TECHNICAL PRODUCT MANUAL

2024 EDITION








NUCOR®

SKYLINE

UNMATCHED PRODUCT RANGE

As the premier leader of steel pile systems and solutions, Nucor Skyline's blend of products is unrivaled. From hot and cold rolled sheet piles to H-piles, pipe piles to geostructural products, only Nucor Skyline offers the product range to meet the design and construction demands of the Americas.

MATERIAL AVAILABILITY

With strategic stocking locations throughout the Americas, Nucor Skyline has established a material delivery network that is primed for immediate response. Our facilities offer barge, rail and truck transportation options for cost effectiveness and on-time delivery.

MANUFACTURING CAPABILITIES

Nucor Skyline owns and operates pipe, sheet pile, geostructural and pile accessory facilities. Production is supplemented with full fabrication capabilities to provide a single source for all your foundation needs.

INNOVATIVE APPLICATIONS AND ENGINEERING EXPERTISE

Nucor Skyline has offices throughout the Americas staffed with experienced sales professionals to help meet your material needs. In addition, Nucor Skyline offers engineering support in project design and construction.

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CONVERSION TABLE

	Imperial to Metric				Metric to Imperial			
Dimensions	1 in	=	2.5400	cm	1 cm	=	0.3937	in
	1 ft	=	0.3048	m	1 m	=	3.2808	ft
	1 in^2	=	6.4516	cm^2	1 cm^2	=	0.1550	in^2
	1 ft^2	=	0.0929	m^2	1 m^2	=	10.7639	ft^2
	1 in^3	=	16.3870	cm^3	1 cm^3	=	0.0610	in^3
	1 ft^3	=	0.0283	m^3	1 m^3	=	35.3149	ft^3
	1 in^2/ft	=	21.166	cm^2/m	1 cm^2/m	=	0.0472	in^2/ft
Mass, Force, Pressure	1 lb	=	4.4497	N	1 N	=	0.2247	lb
	1 lb/in	=	0.1752	N/mm	1 N/mm	=	5.7082	lb/in
	1 lb/ft	=	14.5989	N/m	1 N/m	=	0.0685	lb/ft
	1 lb/in^2	=	0.6897	N/cm^2	1 N/cm^2	=	1.4499	lb/in^2
	1 lb/ft^2	=	47.8968	N/m^2	1 N/m^2	=	0.0209	lb/ft^2
	1 lb/in^3	=	0.2715	N/cm^3	1 N/cm^3	=	3.6827	lb/in^3
	1 lb/ft^3	=	157.1420	N/m^3	1 N/m^3	=	0.0064	lb/ft^3
	1 lb	=	0.4536	kg	1 kg	=	2.2046	lbs
	1 lb/ft	=	1.4882	kg/m	1 kg/m	=	0.6720	lb/ft
	1 lb/ft^2	=	4.8824	kg/m^2	1 kg/m^2	=	0.2048	lb/ft^2
	1 kips	=	4.4482	kN	1 kN	=	0.2248	kips
	1 US Ton	=	0.9072	Metric Tons	1 Metric Ton	=	1.1023	US Tons
Moment of Inertia	1 in^4	=	41.6228	cm^4	1 cm^4	=	0.0240	in^4
	1 in^4/ft	=	136.5582	cm^4/m	1 cm^4/m	=	0.0073	in^4/ft
Section Modulus	1 in^3	=	16.3870	cm^3	1 cm^3	=	0.0610	in^3
	1 in^3/ft	=	53.7631	cm^3/m	1 cm^3/m	=	0.0186	in^3/ft
Bending Moment	1 lb.ft	=	1.3563	Nm	1 Nm	=	0.7373	lb.ft
	1 lb.in/ft	=	0.3708	Nm/m	1 Nm/m	=	2.6968	lb.in/ft
	1 lb.ft/ft	=	4.4497	Nm/m	1 Nm/m	=	0.2247	lb.ft/ft

STEEL SHEET PILE

Steel sheet piles are interlocking, corrugated structural sections that are used to form a continuous retaining wall to retain soil or water.

- The ability of a sheet pile section to perform is dependent upon its geometry and the soils it is driven into.
- The pile transfers pressure from the high side of the wall to the soil in front of the wall.
- Nucor Skyline offers a wide range of cold formed and hot rolled steel sheet pile all melted and manufactured in the USA.

Design Considerations

Bending strength and stiffness are the primary design considerations of sheet piles. Durability of the section, especially in permanent salt water applications, must also be taken into account. Drivability of the sheet pile is often overlooked and can control the selection of the sheet.

Applications of Sheet Pile

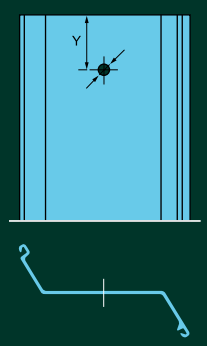
- Permanent: Levee Strengthening, Retaining Walls, Breakwaters, Bulkheads, Environmental Barrier Walls, Bridge Abutments, Underground Parking Garages
- Temporary: Cofferdams and Support of Excavation

HANDLING HOLES

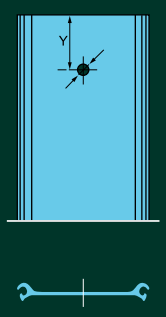
Handling holes are standard for all sheet pile sections. They are located in the centerline of each section.

Y = 6" (152.4 mm)
Ø = 2½" – 2⅝" (63.5 mm – 66.7 mm)

Z-Sections
(NZ, PZ, SKZ/SCZ)

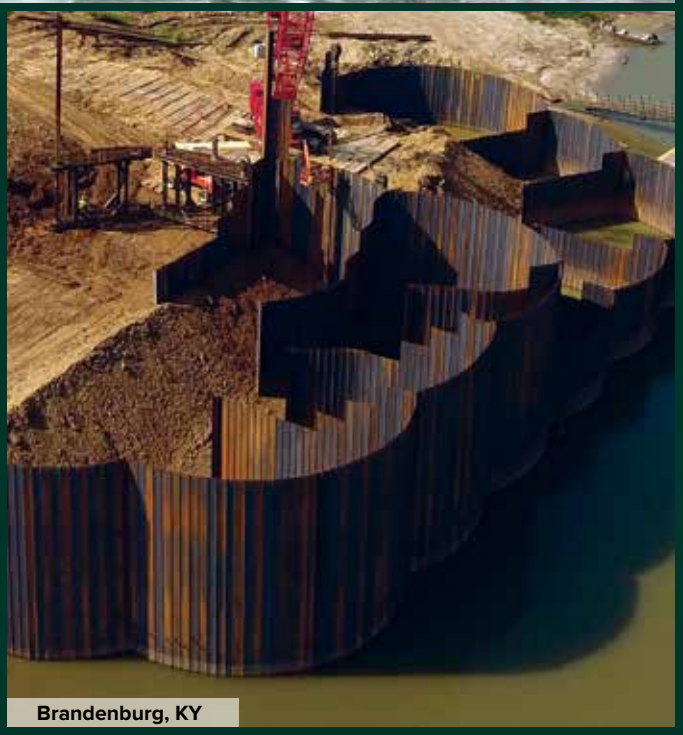


Straight Web Sections
(PS)

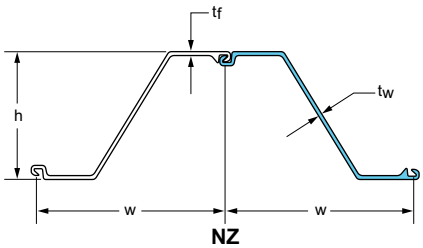


Alma, WI

Sanibel Island, FL

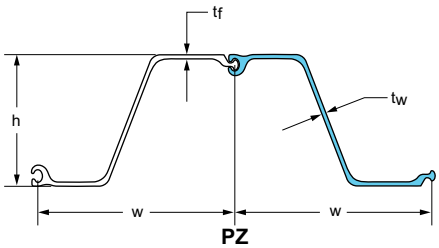


Brandenburg, KY



NZ

SECTION	Width (w) in mm	Height (h) in mm	THICKNESS Flange (t_f) in mm	THICKNESS Web (t_w) in mm	Cross Sectional Area in²/ft cm²/m	WEIGHT Single Pile lb/ft kg/m	WEIGHT Wall Area lb/ft² kg/m²	SECTION MODULUS Elastic in³/ft cm³/m	SECTION MODULUS Plastic in³/ft cm³/m	Moment of Inertia in⁴/ft cm⁴/m	COATING AREA Both Sides ft²/ft of single m²/m	COATING AREA Wall Surface ft²/ft² m²/m²
NZ 14	30.31 770	13.39 340	0.375 9.5	0.375 9.5	6.40 135.4	55 81.26	21.77 106.30	25.65 1379	30.50 1640	171.7 23447	6.10 1.86	1.20 1.20
NZ 19	27.56 700	16.14 410	0.375 9.5	0.375 9.5	7.07 149.6	55 81.85	24.05 117.40	35.08 1886	41.33 2222	283.1 38659	6.18 1.88	1.35 1.35
NZ 20	27.56 700	16.16 411	0.394 10.0	0.394 10.0	7.34 155.4	57 85.37	24.82 122.00	36.24 1948	42.80 2301	292.8 39984	6.18 1.88	1.35 1.35
NZ 21	27.56 700	16.20 412	0.433 11.0	0.433 11.0	7.80 165.2	61 90.78	26.56 129.70	38.69 2080	45.85 2465	313.4 42797	6.18 1.88	1.35 1.35
NZ 22	27.56 700.0	16.25 413.0	0.480 12.20	0.480 12.20	8.57 181.4	67 99.71	29.20 142.44	41.47 2230	49.34 2653	336.9 46006	6.18 1.88	1.35 1.35
NZ 26	27.56 700	17.32 440	0.500 12.7	0.500 12.7	9.08 192.2	71 105.66	30.99 151.30	48.50 2608	57.01 3065	419.9 57340	6.49 1.98	1.41 1.41
NZ 28	27.56 700	17.38 441	0.560 14.2	0.560 14.2	9.98 211.2	78 116.08	33.96 165.82	52.62 2829	62.16 3342	457.4 62461	6.49 1.98	1.41 1.41
NZ 38	27.56 700	19.69 500	0.689 17.5	0.500 12.7	11.00 232.9	86 127.99	37.45 182.83	70.84 3809	81.57 4386	697.3 95214	6.58 2.01	1.43 1.43
NZ 40	27.56 700.0	19.73 501.0	0.735 18.70	0.551 14.00	11.77 249.1	92 136.91	40.06 195.59	74.97 4031	86.75 4664	739.6 100997	6.58 2.01	1.43 1.43
NZ 42	27.56 700.0	19.77 502.0	0.769 19.50	0.589 15.0	12.41 262.7	97 144.36	42.24 206.23	78.17 4203	90.80 4881	772.5 105490	6.58 2.01	1.43 1.43



PZ

SECTION	Width (w) in mm	Height (h) in mm	THICKNESS Flange (t_f) in mm	THICKNESS Web (t_w) in mm	Cross Sectional Area in²/ft cm²/m	WEIGHT Single Pile lb/ft kg/m	WEIGHT Wall Area lb/ft² kg/m²	SECTION MODULUS Elastic in³/ft cm³/m	SECTION MODULUS Plastic in³/ft cm³/m	Moment of Inertia in⁴/ft cm⁴/m	COATING AREA Both Sides ft²/ft of single m²/m	COATING AREA Wall Surface ft²/ft² m²/m²
PZ 22	22.00 559	9.0 229	0.375 9.50	0.375 9.50	6.47 136.9	40.3 60.0	22.0 107.4	18.1 973	21.79 1171.4	84.38 11500	4.48 1.37	1.22 1.22
PZ 27	18.00 457	12.0 305	0.375 9.50	0.375 9.50	7.94 168.1	40.5 60.3	27.0 131.8	30.2 1620	36.49 1961.9	184.20 25200	4.48 1.37	1.49 1.49
PZ 35	22.64 575	14.9 378	0.600 15.21	0.500 12.67	10.29 217.8	66.0 98.2	35.0 170.9	48.5 2608	57.17 3073.5	361.22 49300	5.37 1.64	1.42 1.42
PZ 40	19.69 500	16.1 409	0.600 15.21	0.500 12.67	11.77 249.1	65.6 97.6	40.0 195.3	60.7 3263	71.92 3866.7	490.85 67000	5.37 1.64	1.64 1.64

NZ/PZ

NZ AVAILABLE STEEL GRADES

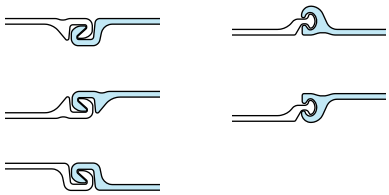
ASTM	YIELD STRENGTH	
	ksi	MPa
A328	39	270
A572 Grade 50	50	345
A572 Grade 60	60	415
A572 Grade 65	65	450
A588	50	345
A690	50	345

PZ AVAILABLE STEEL GRADES

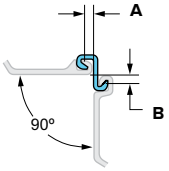
ASTM	YIELD STRENGTH	
	ksi	MPa
A328	39	270
A572 Grade 50	50	345
A572 Grade 60	60	415
A588	50	345
A690	50	345

Highlighted fields represent the most commonly used and readily available steel grades.

INTERLOCK COMBINATIONS

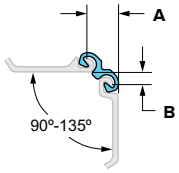


NZ CORNER PILES



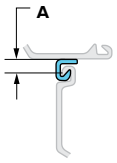
E 20

Gr: S355 GP/Gr. 50/60
Wt: 9.68 lb/ft
14.4 kg/m
A: ~0.95″
24.9 mm
B: ~0.73″
18.5 mm



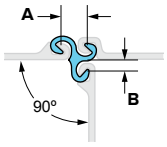
OMEGA 18

Gr: S355 GP/Gr. 50/60
Wt: 12.10 lb/ft
18.0 kg/m
A: ~2.76″
~70 mm
B: ~1.18″
~30 mm



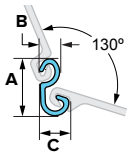
E 22

Gr: S355 GP/Gr. 50/60
Wt: 6.87 lb/ft
10.2 kg/m
A: ~1.28″
~32.5 mm



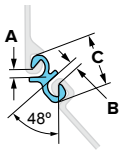
LARSSEN T

Gr: A572 Gr. 50/60
Wt: 14.02 lb/ft
20.9 kg/m
A: 2.075″
5.27 mm
B: 0.914″
23.2 mm



SKLC 90

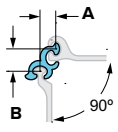
Gr: S355 GP/Gr. 50/60
Wt: 8.50 lb/ft
12.6 kg/m
A: 4.09″
103.9 mm
B: 1.10″
27.9 mm
C: 2.05″
52.1 mm



LARSSEN 45

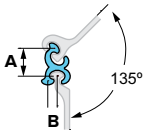
Gr: A572 Gr. 50/60
Wt: 9.88 lb/ft
14.7 kg/m
A: 0.74″
18.8 mm
B: 0.74″
18.8 mm
C: 3.87″
98.3 mm

PZ CORNER PILES



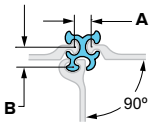
SKP90

Gr: A572 Gr. 50/60
Wt: 9.17 lb/ft
13.6 kg/m
A: 1.24″
31.5 mm
B: 1.76″
37.1 mm



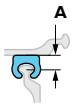
SKP45

Gr: A572 Gr. 50/60
Wt: 9.08 lb/ft
13.5 kg/m
A: 2.05″
52.1 mm
B: 0.70″
17.8 mm



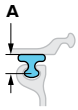
SKPT

Gr: A572 Gr. 50/60
Wt: 11.30 lb/ft
16.8 kg/m
A: 1.23″
31.2 mm
B: 1.46″
37.1 mm



SKPF

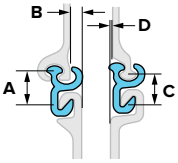
Gr: S355 GP/Gr. 50/60
Wt: 6.13 lb/ft
9.1 kg/m
A: 0.96″
24.4 mm



SKPM

Gr: S355 GP/Gr. 50/60
Wt: 4.92 lb/ft
7.3 kg/m
A: 1.26″
32.0 mm

TRANSITIONAL PILES



SKAP

Gr: A572 Gr. 50/60
Wt: 8.95 lb/ft 13.3 kg/m
A: 1.97″ 50.0 mm
B: 0.69″ 17.5 mm
C: 1.61″ 40.9 mm
D: 0.02″ 0.5 mm

DELIVERY CONDITIONS & TOLERANCES

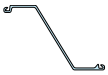
	ASTM A6	
Mass	± 2.5%	
Length	+ 5 in.	– 0 in.

MAXIMUM ROLLED LENGTHS†

NZ/PZ	105.0 ft.	32.0 m

† Longer lengths may be possible upon request.

DELIVERY FORMS



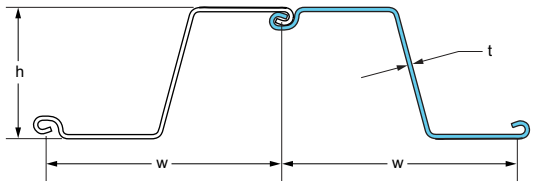
Single Pile
Position A

Double Pile
Form I Standard

Single Pile
Position B

Double Pile
Form II on Request

SCZ/SKZ



SKZ/SCZ

SECTION	Width (w) in mm	Height (h) in mm	Thickness (t) in mm	Cross Sectional Area in²/ft cm²/m	WEIGHT Single Pile lb/ft kg/m	WEIGHT Wall Area lb/ft² kg/m²	SECTION MODULUS Elastic in³/ft cm³/m	SECTION MODULUS Plastic in³/ft cm³/m	Moment of Inertia in⁴/ft cm⁴/m	COATING AREA Both Sides ft²/ft m²/m	COATING AREA Coating Area ft²/ft² m²/m²
SCZ 12	28.50 723.9	10.00 254.0	0.200 5.1	3.32 70.3	27.01 40.20	11.37 55.51	11.52 619	13.10 704	57.6 7866	6.10 1.86	1.28 1.28
SCZ 14	28.50 723.9	10.00 254.0	0.250 6.4	4.18 88.48	33.81 50.31	14.23 69.50	14.36 772	16.32 877.4	71.82 9808	6.10 1.86	1.28 1.28
SCZ 16	28.50 723.9	10.00 254.0	0.276 7.0	4.62 97.79	37.37 55.61	15.73 76.82	15.75 847	17.97 965.9	78.73 10751	6.10 1.86	1.28 1.28
SCZ 17N	28.50 723.9	10.00 254.0	0.295 7.5	4.95 104.78	40.03 59.58	16.86 82.32	16.87 907	19.21 1033	84.35 11519	6.10 1.86	1.28 1.28
SCZ 18N	28.50 723.9	10.00 254.0	0.317 8.1	5.31 112.39	42.94 63.91	18.08 88.28	18.10 973	20.61 1108	90.48 12356	6.10 1.86	1.28 1.28
SCZ 21N	28.50 723.9	10.00 254.0	0.375 9.5	6.29 133.06	50.84 75.66	21.41 104.54	21.43 1152	24.40 1312	107.13 14629	6.10 1.86	1.28 1.28
SKZ 20	28.50 723.9	16.00 406.4	0.315 8.0	6.00 127.00	48.24 71.79	20.31 99.17	31.69 1704	36.66 1970.97	253.51 34618	7.60 2.32	1.60 1.60
SKZ 22	28.50 723.9	16.00 406.4	0.335 8.5	6.30 133.35	51.30 76.34	21.60 105.46	33.43 1797	38.94 2093.55	267.40 36515	7.60 2.32	1.60 1.60
SKZ 23	28.50 723.9	16.00 406.4	0.354 9.0	6.70 141.82	54.20 80.66	22.82 111.42	35.61 1915	41.12 2210.75	284.90 38905	7.60 2.32	1.60 1.60
SKZ 24	28.50 723.9	16.00 406.4	0.375 9.5	7.10 150.28	57.43 85.47	24.18 118.06	37.73 2028	43.52 2339.78	301.80 41213	7.60 2.32	1.60 1.60
SKZ 25	28.50 723.9	16.00 406.4	0.399 10.1	7.60 160.87	61.10 90.93	25.73 125.61	40.14 2158	46.24 2486.02	321.12 43851	7.60 2.32	1.60 1.60
SKZ 31	28.50 723.9	18.00 457.2	0.450 11.4	9.07 192.04	73.82 109.85	31.08 151.75	51.56 2772	60.51 3253.29	464.05 63369	8.06 2.46	1.70 1.70
SKZ 33	28.50 723.9	18.00 457.2	0.475 12.1	9.40 198.97	77.64 115.54	32.69 159.61	54.89 2951	63.57 3417.68	494.03 67462	8.06 2.46	1.70 1.70
SKZ 34	28.50 723.9	18.00 457.2	0.500 12.7	9.89 209.25	81.42 121.17	34.28 167.38	57.62 3098	66.86 3594.60	518.62 70821	8.06 2.46	1.70 1.70
SKZ 36	28.50 723.9	18.00 457.2	0.535 13.6	10.78 228.10	86.81 129.19	36.55 178.46	60.71 3264	71.58 3848.17	546.43 74619	8.06 2.46	1.70 1.70
SKZ 38	28.50 723.9	18.00 457.2	0.550 14.0	11.07 234.42	88.95 132.37	37.45 182.85	62.32 3350	73.52 3952.44	560.85 76588	8.06 2.46	1.70 1.70

INTERLOCK COMPATIBILITY

	SCZ 12	SCZ 14	SCZ 16	SCZ 17N	SCZ 18N	SCZ 21N	SKZ 20	SKZ 22	SKZ 23	SKZ 24	SKZ 25	SKZ 31	SKZ 33	SKZ 34	SKZ 36	SKZ 38
SCZ 12	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 14	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 16	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 17N	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 18N	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SCZ 21N	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 20	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 22	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 23	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 24	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 25	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○
SKZ 31	○	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 33	○	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 34	○	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 36	○	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●
SKZ 38	○	○	○	○	○	○	○	○	○	○	○	●	●	●	●	●

● Interlock compatible ○ Interlock not compatible

SCZ/SKZ

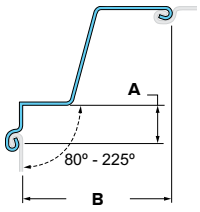
AVAILABLE STEEL GRADES

ASTM	YIELD STRENGTH	
	ksi	MPa
A572 Grade 50	50	345
A572 Grade 55	55	380
A572 Grade 60	60	415
A572 Grade 65	65	450

ASTM	YIELD STRENGTH	
	ksi	MPa
A588	50	345
A690 Grade 50	50	345
A690 Grade 60	60	415

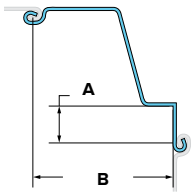
Highlighted fields represent the most commonly used and readily available steel grades.

CORNER PILES



B2 CORNER PILE

A: 5.0″ 127 mm
B: 23.5″ 596.9 mm



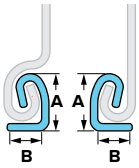
B3 CORNER PILE

A: 5.0″ 127 mm
B: 23.5″ 596.9 mm

SKLC 90*

Gr: S 355 GP/Gr. 50/60
Wt: 8.50 lb/ft 12.6 kg/m
A: 4.09″ 103.9 mm
B: 1.10″ 27.9 mm
C: 2.05″ 52.1 mm

* SKLC 90 only compatible with SCZ 14-21N / SKZ 20-25.

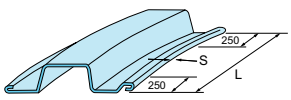


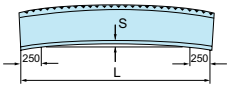
SKCW

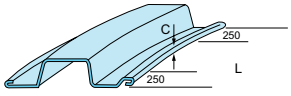
Gr: A 572 / Gr. 50/60
Wt: 7.32 lb/ft 10.9 kg/m
A: 1.53″ 38.9 mm
B: 2.75″ 69.9 mm

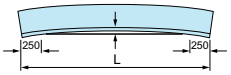
DELIVERY CONDITIONS & TOLERANCES

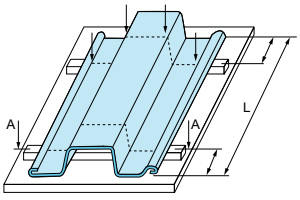
	ASTM A6		EN 10249-2
Mass	± 2.5%		± 7%
Length	+ 5 in.	– 0 in.	± 50 mm
Straightness			
Bending (S)			0.25% of the length
Curving (C)			0.25% of the length
Twisting (V)			2% of the length









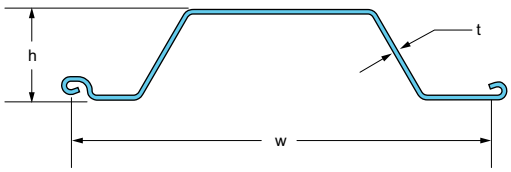


MAXIMUM ROLLED LENGTHS†

SCZ/SKZ	90 ft.	27.4 m

† Longer lengths may be possible upon request.

SKL/SKS



SKL/SKS

SECTION	Width (w)	Height (h)	Thickness (t)	Cross Sectional Area	WEIGHT		SECTION MODULUS		Moment of Inertia	COATING AREA	
					Single Pile	Wall Area	Elastic	Plastic		Both Sides	Coating Area
	in mm	in mm	in mm	in²/ft cm²/m	lb/ft kg/m	lb/ft² kg/m²	in³/ft cm³/m	in³/ft cm³/m	in⁴/ft cm⁴/m	ft²/ft m²/m	ft²/ft² m²/m²
SKL 9	21.65 550	3.54 90	0.157 4.0	2.53 53.50	15.52 23.10	8.60 42.00	2.55 137	3.28 176.43	4.50 615	4.23 1.29	1.17 1.17
SKL 10	21.65 550	3.54 90	0.177 4.5	2.83 59.90	17.40 25.90	9.63 47.00	2.88 155	3.67 197.23	5.09 695	4.23 1.29	1.17 1.17
SKL 12	21.65 550	3.54 90	0.217 5.5	3.43 72.60	21.10 31.40	11.67 57.00	3.53 190	4.42 237.66	6.22 850	4.23 1.29	1.17 1.17
SKS 11	27.56 700	5.91 150	0.197 5.0	3.29 69.60	25.69 38.23	11.26 55.00	6.34 341	7.54 405.36	18.67 2550	5.87 1.79	1.28 1.28
SKS 13	27.56 700	5.91 150	0.217 5.5	3.61 76.40	28.22 42.00	12.29 60.00	6.98 375	8.44 454.03	20.48 2810	5.87 1.79	1.28 1.28
SKS 14	27.56 700	5.91 150	0.250 6.4	4.17 88.20	32.58 48.49	14.19 69.27	8.05 433	9.48 509.87	23.78 3247	5.87 1.79	1.28 1.28
SKS 16	27.56 700	5.91 150	0.276 7.0	4.57 96.70	35.61 53.00	15.57 76.00	8.89 478	10.40 559.20	26.25 3585	5.87 1.79	1.28 1.28

INTERLOCK COMPATIBILITY

	SKL 9	SKL 10	SKL 12	SKS 11	SKS 13	SKS 14	SKS 16
SKL 9	●	●	●	●	●	●	●
SKL 10	●	●	●	●	●	●	●
SKL 12	●	●	●	●	●	●	●
SKS 11	●	●	●	●	●	●	●
SKS 13	●	●	●	●	●	●	●
SKS 14	●	●	●	●	●	●	●
SKS 16	●	●	●	●	●	●	●

● Interlock compatible ○ Interlock not compatible

COLD FORMED STEEL SHEET PILE

SKL/SKS

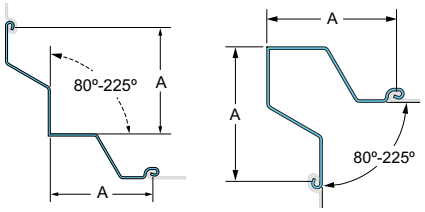
AVAILABLE STEEL GRADES

ASTM	YIELD STRENGTH	
	ksi	MPa
A572 Grade 50	50	345
A572 Grade 55	55	380
A572 Grade 60	60	415
A572 Grade 65	65	450

ASTM	YIELD STRENGTH	
	ksi	MPa
A588	50	345
A690	50	345

Highlighted fields represent the most commonly used and readily available steel grades.

CORNER PILES



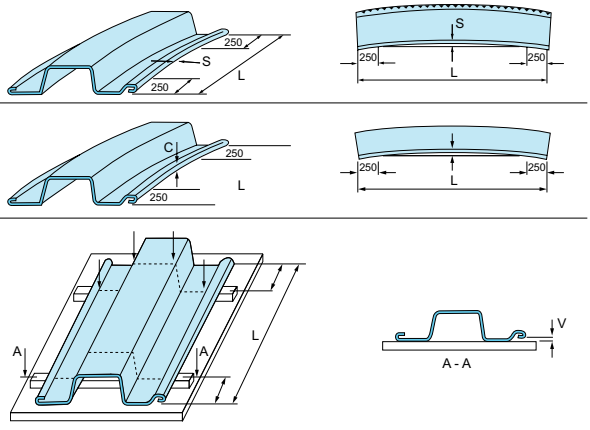
D1 CORNER PILE D3 CORNER PILE

SKL 9-12: A: 10.8 in. 275.0 mm

SKS 11-16: A: 13.8 in. 350.0 mm

DELIVERY CONDITIONS & TOLERANCES

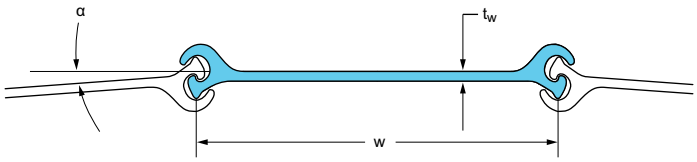
	ASTM A6		EN 10249-2
Mass	± 2.5%		± 7%
Length	+ 5 in.	– 0 in.	± 50 mm
Straightness			
Bending (S)			0.25% of the length
Curving (C)			0.25% of the length
Twisting (V)			2% of the length



STANDARD ROLLED LENGTHS†

SKL/SKS	70 ft.	(21.3 m)

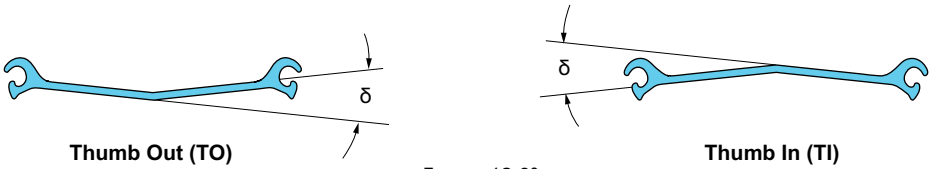
† Longer lengths may be possible upon request.



SECTION	Width (w) in mm	Web (t_w) in mm	Maximum Interlock Strength k/in kN/m	Allowable Interlock Rotation (α) Degrees	Cross Sectional Area in²/ft cm²/m	WEIGHT Single Pile lb/ft kg/m	WEIGHT Wall Area lb/ft² kg/m²	Elastic Section Modulus in³/sheet cm³/sheet	Moment of Inertia in⁴/sheet cm⁴/sheet	COATING AREA Both Sides ft²/ft of single m²/m	COATING AREA Wall Surface ft²/ft² of wall m²/m²
PS 27.5	19.69 500	0.4 10.2	20 3500	7.0	8.09 171.2	45.1 67.1	27.5 134.3	3.3 54	5.3 221	3.65 1.11	1.11 1.11
PS 31	19.69 500	0.5 12.7	20 3500	7.0	9.12 193.0	50.9 75.7	31.0 151.4	3.3 54	5.3 221	3.65 1.11	1.11 1.11

† Minimum cell diameter cannot be guaranteed for piles over 65 feet (19.81 m) in length, or if piles are spliced. 58 piles are needed to make a 30 foot diameter cell.

Pre-bent piles are available to achieve a tighter radius in the cells and arcs.



Thumb Out (TO)

Thumb In (TI)

δ_{max} = 12.0°

HOT ROLLED STEEL SHEET PILE

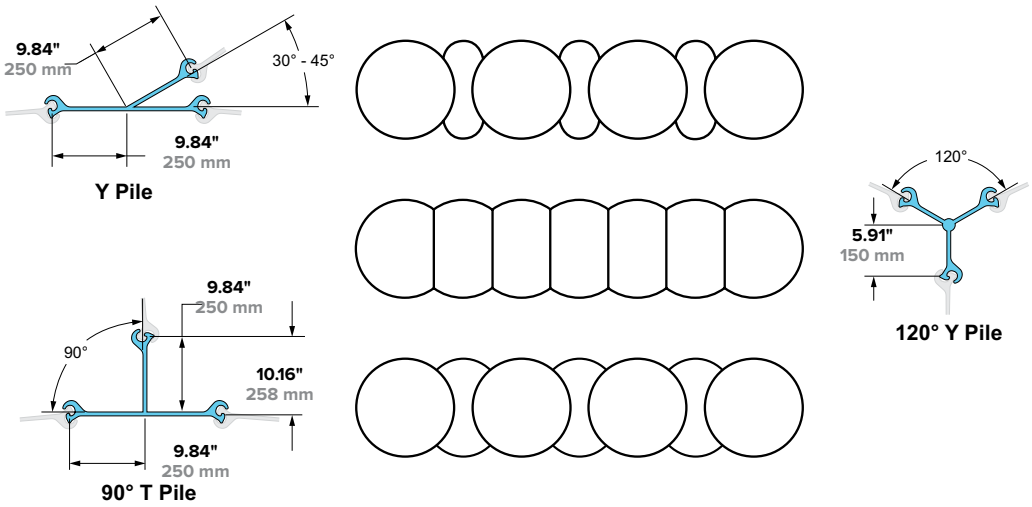
PS

PS AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A328	39	270
A572 Gr 50	50	345
A588	50	345
A690	50	345

* Only available for AS 500-13.0 sheet.

JUNCTION PILES



DELIVERY CONDITIONS & TOLERANCES

	ASTM A6		EN 10248
Mass	± 2.5%		± 5%
Length	+ 5 in.	- 0 in.	± 200 mm
Height			± 5 mm
Thickness			± 6%
Width			± 2%
Straightness			0.2% of the length
Ends out of Square			2% of the width

MAXIMUM ROLLED LENGTHS†

PS	105.0 ft.	32.0 m

† Longer lengths may be possible upon request.

COMBINED WALL SYSTEMS

Combined wall systems are used when regular sheet piles are not strong enough to carry the required loads. There are a wide variety of solutions which give the designer a great deal of flexibility. Each type of system, beam and pipe, has their own advantages.

Components of a combined wall system are:

- Primary: King pile and a pair of intermediary sheet piles
- Connector welded to or interlocked with the king pile connecting the king pile to the sheet pile

The intermediary sheet piles transfer the soil and water pressures to the king piles, which carry most of the load. The sheet piles are usually shorter, varying from 60% to 100% of the length of the king piles. The king piles are often designed to carry substantial vertical loads in addition to the normal bending loads.

Applications of Combined Wall Systems

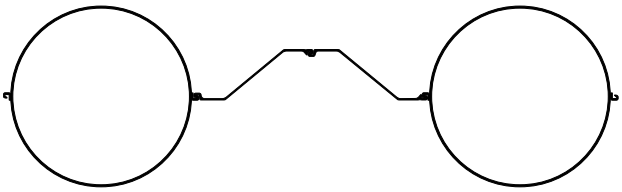
- Large Capacity Retaining Walls with Deep Excavations
- Breakwaters
- Deep Cofferdams
- Structures Requiring Retaining Walls to Resist Large Loads

Detroit, MI

Sumterville, FL

Corpus Christi, TX

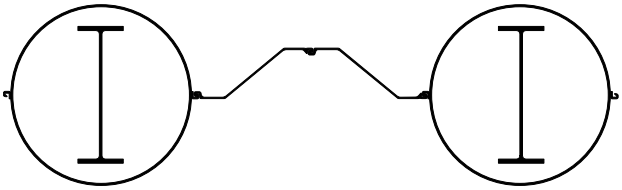
PIPE COMBINED WALLS



PIPE-Z WITH E22 CONNECTORS

Benefits of System

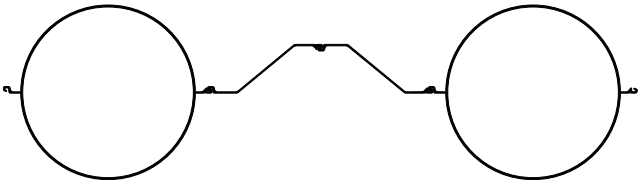
- Best Strength/Stiffness to Cost Ratio
- Most Common System
- No Waler Required
- Direct Connect Tie Rods/Anchors to Pipe



PIPE-Z + WF WITH E22 CONNECTORS

Benefits of System

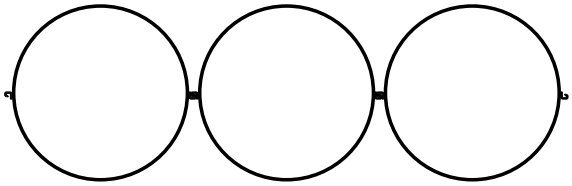
- Increased Bending Capacity without Increasing Footprint
- Rock Socket with Shear & Moment Connection
- No Waler Required
- Direct Connect Tie Rods/Anchors to Pipe



PIPE-Z WITH NZ OR PZ FLANGE

Benefits of System

- Precise control of System Width
- Wider Variety of Steel Grades for Sheet Pile Flanges
- No Waler Required
- Direct Connect Tie Rods/Anchors to Pipe



PIPE-PIPE WITH E22 CONNECTORS

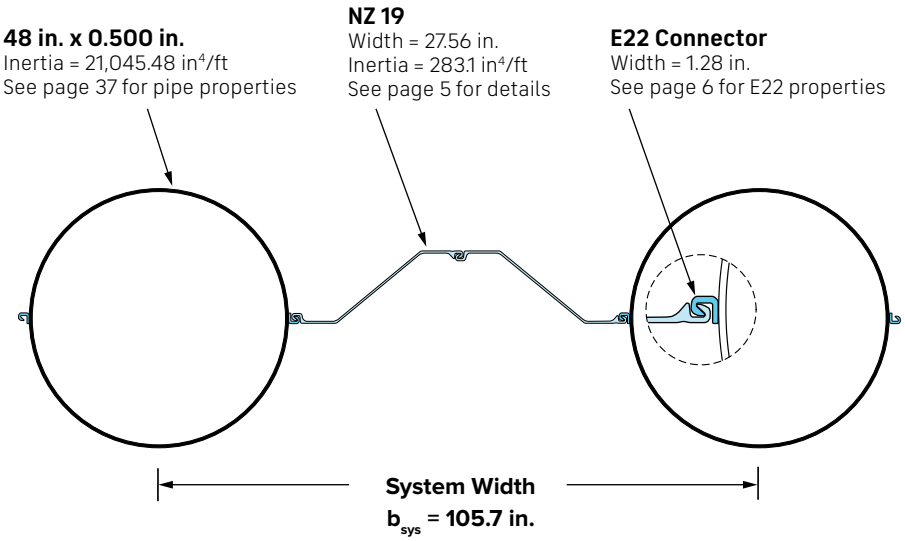
Benefits of System

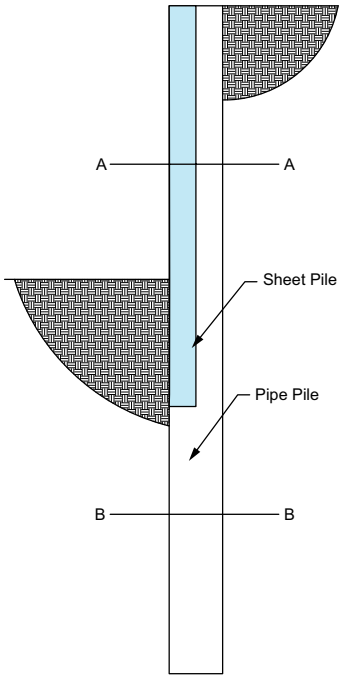
- Smallest Footprint of any Pipe Combined Wall System
- Highest Capacity of any Pipe Combined Wall System
- One Type of Section for Contractor to Drive

PIPE COMBINED WALLS

SAMPLE CALCULATION

48 in. x 0.500" Pipe Piles with E22 Connectors and NZ 19 Intermediary Sheet Piles





b_{sys} = 48 in + 2*(1.28 in + 27.56 in)
= **105.7 in**

I_{pipe} = $(\pi/64)(OD^4 - ID^4)$
= $(3.14/64)((48\text{ in})^4 - (48\text{ in} - 2*0.5\text{ in})^4)$
= 21,045 in^4

I_{sp} = $2 * b_{sp} * I_{sp}/ft$
= (2 * 27.56 in * 283.1 in^4/ft) / 12 in/ft
1,300 in^4

Properties through A-A

I_{sys} = $(I_{pipe} + I_{sp}) / b_{sys}$
= (21,045 in^4 + 1,300 in^4) / (105.7 in / 12 in/ft)
2,537 in^4/ft

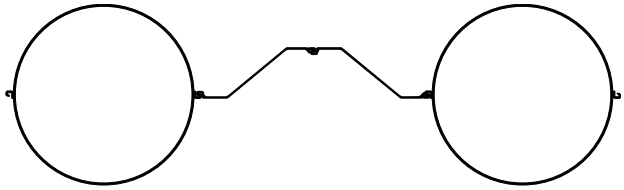
S_{sys} = I_{sys} / (OD/2)
2,537 in^4/ft / (48 in / 2)
105.7 in^3/ft

Properties through B-B

I_{sys} = (21,045 in^4) / (105.7 in / 12 in/ft)
= **2,389 in^4/ft**

S_{sys} = 2,389 in^4/ft / (48 in / 2)
99.6 in^3/ft

Pipe-Z with E22 Connector System*



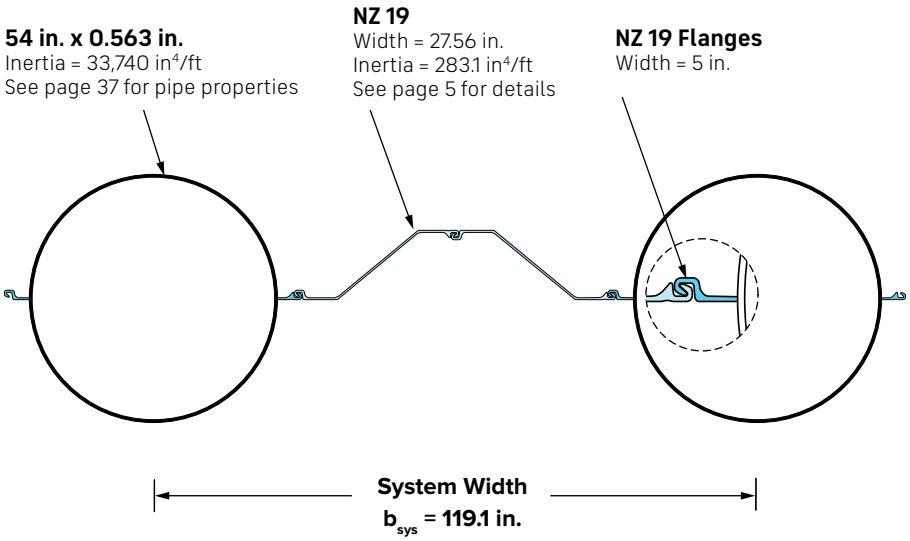
Pipe Diameter	Wall Thickness	Intermediary Sheet Pile	Sheet Pile Connector	System Width	Moment of Inertia	Section Modulus	Weight (NZ Length / Pipe Length)			Cross Sectional Area
							100%	80%	60%	
in mm	in mm			in mm	in⁴/ft cm⁴/m	in³/ft cm³/m	lb/ft² kg/m²	lb/ft² kg/m²	lb/ft² kg/m²	in²/ft cm²/m
36 914	0.375 9.5	NZ 14	E22	99.19 2519.4	911 124341	50.6 2720	32.2 157.5	29.3 142.8	26.3 128.2	8.99 190.3
36 914	0.438 11.1	NZ 19	E22	93.68 2379.4	1158 158082	64.3 3458	37.2 181.5	34.0 166.1	30.8 150.6	10.43 220.7
42 1067	0.500 12.7	NZ 14	E22	105.19 2671.8	1700 232167	81.0 4353	39.4 192.5	36.6 178.7	33.8 164.9	11.13 235.5
42 1067	0.563 14.3	NZ 19	E22	99.68 2531.8	2051 280023	97.6 5250	44.9 219.3	41.9 204.8	39.0 190.2	12.73 269.5
48 1219	0.563 14.3	NZ 14	E22	111.19 2824.2	2641 360648	110.0 5916	44.2 215.7	41.5 202.6	38.8 189.6	12.54 265.5
48 1219	0.625 15.875	NZ 19	E22	105.68 2684.2	3112 424898	129.6 6970	50.0 244.1	47.2 230.4	44.4 216.7	14.25 301.6
54 1372	0.625 15.9	NZ 19	E22	111.68 2836.6	4150 566773	153.7 8265	51.6 252.0	49.0 239.0	46.3 226.1	14.75 312.2
54 1372	0.688 17.5	NZ 26	E22	111.68 2836.6	4607 629086	170.6 9173	58.9 287.4	55.5 271.1	52.2 254.7	16.86 356.9
60 1524	0.688 17.5	NZ 19	E22	117.68 2989.0	5882 803218	196.1 10541	57.1 278.8	54.6 266.5	52.1 254.2	16.38 346.8
60 1524	0.750 19.1	NZ 26	E22	117.68 2989.0	6445 880060	214.8 11550	64.3 314.1	61.1 298.6	58.0 283.1	18.49 391.3
66 1676	0.750 19.1	NZ 19	E22	123.68 3141.4	8066 1101454	244.4 13141	62.8 306.5	60.4 294.7	58.0 283.0	18.07 382.4
66 1676	0.813 20.7	NZ 26	E22	123.68 3141.4	8769 1197480	265.7 14287	70.1 342.2	67.1 327.4	64.0 312.7	20.20 427.6
72 1829	0.813 20.7	NZ 26	E22	129.68 3293.8	10838 1479947	301.0 16185	71.7 349.9	68.8 335.8	65.9 321.8	20.68 437.8
72 1829	0.875 22.2	NZ 26	E22	129.68 3293.8	11621 1586893	322.8 17355	76.0 371.0	73.1 356.9	70.2 342.8	21.95 464.6
78 1981	0.875 22.2	NZ 26	E22	135.68 3446.2	14114 1927403	361.9 19457	77.6 378.8	74.8 365.4	72.1 351.9	22.44 475.0
78 1981	0.938 23.8	NZ 26	E22	135.68 3446.2	15082 2059540	386.7 20791	82.1 401.0	79.4 387.5	76.6 374.1	23.77 503.2
84 2134	0.938 23.8	NZ 26	E22	141.68 3598.6	18045 2464133	429.6 23099	83.7 408.9	81.1 396.0	78.5 383.1	24.26 513.6
84 2134	1.000 25.4	NZ 26	E22	141.68 3598.6	19184 2619754	456.8 24558	88.3 431.4	85.7 418.5	83.1 405.6	25.62 542.2

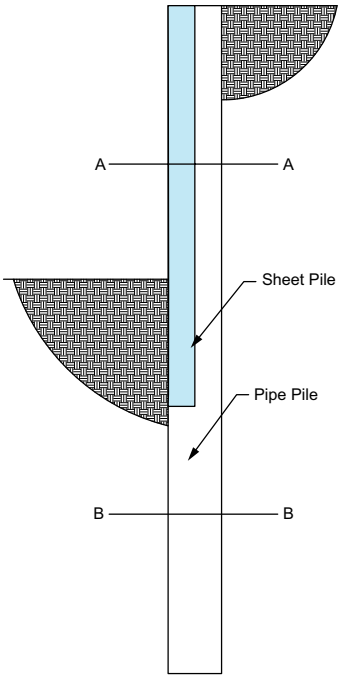
* Additional combinations are available upon request.

