	1088.00
4 1/2	68.85	1377.00
5	85.00	1700.00
6	122.40	2448.00

*** 2″ Carried in Both Square Corner and Round Corner**

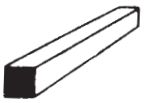
COLD-DRAWN SQUARES

Chemical Analysis:

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A108 Grade 1018	.15/.20	.60/.90	.04 max	.05 max

Tolerances:

Size	Thickness
to 3/4, incl.	+0, –.002
over 3/4 to 1 1/2, incl.	+0, –.003
over 1 1/2 to 2 1/2, incl.	+0, –.004
over 2 1/2 to 4, incl.	+0, –.006



COLD DRAWN SQUARE BAR

Standard Lengths – 12′ to 20′ Random

Size	Weight in Pounds Per Foot	12′
1/8	.05	.63
3/16	.12	1.44
1/4	.21	2.55
5/16	.33	3.98
3/8	.47	5.73
7/16	.65	7.81
1/2	.85	10.20
9/16	1.08	12.96
5/8	1.33	15.96
11/16	1.61	19.32
3/4	1.91	22.92
13/16	2.24	26.88
7/8	2.60	31.20
15/16	2.99	35.88
1	3.40	40.80
1 1/16	3.84	46.08
1 1/8	4.30	51.60
1 3/16	4.80	57.60
1 1/4	5.31	63.72
1 3/8	6.43	77.16
1 1/2	7.65	91.80
1 3/4	10.41	124.92
2	13.60	163.20
2 1/4	17.21	206.52
2 1/2	21.25	255.00
2 5/8	23.43	281.16
2 3/4	25.71	308.52
3	30.60	367.20

HOT ROLLED STRIP — SPECIFICATIONS

Chemical Analysis:

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A-569	.15 max	.60 max	.035 max	.04 max

Mechanical Properties:

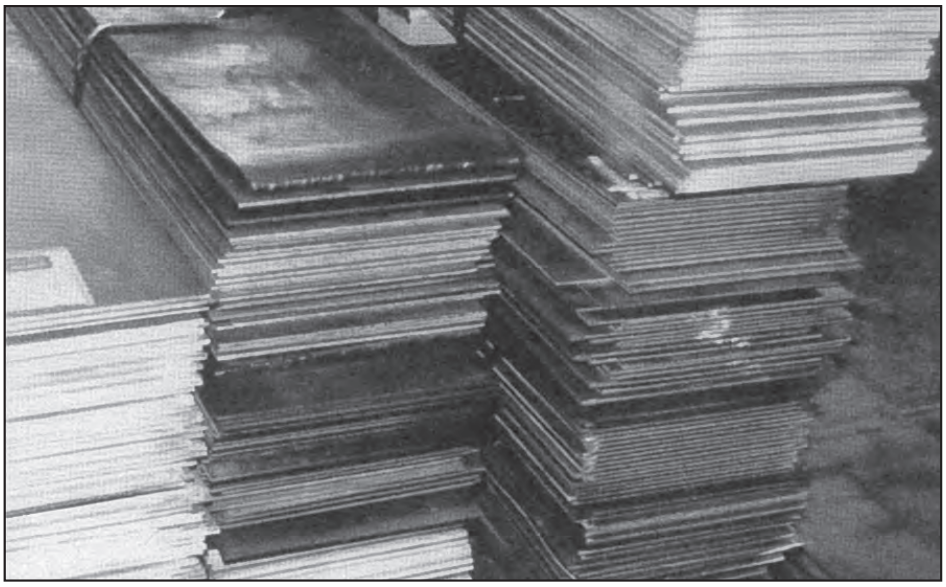
ASTM	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8″
A-569	—	—	—

Tolerances:

Width	Over or Under In Width	Over on Length
To 2″, incl.	1/32	3/4
Over 2″ to 5″, incl.	3/64	3/4
5″ to 10″	1/16	1 1/4

Straightness:

Up to & incl. 1 1/2″ width — 1/2 inch in any 8 ft.
Over 1 1/2″ width — 1/4 inch in any 8 ft.



HOT ROLLED STRIP

Standard Length – 20′

Size		Weight in Pounds Per Foot	Weight in Pounds 20′
1/8 x (.125)	3/8	.159	3.18
	1/2	.213	4.26
	5/8	.266	5.32
	3/4	.319	6.38
	7/8	.372	7.44
	1	.425	8.50
	1 1/4	.531	10.62
	1 1/2	.638	12.76
	1 3/4	.744	14.88
	2	.850	17.00
	2 1/4	.956	19.12
	2 1/2	1.063	21.26
	2 3/4	1.169	23.38
	3	1.275	25.50
	3 1/4	1.381	27.62
	3 1/2	1.488	29.76
	4	1.700	34.00
	4 1/2	1.913	38.00
	5	2.125	42.50
	5 1/2	2.338	46.76
	6	2.550	51.00
	8	3.400	68.00
	10	4.250	85.00
	12	5.100	102.00
3/16 x (.1875)	3/8	.239	4.78
	1/2	.319	6.38
	5/8	.398	7.96
	3/4	.478	9.56
	7/8	.558	11.16
	1	.638	12.76
	1 1/4	.797	15.94
	1 1/2	.956	19.12
	1 3/4	1.120	22.40
	2	1.280	25.60
	2 1/4	1.430	28.60
	2 1/2	1.590	31.80
	3	1.910	38.20
	3 1/4	2.070	41.40
	3 1/2	2.230	44.60
	4	2.550	51.00
	4 1/2	2.870	57.40
	5	3.190	63.80
	6	3.830	76.60
	7	4.460	89.20
	8	5.100	102.00
	9	5.740	114.80
	10	6.380	127.60
	12	7.650	153.00

Processing: See pages 95, 96

HOT ROLLED FLAT BAR

Chemical Analysis:

ASTM	Thickness	Carbon	Manganese	Phosphorus	Sulphur
A-36	to 3/4″ incl.	.26 max	—	.04 max	.05 max
	over 3/4″ to 1 1/2″, incl.	.27 max	.60/.80	.04 max	.05 max
	over 1 1/2″ to 4″, incl.	.28 max	.60/.80	.04 max	.05 max

Mechanical Properties:

ASTM	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8″
A-36	36,000 min[A]	58,000/80,000[A]	20 min[B]

[A] Shapes less than 1 in.^{2} (6.45 mm^2) in cross section and bars, other than flats, less than 1/2 in. (13 mm) in thickness or diameter need not be subjected to tension tests by the manufacturer.

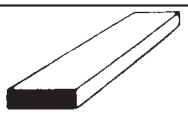
[B] For material under 5/16 in. (8 mm) in thickness or diameter, a deduction from the percentage of elongation in 8 in. (203 mm), specified in Table 3, of 1.25% shall be made for each decrease of 1/32 in. (0.8 mm) of the specified thickness or diameter below 5/16 in.

Tolerances:

Size (Incl.)	Variations from thickness					Width	
	Under 1/4″	1/4″ to 1/2″ Incl.	Over 1/2″ thru 1″	Over 1″ to 2″	Over 2″ to 3″	Over	Under
To 1″	± .007	± .008	±.010	–	–	1/64	1/64
Over 1″ to 2″	± .007	± .012	±.015	± 1/32	–	1/32	1/32
Over 2″ to 4″	± .008	± .015	±.020	± 1/32	± 3/64	1/16	1/32
Over 4″ to 6″	± .009	± .015	±.020	± 1/32	± 3/64	3/32	1/16
Over 6″ to 8″	± .015	± .016	±.025	± 1/32	± 3/64	1/8	3/32

Straightness:

Camber — 1/4″ in 5′ or $\dfrac{(1/4'' \times \text{length in feet})}{5}$

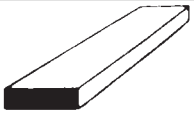


HOT ROLLED FLAT BAR

Standard Length – 20′

Size		Weight in Pounds Per Foot	20′
1/4 x	1/2	0.425	8.50
	5/8	0.531	10.62
	3/4	0.638	12.76
	7/8	0.744	14.88
	1	0.850	17.00
	1 1/4	1.063	21.26
	1 1/2	1.276	25.52
	1 3/4	1.488	29.76
	2	1.700	34.00
	2 1/4	1.913	38.26
	2 1/2	2.125	42.50
	2 3/4	2.338	46.70
	3	2.550	51.00
	3 1/2	2.975	59.50
	4	3.400	68.00
	4 1/2	3.825	76.50
	5	4.250	85.00
	5 1/2	4.675	93.50
	6	5.100	102.00
	7	5.950	119.00
	8	6.800	136.00
5/16 x	1/2	0.531	10.62
	3/4	0.797	15.94
	1	1.063	21.26
	1 1/4	1.328	26.56
	1 1/2	1.594	31.88
	1 3/4	1.859	37.18
	2	2.125	42.50
	2 1/4	2.391	47.82
	2 1/2	2.656	53.12
	3	3.188	63.76
	3 1/2	3.719	74.38
	4	4.250	85.00
	4 1/2	4.781	95.62
	5	5.313	106.20
	6	6.375	127.50
	7	7.438	148.76
	8	8.500	170.00
3/8 x	1/2	0.638	12.76
	5/8	0.797	15.94
	3/4	0.956	19.12
	1	1.275	25.50
	1 1/4	1.594	31.88
	1 1/2	1.913	38.26
	1 3/4	2.231	44.62
	2	2.550	51.00
	2 1/4	2.869	57.38
	2 1/2	3.188	63.76
	2 3/4	3.506	70.12
	3	3.825	76.50
	3 1/2	4.463	89.26
	4	5.100	102.00
	4 1/2	5.738	114.76
	5	6.375	127.50
	5 1/2	7.013	140.26
	6	7.650	153.00
	7	8.925	178.50
	8	10.200	204.00
1/2 x	3/4	1.275	25.50
	1	1.700	34.00
	1 1/4	2.125	42.50
	1 1/2	2.550	51.00
	1 3/4	2.975	59.50
	2	3.400	68.00
	2 1/4	3.825	76.50
	2 1/2	4.250	85.00
	2 3/4	4.675	93.50
	3	5.100	102.00
	3 1/2	5.950	119.00
	4	6.800	136.00
	4 1/2	7.650	153.00
	5	8.500	170.00
	5 1/2	9.350	187.00
	6	10.200	204.00
	7	11.900	238.00
	8	13.600	272.00

Flats wider than 8″ see U.M. Plates – Page 41



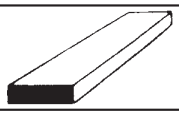
HOT ROLLED FLAT BAR

Standard Length – 20′

Size		Weight in Pounds Per Foot	20′
5/8 x	1	2.125	42.50
	1 1/4	2.656	53.12
	1 1/2	3.188	63.76
	1 3/4	3.719	74.38
	2	4.250	85.00
	2 1/4	4.781	95.62
	2 1/2	5.313	106.26
	3	6.375	127.50
	3 1/2	7.438	148.76
	4	8.500	170.00
	4 1/2	9.563	191.26
	5	10.630	212.60
	6	12.750	255.00
	7	14.880	297.60
	8	17.000	340.00
3/4 x	1	2.550	51.00
	1 1/4	3.188	63.76
	1 1/2	3.825	76.50
	1 3/4	4.463	89.26
	2	5.100	102.00
	2 1/4	5.738	114.76
	2 1/2	6.375	127.50
	2 3/4	7.010	140.20
	3	7.650	153.00
	3 1/2	8.925	178.50
	4	10.200	204.00
	4 1/2	11.480	229.60
	5	12.750	255.00
	5 1/2	14.030	280.60
	6	15.300	306.00
	7	17.850	357.00
	8	20.400	408.00
7/8 x	1 1/4	3.719	74.38
	1 1/2	4.463	89.26
	1 3/4	5.206	104.12
	2	5.950	119.00
	2 1/4	6.694	133.88

Size		Weight in Pounds Per Foot	20′
7/8 x	2 1/2	7.438	148.8
	3	8.925	178.5
	3 1/2	10.410	208.2
	4	11.900	238.0
	4 1/2	13.390	267.8
	5	14.880	297.6
	6	17.850	357.0
	8	23.800	476.0
1 x	1 1/4	4.250	85.0
	1 1/2	5.100	102.0
	1 3/4	5.950	119.0
	2	6.800	136.0
	2 1/4	7.650	153.0
	2 1/2	8.500	170.0
	2 3/4	9.350	187.0
	3	10.200	204.8
	3 1/4	11.050	221.0
	3 1/2	11.900	238.0
	4	13.600	272.0
	4 1/2	15.300	306.0
	5	17.000	340.0
	6	20.400	408.0
	7	23.800	476.0
	8	27.200	544.0
1 1/4 x	2	8.500	170.0
	2 1/2	10.630	212.6
	3	12.750	255.0
	3 1/2	14.880	297.6
	4	17.000	340.0
	4 1/2	19.130	382.6
	5	21.250	425.0
	5 1/2	23.380	467.6
	6	25.500	510.0
	7	29.750	595.0
	8	34.000	680.0
1 1/2 x	2	10.200	204.0
	2 1/2	12.750	255.0
	3	15.300	306.0

Flats wider than 8″ see U.M. Plates – Page 41



HOT ROLLED FLAT BAR

Standard Length — 20′

Size	Weight in Pounds Per Foot	20′
1 1/2 x 3 1/2	17.850	357.0
4	20.400	408.0
4 1/2	22.950	459.0
5	25.500	510.0
6	30.600	612.0
7	35.700	714.0
8	40.800	816.0
1 3/4 x 4	23.800	476.0
5	29.750	575.0
6	35.700	714.0
8	47.600	952.0
2 x 2 1/2	17.000	340.0
3	20.400	408.0
3 1/2	23.800	476.0
4	27.200	544.0
5	34.000	680.0
6	40.800	816.0
8	54.400	1088.0
2 1/2 x 4	34.000	680.0
6	51.000	1020.0
8	68.000	1360.0

Flats wider than 8″ see U.M. Plates – Page 41

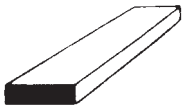
COLD DRAWN FLAT BAR

Chemical Analysis:

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A-108 Grade 1018	.15/.20	.60/.90	.04 max	.05 max

Tolerance:

Width. In.	Thickness & Width Tolerance
to 3/4″, incl.	+0, –.003
over 3/4″ to 1 1/2″, incl.	+0, –.004
over 1 1/2″ to 3″, incl.	+0, –.005
over 3″ to 4, incl.	+0, –.006
over 4″ to 6″, incl.	+0, –.008
over 6″	+0, –.013

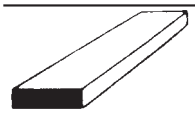


COLD DRAWN FLAT BAR

Standard Length — 10′ to 12′ Random

Size	Weight in Pounds Per Foot	12′
1/8 x 1/4	.106	1.27
5/16	.133	1.60
3/8	.159	1.91
1/2	.213	2.56
5/8	.266	3.19
3/4	.319	3.83
7/8	.372	4.46
1	.425	5.10
1 1/4	.531	6.37
1 1/2	.639	7.67
1 3/4	.745	8.94
2	.851	10.21
2 1/4	.957	11.48
2 1/2	1.064	12.77
2 3/4	1.170	14.04
3	1.276	15.31
3 1/2	1.489	17.87
4	1.702	20.42
4 1/2	1.915	22.98
5	2.127	25.52
6	2.552	30.62
3/16 x 1/4	.159	1.91
5/16	.199	2.39
3/8	.239	2.87
1/2	.319	3.83
5/8	.398	4.78
3/4	.478	5.74
7/8	.559	6.71
1	.639	7.67
1 1/4	.798	9.58
1 1/2	.957	11.48
1 3/4	1.117	13.40
2	1.276	15.31
2 1/4	1.435	17.22
2 1/2	1.596	19.15
2 3/4	1.755	21.06
3	1.915	22.98
3 1/2	2.233	26.80
4	2.552	30.62

Size	Weight in Pounds Per Foot	12′
3/16 x 4 1/2	2.872	34.46
5	3.191	38.29
6	3.829	45.95
8	5.105	61.26
10	6.381	76.57
12	7.657	91.88
1/4 x 5/16	.266	3.19
3/8	.319	3.83
1/2	.425	5.10
5/8	.531	6.37
3/4	.639	7.67
7/8	.745	8.94
1	.851	10.21
1 1/4	1.064	12.77
1 3/8	1.170	14.04
1 1/2	1.276	15.31
1 3/4	1.489	17.87
2	1.702	20.42
2 1/4	1.915	22.98
2 1/2	2.127	25.52
2 3/4	2.340	28.08
3	2.552	30.62
3 1/2	2.978	35.74
4	3.403	40.84
4 1/2	3.829	45.95
5	4.254	51.05
5 1/2	4.679	56.15
6	5.105	61.26
7	5.956	71.47
8	6.806	81.67
10	8.508	102.10
12	10.210	122.52
5/16 x 3/8	.389	4.78
1/2	.531	6.37
5/8	.665	7.98
3/4	.798	9.58
7/8	.931	11.17
1	1.064	12.77

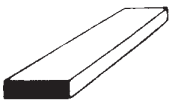


COLD DRAWN FLAT BAR

Standard Length — 10′ to 12′ Random

Size	Weight in Pounds Per Foot	12′
5/16 x 1 1/8	1.196	14.35
1 1/4	1.329	15.95
1 1/2	1.596	19.15
1 3/4	1.861	22.33
2	2.127	25.52
2 1/4	2.393	28.72
2 1/2	2.658	31.90
2 3/4	2.925	35.10
3	3.151	37.81
3 1/2	3.723	44.68
4	4.254	51.05
4 1/2	4.785	57.42
5	5.318	63.82
5 1/2	5.850	70.20
6	6.302	75.62
8	8.508	102.10
10	10.635	127.62
12	12.762	153.14
3/8 x 1/2	.639	7.67
5/8	.798	9.58
3/4	.957	11.48
7/8	1.117	13.40
1	1.276	15.31
1 1/4	1.596	19.15
1 1/2	1.915	22.98
1 3/4	2.233	26.80
2	2.552	30.62
2 1/4	2.872	34.46
2 1/2	3.191	38.29
2 3/4	3.509	42.11
3	3.829	45.95
3 1/4	4.148	49.78
3 1/2	4.467	53.60
4	5.105	61.26
4 1/2	5.743	68.92
5	6.381	76.57
5 1/2	7.020	84.24
6	7.657	91.88

