

STRUCTURAL SECTIONS

Structural sections (also called shapes) is the general term given to rolled flanged sections having at least one dimension of their cross section 3 inches or greater which are widely used in the construction of bridges, buildings, equipment, ships and various construction applications. They are furnished in I-beams, channels, H-beams, columns, standard beams, light beams, joists, stanchions, bearing piles and certain tees. In addition Special Sections are produced that are designed for specialized applications and have variations from the dimensions or weights of regular sections.

Sizes listed are approved standard sizes, although instead of listing all approved sizes, the table shows only those generally used in the West.

Weldability: These shapes can be welded by all welding processes and design and thickness of material determines the grade and size of welding rod to be used.

A.S.T.M. A-36 ANALYSIS (Typical)

CARBON	PHOSPHOROUS	SULPHUR
.15/.26	.04	.050

A.S.T.M. A-36 MECHANICAL PROPERTIES (Average)

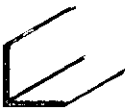
TENSILE STRENGTH	YIELD STRENGTH	ELONGATION
P. S. I. (MIN.)	P. S. I. (MIN.)	% IN 8"
58,000-80,000	36,000	20-23

M-1020 ANALYSIS (Typical)

CARBON	MANGANESE	PHOSPHOROUS	SULPHUR
.17/.24	.25/.60	.04	.050

M-1020 MECHANICAL PROPERTIES (Average)

TENSILE STRENGTH	YIELD STRENGTH	ELONGATION
P. S. I. (MIN.)	P. S. I. (MIN.)	% IN 2"
65,000	48,000	36



ANGLES BAR SIZE

SIZE IN INCHES	WEIGHT IN POUNDS		
	FOOT	20'	30'
1/2 x 1/2 x 1/8	.38	7.6	11.4
5/8 x 5/8 x 1/8	.48	9.6	14.4
3/4 x 3/4 x 1/8	.59	11.8	17.7
7/8 x 7/8 x 1/8	.7	14.	21.
1 x 1 x 1/8	.8	16.	24.
3/16	1.16	23.2	34.8
1/4	1.49	29.8	44.7
1-1/4 x 1-1/4 x 1/8	1.01	20.2	30.3
3/16	1.48	29.6	44.4
1/4	1.92	38.4	57.6
1-1/2 x 1-1/2 x 1/8	1.23	24.6	36.9
3/16	1.8	36.	54.
1/4	2.34	46.8	70.2
5/16	2.86	57.2	85.8
3/8	3.35	67.	100.5
1-3/4 x 1-3/4 x 1/8	1.44	28.8	43.2
3/16	2.12	42.4	63.6
1/4	2.77	55.4	83.1
2 x 1-1/2 x 1/8	1.44	28.8	43.2
3/16	2.12	42.4	63.6
1/4	2.77	55.4	83.1
2 x 2 x 1/8	1.65	33.	49.5
3/16	2.44	48.8	73.2
1/4	3.19	63.8	95.7
5/16	3.92	78.4	117.6
3/8	4.7	94.	141.
2-1/2 x 1-1/2 x 3/16	2.44	48.8	73.2
1/4	3.19	63.8	95.7
5/16	3.92	78.4	117.6
2-1/2 x 2 x 3/16	2.75	55.	82.5
1/4	3.62	72.4	108.6
5/16	4.5	90.	135.
3/8	5.3	106.	159.

ANGLES BAR SIZE (continued)

SIZE IN INCHES	WEIGHT IN POUNDS		
	FOOT	20'	30'
2-1/2 x 2-1/2 x 3/16	3.07	61.4	92.1
1/4	4.1	82.	123.
5/16	5.	100.	150.
3/8	5.9	118.	177.
1/2	7.7	154.	231.

ANGLES STRUCTURAL

SIZE IN INCHES	WEIGHT IN POUNDS			
	FOOT	20'	30'	40'
3 x 2 x 3/16	3.07	61.4	92.	123.
1/4	4.1	82.	123.	164.
5/16	5.	100.	150.	200.
3/8	5.9	118.	177.	236.
1/2	7.7	154.	231.	308.
3 x 2-1/2 x 3/16	3.4	68.	102.	136.
1/4	4.5	90.	135.	180.
5/16	5.6	112.	168.	224.
3/8	6.6	132.	198.	264.
1/2	8.5	170.	255.	340.
3 x 3 x 3/16	3.7	74.	111.	148.
1/4	4.9	98.	147.	196.
5/16	6.1	122.	183.	244.
3/8	7.2	144.	216.	288.
1/2	9.4	188.	282.	376.
3-1/2 x 2-1/2 x 1/4	4.9	98.	147.	196.
5/16	6.1	122.	183.	244.
3/8	7.2	144.	216.	288.
1/2	9.4	188.	282.	376.
3-1/2 x 3 x 1/4	5.4	108.	162.	216.
5/16	6.6	132.	198.	264.
3/8	7.9	158.	237.	316.
1/2	10.2	204.	306.	408.
3-1/2 x 3-1/2 x 1/4	5.8	116.	174.	232.
5/16	7.2	144.	216.	288.
3/8	8.5	170.	255.	340.
1/2	11.1	222.	333.	444.
4 x 3 x 1/4	5.8	116.	174.	232.
5/16	7.2	144.	216.	288.
3/8	8.5	170.	255.	340.
1/2	11.1	222.	333.	444.
5/8	13.6	272.	408.	544.
4 x 3-1/2 x 1/4	6.2	124.	186.	248.
5/16	7.7	154.	231.	308.
3/8	9.1	182.	273.	364.
1/2	11.9	238.	357.	476.
4 x 4 x 1/4	6.6	132.	198.	264.
5/16	8.2	164.	246.	328.
3/8	9.8	196.	294.	392.
7/16	11.3	226.	339.	452.
1/2	12.8	256.	384.	512.
5/8	15.7	314.	471.	628.
3/4	18.5	370.	555.	740.
5 x 3 x 1/4	6.6	132.	198.	264.
5/16	8.2	164.	246.	328.
3/8	9.8	196.	294.	392.
1/2	12.8	256.	384.	512.
5 x 3-1/2 x 1/4	7.	140.	210.	280.
5/16	8.7	174.	261.	358.
3/8	10.4	208.	312.	416.
1/2	13.6	272.	408.	544.
5/8	16.8	336.	504.	672.
3/4	19.8	396.	594.	792.



ANGLES STRUCTURAL (continued)

SIZE IN INCHES			WEIGHT IN POUNDS			
			FOOT	20'	30'	40'
5	x 5	x 5/16	10.3	206.	309.	412.
		3/8	12.3	246.	369.	492.
		1/2	16.2	324.	486.	648.
		5/8	20.	400.	600.	800.
		3/4	23.6	472.	708.	944.
6	x 3-1/2	x 5/16	9.8	196.	294.	392.
		3/8	11.7	234.	351.	468.
		1/2	15.3	306.	459.	612.
6	x 4	x 5/16	10.3	206.	309.	412.
		3/8	12.3	246.	369.	492.
		1/2	16.2	324.	486.	648.
		5/8	20.	400.	600.	800.
		3/4	23.6	472.	708.	944.
6	x 6	x 5/16	12.6	252.	378.	504.
		3/8	14.9	298.	447.	596.
		1/2	19.6	392.	588.	784.
		5/8	24.2	484.	726.	968.
		3/4	28.7	574.	861.	1148.
1	37.4	748.	1122.	1496.		
7	x 4	x 3/8	13.6	272.	408.	544.
		1/2	17.9	358.	537.	716.
		5/8	22.1	442.	663.	884.
8	x 4	x 1/2	19.6	392.	588.	784.
		5/8	24.2	484.	726.	968.
		3/4	28.7	574.	861.	1148.
8	x 6	x 1/2	23.	460.	690.	920.
		5/8	28.5	570.	855.	1140.
		3/4	33.8	676.	1014.	1352.
		1	44.2	884.	1326.	1768.
8	x 8	x 1/2	26.4	528.	792.	1056.
		5/8	32.7	654.	981.	1308.
		3/4	38.9	778.	1167.	1556.
		1	51.	1020.	1530.	2040.