PIPE COMBINED WALLS

SAMPLE CALCULATION

54” x 0.563” Pipe with 5 in. NZ 19 Flanges & NZ 19





b_{sys} = 54 in + 2*(5 in + 27.56 in)
= **119.1 in**

I_{pipe} = (π/64)(OD^4 – ID^4)
= (3.14/64)((54 in)⁴ – (54 in – 2*0.563 in)⁴
= 33,739.81 in⁴

I_{sp} = 2 * b_{sys} * I_{sp}/ft
= (2 * 27.56 in * 283.1 in⁴/ft) / 12 in/ft
1,300 in⁴

Properties through A-A

I_{sys} = (I_{pipe} + I_{sp}) / b_{sys}
= (33,739.81 in⁴ + 1,300 in⁴) / (119.1 in / 12 in/ft)
3,530 in⁴/ft

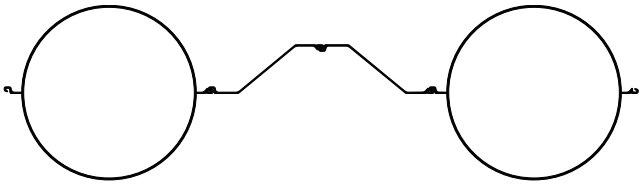
S_{sys} = I_{sys} / (OD/2)
3,530 in⁴/ft / (54 in / 2)
130.7 in³/ft

Properties through B-B

I_{sys} = (33,739.81 in⁴) / (119.1 in / 12 in/ft)
= **3,399 in⁴/ft**

S_{sys} = 3,399 in⁴/ft / (54 in / 2)
125.9 in³/ft

Pipe-Z with NZ or PZ Flanges System*



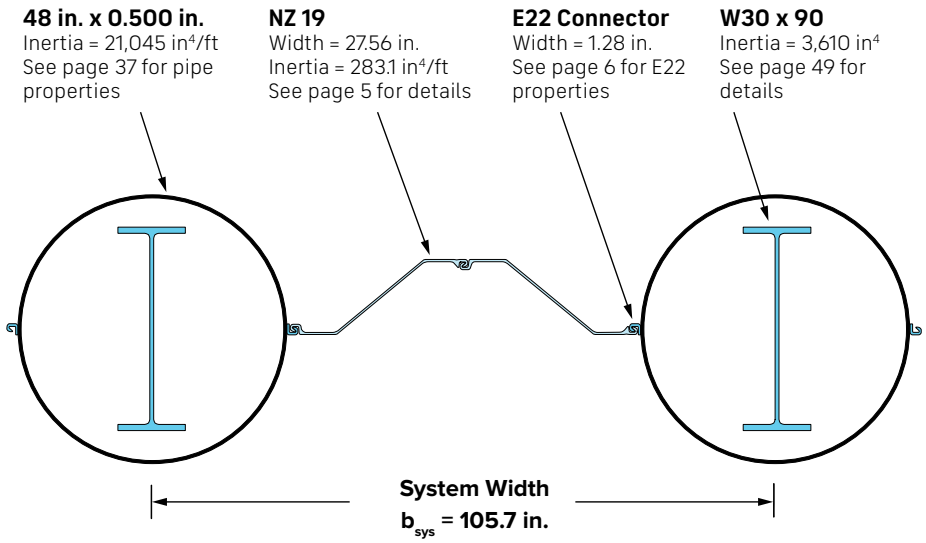
Pipe Diameter	Wall Thickness	Intermediary Sheet Pile	Sheet Pile Connector	Flange Width	System Width	Moment of Inertia	Section Modulus	Weight (NZ Length / Pipe Length)			Cross Sectional Area
								100%	80%	60%	
in mm	in mm			in mm	in mm	in⁴/ft cm⁴/m	in³/ft cm³/m	lb/ft² kg/m²	lb/ft² kg/m²	lb/ft² kg/m²	in²/ft cm²/m
36 914	0.375 9.5	NZ 14	NZ 14 Flange	6.63 168.3	109.88 2791.0	822 112244	45.7 2455	33.5 163.4	29.9 145.9	26.3 128.5	8.11 171.8
36 914	0.438 11.1	NZ 19	NZ 19 Flange	6.00 152.4	103.12 2619.2	1052 143610	58.4 3141	38.0 185.7	34.3 167.5	30.6 149.3	9.47 200.5
42 1067	0.500 12.7	NZ 14	NZ 14 Flange	6.63 168.3	115.88 2943.4	1543 210750	73.5 3951	39.9 194.8	36.5 178.3	33.1 161.8	10.10 213.8
42 1067	0.563 14.3	NZ 19	NZ 19 Flange	6.00 152.4	109.12 2771.6	1873 255798	89.2 4796	45.1 220.0	41.5 202.8	38.0 185.6	11.63 246.2
48 1219	0.563 14.3	NZ 14	NZ 14 Flange	6.63 168.3	121.88 3095.8	2409 329016	100.4 5397	44.2 215.9	41.0 200.1	37.8 184.4	11.44 242.2
48 1219	0.625 15.9	NZ 19	NZ 19 Flange	6.00 152.4	115.12 2924.0	2856 390055	119.0 6399	49.7 242.7	46.4 226.4	43.0 210.1	13.08 276.9
54 1372	0.625 15.9	NZ 19	NZ 14 Flange	6.63 168.3	122.37 3108.2	3788 517260	140.3 7543	51.0 249.1	47.8 233.4	44.6 217.7	13.46 284.9
54 1372	0.688 17.5	NZ 26	NZ 14 Flange	6.63 168.3	122.37 3108.2	4204 574129	155.7 8372	57.6 281.4	53.8 262.6	50.0 243.9	15.39 325.8
60 1524	0.688 17.5	NZ 19	NZ 19 Flange	6.00 152.4	127.12 3228.8	5445 743570	181.5 9758	56.3 275.0	53.3 260.2	50.3 245.4	15.17 321.0
60 1524	0.750 19.1	NZ 26	NZ 26 Flange	7.00 177.8	129.12 3279.6	5874 802086	195.8 10526	63.3 309.3	59.5 290.5	55.7 271.8	16.85 356.7
66 1676	0.750 19.1	NZ 19	NZ 19 Flange	6.00 152.4	133.12 3381.2	7494 1023345	227.1 12209	61.6 300.8	58.7 286.7	55.8 272.6	16.79 355.3
66 1676	0.813 20.7	NZ 26	NZ 26 Flange	7.00 177.8	135.12 3432.0	8027 1096094	243.2 13077	68.6 335.2	65.0 317.3	61.3 299.4	18.49 391.4
72 1829	0.813 20.7	NZ 26	NZ 26 Flange	7.00 177.8	141.12 3584.4	9959 1359972	276.6 14873	70.2 342.6	66.7 325.5	63.1 308.3	19.01 402.3
72 1829	0.875 22.2	NZ 26	NZ 26 Flange	7.00 177.8	141.12 3584.4	10679 1458249	296.6 15948	74.1 361.9	70.6 344.8	67.1 327.7	20.17 427.0
78 1981	0.875 22.2	NZ 26	NZ 26 Flange	7.00 177.8	147.12 3736.8	13017 1777527	333.8 17944	75.7 369.5	72.3 353.1	68.9 336.7	20.69 438.0
78 1981	0.938 23.8	NZ 26	NZ 26 Flange	7.00 177.8	147.12 3736.8	13909 1899389	356.6 19175	79.9 390.0	76.5 373.5	73.1 357.1	21.92 464.1
84 2134	0.938 23.8	NZ 26	NZ 26 Flange	7.00 177.8	153.12 3889.2	16697 2280029	397.5 21373	81.5 397.7	78.2 381.9	75.0 366.1	22.45 475.2
84 2134	1.000 25.4	NZ 26	NZ 26 Flange	7.00 177.8	153.12 3889.2	17751 2424023	422.6 22723	85.7 418.5	82.5 402.7	79.2 386.9	23.70 501.7

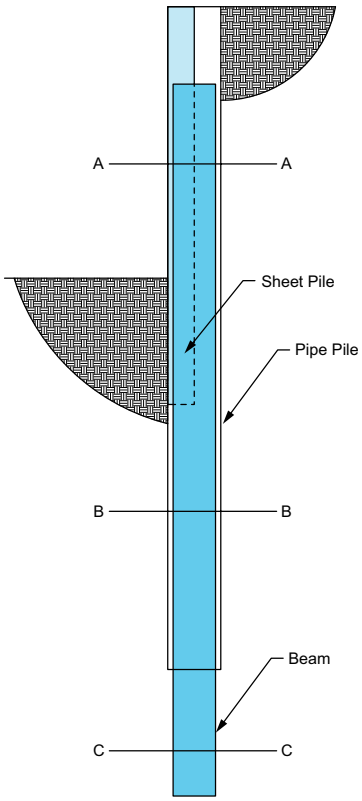
* Additional combinations are available upon request.

PIPE COMBINED WALLS

SAMPLE CALCULATION

48” x 0.500” Pipe with E22 Connectors & NZ 19 & Internal W30 x 90





b_{sys} = 48 in + 2*(1.28 in + 27.56 in)
= **105.7 in**

I_{pipe} = (π/64)(OD⁴ – ID⁴)
= (3.14/64)((48 in)⁴ – (48 in – 2*0.5 in)⁴
= 21,045 in⁴

I_{sp} = 2 * b_{sys} * I_{sp}/ft
= (2 * 27.56 in * 283.1 in⁴/ft) / 12 in/ft
= 1,300 in⁴

I_{beam} = 3,610 in⁴

Properties through A-A

I_{sys} = (I_{pipe} + I_{sp} + I_{beam}) / b_{sys}
= (21,045 in⁴ + 1,300 in⁴ + 3,610 in⁴) / (105.7 in / 12 in/ft)
= **2,773 in⁴/ft**

S_{sys} = I_{sys} / (OD/2)
= 2,947 in⁴/ft / (48 in / 2)
= **122.8 in³/ft**

Properties through B-B

I_{sys} = (21,045 in⁴ + 3,610 in⁴) / (105.7 in / 12 in/ft)
= **2,799 in⁴/ft**

S_{sys} = 2,224 in⁴/ft / (48 in / 2)
= **116.6 in³/ft**

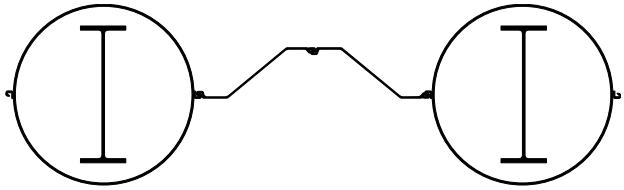
Properties through C-C

I_{sys} = (3,610 in⁴) / (105.7 in / 12 in/ft)
= **409.8 in⁴/ft**

S_{sys} = 409.8 in⁴/ft / (29.5 in / 2)
= **27.8 in³/ft**

Shear Area = 25.9 in * 0.47 in
12.2 in²

Pipe-Z + WF with E22 Connector System*



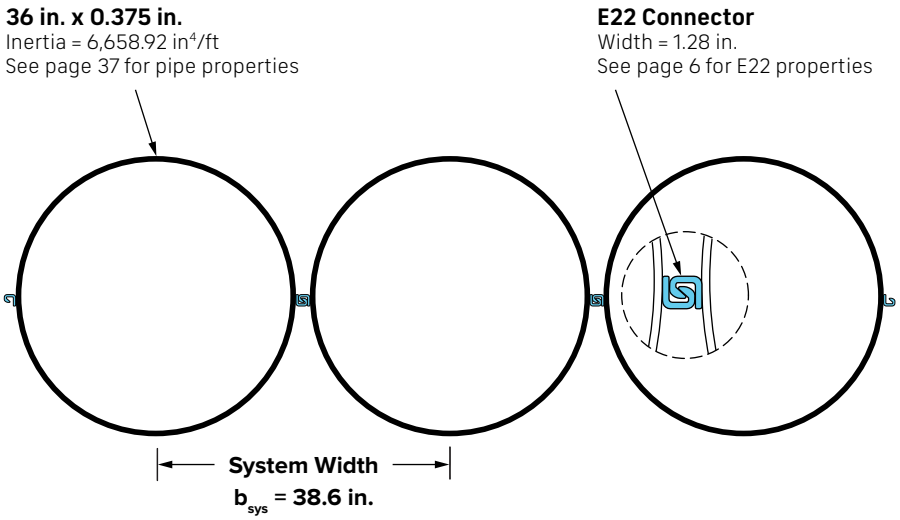
Pipe Diameter	Wall Thickness	Intermediary Sheet Pile	Internal Beam	Sheet Pile Connector	System Width	Cross Section A-A			Cross Section B-B			Cross Section C-C		
						Moment of Inertia	Section Modulus	Weight	Moment of Inertia	Section Modulus	Weight	Moment of Inertia	Section Modulus	Weight
in mm	in mm				in mm	in⁴/ft cm⁴/m	lb/ft² kg/m²	lb/ft² kg/m²	in⁴/ft cm⁴/m	lb/ft² kg/m²	lb/ft² kg/m²	in⁴/ft cm⁴/m	lb/ft² kg/m²	lb/ft² kg/m²
36 914	0.375 9.5	NZ 14	W24x55	E22	99.19 2519.4	1073.9 146644	59.7 3208	32.2 157.5	968.9 132312	53.8 2894	23.9 116.9	163.3 22303	13.8 742	6.7 32.5
36 914	0.438 11.1	NZ 19	W24x104	E22	93.68 2379.4	1554.7 212309	86.4 4644	43.5 212.2	1388.2 189563	77.1 4146	34.7 169.2	397.1 54227	33.0 1777	13.3 65.0
42 1067	0.500 12.7	NZ 14	W30x90	E22	105.19 2671.8	2112.0 288405	100.6 5407	43.4 212.0	2013.0 274890	95.9 5154	35.6 173.7	411.8 56237	27.9 1503	10.3 50.1
42 1067	0.563 14.3	NZ 19	W30x173	E22	99.68 2531.8	3041.4 415321	144.8 7787	59.1 288.7	2884.9 393944	137.4 7386	50.9 248.3	990.8 135298	65.1 3502	20.8 101.7
48 1219	0.563 14.3	NZ 14	W36x135	E22	111.19 2824.2	3482.8 475601	145.1 7802	52.8 257.8	3389.2 462816	141.2 7592	45.4 221.6	841.8 114953	47.4 2547	14.6 71.1
48 1219	0.625 15.9	NZ 19	W36x256	E22	105.68 2684.2	5019.2 685403	209.1 11244	72.8 355.6	4871.6 665240	203.0 10913	65.0 317.4	1907.7 260505	101.6 5464	29.1 141.9
54 1372	0.625 15.9	NZ 19	W40x149	E22	111.68 2836.6	5203.5 710570	192.7 10361	61.7 301.3	5063.8 691490	187.5 10083	54.3 265.3	1053.0 143797	55.1 2964	16.0 78.2
54 1372	0.688 17.5	NZ 26	W40x249	E22	111.68 2836.6	6712.8 916680	248.6 13367	78.0 380.8	6505.6 888380	240.9 12954	68.9 336.4	2106.1 287594	106.7 5737	26.8 130.6
60 1524	0.688 17.5	NZ 19	W44x230	E22	117.68 2989.0	8003.0 1092859	266.8 14342	74.9 366.0	7870.4 1074752	262.3 14105	67.9 331.7	2121.0 289641	99.0 5323	23.5 114.5
60 1524	0.750 19.1	NZ 26	W44x262	E22	117.68 2989.0	8902.2 1215653	296.7 15954	83.8 409.2	8705.6 1188796	290.2 15601	75.2 367.0	2457.6 335594	113.2 6086	26.7 130.5
66 1676	0.750 19.1	NZ 19	W44x290	E22	123.68 3141.4	10685.6 1459190	323.8 17409	85.6 417.8	10559.5 1441962	320.0 17204	78.9 385.2	2619.7 357736	120.3 6468	28.1 137.4
66 1676	0.813 20.7	NZ 26	W44x335	E22	123.68 3141.4	11786.7 1609540	357.2 19203	95.7 467.3	11599.5 1583986	351.5 18898	87.5 427.1	3017.5 412059	136.8 7355	32.5 158.7
72 1829	0.813 20.7	NZ 26	W44x368	E22	129.68 3293.8	14030.2 1915905	389.7 20953	99.1 484.1	13851.7 1891533	384.8 20687	91.3 445.8	3192.5 435958	143.4 7711	34.1 166.3
72 1829	0.875 22.2	NZ 26	W44x408	E22	129.68 3293.8	15183.5 2073397	421.8 22676	107.2 523.2	15005.0 2049026	416.8 22409	99.3 485.0	3562.7 486504	159.2 8557	37.8 184.4
78 1981	0.875 22.2	NZ 26	W40x397	E22	135.68 3446.2	16944.6 2313888	434.5 23359	106.4 519.6	16774.0 2290594	430.1 23124	98.9 483.0	2830.2 386485	138.0 7418	35.1 171.4
78 1981	0.938 23.8	NZ 26	W40x431	E22	135.68 3446.2	18159.9 2479842	465.6 25034	114.0 556.4	17989.3 2456549	461.3 24799	106.5 519.8	3077.9 420302	149.5 8036	38.1 186.1
84 2134	0.938 23.8	NZ 26	W40x503	E22	141.68 3598.6	21568.3 2945286	513.5 27609	120.3 587.5	21405.0 2922979	509.6 27400	113.1 552.5	3523.5 481153	167.7 9016	42.6 208.0
84 2134	1.000 25.4	NZ26	W40x593	E22	141.68 3598.6	23453.3 3202689	558.4 30022	132.6 647.2	23289.9 3180382	554.5 29813.0	125.4 612.2	4268.8 582935	198.2 10656	50.2 245.2

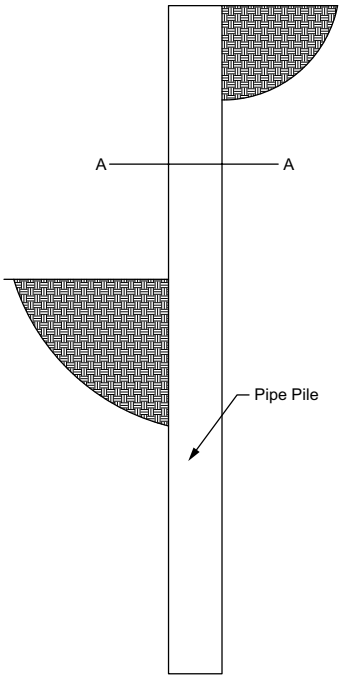
* Additional combinations are available upon request.

PIPE COMBINED WALLS

SAMPLE CALCULATION

Continuous
36” x 0.375” Pipe





b_{sys} = 36 in + 2 * 1.28 in
= **38.6 in**

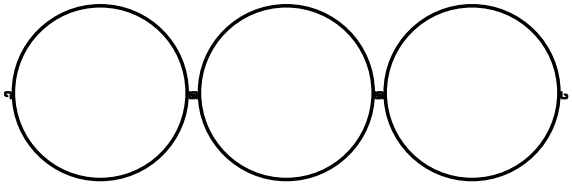
I_{pipe} = $(\pi/64)(OD^4 - ID^4)$
= $(3.14/64)((36\text{ in})^4 - (36\text{ in} - 2*0.375\text{ in})^4)$
= 6,658.92 in⁴ *

Properties through A-A

I_{sys} = (I_{pipe} / b_{sys})
= 6,658.92 in⁴ / (38.6 in / 12 in/ft)
2,072 in⁴/ft

S_{sys} = I_{sys} / (OD/2)
2,072 in⁴/ft / (36 in / 2)
115.1 in³/ft

Pipe-Pipe with E22 Connector System*



Pipe Diameter in mm	Wall Thickness in mm	Connector	System Width in mm	Moment of Inertia in⁴/ft cm⁴/m	Section Modulus in³/ft cm³/m	Weight lb/ft² kg/m²	Cross Sectional Area in²/ft cm²/m
36 914	0.375 9.5	E22	38.56 979.4	2072 282982	115.1 6190	48.7 237.9	14.32 303.1
36 914	0.438 11.1	E22	38.56 979.4	2408 328786	133.8 7191	56.1 273.9	16.48 348.9
42 1067	0.500 12.7	E22	44.56 1131.8	3780 516160	180.0 9677	63.4 309.7	18.64 394.6
42 1067	0.563 14.3	E22	44.56 1131.8	4237 578576	201.8 10847	70.9 346.0	20.82 440.8
48 1219	0.563 14.3	E22	50.56 1284.2	5602 765008	233.4 12550	71.0 346.8	20.87 441.8
48 1219	0.625 15.9	E22	50.56 1284.2	6195 845957	258.1 13878	78.4 382.7	23.04 487.6
54 1372	0.625 15.9	E22	56.56 1436.6	7919 1081424	293.3 15769	78.6 383.7	23.09 488.8
54 1372	0.688 17.5	E22	56.56 1436.6	8687 1186256	321.7 17298	86.1 420.4	25.30 535.6
60 1524	0.688 17.5	E22	62.56 1589.0	10815 1476828	360.5 19381	86.3 421.4	25.36 536.9
60 1524	0.750 19.1	E22	62.56 1589.0	11753 1604912	391.8 21062	93.8 457.8	27.55 583.2
66 1676	0.750 19.1	E22	68.56 1741.4	14323 1955877	434.0 23335	94.0 458.8	27.62 584.5
66 1676	0.813 20.7	E22	68.56 1741.4	15481 2114085	469.1 25222	101.6 495.9	29.85 631.8
72 1829	0.813 20.7	E22	74.56 1893.8	18539 2531602	515.0 27687	101.8 497.0	29.91 633.2
72 1829	0.875 22.2	E22	74.56 1893.8	19901 2717608	552.8 29721	109.3 533.6	32.12 679.8
78 1981	0.875 22.2	E22	80.56 2046.2	23484 3206876	602.2 32374	109.5 534.7	32.18 681.2
78 1981	0.938 23.8	E22	80.56 2046.2	25114 3429420	643.9 34620	117.2 572.0	34.43 728.7
84 2134	0.938 23.8	E22	86.56 2198.6	29268 3996688	696.9 37465	117.4 573.1	34.49 730.1
84 2134	1.000 25.4	E22	86.56 2198.6	31133 4251402	741.3 39853	124.9 609.9	36.71 777.0

* Additional combinations are available upon request.

PIPE COMBINED WALLS

SPECIFICATIONS

Manufacturing Specifications	Yield Strength		PIPE	NZ, PZ, & WF
	ksi	MPa		
A252 Grade 3 (50 ksi)	50	345	✔	
A252 Grade 3 (60 ksi)	60	415	✔	

Steel Specifications	Yield Strength		PIPE	NZ, PZ, & WF
	ksi	MPa		
A572 Grade 60	60	415	✔	✔
A690	50	345	✔	✔

For a complete list of steel grades see page 46. For availability of other yield strengths please, contact Nucor Skyline.

DELIVERY CONDITIONS & TOLERANCES

SHEET PILE	ASTM A6	EN10248
Mass	± 2.5%	± 5%
Length	+ 5 in.	± 200 mm
Height		± 7 mm
Thickness		≤ 8.5 mm > 8.5 mm
Width		± 2%
Double Pile Width		± 3%
Straightness		0.2% of the length
Ends out of Square		2% of the width

PIPE	A139	A252	A500	A1085	AWWA C200
Outside Diameter	± 1%	± 1%	± 0.75%	± 0.75%	+1/8" / -1/16"
Thickness	- 12.5%	- 12.5%	±10%	+10% / -5%	+10%[§]
Weight	+10% / -5%	+10% / -5%	±10%	+10% / -3.5%	+10% / -5%
Length	± ½"	± 1"	+¾" / -¼"	+¾" / -¼"	± 2"

**Different conditions and tolerances vary based on diameter, length, and project requirements. Please inquire for additional information.
§ Lowest of value of applicable ASTM tolerance, 0.01 inch, or 6% percent of the nominal thickness.

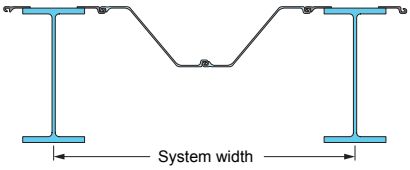
MAXIMUM ROLLED LENGTHS†

E22	59 ft.	18.0 m
NZ & PZ	105 ft.	32.0 m

	12" OD and Under		12.75" OD and Over	
Spiralweld / Rolled & Welded	90 ft.	27.4 m	115 ft.	31.1 m

† All sections are readily spliced for longer lengths.

Single Beam / Sheet Pile System*

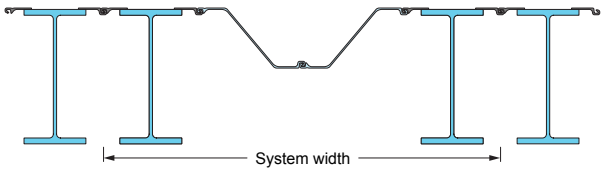


SYSTEM			System Width	Cross Sectional Area	Moment of Inertia	Elastic Section Modulus	Weight (Sheet Pile Length / Beam Length)			Coating Area	
							100%	80%	60%	Front Wall	Back Wall
Beam Size	Connectors	Sheet Pile	in mm	in²/ft cm²/m	in⁴/ft cm⁴/m	in³/ft cm³/m	lb/ft² kg/m²	lb/ft² kg/m²	lb/ft² kg/m²)	ft²/ft cm²/m	ft²/ft cm²/m
W36x135	NZ 14 Flange	NZ 14	78 1,981	12.32 261	1,649 225,200	79.6 4,280	41.8 204.1	37.6 183.6	33.4 163.0	7.5 2.30	15.4 4.69
W36x150	NZ 14 Flange	NZ 14	78 1,981	13.00 275	1,851 252,700	89.7 4,820	44.1 215.4	39.9 194.9	35.7 174.3	7.5 2.30	15.4 4.70
W40x167	NZ 14 Flange	NZ 14	78 1,981	13.77 291	2,302 314,200	104.9 5,640	46.7 228.2	42.5 207.6	38.3 187.1	7.5 2.30	15.8 4.83
W40x199	NZ 14 Flange	NZ 14	84 2,134	14.14 299	2,619 357,500	121.1 6,510	48.0 234.2	44.1 215.1	40.2 196.0	8.0 2.45	17.0 5.19
W40x215	NZ 14 Flange	NZ 14	84 2,134	14.81 314	2,885 393,900	133.4 7,170	50.3 245.3	46.3 226.3	42.4 207.2	8.0 2.45	17.1 5.20
W44x230	NZ 14 Flange	NZ 14	84 2,134	15.43 327	3,553 485,100	150.1 8,070	52.4 255.8	48.5 236.7	44.6 217.7	8.0 2.45	17.7 5.40
W44x262	NZ 14 Flange	NZ 14	84 2,134	16.77 355	4039 551,400	170.9 9,180	57.0 278.2	53.1 259.1	49.2 240.0	8.0 2.45	17.8 5.42
W44x290	NZ 14 Flange	NZ 14	84 2,134	17.94 380	4,465 609,500	189.0 10,160	61.0 297.7	57.1 278.6	53.2 259.5	8.0 2.45	17.8 5.43
W44x335	NZ 14 Flange	NZ 14	84 2,134	19.81 419	5,064 691,400	214.5 11,530	67.4 329.1	63.5 310.0	59.6 290.9	8.0 2.45	17.9 5.44
W44x335	NZ 19 Flange	NZ 19	78 1,981	21.29 451	5,490 749,600	233.4 12,540	72.4 353.5	68.2 333.2	64.1 312.8	8.1 2.46	17.9 5.46
W44x335	NZ 26 Flange	NZ 26	78 1,981	23.03 487	5,725 781,600	239.3 12,860	78.3 382.4	73.0 356.3	67.6 330.1	8.4 2.56	18.2 5.55
W44x335	NZ 38 Flange	NZ 38	78 1,981	24.84 526	6,112 834,500	249.7 13,420	84.5 412.5	77.9 380.3	71.3 348.1	8.5 2.59	18.3 5.58

*With the widest ranges of domestically produced beams and sheet piles, there are thousands of variations of beam-z walls available from Nucor Skyline. Contact your Nucor Skyline representative for additional solutions.

BEAM COMBINED WALLS

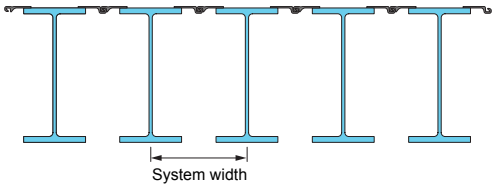
Double Beam / Sheet Pile System*



SYSTEM			System Width	Cross Sectional Area	Moment of Inertia	Elastic Section Modulus	Weight (Sheet Pile Length / Beam Length)			Coating Area	
							100%	80%	60%	Front Wall	Back Wall
Beam Size	Connectors	Sheet Pile	in mm	in²/ft cm²/m	in⁴/ft cm⁴/m	in³/ft cm³/m	lb/ft² kg/m²	lb/ft² kg/m²	lb/ft² kg/m²)	ft²/ft cm²/m	ft²/ft cm²/m
W44x230	NZ 19 Flange	NZ 19	102 2,591	21.51 455	5,760 786,400	244.6 13,150	73.0 356.6	69.3 338.2	65.5 319.7	10.1 3.08	29.4 8.97
W44x262	NZ 19 Flange	NZ 19	102 2,591	23.73 502	6,559 895,400	278.7 14,980	80.6 393.4	76.8 374.9	73.0 356.4	10.1 3.08	29.5 9.00
W44x290	NZ 19 Flange	NZ 19	102 2,591	25.66 543	7,258 990,800	308.5 16,580	87.2 425.5	83.4 407.0	79.6 388.6	10.1 3.08	29.6 9.02
W44x335	NZ 19 Flange	NZ 19	102 2,591	28.74 608	8,244 1,126,000	350.4 18,830	97.8 477.3	94.0 458.8	90.2 440.3	10.1 3.08	29.7 9.06
W44x230	NZ 26 Flange	NZ 26	102 2,591	23.09 489	6,021 822,100	250.1 13,440	78.4 382.7	73.5 359.1	68.7 335.3	10.4 3.17	29.7 9.06
W44x262	NZ 26 Flange	NZ 26	102 2,591	25.30 535	6,829 932,300	284.4 15,280	85.9 419.5	81.1 395.8	76.2 372.1	10.4 3.17	29.8 9.10
W44x290	NZ 26 Flange	NZ 26	102 2,591	27.23 576	7,534 1,029,000	314.2 16,890	92.5 451.7	87.7 427.9	82.8 404.3	10.4 3.17	29.9 9.12
W44x335	NZ 26 Flange	NZ 26	102 2,591	30.31 641	8,529 1,164,000	356.4 19,160	103.1 503.4	98.2 479.6	93.4 456.0	10.4 3.17	30.0 9.15
W44x230	NZ 38 Flange	NZ 38	102 2,591	24.82 525	6,427 877,400	259.2 13,930	84.3 411.5	78.2 382.0	72.2 352.6	10.5 3.20	29.8 9.09
W44x262	NZ 38 Flange	NZ 38	102 2,591	27.03 572	7,247 989,400	293.7 15,790	91.8 448.2	85.8 418.8	79.7 389.3	10.5 3.20	29.9 9.12
W44x290	NZ 38 Flange	NZ 38	102 2,591	28.96 613	7,963 1,087,000	323.8 17,410	98.4 480.4	92.4 450.9	86.3 421.5	10.5 3.20	30.0 9.14
W44x335	NZ 38 Flange	NZ 38	102 2,591	32.04 678	8,971 1,225,000	366.5 19,700	109.0 532.2	102.9 502.4	96.9 473.2	10.5 3.20	30.1 9.18

*With the widest ranges of domestically produced beams and sheet piles, there are thousands of variations of beam-z walls available from Nucor Skyline. Contact your Nucor Skyline representative for additional solutions.

Continuous Beam System



SYSTEM		System Width	Cross Sectional Area	Moment of Inertia	Elastic Section Modulus	Weight (Sheet Pile Length / Beam Length)			Coating Area	
						100%	80%	60%	Front Wall	Back Wall
Beam Size	Connectors	in mm	in²/ft cm²/m	in⁴/ft cm⁴/m	in³/ft cm³/m	lb/ft² kg/m²	lb/ft² kg/m²	lb/ft² kg/m²)	ft²/ft cm²/m	ft²/ft cm²/m
W36x150	NZ 19 Flange	18 457	34.5 729	7,368 1,006,000	359.4 19,320	116.8 570.3	113.4 553.7	110.1 537.6	1.5 0.46	9.4 2.86
W40x183	NZ 19 Flange	20 508	36.4 771	9,381 1,281,000	429.2 23,070	124.9 609.8	121.9 595.2	118.9 580.5	1.7 0.51	10.0 3.06
W44x230	NZ 19 Flange	24 610	37.6 796	11,910 1,627,000	506.0 27,200	127.6 623.0	125.1 610.8	122.6 598.6	2.0 0.61	11.7 3.56
W44x335	NZ 19 Flange	24 610	53.0 1,120	17,190 2,347,000	730.8 39,280	180.1 879.3	177.6 867.1	175.1 854.9	2.0 0.61	11.8 3.60
W36x150	NZ 26 Flange	18 457	35.8 758	7,705 1,052,000	365.0 19,620	121.5 593.2	117.2 572.2	112.9 551.2	1.5 0.46	9.4 2.86
W40x183	NZ 26 Flange	20 508	37.7 797	9,757 1,332,000	434.8 23,370	129.1 630.3	125.3 611.8	121.4 592.7	1.7 0.51	10.0 3.06
W44x230	NZ 26 Flange	24 610	38.6 818	12,310 1,681,000	511.4 27,490	131.1 640.1	127.9 624.5	124.7 608.8	2.0 0.61	11.7 3.56
W44x335	NZ 26 Flange	24 610	54.0 1,142	17,640 2,409,000	737.3 39,630	183.6 896.4	180.4 880.8	177.2 865.2	2.0 0.61	11.8 3.60
W36x150	NZ 38 Flange	18 457	37.8 800	8,154 1,113,000	372.0 20,000	128.1 625.4	122.5 598.1	116.9 570.8	1.5 0.46	9.4 2.86
W40x183	NZ 38 Flange	20 508	39.4 834	10,260 1,401,000	442.0 23,760	135.1 659.6	130.1 635.2	125.0 610.3	1.7 0.51	10.0 3.05
W44x230	NZ 38 Flange	24 610	40.1 849	12,860 1,755,000	518.5 27,870	136.1 664.5	131.9 644.0	127.7 623.5	2.0 0.61	11.7 3.55
W44x335	NZ 38 Flange	24 610	55.5 1,173	18,260 2,493,000	746.0 40,100	188.6 920.8	184.4 900.3	180.2 879.8	2.0 0.61	11.8 3.60

*With the widest ranges of domestically produced beams and sheet piles, there are thousands of variations of beam-z walls available from Nucor Skyline. Contact your Nucor Skyline representative for additional solutions.

BEAM COMBINED WALLS

AVAILABLE STEEL GRADES

AMERICAN				
ASTM	YIELD STRENGTH		WF	NZ & PZ
	ksi	MPa		
A36	36	250	✔	
A572	50-65	345-450	✔	✔
A588	50	345	✔	✔
A690	50	345	✔	✔
A709	50	345	✔	
A913	50-80*	345-550	✔	
A992	50	345	✔	

* Inquire for availability.

Additional grades available upon request.

CANADIAN				
CSA G40.21	YIELD STRENGTH		WF	NZ & PZ
	ksi	MPa		
Grade 350 W	50	350	✔	

DELIVERY CONDITIONS & TOLERANCES

SHEET PILE	ASTM A6	EN10248
Mass	± 2.5%	± 5%
Length	+ 5 in.	± 200 mm
Height		± 7 mm
Thickness		≤ 8.5 mm > 8.5 mm
Width		± 2%
Double Pile Width		± 3%
Straightness		0.2% of the length
Ends out of Square		2% of the width

WIDE FLANGE BEAMS	ASTM A6		
Mass	± 2.5%		
Depth	± 0.125 in.		
Length	30 ft. and under	Over 30 ft.	
Beams W24 and Under	± 0.375 in.	+ (0.375 in. + (Length - 30) / 80	-0.375 in.
Beams Over W24	± 0.5 in.	+ (0.5 in. + (Length - 30) / 80	-0.375 in.
Flanges out of Square			
Beams W12 and Under	≤ 0.25 in.		
Beams Over W12	≤ 0.3125 in.		
Web off Center	≤ 0.1875 in.		
Greatest Depth over Theoretical	≤ 0.25 in.		
Camber and Sweep	(0.125 in) * (Length / 10)		
Camber and Sweep for Columns**			
45 ft. and Under	(0.125 in) * (Length / 10) but not over 0.375 in.		
Over 45 ft.	(0.375 in) + (0.125 in * (Length - 45) / 10		

** W8 x 31 and heavier, W10 x 49 and heavier, W12 x 65 and heavier, and W14 x 90 and heavier; order as columns.
If other sections are ordered as columns, the tolerances are subject to negotiation with the manufacturer.

H-PILE

Bearing piles are required when a structure cannot be founded on a shallow foundation. Tall structures, for example, often require deep foundations based on engineering principles. In other cases, the soils near the surface may not have the strength to support the structure. Thus, a deep foundation system must be designed to transfer the foundation loads down through the piles to carry the load.

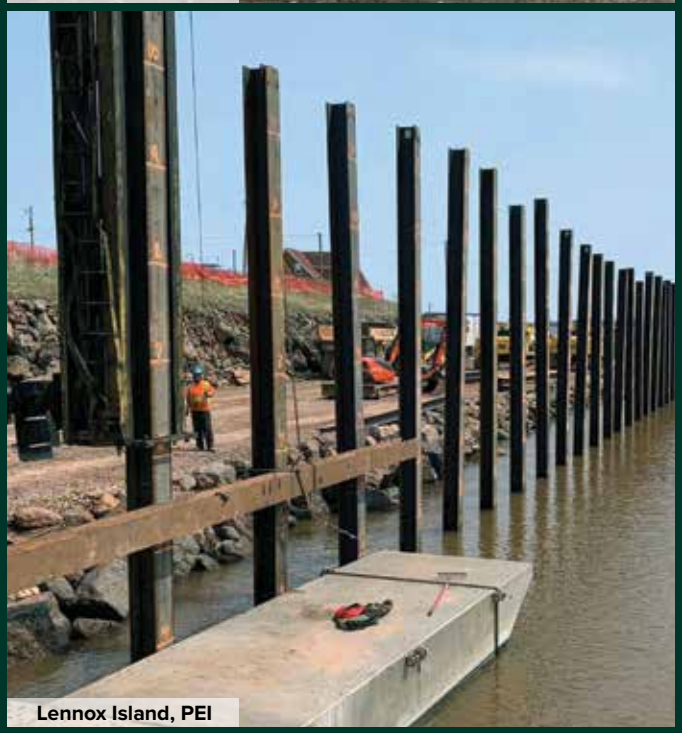
H-piles are as wide as they are deep and have the same thickness in the flange and web. When compared to standard beams, the 'H' design of H-pile beams provides better weight distribution over a wider area, resulting in the ability to support heavier and larger structures. This allows the flexibility to build grander projects without the risk of weakening beams.

H-piles are manufactured by Nucor and constitute most of the steel piles supplied by Nucor Skyline. Traditionally, H-piles were made in 8-, 10-, 12-, and 14-inch sizes. In recent years, the capacity of previous sections has been nearly doubled through the addition of 16- and 18-inch piles. They can be pulled from the ground decades after use, making them one of the most environmentally friendly piling products.

Applications of H-Piles

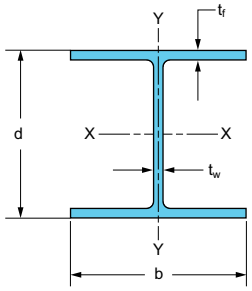
- Bearing Piles to Support Bridges, Buildings, Factories, Stadiums, and Additional Structures
- Bracing Systems for Cofferdams
- Beam and Lagging Walls

Amherst, MA



Lennox Island, PEI

Los Angeles, CA



SECTION	Weight	Area A	Depth d	Thickness of Web t_w	Flange		AXIS X-X				AXIS Y-Y				Coating Area
					b_f	t_f	I	S	Z	r	I	S	Z	r	
	lb/ft kg/m	in^2 cm^2	in mm	in mm	in mm	in mm	in^4 cm^4	in^3 cm^3	in^3 cm^3	in cm	in^4 cm^4	in^3 cm^3	in^3 cm^3	in cm	ft^2/ft m^2/m
HP 8 **HP 200**	36 54	10.6 68.4	8.02 204	0.445 11.3	8.16 207	0.445 11.3	119 4980	29.8 488	33.6 552	3.36 8.53	40.3 1670	9.88 162	15.2 249	1.95 4.95	3.92 1.21
HP 10 **HP 250**	42 62	12.4 79.8	9.70 246	0.415 10.5	10.10 256	0.420 10.7	210 8750	43.4 711	48.3 792	4.13 10.5	71.7 3000	14.2 234	21.8 358	2.41 6.13	4.83 1.50
	57 85	16.7 109.0	9.99 254	0.565 14.4	10.20 259	0.565 14.4	294 12300	58.8 968	66.5 1090	4.18 10.6	101 4230	19.7 325	30.3 500	2.45 6.23	4.91 1.50
	53 79	15.5 99.8	11.80 299	0.435 11.0	12.00 306	0.435 11.0	393 16300	66.7 1090	74.0 1210	5.03 12.8	127 5260	21.1 344	32.2 525	2.86 7.26	5.82 1.80
	63 94	18.4 119.0	11.90 303	0.515 13.1	12.10 308	0.515 13.1	472 19600	79.1 1300	88.3 1450	5.06 12.9	153 6390	25.3 415	38.7 635	2.88 7.33	5.86 1.81
	74 110	21.8 141.0	12.10 308	0.605 15.4	12.20 310	0.610 15.5	569 23700	93.8 1540	105 1730	5.11 13.0	186 7710	30.4 497	46.6 763	2.92 7.40	5.91 1.83
HP 12 **HP 310**	84 125	24.6 159.0	12.30 312	0.685 17.4	12.30 312	0.685 17.4	650 27000	106 1730	120 1960	5.14 13.0	213 8820	34.6 566	53.2 870	2.94 7.45	5.97 1.84
	89 132	25.9 167	12.36 314	0.720 18.3	12.32 313	0.720 18.3	689 28700	111.6 1830	126.3 2070	5.16 13.1	225 9370	36.5 599	56.2 922	2.94 7.48	6.04 1.84
	102 152	29.9 193	12.56 319	0.819 20.8	12.64 321	0.819 20.8	811 33800	129.3 2120	147.6 2420	5.20 13.2	276 11500	43.7 716	67.1 1100	3.04 7.71	6.17 1.88
	117 174	34.4 222	12.76 324	0.929 23.6	12.87 327	0.929 23.6	946 39400	148.2 2430	170.8 2800	5.24 13.3	331 13800	51.4 843	79.3 1300	3.11 7.89	6.26 1.91
	73 108	21.4 138	13.60 346	0.505 12.8	14.60 370	0.505 12.8	729 30300	107 1750	118 1940	5.84 14.8	261 10800	35.8 585	54.6 891	3.49 8.86	6.96 2.15
HP 14 **HP 360**	89 132	26.1 168	13.80 351	0.615 15.6	14.70 373	0.615 15.6	904 37500	131 2140	146 2380	5.88 14.9	326 13500	44.3 724	67.7 1110	3.53 8.96	7.02 2.16
	102 152	30.1 194	14.00 356	0.705 17.9	14.80 376	0.705 17.9	1050 43900	150 2470	169 2770	5.92 15.0	380 15900	51.4 845	78.8 1290	3.56 9.05	7.06 2.18
	117 174	34.4 222	14.20 361	0.805 20.4	14.90 378	0.805 20.4	1220 50800	172 2820	194 3180	5.96 15.2	443 18400	59.5 973	91.4 1490	3.59 9.11	7.12 2.19
	88 131	25.8 167	15.30 389	0.540 13.7	15.70 399	0.540 13.7	1110 46201	145 2376	161 2638.3	6.56 16.7	349 14526	44.5 729	68.2 1117.6	3.68 9.35	7.52 2.29
	101 150	29.9 193	15.50 394	0.625 15.9	15.80 401	0.625 15.9	1300 54110	168 2753	187 3064.4	6.59 16.7	412 17149	52.2 855	80.1 1312.6	3.71 9.42	7.56 2.30
	121 180	35.8 231	15.80 401	0.750 19.1	15.90 404	0.750 19.1	1590 66180	201 3294	226 3703.5	6.66 16.9	504 20978	63.4 1039	97.6 1599.4	3.75 9.53	7.62 2.32
HP 16 **HP 410**	141 210	41.7 269	16.00 406	0.875 22.2	16.00 406	0.875 22.2	1870 77835	234 3835	264 4326.2	6.70 17.0	599 24932	74.9 1227	116 1900.9	3.79 9.63	7.69 2.34
	162 241	47.7 308	16.30 414	1.000 25.4	16.10 409	1.000 25.4	2190 91154	269 4408	306 5014.4	6.78 17.2	697 29011	86.6 1419	134 2195.9	3.82 9.70	7.75 2.36
	183 272	54.1 349	16.50 419	1.130 28.7	16.30 414	1.130 28.7	2510 104473	304 4982	349 5719.1	6.81 17.3	818 34047	100.0 1639	156 2556.4	3.89 9.88	7.81 2.38
	135 201	39.9 257	17.50 445	0.750 19.1	17.80 452	0.750 19.1	2200 91570	251 4113	281 4604.7	7.43 18.9	706 29386	79.3 1299	122 1999.2	4.21 10.7	8.54 2.60
	157 234	46.2 298	17.70 450	0.870 22.1	17.90 455	0.870 22.1	2570 106971	290 4752	327 5358.5	7.46 18.9	833 34672	93.1 1526	143 2343.3	4.25 10.8	8.60 2.62
HP 18 **HP 460**	181 269	53.2 343	18.00 457	1.000 25.4	18.00 457	1.000 25.4	3020 125701	336 5506	379 6210.7	7.53 19.1	974 40541	108.0 1770	167 2736.6	4.28 10.9	8.66 2.64
	204 304	60.2 388	18.30 465	1.130 28.7	18.10 460	1.130 28.7	3480 144847	380 6227	433 7095.6	7.60 19.3	1120 46618	124.0 2032	191 3129.9	4.31 11.0	8.73 2.66

HP

AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A36	36	250
A572 Grade 50	50	345
A572 Grade 60	60	415
A588	50	345
A690	50	345
A709	50	345
A913	50-80*	345-550

CANADIAN		
CSA G40.21	YIELD STRENGTH	
	ksi	MPa
Grade 300 W	44	300
Grade 350 W	50	350

Highlighted fields represent the most commonly used and readily available steel grades. * Inquire for availability.

SPLICER AND H-PILE POINT

Splicer

H-Pile Point

DELIVERY CONDITIONS & TOLERANCES

	ASTM A6	
Mass	± 2.5%	
Length§		
30 ft. and Under	± 0.375 in.	
Over 30 ft.	+ (0.375 in. + (length - 30)/80)	– 0.375 in.
Depth	± 0.125 in.	– 0.1875 in.
Flange Width	+ 0.25 in.	
Flanges out of Square		
HP 8 x 42 - HP 12 x 84	≤ 0.25 in.	
HP 14 x 73 - HP 14 x 117	≤ 0.3125 in.	
Web off Center	≤ 0.1875 in.	
Greatest Depth over Theoretical	≤ 0.25 in.	
Camber and Sweep***		
45 ft. and Under	(0.125")(Length in ft./10) but not over 0.375"	
Over 45 ft.	(0.375") + (0.125" (Length in ft. - 45)/10)	

§ For HP ordered as bearing piles, length tolerances are +5 in. and -0 in.

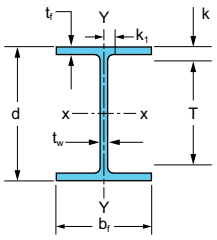
***For the HP 10 x 42, 12 x 53, 12 x 63, 14 x 73, and 14 x 89 ordered as columns, tolerances are subject to negotiation with manufacturer.

MAXIMUM ROLLED LENGTHS†

HP 8 - HP 10	120 ft.	36.6 m
HP 12 - HP 18	128 ft.	39.0 m

† Please check for availability.