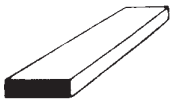
Size	Weight in Pounds Per Foot	12′
3/8 x 7	8.933	107.20
8	10.210	122.52
10	12.762	153.14
12	15.314	183.77
7/16 x 1/2	.745	8.94
3/4	1.117	13.40
1	1.489	17.87
1 1/4	1.861	22.33
1 1/2	2.233	26.80
1 3/4	2.605	31.26
2	2.979	35.75
2 1/4	3.350	40.20
2 1/2	3.721	44.65
3	4.467	53.60
4	5.956	71.47
1/2 x 5/8	1.064	12.77
3/4	1.276	15.31
7/8	1.489	17.87
1	1.702	20.42
1 1/4	2.127	25.52
1 1/2	2.552	30.62
2	3.403	40.84
2 1/4	3.829	45.95
2 1/2	4.254	51.05
2 3/4	4.679	56.15
3	5.105	61.26
3 1/4	5.530	66.36
3 1/2	5.956	71.47
4	6.806	81.67
4 1/2	7.657	91.88
5	8.508	102.10
5 1/2	9.359	112.31
6	10.210	122.52
7	11.911	142.93
8	13.613	163.36
9	15.314	183.77
10	17.016	204.19
12	20.419	245.03



COLD DRAWN FLAT BAR

Standard Length — 10′ to 12′ Random

Size	Weight in Pounds Per Foot	12′
5/8 x 3/4	.596	19.15
7/8	1.861	22.33
1	2.127	25.52
1 1/4	2.658	31.90
1 1/2	3.191	38.29
1 3/4	3.723	44.68
2	4.254	51.05
2 1/4	4.785	57.42
2 1/2	5.318	63.82
2 3/4	5.850	70.20
3	6.381	76.57
3 1/2	7.445	89.34
4	8.508	102.10
4 1/2	9.572	114.86
5	10.640	127.68
5 1/2	11.699	140.39
6	12.762	153.14
7	14.894	178.73
8	17.015	204.18
10	21.280	255.36
12	25.524	306.29
3/4 x 7/8	2.233	26.80
1	2.552	30.62
1 1/4	3.191	38.29
1 1/2	3.829	45.95
1 3/4	4.467	53.60
2	5.105	61.26
2 1/4	5.743	68.92
2 1/2	6.381	76.57
2 3/4	7.020	84.24
3	7.657	91.88
3 1/4	9.572	114.86
3 1/2	8.933	107.20
4	10.210	122.52
4 1/2	11.491	137.89
5	12.762	153.14
5 1/2	14.038	168.46
6	15.314	183.77
3/4 x 7	17.867	214.40
8	20.419	245.03
10	25.524	306.29
12	30.629	367.55
7/8 x 1	2.978	35.74
1 1/4	3.723	44.68
1 3/8	4.095	49.14
1 1/2	4.467	53.60
1 3/4	5.211	62.53
2	5.956	71.47
2 1/4	6.700	80.40
2 1/2	7.445	89.34
2 3/4	8.189	98.27
3	8.933	107.20
3 1/2	10.420	125.04
4	11.911	142.93
5	14.894	178.73
6	17.867	214.40
8	23.822	285.86
12	35.734	428.81
1 x 1 1/4	4.254	51.05
1 1/2	5.105	61.26
1 3/4	5.956	71.47
2	6.806	81.67
2 1/4	7.657	91.88
2 1/2	8.508	102.10
2 3/4	9.359	112.31
3	10.210	122.52
3 1/4	11.060	132.72
3 1/2	11.911	142.93
4	13.613	163.36
4 1/2	15.314	183.77
5	17.016	204.19
5 1/2	18.718	212.62
6	20.419	245.03
7	23.822	285.86
8	27.226	326.71



COLD DRAWN FLAT BAR

Standard Length — 10′ to 12′ Random

Size		Weight in Pounds	
		Per Foot	12′
1	x 10	34.032	408.38
	12	40.838	490.06
1 1/4	x 1 1/2	6.381	76.57
	1 3/4	7.445	89.34
	2	8.508	102.10
	2 1/4	9.572	114.86
	2 1/2	10.640	127.68
	2 3/4	11.701	140.41
	3	12.762	153.14
	3 1/2	14.894	178.73
	4	17.016	204.19
	4 1/2	19.148	229.78
	5	21.270	255.24
	6	25.524	306.29
	8	34.032	408.38
	10	42.540	510.48
	12	51.048	612.58
1 1/2	x 1 3/4	8.933	107.20
	2	10.210	122.52
	2 1/4	11.486	137.83
	2 1/2	12.762	153.14
	2 3/4	14.038	168.46
	3	15.314	183.77
	3 1/2	17.867	214.40
	4	20.419	245.03
	4 1/2	22.972	275.66
	5	25.524	306.29
	6	30.629	367.55
	8	40.838	490.06
	10	51.048	612.58
	12	61.258	735.10
1 3/4	x 2	11.911	142.93
	2 1/4	13.401	160.81
	2 1/2	14.889	178.67
	3	17.867	214.67
	3 1/2	20.845	250.14
	4	23.822	285.86
	5	29.778	357.34
	6	35.734	428.81
	8	47.645	571.74
2	x 2 1/4	18.317	219.80
	2 1/2	17.016	204.19
	2 3/4	18.718	224.62
	3	20.419	245.03
	3 1/2	23.822	285.86
	4	27.226	326.71
	4 1/2	30.625	367.50
	5	34.032	408.38
	6	40.838	490.06
	8	54.451	653.41
	10	68.064	816.77
	12	81.677	980.12

UNIVERSAL MILL PLATE

Standard Length — 20′

Size	Weight in Pounds	
	Per Foot	20′
1/4 x 9	7.6572	153.14
1/4 x 10	8.5080	170.16
¼ x 11	9.3588	187.17
1/4 x 12	10.2096	204.19
5/16 x 9	9.5715	191.43
5/16 x 10	10.6350	212.70
5/16 x 12	12.7620	255.24
3/8 x 9	11.4858	229.72
3/8 x 10	12.7620	255.24
3/8 x 11	14.0382	280.76
3/8 x 12	15.3144	306.29
1/2 x 9	15.3144	306.29
1/2 x 10	17.0160	340.32
1/2 x 11	18.7176	374.35
1/2 x 12	20.4192	408.38
5/8 x 9	19.1430	382.86
5/8 x 10	21.2700	425.40
5/8 x 12	25.5240	510.48
3/4 x 9	22.9716	459.43
3/4 x 10	25.5240	510.48
3/4 x 12	30.6288	612.57
1 x 9	30.6288	612.58
1 x 10	34.0320	680.64
1 x 12	40.8384	816.77
1 1/4 x 10	42.5400	850.80
1 1/4 x 12	51.0480	1020.96
1 1/2 x 10	51.0480	1020.96
1 1/2 x 12	61.2576	1225.15

Processing: See pages 95, 96

PLATE — SPECIFICATIONS
UNIVERSAL MILL PLATE

"U.M." Plates are over 8" wide and are carried in stock to widths up to 12" wide. They are rolled on a universal mill between horizontal and vertical rolls to a specified width while sheared plates are rolled between horizontal rolls only and are then sheared (or flame cut) to width and length.

Chemical Analysis:

ASTM	Thickness	Carbon	Manganese	Phosphorus	Sulphur
A-36	to 3/4"	.25 max	—	.04 max	.05 max
A-36	over 3/4" to 1 1/2"	.25 max	.80/1.20	.04 max	.05 max
A-36	over 1 1/2" to 2 1/2"	.25 max	.80/1.20	.04 max	.05 max

Mechanical Properties:

Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8"
36,000 min	58,000/80,000	20 min[A]

[A]For material under 5/16 in. (8 mm) in thickness or diameter, a deduction from the percentage of elongation in 8 in. (203 mm), specified in Table 3, of 1.25% shall be made for each decrease of 1/32 in. (0.8 mm) of the specified thickness or diameter below 1/16 in.

ASTM A-36

Chemical Analysis:

Thickness	Carbon	Manganese	Phosphorus	Sulphur
3/4" Thick & Under	.25 max	—	.04 max	.05 max
Over 3/4" to 1 1/2" incl.	.25 max	.80/1.20	.04 max	.05 max
Over 1 1/2" to 2 1/2" incl.*	.26 max	.80/1.20	.04 max	.05 max
Over 2 1/2" to 4" incl.*	.27 max	.85/1.20	.04 max	.05 max
Over 4" *	.29 max	.85/1.20	.04 max	.05 max

*Plates 1 1/2" and over also require .15/.30 Silicon content.

Mechanical Properties:

ASTM	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8"
A-36	36,000 min	58,000/80,000	20 min[A]

Tolerances:

See pages 52, 53

Stock Sizes: 3/16 through 12"

Special widths, lengths, and odd shapes can be quickly cut to your exact specifications.

AMERICAN BUREAU OF SHIPPING [ABS] [PLATE ONLY]

Chemical Analysis:

ASTM	Carbon	Manganese	Sulphur	Silicon
A131 Grade A	.23[A]	[B]	.05 max	.05 max

[A]A maximum carbon content of .26 is acceptable for grade A plates equal to or less than 1/2 in.

[B]Grade A plates over 1/2 in. in thickness shall have a minimum manganese content of not less than 2.5 times the carbon content.

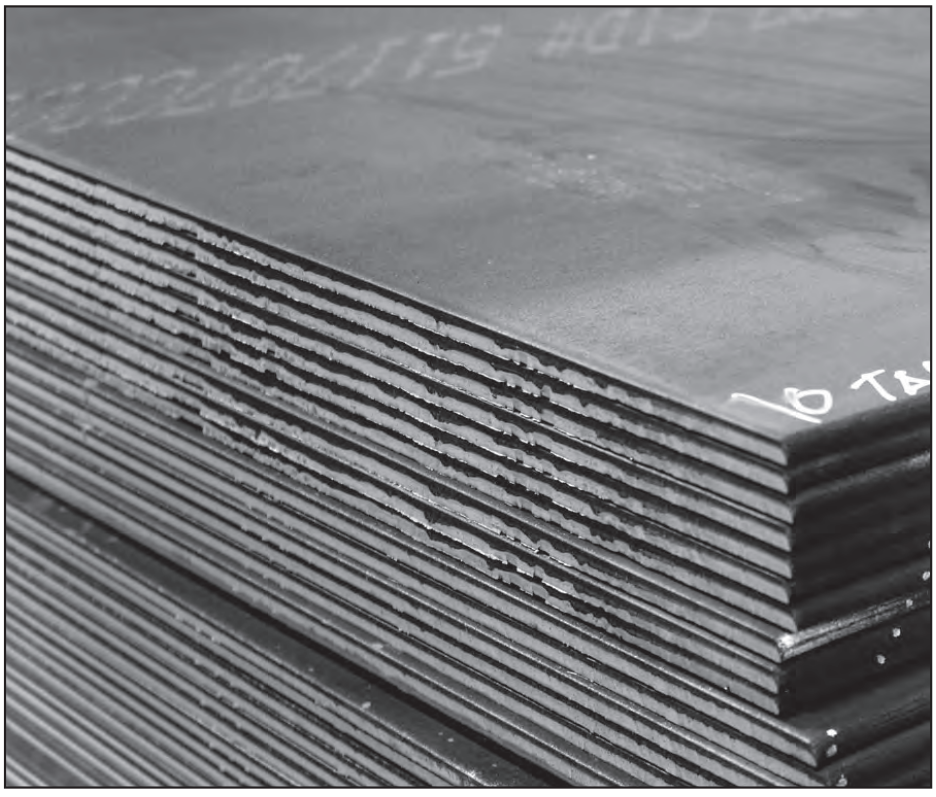
Mechanical Properties:

Yield Strength PSI	Tensile Strength PSI	% Elongation in 8"
34,000 min[C]	58,000/71,000	21 min

[C]For grade A over 1" in thickness, minimum yield point may be reduced to 32,000.

Tolerances: See pages 51-53

Processing: See pages 95, 96



AISI 1040/1045 AS ROLLED —

High carbon steel plates have high strength and toughness. These plates will flame or induction harden.

Chemical Analysis:

Carbon	Manganese	Phosphorus	Sulphur
.37/.50	.60/.90	.04 max	.05 max

Mechanical Properties: (Average range of 1″ thick plate)

	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elong in 2″	Reduc. area	Brinell Hard
As Rolled	48,000	85,000	22	48%	179

AISI 4140 AS ROLLED —

Chemical Analysis:

Carbon	Manganese	Phosphorus	Sulphur	Silicon	Chromium	Molybdenum
.38/.43	.25/1.00	.035 max	.04 max	.20/.35	.80/1.10	.15/.25

Mechanical Properties: (Approximate)

Yield Strength P.S.I.	Tensile Strength P.S.I.
60,000	95,000

Tolerances: See pages 51-53

Processing: See pages 95, 96

HIGH STRENGTH — LOW ALLOY

Chemical Analysis:

ASTM	A-572-Gr 50*	A-588 Gr. B	A-656 Type 7
Carbon	.23 max	.20 max	0.180 max
Manganese	1.35 max	.75/1.35	1.650 max
Phosphorus	.04 max	.04 max	0.025 max
Sulphur	.05 max	.05 max	0.035 max
Silicon	.40 max	.15/.50	0.060 max
Vanadium	—	.01/.10	0.005-0.15
Nitrogen	—	—	0.020 max
Columbium	—	—	0.005-0.10
Nickel	—	.50 max	—
Chromium	—	.40/.70	—
Copper	—	.20/.40	—

*A572/50 must also contain the following alloys: Columbium and/or Vanadium and/or Nitrogen. **Thickness Note:** </= 4″ is grade A572/50, > 4″ is grade A572/42.

Mechanical Properties: (Approximate)

	Yield Strength	Tensile Strength	%
Elongation Type	**P.S.I.**	**P.S.I.**	**in 8″**
A572-Gr 50	50,000 min	65,000 min	18 min[A]
A588[B]	50,000 min	70,000 min	18 min[A]
A656-Gr 70	70,000 min	80,000 min	14 min[A]
A656-Gr 80	80,000 min	90,000 min	12 min[A]

[A]For plates wider than 24″, the elongation requirement is reduced by 2% and 3% points for grade 70 and 80.
[B]For plates 4″ thick and under.

Tolerances: See pages 51-53 ***Processing:*** See pages 95, 96

HIGH STRENGTH ALLOY ASTM-514

Chemical Analysis:

	A514 Type Alloy
Carbon	.12/.21
Manganese	.70/1.00
Phosphorus	.035 max
Sulphur	.040 max
Silicon	.20/.35
Vanadium	.03/.08
Chromium	.40/.65
Molybdenum	.15/.25
Boron	.0005/.005
Titanium	.01/.03

Mechanical Properties:

Thickness	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 2″
3/16″ to 2 1/2″ incl.	100,000 min	110,000/130,000	18 min
Over 2 1/2″ to 6″ incl.	90,000 min	110,000/130,000	16 min

Tolerances: See pages 50, 52

ABRASION RESISTING PLATE

AR steel is a medium carbon, high manganese steel. This grade has a Brinell hardness range of 180 - 235.

Chemical Analysis: (Approximate)

Carbon	Manganese	Phosphorus	Sulphur	Silicon
.35/.50	1.2/2.0	.050 max	.055 max	.10/.35

Mechanical Properties: (Approximate)

	Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8″	Reduction of Area	Brinell Hardness
As Rolled	70,000	115,000	16	35%	235

Tolerances: See pages 51-53

Processing: See pages 95, 96

FORMABLE 400

Formable 400 is quenched and tempered, abrasion resistant, alloy steel plate. This steel is produced with fine grain practice, ladle-desulfurized, and calcium treated to improve toughness.

PLATE THICKNESS: 3/16, 1/4, 5/16, 1/2, 5/8, 3/4, 1, 1-1/4, 1-1/2, 1-3/4, 2

Chemical Analysis	Max.	Typical Mechanical Properties	Info. Only
Carbon	.17	Yield	160 ksi
Manganese	1.50	Tensile	170-190 ksi
Phosphorus	0.015	Elongation	15% in 2″
Sulphur	0.005	L/TCVN	25/15 ft. lbs @ -40°F
Silicon	0.60		35/25 ft. lbs @ 0°F
Molybdenum	0.40		45/30 ft. lbs @+32°F
Boron	0.0005	Minimum	

Formable 400 is heat treated to conform to a Brinell hardness range only. Mechanical properties are estimated for informational purposes and are not guaranteed.

Hardness Range	Flatness
363-444 Brinell	ASTM A 6 1/2 Commercial Standard

FLAME-CUTTING AND WELDING: Formable 400 has been developed to permit conventional oxy-fuel flame cutting, plasma cutting, and welding with minimal or no preheating as described below:

RECOMMENDED MINIMUM PREHEAT TEMPERATURES
combined plate thickness

GRADE	3/4″	3/4″ - 1″	1″ - 1-1/4″	1-1/4″ - 1-1/2″	1-1/2″ - 2″
Formable 400	70°F	70°F	70°F	70°F	Refer

Preheat and interpass temperatures should not exceed 400 degrees in order to maintain parent metal plate hardness. Formable grades may be welded using any of the conventional welding methods including fluxcore, SAW, GSAW and SMAW. Weld metal should have a tensile strength to undermatch the strength of the parent metal.

FORMABILITY: Cold forming of 90 degrees or less can be performed on Formable 400. A forming die with a radius of at least three times the thickness of material for transverse (easy way) bends, and four times the thickness of material for longitudinal (hard way) bends. The die opening on transverse bends should be at least 12 times the thickness of material, and 14 times the thickness of material on longitudinal bends. Edge preparation by grinding is required. Burned edges should be tempered at 400° maximum prior to grinding.

Tolerances: See pages 51-53 ***Processing:*** See pages 95, 96

FORMABLE 500

Formable 500 is quenched and tempered, abrasion resistant, alloy steel plate. This steel is vacuum degassed, ladle desulfurized, and calcium treated with inclusion shape control to a .005% maximum sulfur.