STRUCTURAL STEEL CHANNELS

AISI DESIGNATION	WEB THICK.	FLANGE WIDTH	WEIGHT IN POUNDS		
			20'	30'	40'
C3	x 4.1	.17	82.	123.	164.
	x 5.	.258	100.	150.	200.
	x 6.	.356	120.	180.	240.
C4	x 5.4	.18	108.	162.	216.
	x 6.25	.247	125.	187.5	250.
	x 7.25	.32	145.	217.5	290.
C5	x 6.7	.19	134.	201.	268.
	x 9.	.325	180.	270.	360.
C6	x 8.2	.2	164.	246.	328.
	x 10.5	.314	210.	315.	420.
	x 13.	.437	260.	390.	520.
C7	x 9.8	.21	196.	294.	392.
	x 12.25	.314	245.	367.5	490.
	x 14.75	.419	295.	442.5	590.
C8	x 11.5	.22	230.	345.	460.
	x 13.75	.303	275.	412.5	550.
	x 18.75	.487	375.	562.5	750.
C9	x 13.4	.23	268.	402.	536.
	x 15.	.285	300.	450.	600.
	x 20.	.448	400.	600.	800.
C10	x 15.3	.24	306.	459.	612.
	x 20.	.379	400.	600.	800.
	x 25.	.526	500.	750.	1000.
	x 30.	.673	600.	900.	1200.
C12	x 20.7	.28	414.	621.	828.
	x 25.	.387	500.	750.	1000.
	x 30.	.51	600.	900.	1200.
C15	x 33.9	.4	678.	1017.	1356.
	x 40.	.52	800.	1200.	1600.
	x 50.	.716	1000.	1500.	2000.



BAR SIZE CHANNELS

SIZE IN INCHES			WEIGHT IN POUNDS		
			FOOT	20'	30'
3/4 x 3/8 x 1/8	.54	10.8	16.2		
7/8 x 7/16 x 1/8	.69	13.8	20.7		
1 x 3/8 x 1/8	.68	13.6	20.4		
1 x 1/2 x 1/8	.8	16.	24.		
1-1/4 x 1/2 x 1/8	1.	20.	30.		
1-1/2 x 1/2 x 1/8	1.12	22.4	33.6		
1-1/2 x 9/16 x 3/16	1.44	28.8	43.2		
1-1/2 x 3/4 x 1/8	1.17	23.4	35.1		
1-3/4 x 1/2 x 3/16	1.55	31.	46.5		
2 x 1/2 x 1/8	1.34	26.8	40.2		
2 x 9/16 x 3/16	1.76	35.2	52.8		
2 x 1 x 1/8	1.78	35.6	53.4		
2 x 1 x 3/16	2.57	51.4	77.1		
2-1/2 x 5/8 x 3/16	2.27	45.4	68.1		

JR. CHANNELS

AISI DESIGNATION	WEIGHT IN POUNDS		
	FOOT	20'	40'
MC10 x 6.5	6.5	130.	260.
MC10 x 8.4	8.4	168.	336.
MC12 x 10.6	10.6	212.	424.

SHIP & CAR CHANNELS

AISI DESIGNATION	FLANGE WIDTH	WEB THICK.	WEIGHT IN POUNDS		
			20'	30'	40'
MC3 x 7.1	1.938	.312	142.	213.	284.
MC4 x 13.8	2.5	.5	276.	414.	552.
MC6 x 12.	2.5	.313	240.	360.	480.
		.34	306.	459.	612.
		.375	326.	489.	652.
		.375	360.	540.	720.
MC7 x 17.6	3.	.375	352.	528.	704.
		.35	382.	573.	764.
MC8 x 18.7	2.975	.35	374.	561.	748.
		.4	400.	600.	800.
		.375	428.	642.	856.
		.425	456.	684.	912.
MC9 x 23.9	3.45	.4	478.	717.	956.
		.45	508.	762.	1016.
MC10 x 21.9	3.45	.325	438.	657.	876.
		.375	498.	747.	996.
		.425	506.	759.	1012.
		.425	570.	855.	1140.
		.575	672.	1008.	1344.

SHIP & CAR CHANNELS

(Continued)

SIZE (In.)	WEIGHT FOOT	FLANGE WIDTH	WEB THICK.	WEIGHT IN POUNDS		
				20'	30'	40'
MC12	x 30.9	3.45	.45	618.	927.	1236.
	x 32.9	3.5	.5	658.	987.	1316.
	x 35.	3.767	.467	700.	1050.	1400.
	x 37.	3.6	.6	740.	1110.	1480.
	x 40.	3.89	.59	800.	1200.	1600.
	x 45.	4.	.7	900.	1350.	1800.
	x 50.	4.135	.7	1000.	1500.	2000.
MC13	x 31.8	4.	.375	636.	954.	1272.
	x 35.	4.072	.447	700.	1050.	1400.
	x 40.	4.185	.56	800.	1200.	1600.
	x 50.	4.412	.61	1000.	1500.	2000.
MC18	x 42.7	3.95	.45	854.	1281.	1708.
	x 45.8	4.	.5	916.	1374.	1832.
	x 51.9	4.1	.6	1038.	1557.	2076.
	x 58.	4.2	.72	1160.	1740.	2320.


I BEAMS

AISI DESIGNATION		FLANGE WIDTH	WEB THICK.	WEIGHT IN POUNDS		
				20'	30'	40'
S3	x 5.7	2.33	.17	114.	171.	228.
	x 7.5	2.509	.349	150.	225.	300.
S4	x 7.7	2.66	.19	154.	231.	308.
	x 9.5	2.796	.326	190.	285.	380.
S5	x 10.	3.	.21	200.	300.	400.
	x 14.75	3.284	.494	295.	442.5	590.
S6	x 12.5	3.33	.23	250.	375.	500.
	x 17.25	3.565	.465	345.	517.5	690.
S7	x 15.3	3.66	.25	306.	459.	612.
	x 20.	3.86	.45	400.	600.	800.
S8	x 18.4	4.	.27	368.	552.	736.
	x 23.	4.171	.441	460.	690.	920.
S10	x 25.4	4.66	.31	508.	762.	1016.
	x 35.	4.944	.594	700.	1050.	1400.
S12	x 31.8	5.	.35	636.	954.	1272.
	x 35.	5.078	.428	700.	1050.	1400.
	x 40.8	5.25	.46	816.	1224.	1632.
	x 50.	5.477	.687	1000.	1500.	2000.
S15	x 42.9	5.5	.41	858.	1287.	1716.
	x 50.	5.64	.55	1000.	1500.	2000.
S18	x 54.7	6.	.46	1094.	1641.	2188.
	x 70.	6.251	.711	1400.	2100.	2800.
S20	x 65.4	6.25	.5	1308.	1962.	2616.
	x 75.	6.391	.641	1500.	2250.	3000.
S24	x 79.9	7.	.5	1598.	2397.	3196.
	x 100.	7.247	.747	2000.	3000.	4000.
	x 105.9	7.875	.625	2118.	3177.	4236.

STRUCTURAL TEES

AISI DESIGNATION		SIZE, INCHES			WEIGHT IN POUNDS		
		FLANGE A	STEM B	THICK. C	FOOT	20'	30'
T3	x 6.7	3	x 3	x 5/16	6.7	134.	201.
T3	x 7.8	3	x 3	x 3/8	7.8	156.	234.
T4	x 13.5	4	x 4	x 1/2	13.5	270.	405.


BAR SIZE TEES

SIZE IN INCHES	WEIGHT IN POUNDS		
	FOOT	20'	30'
3/4 x 3/4 x 1/8	.61	12.2	18.3
1 x 1 x 1/8	.85	17.	25.5
1-1/4 x 1-1/4 x 1/8	1.09	21.8	32.7
	1.55	31.	46.5
1-1/2 x 1-1/2 x 3/16	1.9	38.	57.
	2.43	48.6	72.9
2 x 2 x 1/4	3.56	71.2	106.8
2-1/2 x 2-1/2 x 1/4	4.6	92.	138.
	5.5	110.	165.
	6.4	128.	192.

**AISI STANDARD DESIGNATIONS
Structural Shapes**

A designation system for structural shapes has been established by the American Iron and Steel Institute, which has been adopted by steel producers. The AISI Designation is a letter or letters preceding the size and weight per foot of the shape. For example, for a standard structural channel, 3-inch x 4.1 pounds, the AISI Designation would be C3 x 4.1.

A summary of the new designations are as follows:

"W" Shapes—Doubly-symmetric wide flange shapes used as beams or columns whose inside flange surfaces are substantially parallel. A shape having essentially the same nominal weight and dimensions as a "W" shape listed in the tabulation but whose inside flange surfaces are not parallel may be considered a "W" shape having the same nomenclature as the tabulated shape, provided its average flange thickness is essentially the same shape as the flange thickness of the "W" shape.

"S" Shapes—Doubly-symmetric shapes produced in accordance with dimensional standards adopted in 1896 by the Association of American Steel Manufacturers for American Standard beam shapes. The essential part of these standards is that the inside flange surfaces of American Standard beam shapes have approximately 16 2/3% slope.

"M" Shapes—Doubly-symmetric shapes that cannot be classified as "W", "S", or "C" shapes. (Although not included in the standard nomenclature tabulation, bearing piles are doubly-symmetric wide flange shapes whose inside flange surfaces are essentially parallel and whose flange and web have essentially the same thickness.

"C" Shapes—Channels produced in accordance with dimensional standards adopted in 1896 by the Association of American Steel Manufacturers of American Standard channels. The essential part of these standards is the inside flange surfaces of American Standard channels have approximately 16 2/3% slope.