BEARING PILES



Beam Size		Area A	Depth d	Thickness of Web t_w	Flange		Axis X-X				Axis Y-Y				Coating Area
					b_f	t_f	I	S	r	Z	I	S	r	Z	
		in^2 mm^2	in mm	in mm	in mm	in mm	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	ft^2/ft m^2/m
W8 **W200**	x 28 x 41.7	8.25 5320	8.06 205	0.285 7.24	6.54 166	0.465 11.8	98.0 40.8	24.3 398	3.45 87.6	27.2 446	21.7 9.03	6.63 109	1.62 41.1	10.1 166	3.48 1.06
	x 24 x 35.9	7.08 4570	7.93 201	0.245 6.22	6.50 165	0.400 10.2	82.7 34.4	20.9 342	3.42 86.9	23.1 379	18.3 7.62	5.63 92.3	1.61 40.9	8.57 140	3.45 1.05
W8 **W200**	x 21 x 31.3	6.16 3970	8.28 210	0.250 6.35	5.27 134	0.400 10.2	75.3 31.3	18.2 298	3.49 88.6	20.4 334	9.77 4.07	3.71 60.8	1.26 32.0	5.69 93.2	3.10 0.94
	x 18 x 26.6	5.26 3390	8.14 207	0.230 5.84	5.25 133	0.330 8.38	61.9 25.8	15.2 249	3.43 87.1	17.0 279	7.97 3.32	3.04 49.8	1.23 31.2	4.66 76.4	3.07 0.94
W8 **W200**	x 15 x 22.5	4.44 2860	8.11 206	0.245 6.22	4.02 102	0.315 8.00	48.0 20.0	11.8 193	3.29 83.6	13.6 223	3.41 1.42	1.70 27.9	0.876 22.3	2.67 43.8	2.65 0.81
	x 13 x 19.3	3.84 2480	7.99 203	0.230 5.84	4.00 102	0.255 6.48	39.6 16.5	9.91 162	3.21 81.5	11.4 187	2.73 1.14	1.37 22.5	0.843 21.4	2.15 35.2	2.63 0.80
	x 10 x 15	2.96 1910	7.89 200	0.170 4.32	3.94 100	0.205 5.21	30.8 12.8	7.81 128	3.22 81.8	8.87 145	2.09 0.870	1.06 17.4	0.841 21.4	1.66 27.2	2.60 0.79
W6 **W150**	x 25 x 37.1	7.34 4740	6.38 162	0.320 8.13	6.08 154	0.455 11.6	53.4 22.2	16.7 274	2.70 68.6	18.9 310	17.1 7.12	5.61 91.9	1.52 38.6	8.56 140	3.04 0.93
	x 20 x 29.8	5.87 3790	6.20 157	0.260 6.60	6.02 153	0.365 9.27	41.4 17.2	13.4 220	2.66 67.6	15.0 246	13.3 5.54	4.41 72.3	1.50 38.1	6.72 110	3.00 0.91
	x 15 x 22.5	4.43 2860	5.99 152	0.230 5.84	5.99 152	0.260 6.60	29.1 12.1	9.72 159	2.56 65.0	10.8 177	9.32 3.88	3.11 51.0	1.45 36.8	4.75 77.8	2.96 0.90
W6 **W150**	x 16 x 24	4.74 3060	6.28 160	0.260 6.60	4.03 102	0.405 10.3	32.1 13.4	10.2 167	2.60 66.0	11.7 192	4.43 1.84	2.20 36.1	0.967 24.6	3.39 55.6	2.35 0.72
	x 12 x 18	3.55 2290	6.03 153	0.230 5.84	4.00 102	0.280 7.11	22.1 9.20	7.31 120	2.49 63.2	8.30 136	2.99 1.24	1.50 24.6	0.918 23.3	2.32 38.0	2.30 0.70
	x10.4 x15.5	3.09 1990	5.96 151	0.200 5.08	3.94 100	0.247 6.27	19.0 7.89	6.36 104.2	2.48 63.0	7.18 118	2.523 1.050	1.28 21.0	0.904 23.0	1.98 32.4	2.27 0.69
	x 9 13.5	2.68 1730	5.90 150	0.170 4.32	3.94 100	0.215 5.46	16.4 6.83	5.56 91.1	2.47 62.7	6.23 102	2.20 0.916	1.11 18.2	0.905 23.0	1.72 28.2	2.27 0.69
	x 8.5 x 13	2.52 1630	5.83 148	0.170 4.32	3.94 100	0.195 4.95	14.9 6.20	5.10 83.6	2.43 61.7	5.73 93.9	1.99 0.828	1.01 16.6	0.890 22.6	1.56 25.6	2.26 0.69
	x7.75 x11.5	2.28 1471	5.82 148	0.151 3.835	3.95 100	0.178 4.52	13.6 5.66	4.66 76.4	2.44 62.0	5.22 85.5	1.83 0.762	0.93 15.2	0.897 22.8	1.43 23.434	2.26 0.69
	x7 x10.4	2.05 1321	5.77 147	0.129 3.277	3.94 100	0.165 4.19	12.3 5.11	4.25 69.6	2.45 62.2	4.72 77.3	1.68 0.701	0.86 14.0	0.907 23.0	1.31 21.467	2.25 0.69
W5 **W130**	x 19 x 28.1	5.56 3590	5.15 131	0.270 6.86	5.03 128	0.430 10.9	26.3 10.9	10.2 167	2.17 55.1	11.6 190	9.13 3.80	3.63 59.5	1.28 32.5	5.53 90.6	2.49 0.76
	x 16 x 23.8	4.71 3040	5.01 127	0.240 6.10	5.00 127	0.360 9.14	21.4 8.91	8.55 140	2.13 54.1	9.63 158	7.51 3.13	3.00 49.2	1.26 32.0	4.58 75.1	2.46 0.75
W4 **W100**	x 13 x 19.3	3.83 2470	4.16 106	0.280 7.11	4.06 103	0.345 8.76	11.3 4.70	5.46 89.5	1.72 43.7	6.28 103	3.86 1.61	1.90 31.1	1.00 25.4	2.92 47.9	2.00 0.61

LIGHT DUTY

BEARING PILES

AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A572 Grade 50	50	345
A572 Grade 60	60	415
A572 Grade 65	65	450
A588	50	345
A690	50	345
A709	50	345
A992	50	345

CANADIAN		
CSA G40.21	YIELD STRENGTH	
	ksi	MPa
Grade 350 W	50	350

Highlighted fields represent the most commonly used and readily available steel grades. Additional grades available upon request.

DELIVERY CONDITIONS & TOLERANCES

	ASTM A6		
Mass	± 2.5%		
Depth	± 0.125 in.		
Length	30 ft. and under	Over 30 ft.	
Beams W24 and Under	± 0.375 in.	+ (0.375 in. + (Length - 30) / 80	-0.375 in.
Beams Over W24	± 0.5 in.	+ (0.5 in. + (Length - 30) / 80	-0.375 in.
Flanges out of Square			
Beams W12 and Under	≤ 0.25 in.		
Beams Over W12	≤ 0.3125 in.		
Web off Center	≤ 0.1875 in.		
Greatest Depth over Theoretical	≤ 0.25 in.		
Camber and Sweep	(0.125 in) * (Length / 10)		
Camber and Sweep for Columns**			
45 ft. and Under	(0.125 in) * (Length / 10) but not over 0.375 in.		
Over 45 ft.	(0.375 in) + (0.125 in * (Length - 45) / 10		

** W8 x 31 and heavier, W10 x 49 and heavier, W12 x 65 and heavier, and W14 x 90 and heavier; order as columns.
If other sections are ordered as columns, the tolerances are subject to negotiation with the manufacturer.

PIPE

Nucor Skyline manufactures three types of pipe made from steel with similar physical and chemical properties. These are all welded in accordance with the required specifications and are just as strong as the base material.

- Straight Seam Electric Resistance Welded (ERW)
- Spiralweld
- Rolled & Welded

ERW Pipe

ERW pipe is made from steel coil with weld seams running parallel to the pipe. The width of the coil is the same as the circumference of the pipe, limiting diameters to 24 inches. However, the manufacturing process is fast, making it ideal for large production runs of sections with diameters of 24 inches or less.

Spiralweld Pipe

Spiralweld pipe, like ERW, is also manufactured from steel coil. The difference is that the coil is wound at an angle, so the weld runs around the outside of the pipe in the shape of a helix. This allows for a lot more variation in diameter and thickness than ERW pipe. Spiralweld pipe is most commonly used for pipe diameters between 24 inches and 120 inches and for thicknesses of 1.0 inches or less.

Rolled & Welded Pipe

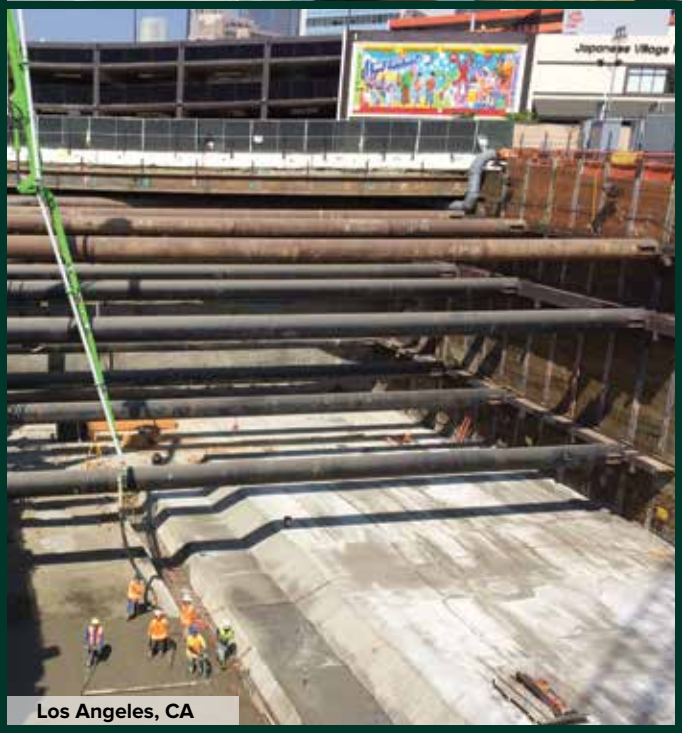
Rolled & Welded pipe is made from sections of plate rolled into cans. The seam of the can is welded and then the individual cans are welded together to make the finished pipe. Rolled & Welded pipe can be made in diameters of up to 16 feet and over 2.0 inches in thickness.

Pipe is ideal for bearing piles since it can be produced in a wide variety of sizes, grades, and lengths. It is also easy to splice and can be driven open or closed-ended.

Applications of Pipe

- Bearing Piles
- Pipe-Z Combination Walls
- Casing for Drilled Shafts
- Micropile Casing
- Bracing for Cofferdams or Excavation Support
- Mine Shafts
- Sign Poles
- Jack & Bored Installations
- Tanks
- Transmission Lines

Seattle, WA



Los Angeles, CA

New York, NY

PIPE PROPERTIES

Example is a 24" x 0.5" pipe.

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration
										Elastic	Plastic	
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm
24 610	0.500 12.700	125.6 186.9	23.00 584.2	36.91 238.2	452.4 2,919	415.5 2,680	2.885 0.268	6.28 1.92	2,549 106,100	212.4 3,481	276.2 4,526	8.31 21.11

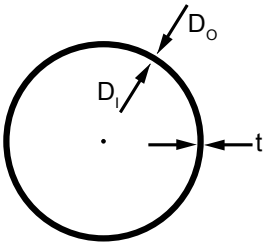
DIMENSIONS

Outside Diameter : D_o = 24 in

Thickness : t = 0.5 in

Inside Diameter : $D_i = D_o - 2 \times t$ = 23 in

Weight : $w_{pipe} = A_s \times 12 \text{ in/ft} \times 0.2836 \text{ lb/in}^3$ = 125.6 lb/ft



ENGINEERING PROPERTIES

Cross Sectional Area : $A_s = \frac{\pi (D_o^2 - D_i^2)}{4}$ = 36.91 in²

Total Area of Pile : $A_t = \pi (D_o/2)^2$ = 452.39 in²

Internal Volume : $V_{internal} = \frac{\pi (D_i/2)^2}{12 \text{ in/ft}}$ = 2.885 ft³/ft

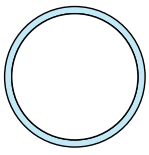
External Coating Area : $A_{coat} = \frac{(\pi \times D_o)}{12 \text{ in/ft}}$ = 6.28 ft²/ft

Moment of Inertia : $I = \frac{\pi (D_o^4 - D_i^4)}{64}$ = 2549.35 in⁴

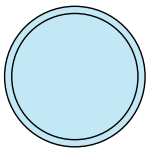
Elastic Section Modulus : $S = \frac{I}{D_o/2}$ = 212.45 in³

Plastic Section Modulus : $Z = 4 \times \frac{(D_o/2)^3 - (D_i/2)^3}{3}$ = 276.16 in³

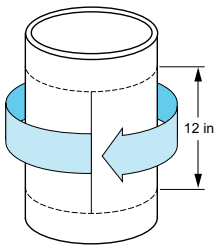
Radius of Gyration : $r = \frac{\sqrt{D_o^2 + D_i^2}}{4}$ = 8.31 in



CROSS SECTIONAL AREA



TOTAL AREA OF PILE



EXTERNAL COATING AREA

PIPE

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
2 ⅜ **60**	0.109 2.769	2.64 3.93	2.16 54.79	0.78 5.01	4.43 28.58	3.65 23.58	0.0254 0.0024	0.62 0.19	0.50 20.78	0.42 6.89	0.56 9.18	1.80 4.56	80 552	Not Available	Not Available
	0.154 3.912	3.66 5.44	2.07 52.50	1.08 6.93	4.43 28.58	3.36 21.65	0.0233 0.0022	0.62 0.19	0.67 27.71	0.56 9.19	0.76 12.47	1.78 4.51	80 552		
	0.188 4.775	4.40 6.54	2.00 50.77	1.29 8.33	4.43 28.58	3.14 20.25	0.0218 0.0020	0.62 0.19	0.78 32.38	0.66 10.74	0.90 14.77	1.76 4.47	80 552		
	0.218 5.537	5.03 7.48	1.94 49.25	1.48 9.53	4.43 28.58	2.95 19.05	0.0205 0.0019	0.62 0.19	0.87 36.13	0.73 11.98	1.02 16.68	1.75 4.43	80 552		
2 ⅞ **73**	0.120 3.048	3.53 5.26	2.64 66.93	1.04 6.70	6.49 41.88	5.45 35.18	0.0379 0.0035	0.75 0.23	0.99 41.09	0.69 11.25	0.91 14.93	1.84 4.66	80 552	Not Available	Not Available
	0.188 4.775	5.40 8.04	2.50 63.47	1.59 10.24	6.49 41.88	4.91 31.64	0.0341 0.0032	0.75 0.23	1.44 59.91	1.00 16.41	1.36 22.28	1.81 4.59	80 552		
	0.203 5.156	5.80 8.63	2.47 62.71	1.70 10.99	6.49 41.88	4.79 30.89	0.0332 0.0031	0.75 0.23	1.53 63.66	1.06 17.44	1.45 23.80	1.80 4.57	80 552		
	0.219 5.563	6.22 9.25	2.44 61.90	1.83 11.79	6.49 41.88	4.66 30.09	0.0324 0.0030	0.75 0.23	1.62 67.53	1.13 18.49	1.55 25.37	1.79 4.55	80 552		
	0.276 7.010	7.67 11.41	2.32 59.00	2.25 14.54	6.49 41.88	4.24 27.34	0.0294 0.0027	0.75 0.23	1.92 80.09	1.34 21.94	1.87 30.67	1.77 4.48	80 552		
3 ½ **89**	0.120 3.048	4.34 6.45	3.26 82.80	1.27 8.22	9.62 62.07	8.35 53.85	0.0580 0.0054	0.92 0.28	1.82 75.84	1.04 17.06	1.37 22.47	1.90 4.83	80 552	Not Available	Not Available
	0.188 4.775	6.66 9.91	3.12 79.35	1.96 12.62	9.62 62.07	7.67 49.45	0.0532 0.0049	0.92 0.28	2.69 112.0	1.54 25.20	2.06 33.83	1.87 4.76	80 552		
	0.203 5.156	7.16 10.65	3.09 78.59	2.10 13.57	9.62 62.07	7.52 48.51	0.0522 0.0049	0.92 0.28	2.87 119.4	1.64 26.85	2.21 36.21	1.87 4.74	80 552		
	0.219 5.563	7.68 11.43	3.06 77.77	2.26 14.56	9.62 62.07	7.36 47.51	0.0511 0.0048	0.92 0.28	3.05 127.0	1.74 28.57	2.36 38.69	1.86 4.72	80 552		
	0.276 7.010	9.51 14.16	2.95 74.88	2.80 18.04	9.62 62.07	6.83 44.04	0.0474 0.0044	0.92 0.28	3.66 152.3	2.09 34.26	2.88 47.13	1.83 4.66	80 552		
4 ½ **114**	0.120 3.048	5.62 8.36	4.26 108.2	1.65 10.65	15.90 102.6	14.25 91.96	0.0990 0.0092	1.18 0.36	3.96 164.9	1.76 28.86	2.30 37.73	2.03 5.16	80 552	Not Available	Not Available
	0.188 4.775	8.67 12.90	4.12 104.7	2.55 16.43	15.90 102.6	13.36 86.18	0.0928 0.0086	1.18 0.36	5.93 246.8	2.64 43.19	3.50 57.32	2.00 5.09	80 552		
	0.237 6.020	10.80 16.07	4.03 102.3	3.17 20.48	15.90 102.6	12.73 82.13	0.0884 0.0082	1.18 0.36	7.23 301.0	3.21 52.68	4.31 70.65	1.98 5.03	80 552		
	0.337 8.560	15.00 22.32	3.83 97.18	4.41 28.44	15.90 102.6	11.50 74.17	0.0798 0.0074	1.18 0.36	9.61 400.0	4.27 69.99	5.85 95.92	1.94 4.93	80 552		
	0.375 9.525	16.54 24.61	3.75 95.25	4.86 31.35	15.90 102.6	11.04 71.26	0.0767 0.0071	1.18 0.36	10.42 433.8	4.63 75.90	6.40 104.9	1.93 4.89	80 552		
5 **127**	0.125 3.175	6.51 9.69	4.75 120.65	1.91 12.35	19.63 126.68	17.72 114.33	0.123 0.011	1.31 0.40	5.69 236.9	2.28 37.30	2.97 48.69	1.72 4.38	80 552	Not Available	Not Available
	0.148 3.759	7.68 11.42	4.70 119.48	2.26 14.55	19.63 126.68	17.38 112.12	0.121 0.011	1.31 0.40	6.64 276.6	2.66 43.56	3.49 57.11	1.72 4.36	80 552		
	0.188 4.775	9.67 14.39	4.62 117.45	2.84 18.34	19.63 126.68	16.79 108.34	0.117 0.011	1.31 0.40	8.24 342.9	3.30 54.00	4.36 71.37	1.70 4.32	80 552		
	0.250 6.350	12.69 18.89	4.50 114.30	3.73 24.07	19.63 126.68	15.90 102.61	0.110 0.010	1.31 0.40	10.55 439.2	4.22 69.16	5.65 92.52	1.68 4.27	80 552		
	0.313 7.950	15.68 23.34	4.37 111.10	4.61 29.73	19.63 126.68	15.03 96.94	0.104 0.010	1.31 0.40	12.71 529.1	5.08 83.33	6.89 112.8	1.66 4.22	80 552		
	0.375 9.525	18.54 27.59	4.25 107.95	5.45 35.15	19.63 126.68	14.19 91.52	0.099 0.009	1.31 0.40	14.66 610.4	5.87 96.12	8.04 131.7	1.64 4.17	80 552		
6 ⅝ **168**	0.188 4.775	12.94 19.25	6.25 158.7	3.80 24.53	34.47 222.4	30.67 197.9	0.2130 0.0198	1.73 0.53	19.71 820.3	6.0 97.50	7.79 127.7	2.28 5.78	80 552	Not Available	Not Available
	0.280 7.112	18.99 28.26	6.07 154.1	5.58 36.01	34.47 222.4	28.89 186.4	0.2006 0.0186	1.73 0.53	28.14 1,171	8.5 139.2	11.28 184.8	2.25 5.70	80 552		
	0.375 9.525	25.06 37.28	5.88 149.2	7.36 47.50	34.47 222.4	27.11 174.9	0.1883 0.0175	1.73 0.53	36.08 1,502	10.89 178.5	14.67 240.3	2.21 5.62	80 552		
	0.432 10.973	28.60 42.56	5.76 146.3	8.41 54.23	34.47 222.4	26.07 168.2	0.1810 0.0168	1.73 0.53	40.49 1,685	12.2 200.3	16.60 272.0	2.20 5.58	80 552		
	0.500 12.700	32.74 48.72	5.63 142.9	9.62 62.07	34.47 222.4	24.85 160.3	0.1726 0.0160	1.73 0.53	45.42 1,890	13.71 224.7	18.80 308.1	2.17 5.52	80 552		
	0.562 14.275	36.43 54.20	5.50 139.7	10.70 69.06	34.47 222.4	23.77 153.3	0.1650 0.0153	1.73 0.53	49.61 2,065	14.98 245.4	20.72 339.5	2.15 5.47	80 552		

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
7 **178**	0.250 6.350	18.04 26.84	6.50 165.1	5.30 34.20	38.48 248.3	33.18 214.1	0.2304 0.0214	1.83 0.56	30.23 1,258	8.6 141.6	11.40 186.7	2.39 6.07	80 552	Not Available	Not Available
	0.312 7.925	22.31 33.19	6.38 162.0	6.56 42.29	38.48 248.3	31.93 206.0	0.2217 0.0206	1.83 0.56	36.73 1,529	10.49 172.0	13.97 228.9	2.37 6.01	80 552		
	0.375 9.525	26.56 39.52	6.25 158.8	7.81 50.35	38.48 248.3	30.68 197.9	0.2131 0.0198	1.83 0.56	42.96 1788.0	12.27 201.1	16.48 270.0	2.35 5.96	80 552		
	0.500 12.700	34.74 51.70	6.00 152.4	10.21 65.87	38.48 248.3	28.27 182.4	0.1963 0.0182	1.83 0.56	54.24 2,258	15.50 254.0	21.17 346.9	2.31 5.85	80 552		
	0.562 14.275	38.68 57.56	5.88 149.3	11.37 73.33	38.48 248.3	27.12 175.0	0.1883 0.0175	1.83 0.56	59.34 2,470	16.95 277.8	23.35 382.7	2.29 5.80	80 552		
8 ⅝ **219**	0.188 4.775	16.96 25.23	8.25 209.5	4.98 32.15	58.43 376.9	53.44 344.8	0.3711 0.0345	2.26 0.69	44.36 1,846	10.29 168.6	13.38 219.3	2.98 7.58	80 552	Not Available	Not Available
	0.250 6.350	22.38 33.31	8.13 206.4	6.58 42.44	58.43 376.9	51.85 334.5	0.3601 0.0335	2.26 0.69	57.72 2,403	13.38 219.3	17.54 287.4	2.96 7.52	80 552		
	0.322 8.179	28.58 42.53	7.98 202.7	8.40 54.19	58.43 376.9	50.03 322.8	0.3474 0.0323	2.26 0.69	72.49 3,017	16.81 275.5	21.64 354.5	2.94 7.46	80 552		
	0.375 9.525	33.07 49.22	7.88 200.0	9.72 62.71	58.43 376.9	48.71 314.2	0.3382 0.0314	2.26 0.69	82.86 3,449	19.21 314.9	25.54 418.5	2.92 7.42	80 552		
	0.500 12.700	43.43 64.63	7.63 193.7	12.76 82.34	58.43 376.9	45.66 294.6	0.3171 0.0295	2.26 0.69	105.7 4,400	24.51 401.7	33.05 541.6	2.88 7.31	80 552		
	0.533 13.538	46.11 68.61	7.56 192.0	13.55 87.42	58.43 376.9	44.88 289.5	0.3116 0.0290	2.26 0.69	111.4 4,636	25.83 423.3	34.95 572.8	2.87 7.28	80 552		
	0.625 15.875	53.45 79.54	7.38 187.3	15.71 101.3	58.43 376.9	42.72 275.6	0.2967 0.0276	2.26 0.69	126.4 5,262	29.32 480.4	40.08 656.8	2.84 7.21	80 552		
9 ⅝ **244**	0.250 6.350	25.06 37.28	9.13 231.8	7.36 47.50	72.76 469.4	65.40 421.9	0.4541 0.0422	2.52 0.77	81.95 3,369	16.82 275.6	21.98 360.2	3.32 8.42	80 552	Not Available	Not Available
	0.312 7.925	31.06 46.22	9.00 228.6	9.13 58.89	72.76 469.4	63.63 410.52	0.4419 0.0411	2.52 0.77	99.08 4,124	20.59 337.4	27.07 443.6	3.29 8.37	80 552		
	0.375 9.525	37.08 55.18	8.88 225.4	10.90 70.31	72.76 469.4	61.86 399.1	0.4296 0.0399	2.52 0.77	116.7 4,859	24.26 397.5	32.10 526.1	3.27 8.31	80 552		
	0.500 12.700	48.77 72.58	8.63 219.1	14.33 92.47	72.76 469.4	58.43 376.9	0.4057 0.0377	2.52 0.77	149.6 6,228	31.09 509.5	41.67 682.9	3.23 8.21	80 552		
	0.545 13.843	52.90 78.72	8.54 216.8	15.55 100.3	72.76 469.4	57.21 369.1	0.3973 0.0369	2.52 0.77	160.8 6,693	33.41 547.5	44.99 737.2	3.22 8.17	80 552		
10 ¾ **273**	0.188 4.775	21.23 31.59	10.37 263.5	6.24 40.25	90.76 585.56	84.52 545.32	0.587 0.055	2.81 0.86	87.01 3,622	16.19 265.3	20.97 343.7	3.73 9.49	80 552	Not Available	Not Available
	0.250 6.350	28.06 41.76	10.25 260.4	8.25 53.20	90.76 585.6	82.52 532.4	0.5730 0.0532	2.81 0.86	113.7 4,733	21.16 346.7	27.57 451.8	3.71 9.43	80 552		
	0.312 7.925	34.81 51.81	10.13 257.2	10.23 66.01	90.76 585.6	80.53 519.6	0.5592 0.0520	2.81 0.86	139.5 5,805	25.95 425.2	34.00 557.2	3.69 9.38	80 552		
	0.375 9.525	41.59 61.89	10.00 254.0	12.22 78.86	90.76 585.6	78.54 506.7	0.5454 0.0507	2.81 0.86	164.7 6,854	30.64 502.0	40.38 661.8	3.67 9.32	80 552		
	0.500 12.700	54.79 81.53	9.75 247.7	16.10 103.9	90.76 585.6	74.66 481.7	0.5185 0.0482	2.81 0.86	212.0 8,822	39.43 646.2	52.57 861.5	3.63 9.22	80 552		
	0.593 15.062	64.39 95.82	9.56 242.9	18.92 122.1	90.76 585.6	71.84 463.5	0.4989 0.0463	2.81 0.86	244.8 10,190	45.55 746.5	61.25 1004	3.60 9.14	80 552		
12 **305**	0.250 6.350	31.40 46.73	11.50 292.1	9.23 59.54	113.1 729.7	103.9 670.1	0.7213 0.0670	3.14 0.96	159.3 6,632	26.56 435.2	34.52 565.7	4.16 10.55	80 552	Not Available	Not Available
	0.312 7.925	38.98 58.01	11.38 289.0	11.46 73.91	113.1 729.7	101.6 655.7	0.7058 0.0656	3.14 0.96	195.8 8,149	32.63 534.7	42.63 698.6	4.13 10.50	80 552		
	0.335 8.509	41.77 62.16	11.33 287.8	12.28 79.20	113.1 729.7	100.8 650.5	0.7001 0.0650	3.14 0.96	209.0 8,699	34.83 570.8	45.60 747.2	4.13 10.48	80 552		
	0.375 9.525	46.60 69.35	11.25 285.8	13.70 88.36	113.1 729.7	99.40 641.3	0.6903 0.0641	3.14 0.96	231.6 9,640	38.60 632.5	50.70 830.7	4.11 10.44	80 552		
	0.500 12.700	61.47 91.47	11.00 279.4	18.06 116.5	113.1 729.7	95.03 613.1	0.6600 0.0613	3.14 0.96	299.2 12,450	49.86 817.1	66.17 1084	4.07 10.34	80 552		
	0.625 15.875	76.00 113.1	10.75 273.1	22.33 144.1	113.1 729.7	90.76 585.6	0.6303 0.0586	3.14 0.96	362.3 15,080	60.39 989.6	80.95 1327	4.03 10.23	80 552		

PIPE

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
12 ¾ **324**	0.250 6.350	33.41 49.71	12.25 311.2	9.82 63.34	127.7 823.7	117.9 760.4	0.819 0.076	3.34 1.02	191.8 7,984	30.09 493.1	39.07 640.2	4.42 11.23	80 552	Not Available	Not Available
	0.312 7.925	41.48 61.73	12.13 308.0	12.19 78.65	127.7 823.7	115.5 745.1	0.802 0.075	3.34 1.02	235.9 9,819	37.00 606.4	48.28 791.1	4.40 11.17	80 552		
	0.375 9.525	49.61 73.82	12.00 304.8	14.58 94.06	127.7 823.7	113.1 729.7	0.785 0.073	3.34 1.02	279.3 11,630	43.82 718.0	57.45 941.4	4.38 11.12	80 552		
	0.394 10.008	52.04 77.44	11.96 303.8	15.29 98.67	127.7 823.7	112.4 725.0	0.780 0.073	3.34 1.02	292.2 12,161	45.83 751.0	60.17 986.1	4.37 11.10	80 552		
	0.406 10.312	53.58 79.73	11.94 303.2	15.74 101.6	127.7 823.7	111.9 722.1	0.777 0.072	3.34 1.02	300.2 12,500	47.09 771.7	61.89 1,014	4.37 11.09	80 552		
	0.500 12.700	65.48 97.44	11.75 298.5	19.24 124.1	127.7 823.7	108.4 699.6	0.753 0.070	3.34 1.02	361.5 15,050	56.7 929.4	75.07 1,230	4.34 11.01	80 552		
	0.525 13.335	68.61 102.1	11.70 297.2	20.16 130.1	127.7 823.7	107.5 693.6	0.747 0.069	3.34 1.02	377.4 15,710	59.20 970.0	78.51 1,287	4.33 10.99	80 552		
	0.687 17.450	88.59 131.8	11.38 289.0	26.04 168.0	127.7 823.7	101.6 655.7	0.706 0.066	3.34 1.02	475.1 19,780	74.53 1,221	100.1 1,640	4.27 10.85	80 552		
14 **356**	0.219 5.563	32.26 48.01	13.56 344.5	9.48 61.17	153.9 993.1	144.5 932.0	1.003 0.093	3.67 1.12	225.1 9,371	32.16 527.1	41.60 681.6	4.87 12.38	80 552	Not Available	Not Available
	0.250 6.350	36.75 54.68	13.50 342.9	10.80 69.67	153.9 993.1	143.1 923.5	0.994 0.092	3.67 1.12	255.3 10,630	36.47 597.7	47.27 774.6	4.86 12.35	80 552		
	0.312 7.925	45.65 67.94	13.38 339.8	13.42 86.56	153.9 993.1	140.5 906.6	0.976 0.091	3.67 1.12	314.4 13,090	44.91 736.0	58.47 958.1	4.84 12.30	80 552		
	0.375 9.525	54.62 81.28	13.25 336.6	16.05 103.6	153.9 993.1	137.9 889.6	0.958 0.089	3.67 1.12	372.8 15,520	53.25 872.6	69.63 1,141	4.82 12.24	80 552		
	0.438 11.125	63.50 94.50	13.12 333.3	18.66 120.4	153.9 993.1	135.3 872.7	0.939 0.087	3.67 1.12	429.5 17,880	61.36 1,005	80.59 1,321	4.80 12.19	80 552		
	0.500 12.700	72.16 107.4	13.00 330.2	21.21 136.8	153.9 993.1	132.7 856.3	0.922 0.086	3.67 1.12	483.8 20,140	69.11 1,132	91.17 1,494	4.78 12.13	80 552		
	0.625 15.875	89.36 133.0	12.75 323.9	26.26 169.4	153.9 993.1	127.7 823.7	0.887 0.082	3.67 1.12	588.5 24,500	84.08 1,377	111.9 1,834	4.73 12.02	80 552		
16 **406**	0.219 5.563	36.95 54.98	15.56 395.3	10.86 70.05	201.1 1,297	190.2 1,227	1.321 0.123	4.19 1.28	338.1 14,071	42.26 692.5	54.54 893.8	5.58 14.20	80 552	Not Available	Not Available
	0.250 6.350	42.09 62.64	15.50 393.7	12.37 79.81	201.1 1,297	188.7 1,217	1.310 0.122	4.19 1.28	383.7 15,970	47.96 785.9	62.02 1,016	5.57 14.15	80 552		
	0.312 7.925	52.32 77.86	15.38 390.6	15.38 99.21	201.1 1,297	185.7 1,198	1.289 0.120	4.19 1.28	473.2 19,700	59.16 969.4	76.80 1,258	5.55 14.09	80 552		
	0.375 9.525	62.64 93.22	15.25 387.35	18.41 118.76	201.06 1297.17	182.65 1178.41	1.268 0.118	4.19 1.28	562.1 23396	70.26 1151	91.57 1,501	5.52 14.0	80 552		
	0.406 10.312	67.68 100.7	15.19 385.8	19.89 128.3	201.1 1,297	181.2 1,169	1.258 0.117	4.19 1.28	605.0 25,180	75.62 1,239	98.75 1,618	5.52 14.01	80 552		
	0.500 12.700	82.85 123.3	15.00 381.0	24.35 157.1	201.1 1,297	176.7 1,140	1.227 0.114	4.19 1.28	731.9 30,470	91.49 1,499	120.2 1,969	5.48 13.93	80 552		
	0.625 15.875	102.7 152.9	14.75 374.7	30.19 194.8	201.1 1,297	170.9 1,102	1.187 0.110	4.19 1.28	893.5 37,190	111.7 1,830	147.8 2,422	5.44 13.82	80 552		
18 **457**	0.250 6.350	47.44 70.59	17.50 444.5	13.94 89.94	254.5 1,642	240.5 1,552	1.670 0.155	4.71 1.44	549.1 22,860	61.02 999.9	78.77 1,291	6.28 15.94	80 552	70 483	Not Available
	0.312 7.925	59.00 87.79	17.38 441.4	17.34 111.9	254.5 1,642	237.1 1,530	1.647 0.153	4.71 1.44	678.2 28,230	75.36 1,235	97.62 1,600	6.25 15.89	80 552	70 483	
	0.375 9.525	70.66 105.1	17.25 438.2	20.76 134.0	254.5 1,642	233.71 1,508	1.623 0.151	4.71 1.44	806.6 33,570	89.63 1,469	116.5 1,909	6.23 15.83	80 552	70 483	
	0.500 12.700	93.54 139.2	17.00 431.8	27.49 177.3	254.5 1,642	227.0 1,464	1.576 0.146	4.71 1.44	1,053 43,840	117.0 1,918	153.2 2,510	6.19 15.72	80 552	70 483	
	0.625 15.875	116.1 172.8	16.75 425.5	34.12 220.1	254.5 1,642	220.4 1,422	1.530 0.142	4.71 1.44	1,289 53,660	143.2 2,347	188.8 3,093	6.15 15.61	80 552	70 483	

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
20 **508**	0.250 6.350	52.78 78.55	19.50 495.3	15.51 100.1	314.2 2,027	298.7 1,927	2.074 0.193	5.24 1.60	756.4 31,485	75.6 1,240	97.52 1,598	6.98 17.70	70 483	70 483	Not Available
	0.312 7.925	65.67 97.72	19.38 492.2	19.30 124.5	314.2 2,027	294.9 1,902	2.048 0.190	5.24 1.60	935.3 38,930	93.5 1,533	120.95 1,982	6.96 17.68	70 483	70 483	
	0.375 9.525	78.67 117.1	19.25 489.0	23.12 149.2	314.2 2,027	291.0 1,878	2.021 0.188	5.24 1.60	1,113 46,350	111.3 1,825	144.4 2,367	6.94 17.63	70 483	70 483	
	0.500 12.700	104.2 155.1	19.00 482.6	30.63 197.6	314.2 2,027	283.5 1,829	1.969 0.183	5.24 1.60	1,457 60,640	145.7 2,387	190.2 3,116	6.90 17.52	70 483	70 483	
	0.625 15.875	129.5 192.6	18.75 476.3	38.04 245.4	314.2 2,027	276.1 1,781	1.917 0.178	5.24 1.60	1,787 74,380	178.7 2,928	234.7 3,846	6.85 17.41	60 414	70 483	
24 **610**	0.250 6.350	63.47 94.46	23.50 596.9	18.65 120.3	452.4 2,919	433.7 2,798	3.012 0.280	6.28 1.92	1,315 54,749	109.6 1,796	141.0 2,311	8.40 21.3	70 483	70 483	Not Available
	0.312 7.925	79.01 117.6	23.38 593.8	23.22 149.8	452.4 2,919	429.2 2,769	2.980 0.277	6.28 1.92	1,629 67,800	135.7 2,224	175.1 2,869	8.38 21.27	70 483	70 483	
	0.375 9.525	94.71 140.9	23.25 590.6	27.83 179.6	452.4 2,919	424.6 2,739	2.948 0.274	6.28 1.92	1,942 80,840	161.9 2,652	209.3 3,430	8.35 21.22	70 483	70 483	
	0.500 12.700	125.6 186.9	23.00 584.2	36.91 238.2	452.4 2,919	415.5 2,680	2.885 0.268	6.28 1.92	2,549 106,100	212.4 3,481	276.2 4,526	8.31 21.11	70 483	70 483	
	0.625 15.875	156.2 232.4	22.75 577.9	45.90 296.11	452.4 2,919	406.5 2,623	2.823 0.262	6.28 1.92	3,137 130,600	261.4 4,284	341.6 5,597	8.27 21.00	60 414	70 483	
	0.750 19.050	186.4 277.4	22.50 571.5	54.78 353.4	452.4 2,919	397.6 2,565	2.761 0.257	6.28 1.92	3,705 154,200	308.8 5,060	405.6 6,646	8.22 20.89	Not Available	60 414	
	0.875 22.225	216.3 321.9	22.25 565.2	63.57 410.1	452.4 2,919	388.8 2,509	2.700 0.251	6.28 1.92	4,255 177,100	354.6 5,811	468.1 7,671	8.18 20.78		50 345	
	1.000 25.400	245.9 365.9	22.00 558.8	72.26 466.2	452.4 2,919	380.1 2,452	2.640 0.245	6.28 1.92	4,787 199,300	398.9 6,537	529.3 8,674	8.14 20.67		50 345	
30 **762**	0.250 6.350	79.5 118.3	29.50 749.3	23.37 150.8	706.9 4,560	683.5 4,410	4.746 0.441	7.85 2.39	2,585 107,603	172.3 2,824	221.3 3,626	10.50 26.70	Not Available	70 483	50 345
	0.312 7.925	99.0 147.3	29.38 746.2	29.10 187.7	706.9 4,560	677.8 4,373	4.71 0.44	7.85 2.39	3,206 133,500	213.8 3,503	275.0 4,506	10.50 26.66		70 483	50 345
	0.375 9.525	118.8 176.7	29.25 743.0	34.90 225.2	706.9 4,560	672.0 4,335	4.67 0.43	7.85 2.39	3,829 159,400	255.3 4,184	329.1 5,394	10.47 26.61		70 483	50 345
	0.500 12.700	157.7 234.6	29.00 736.6	46.34 299.0	706.9 4,560	660.5 4,261	4.59 0.43	7.85 2.39	5,042 209,900	336.1 5,508	435.2 7,131	10.43 26.50		70 483	50 345
	0.625 15.875	196.3 292.1	28.75 730.3	57.68 372.1	706.9 4,560	649.2 4,188	4.51 0.42	7.85 2.39	6,224 259,100	414.9 6,800	539.4 8,839	10.39 26.39		70 483	50 345
	0.750 19.050	234.5 349.0	28.50 723.9	68.92 444.6	706.9 4,560	637.9 4,116	4.43 0.41	7.85 2.39	7,375 307,000	491.7 8,057	641.8 10,517	10.34 26.28		70 483	50 345
	0.875 22.225	272.4 405.4	28.25 717.6	80.06 516.5	706.9 4,560	626.8 4,044	4.35 0.40	7.85 2.39	8,497 353,700	566.5 9,283	742.5 12,167	10.30 26.17		60 414	50 345
	1.000 25.400	310.0 461.3	28.00 711.2	91.11 587.8	706.9 4,560	615.8 3,973	4.28 0.40	7.85 2.39	9,589 399,100	639.3 10,480	841.3 13,787	10.26 26.06		60 414	50 345
36 **914**	0.250 6.350	95.5 142.19	35.50 901.70	28.08 181.2	1,018 6,567	989.8 6,386	6.874 0.639	9.42 2.87	4,486 186,717	249.2 4,084	319.5 5,236	12.60 31.99	Not Available	70 483	60 414
	0.312 7.925	119.0 177.1	35.38 898.55	34.98 225.7	1,018 6,567	982.9 6,341	6.826 0.634	9.42 2.87	5,569 231,819	309.4 5,070	397.4 6,512	12.60 31.99		70 483	60 414
	0.375 9.525	142.8 212.5	35.25 895.4	41.97 270.8	1,018 6,567	975.9 6,296	6.78 0.63	9.43 2.87	6,659 277,200	369.9 6,062	475.9 7,799	12.60 31.99		70 483	60 414
	0.500 12.700	189.8 282.4	35.00 889.0	55.76 359.8	1,018 6,567	962.1 6,207	6.68 0.62	9.43 2.87	8,786 365,700	488.1 7,999	630.2 10,327	12.55 31.88		70 483	60 414
	0.625 15.875	236.4 351.7	34.75 882.7	69.46 448.1	1,018 6,567	948.4 6,119	6.59 0.61	9.43 2.87	10,870 452,400	603.8 9,894	782.2 12,818	12.51 31.77		70 483	60 414
	0.750 19.050	282.6 420.6	34.50 876.3	83.06 535.8	1,018 6,567	934.8 6,031	6.49 0.60	9.43 2.87	12,910 537,200	717.0 11,750	932.1 15,274	12.47 31.66		70 483	60 414
	0.875 22.225	328.6 488.9	34.25 870.0	96.55 622.9	1,018 6,567	921.3 5,944	6.40 0.59	9.43 2.87	14,900 620,200	827.8 13,560	1,080 17,694	12.42 31.55		60 414	60 414
	1.000 25.400	374.2 556.8	34.00 863.6	110.0 709.4	1,018 6,567	907.9 5,858	6.31 0.59	9.43 2.87	16,850 701,400	936.2 15,340	1,225 20,080	12.38 31.44		60 414	60 414

PIPE

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
42 **1067**	0.250 6.350	111.58 166.1	41.50 1,054	32.79 211.6	1,385 8,938	1,353 8,727	9.39 0.87	11.00 3.35	7,145 297,385	340.2 5,575	435.8 7,141	14.80 37.50	Not Available	70 483	60 414
	0.375 9.525	166.9 248.3	41.25 1,048	49.04 316.4	1,385 8,938	1,336 8,622	9.28 0.86	11.00 3.35	10,620 442,100	505.8 8,288	649.8 10,648	14.72 37.38		70 483	60 414
	0.500 12.700	221.8 330.1	41.00 1,041	65.19 420.6	1,385 8,938	1,320 8,518	9.17 0.85	11.00 3.35	14,040 584,200	668.4 10,950	861.2 14,112	14.67 37.27		70 483	60 414
	0.625 15.875	276.4 411.4	40.75 1,035	81.24 524.1	1,385 8,938	1,304 8,414	9.06 0.84	11.00 3.35	17,390 723,700	828.0 13,570	1,070 17,534	14.63 37.16		70 483	60 414
	0.750 19.050	330.7 492.2	40.50 1,029	97.19 627.1	1,385 8,938	1,288 8,311	8.95 0.83	11.00 3.35	20,680 860,700	984.7 16,140	1,276 20,915	14.59 37.05		70 483	60 414
	0.875 22.225	384.7 572.4	40.25 1,022	113.0 729.3	1,385 8,938	1,272 8,209	8.84 0.82	11.00 3.35	23,910 995,200	1,139 18,660	1,480 24,254	14.54 36.94		70 483	60 414
	1.000 25.400	438.3 652.2	40.00 1,016	128.8 831.0	1,385 8,938	1,257 8,107	8.73 0.81	11.00 3.35	27,080 1,127,000	1,290 21,130	1,681 27,552	14.50 36.83		70 483	60 414
48 **1219**	0.375 9.525	190.9 284.1	47.25 1,200	56.11 362.0	1,810 11,670	1,753 11,310	12.18 1.13	12.57 3.83	15,910 662,200	662.8 10,860	850.6 13,938	16.84 42.77	Not Available	70 483	60 414
	0.500 12.700	253.9 377.8	47.00 1,194	74.61 481.4	1,810 11,670	1,735 11,190	12.05 1.12	12.57 3.83	21,050 876,000	876.9 14,370	1,128 18,487	16.79 42.66		70 483	60 414
	0.625 15.875	316.5 471.0	46.75 1,187	93.02 600.1	1,810 11,670	1,717 11,070	11.92 1.11	12.57 3.83	26,100 1,086,000	1,088 17,820	1,403 22,988	16.75 42.55		70 483	60 414
	0.750 19.050	378.8 563.7	46.50 1,181	111.3 718.3	1,810 11,670	1,698 10,960	11.79 1.10	12.57 3.83	31,080 1,294,000	1,295 21,220	1,675 27,441	16.71 42.44		70 483	60 414
	0.875 22.225	440.8 656.0	46.25 1,175	129.5 835.8	1,810 11,670	1680 10,840	11.67 1.08	12.57 3.83	35,970 1,497,000	1,499 24,560	1,943 31,847	16.66 42.33		70 483	60 414
	1.000 25.400	502.4 747.7	46.00 1,168	147.7 952.6	1,810 11,670	1,662 10,720	11.54 1.07	12.57 3.83	40,790 1,698,000	1,700 27,850	2,209 36,204	16.62 42.22		70 483	60 414
	1.250 31.750	624.7 929.6	45.50 1,156	183.6 1,184	1,810 11,670	1,626 10,490	11.29 1.05	12.57 3.83	50,190 2,089,000	2,091 34,270	2,733 44,779	16.53 42.00		Not Available	60 414
	1.375 34.925	685.3 1,020	45.25 1,149	201.4 1,299	1,810 11,670	1,608 10,380	11.17 1.04	12.57 3.83	54,780 2,280,000	2,282 37,400	2,990 48,997	16.49 41.89			60 414
54 **1372**	0.375 9.525	215.0 319.9	53.25 1,353	63.18 407.6	2,290 14,780	2,227 14,370	15.47 1.44	14.14 4.31	22,710 945,300	841.1 13,780	1,078 17,672	18.96 48.16	Not Available	70 483	70 483
	0.500 12.700	286.0 425.5	53.00 1,346	84.04 542.2	2,290 14,780	2,206 14,230	15.32 1.42	14.14 4.31	30,070 1,252,000	1,114 18,250	1,431 23,453	18.92 48.05		70 483	70 483
	0.625 15.875	356.6 530.7	52.75 1,340	104.8 676.1	2,290 14,780	2,185 14,100	15.18 1.41	14.14 4.31	37,330 1,554,000	1,382 22,650	1,781 29,179	18.87 47.94		70 483	70 483
	0.750 19.050	426.9 635.3	52.50 1,334	125.5 809.5	2,290 14,780	2,165 13,970	15.03 1.40	14.14 4.31	44,480 1,851,000	1,647 27,000	2,127 34,852	18.83 47.82		70 483	70 483
	0.875 22.225	496.9 739.5	52.25 1,327	146.0 942.2	2,290 14,780	2,144 13,830	14.89 1.38	14.14 4.31	51,530 2,145,000	1,909 31,280	2,470 40,471	18.79 47.71		70 483	70 483
	1.000 25.400	566.6 843.12	52.00 1,321	166.5 1,074	2,290 14,780	2,124 13,700	14.75 1.37	14.14 4.31	58,480 2,434,000	2,166 35,500	2,809 46,037	18.74 47.60		70 483	70 483
	1.250 31.750	704.9 1,049	51.50 1,308	207.1 1,336	2,290 14,780	2,083 13,440	14.47 1.34	14.14 4.31	72,090 3,001,000	2,670 43,750	3,479 57,008	18.66 47.38		Not Available	60 414
	1.375 34.925	773.5 1,151	51.25 1,302	227.3 1,467	2,290 14,780	2,063 13,310	14.33 1.33	14.14 4.31	78,750 3,278,000	2,917 47,790	3809 62,,415	18.61 47.27			60 414
60 **1524**	0.375 9.525	239.0 355.7	59.25 1,505	70.24 453.2	2,827 18,240	2,757 17,790	19.15 1.78	15.71 4.79	31,220 1,299,000	1,041 17,050	1,333 21,847	21.08 53.55	Not Available	70 483	70 483
	0.500 12.700	318.0 473.3	59.00 1,499	93.46 603.0	2,827 18,240	2,734 17,640	18.99 1.76	15.71 4.79	41,360 1,722,000	1,379 22,590	1,770 29,008	21.04 53.43		70 483	70 483
	0.625 15.875	396.7 590.3	58.75 1,492	116.6 752.1	2,827 18,240	2,711 17,490	18.83 1.75	15.71 4.79	51,380 2,139,000	1,713 28,070	2,203 36,108	20.99 53.32		70 483	70 483
	0.750 19.050	475.0 706.9	58.50 1,486	139.6 900.7	2,827 18,240	2,688 17,340	18.67 1.73	15.71 4.79	61,270 2,550,000	2,042 33,470	2,633 43,148	20.95 53.21		70 483	70 483
	0.875 22.225	553.0 823.0	58.25 1,480	162.5 1,049	2,827 18,240	2,665 17,190	18.51 1.72	15.71 4.79	71,040 2,957,000	2,368 38,800	3,059 50,128	20.91 53.10		60 414	70 483
	1.000 25.400	630.7 938.6	58.00 1,473	185.4 1,196	2,827 18,240	2,642 17,050	18.35 1.71	15.71 4.79	80,680 3,358,000	2,689 44,070	3,481 57,049	20.86 52.99		60 414	70 483
	1.250 31.750	785.1 1,168	57.50 1,461	230.7 1,488	2,827 18,240	2,597 16,750	18.03 1.68	15.71 4.79	99,580 4,145,000	3,319 54,400	4,315 70,712	20.78 52.77		Not Available	70 483
	1.500 38.100	938.1 1,396	57.00 1,448	275.7 1,779	2,827 18,240	2,552 16,460	17.72 1.65	15.71 4.79	118,000 4,912,000	3,934 64,460	5,135 84,139	20.69 52.55			60 414