PLATE THICKNESS: 3/16, 1/4, 5/16, 1/2, 5/8, 3/4, 1, 1-1/4, 1-1/2, 1-3/4, 2

Chemical Analysis	Max.	Typical Mechanical Properties	Info. Only
Carbon	.30	Yield	210-230 ksi
Manganese	1.15	Tensile	230-255 ksi
Phosphorus	0.015	Elongation	14% in 2″
Sulphur	0.005	L/TCVN	20/15 ft. lbs @ -40°F
Silicon	0.60		23/18 ft. lbs @ 0°F
Chromium	0.65		
Molybdenum	0.40		25/20 ft. lbs @+32°F
Boron	0.0005	Minimum	

Formable 500 is heat treated to conform to a Brinell hardness range only. Mechanical properties are estimated for informational purposes and are not guaranteed.

Hardness Range	Flatness
3/16″ through 1″ 477-534 Brinell Over 1″ through 2″ 444-534 Brinell	ASTM A 6 1/2 Commercial Standard

FLAME-CUTTING AND WELDING: Formable 500 requires preheating prior to flame cutting and welding as described by the following:

RECOMMENDED MINIMUM PREHEAT TEMPERATURES
combined plate thickness

GRADE	3/4″	3/4″ - 1″	1″ - 1-1/4″	1-1/4″ - 1-1/2″	1-1/2″ - 2″
Formable 500	200°F	250°F	300°F	350°F	400°F

Preheat and interpass temperatures should not exceed 400 degrees in order to maintain parent metal plate hardness. Formable grades may be welded using any of the conventional welding methods including fluxcore, SAW, GSAW and SMAW. Weld metal should have a tensile strength to undermatch the strength of the parent metal.

FORMABILITY: Cold forming of 90 degrees or less can be performed on Formable 500. A forming die with a radius of at least five times the thickness of material for transverse (easy way) bends, and six times the thickness of material for longitudinal (hard way) bends. The die opening on transverse bends should be at least 12 times the thickness of material, and 16 times the thickness of material on longitudinal bends. Edge preparation by grinding is required. Burned edges should be tempered at 400° maximum prior to grinding.

Tolerances: See pages 51-53 ***Processing:*** See pages 95, 96

GRADE 100

APPLICATION: Any product where high strength and good bendability can reduce production costs, lower overall weight and increase payload. Typical applications:

- Cranes
- Car, truck and rail industries
- Contractor and agricultural machinery

Chemical Composition

C	Si	Mn	P	S	Al	Cb	Ti
% max	% max	% max	% max	% max	% min	% max	% max
0.12	0.60	2.0	0.025	0.010	0.015	0.06	0.20

Mechanical Properties (acc. to ASTM A6)

Yield Strength Ksi		Tensile Strength Ksi	
Min.	(MPa)	Min.	(MPa)
100	(690)	110	(760)

Elongation (2")%	Hardness H_B
Minimum	Approximate
15	250

Bendability

Minimum inside radius for cold forming in all directions.

.079" - .250" 1.6xt
> .250" - .394" 1.8xt

Impact Toughness

Guaranteed minimum: 20 ft. lbs. at -40°F.

Bending GRADE 100XF

Approximate press force needed: Ton per foot.

Material Thickness decimal inches	2" Die	3" Die	4" Die
0.1180	8 t/ft	5 t/ft	4 t/ft
0.1575	14 t/ft	9 t/ft	7 t/ft
0.1880	20 t/ft	13 t/ft	10 t/ft
0.2500	34 t/ft	23 t/ft	18 t/ft
0.3125	53 t/ft	35 t/ft	27 t/ft
0.3750	76 t/ft	52 t/ft	39 t/ft

WELDING CONSUMABLES FOR GRADE 100 XF COLD-FORMING STEEL ACCORDING TO AWS

Manual metal arc welding MMA	Gas shielded metal arc welding MIG/MAG		Submerged arc welding SAW
	Tubular Wire	Solid Wire	Wire/Powder
AWS A5.5 E11018	AWS A5.29 E110Tx-X	AWS A5.28 ER100S-X AWS A5.28 E110C-X	AWS A5.23/ F11A4-EX

$$t_2 = t_1 \sqrt{\frac{YS_1}{YS_2}}$$

t = thickness
YS = yield strength
Subscript 1 indicates the reference steel
Subscript 2 indicates the high strength steel

Example:

.25 (t_1 current thickness) x $\sqrt{\frac{36}{100}}$ (t_1 current yield) = .150 (t_2 new thickness)
(GRADE)

Possible weight reduction if the rule of thumb is used with GRADE 100 XF

Grade								
110	42.8%	36.0%	32.6%	26.1%	20.2%	14.7%	9.5%	4.7%
100	40.0%	32.9%	29.3%	22.5%	16.3%	10.6%	5.1%	0.0%
Grade	36	45	50	60	70	80	80	100

Welding

Low carbon, phosphorus and sulphur levels allow trouble-free welding by all conventional methods. No preheating is required.

Adjacent to the weld, a narrow Heat Affected zone (HAZ) with a slightly decreased hardness is produced. However, with standard welding techniques, the HAZ has no practical significance.

Tensile tests taken transverse to the weld show the same tensile strength as the parent metal.

Practical tests show softer filler metals can be used in most cases. For specific information about filler material, consult SSAB technical support.

Heat Treatment

Stress relieving should be done in temperature ranges of 980° - 1080°F. Heating above this range reduces strength and should be avoided.

Permissible Variations in Thickness for Rectangular, Carbon, High-Strength, Low-Alloy, and Alloy-Steel Plates, 15 in. and Under in Thickness When Ordered to Thickness

NOTE 1 – Tables 1 through 31, inclusive, contain permissible variations in dimensions stated in inch-pound units.
NOTE 2 – Permissible variation under specified thickness, 0.01 in.
NOTE 3 – Thickness to be measured at 3/8 to 3/4 in. from the longitudinal edge.
NOTE 4 – For thickness measured at any location other than that specified in Note 3, the permissible maximum over tolerance shall be increased by 75%, rounded to the nearest 0.01 in.
NOTE 5 – Where "..." appears in this table there is no requirement.

Specified Thickness, in.	Tolerance Over Specified Thickness for Widths Given, in.											
	48 and under	Over 48 to 60, excl	60 to 72, excl	72 to 84, excl	84 to 96, excl	96 to 108, excl	108 to 120, excl	120 to 132, excl	132 to 144, excl	144 to 168, excl	168 to 182, excl	182 and Over
To 1/4, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	...	...	...
1/4 to 5/16, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	...	...	...
5/16 to 3/8, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	...	...
3/8 to 7/16, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	...
7/16 to 1/2, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	...
1/2 to 5/8, excl	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.07	...
5/8 to 3/4, excl	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.06	0.07	0.07
3/4 to 1, excl	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.08	0.09
1 to 2, excl	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.10	0.10	0.11	0.13	0.16
2 to 3, excl	0.09	0.09	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.15	...
3 to 4, excl	0.11	0.11	0.11	0.11	0.11	0.13	0.14	0.14	0.14	0.15	0.17	...
4 to 6, excl	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20	...
6 to 10, excl	0.23	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.27	0.28	...
10 to 12, excl	0.29	0.29	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.35	...
12 to 15, incl	0.29	0.29	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	...

Permissible Variations From Flatness (A6) for Carbon Steel Rectangular Sheared Plates, Universal Mill Plates, and Circular and Sketch Plates (Applies to Carbon Steel Only)

NOTE 1 – When the longer dimension is under 36 in., the permissible variation should not exceed 1/4 in. When the longer dimension is from 36 to 72 in., incl. the permissible variation should not exceed 75% of the tabular amount for the specified width, but in no case less than 1/4 in.

NOTE 2 – These variations apply to plates which have a specified minimum tensile strength of not more than 60 ksi (415 MPa) or comparable chemical composition or hardness. The limits in the table are increased 50% for plates specified to a higher minimum tensile strength or compatible chemistry or hardness.

NOTE 3 – This table and these notes cover the permissible variations for flatness of circular and sketch plates, based on the maximum dimensions of those plates.

Specified Thickness. in.	Specified Weight. lb / ft²	Permissible Variations from a Flat Surface for Specified Widths. in.[a, b]										
		To 36. excl	36 to 48. excl	48 to 60. excl	60 to 72. excl	72 to 84. excl	84 to 96. excl	96 to 108. excl	108 to 120. excl	120 to 144. excl	144 to 168. excl	168 and Over
To 1/4, excl	To 10.2, excl	9/16	3/4	15/16	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	–	–
1/4 to 3/8, excl	10.2 to 15.3, excl	1/2	5/8	3/4	15/16	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	–	–
3/8 to 1/2, excl	15.3 to 20.4, excl	1/2	9/16	5/8	5/8	3/4	7/8	1	1 1/8	1 1/4	1 7/8	2 1/8
1/2 to 3/4, excl	20.4 to 30.6, excl	7/16	1/2	9/16	5/8	5/8	3/4	1	1	1 1/8	1 1/2	2
3/4 to 1, excl	30.6 to 40.8, excl	7/16	1/2	9/16	5/8	5/8	5/8	3/4	7/8	1	1 3/8	1 3/4
1 to 2, excl	40.8 to 81.7, excl	3/8	1/2	1/2	9/16	9/16	5/8	5/8	5/8	11/16	1 1/8	1 1/2
2 to 4, excl	81.7 to 163.4, excl	5/16	3/8	7/16	1/2	1/2	1/2	1/2	9/16	5/8	7/8	1 1/8
4 to 6, excl	163.4 to 245.1, excl	3/8	7/16	1/2	1/2	9/16	9/16	5/8	3/4	7/8	7/8	1
6 to 8, excl	245.1 to 326.8, excl	7/16	1/2	1/2	5/8	11/16	3/4	7/8	7/8	1	1	1
8 to 10, excl	326.8 to 409.0, excl	1/2	1/2	5/8	11/16	3/4	13/16	7/8	15/16	1	1	1
10 to 12, excl	409.0 to 490.1, excl	1/2	5/8	3/4	13/16	7/8	15/16	1	1	1	1	1
12 to 15, incl	490.1 to 613.0, incl	5/8	3/4	13/16	7/8	15/16	1	1	1	1	1	–

[a] Flatness Variations for Length – The longer dimension specified is considered the length, and permissible variations in flatness along the length should not exceed the tabular amount for the specified width in plates up to 12 ft. in length or in any 12 ft. of longer plates.

[b] Flatness Variations for Width – The flatness variations across the width should not exceed the tabular amount for the specified width.

Permissible Variations From Flatness (A6) for High-Strength Low-Alloy and Alloy Steel Rectangular Sheared Plates, Universal Mill Plates, and Circular and Sketch Plates, Hot Rolled or Thermally Treated (Not Applicable to Carbon Steel)

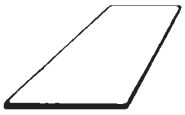
NOTE 1 – When the longer dimension is under 36 in., the variation should not exceed 1/8 in. When the larger dimension is from 36 to 72 in., incl. the variation should not exceed 75% of the tabular amount for the specified width.

NOTE 2 – This table and notes cover the tolerances for flatness of circular and sketch plates, based on the maximum dimensions of those plates.

Specified Thickness. in.	Specified Weight. lb / ft²	Flatness Tolerances for Specified Widths. in. [a, b]										
		To 36. excl	36 to 48. excl	48 to 60. excl	60 to 72. excl	72 to 84. excl	84 to 96. excl	96 to 108. excl	108 to 120. excl	120 to 144. excl	144 to 168. excl	168 and Over
To 1/4, excl	To 10.2, excl	13/16	1 1/8	1 3/8	1 7/8	2	2 1/4	2 3/8	2 5/8	2 3/4	–	–
1/4 to 3/8, excl	10.2 to 15.3, excl	3/4	15/16	1 1/8	1 3/8	1 3/4	1 7/8	2	2 1/4	2 3/8	–	–
3/8 to 1/2, excl	15.3 to 20.4, excl	3/4	7/8	15/16	15/16	1 1/8	1 5/16	1 1/2	1 5/8	1 7/8	2 3/4	3 1/8
1/2 to 3/4, excl	20.4 to 30.6, excl	5/8	3/4	13/16	7/8	1	1 1/8	1 1/4	1 3/8	1 5/8	2 1/4	3
3/4 to 1, excl	30.6 to 40.8, excl	5/8	3/4	7/8	7/8	15/16	1	1 1/8	1 5/16	1 1/2	2	2 5/8
1 to 2, excl	40.8 to 81.7, excl	9/16	5/8	3/4	13/16	7/8	15/16	1	1	1	1 5/8	2 1/4
2 to 4, excl	81.7 to 163.4, excl	1/2	9/16	11/16	3/4	3/4	3/4	3/4	7/8	1	1 1/4	1 5/8
4 to 6, excl	163.4 to 245.1, excl	9/16	11/16	3/4	3/4	7/8	7/8	15/16	1 1/8	1 1/4	1 1/4	1 1/2
6 to 8, excl	245.1 to 326.8, excl	5/8	3/4	3/4	15/16	1	1 1/8	1 1/4	1 5/16	1 1/2	1 1/2	1 1/2
8 to 10, excl	326.8 to 409.0, excl	3/4	13/16	15/16	1	1 1/8	1 1/4	1 5/16	1 3/8	1 1/2	1 1/2	1 1/2
10 to 12, excl	409.0 to 490.1, excl	3/4	15/16	1 1/8	1 1/4	1 5/16	1 3/8	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
12 to 15, incl	490.1 to 613.0, incl	7/8	1	1 3/16	1 5/16	1 3/8	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2

[a] Flatness Variations for Length – The longer dimension specified is considered the length, and variations from a flat surface along the length should not exceed the tabular amount for the specified width in plates up to 12 ft. in length or in any 12 ft. of longer plates.

[b] Flatness Variations for Width – The flatness variations across the width should not exceed the tabular amount for the specified width.



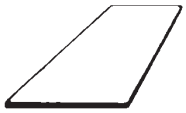
HOT ROLLED PLATE

Size	Weight Per Plate
3/16 7.6579# / Sq. Ft.	
48 x 96	245.05
120	306.32
144	367.58
240	612.63
60 x 96	306.32
120	382.90
144	459.47
240	765.79
360	1148.69
72 x 96	367.58
120	459.47
144	551.37
240	918.95
360	1378.42
84 x 96	428.84
120	536.05
144	643.26
240	1072.11
360	1608.16
96 x 120	612.63
144	735.16
240	1225.26
360	1837.90
1/4 10.2096# / Sq. Ft.	
48 x 96	326.71
120	408.38
144	490.06
240	816.77
60 x 96	408.38
120	510.48
144	612.58
240	1020.96
360	1531.44
72 x 96	490.06
120	612.58
144	735.09

Size	Weight Per Plate
1/4 72 x 240	1225.15
360	1837.73
84 x 96	571.74
120	714.67
144	857.61
240	1429.34
360	2144.02
96 x 120	816.77
144	980.12
240	1633.54
360	2450.30
480	3267.07
120 x 240	2041.92
360	3062.88
480	4083.84
5/16 12.7627# / Sq. Ft.	
48 x 96	408.41
120	510.51
144	612.61
240	1021.02
60 x 96	510.51
120	638.14
144	765.76
240	1276.27
360	1914.41
72 x 96	612.61
120	765.76
144	918.92
240	1531.53
360	2297.29
84 x 96	714.71
120	893.39
144	1072.07
240	1786.78
360	2680.17

Plate Weight Calculation
T x W x L x .2836 = Weight

Processing: See pages 95,96



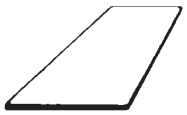
HOT ROLLED PLATE

Size			Weight Per Plate
5/16	96 x	120	1021.02
		144	1225.22
		240	2042.04
		360	3063.05
		480	4084.08
	120 x	240	2552.24
		360	3828.82
		480	5104.48
3/8	15.3144# / Sq. Ft.		
	48 x	96	490.06
		120	612.58
		144	735.09
		240	1225.15
	60 x	96	612.58
		120	765.72
		144	918.86
		240	1531.44
		360	2297.16
	72 x	96	735.09
		120	918.86
		144	1102.64
		240	1837.73
		360	2756.59
	84 x	96	857.61
		120	1072.01
		144	1286.41
		240	2144.02
		360	3216.02
	96 x	120	1225.15
		144	1470.18
		240	2450.30
		360	3675.46
		480	4900.61
	120 x	240	3062.88
		360	4594.32
		480	6125.76
7/16	17.8675# / Sq. Ft.		