"MC" Shapes—Channels that cannot be classified as "C" shapes.

**Can't Find It? Call us
- We'll Find It For You!**

HOLLOW STRUCTURAL STEEL TUBING

Square and rectangular structural steel tubing offers manufacturers and builders greater strength, less weight, ease and flexibility of fabrication. Typical uses are for beams, trusses, frames, structural members and columns, in truck and trailer frames, agricultural equipment, machinery, buildings, railings, towers, and varied architectural designs. It is cold formed from prime, cleaned sheets and plates and produces a finish suitable for painting or clean and smooth enough for exposed applications.

HOLLOW STRUCTURAL SECTIONS DATA

NOTE: Conforms to chemical and mechanical property requirements of ASTM Specifications A-500 Grade B.

Mechanical Properties

Tensile Strength, psi	- - - - -	58,000 / 80,000
Yield Point, min. psi	- - - - -	46,000

Outside Dimension Tolerance

LARGEST NOMINAL OUTSIDE DIMENSION ACROSS FLATS, INCHES	OUTSIDE TOLERANCE AT ALL SIDES AT CORNER, INCHES
Up to 2-1/2	Plus / Minus .020
Over 2-1/2 to 3-1/2, incl.	Plus / Minus .025
Over 3-1/2 to 5-1/2, incl.	Plus / Minus .030
Over 5-1/2	Plus / Minus 1%

Wall Thickness Tolerance

The tolerance for wall thickness exclusive of the weld area, shall be plus or minus 10% of the nominal wall thickness specified. Wall thickness is to be measured at the center of the flat.

Squareness of Sides

Adjacent sides of Hollow Structural Sections may deviate from 90° by plus or minus one degree.

Straightness Tolerance

The permissible variation for straightness shall be 1/8 inch times the number of feet of total length divided by 5.

Maximum Twist

SPECIFIED DIMENSION OF LONGEST SIDE, INCHES	MAXIMUM TWIST PER 3 FT. OF LENGTH, INCHES
Over 1-1/2 to 2-1/2, incl.	.062
Over 2-1/2 to 4, incl.	.075
Over 4 - to 6, incl.	.087
Over 6 - to 8, incl.	.100
Over 8	.112

Maximum Outside Corner Radii

The radius of any outside corner of the section may not exceed 3 times the nominal wall thickness.

HOLLOW STEEL STRUCTURAL SECTIONS

SQUARES

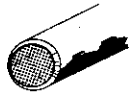
SIZE IN INCHES OUTSIDE DIMENSIONS AND NOMINAL WALL	BILLING WEIGHT PER FOOT	BAR WEIGHT IN POUNDS		
		20'	24'	40'
1/2 x 1/2 x 16 ga.	.385	7.70	9.24	
3/4 x 3/4 x 14 ga.	.753	15.06	18.07	
13 ga.	.846	16.92	20.30	

HOLLOW STEEL STRUCTURAL SECTIONS (continued)

SIZE IN INCHES OUTSIDE DIMENSIONS AND NOMINAL WALL	BILLING WEIGHT PER FOOT	BAR WEIGHT IN POUNDS		
		20'	24'	40'
1 x 1 x 16 ga.	.827	16.54	19.85	
14 ga.	1.035	20.70	24.84	
13 ga.	1.169	23.38	28.06	
11 ga.	1.436	28.72	34.46	
1-1/4 x 1-1/4 x 14 ga.	1.317	26.34	31.61	
13 ga.	1.492	29.84	35.81	
11 ga.	1.844	36.88	44.26	
1-1/2 x 1-1/2 x 14 ga.	1.600	32.00	38.40	
13 ga.	1.815	36.30	43.56	
11 ga.	2.252	45.04	54.05	
1-1/2 x 1-1/2 x 3/16	3.536	(74.26 21' Only)		
2 x 2 x 11 ga.	3.068	61.36	73.63	
3/16	4.49	89.8	179.6	
1/4	5.71	114.2	228.4	
2-1/4 x 2-1/4 x 1/4	7.01	140.2	280.4	
2-1/2 x 2-1/2 x 3/16	5.75	115.	230.	
1/4	7.41	148.2	296.4	
3 x 3 x 11 ga.	4.7	94.	188.	
3/16	7.04	140.8	281.6	
1/4	9.11	182.2	364.4	
3-1/2 x 3-1/2 x 3/16	8.3	166.	332.	
1/4	10.81	216.2	432.4	
4 x 4 x 3/16	9.59	191.8	383.6	
1/4	12.51	250.2	500.4	
5/16	15.33	306.6	613.2	
3/8	18.02	360.4	720.8	
4-1/2 x 4-1/2 x 3/16	10.84	216.8	433.6	
1/4	14.21	284.2	568.4	
5 x 5 x 3/16	12.14	242.8	485.6	
1/4	15.91	318.2	636.4	
5/16	19.58	391.6	783.2	
3/8	23.12	462.4	924.8	
5-1/2 x 5-1/2 x 3/16	13.39	267.8	535.6	
1/4	17.61	352.2	704.4	
5/16	21.69	433.8	867.6	
3/8	25.67	513.4	1026.8	
6 x 6 x 3/16	14.65	293.	586.	
1/4	19.31	386.2	772.4	
5/16	23.83	476.6	953.2	
3/8	28.22	564.4	1128.8	
7 x 7 x 3/16	17.13	342.6	685.2	
1/4	22.71	454.2	908.4	
5/16	28.08	561.6	1123.2	
3/8	33.32	666.4	1332.8	
8 x 8 x 3/16	19.65	393.	786.	
1/4	26.04	520.8	1041.6	
5/16	32.33	646.6	1293.2	
3/8	38.42	768.4	1536.8	



BLACK OR GALVANIZED STEEL PIPE
 LAP WELD, CONTINUOUS WELD, BUTT WELD, ELECTRIC WELD, OR SEAMLESS



STANDARD
 All Weights and Dimensions are Nominal

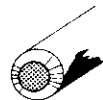
SIZE INCHES	DIA. IN IN.		THICKNESS (Inches)	WEIGHTS IN POUNDS			
	External	Internal		Plain End		Threaded & Cpld.	
				Per Ft.	21' Lgth.	Per Ft.	21' Lgth.
1/8	.405	.269	.068	.24	5.04	.24	5.04
1/4	.54	.364	.088	.42	8.82	.42	8.82
3/8	.675	.493	.091	.57	11.97	.57	11.97
1/2	.84	.622	.109	.85	17.85	.85	17.85
3/4	1.05	.824	.113	1.13	23.73	1.13	23.73
<hr/>							
1	1.315	1.049	.133	1.68	35.28	1.68	35.28
1-1/4	1.66	1.38	.14	2.27	47.67	2.28	47.88
1-1/2	1.9	1.61	.145	2.72	57.12	2.73	57.33
<hr/>							
2	2.375	2.067	.154	3.65	76.65	3.68	77.28
2-1/2	2.875	2.469	.203	5.79	121.59	5.82	122.22
<hr/>							
3	3.5	3.068	.216	7.58	159.18	7.62	160.02
3-1/2	4.	3.548	.226	9.11	191.31	9.2	193.2
<hr/>							
4	4.5	4.026	.237	10.79	226.59	10.89	228.69
<hr/>							
5	5.563	5.047	.258	14.62	307.02	14.81	311.01
<hr/>							
6	6.625	6.065	.28	18.97	398.37	19.18	402.78
<hr/>							
8	8.625	8.071	.277	24.7	518.7	25.55	536.55
8	8.625	7.981	.322	28.55	599.55	29.35	616.35
<hr/>							
10	10.75	10.192	.279	31.2	655.2	32.75	687.75
10	10.75	10.136	.307	34.24	719.04	35.75	750.75
10	10.75	10.02	.365	40.48	850.08	41.85	878.85
<hr/>							
12	12.75	12.09	.33	43.77	919.17	45.45	954.45
12	12.75	12.	.375	49.56	1040.76	51.15	1074.15

BLACK OR GALVANIZED STEEL PIPE
 LAP WELD, CONTINUOUS WELD,
 BUTT WELD, ELECTRIC WELD, OR SEAMLESS



EXTRA STRONG
 All Weights and Dimensions are Nominal

SIZE INCHES	DIA. IN IN.		THICKNESS (Inches)	WT. IN LBS.	
	External	Internal		Plain End	
				Per Ft.	21' Lgth.
1/8	.405	.215	.095	.31	6.51
1/4	.54	.302	.119	.54	11.34
3/8	.675	.423	.126	.74	15.54
1/2	.84	.546	.147	1.09	22.89
3/4	1.05	.742	.154	1.47	30.87
<hr/>					
1	1.315	.957	.179	2.17	45.57
1-1/4	1.66	1.278	.191	3.	63.
1-1/2	1.9	1.5	.2	3.63	76.23
<hr/>					
2	2.375	1.939	.218	5.04	105.84
2-1/2	2.875	2.323	.276	7.66	160.86
<hr/>					
3	3.5	2.9	.3	10.25	215.25
3-1/2	4.	3.364	.318	12.51	262.71
<hr/>					
4	4.5	3.826	.337	14.98	314.58
<hr/>					
5	5.563	4.813	.375	20.78	436.38
<hr/>					
6	6.625	5.761	.432	28.57	599.97
<hr/>					
8	8.625	7.625	.5	43.39	911.19
<hr/>					
10	10.75	9.75	.5	54.74	1149.54
<hr/>					
12	12.75	11.75	.5	65.42	1373.82