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
72 **1829**	0.375 9.525	287.1 427.3	71.25 1,810	84.38 544.4	4,072 26,270	3,987 25,720	27.69 2.57	18.85 5.75	54,110 2,252,000	1,503 24,630	1,924 31,526	25.32 64.32	Not Available	70 483	70 483
	0.500 12.700	382.2 568.7	71.00 1,803	112.3 724.6	4,072 26,270	3,959 25,540	27.49 2.55	18.85 5.75	71,770 2,987,000	1,994 32,670	2,556 41,888	25.28 64.21		70 483	70 483
	0.625 15.875	476.9 709.6	70.75 1,797	140.1 904.2	4,072 26,270	3,931 25,360	27.30 2.54	18.85 5.75	89,250 3,715,000	2,479 40,630	3,184 52,178	25.24 64.10		70 483	70 483
	0.750 19.050	571.3 850.1	70.50 1,791	167.9 1,083	4,072 26,270	3,904 25,180	27.11 2.52	18.85 5.75	106,500 4,435,000	2,960 48,500	3,808 62,395	25.19 63.99		70 483	70 483
	0.875 22.225	665.3 990.0	70.25 1,784	195.5 1,261	4,072 26,270	3,876 25,010	26.92 2.50	18.85 5.75	123,700 5,147,000	3,435 56,290	4,427 72,540	25.15 63.88		70 483	70 483
	1.000 25.400	759.0 1,129	70.00 1,778	223.1 1,439	4,072 26,270	3,848 24,830	26.73 2.48	18.85 5.75	140,600 5,851,000	3,905 63,990	5,041 82,613	25.10 63.77		70 483	70 483
	1.125 28.575	852.37 1268.50	69.75 1771.65	250.49 1616.08	4,072 26,270	3821 24,652	26.54 2.47	18.85 5.75	157,326 6,548,411	4,370 71,614	5,652 92,614	25.1 63.7		70 483	70 483
	1.250 31.750	945.4 1,407	69.50 1,765	277.8 1,792	4,072 26,270	3,794 24,480	26.34 2.45	18.85 5.75	173,900 7,238,000	4,830 79,160	6,258 102,544	25.02 63.55		Not Available	60 414
	1.375 34.925	1,038 1,545	69.25 1,759	305.1 1,968	4,072 26,270	3,766 24,299	26.16 2.43	18.85 5.75	190,284 7,920,223	5,286 86,617	6,859 112,402	25.0 63.4			60 414
	1.500 38.100	1,130 1,682	69.00 1,753	332.2 2,143	4,072 26,270	3,739 24,120	25.97 2.41	18.85 5.75	206,500 8,595,000	5,736 94,000	7,457 122,190	24.93 63.33			60 414
84 **2134**	0.375 9.525	335.2 498.9	83.25 2,115	98.52 635.6	5,542 35,750	5,443 35,120	37.80 3.51	21.99 6.70	86,120 3,585,000	2,050 33,600	2,622 42,974	29.57 75.10	Not Available	70 483	70 483
	0.500 12.700	446.3 664.2	83.00 2,108	131.2 846.2	5,542 35,750	5,411 34,910	37.57 3.49	21.99 6.70	114,300 4,758,000	2,722 44,600	3,486 57,128	29.52 74.99		70 483	70 483
	0.625 15.875	557.1 829.0	82.75 2,102	163.7 1,056	5,542 35,750	5,378 34,700	37.35 3.47	21.99 6.70	142,300 5,921,000	3,387 55,500	4,345 71,197	29.48 74.87		70 483	70 483
	0.750 19.050	667.5 993.3	82.50 2,096	196.2 1,266	5,542 35,750	5,346 34,490	37.12 3.45	21.99 6.70	169,900 7,074,000	4,046 66,310	5,198 85,181	29.43 74.76		70 483	70 483
	0.875 22.225	777.5 1,157	82.25 2,089	228.5 1,474	5,542 35,750	5,313 34,280	36.90 3.43	21.99 6.70	197,400 8,216,000	4,700 77,010	6,046 99,081	29.39 74.65		70 483	70 483
	1.000 25.400	887.3 1,320	82.00 2,083	260.8 1,682	5,542 35,750	5,281 34,070	36.67 3.41	21.99 6.70	224,600 9,347,000	5,347 87,620	6,889 112,896	29.35 74.54		70 483	70 483
	1.250 31.750	1,106 1,645	81.50 2,070	325.0 2,097	5,542 35,750	5,217 33,660	36.23 3.37	21.99 6.70	278,200 11,580,000	6,624 108,500	8,560 140,275	29.26 74.32		Not Available	70 483
	1.500 38.100	1,323 1,969	81.00 2,057	388.8 2,508	5,542 35,750	5,153 33,250	35.78 3.32	21.99 6.70	330,900 13,770,000	7,878 129,100	10,211 167,320	29.17 74.10			70 483
	1.625 41.275	1,431 2,129	80.75 2,051	420.5 2,713	5,542 35,750	5,121 33,040	35.56 3.30	21.99 6.70	356,800 14,850,000	8,496 139,200	11,028 180,718	29.13 73.99			70 483
96 **2438**	0.375 9.525	383.3 570.4	95.25 2,419	112.7 726.8	7,238 46,700	7,126 45,970	49.48 4.60	25.13 7.66	128,800 5,360,000	2,683 43,960	3,429 56,192	33.81 85.87	Not Available	Not Available	70 483
	0.500 12.700	510.5 759.6	95.00 2,413	150.0 967.8	7,238 46,700	7,088 45,730	49.22 4.57	25.13 7.66	171,000 7,118,000	3,563 58,390	4,560 74,728	33.76 85.76		70 483	70 483
	0.625 15.875	637.2 948.3	94.75 2,407	187.3 1,208	7,238 46,700	7,051 45,490	48.97 4.55	25.13 7.66	212,900 8,863,000	4,436 72,700	5,685 93,166	33.72 85.65		70 483	70 483
	0.750 19.050	763.7 1,136	94.50 2,400	224.4 1,448	7,238 46,700	7,014 45,250	48.71 4.53	25.13 7.66	254,500 10,590,000	5,303 86,900	6,805 111,507	33.68 85.54		70 483	70 483
	0.875 22.225	889.8 1,324	94.25 2,394	261.5 1,687	7,238 46,700	6,977 45,010	48.45 4.50	25.13 7.66	295,800 12,310,000	6,162 101,000	7,918 129,751	33.63 85.43		70 483	70 483
	1.000 25.400	1,016 1,511	94.00 2,388	298.5 1,925	7,238 46,700	6,940 44,770	48.19 4.48	25.13 7.66	336,700 14,020,000	7,015 115,000	9,025 147,899	33.59 85.32		70 483	70 483
	1.250 31.750	1,266 1,884	93.50 2,375	372.1 2,401	7,238 46,700	6,866 44,300	47.68 4.43	25.13 7.66	417,600 17,380,000	8,700 142,600	11,223 183,906	33.50 85.10		Not Available	70 483
	1.500 38.100	1,515 2,255	93.00 2,362	445.3 2,873	7,238 46,700	6,793 43,830	47.17 4.38	25.13 7.66	497,200 20,700,000	10,360 169,800	13,397 219,529	33.42 84.87			70 483
	1.750 44.450	1,763 2,624	92.50 2,350	518.2 3,343	7,238 46,700	6,720 43,360	46.67 4.34	25.13 7.66	575,600 23,960,000	11,990 196,500	15,547 254,772	33.33 84.65			70 483
	2.000 50.800	2,010 2,991	92.00 2,337	590.6 3,810	7,238 46,700	6,648 42,890	46.16 4.29	25.13 7.66	652,600 27,160,000	13,600 222,800	17,675 289,636	33.24 84.43			70 483

PIPE

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
108 **2743**	0.375 9.525	431.4 642.0	107.3 2,724	126.8 818.0	9,161 59,100	9,034 58,280	62.74 5.83	28.27 8.62	183,600 7,641,000	3,400 55,710	4,344 71,180	38.05 96.65	Not Available	Not Available	70 483
	0.500 12.700	574.6 855.1	107.0 2,718	168.9 1,089	9,161 59,100	8,992 58,010	62.44 5.80	28.27 8.62	243,900 10,150,000	4,517 74,020	5,778 94,687	38.01 96.54		70 483	70 483
	0.625 15.875	717.4 1,068	106.8 2,711	210.8 1,360	9,161 59,100	8,950 57,740	62.15 5.77	28.27 8.62	303,900 12,650,000	5,627 92,210	7,206 118,084	37.96 96.43		70 483	70 483
	0.750 19.050	859.9 1,280	106.5 2,705	252.7 1,630	9,161 59,100	8,908 57,470	61.86 5.75	28.27 8.62	363,400 15,120,000	6,729 110,300	8,627 141,372	37.92 96.32		70 483	70 483
	0.875 22.225	1,002 1,491	106.3 2,699	294.5 1,900	9,161 59,100	8,866 57,200	61.57 5.72	28.27 8.62	422,400 17,580,000	7,823 128,200	10,042 164,551	37.88 96.20		70 483	70 483
	1.000 25.400	1,144 1,702	106.0 2,692	336.2 2,169	9,161 59,100	8,825 56,930	61.28 5.69	28.27 8.62	481,100 20,030,000	8,910 146,000	11,449 187,621	37.83 96.09		70 483	70 483
	1.250 31.750	1,426 2,123	105.5 2,680	419.2 2,705	9,161 59,100	8,742 56,400	60.71 5.64	28.27 8.62	597,200 24,860,000	11,060 181,200	14,245 233,435	37.74 95.87		Not Available	70 483
	1.500 38.100	1,708 2,541	105.0 2,667	501.9 3,238	9,161 59,100	8,659 55,860	60.13 5.59	28.27 8.62	711,700 29,620,000	13,180 216,000	17,015 278,818	37.66 95.65			70 483
	1.750 44.450	1,988 2,958	104.5 2,654	584.1 3,769	9,161 59,100	8,577 55,330	59.56 5.53	28.27 8.62	824,500 34,320,000	152,69 250,200	19,758 323,770	37.57 95.43			70 483
	2.000 50.800	2,266 3,372	104.0 2,642	666.0 4,297	9,161 59,100	8,495 54,810	58.99 5.48	28.27 8.62	935,800 38,950,000	17,330 284,000	22,475 368,294	37.48 95.21			70 483
120 **3048**	0.375 9.525	479.6 713.6	119.3 3,029	140.9 909.2	11,310 72,970	11,170 72,060	77.56 7.21	31.42 9.58	252,100 10,490,000	4,202 68,850	5,366 87,938	42.29 107.4	Not Available	Not Available	70 483
	0.500 12.700	638.7 950.5	119.0 3,023	187.7 1,211	11,310 72,970	11,120 71,750	77.24 7.18	31.42 9.58	335,100 13,950,000	5,585 91,510	7,140 117,006	42.25 107.3		70 483	70 483
	0.625 15.875	797.6 1,187	118.8 3,016	234.4 1,512	11,310 72,970	11,080 71,450	76.91 7.15	31.42 9.58	417,500 17,380,000	6,959 114,000	8,907 145,953	42.21 107.2		70 483	70 483
	0.750 19.050	956.1 1,423	118.5 3,010	281.0 1,813	11,310 72,970	11,030 71,150	76.59 7.12	31.42 9.58	499,500 20,790,000	8,325 136,400	10,666 174,777	42.16 107.1		70 483	70 483
	0.875 22.225	1,114 1,658	118.3 3,004	327.5 2,113	11,310 72,970	10,980 70,850	76.27 7.09	31.42 9.58	580,900 24,180,000	9,682 158,700	12,417 203,481	42.12 107.0		70 483	70 483
	1.000 25.400	1272 1,893	118.0 2,997	373.8 2,412	11,310 72,970	10,940 70,550	75.94 7.06	31.42 9.58	661,800 27,550,000	11,030 180,800	14,161 232,063	42.07 106.9		70 483	70 483
	1.250 31.750	1,587 2,361	117.5 2,985	466.3 3,009	11,310 72,970	10,840 69,960	75.30 7.00	31.42 9.58	822,100 34,220,000	13,700 224,500	17,628 288,865	41.99 106.6		Not Available	70 483
	1.500 38.100	1,900 2,828	117.0 2,972	558.4 3,603	11,310 72,970	10,750 69,360	74.66 6.94	31.42 9.58	980,300 40,800,000	16,340 267,700	21,065 345,185	41.90 106.4			70 483
	1.750 44.450	2,212 3,292	116.5 2,959	650.1 4,194	11,310 72,970	10,660 68,770	74.03 6.88	31.42 9.58	1,137,000 47,310,000	18,940 310,400	24,472 401,027	41.81 106.2			70 483
	2.000 50.800	2,523 3,754	116.0 2,946	741.4 4,783	11,310 72,970	10,570 68,180	73.39 6.82	31.42 9.58	1,291,000 53,730,000	21,510 352,500	27,851 456,391	41.73 106.0			70 483
132 **3353**	0.375 9.525	527.7 785	131.3 3,334	155.1 1,000	13,685 88,289	13,530 87,288	93.96 8.73	34.56 10.53	335,823 13,977,989	5,088 83,381	6,497 106,466	46.50 118.1	Not Available	Not Available	70 483
	0.500 12.700	702.9 1,046	131.0 3,327	206.6 1,333	13,680 88,290	13,480 86,960	93.60 8.70	34.56 10.53	446,500 18,580,000	6,765 110,900	8,646 141,685	46.49 118.1			70 483
	0.625 15.875	877.8 1,306	130.8 3,321	258.0 1,664	13,680 88,290	13,430 86,620	93.24 8.66	34.56 10.53	556,500 23,160,000	8,432 138,200	10,787 176,771	46.45 118.0			70 483
	0.750 19.050	1,052 1,566	130.5 3,315	309.3 1,995	13,680 88,290	13,380 86,290	92.89 8.63	34.56 10.53	665,900 27,720,000	10,090 165,300	12,920 211,722	46.40 117.9			70 483
	0.875 22.225	1,227 1,825	130.3 3,308	360.4 2,325	13,680 88,290	13,320 85,960	92.53 8.60	34.56 10.53	774,700 32,250,000	11,740 192,400	15,045 246,540	46.36 117.8			70 483
	1.000 25.400	1,400 2,084	130.0 3,302	411.5 2,655	13,680 88,290	13,270 85,630	92.18 8.56	34.56 10.53	882,900 36,750,000	13,380 219,200	17,161 281,224	46.32 117.6			70 483
	1.250 31.750	1,747 2,600	129.5 3,289	513.5 3,313	13,680 88,290	13,170 84,980	91.47 8.50	34.56 10.53	1,097,000 45,670,000	16,630 272,500	21,370 350,193	46.23 117.4			70 483
	1.500 38.100	2,093 3,114	129.0 3,277	615.0 3,968	13,680 88,290	13,070 84,320	90.76 8.43	34.56 10.53	1,309,000 54,500,000	19,840 325,100	25,547 418,632	46.14 117.2			70 483
	1.750 44.450	2,437 3,626	128.5 3,264	716.1 4,620	13,680 88,290	12,970 83,670	90.06 8.37	34.56 10.53	1,519,000 63,220,000	23,010 377,100	29,691 486,543	46.05 117.0			70 483
	2.000 50.800	2,779 4,136	128.0 3,251	816.8 5,270	13,680 88,290	12,870 83,020	89.36 8.30	34.56 10.53	1,726,000 71,840,000	26,150 428,500	33,803 553,926	45.97 116.8			70 483

Diameter	Wall	Weight	Inside Diameter	Cross Sectional Area	Total Area of Pile	Internal Area	Internal Volume	External Coating Area	Moment of Inertia	Section Modulus		Radius of Gyration	Available Yield Strength		
										Elastic	Plastic		ERW	SW	R&W
in mm	in mm	lb/ft kg/m	in mm	in² cm²	in² cm²	in² cm²	ft³/ft m³/m	ft²/ft m²/m	in⁴ cm⁴	in³ cm³	in³ cm³	in cm	ksi (MPa)		
144 **3658**	0.500 12.700	767.0 1,142	143.0 3,632	225.4 1,454	16,286 105,071	16,061 103,617	111.5 10.36	37.70 11.49	580,218 24,150,478	8,059 132,056	10,296 168,724	50.7 129	Not Available	Not Available	70 483
	0.625 15.875	957.9 1,426	142.8 3,626	281.5 1,816	16,290 105,100	16,000 103,300	111.1 10.33	37.70 11.49	723,400 30,110,000	10,050 164,600	12,848 210,538	50.69 128.8			70 483
	0.750 19.050	1,149 1,709	142.5 3,620	337.5 2,178	16,290 105,100	15,950 102,900	110.8 10.29	37.70 11.49	865,800 36,040,000	12,020 197,100	15,391 252,206	50.65 128.6			70 483
	0.875 22.225	1,339 1,992	142.3 3,613	393.4 2,538	16,290 105,100	15,890 102,500	110.4 10.25	37.70 11.49	1,007,000 41,930,000	13,990 229,300	17,924 293,728	50.60 128.5			70 483
	1.000 25.400	1,529 2,275	142.0 3,607	449.2 2,898	16,290 105,100	15,840 102,200	110.0 10.22	37.70 11.49	1,148,000 47,800,000	15,950 261,400	20,449 335,105	50.56 128.4			70 483
	1.250 31.750	1,908 2,839	141.5 3,594	560.6 3,617	16,290 105,100	15,730 101,500	109.2 10.15	37.70 11.49	1,428,000 59,440,000	19,830 325,000	25,473 417,421	50.47 128.2			70 483
	1.500 38.100	2,285 3,400	141.0 3,581	671.5 4,332	16,290 105,100	15,610 100,700	108.4 10.07	37.70 11.49	1,705,000 70,950,000	23,680 388,000	30,461 499,158	50.38 128.0			70 483
	1.750 44.450	2,661 3,960	140.5 3,569	782.1 5,046	16,290 105,100	15,500 100,000	107.7 10.00	37.70 11.49	1,978,000 82,350,000	27,480 450,300	35,413 580,317	50.30 127.8			70 483
	2.000 50.800	3,036 4,518	140.0 3,556	892.2 5,756	16,290 105,100	15,390 99,310	106.9 9.93	37.70 11.49	2,249,000 93,620,000	31,240 511,900	40,331 660,901	50.21 127.5			70 483
156 **3962**	0.625 15.875	1,038 1,545	154.8 3,931	305.1 1,968	19,110 123,300	18,810 121,300	130.6 12.13	40.84 12.45	920,600 38,320,000	11,800 193,400	15,088 247,255	54.93 139.5	Not Available	Not Available	80 552
	0.750 19.050	1,245 1,852	154.5 3,924	365.8 2360	19,110 123,300	18,750 121,000	130.2 12.10	40.84 12.45	1,102,000 45,870,000	14,130 231,500	18,077 296,230	54.89 139.4			80 552
	0.875 22.225	1,451 2,159	154.3 3,918	426.4 2,751	19,110 123,300	18,690 120,600	129.8 12.06	40.84 12.45	1,283,000 53,390,000	16,440 269,500	21,056 345,046	54.85 139.3			80 552
	1.000 25.400	1,657 2,466	154.0 3,912	486.9 3,142	19,110 123,300	18,630 120,200	129.4 12.02	40.84 12.45	1,462,000 60,870,000	18,750 307,200	24,025 393,705	54.80 139.2			80 552
	1.250 31.750	2,068 3,077	153.5 3,899	607.7 3,921	19,110 123,300	18,510 119,400	128.5 11.94	40.84 12.45	1,819,000 75,720,000	23,320 382,200	29,935 490,548	54.71 139.0			80 552
	1.500 38.100	2,477 3,687	153.0 3,886	728.1 4,697	19,110 123,300	18,390 118,600	127.7 11.86	40.84 12.45	2,173,000 90,430,000	27,850 456,400	35,807 586,763	54.63 138.8			80 552
	1.750 44.450	2,886 4,294	152.5 3,874	848.0 5,471	19,110 123,300	18,270 117,800	126.8 11.78	40.84 12.45	2,522,000 105,000,000	32,340 530,000	41,640 682,352	54.54 138.5			80 552
	2.000 50.800	3,293 4,900	152.0 3,861	967.6 6,243	19,110 123,300	18,150 117,100	126.0 11.71	40.84 12.45	2,869,000 119,400,000	36,780 602,700	47,435 777,315	54.45 138.3			80 552
168 **4267**	0.750 19.050	1,341 1,995	166.5 4,229	394.1 2,542	22,170 143,000	21,770 140,500	151.2 14.05	43.98 13.41	1,378,000 57,350,000	16,400 268,800	20,980 343,793	59.13 150.2	Not Available	Not Available	80 552
	0.875 22.225	1,563 2,326	166.3 4,223	459.4 2,964	22,170 143,000	21,710 140,000	150.7 14.00	43.98 13.41	1,604,000 66,760,000	19,100 312,900	24,440 400,494	59.09 150.1			80 552
	1.000 25.400	1,785 2,657	166.0 4,216	524.6 3,385	22,170 143,000	21,640 139,600	150.3 13.96	43.98 13.41	1,829,000 76,130,000	21,770 356,800	27,889 457,024	59.04 150.0			80 552
	1.250 31.750	2,228 3,316	165.5 4,204	654.8 4,225	22,170 143,000	21,510 138,800	149.4 13.88	43.98 13.41	2,276,000 94,740,000	27,100 444,000	34,758 569,575	58.96 149.7			80 552
	1.500 38.100	2,670 3,973	165.0 4,191	784.6 5,062	22,170 143,000	21,380 138,000	148.5 13.80	43.98 13.41	2,719,000 113,200,000	32,370 530,500	41,585 681,448	58.87 149.5			80 552
	1.750 44.450	3,110 4,628	164.5 4,178	914.0 5,897	22,170 143,000	21,250 137,100	147.6 13.71	43.98 13.41	3,158,000 131,500,000	37,600 616,100	48,370 792,645	58.78 149.3			80 552
	2.000 50.800	3,549 5,281	164.0 4,166	1,043 6,729	22,170 143,000	21,120 136,300	146.7 13.63	43.98 13.41	3,593,000 149,600,00	42,780 701,000	55,115 903,168	58.69 149.1			80 552

For diameters over 168” or thicknesses over 2”, please inquire.

PIPE

Steel Pipe Specification

When specifying steel pipe, it is important to note that there are often multiple ASTM specifications involved. Steel coil, for the production of ERW and spiralweld pipe, is manufactured to A1011 and A1018. This coil is often made to meet the physical and chemical requirements of steel grades like A36, A572, and A709.

Pipe manufacturing specifications are different than steel specifications and fall under specifications like A139, A252, A500, and A1085. These specifications control the manufacturing tolerances of the pipe.

If the designer requires a steel grade that is more specific than the requirements that are described in A252 or other pipe manufacturing specifications, it would be acceptable to specify steel pipe like below.

A252 Gr. 3 with physical and chemical requirements that meet A572 Gr. 55.

Additional Capabilities

- Installation of: Bands, Cutting Shoes, Conical Points, End Plates, Carbide Teeth, Rolled Channels and Angle Irons, Twisting Slots, Picking Eyes, Lifting Lugs, etc.
- Fabrication of Segmented Fittings: Elbows, Wyes, Laterals, Tees, Concentric and Eccentric Reducers.
- Manufacturers of concentric tapered pipe from .250" to 2" wall thickness.
- Pipe manufactured to American Welding Society standards. Structural welding code AWS D1.1 or D1.5 is also available.

PIPE MANUFACTURING SPECIFICATIONS

	Yield Strength		PIPE		
	ksi	MPa	ERW	Spiralweld	Rolled & Welded
A134				✔	✔
A139 Grade A	30	205		✔	✔
A139 Grade B	35	240		✔	✔
A139 Grade C	42	290		✔	✔
A139 Grade D	46	315		✔	✔
A139 Grade E	52	360		✔	✔
A252 Grade 1	30	205	✔	✔	✔
A252 Grade 2	35	240	✔	✔	✔
A252 Grade 3	45	310	✔	✔	✔
A252 Grade 3 (mod)*	50	345	✔	✔	✔
A500 Grade A	33	288	✔		
A500 Grade B	42	290	✔		
A500 Grade C	46	317	✔		
A500 Grade D	36	250	✔		
AWWA C-200**				✔	

STEEL SPECIFICATIONS

	Yield Strength		PIPE		
	ksi	MPa	ERW	Spiralweld	Rolled & Welded
A36	36	250			✔
A516 Grade 55	30	205			✔
A516 Grade 60	32	220			✔
A516 Grade 65	35	240			✔
A516 Grade 70	38	260			✔
A572 Grade 42	42	290	✔	✔	✔
A572 Grade 50	50	345	✔	✔	✔
A572 Grade 55	55	380	✔	✔	✔
A572 Grade 60	60	415	✔	✔	✔
A572 Grade 65	65	450	✔	✔	✔
A588	50	345	✔	✔	✔
A690*	50	390	✔	✔	✔
A709	50	345	✔	✔	
A1011	50	345	✔	✔	
A1018	50	345	✔	✔	

*For availability of other yield strengths, please contact Nucor Skyline.
** Hydrotesting available

DELIVERY CONDITIONS & TOLERANCES†

	A139	A252	A500	A1085	AWWA C200
Outside Diameter	± 1%	± 1%	± 0.75%	± 0.75%	+⅛" / -1/16"
Thickness	- 12.5%	- 12.5%	±10%	+10% / -5%	+10%§
Weight	+10% / -5%	+10% / -5%	±10%	+10% / -3.5%	+10% / -5%
Length	± ½"	± 1"	+¾" / -¼"	+¾" / -¼"	± 2"

† Different conditions and tolerances vary based on diameter, length, and project requirements. Please inquire for additional information.
§ Lowest of value of applicable ASTM tolerance, 0.01 inch, or 6% percent of the nominal thickness.

MAXIMUM ROLLED LENGTHS***

	16" OD and under		18" OD and over	
ERW	90 ft	27.4 m	120 ft	36.6 m
	12" OD and under		12.75" OD and over	
Spiralweld / Rolled & Welded	90 ft	27.4 m	115 ft	31.1 m

***Please inquire for longer lengths.

STRUCTURAL SECTIONS

Wide flange, channel, and angle sections manufactured by Nucor are all produced from scrap steel melted in an electric arc furnace, a technology pioneered by Nucor. Nucor Skyline has access to every shape in the marketplace, with beams up to 44 inches deep. In addition to the wide range of shapes, Nucor Skyline can supply many different steel grades including A913 quench and tempered steel, which allows us to attain high yield strengths, up to 70 ksi, with good weldability.

Applications of Structural Sections

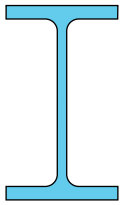
- Bracing Systems for Cofferdams
- Secant Pile Walls
- Sound Walls
- Beam and Lagging Walls
- Walers for Retaining Walls
- Caps and Corners for Sheet Pile Walls

Newark, NJ

Chicago, IL

Bellevue, WA

WIDE FLANGE



AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A36	36	250
A572 Grade 50	50	345
A588	50	345
A690	50	345
A709	50	345
A913	50-80*	345-550
A992	50	345

CANADIAN		
CSA G40.21	YIELD STRENGTH	
	ksi	MPa
Grade 350 W	50	350

Highlighted fields represent the most commonly used and readily available steel grades. * Inquire for availability.

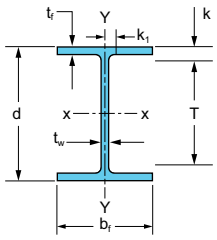
Additional grades available upon request.

DELIVERY CONDITIONS & TOLERANCES

	ASTM A6		
Mass	± 2.5%		
Depth	± 0.125 in.		
Length	30 ft. and under	Over 30 ft.	
Beams W24 and Under	± 0.375 in.	+ (0.375 in. + (Length - 30) / 80	-0.375 in.
Beams Over W24	± 0.5 in.	+ (0.5 in. + (Length - 30) / 80	-0.375 in.
Flanges out of Square			
Beams W12 and Under	≤ 0.25 in.		
Beams Over W12	≤ 0.3125 in.		
Web off Center	≤ 0.1875 in.		
Greatest Depth over Theoretical	≤ 0.25 in.		
Camber and Sweep	(0.125 in) * (Length / 10)		
Camber and Sweep for Columns**			
45 ft. and Under	(0.125 in) * (Length / 10) but not over 0.375 in.		
Over 45 ft.	(0.375 in) + (0.125 in * (Length - 45) / 10		

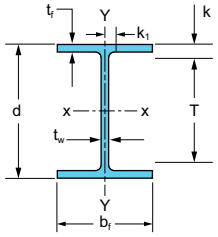
** W8 x 31 and heavier, W10 x 49 and heavier, W12 x 65 and heavier, and W14 x 90 and heavier; order as columns.
If other sections are ordered as columns, the tolerances are subject to negotiation with the manufacturer.

WIDE FLANGE



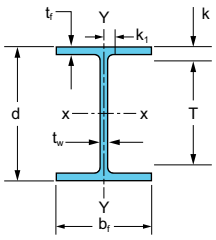
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W44 W1100	x 408 x 607	120 77400	44.8 1140	1.22 31.0	⅝ 15.9	16.1 409	2.17 55.1	2.96 75.2	3 ⅜ 85.7	1 ¹³⁄₁₆ 46.0	38 965	5 ½ 139.7	3.71 3.71	31.9 31.9
	x 368 x 548	108 69700	44.4 1130	1.10 27.9	⅝ 14.3	16.0 406	1.97 50.0	2.76 70.1	3 ³⁄₁₆ 81.0	1 ¾ 44.5	38 965		4.06 4.06	35.4 35.4
	x 335 x 499	98.5 63500	44.0 1120	1.03 26.2	½ 12.7	15.9 404	1.77 45.0	2.56 65.0	2 ⅝ 66.7	1 ⅝ 33.3	38 ¾ 984.25		4.50 4.50	38.0 38.0
	x 290 x 433	85.4 55100	43.6 1110	0.865 22.0	⅞ 11.1	15.8 401	1.58 40.1	2.36 59.9	2 ⅜ 61.9	1 ¼ 31.8			5.02 5.02	45.0 45.0
	x 262 x 390	77.2 49800	43.3 1100	0.785 19.9	⅞ 11.1	15.8 401	1.42 36.1	2.20 55.9	2 ¼ 57.2	1 ³⁄₁₆ 30.2			5.57 5.57	49.6 49.6
	x 230 x 343	67.8 43700	42.9 1090	0.710 18.0	⅜ 9.52	15.8 401	1.22 31.0	2.01 51.1	2 ⅛ 52.4	1 ³⁄₁₆ 30.2			6.45 6.45	54.8 54.8
W40 W1000	x 655 x 976	193 125000	43.6 1110	1.97 50.0	1 25.4	16.9 429	3.54 89.9	4.72 120	4 ¹³⁄₁₆ 122	2 ⅜ 55.6	34 863.6	7 ½ 190.5	2.39 2.39	17.3 17.3
	x 593 x 883	174 112000	43.0 1090	1.79 45.5	¹⁵⁄₁₆ 23.8	16.7 424	3.23 82.0	4.41 112	4 ½ 114	2 ⅛ 54.0			2.58 2.58	19.1 19.1
	x 503 x 748	148 95500	42.1 1070	1.54 39.1	¹³⁄₁₆ 20.6	16.4 417	2.76 70.1	3.94 100	4 102	2 50.8			2.98 2.98	22.3 22.3
	x 431 x 642	127 81900	41.3 1050	1.34 34.0	¹¹⁄₁₆ 17.5	16.2 411	2.36 59.9	3.54 89.9	3 ⅜ 92.1	1 ⅞ 47.6			3.44 3.44	25.5 25.5
	x 397 x 591	117 75500	41.0 1040	1.22 31.0	⅝ 15.9	16.1 409	2.20 55.9	3.38 85.9	3 ½ 88.9	1 ¹³⁄₁₆ 46.0			3.66 3.66	28.0 28.0
	x 372 x 554	110 71000	40.6 1030	1.16 29.5	⅝ 15.9	16.1 409	2.05 52.1	3.23 82.0	3 ³⁄₁₆ 84.1	1 ¹³⁄₁₆ 46.0			3.93 3.93	29.5 29.5
	x 362 x 539	106 68400	40.6 1030	1.12 28.4	⅝ 14.3	16.0 406	2.01 51.1	3.19 81.0	3 ¼ 82.6	1 ¾ 44.5			3.99 3.99	30.5 30.5
	x 324 x 483	95.3 61500	40.2 1020	1.00 25.4	½ 12.7	15.9 404	1.81 46.0	2.99 75.9	3 ⅛ 77.8	1 ¹¹⁄₁₆ 42.9			4.40 4.40	34.2 34.2
	x 297 x 443	87.3 56300	39.8 1010	0.930 23.6	½ 12.7	15.8 401	1.65 41.9	2.83 71.9	2 ¹³⁄₁₆ 74.6	1 ¹¹⁄₁₆ 42.9			4.80 4.80	36.8 36.8
	x 277 x 412	81.5 52600	39.7 1010	0.830 21.1	⅞ 11.1	15.8 401	1.58 40.1	2.76 70.1	2 ⅞ 73.0	1 ⅝ 41.3			5.03 5.03	41.2 41.2
	x 249 x 371	73.5 47400	39.4 1000	0.750 19.1	⅜ 9.52	15.8 401	1.42 36.1	2.60 66.0	2 ¹⁄₁₆ 68.3	1 ⁹⁄₁₆ 39.7			5.55 5.55	45.6 45.6
	x 215 x 321	63.5 41000	39.0 991	0.650 16.5	⅝ 7.94	15.8 401	1.22 31.0	2.40 61.0	2 ½ 63.5	1 ⁹⁄₁₆ 39.7			6.45 6.45	52.6 52.6
	x 199 x 296	58.8 37900	38.7 983	0.650 16.5	⅝ 7.94	15.8 401	1.07 27.2	2.25 57.2	2 ⅜ 58.7	1 ⁹⁄₁₆ 39.7			7.39 7.39	52.6 52.6
W40 W1000	x 392 x 584	116 74800	41.6 1060	1.42 36.1	¾ 19.0	12.4 315	2.52 64.0	3.70 94.0	3 ¹³⁄₁₆ 96.8	1 ¹³⁄₁₆ 49.2	34 863.6	7 ½ 190.5	2.45 2.45	24.1 24.1
	x 331 x 494	97.7 63000	40.8 1040	1.22 31.0	⅝ 15.9	12.2 310	2.13 54.1	3.31 84.1	3 ⅜ 85.7	1 ¹³⁄₁₆ 46.0			2.86 2.86	28.0 28.0
	x 327 x 486	95.9 61900	40.8 1040	1.18 30.0	⅝ 15.9	12.1 307	2.13 54.1	3.31 84.1	3 ⅜ 85.7	1 ¹³⁄₁₆ 46.0			2.85 2.85	29.0 29.0
	x 294 x 438	86.2 55600	40.4 1030	1.06 26.9	⅝ 14.3	12.0 305	1.93 49.0	3.11 79.0	3 ³⁄₁₆ 81.0	1 ¾ 44.5			3.11 3.11	32.2 32.2
	x 278 x 415	82.3 53100	40.2 1020	1.03 26.2	½ 12.7	12.0 305	1.81 46.0	2.99 75.9	3 ⅛ 77.8	1 ¾ 44.5			3.31 3.31	33.3 33.3
	x 264 x 393	77.4 49900	40.0 1020	0.960 24.4	½ 12.7	11.9 302	1.73 43.9	2.91 73.9	3 76.2	1 ¹¹⁄₁₆ 42.9			3.45 3.45	35.6 35.6
	x 235 x 350	69.1 44600	39.7 1010	0.830 21.1	⅞ 11.1	11.9 302	1.58 40.1	2.76 70.1	2 ⅞ 73.0	1 ⅝ 41.3			3.77 3.77	41.2 41.2

WIDE FLANGE



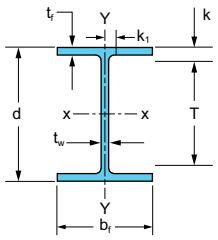
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
408 607	38700 16100	1730 28300	18.0 457	2000 32800	1520 633	189 3100	3.56 90.4	297 4870	4.33 110	42.6 1080	134 55800	691000 186000	12.63 3.85
368 548	34700 14400	1560 25600	17.9 455	1800 29500	1350 562	169 2770	3.54 89.9	265 4340	4.28 109	42.4 1080	100 41600	608000 163000	12.55 3.83
335 499	31100 12900	1410 23100	17.8 452	1620 26500	1200 499	150 2460	3.49 88.6	236 3870	4.24 108	42.2 1070	74.7 31100	535000 144000	12.46 3.80
290 433	27000 11200	1240 20300	17.8 452	1410 23100	1040 433	132 2160	3.49 88.6	205 3360	4.20 107	42.0 1070	50.9 21200	461000 124000	12.39 3.78
262 390	24100 10000	1110 18200	17.7 450	1270 20800	923 384	117 1920	3.47 88.1	182 2980	4.17 106	41.9 1060	37.3 15500	405000 109000	12.35 3.77
230 343	20800 8660	971 15900	17.5 445	1100 18000	796 331	101 1660	3.43 87.1	157 2570	4.13 105	41.7 1060	24.9 10400	346000 92900	12.30 3.75
655 976	56500 23500	2590 42500	17.1 434	3080 50500	2870 1190	340 5570	3.86 98.0	542 8880	4.71 120	40.1 1020	589 245000	1150000 309000	12.57 3.83
593 883	50400 21000	2340 38300	17.0 432	2760 45200	2520 1050	302 4950	3.80 96.5	481 7880	4.63 118	39.8 1010	445 185000	997000 268000	12.44 3.79
503 748	41600 17300	1980 32400	16.8 427	2320 38000	2040 849	249 4080	3.72 94.5	394 6460	4.50 114	39.3 998	277 115000	789000 212000	12.23 3.73
431 642	34800 14500	1690 27700	16.6 422	1960 32100	1690 703	208 3410	3.65 92.7	328 5370	4.41 112	38.9 988	177 73700	638000 171000	12.06 3.68
397 591	32000 13300	1560 25600	16.6 422	1800 29500	1540 641	191 3130	3.64 92.5	300 4920	4.38 111	38.8 986	142 59100	579000 155000	12.00 3.66
372 554	29600 12300	1460 23900	16.5 419	1680 27500	1420 591	177 2900	3.60 91.4	277 4540	4.33 110	38.6 980	116 48300	528000 142000	11.94 3.64
362 539	28900 12000	1420 23300	16.5 419	1640 26900	1380 574	173 2830	3.60 91.4	270 4420	4.33 110	38.6 980	109 45400	513000 138000	11.91 3.63
324 483	25600 10700	1280 21000	16.4 417	1460 23900	1220 508	153 2510	3.58 90.9	239 3920	4.27 108	38.4 975	79.4 33000	448000 120000	11.83 3.61
297 443	23200 9660	1170 19200	16.3 414	1330 21800	1090 454	138 2260	3.54 89.9	215 3520	4.22 107	38.2 970	61.2 25500	399000 107000	11.75 3.58
277 412	21900 9120	1100 18000	16.4 417	1250 20500	1040 433	132 2160	3.58 90.9	204 3340	4.25 108	38.1 968	51.5 21400	379000 102000	11.75 3.58
249 371	19600 8160	993 16300	16.3 414	1120 18400	926 385	118 1930	3.55 90.2	182 2980	4.21 107	38.0 965	38.1 15900	334000 89700	11.71 3.57
215 321	16700 6950	859 14100	16.2 411	964 15800	803 334	101 1660	3.54 89.9	156 2560	4.19 106	37.8 960	24.8 10300	284000 76300	11.66 3.55
199 296	14900 6200	770 12600	16.0 406	869 14200	695 289	88.2 1450	3.45 87.6	137 2250	4.12 105	37.6 955	18.3 7620	246000 66100	11.61 3.54
392 584	29900 12400	1440 23600	16.1 409	1710 28000	803 334	130 2130	2.64 67.1	212 3470	3.30 83.8	39.1 993	172 71600	306000 82200	10.83 3.30
331 494	24700 10300	1210 19800	15.9 404	1430 23400	644 268	106 1740	2.57 65.3	172 2820	3.21 81.5	38.7 983	105 43700	241000 64700	10.66 3.25
327 486	24500 10200	1200 19700	16.0 406	1410 23100	640 266	105 1720	2.58 65.5	170 2790	3.21 81.5	38.7 983	103 42900	239000 64200	10.64 3.24
294 438	21900 9120	1080 17700	15.9 404	1270 20800	562 234	93.5 1530	2.55 64.8	150 2460	3.16 80.3	38.5 978	76.6 31900	208000 55900	10.56 3.22
278 415	20500 8530	1020 16700	15.8 401	1190 19500	521 217	87.1 1430	2.52 64.0	140 2290	3.13 79.5	38.4 975	65.0 27100	192000 51600	10.53 3.21
264 393	19400 8070	971 15900	15.8 401	1130 18500	493 205	82.6 1350	2.52 64.0	132 2160	3.12 79.2	38.3 973	56.1 23400	181000 48600	10.47 3.19
235 350	17400 7240	875 14300	15.9 404	1010 16600	444 185	74.6 1220	2.54 64.5	118 1930	3.11 79.0	38.1 968	41.3 17200	161000 43200	10.45 3.18

WIDE FLANGE



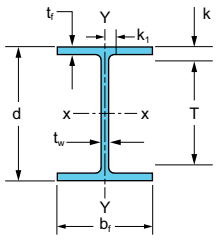
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in^2 mm^2	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W40 W1000	x 211 x 314	62.1 40100	39.4 1000	0.750 19.1	⅜ 9.52	11.8 300	1.42 36.1	2.60 66.0	2 11/16 68.3	1 9/16 39.7	34 863.6	7 ½ 190.5	4.17 4.17	45.6 45.6
	x 183 x 272	53.3 34400	39.0 991	0.650 16.5	5/16 7.94	11.8 300	1.20 30.5	2.38 60.5	2 ½ 63.5	1 9/16 39.7			4.92 4.92	52.6 52.6
	x 167 x 249	49.3 31800	38.6 980	0.650 16.5	5/16 7.94	11.8 300	1.03 26.2	2.21 56.1	2 5/16 58.7	1 9/16 39.7			5.76 5.76	52.6 52.6
	x 149 x 222	43.8 28300	38.2 970	0.630 16.0	5/16 7.94	11.8 300	0.83 21.1	2.01 51.1	2 ⅛ 54.0	1 ½ 38.1			7.11 7.11	54.3 54.3
W36 W920	x 652 x 970	192 124000	41.1 1040	1.97 50.0	1 25.4	17.6 447	3.54 89.9	4.49 114	4 13/16 122	2 5/16 55.6	31 ⅜ 796.93	7 ½ 190.5	2.48 2.48	16.3 16.3
	x 529 x 787	156 101000	39.8 1010	1.61 40.9	13/16 20.6	17.2 437	2.91 73.9	3.86 98.0	4 3/16 106	2 50.8			2.96 2.96	19.9 19.9
	x 487 x 725	143 92300	39.3 998	1.50 38.1	¾ 19.0	17.1 434	2.68 68.1	3.63 92.2	4 102	1 ⅞ 47.6			3.19 3.19	21.4 21.4
	x 441 x 656	130 83900	38.9 988	1.36 34.5	11/16 17.5	17.0 432	2.44 62.0	3.39 86.1	3 ¾ 95.3	1 ⅞ 47.6			3.48 3.48	23.6 23.6
	x 395 x 588	116 74800	38.4 975	1.22 31.0	⅝ 15.9	16.8 427	2.20 55.9	3.15 80.0	3 7/16 87.3	1 13/16 46.0			3.83 3.83	26.3 26.3
	x 361 x 537	106 68400	38.0 965	1.12 28.4	9/16 14.3	16.7 424	2.01 51.1	2.96 75.2	3 5/16 84.1	1 ¾ 44.5			4.16 4.16	28.6 28.6
	x 330 x 491	96.9 62500	37.7 958	1.02 25.9	½ 12.7	16.6 422	1.85 47.0	2.80 71.1	3 ⅛ 79.4	1 ¾ 44.5			4.49 4.49	31.4 31.4
	x 302 x 449	89.0 57400	37.3 947	0.945 24.0	½ 12.7	16.7 424	1.68 42.7	2.63 66.8	3 76.2	1 11/16 42.9			4.96 4.96	33.9 33.9
	x 282 x 420	82.9 53500	37.1 942	0.885 22.5	7/16 11.1	16.6 422	1.57 39.9	2.52 64.0	2 ⅞ 73.0	1 ⅝ 41.3			5.29 5.29	36.2 36.2
	x 262 x 390	77.2 49800	36.9 937	0.840 21.3	7/16 11.1	16.6 422	1.44 36.6	2.39 60.7	2 ¾ 69.9	1 ⅝ 41.3			5.75 5.75	38.2 38.2
	x 247 x 368	72.5 46800	36.7 932	0.800 20.3	7/16 11.1	16.5 419	1.35 34.3	2.30 58.4	2 ⅝ 66.7	1 ⅝ 41.3			6.11 6.11	40.1 40.1
	x 231 x 344	68.2 44000	36.5 927	0.760 19.3	⅜ 9.52	16.5 419	1.26 32.0	2.21 56.1	2 9/16 65.1	1 9/16 39.7			6.54 6.54	42.2 42.2
W36 W920	x 387 x 576	114 73500	39.1 993	1.42 36.1	¾ 19.1	12.7 323	2.56 65.0	3.31 84.1	3 13/16 96.8	1 13/16 49.2	31 ½ 800	5 ½ 139.7	2.48 2.48	22.9 22.9
	x 350 x 521	103 66500	38.6 980	1.30 33.0	11/16 17.5	12.6 320	2.32 58.9	3.07 78.0	3 9/16 90.5	1 ⅞ 47.6			2.72 2.72	25.0 25.0
	x 318 x 474	93.4 60300	38.2 970	1.18 30.0	⅝ 15.9	12.4 315	2.13 54.1	2.88 73.2	3 ⅝ 85.7	1 13/16 46.0			2.91 2.91	27.5 27.5
	x 286 x 425	83.9 54100	37.8 960	1.06 26.9	9/16 14.3	12.3 312	1.93 49.0	2.68 68.1	3 ⅛ 79.4	1 ¾ 44.5			3.19 3.19	30.6 30.6
W36 W920	x 256 x 381	75.3 48600	37.4 951	0.960 24.4	½ 12.7	12.2 310	1.73 43.9	2.48 63.0	2 ⅝ 66.7	1 5/16 33.3	32 ⅛ 815.96	5 ½ 139.7	3.53 3.53	33.8 33.8
	x 232 x 345	68.0 43900	37.1 943	0.870 22.1	7/16 11.1	12.1 307	1.57 39.9	2.32 58.9	2 7/16 61.9	1 ¼ 31.8			3.86 3.86	37.3 37.3
	x 210 x 313	61.9 39900	36.7 932	0.830 21.1	7/16 11.1	12.2 310	1.36 34.5	2.11 53.6	2 5/16 58.7	1 ¼ 31.8			4.48 4.48	39.1 39.1
	x 194 x 289	57.0 36800	36.5 927	0.765 19.4	⅜ 9.52	12.1 307	1.26 32.0	2.01 51.1	2 5/16 55.6	1 3/16 30.2			4.81 4.81	42.4 42.4
	x 182 x 271	53.6 34600	36.3 922	0.725 18.4	⅜ 9.52	12.1 307	1.18 30.0	1.93 49.0	2 ⅛ 54.0	1 3/16 30.2			5.12 5.12	44.8 44.8
	x 170 x 253	50.0 32300	36.2 919	0.680 17.3	⅜ 9.52	12.0 305	1.10 27.9	1.85 47.0	2 50.8	1 3/16 30.2			5.47 5.47	47.7 47.7
	x 160 x 238	47.0 30300	36.0 914	0.650 16.5	5/16 7.94	12.0 305	1.02 25.9	1.77 45.0	1 13/16 49.2	1 ⅛ 28.6			5.88 5.88	49.9 49.9
	x 150 x 223	44.3 28600	35.9 912	0.625 15.9	5/16 7.94	12.0 305	0.940 23.9	1.69 42.9	1 ⅞ 47.6	1 ⅛ 28.6			6.37 6.37	51.9 51.9
	x 135 x 201	39.9 25700	35.6 904	0.600 15.2	5/16 7.94	12.0 305	0.790 20.1	1.54 39.1	1 11/16 42.9	1 ⅛ 28.6			7.56 7.56	54.1 54.1