Size			Weight Per Plate
1/2	20.4192# / Sq. Ft.		
	48 x	96	653.41
		120	816.77
		144	980.12
		240	1633.54
	60 x	96	816.77
		120	1020.96
		144	1225.15
		240	2041.92
		360	3062.88
	72 x	96	980.12
		120	1225.15
		144	1470.18
		240	2450.30
		360	3675.46
	84 x	96	1143.48
		120	1429.34
		144	1715.21
		240	2858.69
		360	4288.03
	96 x	120	1633.54
		144	1960.25
		240	3267.07
		360	4900.61
		480	6534.14
	120 x	240	4083.84
		360	6125.76
		480	8167.68
9/16	22.9723# / Sq. Ft.		
5/8	25.5240# / Sq. Ft.		
	48 x	96	816.77
		120	1020.96
	60 x	120	1276.20
		240	2552.40

Plate Weight Calculation
T x W x L x .2836 = Weight

Processing: See pages 95, 96



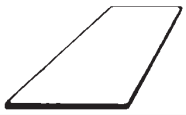
HOT ROLLED PLATE

Size			Weight Per Plate
5/8	72 x	120	1531.44
		240	3062.88
	84 x	120	1786.68
		240	3573.36
	96 x	120	2041.92
		240	4083.84
		360	6125.76
11/16	28.0771# / Sq. Ft.		
3/4	30.6288# / Sq. Ft.		
	48 x	96	980.12
		120	1225.15
		144	1470.18
		240	2450.30
	60 x	96	1225.15
		120	1531.44
		144	1837.73
		240	3062.88
		360	4594.32
	72 x	96	1470.18
		120	1837.73
		144	2205.27
		240	3675.46
		360	5513.18
	84 x	96	1715.22
		120	2144.02
		144	2572.82
		240	4288.03
		360	6432.05
	96 x	120	2450.31
		144	2940.36
		240	4900.61
		360	7350.91
		480	9801.22
	120 x	240	6125.76
		360	9188.64
		480	12251.52

Size			Weight Per Plate
13/16	33.1819# / Sq. Ft.		
7/8	35.7336# / Sq. Ft.		
	48 x	96	1143.48
		120	1429.35
		144	1715.21
		240	2858.69
	60 x	96	1429.34
		120	1786.68
		144	2144.02
		240	3573.36
	72 x	120	2144.02
		240	4288.03
	84 x	120	2501.35
		240	5002.70
	96 x	120	2858.69
		240	5717.38
		360	8576.06
15/16	38.2867# / Sq. Ft.		
1	40.8384# / Sq. Ft.		
	48 x	96	1306.83
		120	1633.54
		144	1960.24
		240	3267.08
	60 x	96	1633.54
		120	2041.92
		144	2450.30
		240	4083.84
		360	6125.76
	72 x	96	1960.24
		120	2450.30
		144	2940.36
		240	4900.61
		360	7350.91

Plate Weight Calculation
T x W x L x .2836 = Weight

Processing: See pages 95, 96

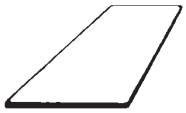


HOT ROLLED PLATE

Size		Weight Per Plate
1	84 x 96	2286.95
	120	2858.69
	144	3430.43
	240	5717.38
	360	8576.06
	96 x 120	3267.07
	144	3920.49
	240	6534.14
	360	9801.22
	480	13068.29
	120 x 240	8167.68
	360	12251.52
	480	16335.36
1-1/8	45.9432# / Sq. Ft.	
1-3/16	48.4956# / Sq. Ft.	
1-1/4	51.0480# / Sq. Ft.	
	48 x 96	1633.53
	120	2041.92
	60 x 120	2552.40
	240	5104.80
	72 x 120	3062.88
	240	6125.76
	84 x 120	3573.36
	240	7146.72
	96 x 120	4083.44
	240	8167.68
	360	12251.52
1-3/8	56.1528# / Sq. Ft.	
1-1/2	61.2576# / Sq. Ft.	
	48 x 96	1960.24
	120	2450.30
	60 x 120	3062.88
	240	6125.76
1-1/2	72 x 120	3675.45
	240	7350.91
	84 x 120	4288.03
	240	8576.06
	96 x 120	4900.60
	240	9801.22
	360	14701.80
1-5/8	66.3624# / Sq.Ft.	
1-3/4	71.4672# / Sq.Ft.	
	48 x 96	2286.95
	120	2858.68
	60 x 120	3573.36
	240	7146.72
	72 x 120	4288.03
	240	8576.06
	84 x 120	5002.70
	240	10005.41
	96 x 120	5717.37
	240	11434.75
	360	17152.13
1-7/8	76.5720# / Sq.Ft.	
2	81.6768# / Sq.Ft.	
	48 x 96	2613.66
	120	3267.07
	60 x 120	4083.84
	240	8167.68
	72 x 120	4900.61
	240	9801.22
	84 x 120	5717.37
	240	11434.75
	96 x 120	6534.14
	240	13068.29
	360	19602.43

Plate Weight Calculation
T x W x L x .2836 = Weight

Processing: See pages 95, 96



HOT ROLLED PLATE

Size	wt/sq ft	Size	wt/sq ft
2-1/4	91.8864# / Sq. Ft.	**6**	245.0304# / Sq. Ft.
2-3/8	96.9912# / Sq. Ft.	**6-1/2**	265.4496# / Sq. Ft.
2-1/2	102.0960# / Sq. Ft.	**7**	285.8688# / Sq. Ft.
2-3/4	112.3056# / Sq. Ft.	**7-1/2**	306.2880# / Sq. Ft.
3	122.5152# / Sq. Ft.	**8**	326.7072# / Sq. Ft.
3-1/4	132.7248# / Sq. Ft.	**8-1/2**	347.1264# / Sq. Ft.
3-1/2	142.9344# / Sq. Ft.	**9**	367.5456# / Sq. Ft.
3-3/4	153.1440# / Sq. Ft.	**9-1/2**	387.9648# / Sq. Ft.
4	163.3536# / Sq. Ft.	**10**	408.3840# / Sq. Ft.
4-1/2	183.7728# / Sq. Ft.	**10-1/2**	428.8032# / Sq. Ft.
5	204.1920# / Sq. Ft.	**11**	449.2224# / Sq. Ft.
5-1/2	224.6112# / Sq. Ft.	**12**	490.0608# / Sq. Ft.

Processing: See pages 95, 96

FLOOR PLATE

Floor Plate is skid resistant regardless of how the plate is laid or whatever angle from which it is approached. Patterns are continuous whether plate is laid end to end, side to side or side to end.

The material provided conforms to an ASTM. A-786 manufacturing standard. All floor plate products are provided to a "Commercial Quality".

Chemical Analysis: (Approximate)

Carbon	Manganese	Phosphorus	Sulphur
.33 max	.30/.70	.05 Approx.	.05 Approx.

Note: Plates are ordered to chemistry only. ASTM A-36 is subject to mill availability.

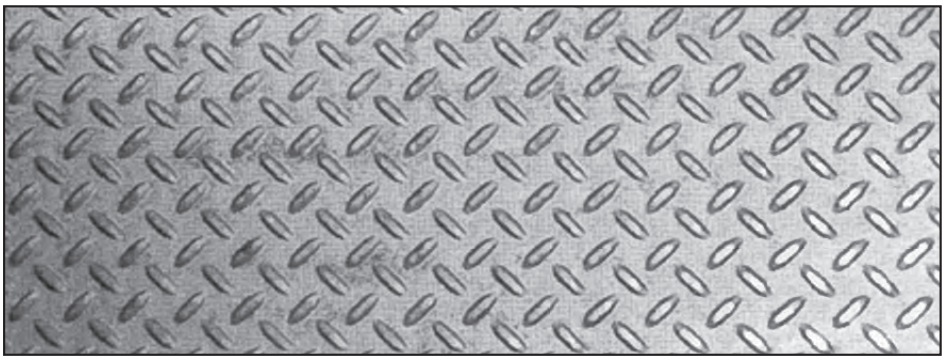
Mechanical Properties: (Approximate)

Yield Strength P.S.I.	Tensile Strength P.S.I.	% Elongation in 8″
33,000	60,000	22

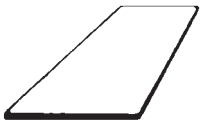
Note: Floor Plates normally are not used as main stress-carrying members and are seldom specified to tensile requirement. For this reason the mechanical properties shown above are only approximate.

Permissible Camber is $\frac{3}{8}'' \times \frac{\text{Length in feet}}{5}$

Size	Weight Per Square Foot	Size	Weight Per Square Foot
16 ga.	3.00	**5/16″**	13.81
14 ga	3.75	**3/8″**	16.37
12 ga	5.25	**1/2″**	21.47
1/8″	6.16	**5/8″**	26.58
3/16″	8.71	**3/4″**	31.68
1/4″	11.26	**1″**	41.89



Processing: See pages 95, 96



HOT ROLLED SHEET & PICKLED & OILED

Standard P&O Widths 48" and 60"

Size			Weight Per Sheet
7 ga.	(.1793) 7.500# / Sq. Ft.		
48	x	96	240.0
		120	300.0
		144	360.0
		240	600.0
60	x	96	300.0
		120	375.0
		144	450.0
		240	750.0
10 ga.	(.1345) 5.625# / Sq. Ft.		
48	x	96	180.0
		120	225.0
		144	270.0
		240	450.0
60	x	96	225.0
		120	281.3
		144	337.5
		240	562.5
72	x	96	270.0
		120	337.5
		144	405.0
		240	675.0
84	x	120	393.8
		144	472.5
		240	787.5
11 ga.	(.1196) 5.0# / Sq. Ft.		
48	x	96	160.0
		120	200.0
		144	240.0
		240	400.0
60	x	96	200.0
		120	250.0
		144	300.0
		240	500.0
72	x	96	240.0
		120	300.0
		144	360.0
		240	600.0
12 ga.	(.1046) 4.375# / Sq. Ft.		
48	x	96	140.0
		120	175.0
		144	210.0
		240	350.0
60	x	96	175.0
		120	218.8
		144	262.5
		240	437.5
72	x	96	210.0
		120	262.5
		144	315.0
		240	525.0
14 ga.	(.0747) 3.125# / Sq. Ft.		
48	x	96	100.0
		120	125.0
		144	150.0
		240	250.0
60	x	96	125.0
		120	156.3
		144	187.5
		240	312.5
72	x	96	150.0
		120	187.5
		144	225.0
16 ga.	(.0598) 2.5# / Sq. Ft.		
48	x	96	80.0
		120	100.0
		144	120.0

Sheet Weight Calculation
T x W x L x .2904 = Weight

Processing: See pages 95, 96

HOT ROLLED SHEET — SPECIFICATIONS

Chemical Analysis: (CS) Commercial Steel, Type B

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A1011*	.15 max	.60 max	.030 max	.035 max

Chemical Analysis and Mechanical Properties: (SS) Structural Steel

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A1011*	.23 max	1.35 max	.040 max	.04 max

ASTM	Thickness	Yield Strength PSI	Tensile Strength PSI	% Elongation in 2˝
A1011* SS GRADE 30	.0255-.0635	30,000 min	49,000 min	21.0 min
	.0636-.0971			24.0 min
	.0972-.2299			25.0 min
SS GRADE 33	.0255-.0635	33,000 min	52,000 min	18.0 min
	.0636-.0971			22.0 min
	.0972-.2299			23.0 min
SS GRADE 36	.0255-.0635	36,000 min	53,000 min	17.0 min
	.0636-.0971			21.0 min
	.0972-.2299			22.0 min

Thickness Tolerances:

Thickness	Width	Minimum Thickness	Maximum Thickness
10 ga	48″	.1260	.1425
	60″	.1260	.1425
	72″	.1260	.1425
	84″	.1260	.1425
11 ga	48″	.1115	.1276
	60″	.1115	.1276
	72″	.1115	.1276
12 ga	48″	.0966	.1126
	60″	.0966	.1126
	72″	.0966	.1126
14 ga	48″	.0677	.0817
	60″	.0677	.0817
	72″	.0667	.0827
16 ga	48″	.0538	.0658
	60″	.0528	.0668

* Limited sizes in stock

Processing: See pages 95, 96

Thickness Tolerances of Hot-Rolled Sheet (Carbon Steel)
(Coils and Cut Lengths, Including Pickled)

NOTE 1 – Thickness is measured at any point across the width not less than 3/8 in. from a cut edge and not less than 3/4 in. from a mill edge. This table does not apply to the uncropped ends of mill edge coils.

NOTE 2 –The specified thickness range captions also apply when sheet is specified to a nominal thickness, and the tolerances are divided equally over and under.

Specified Width, in.	Thickness Tolerances Over, in. No Tolerance Under					
	Specified Minimum Thickness, In.					
	0.180 to 0.230 excl	Over 0.098 to 0.180 excl	Over 0.071 to 0.098 incl	Over 0.057 to 0.071 incl	Over 0.051 to 0.057 incl	0.044 to 0.051 incl
12 to 20 incl	0.014	0.014	0.012	0.012	0.010	0.010
Over 20 to 40 incl.	0.016	0.014	0.014	0.012	0.010	0.010
Over 40 to 48 incl.	0.018	0.016	0.014	0.012	0.012	0.010
Over 48 to 60 incl.	...	0.016	0.014	0.014	0.012	...
Over 60 to 72 incl.	...	0.016	0.016	0.014	0.014	...
Over 72	...	0.016	0.016	...	...	...

COLD ROLLED SHEET — SPECIFICATIONS

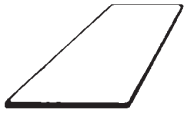
Chemical Analysis: A1008 Type B (CS) Commercial Steel

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A1008 Type B	.15 max	.60 max	.030 max	.035 max

Thickness Tolerances:

Thickness	Minimum Thickness	Maximum Thickness	Thickness	Minimum Thickness	Maximum Thickness
10 ga	.1285	.1405	**16** ga	.0548	.0648
11 ga	.1136	.1256	**18** ga	.0438	.0518
12 ga	.0986	.1106	**20** ga	.0329	.0389
13 ga	.0847	.0947	**22** ga	.0269	.0329
14 ga	.0697	.0797	**24** ga	.0209	.0269

Processing: See pages 95, 96

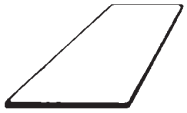


COLD ROLLED SHEET

Size	Weight Per Sheet
10 ga. (.1345) 5.625# / Sq. Ft.	
48 x 96	180.0
120	225.0
144	270.0
60 x 96	225.0
120	281.2
144	337.5
11 ga. (.1196) 5.00# / Sq. Ft.	
48 x 96	160.0
120	200.0
144	240.0
60 x 96	200.0
120	250.0
144	300.0
12 ga. (.1046) 4.375# / Sq. Ft.	
36 x 96	105.0
120	131.0
48 x 96	140.0
120	175.0
144	210.0
60 x 96	175.0
120	218.7
144	262.5
13 ga. (.0897) 3.750# / Sq. Ft.	
36 x 96	90.0
120	112.5
48 x 96	120.0
120	150.0
144	180.0
60 x 96	150.0
120	187.5
144	225.0
14 ga. (.0747) 3.125# / Sq. Ft.	
48 x 96	100.0
120	125.0
144	150.0
60 x 96	125.0
120	156.2
144	187.5
16 ga. (.0598) 2.50# / Sq. Ft.	
48 x 96	80.0
120	100.0
144	120.0
60 x 96	100.0
120	125.0
144	150.0
18 ga. (.0478) 2.00# / Sq. Ft.	
48 x 96	64.0
120	80.0
144	96.0
20 ga. (.0359) 1.50# / Sq. Ft.	
36 x 96	36.0
120	45.0
48 x 96	48.0
120	60.0
144	72.0
22 ga. (.0299) 1.25# / Sq. Ft.	
36 x 96	30.0
120	37.5
48 x 96	40.0
120	50.0
24 ga. (.0239) 1.00# / Sq. Ft.	
36 x 96	24.0
120	30.0
48 x 96	32.0
120	40.0

Sheet Weight Calculation
T x W x L x .2904 = Weight

Processing: See pages 95, 96



GALVANIZED
GALVANNEALED

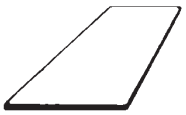
Galvanized Sheet ASTM-A653 G90

ASTM-A653 is the standard specification for galvanized steel sheet. G90 designates the coating thickness as called out in ASTM A653. A durable protective zinc coating is applied to steel sheet using a continuous, high-speed, hot dipped, galvanizing process. Galvanized sheet offers superior corrosion resistance.

Galvannealed ASTM-A653 A60

ASTM-A653 is the standard specification for galvanized steel sheet. A60 designates the coating thickness as called out in ASTM A653. Following the hot dipped galvanizing process sheets are annealed which results in a matte finish that is rust proof and suitable for painting. Galvannealed material can be formed or bent and the coating will not flake.

Processing: See pages 95, 96



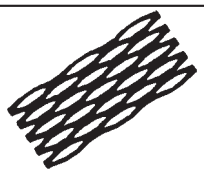
GALVANIZED GALVANNEALED

Size	Weight Per Sheet
10 ga. (.1382) 5.781# / Sq. Ft.	
48 x 96	184.9
120	231.2
144	277.4
60 x 96	231.2
120	289.0
144	346.8
11 ga. (.1233) 5.156# / Sq. Ft.	
48 x 96	176.5
120	220.6
144	264.8
60 x 96	220.6
120	275.8
144	331.0
12 ga. (.1084) 4.531# / Sq. Ft.	
48 x 96	145.0
120	181.2
144	217.5
60 x 96	181.2
120	226.6
144	271.9
14 ga. (.0785) 3.281# / Sq. Ft.	
48 x 96	105.0
120	131.2
144	157.5
60 x 96	131.2
120	164.1
144	196.9
16 ga. (.0635) 2.656# / Sq. Ft.	
48 x 96	85.0
120	106.2
144	127.5
60 x 96	106.2
120	132.8
144	159.4

Size	Weight Per Sheet
18 ga. (.0516) 2.156# / Sq. Ft.	
48 x 96	69.0
120	86.2
144	103.5
60 x 96	86.2
120	107.8
144	129.4
20 ga. (.0396) 1.656# / Sq. Ft.	
48 x 96	53.0
120	66.2
144	79.5
60 x 96	66.2
120	82.8
144	99.4
22 ga. (.0336) 1.406# / Sq. Ft.	
48 x 96	45.0
120	56.2
60 x 96	56.2
120	70.3
24 ga. (.0276) 1.156# / Sq. Ft.	
48 x 96	37.0
120	46.2
60 x 96	46.2
120	57.8
26 ga. (.0217) 0.906# / Sq. Ft.	
48 x 96	29.0
120	36.2
60 x 96	36.2
120	45.3

Sheet Weight Calculation
T x W x L x .2904 = Weight

Processing: See pages 95, 96

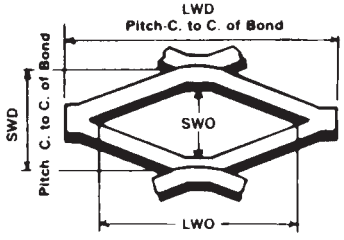


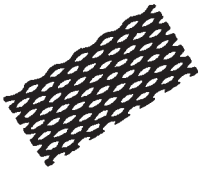
GRATING

FLATTENED MESH

New Designation**		Size of Openings In Inches		Center to Center of Bond In Inches		Size of Strands In Inches	
Size	Wt.	Width -	Length	Width -	Length	Width -	Thickness
3/16 - 24F -	48	.085	.459	.200	.52	.057	.019
3/16 - 22F -	60	.085	.459	.200	.52	.057	.024
3/16 - 20F -	72	.085	.459	.200	.52	.057	.029
1/4 - 20F -	83	.094	.688	.255	1.03	.086	.030
1/4 - 18F -	111	.094	.688	.255	1.03	.086	.040
1/2 - 20F -	40	.375	1.000	.500	1.26	.070	.029
1/2 - 18F -	66	.281	1.000	.500	1.26	.109	.039
1/2 - 16F -	82	.250	1.000	.500	1.26	.103	.050
1/2 - 13F -	140	.250	1.000	.500	1.26	.122	.070
3/4 - 16F -	51	.750	1.750	.923	2.10	.115	.048
3/4 - 14F -	63	.688	1.813	.923	2.12	.119	.061
3/4 - 13F -	75	.688	1.782	.923	2.10	.119	.070
3/4 - 9F -	171	.563	1.688	.923	2.10	.164	.120
1 - 16F -	41	.875	2.250	1.090	2.56	.115	.048
1 1/2 - 16F -	38	1.063	2.750	1.330	3.20	.123	.048
1 1/2 - 14F -	46	1.063	2.750	1.330	3.20	.138	.060
1 1/2 - 13F -	57	1.063	2.750	1.330	3.20	.138	.070
1 1/2 - 10F -	114	1.000	2.563	1.330	3.20	.175	.110

** First number is the width of bond.
The second number is the gauge of steel.
(F designates flattened)
The third number is the weight per 100 sq. feet.