DOUBLE EXTRA STRONG
 All Weights and Dimensions are Nominal

1/2	.84	.252	.294	1.71	35.91
3/4	1.05	.434	.308	2.44	51.24
<hr/>					
1	1.315	.599	.358	3.66	76.86
1-1/4	1.66	.896	.382	5.21	109.41
1-1/2	1.9	1.1	.4	6.41	134.61
<hr/>					
2	2.375	1.503	.436	9.03	189.63
2-1/2	2.875	1.771	.552	13.7	287.7
<hr/>					
3	3.5	2.3	.6	18.58	390.18
<hr/>					
4	4.5	3.152	.674	27.54	578.34
<hr/>					
5	5.563	4.063	.75	38.55	809.55
<hr/>					
6	6.625	4.897	.864	53.16	1116.36
<hr/>					
8	8.625	6.875	.875	72.42	1520.82

H R STRIP

SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
1/8 x 3/8	.159	3.18
	.213	4.26
	.266	5.32
	.319	6.38
	.372	7.44
1	.425	8.5
1-1/8	.478	9.56
1-1/4	.531	10.62
1-1/2	.638	12.76
1-3/4	.744	14.88
2	.85	17.
2-1/4	.956	19.12
2-1/2	1.063	21.26
2-3/4	1.169	23.38
3	1.275	25.5
3-1/2	1.488	29.76
4	1.7	34.
4-1/2	1.913	38.26
5	2.125	42.5
6	2.55	51.
8	3.4	68.
10	4.25	85.
12	5.1	102.
3/16 x 3/8	.239	4.78
	.319	6.38
	.398	7.96
	.478	9.56
	.558	11.16
1	.638	12.76
1-1/8	.717	14.34
1-1/4	.797	15.94
1-1/2	.956	19.12
1-3/4	1.12	22.4
2	1.28	25.6
2-1/4	1.43	28.6
2-1/2	1.59	31.8
2-3/4	1.75	35.
3	1.91	38.2
3-1/2	2.23	44.6
4	2.55	51.
4-1/2	2.87	57.4
5	3.19	63.8
6	3.83	76.6
8	5.1	102.
10	6.38	127.6
12	7.65	153.

FLAT STEEL BARS

SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
1/4 x 3/8	.391	6.38
	.425	8.5
	.531	10.62
	.638	12.76
	.744	14.88
1	.85	17.
1-1/8	.956	19.12
1-1/4	1.063	21.26
1-3/8	1.169	23.38
1-1/2	1.275	25.5
1-3/4	1.488	29.76
2	1.7	34.
2-1/4	1.913	38.26
2-1/2	2.125	42.5
2-3/4	2.338	46.76
3	2.55	51.
3-1/4	2.763	55.26
3-1/2	2.975	59.5
4	3.4	68.
4-1/2	3.825	76.5
5	4.25	85.
5-1/2	4.675	93.5
6	5.1	102.
7	5.95	119.
8	6.8	136.
5/16 x 1/2	.531	10.62
	.664	13.28
	.797	15.94
	.93	18.6
	1.063	21.26
1-1/4	1.328	26.56
1-3/8	1.461	29.22
1-1/2	1.594	31.88
1-3/4	1.859	37.18
2	2.125	42.5
2-1/4	2.391	47.82
2-1/2	2.656	53.12
2-3/4	2.922	58.44
3	3.188	63.76
3-1/2	3.719	74.38
4	4.25	85.
4-1/2	4.781	95.62
5	5.313	106.3
5-1/2	5.844	116.9
6	6.375	127.5
7	7.438	148.8
8	8.5	170.


ROUND STEEL BARS

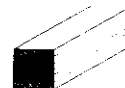
SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
1/8	.042	.84
9/64	.053	1.06
5/32	.065	1.3
11/64	.079	1.58
3/16	.094	1.88
13/64	.109	2.18
7/32	.128	2.56
15/64	.147	2.94
1/4	.167	3.34
17/64	.187	3.74
9/32	.211	4.22
5/16	.261	5.22
11/32	.316	6.32
23/64	.345	6.9
3/8	.376	7.52
25/64	.407	8.14
13/32	.441	8.82
7/16	.511	10.22
31/64	.627	12.54
1/2	.668	13.36
33/64	.71	14.2
17/32	.754	15.08
9/16	.845	16.9
19/32	.942	18.84
39/64	.992	19.84
5/8	1.043	20.86
41/64	1.096	21.92
11/16	1.262	25.24
47/64	1.44	28.8
3/4	1.502	30.04
13/16	1.763	35.26
55/64	1.972	39.44
7/8	2.044	40.88
15/16	2.347	46.94
63/64	2.587	51.74
1	2.67	53.4
1- 1/16	3.014	60.28
1- 1/8	3.379	67.58
1- 3/16	3.766	75.32
1- 1/4	4.173	83.46
1- 5/16	4.6	92.
1- 3/8	5.049	100.98
1- 7/16	5.518	110.36
1- 1/2	6.008	120.16
1- 9/16	6.52	130.4
1- 5/8	7.051	141.02
1-11/16	7.604	152.08
1- 3/4	8.178	163.56
1-13/16	8.773	175.46
1- 7/8	9.388	187.76
1-15/16	10.02	200.4

ROUND STEEL BARS (continued)

SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
2	10.68	213.6
2- 1/16	11.36	227.2
2- 1/8	12.06	241.2
2- 3/16	12.78	255.6
2- 1/4	13.52	270.4
2- 5/16	14.28	285.6
2- 3/8	15.06	301.2
2- 7/16	15.87	317.4
2- 1/2	16.69	333.8
2- 9/16	17.54	350.8
2- 5/8	18.4	368.
2-11/16	19.29	385.8
2- 3/4	20.2	404.
2-13/16	21.12	422.4
2- 7/8	22.07	441.4
2-15/16	23.04	460.8
3	24.03	480.6
3- 1/16	25.05	501.
3- 1/8	26.08	521.6
3- 3/16	27.13	542.6
3- 1/4	28.21	564.2
3- 5/16	29.3	586.
3- 3/8	30.42	608.4
3- 7/16	31.55	631.
3- 1/2	32.71	654.2
3- 9/16	33.89	677.8
3- 5/8	35.09	701.8
3-11/16	36.31	726.2
3- 3/4	37.55	751.
3- 7/8	40.1	802.
3-15/16	41.4	828.
4	42.73	854.6
4- 1/8	45.44	908.8
4- 3/16	46.83	936.6
4- 1/4	48.23	964.6
4- 5/16	49.66	993.2
4- 3/8	51.11	1022.2
4- 7/16	52.58	1051.6
4- 1/2	54.08	1081.6
4- 5/8	57.12	1142.4
4- 3/4	60.25	1205.
4- 7/8	63.52	1270.4
4-15/16	65.1	1302.

ROUND STEEL BARS (continued)

SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
5	66.76	1335.2
5- 1/8	70.14	1402.8
5- 1/4	73.6	1472.
5- 7/16	78.95	1579.
5- 1/2	80.78	1615.6
5- 5/8	84.49	1689.8
5- 3/4	88.29	1765.8
5-15/16	94.14	1882.8
6	96.13	1922.6
6- 1/4	104.31	2086.2
6- 7/16	110.7	2214.
6- 1/2	112.8	2256.
6- 3/4	121.7	2434.
7	130.9	2618.
7- 1/4	140.4	2808.
7- 1/2	150.2	3004.
7- 3/4	160.4	3208.
8	170.9	3418.
8- 1-4	181.8	3636.
8- 1/2	192.9	3858.
8- 3/4	204.5	4090.
9	216.3	4326.
10	267.	5340.


SQUARE STEEL BARS

SIZE INCHES	APPROXIMATE WEIGHT IN POUNDS		
	PER FOOT	PER 12' LENGTH	PER 20' LENGTH
1/8	.053	.64	1.06
3/16	.12	1.44	2.4
1/4	.213	2.56	4.26
5/16	.332	3.98	6.64
3/8	.478	5.74	9.56
7/16	.651	7.81	13.02
1/2	.85	10.2	17.
9/16	1.076	12.91	21.52
5/8	1.328	15.94	26.56
11/16	1.607	19.28	32.14
3/4	1.913	22.96	38.26
13/16	2.245	26.94	44.9
7/8	2.603	31.24	52.06
15/16	2.988	35.86	59.76
1	3.4	40.8	68.
1- 1/16	3.838	46.06	76.76
1- 1/8	4.303	51.64	86.06
1- 3/16	4.795	57.54	95.9
1- 1/4	5.313	63.76	106.3
1- 5/16	5.857	70.28	117.14
1- 3/8	6.428	77.14	128.6
1- 7/16	7.026	84.31	140.52
1- 1/2	7.65	91.8	153.
1- 5/8	8.978	107.74	179.6
1- 3/4	10.41	124.92	208.2
1- 7/8	11.95	143.4	239.