WIDE FLANGE



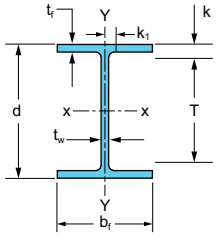
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
211 314	15500 6450	786 12900	15.8 401	906 14800	390 162	66.1 1080	2.51 63.8	105 1720	3.07 78.0	38.0 965	30.4 12700	141000 37900	10.38 3.16
183 272	13200 5490	675 11100	15.7 399	774 12700	331 138	56.0 918	2.49 63.2	88.3 1450	3.04 77.2	37.8 960	19.3 8030	118000 31700	10.33 3.15
167 249	11600 4830	600 9830	15.3 389	693 11400	283 118	47.9 785	2.40 61.0	76.0 1250	2.98 75.7	37.6 955	14.0 5830	99700 26800	10.26 3.13
149 222	9800 4080	513 8410	15.0 381	598 9800	229 95.3	38.8 636	2.29 58.2	62.2 1020	2.89 73.4	37.4 950	9.36 3900	80000 21500	10.20 3.11
652 970	50600 21100	2460 40300	16.2 411	2910 47700	3230 1340	367 6010	4.10 104	581 9520	4.96 126	37.6 955	593 247000	1130000 303000	12.39 3.78
529 787	39600 16500	1990 32600	16.0 406	2330 38200	2490 1040	289 4740	4.00 102	454 7440	4.80 122	36.9 937	327 136000	846000 227000	12.10 3.69
487 725	36000 15000	1830 30000	15.8 401	2130 34900	2250 937	263 4310	3.96 101	412 6750	4.74 120	36.6 930	258 107000	754000 202000	12.00 3.66
441 656	32100 13400	1650 27000	15.7 399	1910 31300	1990 828	235 3850	3.92 99.6	368 6030	4.69 119	36.5 927	194 80700	661000 178000	11.92 3.63
395 588	28500 11900	1490 24400	15.7 399	1710 28000	1750 728	208 3410	3.88 98.6	325 5330	4.61 117	36.2 919	142 59100	575000 154000	11.80 3.60
361 537	25700 10700	1350 22100	15.6 396	1550 25400	1570 653	188 3080	3.85 97.8	293 4800	4.58 116	36.0 914	109 45400	509000 137000	11.71 3.57
330 491	23300 9700	1240 20300	15.5 394	1410 23100	1420 591	171 2800	3.83 97.3	265 4340	4.53 115	35.9 912	84.3 35100	456000 122000	11.65 3.55
302 449	21100 8780	1130 18500	15.4 391	1280 21000	1300 541	156 2560	3.82 97.0	241 3950	4.53 115	35.6 904	64.3 26800	412000 111000	11.63 3.54
282 420	19600 8160	1050 17200	15.4 391	1190 19500	1200 499	144 2360	3.80 96.5	223 3650	4.50 114	35.5 902	52.7 21900	378000 102000	11.57 3.53
262 390	17900 7450	972 15900	15.3 389	1100 18000	1090 454	132 2160	3.76 95.5	204 3340	4.46 113	35.5 902	41.6 17300	342000 91800	11.54 3.52
247 368	16700 6950	913 15000	15.2 386	1030 16900	1010 420	123 2020	3.74 95.0	190 3110	4.42 112	35.4 899	34.7 14400	316000 84900	11.48 3.50
231 344	15600 6490	854 14000	15.1 384	963 15800	940 391	114 1870	3.71 94.2	176 2880	4.40 112	35.2 894	28.7 11900	292000 78400	11.46 3.49
387 576	26500 11000	1360 22300	15.2 386	1610 26400	882 367	139 2280	2.78 70.6	224 3670	3.44 87.4	36.5 927	172 71600	294000 78900	10.51 3.20
350 521	23600 9820	1220 20000	15.1 384	1440 23600	780 325	124 2030	2.75 69.9	199 3260	3.41 86.6	36.3 922	129 53700	257000 69000	10.42 3.18
318 474	21200 8820	1110 18200	15.1 384	1300 21300	682 284	110 1800	2.70 68.6	176 2880	3.33 84.6	36.1 917	98.3 40900	222000 59600	10.30 3.14
286 425	18900 7870	1000 16400	15.0 381	1160 19000	602 251	97.9 1600	2.68 68.1	156 2560	3.29 83.6	35.9 912	72.8 30300	194000 52100	10.22 3.12
256 381	16800 6990	895 14700	14.9 378	1040 17000	528 220	86.5 1420	2.65 67.3	137 2250	3.24 82.3	35.7 907	52.9 22000	168000 45100	10.14 3.09
232 345	15000 6240	809 13300	14.8 376	936 15300	468 195	77.2 1270	2.62 66.5	122 2000	3.21 81.5	35.5 902	39.6 16500	148000 39700	10.07 3.07
210 313	13200 5490	719 11800	14.6 371	833 13700	411 171	67.5 1110	2.58 65.5	107 1750	3.18 80.8	35.3 897	28.0 11700	128000 34400	10.05 3.06
194 289	12100 5040	664 10900	14.6 371	767 12600	375 156	61.9 1010	2.56 65.0	97.7 1600	3.15 80.0	35.2 894	22.2 9240	116000 31200	9.99 3.04
182 271	11300 4700	623 10200	14.5 368	718 11800	347 144	57.6 944	2.55 64.8	90.7 1490	3.13 79.5	35.1 892	18.5 7700	107000 28700	9.96 3.04
170 253	10500 4370	581 9520	14.5 368	668 10900	320 133	53.2 872	2.53 64.3	83.8 1370	3.11 79.0	35.1 892	15.1 6290	98500 26500	9.92 3.02
160 238	9760 4060	542 8880	14.4 366	624 10200	295 123	49.1 805	2.50 63.5	77.3 1270	3.09 78.5	35.0 889	12.4 5160	90200 24200	9.89 3.01
150 223	9040 3760	504 8260	14.3 363	581 9520	270 112	45.1 739	2.47 62.7	70.9 1160	3.06 77.7	35.0 889	10.1 4200	82200 22100	9.88 3.01
135 201	7800 3250	439 7190	14.0 356	509 8340	225 93.7	37.7 618	2.38 60.5	59.7 978	2.99 75.9	34.8 884	7.00 2910	68100 18300	9.83 3.00

WIDE FLANGE



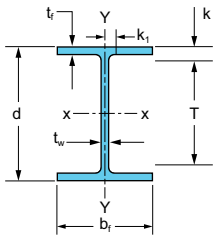
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W33 **W840**	x 387 x 576	114 73500	36.0 914	1.26 32.0	⅝ 15.9	16.2 411	2.28 57.9	3.07 78.0	3 ⅜ 81.0	1 ⅞ 36.5	29 ⅝ 752.48	5 ½ 139.7	3.55 3.55	23.7 23.7
	x 354 x 527	104 67100	35.6 904	1.16 29.5	⅝ 15.9	16.1 409	2.09 53.1	2.88 73.2	2 ¹³⁄₁₆ 74.6	1 ⅝ 34.9			3.85 3.85	25.7 25.7
	x 318 x 473	93.7 60500	35.2 894	1.04 26.4	⅝ 14.3	16.0 406	1.89 48.0	2.68 68.1	2 ¾ 69.9	1 ⅜ 33.3			4.23 4.23	28.7 28.7
	x 291 x 433	85.6 55200	34.8 884	0.960 24.4	½ 12.7	15.9 404	1.73 43.9	2.52 64.0	2 ⅝ 66.7	1 ⅜ 33.3			4.60 4.60	31.0 31.0
	x 263 x 392	77.4 49900	34.5 876	0.870 22.1	⅞ 11.1	15.8 401	1.57 39.9	2.36 59.9	2 ⅜ 61.9	1 ¼ 31.8			5.03 5.03	34.3 34.3
	x 241 x 359	71.1 45900	34.2 869	0.830 21.1	⅞ 11.1	15.9 404	1.40 35.6	2.19 55.6	2 ¼ 57.2	1 ¼ 31.8			5.66 5.66	35.9 35.9
	x 221 x 329	65.3 42100	33.9 861	0.775 19.7	⅜ 9.52	15.8 401	1.28 32.5	2.06 52.3	2 ⅛ 54.0	1 ⅜ 30.2			6.20 6.20	38.5 38.5
	x 201 x 299	59.1 38100	33.7 856	0.715 18.2	⅜ 9.52	15.7 399	1.15 29.2	1.94 49.3	2 50.8	1 ⅜ 30.2			6.85 6.85	41.7 41.7
W33 **W840**	x 169 x 251	49.5 31900	33.8 859	0.670 17.0	⅜ 9.52	11.5 292	1.22 31.0	1.92 48.8	2 ⅛ 54.0	1 ⅜ 30.2	29 ⅝ 752.48	5 ½ 139.7	4.71 4.71	44.7 44.7
	x 152 x 226	44.9 29000	33.5 851	0.635 16.1	⅝ 7.94	11.6 295	1.06 26.9	1.76 44.7	1 ¹³⁄₁₆ 49.2	1 ⅛ 28.6			5.48 5.48	47.2 47.2
	x 141 x 210	41.5 26800	33.3 846	0.605 15.4	⅝ 7.94	11.5 292	0.960 24.4	1.66 42.2	1 ¹³⁄₁₆ 46.0	1 ⅛ 28.6			6.01 6.01	49.6 49.6
	x 130 x 193	38.3 24700	33.1 841	0.580 14.7	⅝ 7.94	11.5 292	0.855 21.7	1.56 39.6	1 ¾ 44.5	1 ⅛ 28.6			6.73 6.73	51.7 51.7
	x 118 x 176	34.7 22400	32.9 836	0.550 14.0	⅝ 7.94	11.5 292	0.740 18.8	1.44 36.6	1 ⅝ 41.3	1 ⅛ 28.6			7.76 7.76	54.5 54.5
W30 **W760**	x 433 x 644	127.1 82013	33.7 855	1.50 38.1	¾ 19.1	15.7 399	2.68 68.1	3.92 99.7	3 ¹³⁄₁₆ 100.0	1 ¹³⁄₁₆ 49	25 ¹³⁄₁₆ 656	5 ½ 139.7	2.93 2.93	22.5 22.5
	x 391 x 582	115 74200	33.2 843	1.36 34.5	¹¹⁄₁₆ 17.5	15.6 396	2.44 62.0	3.23 82.0	3 ⅜ 85.7	1 ½ 38.1	26 ½ 673.1		3.19 3.19	19.7 19.7
	x 357 x 531	105 67700	32.8 833	1.24 31.5	⅝ 15.9	15.5 394	2.24 56.9	3.03 77.0	3 ⅛ 79.4	1 ⅜ 36.5			3.45 3.45	21.6 21.6
	x 326 x 484	95.9 61900	32.4 823	1.14 29.0	⅝ 14.3	15.4 391	2.05 52.1	2.84 72.1	2 ¹³⁄₁₆ 74.6	1 ⅜ 34.9			3.75 3.75	23.4 23.4
	x 292 x 434	86.0 55500	32.0 813	1.02 25.9	½ 12.7	15.3 389	1.85 47.0	2.64 67.1	2 ¾ 69.9	1 ⅜ 33.3			4.12 4.12	26.2 26.2
	x 261 x 389	77.0 49700	31.6 803	0.930 23.6	½ 12.7	15.2 386	1.65 41.9	2.44 62.0	2 ⅝ 65.1	1 ⅜ 33.3			4.59 4.59	28.7 28.7
	x 235 x 350	69.3 44700	31.3 795	0.830 21.1	⅞ 11.1	15.1 384	1.50 38.1	2.29 58.2	2 ⅜ 60.3	1 ¼ 31.8			5.02 5.02	32.2 32.2
	x 211 x 314	62.3 40200	30.9 785	0.775 19.7	⅜ 9.52	15.1 384	1.32 33.5	2.10 53.3	2 ¼ 57.2	1 ⅜ 30.2			5.74 5.74	34.5 34.5
	x 191 x 284	56.1 36200	30.7 780	0.710 18.0	⅜ 9.52	15.0 381	1.19 30.2	1.97 50.0	2 ⅛ 52.4	1 ⅜ 30.2			6.35 6.35	37.7 37.7
	x 173 x 257	50.9 32800	30.4 772	0.655 16.6	⅝ 7.94	15.0 381	1.07 27.2	1.85 47.0	2 50.8	1 ⅛ 28.6			7.04 7.04	40.8 40.8

WIDE FLANGE



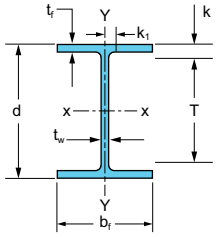
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
387 576	24300 10100	1350 22100	14.6 371	1560 25600	1620 674	200 3280	3.77 95.8	312 5110	4.49 114	33.7 856	148 61600	459000 123000	11.19 3.41
354 527	22000 9160	1240 20300	14.5 368	1420 23300	1460 608	181 2970	3.74 95.0	282 4620	4.44 113	33.5 851	115 47900	408000 110000	11.11 3.39
318 473	19500 8120	1110 18200	14.5 368	1270 20800	1290 537	161 2640	3.71 94.2	250 4100	4.40 112	33.3 846	84.4 35100	357000 95900	11.03 3.36
291 433	17700 7370	1020 16700	14.4 366	1160 19000	1160 483	146 2390	3.68 93.5	226 3700	4.34 110	33.1 841	65.1 27100	319000 85700	10.94 3.33
263 392	15900 6620	919 15100	14.3 363	1040 17000	1040 433	131 2150	3.66 93.0	202 3310	4.31 109	32.9 836	48.7 20300	281000 75500	10.87 3.31
241 359	14200 5910	831 13600	14.1 358	940 15400	933 388	118 1930	3.62 91.9	182 2980	4.29 109	32.8 833	36.2 15100	251000 67400	10.86 3.31
221 329	12900 5370	759 12400	14.1 358	857 14000	840 350	106 1740	3.59 91.2	164 2690	4.25 108	32.6 828	27.8 11600	224000 60200	10.79 3.29
201 299	11600 4830	686 11200	14.0 356	773 12700	749 312	95.2 1560	3.56 90.4	147 2410	4.21 107	32.6 828	20.8 8660	198000 53200	10.73 3.27
169 251	9290 3870	549 9000	13.7 348	629 10300	310 129	53.9 883	2.50 63.5	84.4 1380	3.03 77.0	32.6 828	17.7 7370	82400 22100	9.36 2.85
152 226	8160 3400	487 7980	13.5 343	559 9160	273 114	47.2 773	2.47 62.7	73.9 1210	3.01 76.5	32.4 823	12.4 5160	71700 19300	9.34 2.85
141 210	7450 3100	448 7340	13.4 340	514 8420	246 102	42.7 700	2.43 61.7	66.9 1100	2.98 75.7	32.3 820	9.70 4040	64400 17300	9.28 2.83
130 193	6710 2790	406 6650	13.2 335	467 7650	218 90.7	37.9 621	2.39 60.7	59.5 975	2.94 74.7	32.2 818	7.37 3070	56600 15200	9.25 2.82
118 176	5900 2460	359 5880	13.0 330	415 6800	187 77.8	32.6 534	2.32 58.9	51.3 841	2.89 73.4	32.2 818	5.30 2210	48300 13000	9.23 2.81
433 644	23100 9615	1370 22450	13.5 342	1610 26383	1740 724	221 3627	3.70 94.0	347 5686	4.44 113	31.0 788	236 98400	419000 112500	10.60 3.23
391 582	20700 8620	1250 20500	13.4 340	1450 23800	1550 645	198 3240	3.67 93.2	310 5080	4.37 111	30.8 782	173 72000	366000 98300	10.51 3.20
357 531	18700 7780	1140 18700	13.3 338	1320 21600	1390 579	179 2930	3.64 92.5	279 4570	4.31 109	30.6 777	134 55800	324000 87000	10.43 3.18
326 484	16800 6990	1040 17000	13.2 335	1190 19500	1240 516	162 2650	3.60 91.4	252 4130	4.26 108	30.4 772	103 42900	287000 77100	10.34 3.15
292 434	14900 6200	930 15200	13.2 335	1060 17400	1100 458	144 2360	3.58 90.9	223 3650	4.22 107	30.2 767	75.2 31300	250000 67100	10.26 3.13
261 389	13100 5450	829 13600	13.1 333	943 15500	959 399	127 2080	3.53 89.7	196 3210	4.16 106	30.0 762	54.1 22500	215000 57700	10.18 3.10
235 350	11700 4870	748 12300	13.0 330	847 13900	855 356	114 1870	3.51 89.2	175 2870	4.13 105	29.8 757	40.3 16800	190000 51000	10.11 3.08
211 314	10300 4290	665 10900	12.9 328	751 12300	757 315	100 1640	3.49 88.6	155 2540	4.11 104	29.6 752	28.4 11800	166000 44600	10.05 3.06
191 284	9200 3830	600 9830	12.8 325	675 11100	673 280	89.5 1470	3.46 87.9	138 2260	4.06 103	29.5 749	21.0 8740	146000 39200	10.00 3.05
173 257	8230 3430	541 8870	12.7 323	607 9950	598 249	79.8 1310	3.42 86.9	123 2020	4.03 102	29.3 744	15.6 6490	129000 34600	9.96 3.04

WIDE FLANGE



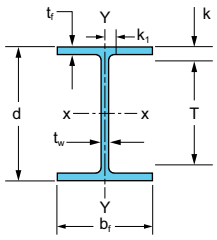
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W30 W760	x 148 x 220	43.6 28100	30.7 780	0.650 16.5	5/16 7.94	10.5 267	1.18 30.0	1.83 46.5	2 1/16 52.4	1 1/8 28.6	26 1/2 673.1	5 1/2 139.7	4.44 4.44	41.6 41.6
	x 132 x 196	38.8 25000	30.3 770	0.615 15.6	5/16 7.94	10.5 267	1.00 25.4	1.65 41.9	1 7/8 47.6	1 1/8 28.6			5.27 5.27	43.9 43.9
	x 124 x 185	36.5 23500	30.2 767	0.585 14.9	5/16 7.94	10.5 267	0.930 23.6	1.58 40.1	1 13/16 46.0	1 1/8 28.6			5.65 5.65	46.2 46.2
	x 116 x 173	34.2 22100	30.0 762	0.565 14.4	5/16 7.94	10.5 267	0.850 21.6	1.50 38.1	1 3/4 44.5	1 1/8 28.6			6.17 6.17	47.8 47.8
	x 108 x 161	31.7 20500	29.8 757	0.545 13.8	5/16 7.94	10.5 267	0.760 19.3	1.41 35.8	1 11/16 42.9	1 1/8 28.6			6.89 6.89	49.6 49.6
	x 99 x 147	29.0 18700	29.7 754	0.520 13.2	1/4 6.35	10.5 267	0.670 17.0	1.32 33.5	1 9/16 39.7	1 1/16 27.0			7.80 7.80	51.9 51.9
	x 90 x 134	26.3 17000	29.5 749	0.470 11.9	1/4 6.35	10.4 264	0.610 15.5	1.26 32.0	1 1/2 38.1	1 1/16 27.0			8.52 8.52	57.5 57.5
W27 W690	x 539 x 802	159 103000	32.5 826	1.97 50.0	1 25.4	15.3 389	3.54 89.9	4.33 110	4 7/16 113	1 13/16 46.0	23 3/8 600.1	5 1/2 139.7	2.15 2.15	12.1 12.1
	x 368 x 548	109 70300	30.4 772	1.38 35.1	11/16 17.5	14.7 373	2.48 63.0	3.27 83.1	3 3/8 85.7	1 1/2 38.1			2.96 2.96	17.3 17.3
	x 336 x 500	99.2 64000	30.0 762	1.26 32.0	5/8 15.9	14.6 371	2.28 57.9	3.07 78.0	3 3/16 81.0	1 7/16 36.5			3.19 3.19	18.9 18.9
	x 307 x 457	90.2 58200	29.6 752	1.16 29.5	5/8 15.9	14.4 366	2.09 53.1	2.88 73.2	3 76.2	1 7/16 36.5			3.46 3.46	20.6 20.6
	x 281 x 419	83.1 53600	29.3 744	1.06 26.9	9/16 14.3	14.4 366	1.93 49.0	2.72 69.1	2 13/16 71.4	1 3/8 34.9			3.72 3.72	22.5 22.5
	x 258 x 384	76.1 49100	29.0 737	0.980 24.9	1/2 12.7	14.3 363	1.77 45.0	2.56 65.0	2 11/16 68.3	1 5/16 33.3			4.03 4.03	24.4 24.4
	x 235 x 350	69.4 44800	28.7 729	0.910 23.1	1/2 12.7	14.2 361	1.61 40.9	2.40 61.0	2 1/2 63.5	1 5/16 33.3			4.41 4.41	26.2 26.2
	x 217 x 323	63.9 41200	28.4 721	0.830 21.1	7/16 11.1	14.1 358	1.50 38.1	2.29 58.2	2 3/8 60.3	1 1/4 31.8			4.71 4.71	28.7 28.7
	x 194 x 289	57.1 36800	28.1 714	0.750 19.1	3/8 9.52	14.0 356	1.34 34.0	2.13 54.1	2 1/4 57.2	1 3/16 30.2			5.24 5.24	31.8 31.8
	x 178 x 265	52.5 33900	27.8 706	0.725 18.4	3/8 9.52	14.1 358	1.19 30.2	1.98 50.3	2 1/16 52.4	1 3/16 30.2			5.92 5.92	32.9 32.9
	x 161 x 240	47.6 30700	27.6 701	0.660 16.8	3/8 9.52	14.0 356	1.08 27.4	1.87 47.5	2 50.8	1 3/16 30.2			6.49 6.49	36.1 36.1
	x 146 x 217	43.2 27900	27.4 696	0.605 15.4	5/16 7.94	14.0 356	0.975 24.8	1.76 44.7	1 7/8 47.6	1 1/8 28.6			7.16 7.16	39.4 39.4
W27 W690	x 129 x 192	37.8 24400	27.6 701	0.610 15.5	5/16 7.94	10.0 254	1.10 27.9	1.70 43.2	2 50.8	1 1/8 28.6	23 3/8 600.1	5 1/2 139.7	4.55 4.55	39.7 39.7
	x 114 x 170	33.6 21700	27.3 693	0.570 14.5	5/16 7.94	10.1 257	0.930 23.6	1.53 38.9	1 13/16 46.0	1 1/8 28.6			5.41 5.41	42.5 42.5
	x 102 x 152	30.0 19400	27.1 688	0.515 13.1	1/4 6.35	10.0 254	0.830 21.1	1.43 36.3	1 3/4 44.5	1 1/16 27.0			6.03 6.03	47.1 47.1
	x 94 x 140	27.6 17800	26.9 683	0.490 12.4	1/4 6.35	10.0 254	0.745 18.9	1.34 34.0	1 3/8 41.3	1 1/16 27.0			6.70 6.70	49.5 49.5
	x 84 x 125	24.7 15900	26.7 678	0.460 11.7	1/4 6.35	10.0 254	0.640 16.3	1.24 31.5	1 9/16 39.7	1 1/16 27.0			7.78 7.78	52.7 52.7

WIDE FLANGE



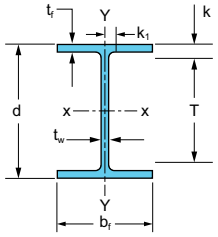
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
148 220	6680 2780	436 7140	12.4 315	500 8190	227 94.5	43.3 710	2.28 57.9	68.0 1110	2.77 70.4	29.5 749	14.5 6040	49400 13300	8.51 2.59
132 196	5770 2400	380 6230	12.2 310	437 7160	196 81.6	37.2 610	2.25 57.2	58.4 957	2.75 69.8	29.3 744	9.72 4050	42100 11300	8.45 2.57
124 185	5360 2230	355 5820	12.1 307	408 6690	181 75.3	34.4 564	2.23 56.6	54.0 885	2.73 69.3	29.3 744	7.99 3330	38600 10400	8.44 2.57
116 173	4930 2050	329 5390	12.0 305	378 6190	164 68.3	31.3 513	2.19 55.6	49.2 806	2.70 68.6	29.2 742	6.43 2680	34900 9370	8.41 2.56
108 161	4470 1860	299 4900	11.9 302	346 5670	146 60.8	27.9 457	2.15 54.6	43.9 719	2.67 67.8	29.0 737	4.99 2080	30900 8300	8.38 2.55
99 147	3990 1660	269 4410	11.7 297	312 5110	128 53.3	24.5 401	2.10 53.3	38.6 633	2.62 66.5	29.0 737	3.77 1570	26800 7200	8.36 2.55
90 134	3610 1500	245 4010	11.7 297	283 4640	115 47.9	22.1 362	2.09 53.1	34.7 569	2.60 66.0	28.9 734	2.84 1180	24000 6440	8.31 2.53
539 802	25600 10700	1570 25700	12.7 323	1890 31000	2110 878	277 4540	3.65 92.7	437 7160	4.41 112	29.0 737	496 206000	443000 119000	10.19 3.11
368 548	16200 6740	1060 17400	12.2 310	1240 20300	1310 545	179 2930	3.48 88.4	279 4570	4.15 105	27.9 709	170 70800	255000 68500	9.74 2.97
336 500	14600 6080	972 15900	12.1 307	1130 18500	1180 491	162 2650	3.45 87.6	252 4130	4.10 104	27.7 704	131 54500	226000 60700	9.66 2.94
307 457	13100 5450	887 14500	12.0 305	1030 16900	1050 437	146 2390	3.41 86.6	227 3720	4.04 103	27.5 698	101 42000	199000 53400	9.54 2.91
281 419	11900 4950	814 13300	12.0 305	936 15300	953 397	133 2180	3.39 86.1	206 3380	4.00 102	27.4 696	79.5 33100	178000 47800	9.51 2.90
258 384	10800 4500	745 12200	11.9 302	852 14000	859 358	120 1970	3.36 85.3	187 3060	3.96 101	27.2 691	61.6 25600	159000 42700	9.44 2.88
235 350	9700 4040	677 11100	11.8 300	772 12700	769 320	108 1770	3.33 84.6	168 2750	3.92 99.6	27.1 688	47.0 19600	141000 37900	9.37 2.85
217 323	8910 3710	627 10300	11.8 300	711 11700	704 293	100 1640	3.32 84.3	154 2520	3.89 98.8	26.9 683	37.6 15700	128000 34400	9.30 2.83
194 289	7860 3270	559 9160	11.7 297	631 10300	619 258	88.1 1440	3.29 83.6	136 2230	3.85 97.8	26.8 681	27.1 11300	111000 29800	9.23 2.81
178 265	7020 2920	505 8280	11.6 295	570 9340	555 231	78.8 1290	3.25 82.6	122 2000	3.83 97.3	26.6 676	20.1 8370	98400 26400	9.21 2.81
161 240	6310 2630	458 7510	11.5 292	515 8440	497 207	70.9 1160	3.23 82.0	109 1790	3.79 96.3	26.5 673	15.1 6290	87300 23400	9.16 2.79
146 217	5660 2360	414 6780	11.5 292	464 7600	443 184	63.5 1040	3.20 81.3	97.7 1600	3.76 95.5	26.4 671	11.3 4700	77200 20700	9.13 2.78
129 192	4760 1980	345 5650	11.2 284	395 6470	184 76.6	36.8 603	2.21 56.1	57.6 944	2.66 67.6	26.5 673	11.1 4620	32500 8730	7.83 2.39
114 170	4080 1700	299 4900	11.0 279	343 5620	159 66.2	31.5 516	2.18 55.4	49.3 808	2.65 67.3	26.4 671	7.33 3050	27600 7410	7.82 2.38
102 152	3620 1510	267 4380	11.0 279	305 5000	139 57.9	27.8 456	2.15 54.6	43.4 711	2.62 66.5	26.3 668	5.28 2200	24000 6440	7.76 2.37
94 140	3270 1360	243 3980	10.9 277	278 4560	124 51.6	24.8 406	2.12 53.8	38.8 636	2.59 65.8	26.2 665	4.03 1680	21300 5720	7.74 2.36
84 125	2850 1190	213 3490	10.7 272	244 4000	106 44.1	21.2 347	2.07 52.6	33.2 544	2.54 64.5	26.1 663	2.81 1170	17900 4810	7.71 2.35

WIDE FLANGE



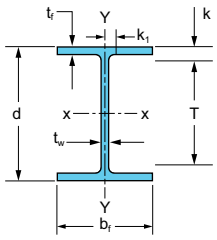
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W24 W610	x 370 x 551	109 70300	28.0 711	1.52 38.6	¾ 19.0	13.7 348	2.72 69.1	3.22 81.8	3 ⅜ 92.1	1 ⁹⁄₁₆ 39.7	20 ¾ 527.1	5 ½ 139.7	2.51 2.51	14.2 14.2
	x 335 x 498	98.3 63400	27.5 699	1.38 35.1	¹¹⁄₁₆ 17.5	13.5 343	2.48 63.0	2.98 75.7	3 ⅜ 85.7	1 ½ 38.1			2.73 2.73	15.6 15.6
	x 306 x 455	89.7 57900	27.1 688	1.26 32.0	⅝ 15.9	13.4 340	2.28 57.9	2.78 70.6	3 ³⁄₁₆ 81.0	1 ⁷⁄₁₆ 36.5			2.94 2.94	17.1 17.1
	x 279 x 415	81.9 52800	26.7 678	1.16 29.5	⅝ 15.9	13.3 338	2.09 53.1	2.59 65.8	3 76.2	1 ⁷⁄₁₆ 36.5			3.18 3.18	18.6 18.6
	x 250 x 372	73.5 47400	26.3 668	1.04 26.4	⁹⁄₁₆ 14.3	13.2 335	1.89 48.0	2.39 60.7	2 ¹³⁄₁₆ 71.4	1 ⅜ 34.9			3.49 3.49	20.7 20.7
	x 229 x 341	67.2 43400	26.0 660	0.960 24.4	½ 12.7	13.1 333	1.73 43.9	2.23 56.6	2 ⅝ 66.7	1 ⁵⁄₁₆ 33.3			3.79 3.79	22.5 22.5
	x 207 x 307	60.7 39200	25.7 653	0.870 22.1	⁷⁄₁₆ 11.1	13.0 330	1.57 39.9	2.07 52.6	2 ½ 63.5	1 ¼ 31.8			4.14 4.14	24.8 24.8
	x 192 x 285	56.5 36500	25.5 648	0.810 20.6	⁷⁄₁₆ 11.1	13.0 330	1.46 37.1	1.96 49.8	2 ⅜ 60.3	1 ¼ 31.8			4.43 4.43	26.6 26.6
	x 176 x 262	51.7 33400	25.2 640	0.750 19.1	⅜ 9.52	12.9 328	1.34 34.0	1.84 46.7	2 ¼ 57.2	1 ³⁄₁₆ 30.2			4.81 4.81	28.7 28.7
	x 162 x 241	47.8 30800	25.0 635	0.705 17.9	⅜ 9.52	13.0 330	1.22 31.0	1.72 43.7	2 ⅛ 54.0	1 ³⁄₁₆ 30.2			5.31 5.31	30.6 30.6
	x 146 x 217	43.0 27700	24.7 627	0.650 16.5	⁵⁄₁₆ 7.94	12.9 328	1.09 27.7	1.59 40.4	2 50.8	1 ⅛ 28.6			5.92 5.92	33.2 33.2
	x 131 x 195	38.6 24900	24.5 622	0.605 15.4	⁵⁄₁₆ 7.94	12.9 328	0.960 24.4	1.46 37.1	1 ⅞ 47.6	1 ⅛ 28.6			6.70 6.70	35.6 35.6
	x 117 x 174	34.4 22200	24.3 617	0.550 14.0	⁵⁄₁₆ 7.94	12.8 325	0.850 21.6	1.35 34.3	1 ¾ 44.5	1 ⅛ 28.6			7.53 7.53	39.2 39.2
	x 104 x 155	30.7 19800	24.1 612	0.500 12.7	¼ 6.35	12.8 325	0.750 19.1	1.25 31.8	1 ⅜ 41.3	1 ⁹⁄₁₆ 27.0			8.50 8.50	43.1 43.1
W24 W610	x 103 x 153	30.3 19500	24.5 622	0.550 14.0	⁵⁄₁₆ 7.94	9.00 229	0.980 24.9	1.48 37.6	1 ⅞ 47.6	1 ⅛ 28.6	20 ¾ 527.1	5 ½ 139.7	4.59 4.59	39.2 39.2
	x 94 x 140	27.7 17900	24.3 617	0.515 13.1	¼ 6.35	9.07 230	0.875 22.2	1.38 35.1	1 ¾ 44.5	1 ⁹⁄₁₆ 27.0			5.18 5.18	41.9 41.9
	x 84 x 125	24.7 15900	24.1 612	0.470 11.9	¼ 6.35	9.02 229	0.770 19.6	1.27 32.3	1 ¹³⁄₁₆ 42.9	1 ⁹⁄₁₆ 27.0			5.86 5.86	45.9 45.9
	x 76 x 113	22.4 14500	23.9 607	0.440 11.2	¼ 6.35	8.99 228	0.680 17.3	1.18 30.0	1 ⁹⁄₁₆ 39.7	1 ⁹⁄₁₆ 27.0			6.61 6.61	49.0 49.0
	x 68 x 101	20.1 13000	23.7 602	0.415 10.5	¼ 6.35	8.97 228	0.585 14.9	1.09 27.7	1 ½ 38.1	1 ⁹⁄₁₆ 27.0			7.66 7.66	52.0 52.0
W24 W610	x 62 x 92	18.2 11700	23.7 602	0.430 10.9	¼ 6.35	7.04 179	0.590 15.0	1.09 27.7	1 ½ 38.1	1 ⁹⁄₁₆ 27.0	20 ¾ 527.1	3 ½ 88.9	5.97 5.97	50.1 50.1
	x 55 x 82	16.2 10500	23.6 599	0.395 10.0	⅜ 4.76	7.01 178	0.505 12.8	1.01 25.7	1 ⁷⁄₁₆ 36.5	1 25.4	20 ¾ 527.1	3 ½ 88.9	6.94 6.94	54.6 54.6
W21 W530	x 275 x 409	81.8 52774	24.1 612	1.22 31.0	5/8 15.9	12.89 327	2.19 55.6	3.37 85.6	3 7/16 87.3	1 ¹³⁄₁₆ 46.0	17 ¼ 438.2	5 ½ 140	2.95 2.95	14.2 14.2
	x 248 x 369	73.8 47613	23.7 602	1.10 27.9	9/16 14.3	12.78 325	1.99 50.5	3.17 80.5	3 1/4 82.6	1 ¾ 44.5			3.22 3.22	15.8 15.8
	x 223 x 332	66.3 42774	23.4 594	1.00 25.4	1/2 12.7	12.68 322	1.79 45.5	2.97 75.4	3 1/16 77.8	1 ¹¹⁄₁₆ 42.9			3.55 3.55	17.5 17.5

WIDE FLANGE



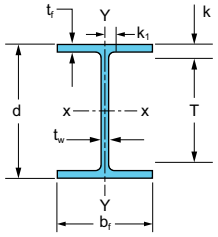
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
370 551	13400 5580	957 15700	11.1 282	1130 18500	1160 483	170 2790	3.27 83.1	267 4380	3.92 99.6	25.3 643	201 83700	186000 49900	8.98 2.74
335 498	11900 4950	864 14200	11.0 279	1020 16700	1030 429	152 2490	3.23 82.0	238 3900	3.86 98.0	25.0 635	152 63300	161000 43200	8.85 2.70
306 455	10700 4450	789 12900	10.9 277	922 15100	919 383	137 2250	3.20 81.3	214 3510	3.81 96.8	24.8 630	117 48700	142000 38100	8.77 2.67
279 415	9600 4000	718 11800	10.8 274	835 13700	823 343	124 2030	3.17 80.5	193 3160	3.76 95.5	24.6 625	90.5 37700	125000 33600	8.69 2.65
250 372	8490 3530	644 10600	10.7 272	744 12200	724 301	110 1800	3.14 79.8	171 2800	3.71 94.2	24.4 620	66.6 27700	108000 29000	8.61 2.62
229 341	7650 3180	588 9640	10.7 272	675 11100	651 271	99.4 1630	3.11 79.0	154 2520	3.67 93.2	24.3 617	51.3 21400	96100 25800	8.54 2.60
207 307	6820 2840	531 8700	10.6 269	606 9930	578 241	88.8 1460	3.08 78.2	137 2250	3.62 91.9	24.1 612	38.3 15900	84100 22600	8.47 2.58
192 285	6260 2610	491 8050	10.5 267	559 9160	530 221	81.8 1340	3.07 78.0	126 2060	3.6 91.4	24.0 610	30.8 12800	76300 20500	8.45 2.58
176 262	5680 2360	450 7370	10.5 267	511 8370	479 199	74.3 1220	3.04 77.2	115 1880	3.57 90.7	23.9 607	23.9 9950	68400 18400	8.38 2.55
162 241	5170 2150	414 6780	10.4 264	468 7670	443 184	68.4 1120	3.05 77.5	105 1720	3.57 90.7	23.8 605	18.5 7700	62600 16800	8.38 2.55
146 217	4580 1910	371 6080	10.3 262	418 6850	391 163	60.5 991	3.01 76.5	93.2 1530	3.53 89.7	23.6 599	13.4 5580	54600 14700	8.31 2.53
131 195	4020 1670	329 5390	10.2 259	370 6060	340 142	53.0 869	2.97 75.4	81.5 1340	3.49 88.6	23.5 597	9.50 3950	47100 12600	8.28 2.52
117 174	3540 1470	291 4770	10.1 257	327 5360	297 124	46.5 762	2.94 74.7	71.4 1170	3.46 87.9	23.5 597	6.72 2800	40800 11000	8.23 2.51
104 155	3100 1290	258 4230	10.1 257	289 4740	259 108	40.7 667	2.91 73.9	62.4 1020	3.42 86.9	23.4 594	4.72 1960	35200 9450	8.20 2.50
103 153	3000 1250	245 4010	10.0 254	280 4590	119 49.5	26.5 434	1.99 50.5	41.5 680	2.40 61.0	23.5 597	7.07 2940	16600 4460	6.99 2.13
94 140	2700 1120	222 3640	9.87 251	254 4160	109 45.4	24.0 393	1.98 50.3	37.5 615	2.40 61.0	23.4 594	5.26 2190	15000 4030	6.99 2.13
84 125	2370 986	196 3210	9.79 249	224 3670	94.4 39.3	20.9 342	1.95 49.5	32.6 534	2.37 60.2	23.3 592	3.70 1540	12800 3440	6.95 2.12
76 113	2100 874	176 2880	9.69 246	200 3280	82.5 34.3	18.4 302	1.92 48.8	28.6 469	2.33 59.2	23.2 589	2.68 1120	11100 2980	6.91 2.11
68 101	1830 762	154 2520	9.55 243	177 2900	70.4 29.3	15.7 257	1.87 47.5	24.5 401	2.30 58.4	23.1 587	1.87 778	9430 2530	6.87 2.09
62 92	1550 645	131 2150	9.23 234	153 2510	34.5 14.4	9.80 161	1.38 35.1	15.7 257	1.75 44.4	23.1 587	1.71 712	4620 1240	6.23 1.90
55 82	1350 562	114 1870	9.11 231	134 2200	29.1 12.1	8.30 136	1.34 34.0	13.3 218	1.72 43.7	23.1 587	1.18 491	3870 1040	6.20 1.89
275 409	7710 3200	639 10500	9.71 247	750 12300	786 328	122 2000	3.10 78.7	190 3130	3.68 93.5	21.9 556	107 44500	94400 25400	8.11 2.47
248 369	6850 2840	577 9440	9.63 245	672 11000	695 291	109 1790	3.07 78.0	169 2790	3.63 92.2	21.7 551	80.7 33600	82400 22100	8.03 2.45
223 332	6040 2530	517 8520	9.54 242	598 9850	610 256	96.2 1580	3.03 77.0	150 2460	3.57 90.7	21.6 549	59.5 24800	71700 19300	7.97 2.43

WIDE FLANGE



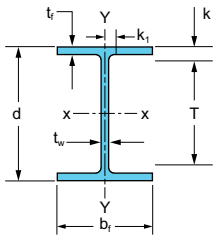
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W21 **W530**	x 201 x 300	59.3 38300	23.0 584	0.910 23.1	½ 12.7	12.6 320	1.63 41.4	2.13 54.1	2 ½ 63.5	1 ⁹⁄₁₆ 33.3	18 457.2	5 ½ 139.7	3.86 3.86	20.6 20.6
	x 182 x 272	53.6 34600	22.7 577	0.830 21.1	⁷⁄₁₆ 11.1	12.5 318	1.48 37.6	1.98 50.3	2 ⅜ 60.3	1 ¼ 31.8			4.22 4.22	22.6 22.6
	x 166 x 248	48.8 31500	22.5 572	0.750 19.1	⅜ 9.52	12.4 315	1.36 34.5	1.86 47.2	2 ¼ 57.2	1 ⁹⁄₁₆ 30.2			4.57 4.57	25.0 25.0
	x 147 x 219	43.2 27900	22.1 561	0.720 18.3	⅜ 9.52	12.5 318	1.15 29.2	1.65 41.9	2 50.8	1 ⁹⁄₁₆ 30.2			5.44 5.44	26.1 26.1
	x 132 x 196	38.8 25000	21.8 554	0.650 16.5	⁵⁄₁₆ 7.94	12.4 315	1.04 26.4	1.54 39.1	1 ¹³⁄₁₆ 49.2	1 ⅛ 28.6			6.01 6.01	28.9 28.9
	x 122 x 182	35.9 23200	21.7 551	0.600 15.2	⁵⁄₁₆ 7.94	12.4 315	0.960 24.4	1.46 37.1	1 ¹³⁄₁₆ 46.0	1 ⅛ 28.6			6.45 6.45	31.3 31.3
	x 111 x 165	32.6 21000	21.5 546	0.550 14.0	⁵⁄₁₆ 7.94	12.3 312	0.875 22.2	1.38 35.1	1 ¾ 44.5	1 ⅛ 28.6			7.05 7.05	34.1 34.1
	x 101 x 150	29.8 19200	21.4 544	0.500 12.7	¼ 6.35	12.3 312	0.800 20.3	1.30 33.0	1 ¹¹⁄₁₆ 42.9	1 ⁹⁄₁₆ 27.0			7.68 7.68	37.5 37.5
W21 **W530**	x 93 x 138	27.3 17600	21.6 549	0.580 14.7	⁵⁄₁₆ 7.94	8.42 214	0.930 23.6	1.43 36.3	1 ⅜ 41.3	¹⁵⁄₁₆ 23.8	18 ⅜ 466.7	5 ½ 139.7	4.53 4.53	32.3 32.3
	x 83 x 123	24.4 15700	21.4 544	0.515 13.1	¼ 6.35	8.36 212	0.835 21.2	1.34 34.0	1 ½ 38.1	⅞ 22.2			5.00 5.00	36.4 36.4
	x 73 x 109	21.5 13900	21.2 538	0.455 11.6	¼ 6.35	8.30 211	0.740 18.8	1.24 31.5	1 ⁷⁄₁₆ 36.5	⅞ 22.2			5.60 5.60	41.2 41.2
	x 68 x 101	20.0 12900	21.1 536	0.430 10.9	¼ 6.35	8.27 210	0.685 17.4	1.19 30.2	1 ⅜ 34.9	⅞ 22.2			6.04 6.04	43.6 43.6
	x 62 x 92	18.3 11800	21.0 533	0.400 10.2	³⁄₁₆ 4.76	8.24 209	0.615 15.6	1.12 28.4	1 ⁵⁄₁₆ 33.3	¹³⁄₁₆ 20.6			6.70 6.70	46.9 46.9
	x 55 x 82	16.2 10500	20.8 528	0.375 9.53	³⁄₁₆ 4.76	8.22 209	0.522 13.3	1.02 25.9	1 ⁵⁄₁₆ 30.2	¹³⁄₁₆ 20.6			7.87 7.87	50.0 50.0
	x 48 x 72	14.1 9100	20.6 523	0.350 8.89	³⁄₁₆ 4.76	8.14 207	0.430 10.9	0.930 23.6	1 ⅛ 28.6	¹³⁄₁₆ 20.6			9.47 9.47	53.6 53.6
W21 **W530**	x 57 x 85	16.7 10800	21.1 536	0.405 10.3	³⁄₁₆ 4.76	6.56 167	0.650 16.5	1.15 29.2	1 ⁵⁄₁₆ 33.3	¹³⁄₁₆ 20.6	18 ⅜ 466.7	3 ½ 88.9	5.04 5.04	46.3 46.3
	x 50 x 74	14.7 9480	20.8 528	0.380 9.65	³⁄₁₆ 4.76	6.53 166	0.535 13.6	1.04 26.4	1 ¼ 31.8	¹³⁄₁₆ 20.6			6.10 6.10	49.4 49.4
	x 44 x 66	13.0 8390	20.7 526	0.350 8.89	³⁄₁₆ 4.76	6.50 165	0.450 11.4	0.950 24.1	1 ⅛ 28.6	¹³⁄₁₆ 20.6			7.22 7.22	53.6 53.6
W18 **W460**	x 311 x 464	91.6 59100	22.3 566	1.52 38.6	¾ 19.0	12.0 305	2.74 69.6	3.24 82.3	3 ⅜ 87.3	1 ⅝ 34.9	15 ½ 393.7	5 ½ 139.7	2.19 2.19	10.4 10.4
	x 283 x 421	83.3 53700	21.9 556	1.40 35.6	¹¹⁄₁₆ 17.5	11.9 302	2.50 63.5	3.00 76.2	3 ⅜ 81.0	1 ⁹⁄₁₆ 33.3			2.38 2.38	11.3 11.3
	x 258 x 384	76.0 49000	21.5 546	1.28 32.5	⅝ 15.9	11.8 300	2.30 58.4	2.70 68.6	3 76.2	1 ¼ 31.8			2.56 2.56	12.5 12.5
	x 234 x 349	68.6 44300	21.1 536	1.16 29.5	⅝ 15.9	11.7 297	2.11 53.6	2.51 63.8	2 ¾ 69.9	1 ⁹⁄₁₆ 30.2			2.76 2.76	13.8 13.8
	x 211 x 315	62.3 40200	20.7 526	1.06 26.9	⁹⁄₁₆ 14.3	11.6 295	1.91 48.5	2.31 58.7	2 ⁹⁄₁₆ 65.1	1 ⁹⁄₁₆ 30.2			3.02 3.02	15.1 15.1
	x 192 x 286	56.2 36300	20.4 518	0.960 24.4	½ 12.7	11.5 292	1.75 44.5	2.15 54.6	2 ⁷⁄₁₆ 61.9	1 ⅛ 28.6			3.27 3.27	16.7 16.7