RAISED MESH

New Designation**			Size of Openings In Inches		Center to Center of Bond In Inches		Size of Strands In Inches	
Size		Wt.	Width	Length	Width	Length	Width	Thickness
3/16	- 24 -	50	.166	.437	.200	.50	.050	.024
3/16	- 22 -	62	.166	.437	.200	.50	.050	.030
3/16	- 20 -	75	.166	.437	.200	.50	.050	.036
1/4	- 20 -	86	.172	.719	.255	1.00	.073	.036
1/4	- 18 -	114	.172	.719	.255	1.00	.073	.048
1/2	- 20 -	43	.438	.938	.500	1.20	.072	.036
1/2	- 18 -	70	.438	.938	.500	1.20	.088	.048
1/2	- 16 -	86	.375	.938	.500	1.20	.086	.060
1/2	- 13 -	147	.313	.938	.500	1.20	.096	.092
3/4	- 16 -	54	.813	1.750	.923	2.00	.099	.060
3/4	- 13 -	80	.750	1.688	.923	2.00	.096	.092
3/4	- 13 -	120	.750	1.625	.923	2.00	.144	.092
3/4	- 9 -	180	.688	1.563	.923	2.00	.148	.134
1	- 16 -	44	1.000	2.063	1.090	2.40	.096	.060
1 1/2	- 18 -	20	1.313	2.625	1.330	3.00	.067	.048
1 1/2	- 16 -	40	1.250	2.625	1.330	3.00	.107	.060
1 1/2	- 13 -	60	1.188	2.500	1.330	3.00	.104	.092
1 1/2	- 13 -	79	1.188	2.500	1.330	3.00	.137	.092
1 1/2	- 10 -	120	1.125	2.375	1.330	3.00	.142	.134
1 1/2	- 6 -	250	1.000	2.313	1.330	3.00	.201	.198
2	- 10 -	68	1.625	3.438	1.850	4.00	.164	.092
2	- 10 -	90	1.563	3.375	1.850	4.00	.149	.134

** First number is the width of bond.
The second number is the gauge of steel.
The third number is the weight per 100 sq. feet.

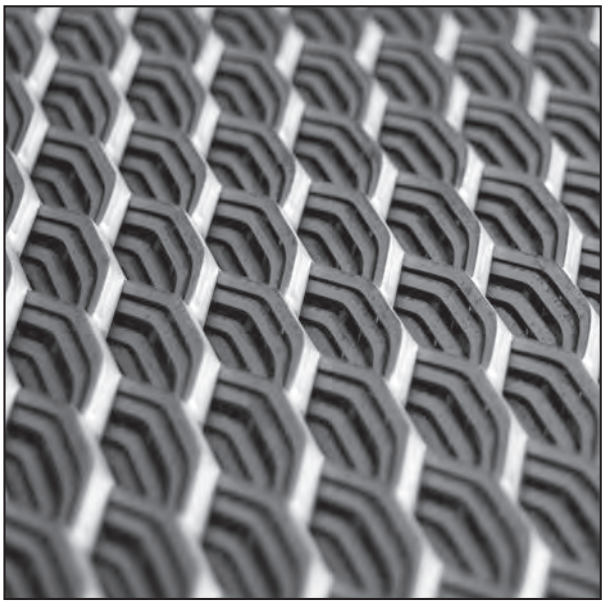
GRATING

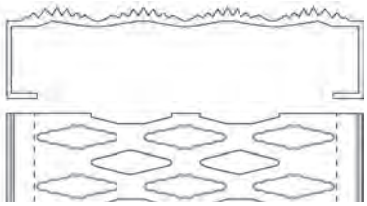
EXPANDED METAL GRATING

Style	Size of Openings In Inches		Center to Center of Bond In Inches		Size of Strands In Inches	
	Width -	Length	Width -	Length	Width -	Thickness
3 lb.	.938	3.438	1.333	5.33	.261	.183
3.14 lb.	1.625	4.875	2.000	6.00	.308	.250
4 lb.	.938	3.438	1.333	5.33	.297	.215
4.27 lb.	1.000	2.875	1.412	4.00	.297	.250
5 lb.	.813	3.375	1.333	5.33	.327	.250
6.25 lb.	.813	3.375	1.412	5.33	.347	.312
7 lb.	.813	3.375	1.412	5.33	.388	.312

Available with the long way of diamond running the length of the sheet (referred to as DLW).

Available with the long way of diamond running the width of the sheet (often referred to as “catwalk” or DSW).





DIAMOND GRIP SAFETY GRATING

Catalog Numbers and Weight Per Linear Foot

Material	Channel	Width					
		4 3/4"	7"	9 1/2"	11 3/4"	18 3/4"	24"
Steel 14 Gauge	1½"	21514	31514	41514	51514	81514	
		2.3	3.0	3.6	4.2	6.1	
	2"	22014	32014	42014	52014	82014	102014
		2.6	3.2	3.8	4.4	6.3	7.4
	2½"	22514	32514	42514	52514	82514	
		2.8	3.5	4.1	4.7	6.6	
Steel 12 Gauge	1½"	21512	31512	41512	51512	81512	
		3.2	4.1	5.0	5.9	8.5	
	2"	22012	32012	42012	52012	82012	102012
		3.6	4.5	5.4	6.2	8.9	10.4
	2½"	22512	32512	42512	52512	82512	
		4.0	4.9	5.7	6.6	9.2	
	3"		33012	43012	53012	83012	103012
			5.2	6.1	7.0	9.6	11.1

Heavy Duty Grip Strut also available.

TUBING SPECIFICATIONS

SQUARE & RECTANGULAR

Chemical Analysis:

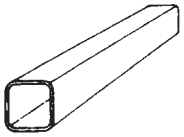
ASTM	Carbon	Manganese	Phosphorus	Sulphur
A513 Grade A	.02 - .15	.30 - .60	.035 max	.035 max
A500 Grade B & C	.26 max	1.35 max	.035 max	.035 max

Mechanical Properties:

ASTM	Yield Strength PSI	Tensile Strength PSI	% Elongation in 2˝
A513 GR A	Not required under A513. If there is a specific requirement for your project please inquire.		
A500 GR B	46,000 min	58,000 min	23 min[A]
A500 GR C	50,000 min	62,000 min	21 min[A]

[A] Applies to specified wall thicknesses .120 in. and over. For wall thicknesses under .120 in., the minimum elongation shall be calculated by the formula: % elongation in 2″ = 56t + 17.5 where t is the nominal thickness.

Processing: See pages 95, 96



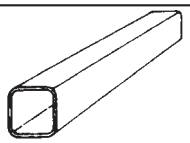
SQUARE TUBING

Standard Length — 20′, 24′, 32′*, 40′, 48′*, 56′*

Nominal Size	Wall Thickness	Weight Per Foot
1/2 x 1/2	.049	.283
	.065	.363
5/8 x 5/8	.049	.363
	.065	.470
3/4 x 3/4	.049	.443
	.065	.557
	.072	.649
	.083	.753
	.120	1.028
7/8 x 7/8	.065	.716
1 x 1	.049	.627
	.065	.814
	.072	.893
	.083	1.010
	.095	1.140
	.109	1.250
	.120	1.390
1 1/4 x 1 1/4	.049	.762
	.065	1.040
	.072	1.140
	.083	1.300
	.095	1.470
	.109	1.620
	.120	1.800
	.180	2.340
1 1/2 x 1 1/2	.065	1.260
	.072	1.380
	.083	1.580
	.095	1.790
	.109	1.990
	.120	2.210
	.180	3.130
	.250	4.250
1 3/4 x 1 3/4	.095	2.138
	.120	2.660
2 x 2	.065	1.67
	.072	1.84
	.083	2.10
	.095	2.38
	.109	2.70
	.120	2.94
	.180	4.17
	.250	5.40
2 1/2 x 2 1/2	.095	3.03
	.109	3.44
	.120	3.76
	.180	5.40
	.250	7.10
2.53 x 2.53	.238	7.56
3 x 3	.095	3.67
	.109	4.18
	.120	4.57
	.180	6.62
	.250	8.80
	.313	10.58
	.375	12.16
3 1/2 x 3 1/2	.109	4.92
	.120	5.39
	.180	7.84
	.250	10.50
	.313	12.70
	.375	14.70
4 x 4	.095	4.97
	.109	5.66
	.120	6.21
	.180	9.07
	.250	12.20
	.313	14.80
	.375	17.30
	.500	21.60
4 1/2 x 4 1/2	.180	10.29
	.250	13.90

*** Available in some sizes only**

Processing: See pages 95, 96

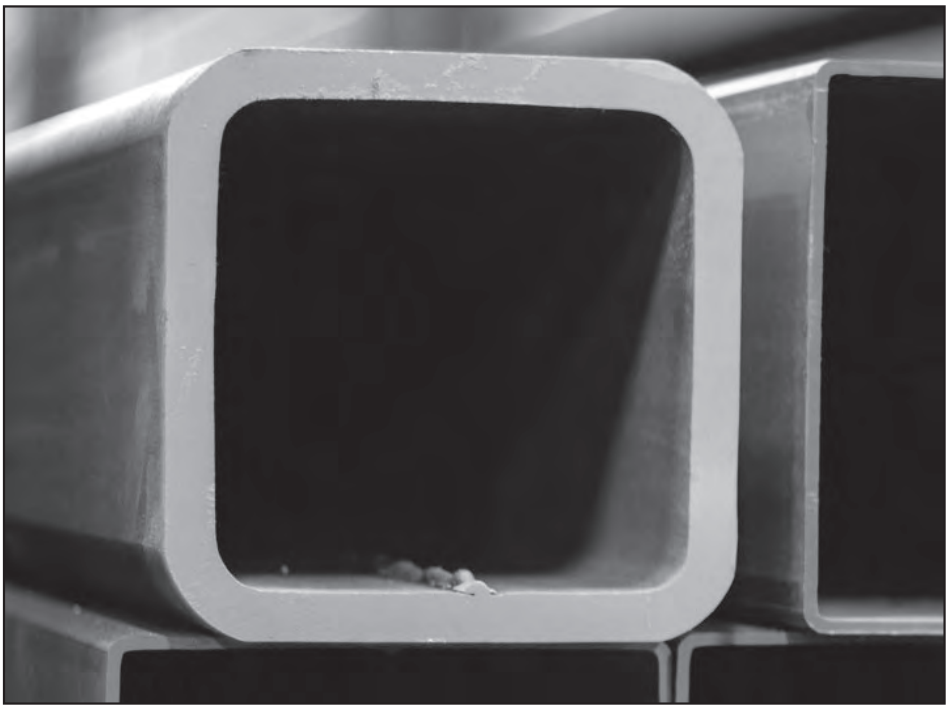


SQUARE TUBING

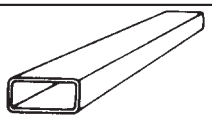
Standard Length — 20′, 24′, 32′*, 40′, 48′*, 56′*

Nominal Size	Wall Thickness	Weight Per Foot
5 x 5	.120	7.84
	.180	11.50
	.250	15.60
	.313	19.10
	.375	22.40
	.500	28.40
6 x 6	.180	14.00
	.250	19.00
	.313	23.30
	.375	27.50
	.500	35.20
7 x 7	.180	16.40
	.250	22.40
	.313	27.60
	.375	32.60
	.500	42.00
8 x 8	.180	18.90
	.250	25.80
	.313	31.80
	.375	37.70
	.500	48.80
10 x 10	.250	32.60
	.313	40.30
	.375	47.90
	.500	62.40
12 x 12	.250	39.40
	.313	48.80
	.375	58.00
	.500	76.00

*Available in some sizes only



Processing: See pages 95, 96

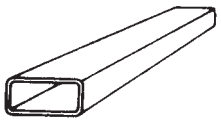


RECTANGULAR TUBING

Standard Length — 20′, 24′, 40′

Nominal Size	Wall Thickness	Weight Per Foot
1 x 1/2	.049	.443
	.065	.577
1 1/2 x 3/4	.065	.898
	.072	1.020
	.083	1.160
	.120	1.640
1 1/2 x 1	.065	1.010
	.072	1.140
	.083	1.300
	.095	1.470
	.120	1.800
2 x 1	.065	1.260
	.072	1.380
	.083	1.580
	.095	1.790
	.109	1.990
	.120	2.210
	.180	2.950
2 x 1 1/2	.065	1.490
	.095	2.138
	.120	2.660
2 1/2 x 1 1/2	.083	2.100
	.095	2.380
	.109	2.700
	.120	2.940
	.180	4.320
3 x 1	.065	1.690
	.072	1.840
	.083	2.100
	.095	2.380
	.109	2.700
	.120	3.050
	.180	4.320
3 x 1 1/2	.072	2.090
	.083	2.390
	.095	2.700
	.109	3.070
	.120	3.350
	.180	4.780
	.250	6.250
3 x 2	.083	2.67
	.095	3.03
	.109	3.44
	.120	3.76
	.180	5.40
	.250	7.10
3 1/2 x 2 1/2	.180	6.90
	.250	9.35
4 x 1 1/2	.120	4.16
4 x 2	.083	3.23
	.095	3.67
	.109	4.18
	.120	4.57
	.180	6.62
	.250	8.80
	.313	10.56
	.375	12.16
4 x 3	.095	4.32
	.109	4.92
	.120	5.39
	.180	7.84
	.250	10.50
	.313	12.70
	.375	14.70
5 x 2	.109	4.92
	.120	5.39
	.180	7.84
	.250	10.50
	.313	12.70
	.375	14.70
5 x 3	.120	6.21
	.180	9.07
	.250	12.20
	.313	14.80
	.375	17.30
	.500	21.62
5 x 4	.180	10.29
	.250	14.45

Processing: See pages 95, 96



RECTANGULAR TUBING

Standard Length — 20′, 24′, 40′

Nominal Size	Wall Thickness	Weight Per Foot
6 x 2	.109	5.66
	.120	6.21
	.180	9.07
	.250	12.20
	.313	14.80
	.375	17.30
6 x 3	.120	7.02
	.180	10.30
	.250	13.90
	.313	16.90
	.375	19.80
	.500	25.03
6 x 4	.120	7.84
	.180	11.50
	.250	15.60
	.313	19.10
	.375	22.40
	.500	28.40
7 x 4	.180	12.70
	.250	17.30
	.313	21.20
	.375	24.90
7 x 5	.180	14.00
	.250	19.00
	.313	23.30
	.375	27.50
	.500	35.20
8 x 2	.180	11.50
	.250	15.60
	.313	19.10
	.375	22.40
8 x 3	.180	12.70
	.250	17.30
	.313	21.20
	.375	24.90
8 x 4	.180	14.00
	.250	19.00
	.313	23.30
	.375	27.50
	.500	35.20
8 x 6	.180	16.40
	.250	22.40
	.313	27.60
	.375	32.60
	.500	42.00
9 x 7	.180	19.60
	.250	26.35
10 x 2	.180	13.90
	.250	19.00
10 x 3	.250	20.72
10 x 4	.180	16.40
	.250	22.40
	.313	27.60
	.375	32.60
	.500	42.10
10 x 6	.250	25.80
	.313	31.80
	.375	37.60
	.500	48.80
10 x 8	.250	29.75
	.375	43.99
	.500	57.80
12 x 2	.180	16.70
	.250	22.95
12 x 4	.180	19.60
	.250	25.80
	.313	31.80
	.375	37.70
	.500	48.90
12 x 6	.250	29.20
	.313	36.10
	.375	42.80
	.500	55.70
12 x 8	.250	32.60
	.313	40.30
	.375	47.90
	.500	62.40

Processing: See pages 95, 96

ROUND TUBING

Standard Length — 20′, 24′

Nominal Size	Wall Thickness	Weight Per Foot
1/2	.047	.236
	.065	.302
5/8	.034	.211
	.042	.262
	.047	.301
	.060	.362
3/4	.034	.267
	.042	.318
	.047	.367
	.060	.442
	.075	.541
7/8	.034	.314
	.042	.374
	.047	.432
	.060	.522
	.075	.641
	.083	.702
1	.034	.361
	.042	.430
	.047	.498
	.060	.602
	.075	.741
	.083	.813
	.095	.875
	.120	1.128
1⅛	.047	.563
	.060	.682
1¼	.034	.454
	.047	.629
	.060	.763
	.075	.941
	.083	1.034
	.095	1.115
	.120	1.448
1 3/8	.047	.694
	.060	.843
	.075	1.041
1 7/16	.075	1.091
1 1/2	.034	.548
	.047	.759
	.060	.923
	.075	1.141
	.083	1.256
	.095	1.355
	.120	1.769
1 5/8	.034	.594
	.047	.825
	.060	1.003
	.075	1.242
	.095	1.475
	.120	1.929
1 3/4	.047	.890
	.060	1.083
	.075	1.342
	.083	1.475
	.095	1.596
	.120	2.089
1 7/8	.047	.956
	.060	1.164