HALF ROUND

SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
1/2 x 1/4	.334	6.68
5/8 x 5/16	.522	10.44
3/4 x 3/8	.751	15.02
7/8 x 7/16	1.022	20.44
1 x 1/2	1.335	26.7
1-1/4 x 5/8	2.086	41.72
1-1/2 x 3/4	3.004	60.08
2 x 1	5.34	106.8
2-1/2 x 1-1/4	8.345	166.9
3 x 1-1/2	12.02	240.4


HALF OVAL

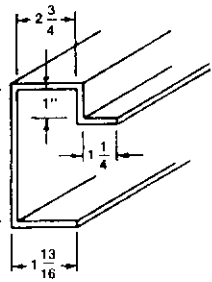
SIZE IN INCHES	WEIGHT IN POUNDS	
	FOOT	20'
1 x 1/4	.594	11.88
1-1/4 x 5/16	.928	18.56
1-1/2 x 3/8	1.337	26.74
2 x 1/2	2.376	47.52
2-1/2 x 5/8	3.713	74.26

2	13.6	163.2	272.
2- 1/8	15.35	184.2	307.
2- 1/4	17.21	206.52	344.2
2- 3/8	19.18	230.16	383.6
2- 1/2	21.25	255.	425.
2- 3/4	25.71	308.52	514.2
3	30.6	367.2	612.
3- 1/2	41.65	499.8	833.
4	54.4	652.8	1088.
4- 1/2	68.85	826.2	1377.
5	85.	1020.	1700.
5 1/2	102.9	1234.8	2058.
6	122.4	1468.8	2448.



Solberga 4MT Drill Press

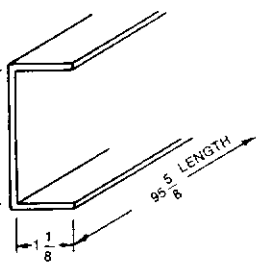
RUB-RAIL



WEIGHT PER LENGTHS
 8-FT. LEN. 45 #
 10-FT. LEN. 67.5 #
 12-FT. LEN. 82.25 #

MADE FROM 10 GAUGE H.R. CARBON RUB-RAIL FOR 1" PLY-WOOD FLOORING USED WITH 4" CROSS MEMBER AVAILABLE IN LENGTHS OF 8-FT., 10-FT. AND 12-FT.

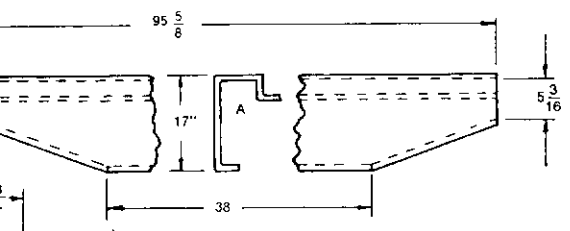
CROSS MEMBER



MADE FROM 10 GA. H.R.

WEIGHT PER PIECE = 22.5 #

TAIL PIECE

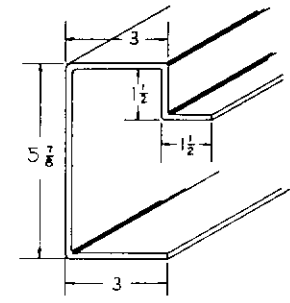


MADE FROM 10 GA. H.R. USED FOR 1" PLY-WOOD FLOORING

WEIGHT PER PIECE 82.5 #

6" STANDARD RUB-RAIL

Made from 10 Gage H.R. C.Q. SHEETS - 6" Carbon Rub Rail for 1 1/8" net wood flooring. Used with 4" cross members. Available in 8-ft., 10-ft., and 12-ft. lengths.

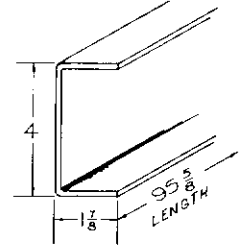


WEIGHTS PER LENGTH:

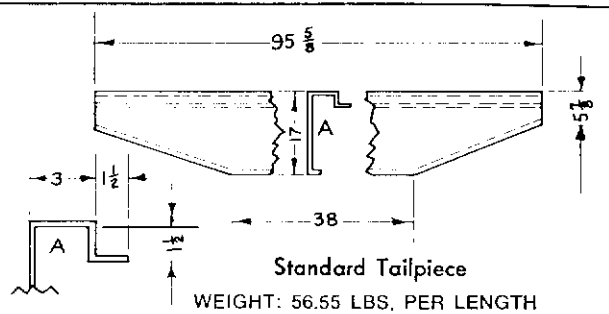
- 8 - foot Lengths - - - - 52.50 Lbs.
- 10 - foot Lengths - - - - 65.63 Lbs.
- 12 - foot Lengths - - - - 78.75 Lbs.

CROSS MEMBER

Made from 3/16" Sheared H. R. Carbon Plate.



WEIGHT: 36 LBS. PER LENGTH



Standard Tailpiece
 WEIGHT: 56.55 LBS. PER LENGTH

Multigrip Floor Plate - Allowable Load Tables
 REGULAR QUALITY CARBON STEEL (C. 15% max.)

Plate Thickness, Inches	SPAN - FEET AND INCHES											
	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	
	Weight of Plate Included - Simply Supported Along Two Opposite Edges											
Allowable Bending Stress = 17,000 psi												
0.0598†	81	36	20	12	9							
0.0747†	126	56	31	20	14	10	7					
0.1046†	248	110	62	39	27	20	15	12	9	8		
1/4	354	157	88	56	39	28	22	17	14	11	9	
5/16	796	354	199	127	88	65	49	39	31	26	22	
3/8	1,416	629	354	226	157	115	88	69	56	46	39	
7/16	2,213	983	553	354	245	180	138	109	88	73	61	
1/2	3,187	1,416	796	510	354	260	199	157	127	105	88	
5/8	4,338	1,928	1,084	694	482	354	271	214	173	143	120	
3/4	5,666	2,518	1,416	906	629	462	354	279	226	187	157	
7/8	7,171	3,187	1,792	1,147	796	585	448	354	286	237	199	
1	8,854	3,935	2,213	1,416	983	722	553	437	354	292	245	
1 1/8	12,750	5,666	3,187	2,040	1,416	1,040	796	629	510	421	354	
1 1/4	17,354	7,712	4,338	2,775	1,928	1,416	1,084	857	694	573	482	
1 1/2	22,666	10,074	5,666	3,626	2,518	1,850	1,416	1,119	906	749	629	
Deflection Coefficient	0.0176	0.0396	0.0704	0.1099	0.1583	0.2154	0.2814	0.3561	0.4397	0.5320	0.6331	

*The tabulated values contained herein are offered as a convenience only. United States Steel Corporation assumes no responsibility for their use.
 †0.0598", 0.0747", and 0.1046" are equivalent to 16, 14 and 12 gages respectively.

NOTES - (Applicable to All Allowable Load Tables) Deflections for loadings above the heavy horizontal lines will exceed 1/100th of the span. The deflection coefficient at the bottom of each span column is a constant, which, when divided by the plate thickness under consideration, in inches, gives the deflection in inches at the center of the span for the tabular loading shown. To find the deflection in inches for any uniform load less than tabulated above, find the deflection for the tabular load for a given span and plate thickness; multiply this deflection by the load per square foot desired; and divide by the tabular allowable safe load above.

DEFORMED CONCRETE REINFORCING STEEL BARS



ROUND — STRUCTURAL GRADE

BAR SIZE No.	DIAMETER (Inches)	AREA (Sq. In.)	Per Foot	WEIGHT IN POUNDS		
				20' Bar	30' Bar	40' Bar
*2	1/4	.05	.167	3.34	5.01	6.68
3	3/8	.11	.376	7.52	11.28	15.04
4	1/2	.2	.668	13.36	20.04	26.72
5	5/8	.31	1.043	20.86	31.29	41.72
6	3/4	.44	1.502	30.04	45.06	60.08
7	7/8	.6	2.044	40.88	61.32	81.76
8	1	.79	2.67	53.4	80.1	106.8

*1/4" round bar furnished plain, not deformed.

CARBON STEEL SHEETS

HOT ROLLED SHEETS, Commercial Quality, (C.Q.) are ordinarily manufactured in a low carbon grade of rimmed, capped, or semi-killed type steel at the producer's option. It is suitable for uses involving simple bending or moderate drawing and welding where the presence of oxide and normal surface defects are not objectionable.