WIDE FLANGE



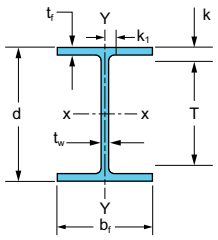
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
201 300	5310 2210	461 7550	9.47 241	530 8690	542 226	86.1 1410	3.02 76.7	133 2180	3.55 90.2	21.4 544	40.9 17000	62000 16600	7.88 2.40
182 272	4730 1970	417 6830	9.40 239	476 7800	483 201	77.2 1270	3.00 76.2	119 1950	3.51 89.2	21.2 538	30.7 12800	54400 14600	7.81 2.38
166 248	4280 1780	380 6230	9.36 238	432 7080	435 181	70.0 1150	2.99 75.9	108 1770	3.48 88.4	21.1 536	23.6 9820	48500 13000	7.76 2.36
147 219	3630 1510	329 5390	9.17 233	373 6110	376 157	60.1 985	2.95 74.9	92.6 1520	3.46 87.9	21.0 533	15.4 6410	41100 11000	7.73 2.36
132 196	3220 1340	295 4830	9.12 232	333 5460	333 139	53.5 877	2.93 74.4	82.3 1350	3.43 87.1	20.8 528	11.3 4700	36000 9670	7.66 2.33
122 182	2960 1230	273 4470	9.09 231	307 5030	305 127	49.2 806	2.92 74.2	75.6 1240	3.40 86.4	20.7 526	8.98 3740	32700 8780	7.65 2.33
111 165	2670 1110	249 4080	9.05 230	279 4570	274 114	44.5 729	2.90 73.7	68.2 1120	3.37 85.6	20.6 523	6.83 2840	29200 7840	7.59 2.31
101 150	2420 1010	227 3720	9.02 229	253 4150	248 103	40.3 660	2.89 73.4	61.7 1010	3.35 85.1	20.6 523	5.21 2170	26200 7040	7.58 2.31
93 138	2070 862	192 3150	8.70 221	221 3620	92.9 38.7	22.1 362	1.84 46.7	34.7 569	2.24 56.9	20.7 526	6.03 2510	9940 2670	6.31 1.92
83 123	1830 762	171 2800	8.67 220	196 3210	81.4 33.9	19.5 320	1.83 46.5	30.5 500	2.21 56.1	20.6 523	4.34 1810	8630 2320	6.27 1.91
73 109	1600 666	151 2470	8.64 219	172 2820	70.6 29.4	17.0 279	1.81 46.0	26.6 436	2.19 55.6	20.5 521	3.02 1260	7410 1990	6.22 1.90
68 101	1480 616	140 2290	8.60 218	160 2620	64.7 26.9	15.7 257	1.80 45.7	24.4 400	2.17 55.1	20.4 518	2.45 1020	6760 1820	6.20 1.89
62 92	1330 554	127 2080	8.54 217	144 2360	57.5 23.9	14.0 229	1.77 45.0	21.7 356	2.15 54.6	20.4 518	1.83 762	5960 1600	6.18 1.88
55 82	1140 475	110 1800	8.40 213	126 2060	48.4 20.1	11.8 193	1.73 43.9	18.4 302	2.11 53.6	20.3 515	1.24 516	4980 1340	6.14 1.87
48 72	959 399	93.0 1520	8.24 209	107 1750	38.7 16.1	9.52 156	1.66 42.2	14.9 244	2.05 52.1	20.2 513	0.803 334	3950 1060	6.09 1.86
57 85	1170 487	111 1820	8.36 212	129 2110	30.6 12.7	9.35 153	1.35 34.3	14.8 243	1.68 42.7	20.5 521	1.77 737	3190 857	5.64 1.72
50 74	984 410	94.5 1550	8.18 208	110 1800	24.9 10.4	7.64 125	1.30 33.0	12.2 200	1.64 41.7	20.3 516	1.14 475	2570 690	5.58 1.70
44 66	843 351	81.6 1340	8.06 205	95.4 1560	20.7 8.62	6.37 104	1.26 32.0	10.2 167	1.60 40.6	20.3 516	0.770 320	2110 567	5.56 1.69
311 464	6970 2900	624 10200	8.72 221	754 12400	795 331	132 2160	2.95 74.9	207 3390	3.53 89.7	19.6 498	176 73300	76200 20500	7.46 2.27
283 421	6170 2570	565 9260	8.61 219	676 11100	704 293	118 1930	2.91 73.9	185 3030	3.47 88.1	19.4 493	134 55800	65900 17700	7.38 2.25
258 384	5510 2290	514 8420	8.53 217	611 10000	628 261	107 1750	2.88 73.2	166 2720	3.42 86.9	19.2 488	103 42900	57600 15500	7.30 2.23
234 349	4900 2040	466 7640	8.44 214	549 9000	558 232	95.8 1570	2.85 72.4	149 2440	3.37 85.6	19.0 483	78.7 32800	50100 13500	7.22 2.20
211 315	4330 1800	419 6870	8.35 212	490 8030	493 205	85.3 1400	2.82 71.6	132 2160	3.32 84.3	18.8 478	58.6 24400	43400 11700	7.14 2.18
192 286	3870 1610	380 6230	8.28 210	442 7240	440 183	76.8 1260	2.79 70.9	119 1950	3.28 83.3	18.7 475	44.7 18600	38000 10200	7.07 2.16

WIDE FLANGE



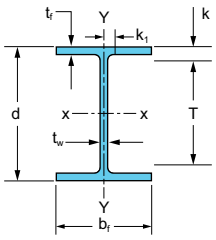
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in^2 mm^2	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W18 **W460**	x 175 x 260	51.4 33200	20.0 508	0.890 22.6	7/16 11.1	11.4 290	1.59 40.4	1.99 50.5	2 7/16 61.9	1 1/4 31.8	15 1/8 384.2	5 1/2 139.7	3.58 3.58	18.0 18.0
	x 158 x 235	46.3 29900	19.7 500	0.810 20.6	7/16 11.1	11.3 287	1.44 36.6	1.84 46.7	2 3/8 60.3	1 1/4 31.8			3.92 3.92	19.8 19.8
	x 143 x 213	42.0 27100	19.5 495	0.730 18.5	3/8 9.52	11.2 284	1.32 33.5	1.72 43.7	2 3/16 55.6	1 3/16 30.2			4.25 4.25	22.0 22.0
	x 130 x 193	38.3 24700	19.3 490	0.670 17.0	3/8 9.52	11.2 284	1.20 30.5	1.60 40.6	2 1/16 52.4	1 3/16 30.2			4.65 4.65	23.9 23.9
	x 119 x 177	35.1 22600	19.0 483	0.655 16.6	5/16 7.94	11.3 287	1.06 26.9	1.46 37.1	1 13/16 49.2	1 3/16 30.2			5.31 5.31	24.5 24.5
	x 106 x 158	31.1 20100	18.7 475	0.590 15.0	5/16 7.94	11.2 284	0.940 23.9	1.34 34.0	1 13/16 46.0	1 1/8 28.6			5.96 5.96	27.2 27.2
	x 97 x 144	28.5 18400	18.6 472	0.535 13.6	5/16 7.94	11.1 282	0.870 22.1	1.27 32.3	1 3/4 44.5	1 1/8 28.6			6.41 6.41	30.0 30.0
	x 86 x 128	25.3 16300	18.4 467	0.480 12.2	1/4 6.35	11.1 282	0.770 19.6	1.17 29.7	1 5/8 41.3	1 1/16 27.0			7.20 7.20	33.4 33.4
	x 76 x 113	22.3 14400	18.2 462	0.425 10.8	1/4 6.35	11.0 279	0.680 17.3	1.08 27.4	1 9/16 39.7	1 1/16 27.0			8.11 8.11	37.8 37.8
W18 **W460**	x 71 x 106	20.9 13500	18.5 470	0.495 12.6	1/4 6.35	7.64 194	0.810 20.6	1.21 30.7	1 1/2 38.1	7/8 22.2	15 1/2 393.7	3 1/2 88.9	4.71 4.71	32.4 32.4
	x 65 x 97	19.1 12300	18.4 467	0.450 11.4	1/4 6.35	7.59 193	0.750 19.1	1.15 29.2	1 7/16 36.5	7/8 22.2			5.06 5.06	35.7 35.7
	x 60 x 89	17.6 11400	18.2 462	0.415 10.5	1/4 6.35	7.56 192	0.695 17.7	1.10 27.9	1 3/8 34.9	13/16 20.6			5.44 5.44	38.7 38.7
	x 55 x 82	16.2 10500	18.1 460	0.390 9.91	3/16 4.76	7.53 191	0.630 16.0	1.03 26.2	1 5/16 33.3	13/16 20.6			5.98 5.98	41.1 41.1
	x 50 x 74	14.7 9480	18.0 457	0.355 9.02	3/16 4.76	7.50 191	0.570 14.5	0.972 24.7	1 1/4 31.8	13/16 20.6			6.57 6.57	45.2 45.2
W18 **W460**	x 46 x 68	13.5 8710	18.1 460	0.360 9.14	3/16 4.76	6.06 154	0.605 15.4	1.01 25.7	1 1/4 31.8	13/16 20.6	15 1/2 393.7	3 1/2 88.9	5.01 5.01	44.6 44.6
	x 40 x 60	11.8 7610	17.9 455	0.315 8.00	3/16 4.76	6.02 153	0.525 13.3	0.927 23.5	1 5/16 30.2	13/16 20.6			5.73 5.73	50.9 50.9
	x 35 x 52	10.3 6650	17.7 450	0.300 7.62	3/16 4.76	6.00 152	0.425 10.8	0.827 21.0	1 1/8 28.6	3/4 19.1			7.06 7.06	53.5 53.5
W16 **W410**	x 100 x 149	29.4 19000	17.0 432	0.585 14.9	5/16 7.94	10.4 264	0.985 25.0	1.39 35.3	1 7/8 47.6	1 1/8 28.6	13 1/4 333.4	5 1/2 139.7	5.29 5.29	24.3 24.3
	x 89 x 132	26.2 16900	16.8 427	0.525 13.3	1/4 6.35	10.4 264	0.875 22.2	1.28 32.5	1 3/4 44.5	1 1/16 27.0			5.92 5.92	27.0 27.0
	x 77 x 114	22.6 14600	16.5 419	0.455 11.6	1/4 6.35	10.3 262	0.760 19.3	1.16 29.5	1 3/8 41.3	1 1/16 27.0			6.77 6.77	31.2 31.2
	x 67 x 100	19.6 12600	16.3 414	0.395 10.0	3/16 4.76	10.2 259	0.665 16.9	1.07 27.2	1 9/16 39.7	1 25.4			7.70 7.70	35.9 35.9
W16 **W410**	x 57 x 85	16.8 10800	16.4 417	0.430 10.9	1/4 6.35	7.12 181	0.715 18.2	1.12 28.4	1 3/8 34.9	7/8 22.2	13 3/8 346.1	3 1/2 88.9	4.98 4.98	33.0 33.0
	x 50 x 75	14.7 9480	16.3 414	0.380 9.65	3/16 4.76	7.07 180	0.630 16.0	1.03 26.2	1 5/16 33.3	13/16 20.6			5.61 5.61	37.4 37.4
	x 45 x 67	13.3 8580	16.1 409	0.345 8.76	3/16 4.76	7.04 179	0.565 14.4	0.967 24.6	1 1/4 31.8	13/16 20.6			6.23 6.23	41.1 41.1
	x 40 x 60	11.8 7610	16.0 406	0.305 7.75	3/16 4.76	7.00 178	0.505 12.8	0.907 23.0	1 5/16 30.2	13/16 20.6			6.93 6.93	46.5 46.5
	x 36 x 53	10.6 6840	15.9 404	0.295 7.49	3/16 4.76	6.99 178	0.430 10.9	0.832 21.1	1 1/8 28.6	3/4 19.1			8.12 8.12	48.1 48.1
W16 **W410**	x 31 x 46.1	9.13 5890	15.9 404	0.275 6.99	1/8 3.18	5.53 140	0.440 11.2	0.842 21.4	1 1/8 28.6	3/4 19.1	13 3/8 346.1	3 1/2 88.9	6.28 6.28	51.6 51.6
	x 26 x 38.8	7.68 4950	15.7 399	0.250 6.35	1/8 3.18	5.50 140	0.345 8.76	0.747 19.0	1 1/16 27.0	3/4 19.1	13 3/8 346.1	3 1/2 88.9	7.97 7.97	56.8 56.8

WIDE FLANGE



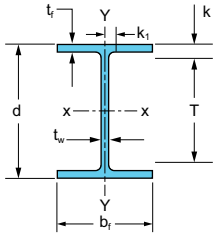
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
175 260	3450 1440	344 5640	8.20 208	398 6520	391 163	68.8 1130	2.76 70.1	106 1740	3.24 82.3	18.4 467	33.8 14100	33300 8940	6.99 2.13
158 235	3060 1270	310 5080	8.12 206	356 5830	347 144	61.4 1010	2.74 69.6	94.8 1550	3.20 81.3	18.3 465	25.2 10500	29000 7790	6.92 2.11
143 213	2750 1140	282 4620	8.09 205	322 5280	311 129	55.5 909	2.72 69.1	85.4 1400	3.17 80.5	18.2 462	19.2 7990	25700 6900	6.86 2.09
130 193	2460 1020	256 4200	8.03 204	290 4750	278 116	49.9 818	2.70 68.6	76.7 1260	3.13 79.5	18.1 460	14.5 6040	22700 6100	6.84 2.08
119 177	2190 912	231 3790	7.90 201	262 4290	253 105	44.9 736	2.69 68.3	69.1 1130	3.13 79.5	17.9 455	10.6 4410	20300 5450	6.82 2.08
106 158	1910 795	204 3340	7.84 199	230 3770	220 91.6	39.4 646	2.66 67.6	60.5 991	3.10 78.7	17.8 452	7.48 3110	17400 4670	6.75 2.06
97 144	1750 728	188 3080	7.82 199	211 3460	201 83.7	36.1 592	2.65 67.3	55.3 906	3.08 78.2	17.7 450	5.86 2440	15800 4240	6.71 2.05
86 128	1530 637	166 2720	7.77 197	186 3050	175 72.8	31.6 518	2.63 66.8	48.4 793	3.05 77.5	17.6 447	4.10 1710	13600 3650	6.69 2.04
76 113	1330 554	146 2390	7.73 196	163 2670	152 63.3	27.6 452	2.61 66.3	42.2 692	3.02 76.7	17.5 444	2.83 1180	11700 3140	6.63 2.02
71 106	1170 487	127 2080	7.50 191	146 2390	60.3 25.1	15.8 259	1.70 43.2	24.7 405	2.05 52.1	17.7 450	3.49 1450	4700 1260	5.55 1.69
65 97	1070 445	117 1920	7.49 190	133 2180	54.8 22.8	14.4 236	1.69 42.9	22.5 369	2.03 51.6	17.7 450	2.73 1140	4240 1140	5.52 1.68
60 89	984 410	108 1770	7.47 190	123 2020	50.1 20.9	13.3 218	1.68 42.7	20.6 338	2.02 51.3	17.5 444	2.17 903	3850 1030	5.48 1.67
55 82	890 370	98.3 1610	7.41 188	112 1840	44.9 18.7	11.9 195	1.67 42.4	18.5 303	2.00 50.8	17.5 444	1.66 691	3430 921	5.46 1.66
50 74	800 333	88.9 1460	7.38 187	101 1660	40.1 16.7	10.7 175	1.65 41.9	16.6 272	1.98 50.3	17.4 442	1.24 516	3040 816	5.44 1.66
46 68	712 296	78.8 1290	7.25 184	90.7 1490	22.5 9.37	7.43 122	1.29 32.8	11.7 192	1.58 40.1	17.5 444	1.22 508	1720 462	4.98 1.52
40 60	612 255	68.4 1120	7.21 183	78.4 1280	19.1 7.95	6.35 104	1.27 32.3	10.0 164	1.56 39.6	17.4 442	0.810 337	1440 387	4.94 1.50
35 52	510 212	57.6 944	7.04 179	66.5 1090	15.3 6.37	5.12 83.9	1.22 31.0	8.06 132	1.51 38.4	17.3 439	0.506 211	1140 306	4.90 1.49
100 149	1490 620	175 2870	7.10 180	198 3240	186 77.4	35.7 585	2.51 63.8	54.9 900	2.92 74.2	16.0 406	7.73 3220	11900 3200	6.20 1.89
89 132	1300 541	155 2540	7.05 179	175 2870	163 67.8	31.4 515	2.49 63.2	48.1 788	2.88 73.2	15.9 404	5.45 2270	10200 2740	6.18 1.88
77 114	1110 462	134 2200	7.00 178	150 2460	138 57.4	26.9 441	2.47 62.7	41.1 674	2.85 72.4	15.7 399	3.57 1490	8590 2310	6.11 1.86
67 100	954 397	117 1920	6.96 177	130 2130	119 49.5	23.2 380	2.46 62.5	35.5 582	2.82 71.6	15.6 396	2.39 995	7300 1960	6.05 1.84
57 85	758 316	92.2 1510	6.72 171	105 1720	43.1 17.9	12.1 198	1.60 40.6	18.9 310	1.92 48.8	15.7 399	2.22 924	2660 714	5.04 1.53
50 75	659 274	81.0 1330	6.68 170	92.0 1510	37.2 15.5	10.5 172	1.59 40.4	16.3 267	1.89 48.0	15.7 399	1.52 633	2270 610	5.01 1.53
45 67	586 244	72.7 1190	6.65 169	82.3 1350	32.8 13.7	9.34 153	1.57 39.9	14.5 238	1.87 47.5	15.5 394	1.11 462	1990 534	4.97 1.52
40 60	518 216	64.7 1060	6.63 168	73.0 1200	28.9 12.0	8.25 135	1.57 39.9	12.7 208	1.86 47.2	15.5 394	0.794 330	1730 465	4.95 1.51
36 53	448 186	56.5 926	6.51 165	64.0 1050	24.5 10.2	7.00 115	1.52 38.6	10.8 177	1.83 46.5	15.5 394	0.545 227	1460 392	4.93 1.50
31 46.1	375 156	47.2 773	6.41 163	54.0 885	12.4 5.16	4.49 73.6	1.17 29.7	7.03 115	1.42 36.1	15.5 394	0.461 192	739 198	4.45 1.36
26 38.8	301 125	38.4 629	6.26 159	44.2 724	9.59 3.99	3.49 57.2	1.12 28.4	5.48 89.8	1.38 35.1	15.4 391	0.262 109	565 152	4.41 1.34

WIDE FLANGE



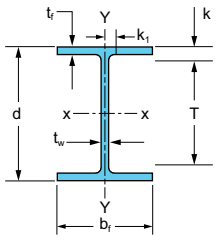
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W14 **W360**	x 808 x 1200	238 154000	22.8 579	3.74 95.0	1 ⅞ 47.6	18.6 472	5.12 130	5.71 145	5 ¾ 146	2 ½ 63.5	11 ¼ 286	8 ½ 216	1.82 1.82	3.04 3.04
W14 **W360**	x 730 x 1086	215 139000	22.4 569	3.07 78.0	1 ⁹⁄₁₆ 39.7	17.9 455	4.91 125	5.51 140	6 ⅜ 157	2 ¾ 69.9	10 254.0	3 - 7½ - 3 76.2-190.5-76.2	1.82 1.82	3.71 3.71
	x 665 x 990	196 126000	21.6 549	2.83 71.9	1 ⅜ 36.5	17.7 450	4.52 115	5.12 130	5 ¹³⁄₁₆ 148	2 ⅝ 66.7			1.95 1.95	4.03 4.03
	x 605 x 900	178 115000	20.9 531	2.60 66.0	1 ⁵⁄₁₆ 33.3	17.4 442	4.16 106	4.76 121	5 ⅜ 138	2 ½ 63.5			2.09 2.09	4.39 4.39
	x 550 x 818	162 105000	20.2 513	2.38 60.5	1 ³⁄₁₆ 30.2	17.2 437	3.82 97.0	4.42 112	5 ⅛ 130	2 ⅜ 60.3			2.25 2.25	4.79 4.79
	x 500 x 744	147 94800	19.6 498	2.19 55.6	1 ⅛ 28.6	17.0 432	3.50 88.9	4.10 104	4 ¹³⁄₁₆ 122	2 ⁵⁄₁₆ 58.7			2.43 2.43	5.21 5.21
	x 455 x 677	134 86500	19.0 483	2.02 51.3	1 25.4	16.8 427	3.21 81.5	3.81 96.8	4 ½ 114	2 ¼ 57.2			2.62 2.62	5.66 5.66
	x 426 x 634	125 80600	18.7 475	1.88 47.8	¹⁵⁄₁₆ 23.8	16.7 424	3.04 77.2	3.63 92.2	4 ⅜ 110	2 ⅛ 54.0			2.75 2.75	6.08 6.08
	x 398 x 592	117 75500	18.3 465	1.77 45.0	⅞ 22.2	16.6 422	2.85 72.4	3.44 87.4	4 ⅛ 105	2 ⅛ 54.0			2.92 2.92	6.44 6.44
	x 370 x 551	109 70300	17.9 455	1.66 42.2	¹³⁄₁₆ 20.6	16.5 419	2.66 67.6	3.26 82.8	3 ¹³⁄₁₆ 100	2 ⅛ 52.4			3.10 3.10	6.89 6.89
	x 342 x 509	101 65200	17.5 445	1.54 39.1	¹³⁄₁₆ 20.6	16.4 417	2.47 62.7	3.07 78.0	3 ¾ 95.3	2 50.8			3.31 3.31	7.41 7.41
	x 311 x 463	91.4 59000	17.1 434	1.41 35.8	¾ 19.0	16.2 411	2.26 57.4	2.86 72.6	3 ⁹⁄₁₆ 90.5	1 ¹⁵⁄₁₆ 49.2			3.59 3.59	8.09 8.09
	x 283 x 421	83.3 53700	16.7 424	1.29 32.8	¹¹⁄₁₆ 17.5	16.1 409	2.07 52.6	2.67 67.8	3 ⅜ 85.7	1 ⅞ 47.6			3.89 3.89	8.84 8.84
	x 257 x 382	75.6 48800	16.4 417	1.18 30.0	⅝ 15.9	16.0 406	1.89 48.0	2.49 63.2	3 ⅛ 81.0	1 ¹³⁄₁₆ 46.0			4.23 4.23	9.71 9.71
	x 233 x 347	68.5 44200	16.0 406	1.07 27.2	⁹⁄₁₆ 14.3	15.9 404	1.72 43.7	2.32 58.9	3 76.2	1 ¾ 44.5			4.62 4.62	10.7 10.7
	x 211 x 314	62.0 40000	15.7 399	0.980 24.9	½ 12.7	15.8 401	1.56 39.6	2.16 54.9	2 ⅞ 73.0	1 ¹¹⁄₁₆ 42.9			5.06 5.06	11.6 11.6
	x 193 x 287	56.8 36600	15.5 394	0.890 22.6	⁷⁄₁₆ 11.1	15.7 399	1.44 36.6	2.04 51.8	2 ¾ 69.9	1 ¹¹⁄₁₆ 42.9			5.45 5.45	12.8 12.8
	x 176 x 262	51.8 33400	15.2 386	0.830 21.1	⁷⁄₁₆ 11.1	15.7 399	1.31 33.3	1.91 48.5	2 ⅝ 66.7	1 ⅝ 41.3			5.97 5.97	13.7 13.7
	x 159 x 237	46.7 30100	15.0 381	0.745 18.9	⅜ 9.52	15.6 396	1.19 30.2	1.79 45.5	2 ½ 63.5	1 ⁹⁄₁₆ 39.7			6.54 6.54	15.3 15.3
	x 145 x 216	42.7 27500	14.8 376	0.680 17.3	⅜ 9.52	15.5 394	1.09 27.7	1.69 42.9	2 ⅜ 60.3	1 ⁹⁄₁₆ 39.7			7.11 7.11	16.8 16.8
W14 **W360**	x 132 x 196	38.8 25000	14.7 373	0.645 16.4	⁹⁄₁₆ 7.94	14.7 373	1.03 26.2	1.63 41.4	2 ⁹⁄₁₆ 58.7	1 ⁹⁄₁₆ 39.7	10 254.0	5 ½ 139.7	7.15 7.15	17.7 17.7
	x 120 x 179	35.3 22800	14.5 368	0.590 15.0	⁹⁄₁₆ 7.94	14.7 373	0.940 23.9	1.54 39.1	2 ¼ 57.2	1 ½ 38.1			7.80 7.80	19.3 19.3
	x 109 x 162	32.0 20600	14.3 363	0.525 13.3	¼ 6.35	14.6 371	0.860 21.8	1.46 37.1	2 ⁹⁄₁₆ 55.6	1 ½ 38.1			8.49 8.49	21.7 21.7
	x 99 x 147	29.1 18800	14.2 361	0.485 12.3	¼ 6.35	14.6 371	0.780 19.8	1.38 35.1	2 ⁷⁄₁₆ 52.4	1 ⁷⁄₁₆ 36.5			9.34 9.34	23.5 23.5
	x 90 x 134	26.5 17100	14.0 356	0.440 11.2	¼ 6.35	14.5 368	0.710 18.0	1.31 33.3	2 50.8	1 ⁷⁄₁₆ 36.5			10.2 10.2	25.9 25.9

WIDE FLANGE



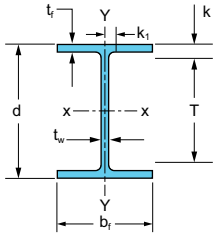
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
808 1200	15900 6620	1390 22800	8.17 208	1830 30000	5550 2310	597 9780	4.83 123	930 15200	5.94 151	17.7 450	1840 766000	434000 117000	9.38 2.86
730 1086	14300 5950	1280 21000	8.17 208	1660 27200	4720 1960	527 8640	4.69 119	816 13400	5.68 144	17.5 444	1450 604000	362000 97200	9.19 2.80
665 990	12400 5160	1150 18800	7.98 203	1480 24300	4170 1740	472 7730	4.62 117	730 12000	5.57 141	17.1 434	1120 466000	305000 81900	9.03 2.75
605 900	10800 4500	1040 17000	7.80 198	1320 21600	3680 1530	423 6930	4.55 116	652 10700	5.44 138	16.7 424	869 362000	258000 69300	8.85 2.70
550 818	9430 3930	931 15300	7.63 194	1180 19300	3250 1350	378 6190	4.49 114	583 9550	5.35 136	16.4 417	669 278000	219000 58800	8.70 2.65
500 744	8210 3420	838 13700	7.48 190	1050 17200	2880 1200	339 5560	4.43 113	522 8550	5.26 134	16.1 409	514 214000	187000 50200	8.57 2.61
455 677	7190 2990	756 12400	7.33 186	936 15300	2560 1070	304 4980	4.38 111	468 7670	5.17 131	15.8 401	395 164000	160000 43000	8.43 2.57
426 634	6600 2750	706 11600	7.26 184	869 14200	2360 982	283 4640	4.34 110	434 7110	5.11 130	15.7 399	331 138000	144000 38700	8.37 2.55
398 592	6000 2500	656 10700	7.16 182	801 13100	2170 903	262 4290	4.31 109	402 6590	5.05 128	15.5 394	273 114000	129000 34600	8.29 2.53
370 551	5440 2260	607 9950	7.07 180	736 12100	1990 828	241 3950	4.27 108	370 6060	5.00 127	15.2 386	222 92400	116000 31200	8.21 2.50
342 509	4900 2040	558 9140	6.98 177	672 11000	1810 753	221 3620	4.24 108	338 5540	4.95 126	15.0 381	178 74100	103000 27700	8.13 2.48
311 463	4330 1800	506 8290	6.88 175	603 9880	1610 670	199 3260	4.20 107	304 4980	4.87 124	14.8 376	136 56600	89100 23900	8.02 2.44
283 421	3840 1600	459 7520	6.79 172	542 8880	1440 599	179 2930	4.17 106	274 4490	4.80 122	14.6 371	104 43300	77700 20900	7.94 2.42
257 382	3400 1420	415 6800	6.71 170	487 7980	1290 537	161 2640	4.13 105	246 4030	4.75 121	14.5 368	79.1 32900	67800 18200	7.87 2.40
233 347	3010 1250	375 6150	6.63 168	436 7140	1150 479	145 2380	4.10 104	221 3620	4.69 119	14.3 363	59.5 24800	59000 15800	7.79 2.37
211 314	2660 1110	338 5540	6.55 166	390 6390	1030 429	130 2130	4.07 103	198 3240	4.64 118	14.1 358	44.6 18600	51500 13800	7.72 2.35
193 287	2400 999	310 5080	6.50 165	355 5820	931 388	119 1950	4.05 103	180 2950	4.59 117	14.1 358	34.8 14500	45900 12300	7.67 2.34
176 262	2140 891	281 4600	6.43 163	320 5240	838 349	107 1750	4.02 102	163 2670	4.55 116	13.9 353	26.5 11000	40500 10900	7.63 2.33
159 237	1900 791	254 4160	6.38 162	287 4700	748 311	96.2 1580	4.00 102	146 2390	4.51 115	13.8 351	19.7 8200	35600 9560	7.58 2.31
145 216	1710 712	232 3800	6.33 161	260 4260	677 282	87.3 1430	3.98 101	133 2180	4.47 114	13.7 348	15.2 6330	31700 8510	7.52 2.29
132 196	1530 637	209 3420	6.28 160	234 3830	548 228	74.5 1220	3.76 95.5	113 1850	4.23 107	13.7 348	12.3 5120	25500 6850	7.24 2.21
120 179	1380 574	190 3110	6.24 158	212 3470	495 206	67.5 1110	3.74 95.0	102 1670	4.20 107	13.6 345	9.37 3900	22700 6100	7.22 2.20
109 162	1240 516	173 2830	6.22 158	192 3150	447 186	61.2 1000	3.73 94.7	92.7 1520	4.17 106	13.4 340	7.12 2960	20200 5420	7.16 2.18
99 147	1110 462	157 2570	6.17 157	173 2830	402 167	55.2 905	3.71 94.2	83.6 1370	4.14 105	13.4 340	5.37 2240	18000 4830	7.15 2.18
90 134	999 416	143 2340	6.14 156	157 2570	362 151	49.9 818	3.70 94.0	75.6 1240	4.10 104	13.3 338	4.06 1690	16000 4300	7.09 2.16

WIDE FLANGE



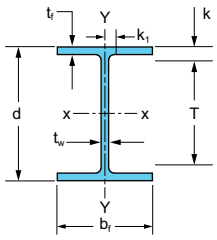
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W14 **W360**	x 82 x 122	24.0 15500	14.3 363	0.510 13.0	¼ 6.35	10.1 257	0.855 21.7	1.45 36.8	1 1⁵⁄₁₆ 42.9	1 1⁄₁₆ 27.0	10 ⅞ 276.2	5 ½ 139.7	5.92 5.92	22.4 22.4
	x 74 x 110	21.8 14100	14.2 361	0.450 11.4	¼ 6.35	10.1 257	0.785 19.9	1.38 35.1	1 ⅝ 41.3	1 1⁄₁₆ 27.0			6.41 6.41	25.4 25.4
	x 68 x 101	20.0 12900	14.0 356	0.415 10.5	¼ 6.35	10.0 254	0.720 18.3	1.31 33.3	1 ⁹⁄₁₆ 39.7	1 1⁄₁₆ 27.0			6.97 6.97	27.5 27.5
	x 61 x 91	17.9 11500	13.9 353	0.375 9.53	⅜ 4.76	10.0 254	0.645 16.4	1.24 31.5	1 ½ 38.1	1 25.4			7.75 7.75	30.4 30.4
W14 **W360**	x 53 x 79	15.6 10100	13.9 353	0.370 9.40	⅜ 4.76	8.06 205	0.660 16.8	1.25 31.8	1 ½ 38.1	1 25.4	10 ⅞ 276.2	5 ½ 139.7	6.11 6.11	30.9 30.9
	x 48 x 72	14.1 9100	13.8 351	0.340 8.64	⅜ 4.76	8.03 204	0.595 15.1	1.19 30.2	1 ⁷⁄₁₆ 36.5	1 25.4			6.75 6.75	33.6 33.6
	x 43 x 64	12.6 8130	13.7 348	0.305 7.75	⅜ 4.76	8.00 203	0.530 13.5	1.12 28.4	1 ⅜ 34.9	1 25.4			7.54 7.54	37.4 37.4
W14 **W360**	x 38 x 57.8	11.2 7230	14.1 358	0.310 7.87	⅜ 4.76	6.77 172	0.515 13.1	0.915 23.2	1 ¼ 31.8	1³⁄₁₆ 20.6	11 ⅝ 295.3	3 ½ 88.9	6.57 6.57	39.6 39.6
	x 34 x 51	10.0 6450	14.0 356	0.285 7.24	⅜ 4.76	6.75 171	0.455 11.6	0.855 21.7	1 ⅜ 30.2	¾ 19.1			7.41 7.41	43.1 43.1
	x 30 x 44	8.85 5710	13.8 351	0.270 6.86	⅛ 3.18	6.73 171	0.385 9.78	0.785 19.9	1 ⅛ 28.6	¾ 19.1			8.74 8.74	45.4 45.4
W14 **W360**	x 26 x 39	7.69 4960	13.9 353	0.255 6.48	⅛ 3.18	5.03 128	0.420 10.7	0.820 20.8	1 ⅛ 28.6	¾ 19.1	11 ⅝ 295.3	2 ¾ 69.9	5.98 5.98	48.1 48.1
	x 22 x 32.9	6.49 4190	13.7 348	0.230 5.84	⅛ 3.18	5.00 127	0.335 8.51	0.735 18.7	1 1⁄₁₆ 27.0	¾ 19.1	11 ⅝ 295.3	2 ¾ 69.9	7.46 7.46	53.3 53.3
W12 **W310**	x 336 x 500	98.9 63800	16.8 427	1.78 45.2	⅞ 22.2	13.4 340	2.96 75.2	3.55 90.2	3 ⅜ 98.4	1 1⁵⁄₁₆ 42.9	9 ⅛ 231.8	5 ½ 139.7	2.26 2.26	5.47 5.47
	x 305 x 454	89.5 57700	16.3 414	1.63 41.4	1³⁄₁₆ 20.6	13.2 335	2.71 68.8	3.30 83.8	3 ⅜ 92.1	1 ⅝ 41.3			2.45 2.45	5.98 5.98
	x 279 x 415	81.9 52800	15.9 404	1.53 38.9	¾ 19.0	13.1 333	2.47 62.7	3.07 78.0	3 ⅜ 85.7	1 ⅝ 41.3			2.66 2.66	6.35 6.35
	x 252 x 375	74.1 47800	15.4 391	1.40 35.6	1⁵⁄₁₆ 17.5	13.0 330	2.25 57.2	2.85 72.4	3 ⅛ 79.4	1 ½ 38.1			2.89 2.89	6.96 6.96
	x 230 x 342	67.7 43700	15.1 384	1.29 32.8	1⁵⁄₁₆ 17.5	12.9 328	2.07 52.6	2.67 67.8	2 1³⁄₁₆ 74.6	1 ½ 38.1			3.11 3.11	7.56 7.56
	x 210 x 313	61.8 39900	14.7 373	1.18 30.0	⅝ 15.9	12.8 325	1.90 48.3	2.50 63.5	2 1³⁄₁₆ 71.4	1 1⁄₁₆ 36.5			3.37 3.37	8.23 8.23
	x 190 x 283	56.0 36100	14.4 366	1.06 26.9	⅝ 14.3	12.7 323	1.74 44.2	2.33 59.2	2 ⅝ 66.7	1 ⅜ 34.9			3.65 3.65	9.16 9.16
	x 170 x 253	50.0 32300	14.0 356	0.960 24.4	½ 12.7	12.6 320	1.56 39.6	2.16 54.9	2 1⁄₁₆ 61.9	1 5⁄₁₆ 33.3			4.03 4.03	10.1 10.1
	x 152 x 226	44.7 28800	13.7 348	0.870 22.1	7⁄₁₆ 11.1	12.5 318	1.40 35.6	2.00 50.8	2 1⁄₁₆ 58.7	1 ¼ 31.8			4.46 4.46	11.2 11.2
	x 136 x 202	39.9 25700	13.4 340	0.790 20.1	7⁄₁₆ 11.1	12.4 315	1.25 31.8	1.85 47.0	2 ⅛ 54.0	1 ¼ 31.8			4.96 4.96	12.3 12.3
	x 120 x 179	35.2 22700	13.1 333	0.710 18.0	⅜ 9.52	12.3 312	1.11 28.2	1.70 43.2	2 50.8	1 5⁄₁₆ 30.2			5.57 5.57	13.7 13.7
	x 106 x 158	31.2 20100	12.9 328	0.610 15.5	⅜ 7.94	12.2 310	0.990 25.1	1.59 40.4	1 ⅝ 47.6	1 ⅛ 28.6			6.17 6.17	15.9 15.9
	x 96 x 143	28.2 18200	12.7 323	0.550 14.0	⅜ 7.94	12.2 310	0.900 22.9	1.50 38.1	1 1³⁄₁₆ 46.0	1 ⅛ 28.6			6.76 6.76	17.7 17.7
	x 87 x 129	25.6 16500	12.5 318	0.515 13.1	¼ 6.35	12.1 307	0.810 20.6	1.41 35.8	1 1⁵⁄₁₆ 42.9	1 1⁄₁₆ 27.0			7.48 7.48	18.9 18.9
	x 79 x 117	23.2 15000	12.4 315	0.470 11.9	¼ 6.35	12.1 307	0.735 18.7	1.33 33.8	1 ⅝ 41.3	1 1⁄₁₆ 27.0			8.22 8.22	20.7 20.7
	x 72 x 107	21.1 13600	12.3 312	0.430 10.9	¼ 6.35	12.0 305	0.670 17.0	1.27 32.3	1 ⁹⁄₁₆ 39.7	1 1⁄₁₆ 27.0			8.99 8.99	22.6 22.6
	x 65 x 97	19.1 12300	12.1 307	0.390 9.91	⅜ 4.76	12.0 305	0.605 15.4	1.20 30.5	1 ½ 38.1	1 25.4			9.92 9.92	24.9 24.9

WIDE FLANGE



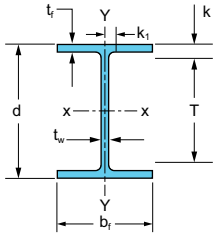
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
82 122	881 367	123 2020	6.05 154	139 2280	148 61.6	29.3 480	2.48 63.0	44.8 734	2.85 72.4	13.4 340	5.07 2110	6710 1800	5.67 1.73
74 110	795 331	112 1840	6.04 153	126 2060	134 55.8	26.6 436	2.48 63.0	40.5 664	2.83 71.9	13.4 340	3.87 1610	5990 1610	5.66 1.72
68 101	722 301	103 1690	6.01 153	115 1880	121 50.4	24.2 397	2.46 62.5	36.9 605	2.80 71.1	13.3 338	3.01 1250	5380 1440	5.60 1.71
61 91	640 266	92.1 1510	5.98 152	102 1670	107 44.5	21.5 352	2.45 62.2	32.8 537	2.78 70.6	13.3 338	2.19 912	4710 1260	5.59 1.70
53 79	541 225	77.8 1270	5.89 150	87.1 1430	57.7 24.0	14.3 234	1.92 48.8	22.0 361	2.22 56.4	13.2 335	1.94 807	2540 682	4.94 1.51
48 72	484 201	70.2 1150	5.85 149	78.4 1280	51.4 21.4	12.8 210	1.91 48.5	19.6 321	2.20 55.9	13.2 335	1.45 604	2240 602	4.92 1.50
43 64	428 178	62.6 1030	5.82 148	69.6 1140	45.2 18.8	11.3 185	1.89 48.0	17.3 283	2.18 55.4	13.2 335	1.05 437	1950 524	4.90 1.49
38 57.8	385 160	54.6 895	5.87 149	61.5 1010	26.7 11.1	7.88 129	1.55 39.4	12.1 198	1.82 46.2	13.6 345	0.798 332	1230 330	4.56 1.39
34 51	340 142	48.6 796	5.83 148	54.6 895	23.3 9.70	6.91 113	1.53 38.9	10.6 174	1.80 45.7	13.5 343	0.569 237	1070 287	4.54 1.38
30 44	291 121	42.0 688	5.73 146	47.3 775	19.6 8.16	5.82 95.4	1.49 37.8	8.99 147	1.77 45.0	13.4 340	0.380 158	887 238	4.50 1.37
26 39	245 102	35.3 578	5.65 144	40.2 659	8.91 3.71	3.55 58.2	1.08 27.4	5.54 90.8	1.30 33.0	13.5 343	0.358 149	405 109	3.95 1.20
22 32.9	199 82.8	29.0 475	5.54 141	33.2 544	7.00 2.91	2.80 45.9	1.04 26.4	4.39 71.9	1.27 32.3	13.4 340	0.208 86.6	314 84.3	3.91 1.19
336 500	4060 1690	483 7910	6.41 163	603 9880	1190 495	177 2900	3.47 88.1	274 4490	4.13 105	13.8 351	243 101000	57000 15300	6.97 2.12
305 454	3550 1480	435 7130	6.29 160	537 8800	1050 437	159 2610	3.42 86.9	244 4000	4.05 103	13.6 345	185 77000	48600 13100	6.85 2.09
279 415	3110 1290	393 6440	6.16 156	481 7880	937 390	143 2340	3.38 85.9	220 3610	4.00 102	13.4 340	143 59500	42000 11300	6.76 2.06
252 375	2720 1130	353 5780	6.06 154	428 7010	828 345	127 2080	3.34 84.8	196 3210	3.93 99.8	13.2 335	108 45000	35800 9610	6.67 2.03
230 342	2420 1010	321 5260	5.97 152	386 6330	742 309	115 1880	3.31 84.1	177 2900	3.87 98.3	13.0 330	83.8 34900	31200 8380	6.60 2.01
210 313	2140 891	292 4790	5.89 150	348 5700	664 276	104 1700	3.28 83.3	159 2610	3.81 96.8	12.8 325	64.7 26900	27200 7300	6.52 1.99
190 283	1890 787	263 4310	5.82 148	311 5100	589 245	93.0 1520	3.25 82.6	143 2340	3.77 95.8	12.7 323	48.8 20300	23600 6340	6.46 1.97
170 253	1650 687	235 3850	5.74 146	275 4510	517 215	82.3 1350	3.22 81.8	126 2060	3.70 94.0	12.4 315	35.6 14800	20100 5400	6.37 1.94
152 226	1430 595	209 3420	5.66 144	243 3980	454 189	72.8 1190	3.19 81.0	111 1820	3.66 93.0	12.3 312	25.8 10700	17200 4620	6.31 1.92
136 202	1240 516	186 3050	5.58 142	214 3510	398 166	64.2 1050	3.16 80.3	98.0 1610	3.61 91.7	12.2 310	18.5 7700	14700 3950	6.24 1.90
120 179	1070 445	163 2670	5.51 140	186 3050	345 144	56.0 918	3.13 79.5	85.4 1400	3.56 90.4	12.0 305	12.9 5370	12400 3330	6.17 1.88
106 158	933 388	145 2380	5.47 139	164 2690	301 125	49.3 808	3.11 79.0	75.1 1230	3.52 89.4	11.9 302	9.13 3800	10700 2870	6.12 1.86
96 143	833 347	131 2150	5.44 138	147 2410	270 112	44.4 728	3.09 78.5	67.5 1110	3.49 88.6	11.8 300	6.85 2850	9410 2530	6.09 1.86
87 129	740 308	118 1930	5.38 137	132 2160	241 100	39.7 651	3.07 78.0	60.4 990	3.46 87.9	11.7 297	5.10 2120	8270 2220	6.03 1.84
79 117	662 276	107 1750	5.34 136	119 1950	216 89.9	35.8 587	3.05 77.5	54.3 890	3.43 87.1	11.7 297	3.84 1600	7330 1970	6.02 1.84
72 107	597 248	97.4 1600	5.31 135	108 1770	195 81.2	32.4 531	3.04 77.2	49.2 806	3.41 86.6	11.6 295	2.93 1220	6540 1760	5.98 1.82
65 97	533 222	87.9 1440	5.28 134	96.8 1590	174 72.4	29.1 477	3.02 76.7	44.1 723	3.38 85.9	11.5 292	2.18 907	5780 1550	5.95 1.81