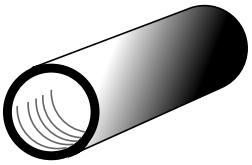
Processing: See pages 95, 96

ROUND TUBING

Standard Length — 20′, 24′

Nominal Size	Wall Thickness	Weight Per Foot
2	.047	1.021
	.060	1.243
	.075	1.542
	.083	1.699
	.095	1.836
	.120	2.409
2 1/8	.047	1.086
	.060	1.323
2 1/4	.047	1.152
	.060	1.403
	.075	1.740
	.083	1.921
	.095	2.183
	.120	2.730
2 3/8	.060	1.485
2 1/2	.047	1.283
	.060	1.564
	.075	1.942
	.083	2.143
	.120	3.051
2 5/8	.047	1.30
	.060	1.779
3	.047	1.544
	.060	1.884
	.075	2.343
	.083	2.586
	.095	2.797
	.120	3.691
3 1/4	.047	1.675
	.065	2.211
3 1/2	.065	2.385
4	.065	2.732
	.120	4.97
5	.250	12.68
	.313	15.67
	.375	18.52
6	.188	11.67
	.250	15.35
	.313	19.02
	.375	22.53
	.500	29.37

Processing: See pages 95, 96



PIPE — SPECIFICATIONS

A53

Chemical Analysis:

ASTM	Carbon	Manganese	Phosphorus	Sulphur
A53 Grade A	.25 max	0.95 max	.05 max	.06 max
A53 Grade B	.30 max	1.20 max	.05 max	.06 max

Mechanical Properties:

ASTM	Yield Strength PSI	Tensile Strength PSI	% Elongation in 2˝
A53 Grade A	30,000 min	48,000 min	Varies
A53 Grade B	35,000 min	60,000 min	Varies

STANDARD BUNDLING SCHEDULE

Size	Pieces Per Lift		Size	Pieces Per Lift
1/2″	21′ 120	OR		
3/4″	21′ 84			
1″	21′ 60			
1 1/4″	21′ 42			
1 1/2″	21′ 36			
2″	21′ 26			
2 1/2″	21′ 18			
3″	21′ 14		3″ 40′. 7	
3 1/2″	21′ 11		3 1/2″ 40′. 6	
4″	21′ 10		4″ 40′. 7	
5″	21′ 7		5″ 40′. 4	
6″	21′ 7		6″ 40′. 4	
8″	21′ 4		8″ 40′. 1	

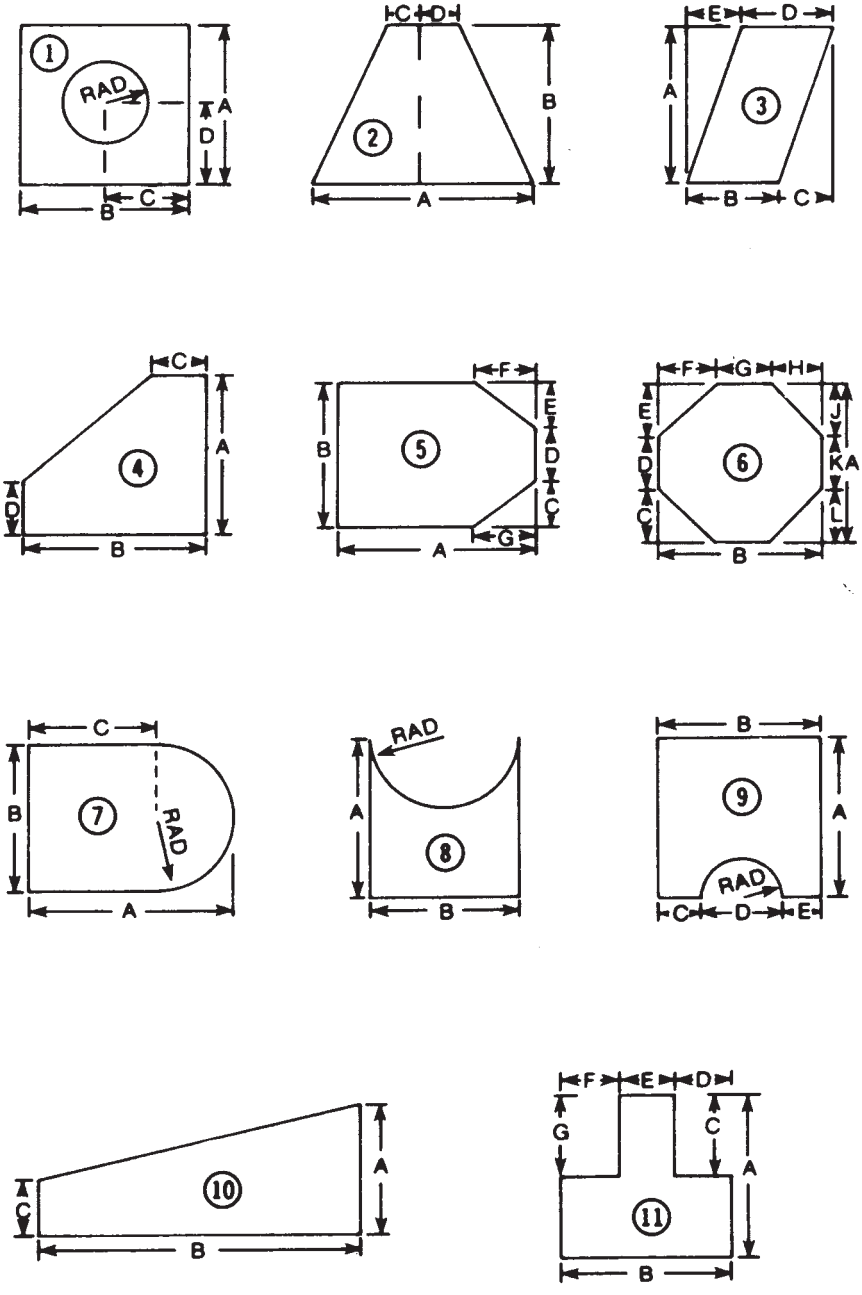
Processing: See pages 95, 96

FARWEST STEEL CORPORATION

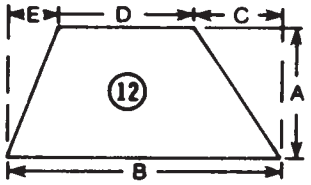
A.S.A. PIPE SCHEDULE

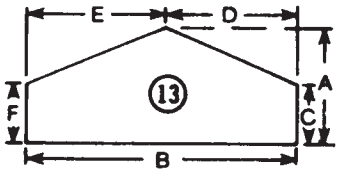
Pipe Size, Inches	O.D. in Inches	5		10		20		30		40		Std.		60		80		E.H.		100		120		140		160		Dbl.	E.H.
		Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.
1/8	.405	.035	.1383	.049	.1863					.068	.2447	.068	.2447			.095	.3145	.095	.3145										
1/4	.540	.049	.2570	.065	.3297					.088	.4248	.088	.4248			.119	.5351	.119	.5351										
3/8	.675	.049	.3276	.065	.4235					.091	.5676	.091	.5676			.126	.7388	.126	.7388										
1/2	.840	.065	.5380	.083	.6710					.109	.8510	.109	.8510			.147	1.088	.147	1.088							.187	1.304	.294	1.714
3/4	1.050	.065	.6838	.083	.8572					.113	1.131	.113	1.131			.154	1.474	.154	1.474							.218	1.937	.308	2.441
1	1.315	.065	.8678	.109	1.404					.133	1.679	.133	1.679			.179	2.172	.179	2.172							.250	2.844	.358	3.659
1 1/4	1.660	.065	1.107	.109	1.806					.140	2.273	.140	2.273			.191	2.997	.191	2.997							.250	3.765	.382	5.214
1 1/2	1.900	.065	1.274	.109	2.085					.145	2.718	.145	2.718			.200	3.631	.200	3.631							.281	4.859	.400	6.408
2	2.375	.065	1.604	.109	2.638					.154	3.653	.154	3.653			.218	5.022	.218	5.022							.343	7.444	.436	9.029
2 1/2	2.875	.083	2.475	.120	3.531					.203	5.793	.203	5.793			.276	7.661	.276	7.661							.375	10.01	.552	13.69
3	3.500	.083	3.029	.120	4.332					.216	7.576	.216	7.576			.300	10.25	.300	10.25							.438	14.32	.600	18.58
3 1/2	4.000	.083	3.472	.120	4.973					.226	9.109	.226	9.109			.318	12.50	.318	12.50									.636	22.85
4	4.500	.083	3.915	.120	5.613					.237	10.79	.237	10.79	.281	12.66	.337	14.98	.337	14.98			.438	19.00			.531	22.51	.674	27.54
4 1/2	5.000											.247	12.53					.355	17.61									.710	32.53
5	5.563	.1096	.349	.134	7.770					.258	14.62	.258	14.62			.375	20.78	.375	20.78			.500	27.04			.625	32.96	.750	38.55
6	6.625	.109	7.585	.134	9.289			.250	17.02	.280	18.97	.280	18.97			.432	28.5	.432	28.57			.562	36.39			.718	45.30	.864	53.16
7	7.625											.301	23.57					.500	38.05									.875	63.08
8	8.625	.109	9.914	.148	13.40	.250	22.36	.277	24.70	.322	28.55	.322	28.55	406	35.64	.500	43.39	.500	43.39	.593	50.87	.718	60.93	.812	67.76	.906	74.69	.875	72.42
9	9.625											.342	33.90					.500	48.72										
10	10.750	.134	15.19	.165	18.70	.250	28.04	.307	34.24	.365	40.48	.365	40.48	.500	54.74	.593	64.33	500	54.74	.718	76.93	.843	89.20	1.000	104.1	1.125	115.6		
11	11.750											.375	45.55					.500	60.07										
12	12.750	.165	22.18	.180	24.20	.250	33.83	.330	43.77	.406	53.53	.375	49.56	.562	73.15	.687	88.51	.500	65.42	.843	107.2	1.000	125.5	1.125	139.7	1.312	160.3		
14	14.000			.250	36.71	.312	45.68	.375	54.57	.438	63.37	.375	54.57	.593	84.91	.750	106.1	.500	72.09	.937	130.7	1.093	150.7	1.250	170.2	1.406	189.1		
16	16.000			.250	42.05	.312	52.36	.375	62.58	.500	82.77	.375	62.58	.656	107.5	.843	136.5	.500	82.77	1.031	164.8	1.218	192.3	1.437	223.5	1.593	245.1		
18	18.000			.250	47.39	.312	59.03	.437	82.06	.562	104.8	.375	70.59	.750	138.2	.937	170.8	.500	93.45	1.156	208.0	1.375	244.1	1.562	274.2	1.781	308.5		
20	20.000			.250	52.73	.375	78.60	.500	104.1	.593	122.9	.375	78.60	.812	166.4	1.031	208.9	.500	104.1	1.280	256.1	1.500	296.4	1.750	341.1	1.968	379.0		
24	24.000			.250	63.41	.375	94.62	.562	140.8	.687	171.2	375	94.62	.968	238.1	1.218	296.4	.500	125.5	1.531	367.4	1.812	429.4	2.062	483.1	2.343	541.9		