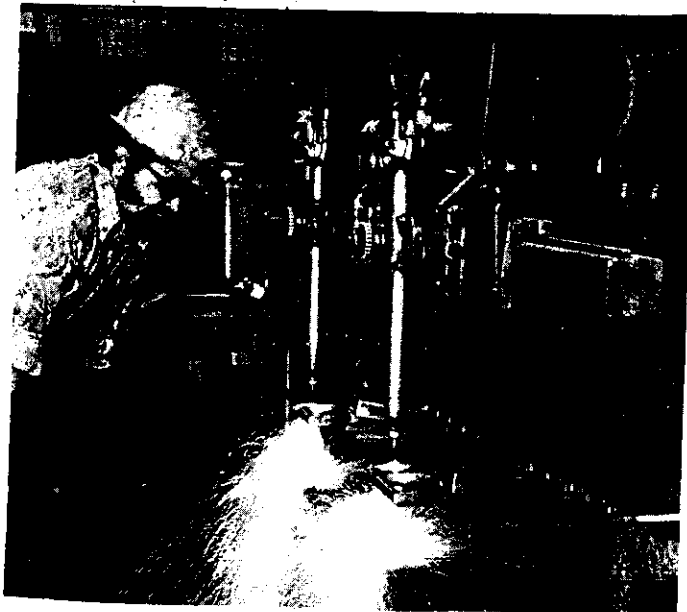
Commercial Quality Sheet can be bent flat on itself in any direction at room temperature in Carbon .15% maximum. This material is readily available from stock and is widely used for bins, chutes, tanks, lockers, partitions, equipment, and agricultural implements.

ANALYSIS (Typical)

CARBON	MANGANESE	PHOSPHORUS	SULPHUR
.15 Max.	.25 / .60	.04 Max.	.05 Max.

COLD ROLLED SHEETS, Commercial Quality, (C.Q.) are ordinarily manufactured in a low carbon (maximum .15) grade of rimmed, capped, or semi-killed type steel at the producer's option, from hot rolled coils by pickling and cold reducing to thickness desired. It is suitable for exposed parts requiring a good surface finish such as paints, enamels, or lacquers, but the matte finish is not suitable for electroplating where surface smoothness or freedom from surface imperfections is essential.

Cold Rolled Commercial Quality sheet should withstand being bent flat on itself in any direction at room temperature without cracking. It should be suitable for moderate drawing and forming. However, it is not guaranteed against breakage except that caused by piped steel. Sheets of this quality are readily available as stock material.



CARBON STEEL SHEETS



GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)	GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)
26 Ga. (.0179)		20 Ga. (.0359)	
.75 lb. sq. ft.		1.5 lb. sq. ft.	
30 x 12	1.88	30 x 12	3.75
96	15.	96	30.
120	18.75	120	37.5
36 x 12	2.25	36 x 12	4.5
96	18.	96	36.
120	22.5	120	45.
		144	54.
48 x 12	3.	48 x 12	6.
96	24.	96	48.
120	30.	120	60.
		144	72.

24 Ga. (.0239)
1 lb. sq. ft.

30 x 12	2.5
96	20.
120	25.

36 x 12	3.
96	24.
120	30.

48 x 12	4.
96	32.
120	40.

18 Ga. (.0478)
2 lb. sq. ft.

24 x 12	4.
96	32.
120	40.

22 Ga. (.0299)
1.25 lb. sq. ft.

30 x 12	3.13
96	25.
120	31.25

36 x 12	3.75
96	30.
120	37.5

48 x 12	5.
96	40.
120	50.

30 x 12	5.
96	40.
120	50.
144	60.

36 x 12	6.
96	48.
120	60.
144	72.

48 x 12	8.
96	64.
120	80.
144	96.

Linde CM-50

2 Torch operation shape cutting capacity 48" x 48"
Slitting capacity 120" — Plate cutting capacity thru 12"



CARBON STEEL SHEETS (continued)

GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)	GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)
16 Ga. (.0598) 2.5 lb. sq. ft.			
24 x 12	5.	24 x 12	6.25
60	25.	60	31.3
72	30.	72	37.5
84	35.	84	43.8
96	40.	96	50.
120	50.	120	62.5
132	55.	144	75.
144	60.		
14 Ga. (.0747) 3.125 lb. sq. ft.			
		30 x 12	7.8
		60	39.1
		72	46.9
30 x 12	6.25	84	54.7
60	31.25	96	62.5
72	37.5	120	78.1
84	43.75	132	86.
96	50.	144	93.8
120	62.5	168	109.
132	68.75	192	125.
144	75.	240	156.2
36 x 12			
		60	46.9
		72	56.3
		84	65.6
		96	75.
		120	93.8
		132	103.1
		144	112.5
		168	131.25
		192	150.
		240	187.5
48 x 12			
		60	62.5
		72	75.
		84	87.5
		96	100.
		120	125.
		132	137.3
		144	150.
		168	175.
		192	200.
		240	250.
60 x 12			
		60	78.13
		96	125.
		120	156.3
		144	187.5
		168	218.8
		192	250.
		240	312.6
72 x 96			
		120	187.6
		144	225.
		240	375.

CARBON STEEL SHEETS (continued)

GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)	GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)
12 Ga. (.1046) 4.375 lb. sq. ft.			
24 x 12	8.75	24 x 12	10.
60	43.8	60	50.
72	52.5	72	60.
84	61.3	84	70.
96	70.	96	80.
120	87.5	120	100.
144	105.	132	110.
240	175.	144	120.
		240	200.
11 Ga. (.1196) 5. lb. sq. ft.			
		30 x 12	12.5
		60	62.5
		72	75.
		84	87.5
		96	100.
		120	125.
		132	137.5
		144	150.
		168	175.
		192	200.
		240	250.
36 x 12			
		60	75.
		72	90.
		84	105.
		96	120.
		120	150.
		132	165.
		144	180.
		168	210.
		192	240.
		240	300.
48 x 12			
		60	100.
		72	120.
		84	140.
		96	160.
		120	200.
		132	220.
		144	240.
		168	280.
		192	320.
		240	400.
60 x 12			
		60	125.
		72	150.
		84	175.
		96	200.
		120	250.
		132	275.
		144	300.
		168	350.
		192	400.
		240	500.
72 x 12			
		96	240.
		120	300.
		144	360.
		240	600.





CARBON STEEL SHEETS (continued)

GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)	GAGE AND SIZE (Inches)	Approx. Wt. Per Sheet (Pounds)
10 Ga. (.1345) 5.625 lb. sq. ft.		10 Ga. (continued)	
24 x 12	11.25	132	371.3
60	56.3	144	405.
72	67.5	168	472.5
84	78.8	192	540.
96	90.	240	675.
120	112.5	7 Ga. (.1793) 7.5 lb. sq. ft.	
132	123.8	30 x 12	18.75
144	135.	60	93.8
168	157.6	72	112.5
192	180.	84	131.3
240	225.	96	150.
30 x 12		120	187.5
60	70.3	132	206.3
72	84.4	144	225.
84	98.4	168	262.5
96	112.5	192	300.
120		240	375.
132	140.6	36 x 12	
144	154.7	60	22.5
168	168.8	72	112.5
192	196.9	84	135.
240	281.2	96	157.5
36 x 12		120	180.
60	16.88	132	225.
72	84.4	144	247.5
84	101.3	168	270.
96	118.1	192	315.
120	135.	240	360.
132	168.8	48 x 12	30.
144	185.6	60	150.
168	202.5	72	180.
192	236.25	84	210.
240	337.5	96	240.
48 x 12		120	240.
60	22.5	132	300.
72	112.5	144	330.
84	135.	168	360.
96	157.5	192	420.
120	180.	240	480.
132	225.	60 x 12	37.5
144	247.5	60	187.5
168	270.	72	225.
192	315.	84	262.5
240	450.	96	300.
60 x 12		120	375.
60	28.13	132	412.5
72	140.6	144	450.
84	168.8	168	525.
96	196.9	192	600.
120	225.	240	750.
132	281.3	72 x 12	
144	309.4	12	45.
168	337.5	72	270.
192	393.8	84	315.
240	562.6	96	360.
72 x 12		120	450.
12	33.75	132	495.
72	202.5	144	540.
84	236.3	168	630.
96	270.	192	720.
120	337.5	240	900.