WIDE FLANGE



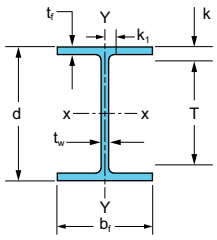
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in^2 mm^2	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W12 **W310**	x 58 x 86	17.0 11000	12.2 310	0.360 9.14	3/16 4.76	10.0 254	0.640 16.3	1.24 31.5	1 1/2 38.1	15/16 23.8	9 1/4 235.0	5 1/2 139.7	7.82 7.82	27.0 27.0
	x 53 x 79	15.6 10100	12.1 307	0.345 8.76	3/16 4.76	10.0 254	0.575 14.6	1.18 30.0	1 3/8 34.9	15/16 23.8	9 1/4 235.0	5 1/2 139.7	8.69 8.69	28.1 28.1
W12 **W310**	x 50 x 74	14.6 9420	12.2 310	0.370 9.40	3/16 4.76	8.08 205	0.640 16.3	1.14 29.0	1 1/2 38.1	15/16 23.8	9 1/4 235.0	5 1/2 139.7	6.31 6.31	26.8 26.8
	x 45 x 67	13.1 8450	12.1 307	0.335 8.51	3/16 4.76	8.05 204	0.575 14.6	1.08 27.4	1 3/8 34.9	15/16 23.8	↓	↓	7.00 7.00	29.6 29.6
	x 40 x 60	11.7 7550	11.9 302	0.295 7.49	3/16 4.76	8.01 203	0.515 13.1	1.02 25.9	1 3/8 34.9	7/8 22.2	↓	↓	7.77 7.77	33.6 33.6
W12 **W310**	x 35 x 52	10.3 6650	12.5 318	0.300 7.62	3/16 4.76	6.56 167	0.520 13.2	0.820 20.8	1 3/16 30.2	3/4 19.1	10 1/8 257.2	3 1/2 88.9	6.31 6.31	36.2 36.2
	x 30 x 44.5	8.79 5670	12.3 312	0.260 6.60	1/8 3.18	6.52 166	0.440 11.2	0.740 18.8	1 1/8 28.6	3/4 19.1	↓	↓	7.41 7.41	41.8 41.8
	x 26 x 38.7	7.65 4940	12.2 310	0.230 5.84	1/8 3.18	6.49 165	0.380 9.65	0.680 17.3	1 1/16 27.0	3/4 19.1	↓	↓	8.54 8.54	47.2 47.2
W12 **W310**	x 22 x 32.7	6.48 4180	12.3 312	0.260 6.60	1/8 3.18	4.03 102	0.425 10.8	0.725 18.4	15/16 23.8	5/8 15.9	10 3/8 263.5	2 1/4 57.2	4.74 4.74	41.8 41.8
	x 19 x 28.3	5.57 3590	12.2 310	0.235 5.97	1/8 3.18	4.01 102	0.350 8.89	0.650 16.5	7/8 22.2	9/16 14.3	↓	↓	5.72 5.72	46.2 46.2
	x 16 x 23.8	4.71 3040	12.0 305	0.220 5.59	1/8 3.18	3.99 101	0.265 6.73	0.565 14.4	13/16 20.6	9/16 14.3	↓	↓	7.53 7.53	49.4 49.4
	x 14 x 21	4.16 2680	11.9 302	0.200 5.08	1/8 3.18	3.97 101	0.225 5.72	0.525 13.3	3/4 19.1	9/16 14.3	↓	↓	8.82 8.82	54.3 54.3
W10 **W250**	x 112 x 167	32.9 21200	11.4 290	0.755 19.2	3/8 9.52	10.4 264	1.25 31.8	1.75 44.5	1 13/16 49.2	1 25.4	7 1/2 190.5	5 1/2 139.7	4.17 4.17	10.4 10.4
	x 100 x 149	29.3 18900	11.1 282	0.680 17.3	3/8 9.52	10.3 262	1.12 28.4	1.62 41.1	1 13/16 46.0	1 25.4	↓	↓	4.62 4.62	11.6 11.6
	x 88 x 131	26.0 16800	10.8 274	0.605 15.4	5/16 7.94	10.3 262	0.990 25.1	1.49 37.8	1 11/16 42.9	15/16 23.8	↓	↓	5.18 5.18	13.0 13.0
	x 77 x 115	22.7 14600	10.6 269	0.530 13.5	1/4 6.35	10.2 259	0.870 22.1	1.37 34.8	1 9/16 39.7	7/8 22.2	↓	↓	5.86 5.86	14.8 14.8
	x 68 x 101	19.9 12800	10.4 264	0.470 11.9	1/4 6.35	10.1 257	0.770 19.6	1.27 32.3	1 7/16 36.5	7/8 22.2	↓	↓	6.58 6.58	16.7 16.7
	x 60 x 89	17.7 11400	10.2 259	0.420 10.7	1/4 6.35	10.1 257	0.680 17.3	1.18 30.0	1 3/8 34.9	13/16 20.6	↓	↓	7.41 7.41	18.7 18.7
	x 54 x 80	15.8 10200	10.1 257	0.370 9.40	3/16 4.76	10.0 254	0.615 15.6	1.12 28.4	1 5/16 33.3	13/16 20.6	↓	↓	8.15 8.15	21.2 21.2
	x 49 x 73	14.4 9290	10.0 254	0.340 8.64	3/16 4.76	10.0 254	0.560 14.2	1.06 26.9	1 1/4 31.8	13/16 20.6	↓	↓	8.93 8.93	23.1 23.1
W10 **W250**	x 45 x 67	13.3 8580	10.1 257	0.350 8.89	3/16 4.76	8.02 204	0.620 15.7	1.12 28.4	1 5/16 33.3	13/16 20.6	7 1/2 190.5	5 1/2 139.7	6.47 6.47	22.5 22.5
	x 39 x 58	11.5 7420	9.92 252	0.315 8.00	3/16 4.76	7.99 203	0.530 13.5	1.03 26.2	1 3/16 30.2	13/16 20.6	↓	↓	7.53 7.53	25.0 25.0
	x 33 x 49.1	9.71 6260	9.73 247	0.290 7.37	3/16 4.76	7.96 202	0.435 11.0	0.935 23.7	1 1/8 28.6	3/4 19.1	↓	↓	9.15 9.15	27.1 27.1
W10 **W250**	x 30 x 44.8	8.84 5700	10.5 267	0.300 7.62	3/16 4.76	5.81 148	0.510 13.0	0.810 20.6	1 1/8 28.6	11/16 17.5	8 1/4 209.6	2 3/4 69.9	5.70 5.70	29.5 29.5
	x 26 x 38.5	7.61 4910	10.3 262	0.260 6.60	1/8 3.18	5.77 147	0.440 11.2	0.740 18.8	1 1/16 27.0	11/16 17.5	↓	↓	6.56 6.56	34.0 34.0
	x 22 x 32.7	6.49 4190	10.2 259	0.240 6.10	1/8 3.18	5.75 146	0.360 9.14	0.660 16.8	15/16 23.8	5/8 15.9	↓	↓	7.99 7.99	36.9 36.9

WIDE FLANGE



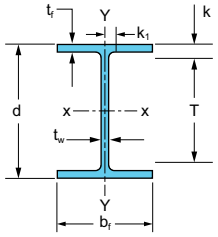
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
58 86	475 198	78.0 1280	5.28 134	86.4 1420	107 44.5	21.4 351	2.51 63.8	32.5 533	2.81 71.4	11.6 295	2.10 874	3570 959	5.31 1.62
53 79	425 177	70.6 1160	5.23 133	77.9 1280	95.8 39.9	19.2 315	2.48 63.0	29.1 477	2.79 70.9	11.5 292	1.58 658	3160 849	5.29 1.61
50 74	391 163	64.2 1050	5.18 132	71.9 1180	56.3 23.4	13.9 228	1.96 49.8	21.3 349	2.25 57.2	11.6 295	1.71 712	1880 505	4.67 1.42
45 67	348 145	57.7 946	5.15 131	64.2 1050	50.0 20.8	12.4 203	1.95 49.5	19.0 311	2.23 56.6	11.5 292	1.26 524	1650 443	4.64 1.42
40 60	307 128	51.5 844	5.13 130	57.0 934	44.1 18.4	11.0 180	1.94 49.3	16.8 275	2.21 56.1	11.4 290	0.906 377	1440 387	4.60 1.40
35 52	285 119	45.6 747	5.25 133	51.2 839	24.5 10.2	7.47 122	1.54 39.1	11.5 188	1.79 45.5	12.0 305	0.741 308	879 236	4.22 1.29
30 44.5	238 99.1	38.6 633	5.21 132	43.1 706	20.3 8.45	6.24 102	1.52 38.6	9.56 157	1.77 45.0	11.9 302	0.457 190	720 193	4.18 1.27
26 38.7	204 84.9	33.4 547	5.17 131	37.2 610	17.3 7.20	5.34 87.5	1.51 38.4	8.17 134	1.75 44.4	11.8 300	0.300 125	607 163	4.16 1.27
22 32.7	156 64.9	25.4 416	4.91 125	29.3 480	4.66 1.94	2.31 37.9	0.848 21.5	3.66 60.0	1.04 26.4	11.9 302	0.293 122	164 44.0	3.35 1.02
19 28.3	130 54.1	21.3 349	4.82 122	24.7 405	3.76 1.57	1.88 30.8	0.822 20.9	2.98 48.8	1.02 25.9	11.9 302	0.180 74.9	131 35.2	3.33 1.02
16 23.8	103 42.9	17.1 280	4.67 119	20.1 329	2.82 1.17	1.41 23.1	0.773 19.6	2.26 37.0	0.983 25.0	11.7 297	0.103 42.9	96.9 26.0	3.29 1.00
14 21	88.6 36.9	14.9 244	4.62 117	17.4 285	2.36 0.982	1.19 19.5	0.753 19.1	1.90 31.1	0.961 24.4	11.7 297	0.070 29.3	80.4 21.6	3.27 1.00
112 167	716 298	126 2060	4.66 118	147 2410	236 98.2	45.3 742	2.68 68.1	69.2 1130	3.08 78.2	10.2 259	15.1 6290	6020 1620	5.24 1.60
100 149	623 259	112 1840	4.60 117	130 2130	207 86.2	40.0 655	2.65 67.3	61.0 1000	3.04 77.2	10.0 254	10.9 4540	5150 1380	5.17 1.58
88 131	534 222	98.5 1610	4.54 115	113 1850	179 74.5	34.8 570	2.63 66.8	53.1 870	2.99 75.9	9.81 249	7.53 3130	4330 1160	5.13 1.56
77 115	455 189	85.9 1410	4.49 114	97.6 1600	154 64.1	30.1 493	2.60 66.0	45.9 752	2.95 74.9	9.73 247	5.11 2130	3630 975	5.08 1.55
68 101	394 164	75.7 1240	4.44 113	85.3 1400	134 55.8	26.4 433	2.59 65.8	40.1 657	2.92 74.2	9.63 245	3.56 1480	3100 832	5.02 1.53
60 89	341 142	66.7 1090	4.39 112	74.6 1220	116 48.3	23.0 377	2.57 65.3	35.0 574	2.88 73.2	9.52 242	2.48 1030	2640 709	5.00 1.52
54 80	303 126	60.0 983	4.37 111	66.6 1090	103 42.9	20.6 338	2.56 65.0	31.3 513	2.85 72.4	9.49 241	1.82 758	2320 623	4.96 1.51
49 73	272 113	54.6 895	4.35 110	60.4 990	93.4 38.9	18.7 306	2.54 64.5	28.3 464	2.84 72.1	9.44 240	1.39 579	2070 556	4.94 1.51
45 67	248 103	49.1 805	4.32 110	54.9 900	53.4 22.2	13.3 218	2.01 51.1	20.3 333	2.27 57.7	9.48 241	1.51 629	1200 322	4.30 1.31
39 58	209 87.0	42.1 690	4.27 108	46.8 767	45.0 18.7	11.3 185	1.98 50.3	17.2 282	2.24 56.9	9.39 239	0.976 406	992 266	4.26 1.30
33 49.1	171 71.2	35.0 574	4.19 106	38.8 636	36.6 15.2	9.20 151	1.94 49.3	14.0 229	2.20 55.9	9.30 236	0.583 243	791 212	4.23 1.29
30 44.8	170 70.8	32.4 531	4.38 111	36.6 600	16.7 6.95	5.75 94.2	1.37 34.8	8.84 145	1.60 40.6	9.99 254	0.622 259	414 111	3.64 1.11
26 38.5	144 59.9	27.9 457	4.35 110	31.3 513	14.1 5.87	4.89 80.1	1.36 34.5	7.50 123	1.58 40.1	9.86 250	0.402 167	345 92.6	3.60 1.10
22 32.7	118 49.1	23.2 380	4.27 108	26.0 426	11.4 4.75	3.97 65.1	1.33 33.8	6.10 100	1.55 39.4	9.84 250	0.239 99.5	275 73.8	3.58 1.09

WIDE FLANGE



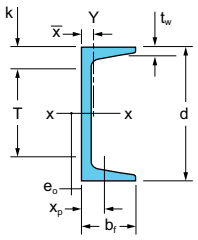
Beam Size		Area A	Depth d	Web		Flange		Distance					Compact Section Criteria	
				Thickness t_w	$t_w/2$	b_f	t_f	k		k_1	T	Workable Gage		
								k_{des}	k_{det}					
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	$b_f/2_{tf}$	h/t_w
W10 **W250**	x 19 x 28.4	5.62 3630	10.2 259	0.250 6.35	⅛ 3.18	4.02 102	0.395 10.0	0.695 17.7	15/16 23.8	⅝ 15.9	8 ⅜ 212.7	2 ¼ 57.2	5.09 5.09	35.4 35.4
	x 17 x 25.3	4.99 3220	10.1 257	0.240 6.10	⅛ 3.18	4.01 102	0.330 8.38	0.630 16.0	⅞ 22.2	9/16 14.3			6.08 6.08	36.9 36.9
	x 15 x 22.3	4.41 2850	9.99 254	0.230 5.84	⅛ 3.18	4.00 102	0.270 6.86	0.570 14.5	13/16 20.6	9/16 14.3			7.41 7.41	38.5 38.5
	x 12 x 17.9	3.54 2280	9.87 251	0.190 4.83	⅛ 3.18	3.96 101	0.210 5.33	0.510 13.0	¾ 19.1	9/16 14.3			9.43 9.43	46.6 46.6
W8 **W200**	x 67 x 100	19.7 12700	9.00 229	0.570 14.5	5/16 7.94	8.28 210	0.935 23.7	1.33 33.8	1 ⅜ 41.3	15/16 23.8	5 ¾ 146.1	5 ½ 139.7	4.43 4.43	11.1 11.1
	x 58 x 86	17.1 11000	8.75 222	0.510 13.0	¼ 6.35	8.22 209	0.810 20.6	1.20 30.5	1 ½ 38.1	⅞ 22.2			5.07 5.07	12.4 12.4
	x 48 x 71	14.1 9100	8.50 216	0.400 10.2	3/16 4.76	8.11 206	0.685 17.4	1.08 27.4	1 ⅜ 34.9	13/16 20.6			5.92 5.92	15.9 15.9
	x 40 x 59	11.7 7550	8.25 210	0.360 9.14	3/16 4.76	8.07 205	0.560 14.2	0.954 24.2	1 ¼ 31.8	13/16 20.6			7.21 7.21	17.6 17.6
	x 35 x 52	10.3 6650	8.12 206	0.310 7.87	3/16 4.76	8.02 204	0.495 12.6	0.889 22.6	1 3/16 30.2	13/16 20.6			8.10 8.10	20.5 20.5
	x 31 x 46.1	9.13 5890	8.00 203	0.285 7.24	3/16 4.76	8.00 203	0.435 11.0	0.829 21.1	1 ⅛ 28.6	¾ 19.1			9.19 9.19	22.3 22.3
W8 **W200**	x 28 x 41.7	8.25 5320	8.06 205	0.285 7.24	3/16 4.76	6.54 166	0.465 11.8	0.859 21.8	15/16 23.8	⅝ 15.9	6 ⅛ 155.6	4 101.6	7.03 7.03	22.3 22.3
	x 24 x 35.9	7.08 4570	7.93 201	0.245 6.22	⅛ 3.18	6.50 165	0.400 10.2	0.794 20.2	⅞ 22.2	9/16 14.3	6 ⅛ 155.6	4 101.6	8.12 8.12	25.9 25.9
W8 **W200**	x 21 x 31.3	6.16 3970	8.28 210	0.250 6.35	⅛ 3.18	5.27 134	0.400 10.2	0.700 17.8	⅞ 22.2	9/16 14.3	6 ½ 165.1	2 ¾ 69.9	6.59 6.59	27.5 27.5
	x 18 x 26.6	5.26 3390	8.14 207	0.230 5.84	⅛ 3.18	5.25 133	0.330 8.38	0.630 16.0	13/16 20.6	9/16 14.3	6 ½ 165.1	2 ¾ 69.9	7.95 7.95	29.9 29.9
W8 **W200**	x 15 x 22.5	4.44 2860	8.11 206	0.245 6.22	⅛ 3.18	4.02 102	0.315 8.00	0.615 15.6	13/16 20.6	9/16 14.3	6 ½ 165.1	2 ¼ 57.2	6.37 6.37	28.1 28.1
	x 13 x 19.3	3.84 2480	7.99 203	0.230 5.84	⅛ 3.18	4.00 102	0.255 6.48	0.555 14.1	¾ 19.1	9/16 14.3			7.84 7.84	29.9 29.9
	x 10 x 15	2.96 1910	7.89 200	0.170 4.32	⅛ 3.18	3.94 100	0.205 5.21	0.505 12.8	11/16 17.5	½ 12.7			9.61 9.61	40.5 40.5
W6 **W150**	x 25 x 37.1	7.34 4740	6.38 162	0.320 8.13	5/16 4.76	6.08 154	0.455 11.6	0.705 17.9	15/16 23.8	9/16 14.3	4 ½ 114.3	3 ½ 88.9	6.68 6.68	15.5 15.5
	x 20 x 29.8	5.87 3790	6.20 157	0.260 6.60	⅛ 3.18	6.02 153	0.365 9.27	0.615 15.6	⅞ 22.2	9/16 14.3			8.25 8.25	19.1 19.1
	x 15 x 22.5	4.43 2860	5.99 152	0.230 5.84	⅛ 3.18	5.99 152	0.260 6.60	0.510 13.0	¾ 19.1	9/16 14.3			11.5 11.5	21.6 21.6
W6 **W150**	x 16 x 24	4.74 3060	6.28 160	0.260 6.60	⅛ 3.18	4.03 102	0.405 10.3	0.655 16.6	⅞ 22.2	9/16 14.3	4 ½ 114.3	2 ¼ 57.2	4.98 4.98	19.1 19.1
	x 12 x 18	3.55 2290	6.03 153	0.230 5.84	⅛ 3.18	4.00 102	0.280 7.11	0.530 13.5	¾ 19.1	9/16 14.3			7.14 7.14	21.6 21.6
	x 9 13.5	2.68 1730	5.90 150	0.170 4.32	⅛ 3.18	3.94 100	0.215 5.46	0.465 11.8	11/16 17.5	½ 12.7			9.16 9.16	29.2 29.2
	x 8.5 x 13	2.52 1630	5.83 148	0.170 4.32	⅛ 3.18	3.94 100	0.195 4.95	0.445 11.3	11/16 17.5	½ 12.7			10.1 10.1	29.1 29.1
W5 **W130**	x 19 x 28.1	5.56 3590	5.15 131	0.270 6.86	⅛ 3.18	5.03 128	0.430 10.9	0.730 18.5	13/16 20.6	7/16 11.1	3 ½ 88.9	2 ¾ 69.9	5.85 5.85	13.7 13.7
	x 16 x 23.8	4.71 3040	5.01 127	0.240 6.10	⅛ 3.18	5.00 127	0.360 9.14	0.660 16.8	¾ 19.1	7/16 11.1	3 ½ 88.9	2 ¾ 69.9	6.94 6.94	15.4 15.4
W4 **W100**	x 13 x 19.3	3.83 2470	4.16 106	0.280 7.11	⅛ 3.18	4.06 103	0.345 8.76	0.595 15.1	¾ 19.1	½ 12.7	2 ⅝ 66.7	2 ¼ 57.2	5.88 5.88	10.6 10.6

WIDE FLANGE



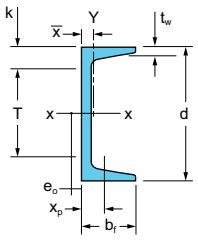
Nominal Weight	Axis X-X				Axis Y-Y				r_{ts}	h_o	Torsional Properties		Coating Area
	I	S	r	Z	I	S	r	Z			J	C_w	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in mm	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	ft^2/ft m^2/m
19 28.4	96.3 40.1	18.8 308	4.14 105	21.6 354	4.29 1.79	2.14 35.1	0.874 22.2	3.35 54.9	1.06 26.9	9.81 249	0.233 97.0	104 27.9	3.00 0.91
17 25.3	81.9 34.1	16.2 265	4.05 103	18.7 306	3.56 1.48	1.78 29.2	0.845 21.5	2.80 45.9	1.04 26.4	9.77 248	0.156 64.9	85.1 22.9	2.98 0.91
15 22.3	68.9 28.7	13.8 226	3.95 100	16.0 262	2.89 1.20	1.45 23.8	0.810 20.6	2.30 37.7	1.01 25.7	9.72 247	0.104 43.3	68.3 18.3	2.96 0.90
12 17.9	53.8 22.4	10.9 179	3.90 99.1	12.6 206	2.18 0.907	1.10 18.0	0.785 19.9	1.74 28.5	0.983 25.0	9.66 245	0.055 22.8	50.9 13.7	2.93 0.89
67 100	272 113	60.4 990	3.72 94.5	70.1 1150	88.6 36.9	21.4 351	2.12 53.8	32.7 536	2.43 61.7	8.07 205	5.05 2100	1440 387	4.17 1.27
58 86	228 94.9	52.0 852	3.65 92.7	59.8 980	75.1 31.3	18.3 300	2.10 53.3	27.9 457	2.39 60.7	7.94 202	3.33 1390	1180 317	4.11 1.25
48 71	184 76.6	43.2 708	3.61 91.7	49.0 803	60.9 25.3	15.0 246	2.08 52.8	22.9 375	2.35 59.7	7.82 199	1.96 816	931 250	4.05 1.24
40 59	146 60.8	35.5 582	3.53 89.7	39.8 652	49.1 20.4	12.2 200	2.04 51.8	18.5 303	2.31 58.7	7.69 195	1.12 466	726 195	4.01 1.22
35 52	127 52.9	31.2 511	3.51 89.2	34.7 569	42.6 17.7	10.6 174	2.03 51.6	16.1 264	2.28 57.9	7.63 194	0.769 320	619 166	3.98 1.21
31 46.1	110 45.8	27.5 451	3.47 88.1	30.4 498	37.1 15.4	9.27 152	2.02 51.3	14.1 231	2.26 57.4	7.57 192	0.536 223	530 142	3.95 1.20
28 41.7	98.0 40.8	24.3 398	3.45 87.6	27.2 446	21.7 9.03	6.63 109	1.62 41.1	10.1 166	1.84 46.7	7.60 193	0.537 224	312 83.8	3.48 1.06
24 35.9	82.7 34.4	20.9 342	3.42 86.9	23.1 379	18.3 7.62	5.63 92.3	1.61 40.9	8.57 140	1.81 46.0	7.53 191	0.346 144	259 69.6	3.45 1.05
21 31.3	75.3 31.3	18.2 298	3.49 88.6	20.4 334	9.77 4.07	3.71 60.8	1.26 32.0	5.69 93.2	1.46 37.1	7.88 200	0.282 117	152 40.8	3.10 0.94
18 26.6	61.9 25.8	15.2 249	3.43 87.1	17.0 279	7.97 3.32	3.04 49.8	1.23 31.2	4.66 76.4	1.43 36.3	7.81 198	0.172 71.6	122 32.8	3.07 0.94
15 22.5	48.0 20.0	11.8 193	3.29 83.6	13.6 223	3.41 1.42	1.70 27.9	0.876 22.3	2.67 43.8	1.06 26.9	7.80 198	0.137 57.0	51.8 13.9	2.65 0.81
13 19.3	39.6 16.5	9.91 162	3.21 81.5	11.4 187	2.73 1.14	1.37 22.5	0.843 21.4	2.15 35.2	1.03 26.2	7.74 197	0.087 36.3	40.8 11.0	2.63 0.80
10 15	30.8 12.8	7.81 128	3.22 81.8	8.87 145	2.09 0.870	1.06 17.4	0.841 21.4	1.66 27.2	1.01 25.7	7.69 195	0.043 17.7	30.9 8.30	2.60 0.79
25 37.1	53.4 22.2	16.7 274	2.70 68.6	18.9 310	17.1 7.12	5.61 91.9	1.52 38.6	8.56 140	1.74 44.2	5.93 151	0.461 192	150 40.3	3.04 0.93
20 29.8	41.4 17.2	13.4 220	2.66 67.6	15.0 246	13.3 5.54	4.41 72.3	1.50 38.1	6.72 110	1.70 43.2	5.84 148	0.240 99.9	113 30.3	3.00 0.91
15 22.5	29.1 12.1	9.72 159	2.56 65.0	10.8 177	9.32 3.88	3.11 51.0	1.45 36.8	4.75 77.8	1.66 42.2	5.73 146	0.101 42.0	76.5 20.5	2.96 0.90
16 24	32.1 13.4	10.2 167	2.60 66.0	11.7 192	4.43 1.84	2.20 36.1	0.967 24.6	3.39 55.6	1.13 28.7	5.88 149	0.223 92.8	38.2 10.3	2.35 0.72
12 18	22.1 9.20	7.31 120	2.49 63.2	8.30 136	2.99 1.24	1.50 24.6	0.918 23.3	2.32 38.0	1.08 27.4	5.75 146	0.090 37.6	24.7 6.63	2.30 0.70
9 13.5	16.4 6.83	5.56 91.1	2.47 62.7	6.23 102	2.20 0.916	1.11 18.2	0.905 23.0	1.72 28.2	1.06 26.9	5.69 145	0.041 16.9	17.7 4.75	2.27 0.69
8.5 13	14.9 6.20	5.10 83.6	2.43 61.7	5.73 93.9	1.99 0.828	1.01 16.6	0.890 22.6	1.56 25.6	1.05 26.7	5.64 143	0.033 13.9	15.8 4.24	2.26 0.69
19 28.1	26.3 10.9	10.2 167	2.17 55.1	11.6 190	9.13 3.80	3.63 59.5	1.28 32.5	5.53 90.6	1.45 36.8	4.72 120	0.316 132	50.9 13.7	2.49 0.76
16 23.8	21.4 8.91	8.55 140	2.13 54.1	9.63 158	7.51 3.13	3.00 49.2	1.26 32.0	4.58 75.1	1.43 36.3	4.65 118	0.192 79.9	40.6 10.9	2.46 0.75
13 19.3	11.3 4.70	5.46 89.5	1.72 43.7	6.28 103	3.86 1.61	1.90 31.1	1.00 25.4	2.92 47.9	1.16 29.5	3.82 97	0.151 62.9	14.0 3.76	2.00 0.61

CHANNELS



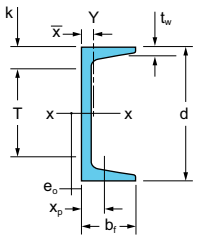
Beam Size		Area A	Depth d	Web		Flange		Distance			r_{ts}	h_o	Shear Center e_o
				Thickness t_w	$t_w/2$	b_f	t_f	k	T	Workable Gage			
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in² mm²
C15 C380	x 50 x 74	14.7 9480	15.0 381	0.716 18.2	⅜ 17.5	3.72 94.5	0.650 15.9	1 7⁄16 36.5	12 ⅛ 308	2 ¼ 57.2	1.17 29.7	14.4 366	0.583 14.8
	x 40 x 60	11.8 7610	15.0 381	0.520 13.2	¼ 12.7	3.52 89.4	0.650 15.9	1 7⁄16 36.5	12 ⅛ 308	2 50.8	1.15 29.2	14.4 366	0.767 19.5
	x 33.9 x 50.4	10.0 6450	15.0 381	0.400 10.2	3⁄16 9.52	3.40 86.4	0.650 15.9	1 7⁄16 36.5	12 ⅛ 308	2 50.8	1.13 28.7	14.4 366	0.896 22.8
C12 C310	x 30 x 45	8.81 5680	12.0 305	0.510 13.0	¼ 12.7	3.17 80.5	0.501 12.7	1 ⅛ 28.6	9 ¾ 248	1 ¾ 44.5	1.01 25.7	11.5 292	0.618 15.7
	x 25 x 37	7.34 4740	12.0 305	0.387 9.83	3⁄16 9.52	3.05 77.5	0.501 12.7	1 ⅛ 28.6	9 ¾ 248	1 ¾ 44.5	1.00 25.4	11.5 292	0.746 18.9
	x 20.7 x 30.8	6.08 3920	12.0 305	0.282 7.16	3⁄16 7.94	2.94 74.7	0.501 12.7	1 ⅛ 28.6	9 ¾ 248	1 ¾ 44.5	0.983 25.0	11.5 292	0.870 22.1
C10 C250	x 30 x 45	8.81 5680	10.0 254	0.673 17.1	⅜ 17.5	3.03 77.0	0.436 11.1	1 1⁄16 27.0	8 203	1 ¾ 44.5	0.924 23.5	9.56 243	0.368 9.35
	x 25 x 37	7.35 4740	10.0 254	0.526 13.4	¼ 12.7	2.89 73.4	0.436 11.1	1 1⁄16 27.0	8 203	1 ¾ 44.5	0.911 23.1	9.56 243	0.494 12.5
	x 20 x 30	5.87 3790	10.0 254	0.379 9.63	3⁄16 9.52	2.74 69.6	0.436 11.1	1 1⁄16 27.0	8 203	1 ½ 38.1	0.894 22.7	9.56 243	0.636 16.2
	x 15.3 x 22.8	4.48 2890	10.0 254	0.240 6.10	⅛ 6.35	2.60 66.0	0.436 11.1	1 1⁄16 27.0	8 203	1 ½ 38.1	0.868 22.0	9.56 243	0.796 20.2
C9 C230	x 20 x 30	5.87 3790	9.00 229	0.448 11.4	¼ 11.1	2.65 67.3	0.413 11.1	1 25.4	7 178	1 ½ 38.1	0.850 21.6	8.59 218	0.515 13.1
	x 15 x 22	4.40 2840	9.00 229	0.285 7.24	3⁄16 7.94	2.49 63.2	0.413 11.1	1 25.4	7 178	1 ⅜ 34.9	0.825 21.0	8.59 218	0.681 17.3
	x 13.4 x 19.9	3.94 2540	9.00 229	0.233 5.92	⅛ 6.35	2.43 61.7	0.413 11.1	1 25.4	7 178	1 ⅜ 34.9	0.814 20.7	8.59 218	0.742 18.8
C8 C200	x 18.75 x 27.9	5.51 3550	8.00 203	0.487 12.4	¼ 12.7	2.53 64.3	0.390 9.52	15⁄16 23.8	6 ⅛ 156	1 ½ 38.1	0.800 20.3	7.61 193	0.431 10.9
	x 13.75 x 20.5	4.03 2600	8.00 203	0.303 7.70	3⁄16 7.94	2.34 59.4	0.390 9.52	15⁄16 23.8	6 ⅛ 156	1 ⅜ 34.9	0.774 19.7	7.61 193	0.604 15.3
	x 11.5 x 17.1	3.37 2170	8.00 203	0.220 5.59	⅛ 6.35	2.26 57.4	0.390 9.52	15⁄16 23.8	6 ⅛ 156	1 ⅜ 34.9	0.756 19.2	7.61 193	0.697 17.7
C7 C180	x 14.75 x 22	4.33 2790	7.00 178	0.419 10.6	¼ 11.1	2.30 58.4	0.366 9.52	⅞ 22.2	5 ¼ 133	1 ¼ 31.8	0.738 18.7	6.63 168	0.441 11.2
	x 12.25 x 18.2	3.59 2320	7.00 178	0.314 7.98	5⁄16 7.94	2.19 55.6	0.366 9.52	⅞ 22.2	5 ¼ 133	1 ¼ 31.8	0.722 18.3	6.63 168	0.538 13.7
	x 9.8 x 14.6	2.87 1850	7.00 178	0.210 5.33	⅛ 4.76	2.09 53.1	0.366 9.52	⅞ 22.2	5 ¼ 133	1 ¼ 31.8	0.698 17.7	6.63 168	0.647 16.4
C6 C150	x 13 x 19.3	3.82 2460	6.00 152	0.437 11.1	¼ 11.1	2.16 54.9	0.343 7.94	13⁄16 20.6	4 ⅜ 111	1 ⅜ 34.9	0.689 17.5	5.66 144	0.380 9.65
	x 10.5 x 15.6	3.07 1980	6.00 152	0.314 7.98	5⁄16 7.94	2.03 51.6	0.343 7.94	13⁄16 20.6	4 ⅜ 111	1 ⅛ 28.6	0.669 17.0	5.66 144	0.486 12.3
	x 8.2 x 12.2	2.39 1540	6.00 152	0.200 5.08	⅛ 4.76	1.92 48.8	0.343 7.94	3⁄16 20.6	4 ⅜ 111	1 ⅛ 28.6	0.643 16.3	5.66 144	0.599 15.2
C5 C130	x 9 x 13	2.64 1700	5.00 127	0.325 8.26	5⁄16 7.94	1.89 48.0	0.320 7.94	¾ 19.1	3 ½ 88.9	1 ⅛ 28.6	0.616 15.6	4.68 119	0.427 10.8
	x 6.7 x 10.4	1.97 1270	5.00 127	0.190 4.83	⅛ 4.76	1.75 44.5	0.320 7.94	¾ 19.1	3 ½ 88.9	– –	0.584 14.8	4.68 119	0.552 14.0

CHANNELS



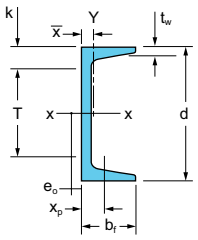
Nominal Weight	Axis X-X				Axis Y-Y						Torsional Properties				Coating Area
	I	S	r	Z	I	S	r	x	Z	xp	J	C_w	r_o	H	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in mm	in^3 $mm^3/10^3$	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	in mm		ft^2/ft m^2/m
50.0 74	404 168	53.8 882	5.24 133	68.5 1120	11.0 4.58	3.77 61.8	0.865 22.0	0.799 20.3	8.14 133	0.490 12.4	2.65 1100	492 132	5.49 139	0.937 0.937	3.62 1.10
40.0 60	348 145	46.5 762	5.43 138	57.5 942	9.17 3.82	3.34 54.7	0.883 22.4	0.778 19.8	6.84 112	0.392 9.96	1.45 604	410 110	5.71 145	0.927 0.927	3.59 1.09
33.9 50.4	315 131	42.0 688	5.61 142	50.8 832	8.07 3.36	3.09 50.6	0.901 22.9	0.788 20.0	6.19 101	0.332 8.43	1.01 420	358 96.1	5.94 151	0.920 0.920	3.57 1.09
30.0 45	162 67.4	27.0 442	4.29 109	33.8 554	5.12 2.13	2.05 33.6	0.762 19.4	0.674 17.1	4.32 70.8	0.367 9.32	0.861 358	151 40.5	4.54 115	0.919 0.919	2.97 0.91
25.0 37	144 59.9	24.0 393	4.43 113	29.4 482	4.45 1.85	1.87 30.6	0.779 19.8	0.674 17.1	3.82 62.6	0.306 7.77	0.538 224	130 34.9	4.72 120	0.909 0.909	2.95 0.90
20.7 30.8	129 53.7	21.5 352	4.61 117	25.6 420	3.86 1.61	1.72 28.2	0.797 20.2	0.698 17.7	3.47 56.9	0.253 6.43	0.369 154	112 30.1	4.93 125	0.899 0.899	2.93 0.89
30.0 45	103 42.9	20.7 339	3.43 87.1	26.7 438	3.93 1.64	1.65 27.0	0.668 17.0	0.649 16.5	3.78 61.9	0.441 11.2	1.22 508	79.5 21.3	3.63 92.2	0.921 0.921	2.56 0.78
25.0 37	91.1 37.9	18.2 298	3.52 89.4	23.1 379	3.34 1.39	1.47 24.1	0.675 17.1	0.617 15.7	3.18 52.1	0.367 9.32	0.687 286	68.3 18.3	3.76 95.5	0.912 0.912	2.54 0.77
20.0 30	78.9 32.8	15.8 259	3.67 93.2	19.4 318	2.80 1.17	1.31 21.5	0.690 17.5	0.606 15.4	2.70 44.2	0.294 7.47	0.368 153	56.9 15.3	3.93 99.8	0.900 0.900	2.52 0.77
15.3 22.8	67.3 28.0	13.5 221	3.88 98.6	15.9 261	2.27 0.945	1.15 18.8	0.711 18.1	0.634 16.1	2.34 38.3	0.224 5.69	0.209 87.0	45.5 12.2	4.19 106	0.884 0.884	2.49 0.76
20.0 30	60.9 25.3	13.5 221	3.22 81.8	16.9 277	2.41 1.00	1.17 19.2	0.640 16.3	0.583 14.8	2.46 40.3	0.326 8.28	0.427 178	39.4 10.6	3.46 87.9	0.899 0.899	2.31 0.70
15.0 22	51.0 21.2	11.3 185	3.40 86.4	13.6 223	1.91 0.795	1.01 16.6	0.659 16.7	0.586 14.9	2.04 33.4	0.245 6.22	0.208 86.6	31.0 8.32	3.69 93.7	0.882 0.882	2.28 0.70
13.4 19.9	47.8 19.9	10.6 174	3.48 88.4	12.6 206	1.75 0.728	0.954 15.6	0.666 16.9	0.601 15.3	1.94 31.8	0.219 5.56	0.168 69.9	28.2 7.57	3.79 96.3	0.875 0.875	2.27 0.69
18.75 27.9	43.9 18.3	11.0 180	2.82 71.6	13.9 228	1.97 0.820	1.01 16.6	0.598 15.2	0.565 14.4	2.17 35.6	0.344 8.74	0.434 181	25.1 6.74	3.05 77.5	0.894 0.894	2.10 0.64
13.75 20.5	36.1 15.0	9.02 148	2.99 75.9	11.0 180	1.52 0.633	0.848 13.9	0.613 15.6	0.554 14.1	1.73 28.3	0.252 6.40	0.186 77.4	19.2 5.16	3.26 82.8	0.874 0.874	2.06 0.63
11.5 17.1	32.5 13.5	8.14 133	3.11 79.0	9.63 158	1.31 0.545	0.775 12.7	0.623 15.8	0.572 14.5	1.57 25.7	0.211 5.36	0.130 54.1	16.5 4.43	3.41 86.6	0.862 0.862	2.05 0.62
14.75 22	27.2 11.3	7.78 127	2.51 63.8	9.75 160	1.37 0.570	0.772 12.7	0.561 14.2	0.532 13.5	1.63 26.7	0.309 7.85	0.267 111	13.1 3.52	2.75 69.9	0.875 0.875	1.86 0.57
12.25 1802	24.2 10.1	6.92 113	2.59 65.8	8.46 139	1.16 0.483	0.696 11.4	0.568 14.4	0.525 13.3	1.42 23.3	0.257 6.53	0.161 67.0	11.2 3.01	2.86 72.6	0.862 0.862	1.84 0.56
9.80 14.6	21.2 8.82	6.07 99.5	2.72 69.1	7.19 118	0.957 0.398	0.617 10.1	0.578 14.7	0.541 13.7	1.26 20.6	0.205 5.21	0.100 41.5	9.15 2.46	3.02 76.7	0.845 0.845	1.83 0.56
13.0 19.3	17.3 7.20	5.78 94.7	2.13 54.1	7.29 119	1.05 0.437	0.638 10.5	0.524 13.3	0.514 13.1	1.35 22.1	0.318 8.08	0.237 98.6	7.19 1.93	2.37 60.2	0.858 0.858	1.65 0.50
10.5 15.6	15.1 6.29	5.04 82.6	2.22 56.4	6.18 101	0.860 0.358	0.561 9.19	0.529 13.4	0.500 12.7	1.14 18.7	0.256 6.50	0.128 53.3	5.91 1.59	2.48 63.0	0.842 0.842	1.62 0.49
8.20 12.2	13.1 5.45	4.35 71.3	2.34 59.4	5.16 84.6	0.687 0.286	0.488 8.00	0.536 13.6	0.512 13.0	0.987 16.2	0.199 5.05	0.074 30.6	4.70 1.26	2.65 67.3	0.824 0.824	1.61 0.49
9.00 13	8.89 3.70	3.56 58.3	1.84 46.7	4.39 71.9	0.624 0.260	0.444 7.28	0.486 12.3	0.478 12.1	0.913 15.0	0.264 6.71	0.109 45.4	2.93 0.787	2.10 53.3	0.815 0.815	1.41 0.43
6.70 10.4	7.48 3.11	2.99 49.0	1.95 49.5	3.55 58.2	0.470 0.196	0.372 6.10	0.489 12.4	0.484 12.3	0.757 12.4	0.215 5.46	0.055 22.9	2.22 0.596	2.26 57.4	0.790 0.790	1.39 0.42

CHANNELS



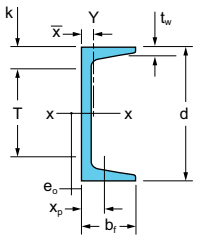
Beam Size		Area A	Depth d	Web		Flange		Distance			r_{ts}	h_o	Shear Center e_o
				Thickness t_w	$t_w/2$	b_f	t_f	k	T	Workable Gage			
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in² mm²
C4 C100	x 7.25 x 10.8	2.13 1370	4.00 102	0.321 8.15	5/16 7.94	1.72 43.7	0.296 7.94	3/4 19.1	2 1/2 63.5	1 25.4	0.563 14.3	3.70 94.0	0.386 9.80
	x 6.25 x 9.3	1.84 1190	4.00 102	0.247 6.27	1/8 6.35	1.65 41.9	0.296 7.94	3/4 19.1	2 1/2 63.5	– –	0.549 13.9	3.70 94.0	0.447 11.4
	x 5.4 x 8	1.58 1020	4.00 102	0.184 4.67	1/8 4.76	1.58 40.1	0.296 7.94	3/4 19.1	2 1/2 63.5	– –	0.528 13.4	3.70 94.0	0.501 12.7
	x 4.5 x 6.7	1.34 865	4.00 102	0.125 3.18	1/16 3.18	1.52 38.6	0.296 7.94	3/4 19.1	2 1/2 63.5	– –	0.506 12.9	3.70 94.0	0.556 14.1
C3 C75	x 6 x 8.9	1.76 1140	3.00 76.2	0.356 9.04	3/16 9.52	1.60 40.6	0.273 6.35	11/16 17.5	1 5/8 41.3	– –	0.519 13.2	2.73 69.3	0.322 8.18
	x 5 x 7.4	1.47 948	3.00 76.2	0.258 6.55	1/8 6.35	1.50 38.1	0.273 6.35	11/16 17.5	1 5/8 41.3	– –	0.496 12.6	2.73 69.3	0.392 9.96
	x 4.1 x 6.1	1.20 774	3.00 76.2	0.170 4.32	1/8 4.76	1.41 35.8	0.273 6.35	11/16 17.5	1 5/8 41.3	– –	0.469 11.9	2.73 69.3	0.461 11.7
	x 3.5 x 5.2	1.09 703	3.00 76.2	0.132 3.35	1/16 3.18	1.37 34.8	0.273 6.35	11/16 17.5	1 5/8 41.3	– –	0.456 11.6	2.73 69.3	0.493 12.5
MC18 MC460	x 58 x 86	17.1 11000	18.0 457	0.700 17.8	3/8 17.5	4.20 107	0.625 15.9	1 7/16 36.5	15 1/8 384	2 1/2 63.5	1.35 34.3	17.4 442	0.695 17.7
	x 51.9 x 77.2	15.3 9870	18.0 457	0.600 15.2	5/16 15.9	4.10 104	0.625 15.9	1 7/16 36.5	15 1/8 384	2 1/2 63.5	1.35 34.3	17.4 442	0.797 20.2
	x 45.8 x 68.2	13.5 8710	18.0 457	0.500 12.7	1/4 12.7	4.00 102	0.625 15.9	1 7/16 36.5	15 1/8 384	2 1/2 63.5	1.34 34.0	17.4 442	0.909 23.1
	x 42.7 x 63.5	12.6 8130	18.0 457	0.450 11.4	1/4 11.1	3.95 100	0.625 15.9	1 7/16 36.5	15 1/8 384	2 1/2 63.5	1.34 34.0	17.4 442	0.969 24.6
MC13 MC330	x 50 x 74	14.7 9480	13.0 330	0.787 20.0	7/16 20.6	4.41 112	0.610 15.9	1 7/16 36.5	10 1/8 257	2 1/2 63.5	1.41 35.8	12.4 315	0.815 20.7
	x 40 x 60	11.7 7550	13.0 330	0.560 14.2	5/16 14.3	4.19 106	0.610 15.9	1 7/16 36.5	10 1/8 257	2 1/2 63.5	1.38 35.1	12.4 315	1.03 26.2
	x 35 x 52	10.3 6650	13.0 330	0.447 11.4	1/4 11.1	4.07 103	0.610 15.9	1 7/16 36.5	10 1/8 257	2 1/2 63.5	1.35 34.3	12.4 315	1.16 29.5
	x 31.8 x 47.3	9.35 6030	13.0 330	0.375 9.53	3/16 9.52	4.00 102	0.610 15.9	1 7/16 36.5	10 1/8 257	2 1/2 63.5	1.34 34.0	12.4 315	1.24 31.5
MC12 MC310	x 50 x 74	14.7 9480	12.0 305	0.835 21.2	7/16 20.6	4.14 105	0.700 17.5	1 5/16 33.3	9 3/8 238	2 1/2 63.5	1.37 34.8	11.3 287	0.741 18.8
	x 45 x 67	13.2 8520	12.0 305	0.710 18.0	3/8 17.5	4.01 102	0.700 17.5	1 5/16 33.3	9 3/8 238	2 1/2 63.5	1.35 34.3	11.3 287	0.844 21.4
	x 40 x 60	11.8 7610	12.0 305	0.590 15.0	5/16 14.3	3.89 98.8	0.700 17.5	1 5/16 33.3	9 3/8 238	2 1/2 63.5	1.33 33.8	11.3 287	0.952 24.2
	x 35 x 52	10.3 6650	12.0 305	0.465 11.8	1/4 11.1	3.77 95.8	0.700 17.5	1 5/16 33.3	9 3/8 238	2 1/2 63.5	1.30 33.0	11.3 287	1.07 27.2
	x 31 x 46	9.12 5880	12.0 305	0.370 9.40	3/16 9.52	3.67 93.2	0.700 17.5	1 5/16 33.3	9 3/8 238	2 1/4 57.2	1.28 32.5	11.3 287	1.17 29.7
MC12 MC310	x 14.3 x 21.3	4.18 2700	12.0 305	0.250 6.35	1/8 6.35	2.12 53.8	0.313 7.94	3/4 19.1	10 1/2 267	1 1/4 31.8	0.672 17.1	11.7 297	0.435 11.0
MC12 MC310	x 10.6 x 15.8	3.10 2000	12.0 305	0.190 4.83	1/8 4.76	1.50 38.1	0.309 7.94	3/4 19.1	10 1/2 267	– –	0.478 12.1	11.7 297	0.284 7.21

CHANNELS



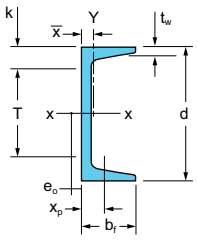
Nominal Weight	Axis X-X				Axis Y-Y						Torsional Properties				Coating Area
	I	S	r	Z	I	S	r	x	Z	xp	J	C_w	r_o	H	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in mm	in^3 $mm^3/10^3$	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	in mm		ft^2/ft m^2/m
7.25 10.8	4.58 1.91	2.29 37.5	1.47 37.3	2.84 46.5	0.425 0.177	0.337 5.52	0.447 11.4	0.459 11.7	0.695 11.4	0.266 6.76	0.082 34.0	1.24 0.333	1.75 44.5	0.767 0.767	1.19 0.36
6.25 9.3	4.19 1.74	2.10 34.4	1.51 38.4	2.55 41.8	0.374 0.156	0.312 5.11	0.451 11.5	0.453 11.5	0.623 10.2	0.233 5.92	0.055 22.8	1.07 0.287	1.81 46.0	0.753 0.753	1.18 0.36
5.40 8.0	3.85 1.60	1.92 31.5	1.56 39.6	2.29 37.5	0.312 0.130	0.277 4.54	0.444 11.3	0.457 11.6	0.565 9.26	0.231 5.87	0.040 16.6	0.921 0.247	1.88 47.8	0.742 0.742	1.16 0.36
4.50 6.7	3.53 1.47	1.77 29.0	1.62 41.1	2.05 33.6	0.265 0.110	0.253 4.15	0.445 11.3	0.473 12.0	0.495 8.11	0.305 7.75	0.031 12.7	0.778 0.209	1.97 50.0	0.727 0.727	1.15 0.35
6.00 8.9	2.07 0.862	1.38 22.6	1.09 27.7	1.74 28.5	0.300 0.125	0.263 4.31	0.413 10.5	0.455 11.6	0.543 8.90	0.294 7.47	0.073 30.2	0.462 0.124	1.40 35.6	0.690 0.690	0.97 0.30
5.00 7.4	1.85 0.770	1.23 20.2	1.12 28.4	1.52 24.9	0.241 0.100	0.228 3.74	0.405 10.3	0.439 11.2	0.464 7.60	0.245 6.22	0.043 17.7	0.379 0.102	1.45 36.8	0.673 0.673	0.96 0.29
4.10 6.1	1.65 0.687	1.10 18.0	1.18 30.0	1.32 21.6	0.191 0.080	0.196 3.21	0.398 10.1	0.437 11.1	0.399 6.54	0.262 6.65	0.027 11.2	0.307 0.082	1.53 38.9	0.655 0.655	0.94 0.29
3.50 5.2	1.57 0.653	1.04 17.0	1.20 30.5	1.24 20.3	0.169 0.070	0.182 2.98	0.394 10.0	0.443 11.3	0.364 5.96	0.296 7.52	0.023 9.41	0.276 0.074	1.57 39.9	0.646 0.646	0.93 0.28
58.0 86	675 281	75.0 1230	6.29 160	95.4 1560	17.6 7.33	5.28 86.5	1.02 25.9	0.862 21.9	10.7 175	0.474 12.0	2.81 1170	1070 287	6.56 167	0.944 0.944	4.28 1.31
51.9 77.2	627 261	69.6 1140	6.41 163	87.3 1430	16.3 6.78	5.02 82.3	1.03 26.2	0.858 21.8	9.86 162	0.424 10.8	2.03 845	985 265	6.70 170	0.939 0.939	4.27 1.30
45.8 68.2	578 241	64.2 1050	6.55 166	79.2 1300	14.9 6.20	4.77 78.2	1.05 26.7	0.866 22.0	9.14 150	0.374 9.50	1.45 604	897 241	6.87 174	0.933 0.933	4.25 1.30
42.7 63.5	554 231	61.5 1010	6.64 169	75.1 1230	14.3 5.95	4.64 76.0	1.07 27.2	0.877 22.3	8.82 145	0.349 8.86	1.23 512	852 229	6.97 177	0.930 0.930	4.24 1.29
50.0 74	314 131	48.3 791	4.62 117	60.8 996	16.4 6.83	4.77 78.2	1.06 26.9	0.974 24.7	10.2 167	0.566 14.4	2.96 1230	558 150	5.07 129	0.875 0.875	3.51 1.07
40.0 60	273 114	41.9 687	4.82 122	51.2 839	13.7 5.70	4.24 69.5	1.08 27.4	0.963 24.5	8.66 142	0.452 11.5	1.55 645	462 124	5.32 135	0.859 0.859	3.47 1.06
35.0 52	252 105	38.8 636	4.95 126	46.5 762	12.3 5.12	3.97 65.1	1.09 27.7	0.980 24.9	8.04 132	0.396 10.1	1.13 470	412 111	5.50 140	0.849 0.849	3.45 1.05
31.8 47.3	239 99.5	36.7 601	5.05 128	43.4 711	11.4 4.75	3.79 62.1	1.10 27.9	1.00 25.4	7.69 126	0.360 9.14	0.937 390	380 102	5.64 143	0.842 0.842	3.44 1.05
50.0 74	269 112	44.9 736	4.28 109	56.5 926	17.4 7.24	5.64 92.4	1.09 27.7	1.05 26.7	10.9 179	0.613 15.6	3.23 1340	411 110	4.77 121	0.859 0.859	3.24 0.99
45.0 67	251 104	41.9 687	4.36 111	52.0 852	15.8 6.58	5.30 86.9	1.09 27.7	1.04 26.4	10.1 166	0.550 14.0	2.33 970	373 100	4.88 124	0.851 0.851	3.22 0.98
40.0 60	234 97.4	39.0 639	4.46 113	47.7 782	14.2 5.91	4.98 81.6	1.10 27.9	1.04 26.4	9.31 153	0.490 12.4	1.69 703	336 90.2	5.01 127	0.842 0.842	3.20 0.98
35.0 52	216 89.9	36.0 590	4.59 117	43.2 708	12.6 5.24	4.64 76.0	1.11 28.2	1.05 26.7	8.62 141	0.428 10.9	1.24 516	297 79.8	5.18 132	0.831 0.831	3.18 0.97
31.0 46	202 84.1	33.7 552	4.71 120	39.7 651	11.3 4.70	4.37 71.6	1.11 28.2	1.08 27.4	8.15 134	0.425 10.8	1.00 416	267 71.7	5.34 136	0.822 0.822	3.16 0.96
14.3 21.3	76.1 31.7	12.7 208	4.27 108	15.9 261	1.00 0.416	0.574 9.41	0.489 12.4	0.377 9.58	1.21 19.8	0.174 4.42	0.117 48.7	32.8 8.81	4.37 111	0.965 0.965	2.67 0.81
10.6 15.8	55.3 23.0	9.22 151	4.22 107	11.6 190	0.378 0.157	0.307 5.03	0.349 8.86	0.269 6.83	0.635 10.4	0.129 3.28	0.060 24.8	11.7 3.14	4.27 108	0.983 0.983	2.47 0.75