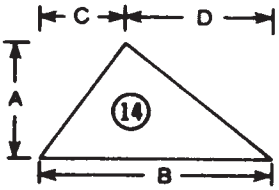
TELEPHONE ORDER METHOD FOR PLATE PATTERN CUTTING

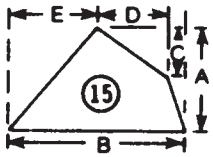


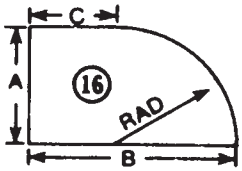
TELEPHONE ORDER METHOD FOR PLATE PATTERN CUTTING

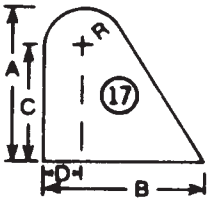


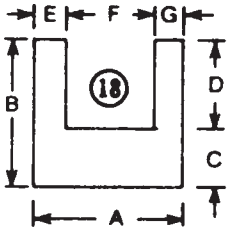


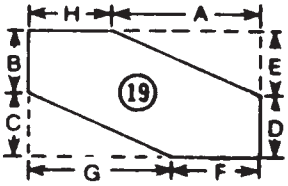


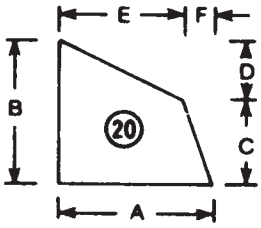


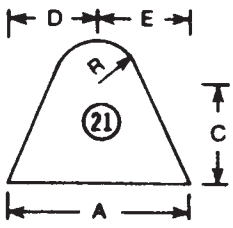




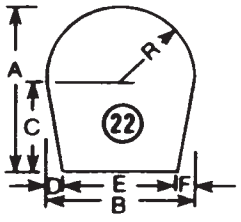


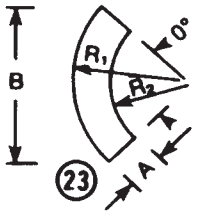


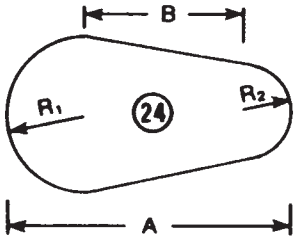


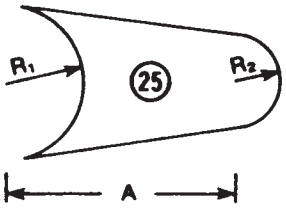


TELEPHONE ORDER METHOD FOR PLATE PATTERN CUTTING

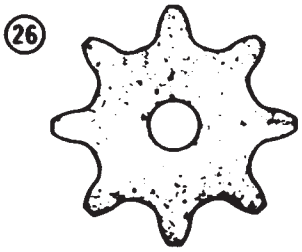




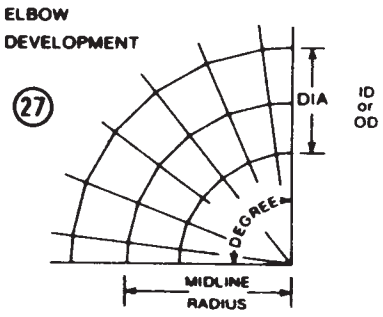


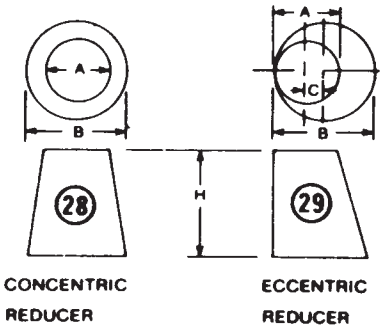


1. CHAIN OR SPROCKET NO
2. PITCH AND ROLL DIA.
3. LENGTH THROUGH BORE

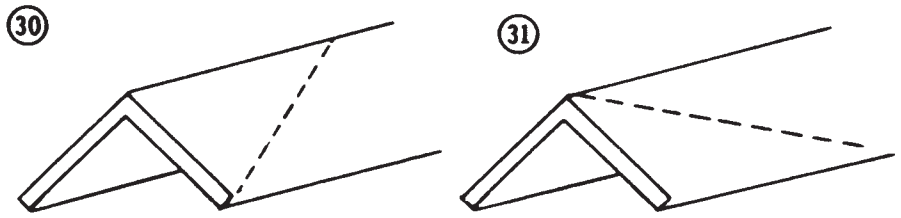


4. HUB OD
5. BORE DIAMETER
6. SPROCKET FACE

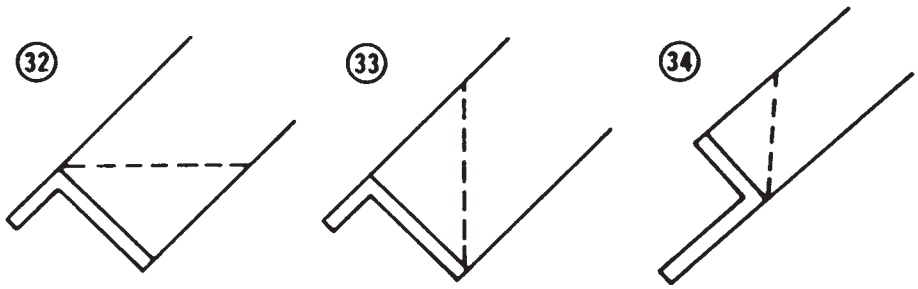




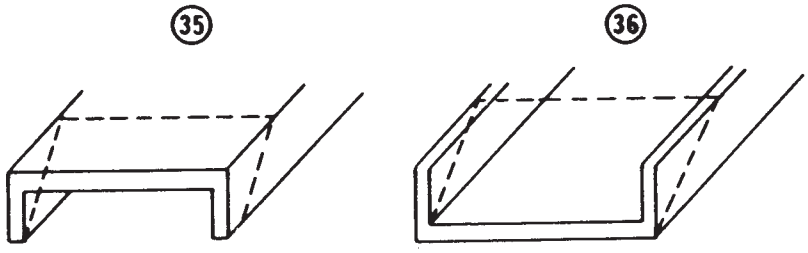
TELEPHONE ORDER METHOD FOR SAW CUTTING



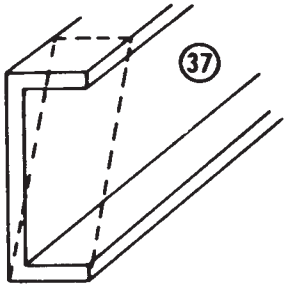
EQUAL LEG ANGLE



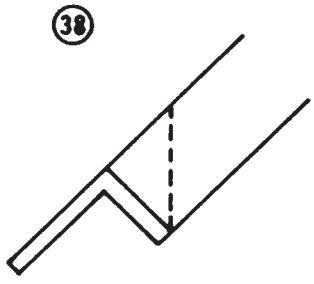
UNEQUAL LEG ANGLE



CHANNEL

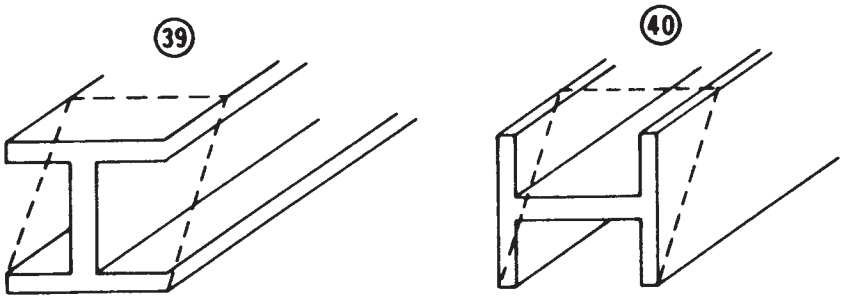


CHANNEL

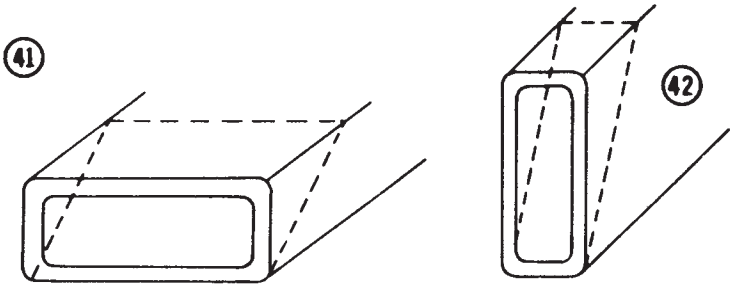


UNEQUAL LEG ANGLE

TELEPHONE ORDER METHOD FOR SAW CUTTING

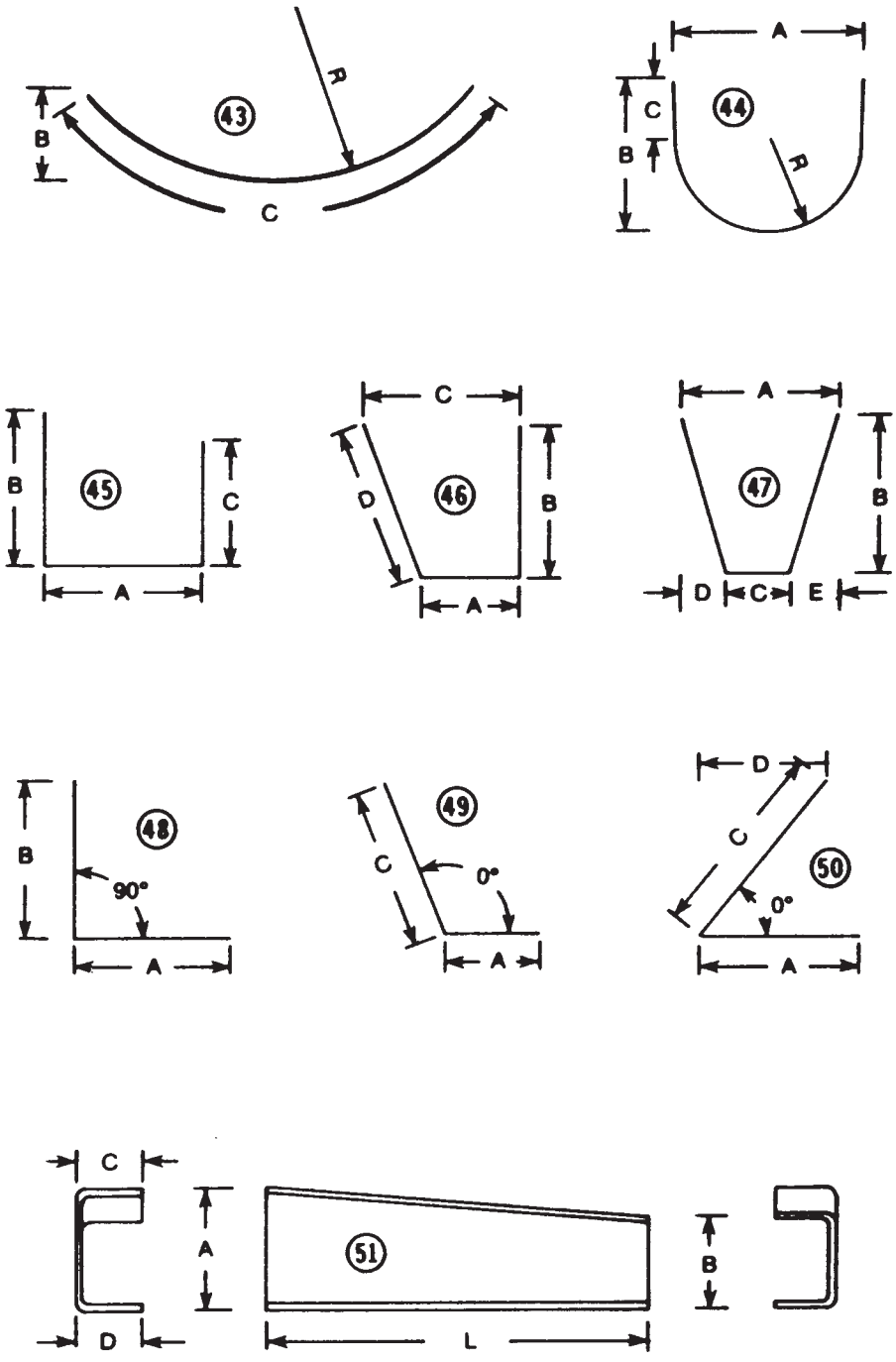


W F OR I BEAM



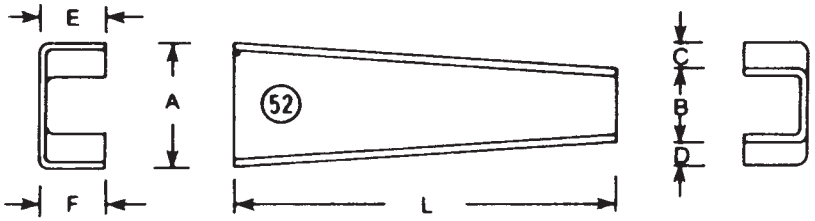
RECTANGULAR TUBE

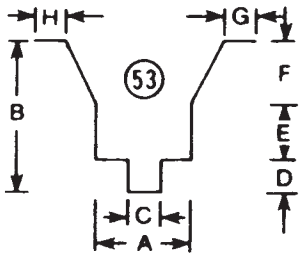
TELEPHONE ORDER METHOD FOR FORMING

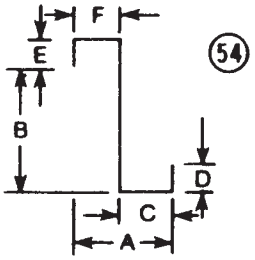


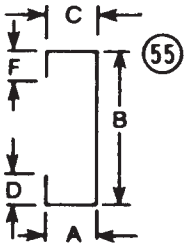
Note: Dimension should be given as I.D.

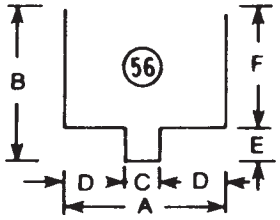
TELEPHONE ORDER METHOD FOR FORMING

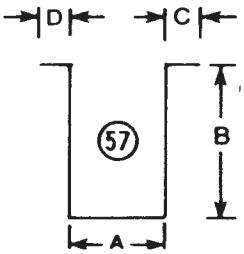


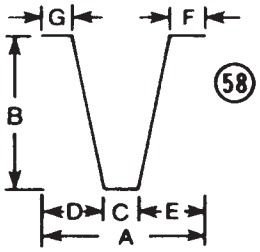


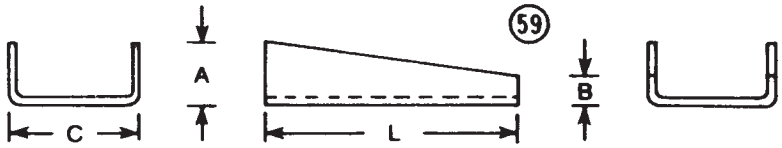






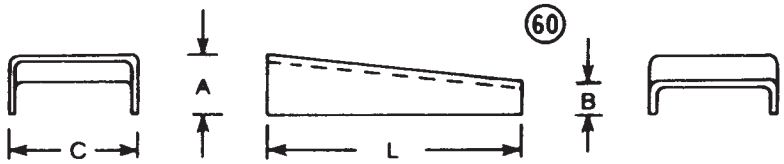


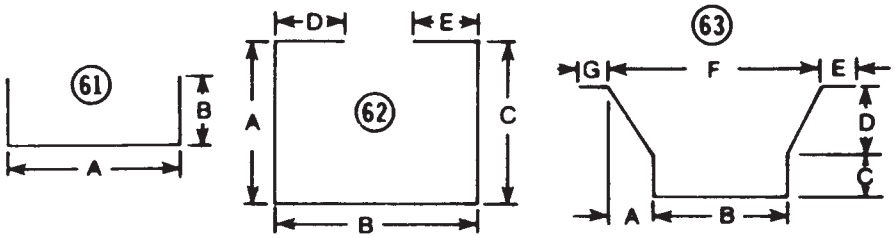




Note: Dimension should be given as I.D.

TELEPHONE ORDER METHOD FOR FORMING





Note: Dimension should be given as I.D.

TELEPHONE ORDER METHOD FOR ROLLING

TEES

64 STEM OUT
Specify inside diameter

STEM IN
Specify outside diameter
65

STEM UP
66 Specify dia. of stem C/L

BEAMS

67 EZ WAY
Specify dia. of web C/L

HARD WAY
68 Specify I.D. or O.D.

ANGLES

69 LEG OUT
Specify inside diameter and, if unequal, which leg is out

70 LEG IN
Specify outside diameter and, if unequal, which leg is in

71 HEEL OUT
Specify inside diameter

ANGLES

72 HEEL IN
Specify outside diameter

LEG OUT

LEG IN

BOTH LEGS OUT

BOTH LEGS IN

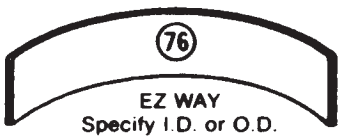
CHANNELS

73 EZ WAY, FLANGES OUT
Specify inside diameter

74 EZ WAY, FLANGES IN
Specify outside diameter

HARD WAY OF WEB
75 Specify I.D. or O.D.

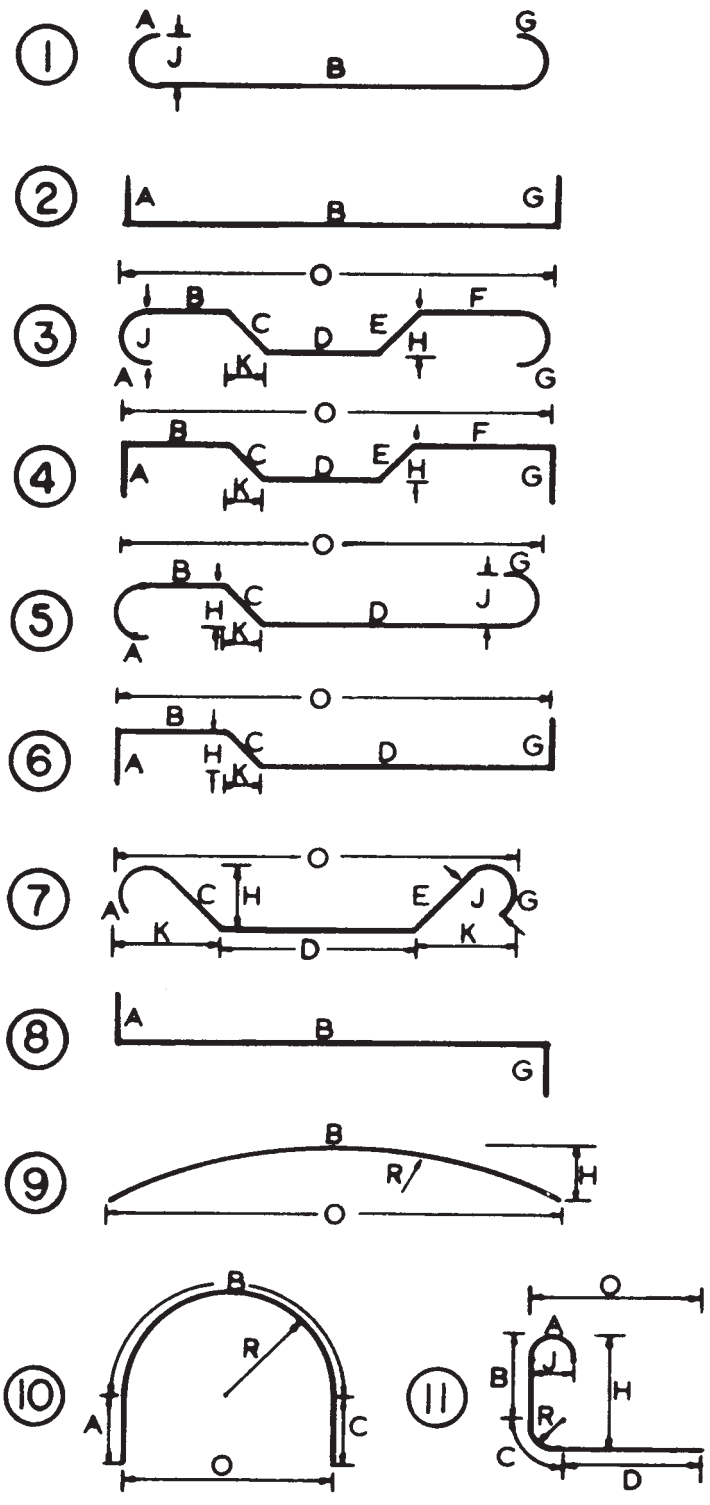
BARS



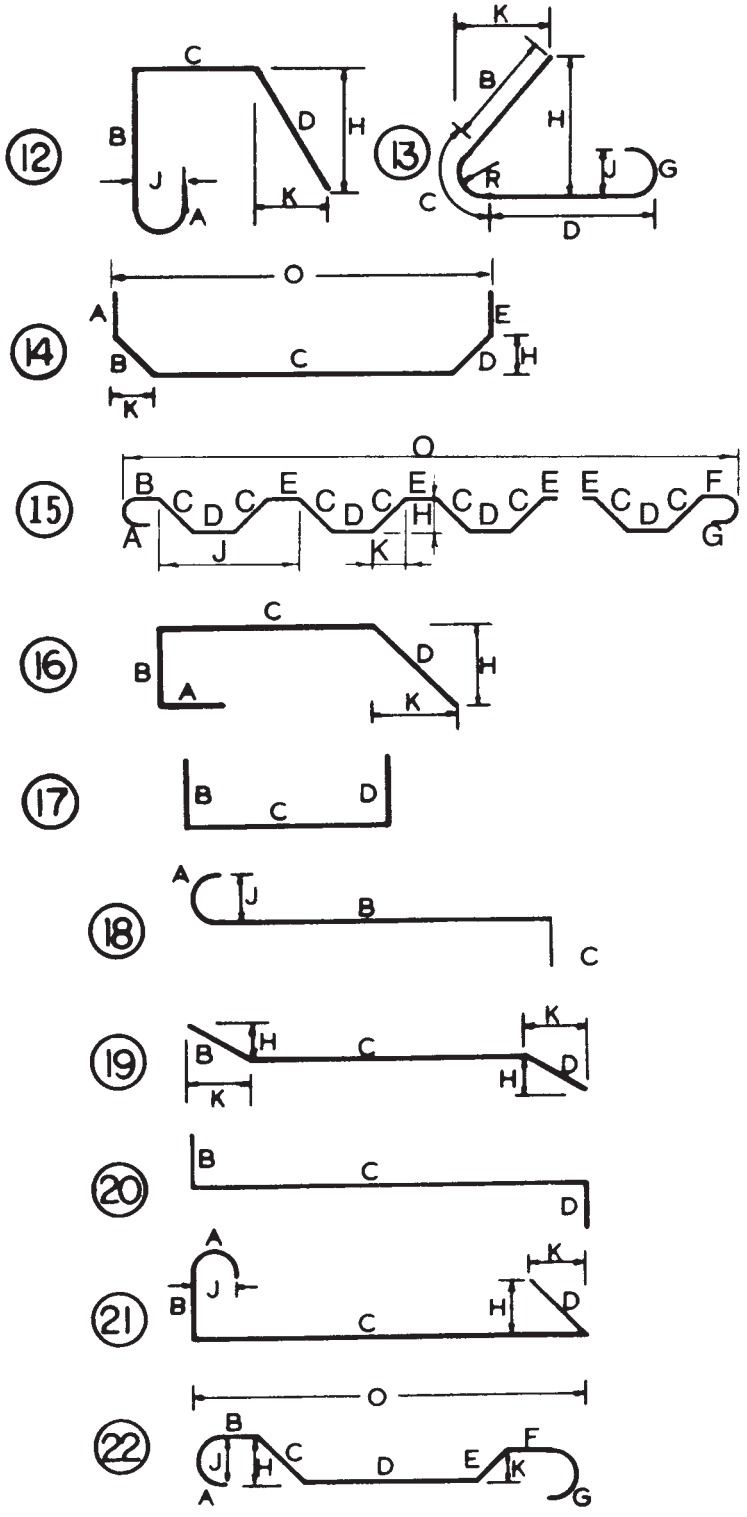
76 EZ WAY
Specify I.D. or O.D.

HARD WAY
77 Specify I.D. or O.D.