FLAT GALVANIZED STEEL SHEETS

GAGE AND SIZE	ESTIMATED WEIGHT LBS. PER SHEET
30 Gage .656 lbs. per sq. ft.	
24 x 96	10.5
120	13.12
30 x 96	
120	13.12
120	16.4
36 x 96	
120	15.74
120	19.68
28 Gage .781 lbs. per sq. ft.	
24 x 96	12.5
120	15.62
30 x 96	
120	15.62
120	19.53
36 x 96	
120	18.74
120	23.43
26 Gage .906 lbs. per sq. ft.	
24 x 96	14.5
120	18.12
30 x 96	
120	18.12
144	22.65
144	27.18
36 x 96	
120	21.74
120	27.18
144	32.62
48 x 96	
120	28.99
120	36.24
24 Gage 1.156 lbs. per sq. ft.	
24 x 96	18.5
120	23.12
144	27.74
30 x 96	
120	23.12
144	28.9
144	34.68
36 x 96	
120	27.74
144	34.68
144	41.62
48 x 96	
120	36.99
144	46.24
144	55.49
22 Gage 1.406 lbs. per sq. ft.	
24 x 96	22.5
120	28.12
144	33.74
30 x 96	
120	28.12
144	35.15
144	42.18
36 x 96	
120	33.74
144	42.18
144	50.62



FLAT GALVANIZED STEEL SHEETS (continued)

GAGE AND SIZE	ESTIMATED WEIGHT LBS. PER SHEET
22 Gage 48 x 96	44.99
120	56.24
144	67.49
20 Gage 1.656 lbs. per sq. ft.	
24 x 96	26.5
120	33.12
144	39.74
30 x 96	33.12
120	41.4
36 x 96	39.74
120	49.68
144	59.62
48 x 96	52.99
120	66.24
144	79.48
18 Gage 2.156 lbs. per sq. ft.	
24 x 96	34.5
120	43.12
144	51.74
30 x 96	43.12
120	53.9
36 x 96	51.74
120	64.68
144	77.62
48 x 96	68.99
120	86.24
144	103.49
16 Gage 2.656 lbs. per sq. ft.	
24 x 96	42.5
120	53.12
144	63.74
30 x 96	53.12
120	66.4
36 x 96	63.74
120	79.68
144	95.62
48 x 96	84.99
120	106.24
144	127.49
14 Gage 3.281 lbs. per sq. ft.	
24 x 96	52.5
120	65.62
144	78.74
30 x 96	65.62
120	82.03

FLAT GALVANIZED STEEL SHEETS (continued)

GAGE AND SIZE	ESTIMATED WEIGHT LBS. PER SHEET
14 Gage (continued)	
36 x 96	78.74
120	98.43
144	118.12
48 x 96	104.99
120	131.24
144	157.49
12 Gage 4.531 lbs. per sq. ft.	
24 x 96	72.5
120	90.62
144	108.74
30 x 96	90.62
120	113.28
36 x 96	108.74
120	135.93
144	163.12
48 x 96	144.99
120	181.24
144	217.49
10 Gage 5.781 lbs. per sq. ft.	
24 x 96	92.5
120	115.62
144	138.74
36 x 96	138.74
120	173.43
48 x 96	184.99
120	231.24
144	277.49

CORRUGATED GALVANIZED 26 GAGE



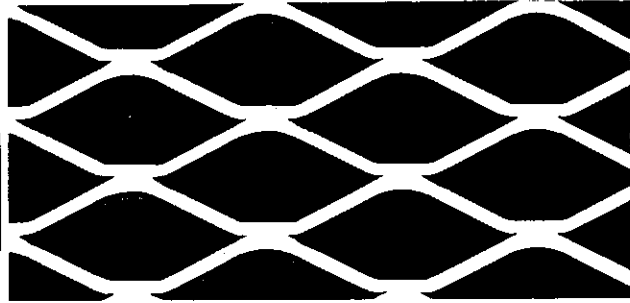
LENGTH OF SHEET	Est. Wt. Per Sheet	Width After Corrugation	Covering Width	Sq. Ft. Per Sheet	No. of Sheets Per Sq.
5	11.39	27-1/2	24	11.46	8.73
6	13.61	27-1/2	24	13.75	7.27
7	15.89	27-1/2	24	16.05	6.23
8	18.15	27-1/2	24	18.33	5.46
9	20.42	27-1/2	24	20.63	4.85
10	22.69	27-1/2	24	22.92	4.36
11	24.96	27-1/2	24	25.21	3.97
12	27.23	27-1/2	24	27.5	3.64



RIDGE ROLL

	WEIGHT PER 10' LENGTH (Pounds)
Plain	7.9
Corrugated	7.7

REGULAR EXPANDED METAL



Carbon Steel

Style	Weight in lbs. per c.s.f.		Standard Sizes In Feet		Size of Openings In Inches		Center to Center of Bond In Inches		Size of Strands In Inches		Percent Open Area	Overall Thickness In Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3/16"-#24	50	A	B	B	.166	.437	.200	.50	.050	.024	63	.086
3/16"-#22	62	A	B	B	.166	.437	.200	.50	.050	.030	60	.088
3/16"-#20	75	A	B	B	.166	.437	.200	.50	.050	.036	57	.090
1/4"-#20	86	129	4	8	.172	.719	.255	1.00	.073	.036	45	.125
1/4"-#18	114	171	4	8	.172	.719	.255	1.00	.073	.048	43	.125
1/2"-#20	43	59	4	8	.438	.938	.500	1.20	.072	.036	80	.124
1/2"-#18	70	85	4-6	8-10	.438	.938	.500	1.20	.088	.048	77	.155
1/2"-#16	86	97	4-6	8-10	.375	.938	.500	1.20	.086	.060	71	.157
1/2"-#13	147	173	4-6	8-10	.313	.938	.500	1.20	.096	.092	58	.182
3/4"-#16	54	65	4-6	8-10	.813	1.750	.923	2.00	.099	.060	85	.186
3/4"-#13	80	92	4-6	8-10	.750	1.688	.923	2.00	.096	.092	78	.195
3/4"-#10	120	136	4-6	8-10	.750	1.625	.923	2.00	.144	.092	77	.282
3/4"-# 9	180	195	4-6	8-10-12	.688	1.563	.923	2.00	.148	.134	66	.300
1" #16	44	51	4	8	1.000	2.063	1.090	2.40	.096	.060	86	.182
1 1/2"-#18	20	25	4	8	1.313	2.625	1.330	3.00	.067	.048	93	.140
1 1/2"-#16	40	48	4	8-10-12	1.250	2.625	1.330	3.00	.107	.060	89	.211
1 1/2"-#13	60	68	4-6	8-10-12	1.188	2.500	1.330	3.00	.104	.092	86	.215
1 1/2"-#10	79	89	4-6	8-10	1.188	2.500	1.330	3.00	.137	.092	85	.289
1 1/2"-# 9	120	131	4-6	8-10-12	1.125	2.375	1.330	3.00	.142	.134	75	.295
1 1/2"-# 6	250	273	4-6	8-10-12	1.000	2.313	1.330	3.00	.201	.198	63	.425
2" #10	68	75	B	B	1.625	3.438	1.850	4.00	.164	.092	86	.312
2" # 9	90	102	B	B	1.563	3.375	1.850	4.00	.149	.134	86	.325

Above conforms to military specification MIL-17194C Type 1 Class 1

FLATTENED EXPANDED METAL

Carbon Steel

Style	Weight in lbs. Per c.s.f.		Standard Sizes In Feet		Size of Openings In Inches		Center to Center of Bond In Inches		Size of Strands In Inches		Percent Open Area	Overall Thickness In Inches
	Plain	Galv.	Width	Length	Width	Length	Width	Length	Width	Thickness		
3/16"-#24	48	A	B	B	.085	.459	.200	.52	.057	.019	41	.019
3/16"-#22	60	A	B	B	.085	.459	.200	.52	.057	.024	40	.024
3/16"-#20	72	A	B	B	.085	.459	.200	.52	.057	.029	39	.029
1/4"-#20	83	124	4	8	.094	.688	.255	1.03	.086	.030	47	.030
1/4"-#18	111	165	4	8	.094	.688	.255	1.03	.086	.040	40	.040
1/2"-#20	40	51	4	8	.375	1.000	.500	1.26	.070	.029	72	.029
1/2"-#18	66	88	3-4-6	8-10	.281	1.000	.500	1.26	.109	.039	69	.039
1/2"-#16	82	100	3-4-6	8-10	.250	1.000	.500	1.26	.103	.050	60	.050
1/2"-#13	140	162	3-4-6	8-10	.250	1.000	.500	1.26	.122	.070	57	.070
3/4"-#16	51	61	3-4-6	8-10	.750	1.750	.923	2.10	.115	.048	75	.048
3/4"-#14	63	75	3-4-6	8-10	.688	1.813	.923	2.12	.119	.061	70	.061
3/4"-#13	75	86	3-4-6	8-10	.688	1.782	.923	2.10	.119	.070	73	.070
3/4"-# 9	171	186	3-4-6	8-10-12	.563	1.688	.923	2.12	.164	.120	63	.120
1" #16	41	50	4	8	.875	2.250	1.090	2.56	.115	.048	77	.048
1 1/2"-#16	38	44	4	8	1.063	2.750	1.330	3.20	.123	.048	82	.048
1 1/2"-#14	46	56	3-4-6	8	1.063	2.750	1.330	3.20	.138	.060	82	.060
1 1/2"-#13	57	68	3-4-6	8	1.063	2.750	1.330	3.20	.138	.070	80	.070
1 1/2"-# 9	111	128	3-4-6	8-10-12	1.000	2.563	1.330	3.20	.175	.110	77	.110

A. Not Available
 B. Special Order Only

Above conforms to military specification MIL-M-17194C Type 11 Class 1

ABRASION-RESISTING STEEL (continued)

CARBON	ANALYSIS (Typical)			
	MANGANESE	PHOSPHORUS	SULPHUR	SILICON
.40	1.62	.021	.028	.20

APPLICATIONS — Abrasion Resisting Steel will give two to ten times the life of Mild Steel when used in mixers, loaders, conveyors, scraper blades, dirt-moving equipment, dipper teeth, drag conveyor bottoms, mine screens, troughs, spouts, shovels, hoppers, dump truck bodies, concrete buckets, fan blades, ore skips, tail sluices, bucket lips, rock screens, loading chutes, agitator paddles, dredge pump liners, grinding pans, liner plates, tipple sluices, etc.

MECHANICAL PROPERTIES (Approximate for 1/2" Plate)

	TENSILE STRENGTH (P. S. I.)	ELASTIC LIMIT (P. S. I.)	ELONGATION IN 8"	REDUC-	BRIN. HARDNESS
				TION OF AREA	
As Rolled	115,000	70,000	16%	35%	235
Oil Quenched at 1550° and Drawn at 800° F.	145,000	100,000	16%	45%	269

SHEARING and FLAME CUTTING — In shear cutting, the capacity rating of the shear should be discounted about 40%. Abrasion Resisting Steel can be readily cut with a gas torch but the extreme heat of the torch coming in contact with this hard metal has a tendency to harden the steel at point of contact, leaving an edge which is more difficult to machine. If flame cutting is necessary, it is recommended that an allowance of about 3/8" be made on all burned edges, followed by machine cutting inside the burned edges. Another method is to burn full to size required and then grind off the oxidized edge. Either of these methods should eliminate the necessity of machine cutting through the burned edge. Some users prefer to preheat the edge that is to be flame cut to about 650°F and normalize afterward. This eliminates grinding or machining the burned edge.

PUNCHING — Holes may be punched in thicknesses up to about 3/8". The capacity of the punch should be discounted about 40%. Holes in plates 3/8" thick and larger should be drilled.

BENDING and FORMING — This steel, if not extremely cold, will take a 90° bend to a reasonable radius in light thickness, such as 12 gauge to 3/8" without fracture, providing it is bent slowly (by degrees) until the forming has been completed. For more difficult forming and for all forming of heavier gauges, it should be heated and formed while hot. Hot forming should be done at about 1500°F. If steel is allowed to cool slowly it will not lose its abrasive resisting qualities, nor should there be any cracking or distortion. High carbon steel such as this grade should not be worked by any method while extremely cold.

MACHINABILITY — This grade, due to its high hardness and toughness, is rather difficult to machine. However, the usual high-speed tools are more than capable of doing machine cutting when necessary.

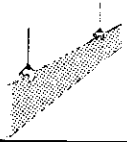
WELDABILITY — This grade is readily welded, although care must be taken that it is not welded while extremely cold. Generally, the entire piece should be normalized immediately after welding. To normalize, heat to 1650° and allow to cool slowly in air. Normalizing is sometimes omitted when the welded part is not subject to severe vibration and stress. However, normalizing will prevent cracks, give uniform structure and will not reduce the abrasive-resisting qualities. The grade of welding rod to be used depends upon the thickness of section, design, service requirements, etc.


UNIVERSAL MILL PLATES

THICKNESS AND WIDTH	WEIGHT IN POUNDS	
	PER FOOT	20-FOOT BAR
1/4 x 9	7.66	153.2
	8.51	170.2
	10.21	204.2
	11.91	238.2
	13.61	272.2
	15.32	306.4
	17.02	340.4
	20.42	408.4
5/16 x 9	9.57	191.4
	10.63	212.6
	12.76	255.2
	14.89	297.8
	17.01	340.2
	19.14	382.8
	21.27	425.4
	25.52	510.4
3/8 x 9	11.49	229.8
	12.77	255.4
	15.32	306.4
	17.87	357.4
	20.43	408.6
	22.98	459.6
	25.53	510.6
	30.64	612.8
1/2 x 9	15.32	306.4
	17.02	340.4
	20.42	408.4
	23.82	476.4
	27.23	544.6
	30.63	612.6
	34.03	680.6
	40.84	816.8
5/8 x 9	19.15	383.
	21.27	425.4
	25.53	510.6
	29.79	595.8
	34.04	680.8
	38.30	766.
	42.55	851.
	51.06	1021.2
3/4 x 9	22.97	459.4
	25.52	510.4
	30.63	612.6
	35.74	714.8
	40.84	816.8
	45.95	919.
	51.05	1021.
	61.26	1225.2

UNIVERSAL MILL PLATES (continued)

THICKNESS AND WIDTH		WEIGHT IN POUNDS	
		PER FOOT	20-FOOT BAR
1	x 9	30.63	612.6
	10	34.03	680.6
	12	40.84	816.8
	14	47.65	953.
	16	54.45	1089.
	18	61.26	1225.2
	20	68.07	1361.4
	24	81.68	1633.6
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1-1/4	x 9	38.29	765.8
	10	42.54	850.8
	12	51.05	1021.
	14	59.56	1191.2
	16	68.07	1361.4
	18	76.58	1531.6
	20	85.09	1701.8
	24	102.10	2042.
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1-1/2	x 9	45.95	919.
	10	51.05	1021.
	12	61.26	1225.2
	14	71.47	1429.4
	16	81.68	1633.6
	18	91.89	1837.8
	20	102.10	2042.
	24	122.52	2450.4


CARBON STEEL PLATES

SIZE	Approx. Wt. Per Plate Lbs.	SIZE	Approx. Wt. Per Plate Lbs.
3/16 Inch		3/16 Inch	
7.66 lb. sq. ft.		7.66 lb. sq. ft.	
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36 x 12	22.98	72 x 12	45.96
96	183.84	96	367.68
120	229.8	120	459.6
144	275.76	144	551.52
192	367.68	192	735.36
240	459.6	240	919.2
288	551.52	288	1103.04
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48 x 12	30.64	84 x 12	53.62
96	245.12	96	428.96
120	306.4	120	536.2
144	367.68	144	643.44
192	490.24	192	857.92
240	612.8	240	1072.4
288	735.36	288	1286.88
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60 x 12	38.3	96 x 12	61.28
96	306.4	96	490.24
120	383.	120	612.8
144	459.6	144	735.36
192	612.8	192	980.48
240	766.	240	1225.6
288	919.2	288	1470.72

CARBON STEEL PLATES (continued)

SIZE	Approx. Wt. Per Plate Lbs.	SIZE	Approx. Wt. Per Plate Lbs.
1/4 Inch		5/16 Inch	
10.21 lb. sq. ft.		12.76 lb. sq. ft.	
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36 x 12	30.63	48 x 12	51.04
96	245.04	96	408.32
120	306.3	120	510.4
144	367.56	144	612.48
192	490.08	192	816.64
240	612.6	240	1020.8
288	735.12	288	1224.96
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48 x 12	40.84	60 x 12	63.8
96	326.72	96	510.4
120	408.4	120	638.
144	490.08	144	765.6
192	653.44	192	1020.8
240	816.8	240	1276.
288	980.16	288	1531.2
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60 x 12	51.05	72 x 12	76.56
96	408.4	96	612.48
120	510.5	120	765.6
144	612.6	144	918.72
192	816.8	192	1224.96
240	1021.	240	1531.2
288	1225.2	288	1837.44
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72 x 12	61.26	84 x 12	89.32
96	490.08	96	714.56
120	612.6	120	893.2
144	735.12	144	1071.84
192	980.16	192	1429.12
240	1225.2	240	1786.4
288	1470.24	288	2143.68
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84 x 12	71.47	96 x 12	102.08
96	571.76	96	816.64
120	714.7	120	1020.8
144	857.6	144	1224.96
192	1143.52	192	1633.28
240	1429.4	240	2041.6
288	1715.28	288	2449.92
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96 x 12	81.68	3/8 Inch	
96	653.44	15.32 lb. sq. ft.	
120	816.8		
144	990.16		
192	1306.88		
240	1633.6		
288	1960.32		
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5/16 Inch		36 x 12	38.28
12.76 lb. sq. ft.		96	306.24
		120	328.8
		144	459.36
		192	612.48
		240	765.6
		288	918.72
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		48 x 12	61.28
		96	490.24
		120	612.8
		144	735.36
		192	980.48
		240	1225.6
		288	1470.72