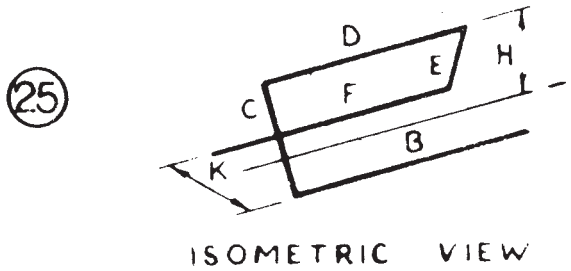
TELEPHONE ORDER METHOD FOR BAR BENDING

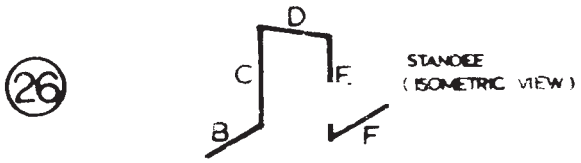


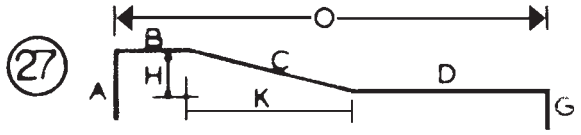
TELEPHONE ORDER METHOD FOR BAR BENDING

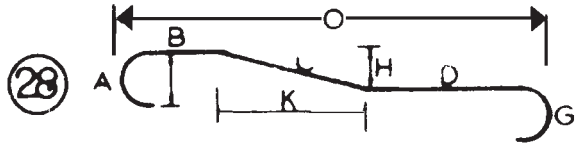


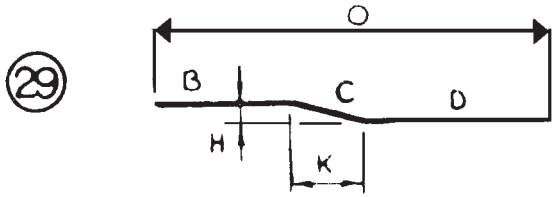
TELEPHONE ORDER METHOD FOR BAR BENDING

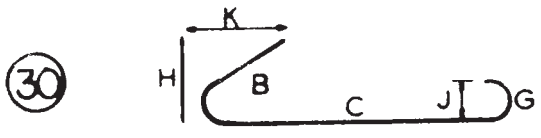


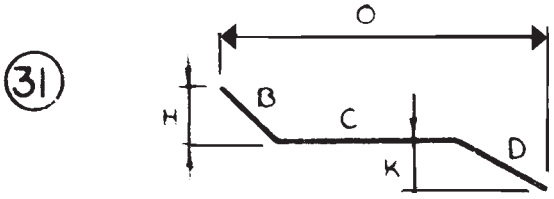




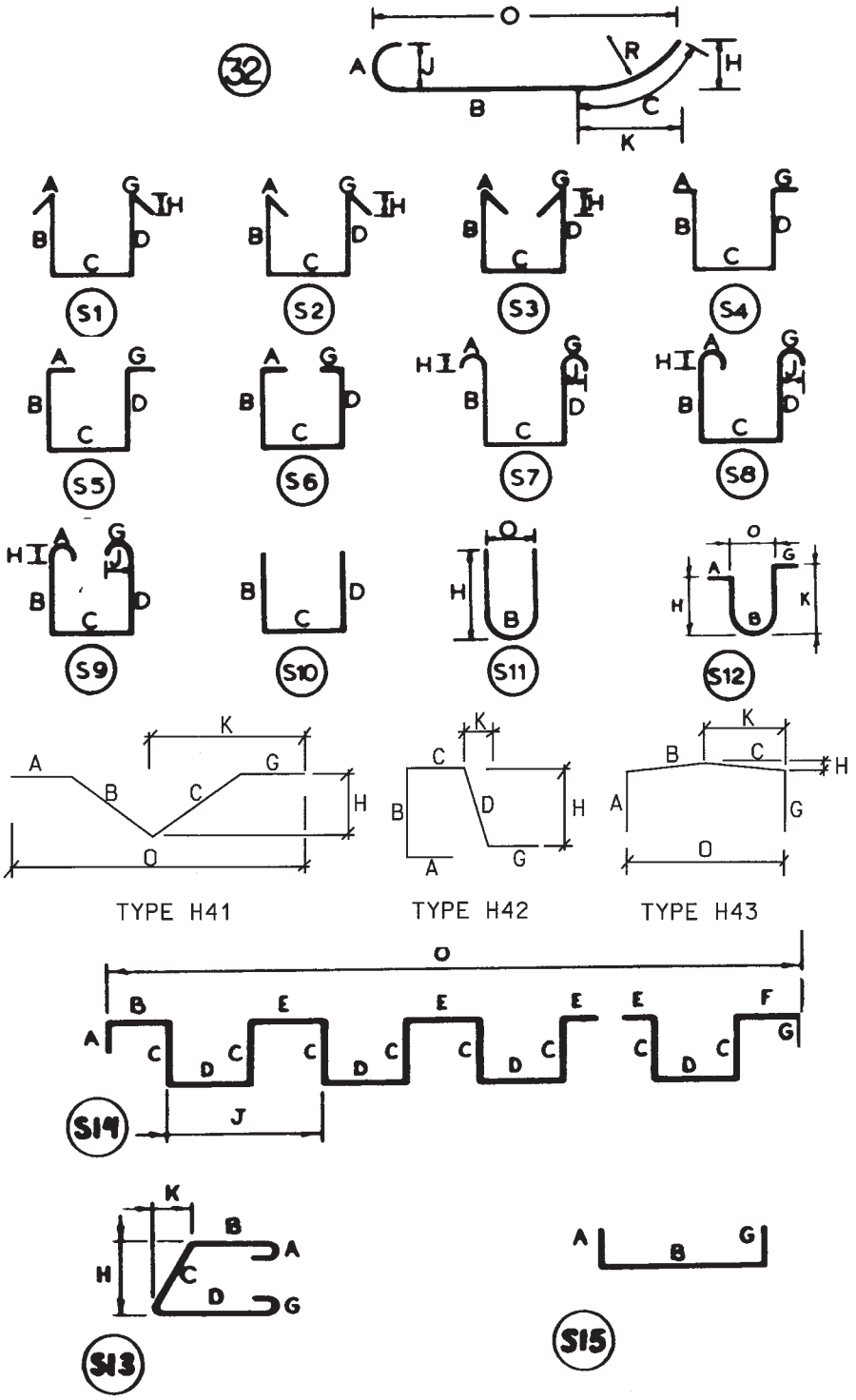




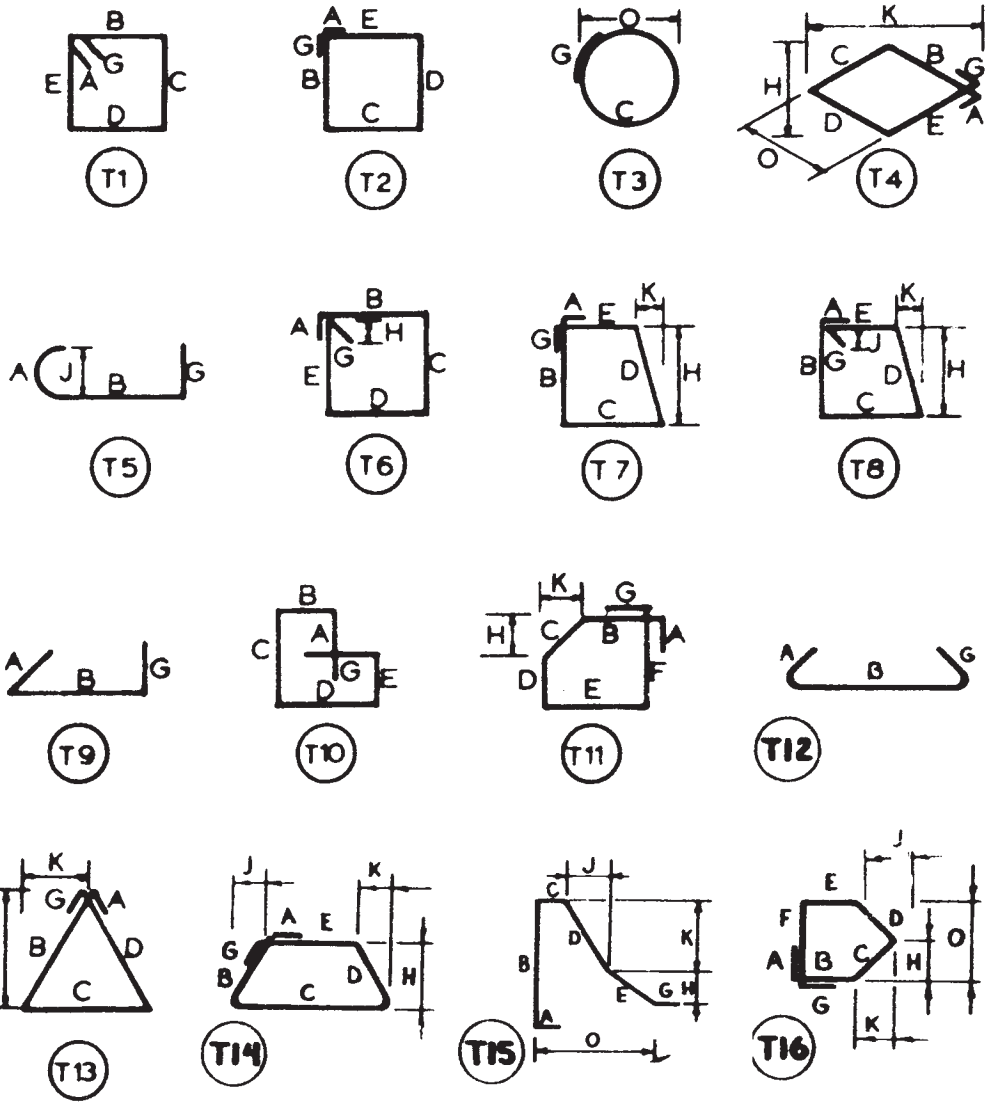


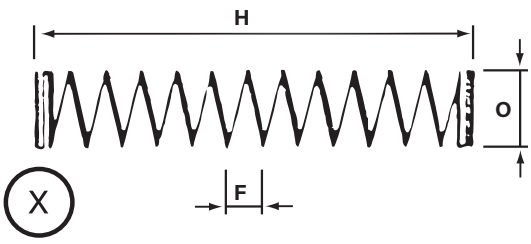


TELEPHONE ORDER METHOD FOR BAR BENDING



TELEPHONE ORDER METHOD FOR BAR BENDING





SPIRAL NOTES:

J = TURNS AT 'F' SPACING

K = EXTRA TURNS (HALF T. & B.)

(XL) PLAIN SPIRAL WITH SPACERS LOOSE.

(XM) PLAIN SPIRAL WITH SPACERS MOUNTED.

FRACTION AND DECIMAL CHART

1/64	.015625	33/64	.515625
1/32	.03125	17/32	.53125
3/64	.046875	35/64	.546875
1/16	.0625	9/16	.5625
5/64	.078125	37/64	.578125
3/32	.09375	19/32	.59375
7/64	.109375	39/64	.609375
1/8	.125	5/8	.625
9/64	.140625	41/64	.640625
5/32	.15625	21/32	.65625
11/64	.171875	43/64	.671875
3/16	.1875	11/16	.6875
13/64	.203125	45/64	.703125
7/32	.21875	23/32	.71875
15/64	.234375	47/64	.734375
1/4	.250	3/4	.750
17/64	.265625	49/64	.765625
9/32	.28125	25/32	.78125
19/64	.296875	51/64	.796875
5/16	.3125	13/16	.8125
21/64	.328125	53/64	.828125
11/32	.34375	27/32	.84375
23/64	.359375	55/64	.859375
3/8	.375	7/8	.875
25/64	.390625	57/64	.890625
13/32	.40625	29/32	.90625
27/64	.421875	59/64	.921875
7/16	.4375	15/16	.9375
29/64	.453125	61/64	.953125
15/32	.46875	31/32	.96875
31/64	.484375	63/64	.984375
1/2	.500	1	1.000

CONVERTING INCHES INTO DECIMALS OF A FOOT

Inches	Decimal of a Ft.	Inches	Decimal of a Ft.	Inches	Decimal of a Ft.	Inches	Decimal of a Ft.
0	.000000	3″	.250000	6″	.500000	9″	.750000
1/16	.005208	1/16	.255208	1/16	.505208	1/16	.755208
1/8	.010416	1/8	.260416	1/8	.510416	1/8	.760416
3/16	.015625	3/16	.265625	3/16	.515625	3/16	.765625
1/4	.020833	1/4	.270833	1/4	.520833	1/4	.770833
5/16	.026042	5/16	.276042	5/16	.526042	5/16	.776042
3/8	.031250	3/8	.281250	3/8	.531250	3/8	.781250
7/16	.036458	7/16	.286458	7/16	.536458	7/16	.786458
1/2	.041666	1/2	.291666	1/2	.541666	1/2	.791666
9/16	.046875	9/16	.296875	9/16	.546875	9/16	.796875
5/8	.052083	5/8	.302083	5/8	.552083	5/8	.802083
11/16	.057292	11/16	.307292	11/16	.557292	11/16	.807292
3/4	.062500	3/4	.312500	3/4	.562500	3/4	.812500
13/16	.067708	13/16	.317708	13/16	.567708	13/16	.817708
7/8	.072916	7/8	.322916	7/8	.572916	7/8	.822916
15/16	.078125	15/16	.328125	15/16	.578125	15/16	.828125
1″	.083333	4″	.333333	7″	.583333	10″	.833333
1/16	.088542	1/16	.338542	1/16	.588542	1/16	.838542
1/8	.093750	1/8	.343750	1/8	.593750	1/8	.843750
3/16	.098958	3/16	.348958	3/16	.598958	3/16	.848958
1/4	.104166	1/4	.354166	1/4	.604166	1/4	.854166
5/16	.109375	5/16	.359375	5/16	.609375	5/16	.859375
3/8	.114583	3/8	.364583	3/8	.614583	3/8	.864583
7/16	.119792	7/16	.369792	7/16	.619792	7/16	.869792
1/2	.125000	1/2	.375000	1/2	.625000	1/2	.875000
9/16	.130208	9/16	.380208	9/16	.630208	9/16	.880208
5/8	.135416	5/8	.385416	5/8	.635416	5/8	.885416
11/16	.140625	11/16	.390625	11/16	.640625	11/16	.890625
3/4	.145833	3/4	.395833	3/4	.645833	3/4	.895833
13/16	.151042	13/16	.401042	13/16	.651042	13/16	.901042
7/8	.156250	7/8	.406250	7/8	.656250	7/8	.906250
15/16	.161458	15/16	.411458	15/16	.661458	15/16	.911458
2″	.166666	5″	.416666	8″	.666666	11″	.916666
1/16	.171875	1/16	.421875	1/16	.671875	1/16	.921875
1/8	.177083	1/8	.427083	1/8	.677083	1/8	.927083
3/16	.182292	3/16	.432292	3/16	.682292	3/16	.932292
1/4	.187500	1/4	.437500	1/4	.687500	1/4	.937500
5/16	.192708	5/16	.442708	5/16	.692708	5/16	.942708
3/8	.197906	3/8	.447916	3/8	.697916	3/8	.947916
7/16	.203175	7/16	.453125	7/16	.703125	7/16	.953125
1/2	.208333	1/2	.458333	1/2	.708323	1/2	.958333
9/16	.213542	9/16	.463542	9/16	.713542	9/16	.963542
5/8	.218750	5/8	.468750	5/8	.718750	5/8	.968750
11/16	.223958	11/16	.473958	11/16	.723958	11/16	.973958
3/4	.229166	3/4	.479166	3/4	.729166	3/4	.979166
13/16	.234375	13/16	.484375	13/16	.734375	13/16	.984375
7/8	.239583	7/8	.489583	7/8	.739583	7/8	.989583
15/16	.244792	15/16	.494792	15/16	.744792	15/16	.994792

SERVICES

HIGH DEFINITION CUTTING

Farwest's HyDefinition Plasma Profiling System is designed to provide customers shorter lead times, increased capacity and larger part sizes while lowering part costs.

CONTOUR HIGH DEFINITION BEVELING

FLAME CUTTING

Oxy Fuel cutting machines enable Farwest Steel to offer a broad range of processed plate products.

Farwest stocks up to 12" thick, with equipment capable of cutting a single piece 83' long or multiple parts utilizing a 9 torch configuration.

ZINC POWDER MARKING

F/C SPROCKETS

CUT-TO-LENGTH PLATE AND SHEET

- 24g - 16g--- 36" - 60" wide
- 14g - 11g--- 36" - 72" wide
- 10g - ½"--- 36" - 96" wide

(continued)

PLASMA PUNCH WITH SERVO DRILL

The CNC programmable Whitney Plasma Punch Fabricating System features a 75-ton hydraulic punch, the Truecut Plasma Cutting System, and a servo drill with tapping capabilities.

SAWCUTTING—MITER OR SQUARE

Square or Miter cutting with a 60° tilt capability.

TUBE AND STRUCTURAL LASER PROCESSING

Laser processing of tube, pipe, bar, shapes, custom shapes and extrusions is a cost-saving specialty of Farwest Steel.

3-D Laser Processing replaces multiple operations such as sawing, grinding, machining, drilling and punching with one operation.

FLAT LASER CUTTING

With cutting envelope of 13′ x 89′.

AUTOMATED DESLAG & EDGE CONDITIONING

ADVANCED PROCESSING

- Forming (up to 54′)
- Welding (including robotic)
- Kitting

PARTS STOCKING PROGRAM

On qualifying parts. Please inquire with your salesperson.

ONLINE BUYING PORTAL

Conversion Factors

To Metric	To Imperial
1/8 inch = 3.175 mm	
1 inch = 25.4 mm	1 mm = 0.0394 inches
1 foot = 304.8 mm	1 meter = 3.2808 feet
1000 $ft.^2$ = 92.903 m^2	100 m^2 = 1076.39 ft^2
1000 $ft.^3$ = 28.317 m^3	10 m^3 = 353.14 ft^3
1000 gal. = 3.784 m^3	10 m^3 = 2641.73 gal.
1 pound = 0.4536 kg	1 kg = 2.2046 pounds
1 psf = 4.88243 kg/m^2	10 kg/m^2 = 2.048 psf
1 pcf = 16.019 kg/m^3	10 kg/m^3 = 0.624 pcf
short ton = 907.18 kg (2000 lbs.)	0.90718 = 2000 pounds tonne
long ton = 1016 kg (2240 lbs.)	1 tonne = 2204.6 pounds
1000 psi = 6.8948 MPa	1 MPa = 145.0368 psi
Newton (N) = $kg{\cdot}m/s^2$ = kilograms x 9.80665 Pascal (Pa) = N/m^2	

Plate Weight Calculation

T x W x L x .2836 = Weight

Sheet Weight Calculation

T x W x L x .2904 = Weight