CHANNELS



Beam Size		Area A	Depth d	Web Thickness t_w	Web $t_w/2$	Flange b_f	Flange t_f	Distance k	Distance T	Distance Workable Gage	r_{ts}	h_o	Shear Center e_o
		in² mm²	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in² mm²
MC10 MC250	x 41.1 x 61.2	12.1 7810	10.0 254	0.796 20.2	7/16 20.6	4.32 110	0.575 14.3	1 5/16 33.3	7 3/8 187	2 1/2 63.5	1.44 36.6	9.43 240	0.864 21.9
	x 33.6 x 50	9.87 6370	10.0 254	0.575 14.6	5/16 14.3	4.10 104	0.575 14.3	1 5/16 33.3	7 3/8 187	2 1/2 63.5	1.40 35.6	9.43 240	1.06 26.9
	x 28.5 x 42.4	8.37 5400	10.0 254	0.425 10.8	1/4 11.1	3.95 100	0.575 14.3	1 5/16 33.3	7 3/8 187	2 1/2 63.5	1.36 34.5	9.43 240	1.21 30.7
MC10 MC250	x 25 x 37	7.34 4740	10.0 254	0.380 9.65	3/16 9.52	3.41 86.6	0.575 14.3	1 5/16 33.3	7 3/8 187	2 50.8	1.17 29.7	9.43 240	1.03 26.2
	x 22 x 33	6.45 4160	10.0 254	0.290 7.37	3/16 7.94	3.32 84.3	0.575 14.3	1 5/16 33.3	7 3/8 187	2 50.8	1.14 29.0	9.43 240	1.12 28.4
MC10 MC250	x 8.4 x 12.5	2.46 1590	10.0 254	0.170 4.32	1/8 4.76	1.50 38.1	0.280 6.35	3/4 19.1	8 1/2 216	– –	0.486 12.3	9.72 247	0.332 8.43
	x 6.5 x 9.7	1.95 1260	10.0 254	0.152 3.86	1/16 3.18	1.17 29.7	0.202 4.76	9/16 14.3	8 3/8 225	– –	0.363 9.22	9.80 249	0.182 4.62
MC9 MC230	x 25.4 x 37.8	7.47 4820	9.00 229	0.450 11.4	1/4 11.1	3.50 88.9	0.550 14.3	1 1/4 31.8	6 1/2 165	2 50.8	1.20 30.5	8.45 215	0.986 25.0
	x 23.9 x 35.6	7.02 4530	9.00 229	0.400 10.2	3/16 9.52	3.45 87.6	0.550 14.3	1 1/4 31.8	6 1/2 165	2 50.8	1.18 30.0	8.45 215	1.04 26.4
MC8 MC200	x 22.8 x 31.8	6.70 4050	8.00 203	0.427 9.53	1/4 9.52	3.50 87.6	0.525 12.7	1 3/16 30.2	5 5/8 143	2 50.8	1.20 30.0	7.48 190	1.04 27.7
	x 21.4 x 31.8	6.28 4050	8.00 203	0.375 9.53	3/16 9.52	3.45 87.6	0.525 12.7	1 3/16 30.2	5 5/8 143	2 50.8	1.18 30.0	7.48 190	1.09 27.7
MC8 MC200	x 20 x 29.8	5.87 3790	8.00 203	0.400 10.2	3/16 9.52	3.03 77.0	0.500 12.7	1 1/8 28.6	5 3/4 146	2 50.8	1.03 26.2	7.50 190	0.843 21.4
	x 18.7 x 27.8	5.50 3550	8.00 203	0.353 8.97	3/16 9.52	2.98 75.7	0.500 12.7	1 1/8 28.6	5 3/4 146	2 50.8	1.02 25.9	7.50 190	0.889 22.6
MC8 MC200	x 8.5 x 12.6	2.50 1610	8.00 203	0.179 4.55	1/8 4.76	1.87 47.5	0.311 7.94	13/16 20.6	6 3/8 162	1 1/8 28.6	0.624 15.8	7.69 195	0.542 13.8
MC7 MC180	x 22.7 x 33.8	6.67 4300	7.00 178	0.503 12.8	1/4 12.7	3.60 91.4	0.500 12.7	1 1/8 28.6	4 3/4 121	2 50.8	1.23 31.2	6.50 165	1.01 25.7
	x 19.1 x 28.4	5.61 3620	7.00 178	0.352 8.94	3/16 9.52	3.45 87.6	0.500 12.7	1 1/8 28.6	4 3/4 121	2 50.8	1.19 30.2	6.50 165	1.15 29.2
MC6 MC150	x 18 x 26.8	5.29 3410	6.00 152	0.379 9.63	3/16 9.52	3.50 88.9	0.475 12.7	1 1/16 27.0	3 7/8 98.4	2 50.8	1.20 30.5	5.53 140	1.17 29.7
	x 15.3 x 22.8	4.49 2900	6.00 152	0.340 8.64	3/16 7.94	3.50 88.9	0.385 9.52	7/8 22.2	4 1/4 108	2 50.8	1.20 30.5	5.62 143	1.16 29.5
MC6 MC150	x 16.3 x 24.3	4.79 3090	6.00 152	0.375 9.53	3/16 9.52	3.00 76.2	0.475 12.7	1 1/16 27.0	3 7/8 98.4	1 3/4 44.5	1.03 26.2	5.53 140	0.930 23.6
	x 15.1 x 22.5	4.44 2860	6.00 152	0.316 8.03	3/16 7.94	2.94 74.7	0.475 12.7	1 1/16 27.0	3 7/8 98.4	1 3/4 44.5	1.01 25.7	5.53 140	0.982 24.9
MC6 MC150	x 12 x 17.9	3.53 2280	6.00 152	0.310 7.87	3/16 7.94	2.50 63.5	0.375 9.52	7/8 22.2	4 1/4 108	1 1/2 38.1	0.856 21.7	5.63 143	0.725 18.4
MC6 MC150	x 7 x 10.4	2.09 1350	6.00 152	0.179 4.55	1/8 4.76	1.88 47.8	0.291 7.94	3/4 19.1	4 1/2 114	– –	0.638 16.2	5.71 145	0.583 14.8
	x 6.5 x 9.7	1.95 1260	6.00 152	0.155 3.94	1/16 3.18	1.85 47.0	0.291 7.94	3/4 19.1	4 1/2 114	– –	0.631 16.0	5.71 145	0.612 15.5
MC4 MC100	x 13.8 x 20.5	4.03 2600	4.00 102	0.500 12.7	1/4 12.7	2.50 63.5	0.500 12.7	1 25.4	2 50.8	– –	0.851 21.6	3.50 88.9	0.643 16.3
MC3 MC75	x 7.1 x 10.6	2.11 1360	3.00 76.2	0.312 7.92	3/16 7.94	1.94 49.3	0.351 9.52	13/16 20.6	1 3/8 34.9	– –	0.657 16.7	2.65 67.3	0.574 14.6

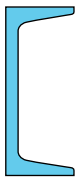
CHANNELS



Nominal Weight	Axis X-X				Axis Y-Y						Torsional Properties				Coating Area
	I	S	r	Z	I	S	r	x	Z	xp	J	C_w	r_o	H	
lb/ft kg/m	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in^3 $mm^3/10^3$	in^4 $mm^4/10^6$	in^3 $mm^3/10^3$	in mm	in mm	in^3 $mm^3/10^3$	in mm	in^4 $mm^4/10^3$	in^6 $mm^6/10^9$	in mm		ft^2/ft m^2/m
41.1 61.2	157 65.3	31.5 516	3.61 91.7	39.3 644	15.7 6.53	4.85 79.5	1.14 29.0	1.09 27.7	9.49 156	0.604 15.3	2.26 941	269 72.2	4.26 108	0.790 0.790	2.97 0.91
33.6 50	139 57.9	27.8 456	3.75 95.3	33.7 552	13.1 5.45	4.35 71.3	1.15 29.2	1.09 27.7	8.28 136	0.494 12.5	1.20 499	224 60.2	4.47 114	0.770 0.770	2.94 0.89
28.5 42.4	126 52.4	25.3 415	3.89 98.8	30.0 492	11.3 4.70	3.99 65.4	1.16 29.5	1.12 28.4	7.59 124	0.419 10.6	0.791 329	193 51.8	4.68 119	0.752 0.752	2.91 0.89
25.0 37	110 45.8	22.0 361	3.87 98.3	26.2 429	7.25 3.02	2.96 48.5	0.993 25.2	0.953 24.2	5.65 92.6	0.367 9.32	0.638 266	124 33.3	4.46 113	0.803 0.803	2.74 0.84
22.0 33	102 42.5	20.5 336	3.99 101	23.9 392	6.40 2.66	2.75 45.1	0.997 25.3	0.990 25.1	5.29 86.7	0.467 11.9	0.510 212	110 29.5	4.62 117	0.791 0.791	2.73 0.83
8.40 12.5	31.9 13.3	6.39 105	3.61 91.7	7.92 130	0.326 0.136	0.268 4.39	0.364 9.25	0.284 7.21	0.548 8.98	0.123 3.12	0.041 17.2	7.00 1.88	3.68 93.5	0.972 0.972	2.14 0.65
6.50 9.7	22.9 9.53	4.59 75.2	3.43 87.1	5.90 96.7	0.133 0.055	0.137 2.25	0.262 6.65	0.194 4.93	0.284 4.65	0.098 2.48	0.019 7.95	2.76 0.741	3.46 87.9	0.988 0.988	2.03 0.62
25.4 37.8	87.9 36.6	19.5 320	3.43 87.1	23.5 385	7.57 3.15	2.99 49.0	1.01 25.7	0.970 24.6	5.70 93.4	0.415 10.5	0.691 288	104 27.9	4.08 104	0.770 0.770	2.59 0.79
23.9 35.6	84.9 35.3	18.9 310	3.48 88.4	22.5 369	7.14 2.97	2.89 47.4	1.01 25.7	0.981 24.9	5.51 90.3	0.390 9.91	0.599 249	98.0 26.3	4.15 105	0.763 0.763	2.58 0.79
22.8 31.8	63.8 25.6	15.9 252	3.09 79.5	19.1 298	7.01 2.74	2.81 44.4	1.02 25.9	1.01 25.9	5.37 84.9	0.419 11.5	0.572 206	75.2 19.0	3.84 99.3	0.715 0.707	2.43 0.74
21.4 31.8	61.5 25.6	15.4 252	3.13 79.5	18.2 298	6.58 2.74	2.71 44.4	1.02 25.9	1.02 25.9	5.18 84.9	0.452 11.5	0.495 206	70.8 19.0	3.91 99.3	0.707 0.707	2.42 0.74
20.0 29.8	54.4 22.6	13.6 223	3.04 77.2	16.4 269	4.42 1.84	2.02 33.1	0.867 22.0	0.840 21.3	3.86 63.3	0.367 9.32	0.441 184	47.8 12.8	3.58 90.9	0.779 0.779	2.28 0.69
18.7 27.8	52.4 21.8	13.1 215	3.09 78.5	15.6 256	4.15 1.73	1.95 32.0	0.868 22.0	0.849 21.6	3.72 61.0	0.344 8.74	0.380 158	45.0 12.1	3.65 92.7	0.773 0.773	2.27 0.69
8.50 12.6	23.3 9.70	5.82 95.4	3.05 77.5	6.95 114	0.624 0.260	0.431 7.06	0.500 12.7	0.428 10.9	0.875 14.3	0.156 3.96	0.059 24.4	8.21 2.20	3.24 82.3	0.910 0.910	1.93 0.59
22.7 33.8	47.4 19.7	13.5 221	2.67 67.8	16.4 269	7.24 3.01	2.83 46.4	1.04 26.4	1.04 26.4	5.38 88.2	0.477 12.1	0.625 260	58.3 15.7	3.53 89.7	0.659 0.659	2.28 0.70
19.1 28.4	43.1 17.9	12.3 202	2.77 70.4	14.5 238	6.06 2.52	2.55 41.8	1.04 26.4	1.08 27.4	4.85 79.5	0.579 14.7	0.407 169	49.3 13.2	3.70 94.0	0.638 0.638	2.26 0.69
18.0 26.8	29.7 12.4	9.89 162	2.37 60.2	11.7 192	5.88 2.45	2.47 40.5	1.05 26.7	1.12 28.4	4.68 76.7	0.644 16.4	0.379 158	34.6 9.29	3.46 87.9	0.563 0.563	2.10 0.64
15.3 2.8	25.3 10.5	8.44 138	2.38 60.5	9.91 162	4.91 2.04	2.01 32.9	1.05 26.7	1.05 26.7	3.85 63.1	0.511 13.0	0.223 92.8	30.0 8.06	3.41 86.6	0.579 0.579	2.11 0.64
16.3 24.3	26.0 10.8	8.66 142	2.33 59.2	10.4 170	3.77 1.57	1.82 29.8	0.887 22.5	0.927 23.5	3.47 56.9	0.465 11.8	0.336 140	22.1 5.93	3.11 79.0	0.643 0.643	1.94 0.59
15.1 22.5	24.9 10.4	8.30 136	2.37 60.2	9.83 161	3.46 1.44	1.73 28.3	0.883 22.4	0.940 23.9	3.30 54.1	0.543 13.8	0.285 119	20.5 5.50	3.18 80.8	0.634 0.634	1.93 0.59
12.0 17.9	18.7 7.78	6.24 102	2.30 58.4	7.47 122	1.85 0.770	1.03 16.9	0.724 18.4	0.704 17.9	1.97 32.3	0.294 7.47	0.155 64.5	11.3 3.03	2.80 71.1	0.740 0.740	1.78 0.54
7.00 10.4	11.4 4.75	3.81 62.4	2.34 59.4	4.50 73.7	0.603 0.251	0.439 7.19	0.537 13.6	0.501 12.7	0.865 14.2	0.174 4.42	0.046 19.3	4.00 1.07	2.63 66.8	0.830 0.830	1.60 0.49
6.50 9.7	11.0 4.58	3.66 60.0	2.38 60.5	4.28 70.1	0.565 0.235	0.422 6.92	0.539 13.7	0.513 13.0	0.836 13.7	0.191 4.85	0.041 17.1	3.75 1.01	2.68 68.1	0.824 0.824	1.59 0.48
13.8 20.5	8.85 3.68	4.43 72.6	1.48 37.6	5.53 90.6	2.13 0.887	1.29 21.1	0.727 18.5	0.849 21.6	2.40 39.3	0.508 12.9	0.373 155	4.84 1.30	2.23 56.6	0.550 0.550	1.42 0.43
7.10 10.6	2.72 1.13	1.81 29.7	1.14 29.0	2.24 36.7	0.666 0.277	0.518 8.49	0.562 14.3	0.653 16.6	0.998 16.4	0.414 10.5	0.093 38.6	0.915 0.246	1.76 44.7	0.516 0.516	1.09 0.33

CHANNELS / ANGLES

CHANNELS



AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A36	36	250
A572 Grade 50	50	345
A572 Grade 60	60	415
A588	50	345
A242	50	345

CANADIAN		
CSA G40.21	YIELD STRENGTH	
	ksi	MPa
Grade 350 W	50	350

DELIVERY CONDITIONS & TOLERANCES

Mass	± 2.5%	
Depth		
3 to 7 in	+ 09375 in	- 0.0625 in
7 to 14 in	+ 0.125 in	- 0.9375 in
Over 14 in	+ 0.1875 in	- 0.125 in
Length		
5 to 10 ft	+ 1.0 in	
10 to 20 ft	+ 1.5 in	
20 to 30 ft	+ 1.75 in	
30 to 40 ft	+ 2.25 in	
40 to 50 ft	+ 2.75 in	
50 to 65 ft	+ 2.75 in	
Flange Width		
3 to 7 in	± 0.125 in	
7 to 14 in	+ 0.125 in	- 0.9375 in
Over 14 in	+ 0.125 in	- 0.1875 in
Flanges out of Square	≤ 0.03125 in	
Camber	(0.125 in) * (Length / 5)	
Sweep	Subject to negotiation with manufacturer	

MAXIMUM ROLLED LENGTHS†

All Sections	60 ft	18.3 m
Most Sections	85 ft	25.9 m
Some Sections	130 ft	39.6 m

† Longer lengths may be possible upon request.

ANGLES

AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A36	36	250
A572 Grade 50	50	345
A572 Grade 60	60	415
A588	50	345
A242	50	345

CANADIAN		
CSA G40.21	YIELD STRENGTH	
	ksi	MPa
Grade 350 W	50	350

DELIVERY CONDITIONS & TOLERANCES

Mass	± 2.5%	
Length		
5 to 10 ft	+ 1.0 in	
10 to 20 ft	+ 1.5 in	
20 to 30 ft	+ 1.75 in	
30 to 40 ft	+ 2.25 in	
40 to 50 ft	+ 2.75 in	
50 to 65 ft	+ 2.75 in	
Leg Length*		
1 to 2 in	± 0.046875 in	
2 to 3 in	± 0.0625 in	
3 to 4 in	+ 0.125 in	- 0.09375 in
4 to 6 in	± 0.125 in	
Over 6 in	+ 0.1875 in	- 0.125 in
Flanges out of Square	± 1.5 degrees	
Thickness	1 to 2 in.	2 to 3 in.
≤ 0.1875 in	± 0.010 in	± 0.012 in
0.1875 to 0.375 in	± 0.010 in	± 0.015 in
Over 0.375 in	± 0.012 in.	± 0.015 in.
Camber	(0.125 in) * (Length / 5)	
Sweep	Subject to negotiation with manufacturer	

* Longer leg length determines classification.

MAXIMUM ROLLED LENGTHS†

All Sections	60 ft	18.3 m
Most Sections	85 ft	25.9 m
Some Sections	130 ft	39.6 m

† Longer lengths may be possible upon request.

PILE ACCESSORIES

Since geotechnical exploration and pile driving are not exact sciences, it is often challenging to predict the difficulty of driving piles and determine what their final lengths will be. To assist engineers and contractors in the construction of deep foundations, pile splicers, shoes, points, and other accessories are available and can be custom made to fit almost any requirement.

Applications of Pile Accessories

- Splicing Steel and Concrete Piles
- Final Pile Lengths with Longer Requirements
- Low Head Room Areas
- Ends of Pile Protection
- Ease of Installation
- Soil Intrusion Prevention in Pipe
- Ease Construction of Sheet Pile Walls

Sheet Pile Protector

Pipe Pile Splicers

H-Pile Splicers

PILE ACCESSORIES

HP ACCESSORIES

HP Point

HP Splicer

HP Point

HP Point

SHEET PILE ACCESSORIES

Sheet Pile Protector

Sheet Pile Protector

Sheet Pile Splicer

Jet Filter

PILE ACCESSORIES

PIPE ACCESSORIES

Cutting Shoes

Outside Flange

Inside Flange

Drive-On Pipe Pile Splicer

Conical Points

Inside Flange (60°)

Inside Flange (60°)

Backing Ring

TIMBER ACCESSORIES

Timber Boot

Timber Point

Timber Uplift Connector

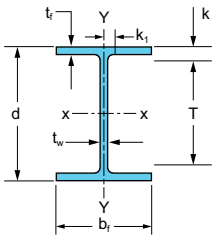
CONTACT INFORMATION

Associated Pile & Fitting
Tel: (973) 773-8400
Toll Free: (800) 526-9047
apf@associatedpile.com
www.associatedpile.com

SOLAR FOUNDATIONS

Nucor Skyline is part of the Nucor family and offers custom tailored solar foundation solutions for fully fabricated and galvanized solar posts delivered directly to your job site. Our product offering includes wide flange beams, "NSP" our pre-galvanized rolled shaped, and pipe/tubing. The wide flange, channel, pipe/tube and NSP sections manufactured by Nucor are all produced from scrap steel melted in an electric arc furnace, a technology pioneered by Nucor. This process results in the production of the most sustainable steel across the globe.

Our expert engineering team can propose value-added options including higher grades of steel, corrosion resistant steels and even non-standard sizes to help ensure seamless project design through execution. Our team takes a solution-driven approach to overcome design challenges related to structure, soil and ground conditions, and steel grade requirements. From universal products to customizable options for unique design requests, we are redefining the standard for solar construction.



Beam Size		Area A	Depth d	Thickness of Web t_w	Flange		Axis X-X				Axis Y-Y				Coating Area
					b_f	t_f	I	S	r	Z	I	S	r	Z	
		in² mm²	in mm	in mm	in mm	in mm	in⁴ mm⁴/10⁶	in³ mm³/10³	in mm	in³ mm³/10³	in⁴ mm⁴/10⁶	in³ mm³/10³	in mm	in³ mm³/10³	ft²/ft m²/m
W8 **W200**	x 40 x 59	11.7 7550	8.25 210	0.360 9.14	8.07 205	0.560 14.2	146 60.8	35.5 582	3.53 89.7	39.8 652	49.1 20.4	12.2 200	2.04 51.8	18.5 303	4.01 1.22
	x 35 x 52	10.3 6650	8.12 206	0.310 7.87	8.02 204	0.495 12.6	127 52.9	31.2 511	3.51 89.2	34.7 569	42.6 17.7	10.6 174	2.03 51.6	16.1 264	3.98 1.21
	x 31 x 46.1	9.13 5890	8.00 203	0.285 7.24	8.00 203	0.435 11.0	110 45.8	27.5 451	3.47 88.1	30.4 498	37.1 15.4	9.27 152	2.02 51.3	14.1 231	3.95 1.20
W8 **W200**	x 28 x 41.7	8.25 5320	8.06 205	0.285 7.24	6.54 166	0.465 11.8	98.0 40.8	24.3 398	3.45 87.6	27.2 446	21.7 9.03	6.63 109	1.62 41.1	10.1 166	3.48 1.06
	x 24 x 35.9	7.08 4570	7.93 201	0.245 6.22	6.50 165	0.400 10.2	82.7 34.4	20.9 342	3.42 86.9	23.1 379	18.3 7.62	5.63 92.3	1.61 40.9	8.57 140	3.45 1.05
	x 21 x 31.3	6.16 3970	8.28 210	0.250 6.35	5.27 134	0.400 10.2	75.3 31.3	18.2 298	3.49 88.6	20.4 334	9.77 4.07	3.71 60.8	1.26 32.0	5.69 93.2	3.10 0.94
	x 18 x 26.6	5.26 3390	8.14 207	0.230 5.84	5.25 133	0.330 8.38	61.9 25.8	15.2 249	3.43 87.1	17.0 279	7.97 3.32	3.04 49.8	1.23 31.2	4.66 76.4	3.07 0.94
	x 15 x 22.5	4.44 2860	8.11 206	0.245 6.22	4.02 102	0.315 8.00	48.0 20.0	11.8 193	3.29 83.6	13.6 223	3.41 1.42	1.70 27.9	0.876 22.3	2.67 43.8	2.65 0.81
	x 13 x 19.3	3.84 2480	7.99 203	0.230 5.84	4.00 102	0.255 6.48	39.6 16.5	9.91 162	3.21 81.5	11.4 187	2.73 1.14	1.37 22.5	0.843 21.4	2.15 35.2	2.63 0.80
	x 10 x 15	2.96 1910	7.89 200	0.170 4.32	3.94 100	0.205 5.21	30.8 12.8	7.81 128	3.22 81.8	8.87 145	2.09 0.870	1.06 17.4	0.841 21.4	1.66 27.2	2.60 0.79
W6 **W150**	x 25 x 37.1	7.34 4740	6.38 162	0.320 8.13	6.08 154	0.455 11.6	53.4 22.2	16.7 274	2.70 68.6	18.9 310	17.1 7.12	5.61 91.9	1.52 38.6	8.56 140	3.04 0.93
	x 20 x 29.8	5.87 3790	6.20 157	0.260 6.60	6.02 153	0.365 9.27	41.4 17.2	13.4 220	2.66 67.6	15.0 246	13.3 5.54	4.41 72.3	1.50 38.1	6.72 110	3.00 0.91
	x 15 x 22.5	4.43 2860	5.99 152	0.230 5.84	5.99 152	0.260 6.60	29.1 12.1	9.72 159	2.56 65.0	10.8 177	9.32 3.88	3.11 51.0	1.45 36.8	4.75 77.8	2.96 0.90
W6 **W150**	x 16 x 24	4.74 3060	6.28 160	0.260 6.60	4.03 102	0.405 10.3	32.1 13.4	10.2 167	2.60 66.0	11.7 192	4.43 1.84	2.20 36.1	0.967 24.6	3.39 55.6	2.35 0.72
	x 12 x 18	3.55 2290	6.03 153	0.230 5.84	4.00 102	0.280 7.11	22.1 9.20	7.31 120	2.49 63.2	8.30 136	2.99 1.24	1.50 24.6	0.918 23.3	2.32 38.0	2.30 0.70
	x10.4 x 15.5	3.09 1990	5.96 151	0.200 5.08	3.94 100	0.247 6.27	19.0 7.89	6.36 104.2	2.48 63.0	7.18 118	2.523 1.050	1.28 21.0	0.904 23.0	1.98 32.4	2.27 0.69
	x 9.5 x 14.1	2.82 1819	6.00 152	0.180 4.6	3.95 100	0.225 5.7	17.7 7.37	5.9 96.7	2.51 63.8	6.64 108	2.31 0.961	1.17 19.2	0.91 23.1	1.80 29.5	2.25 0.69
	x 9 x 13.5	2.68 1730	5.90 150	0.170 4.32	3.94 100	0.215 5.46	16.4 6.83	5.56 91.1	2.47 62.7	6.23 102	2.20 0.916	1.11 18.2	0.905 23.0	1.72 28.2	2.27 0.69
	x 8.5 x 13	2.52 1630	5.83 148	0.170 4.32	3.94 100	0.195 4.95	14.9 6.20	5.10 83.6	2.43 61.7	5.73 93.9	1.99 0.828	1.01 16.6	0.890 22.6	1.56 25.6	2.26 0.69
	x7.75 x11.5	2.28 1471	5.82 148	0.151 3.835	3.95 100	0.178 4.52	13.6 5.66	4.66 76.4	2.44 62.0	5.22 85.5	1.83 0.762	0.93 15.2	0.897 22.8	1.43 23.434	2.26 0.69
	x7 x10.4	2.05 1321	5.77 147	0.129 3.277	3.94 100	0.165 4.19	12.3 5.11	4.25 69.6	2.45 62.2	4.72 77.3	1.68 0.701	0.86 14.0	0.907 23.0	1.31 21.467	2.25 0.69

WF

AVAILABLE STEEL GRADES

AMERICAN		
ASTM	YIELD STRENGTH	
	ksi	MPa
A572 Grade 50	50	345
A572 Grade 60	60	415
A572 Grade 65	65	450
A588	50	345
A690	50	345
A709	50	345
A992	50	345

CANADIAN		
CSA G40.21	YIELD STRENGTH	
	ksi	MPa
Grade 350 W	50	350

Highlighted fields represent the most commonly used and readily available steel grades. Additional grades available upon request.

DELIVERY CONDITIONS & TOLERANCES

	ASTM A6		
Mass	± 2.5%		
Depth	± 0.125 in.		
Length	30 ft. and under	Over 30 ft.	
Beams W24 and Under	± 0.375 in.	+ (0.375 in. + (Length - 30) / 80	-0.375 in.
Beams Over W24	± 0.5 in.	+ (0.5 in. + (Length - 30) / 80	-0.375 in.
Flanges out of Square			
Beams W12 and Under	≤ 0.25 in.		
Beams Over W12	≤ 0.3125 in.		
Web off Center	≤ 0.1875 in.		
Greatest Depth over Theoretical	≤ 0.25 in.		
Camber and Sweep	(0.125 in) * (Length / 10)		
Camber and Sweep for Columns**			
45 ft. and Under	(0.125 in) * (Length / 10) but not over 0.375 in.		
Over 45 ft.	(0.375 in) + (0.125 in * (Length - 45) / 10		

** W8 x 31 and heavier, W10 x 49 and heavier, W12 x 65 and heavier, and W14 x 90 and heavier; order as columns.
If other sections are ordered as columns, the tolerances are subject to negotiation with the manufacturer.

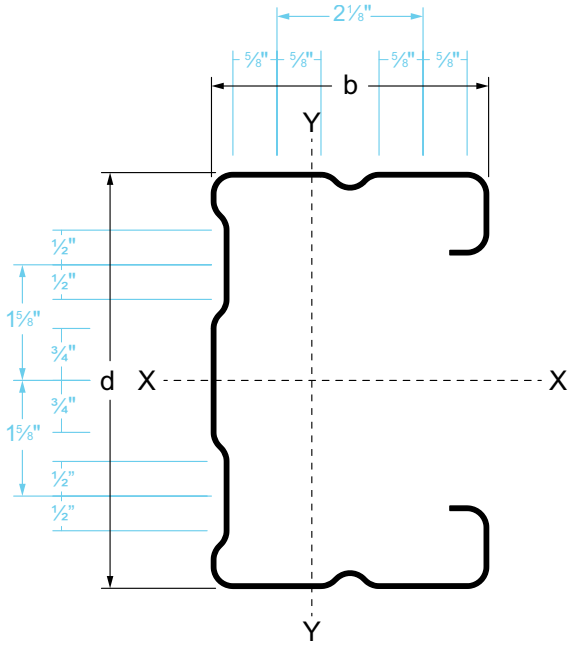
FABRICATION

Any hole pattern is available from our extensive fabricator network.

GALVANIZING AND COATING

Posts can be galvanized to ASTM A123. Galvanization can be up to 5 mils.

A variety of coatings are available.



- **ENGINEERED PRODUCT** designed to replace the W6x7 and W6x9 Grade 50 piles
- **BOLT PATTERNS**, identical to W6 patterns, available for different tracking assemblies have been tested in the lab and the field
- **LIGHT WEIGHT** piles are nearly 40% lighter than their W6 counterparts
- **ECO-FRIENDLY** steel made from 90%+ recycled material and 40% weight savings reduces trucking by the same amount
- **GALVANIZED FINISHED** from G90 to G235 to meet UL2703

SECTION	Replaces	Weight (w)	Area (A)	Depth (d)	Flange Width (b)	Thickness (t)	AXIS X-X				AXIS Y-Y				Warping Torsional Constant (Cw)	Torsion Constant (J)
							I	S	Z	r	I	S	Z	r		
		lbs/ft kg/m	in^2 cm^2	in mm	in mm	in mm	in^3 cm^3	in^3 cm^3	in^3 cm^3	in^3 cm^3	in^3 cm^3	in^3 cm^3	in^3 cm^3	in^3 cm^3	in^6 cm^6	in^4 cm^4
NSP C6x4.23	W6x7 Gr. 50	4.23 6.30	1.2603 8.1310	6.0 152.7	4.0 101.6	0.075 1.91	7.46 122.2	2.49 40.8	2.87 47.0	2.44 40.0	2.88 47.2	1.23 20.2	1.51 24.7	1.74 28.5	30.30 8137	0.0024 0.0981
NSP C6x5.56	W6x9 Gr. 50	5.56 8.27	1.6327 10.5	6.0 152.7	4.0 101.6	0.098 2.49	9.63 157.8	3.21 52.6	3.72 61.0	2.43 39.8	3.69 60.5	1.57 25.7	2.24 36.7	1.50 24.6	37.96 10194	0.0981 0.2176

NSP

AVAILABLE STEEL GRADES

GALVANIZED STEEL SPECIFICATION		
ASTM	Yield	
	ksi	Mpa
A653 HSLAS Gr. 60	60	414
A653 HSLAS Gr. 70	70	483
A653 HSLAS Gr. 80	80	552

HOT DIPPED GALVANIZED COATING					
Designation	Triple_spot Test	Thickness	Designation	Triple_spot Test	Thickness
	oz/ft^2	mils		g/m^2	um
G90	0.9	0.76	Z275	275	18
G210	2.1	1.77	Z600	600	39.3
G235	2.35	1.98	Z700	700	45.8

DELIVERY CONDITIONS & TOLERANCES

Length	± 0.0625 in.
Hole Location	± 0.032 in.
Cross Section	± 0.032 in.
Bend Angles	± 2°
Flare	± 0.125 in. up to 6″ in from edge
Twist	± 0.1875 in. in 6 ft.
Bow	± 0.0625 in. in 6 ft.
Camber	± 0.0625 in. in 6 ft.

FIELD TESTING

NSP Tension & Lateral load test results at the Utah Solar Lab. Material thickness: 0.062″.

Fig. T4: Nucor Solar Lab - Brigham City, UT - Axial Tension Static Load Test - Applied Axial Tension Load vs. Vertical Head Displacement - All Embedment Depths

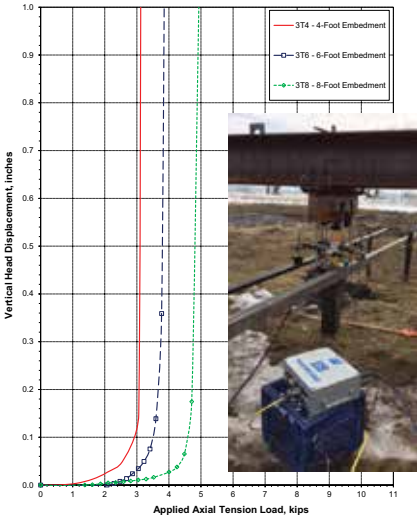
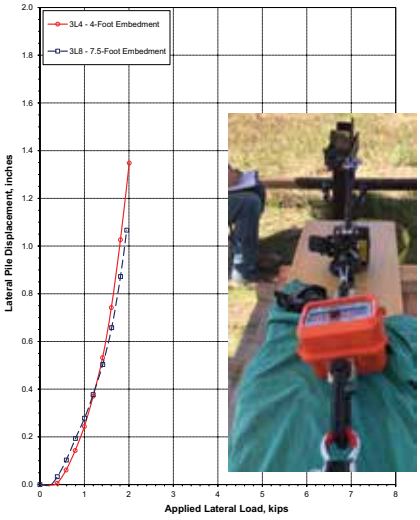
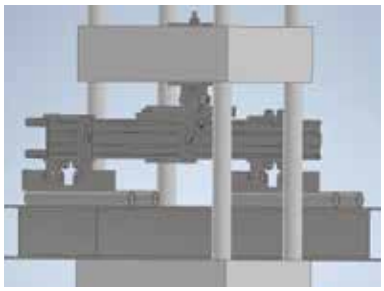


Fig. L3: Nucor Solar Lab - Brigham City, UT - Lateral Static Load Test - Applied Lateral Load vs. Lateral Pile Displacement - All Embedment Depths



LABORATORY TESTING

NSP Static load test at the University of New Mexico. Material thickness: 0.062″.



GEOSTRUCTURAL SOLUTIONS

Nucor Skyline offers a comprehensive line of geostructural products and has a core group of geostructural industry specialists.

Nucor Skyline offers:

- Complete line of grade 80 and grade 150 cold rolled threaded bar
- Hot rolled threaded bars up to #20
- DCP shop grouted and SCP ground anchors in multiple locations across the United States
- Conventional multi-strand anchors
- Comprehensive, domestically manufactured, hollow bar system with a full line of complementary accessories

Nucor Skyline's experienced production team has become experts at assembling large-scale reinforcement bar cages measuring over 109 feet long, using couplers and full load nuts.

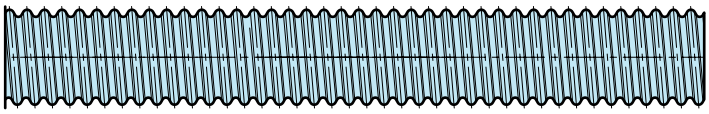
Significant improvements have also been made in our micropile manufacturing capabilities. Micropile threaded casing production capacity has been expanded to further supplement our full line of bar reinforcing products, making us the single source supplier to any contractor involved in a micropile project.

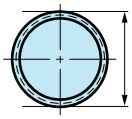
Ontarion, CA

Boston, MA

Questa, NM

FULLY THREADED BAR





Grade 80 ksi Yield Strength / 100 ksi Ultimate Strength									
Bar Designation	**Nominal Diameter** in mm	**Grade**	**Min. Net Area Thru Threads** in^2 mm^2	**Min. Ultimate Strength** kips kN	**Min. Yield Strength** kips kN	**Nominal Weight** lbs/ft kg/m	**Approx. Major Thread Diameter** in mm	**Thread Orientation**	**Max. Length** ft m
#18	2 ¼ 55	80	4.000 2581.0	400.0 1779	320.0 1423	13.60 20.2	2.438 62.0	Right Hand	60 18.3
#20	2 ½ 64	80	4.910 3168.0	491.0 2184	392.8 1747	16.69 24.8	2.750 70.0	Right Hand	60 18.3
#24	3 76	80	7.070 4561.0	707.0 3145	565.6 2516	24.10 35.9	3.250 82.6	Right Hand	60 18.3
#28	3 ½ 89	80	9.610 6200.0	961.0 4275	768.8 3420	32.70 48.7	3.750 95.3	Right Hand	60 18.3
#32	4 102	80	12.57 8107.0	1257.0 5590	1005.3 4472	42.75 63.6	4.125 104.8	Right Hand	40 12.2

Cold rolled threaded bars conform to the physical and chemical requirements of ASTM A615 Grade 80 ksi "Standard Specification for Deformed Carbon Steel Bars for Concrete Reinforcement".

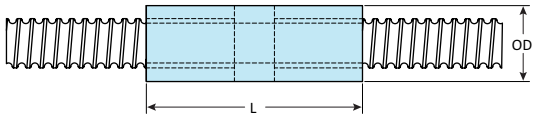
Contact your sales representative for information on hot dip galvanized and epoxy coated bars.

Please note: As we continuously improve the design of our products, product details are subject to change.

REINFORCING STEEL GRADE / COLD ROLLED

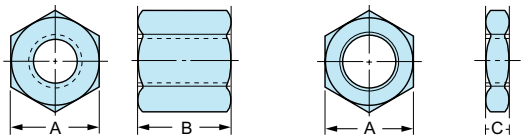
FULLY THREADED BAR

COUPLER



Grade 80 Bar – ASTM A108 / A576			
Bar Designation	OD in mm	L in mm	Weight lbs kg
#18	3.500 88.9	9.125 231.8	13.7 6.2
#20	4.000 101.6	9.500 241.3	19.6 8.9
#24	4.750 120.6	10.750 243.0	31.01 14.07
#28	5.500 139.7	12.000 304.8	46.20 20.96
#32	6.500 165.1	16.00 406.4	90.0 408.2

FULL LOAD HEX NUT AND JAM NUT

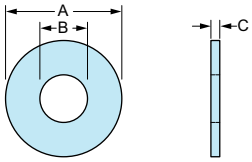


Full Load Hex Nut Jam Nut

Grade 80 Bar – ASTM A108 / A576**					
Bar Designation	A in mm	B in mm	C in mm	Weight lbs / kg Full	 Jam
#18	3.500 89.0	3.500 89.0	1.000 25.4	5.70 2.60	1.81 0.82
#20	4.000 101.6	4.500 114.3	1.125 28.6	10.00 4.50	2.76 1.25
#24*	4.750 120.6	4.500 114.3	1.500 38.1	12.98 5.89	4.33 1.96
#28*	5.500 139.7	6.000 152.4	1.563 39.7	23.10 10.48	6.02 2.73
#32*	6.500 165.1	8.000 203.2	1.750 44.5	44.00 19.96	9.63 4.37

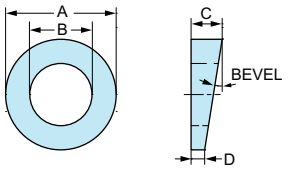
* Round collar nut with flats ** #18 & #20 - ASTM A536.

HARDENED WASHER



Grade 80 Bar – ASTM F436				
Bar Designation	A in mm	B in mm	C in mm	Weight lbs kg
#18	4.500 114.300	2.625 66.7	0.240 6.096	0.70 0.32
#20	5.500 139.700	3.157 80.188	0.240 6.096	1.090 0.49
#24	6.500 165.1	3.625 92.075	0.240 6.096	1.910 0.87
#28	7.500 190.5	4.125 104.775	0.240 6.096	2.10 0.95

BEVELED WASHER



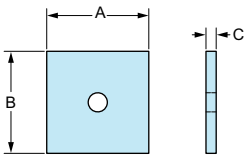
Grade 80 Bar – ASTM F436 / A536, 80-55-06 Ductile Cast Iron						
Bar Designation	A in mm	B in mm	C in mm	D in mm	Bevel degrees	Weight lbs kg
#18	4.60 116.84	2.63 66.80	1.18 29.97	0.37 9.40	10	2.2 1.0
#20	5.00 127.00	3.00 76.20	1.31 33.27	0.43 10.92	10	3.1 1.41
#24	7.50 190.5	3.50 88.90	1.75 44.45	0.43 10.92	10	9.68 4.39
#28	8.00 203.20	4.00 101.60	2.25 57.15	0.84 21.34	10	16.54 7.50

NOTE: Couplers available as "stop type" or "tap through." Tap through couplers require the bars to be torqued against each other at the halfway point in the coupler and fixed with set screws or jam nuts to ensure proper engagement.

Please note: As we continuously improve the design of our products, product details are subject to change.
† Contact your sales representative for information on hot dip galvanized and epoxy coated hardware (available upon request).

FULLY THREADED BAR

BEARING PLATE*

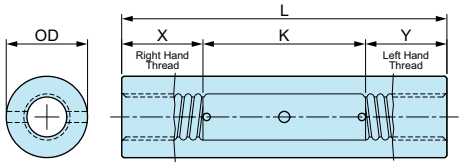


Grade 80 Bar – ASTM A572 (Grade 50 - A588)				
Bar Designation	A in mm	B in mm	C in mm	Weight lbs kg
#18	10 254.00	10 254.00	2 50.80	54.21 24.59
#20	10 254.00	10 254.00	2 ½ 63.50	67.06 30.42
#24	10 254.00	10 254.00	2 ½ 63.50	65.46 29.69
#28	12 304.80	12 304.80	2 ¾ 69.85	104.26 47.29

Bearing plate dimensions reflect typical sizes. Actual design criteria should be used for specific plate sizing.

* Non-inventory items; made to order

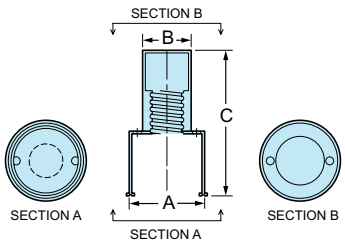
TURNBUCKLE



Bar Designation	OD in mm	L in mm	X in mm	Y in mm	K in mm
#18	3.500 88.9	16.5 419.1	3.50 88.9	3.50 88.9	9.50 241.3
#20	4.000 101.6	21.0 533.4	4.50 114.3	4.50 114.3	12.00 304.8
#24	4.750 120.7	21.5 546.1	4.75 120.7	4.75 120.7	12.00 304.8
#28	5.500 139.7	24.0 609.6	6.00 152.4	6.00 152.4	12.00 304.8

Note: Only cold rolled threads are suitable for use with turnbuckles. The thread direction on the bars must be opposite to each other in order for the turnbuckle to function.

HDPE PLASTIC NUT CAP*



HDPE Plastic Nut Caps for Grade 80 Bars			
Bar Designation	A in mm	B in mm	C in mm
#18 – #24	6.5 165.1	4.25 108.0	10.25 260.4

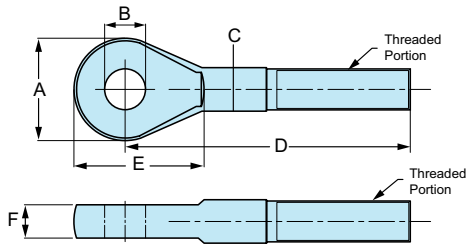
* "O" ring seal in base of cap.

Please note: As we continuously improve the design of our products, product details are subject to change.

REINFORCING STEEL GRADE / COLD ROLLED

FULLY THREADED BAR

FORGED EYE

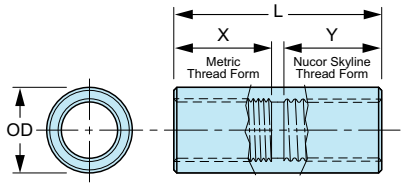


Bar Designation	A	B	C	D	E	F	Weight
	in mm	in mm	in mm	in mm	in mm	in mm	lb kg
#18	6.1 155	2.5 63	2.4 60	19.9 505	8.1 207	2.0 50	34.6 15.7
#20 – #24	7.1 180	3.0 76	3.0 76	20.5 520	9.8 248	2.5 63	60.4 27.4
#28	9.2 230	3.5 88	3.5 90	22.2 565	12.3 312	3.0 75	103.0 46.7

Made in Germany. Threads on forged eyes will be metric. Conversion couplers (transitions) available for all Nucor Skyline thread forms.

Contact your Nucor Skyline sales representative for assistance with connection details.

TRANSITIONAL COUPLER FOR FORGED EYE



Bar Designation	OD	L	X	Y	Weight
	in mm	in mm	in mm	in mm	lb kg
M56 – #18	3.50 88.90	9.8 248.92	4.00 101.6	4.57 116.0	15.6 7.1
M72 – #20	4.75 120.65	12.0 304.80	5.38 136.5	5.38 136.5	39.2 17.8
M72 – #24	4.75 120.65	12.0 304.80	5.38 136.5	5.38 136.5	34.9 15.8
M85 – #28	5.50 139.70	13.3 337.82	6.00 152.4	6.00 152.4	48.5 22.0

CORROSION PROTECTION

All threaded bars can be supplied with a protective smooth-walled PVC tube. While the standard PVC tube is 0.035 inches thick, other options are available upon request.

The following additional corrosion protection options are available for all threaded bars:

Class II Single Corrosion Protection (SCP)

Class I Double Corrosion Protection (DCP)

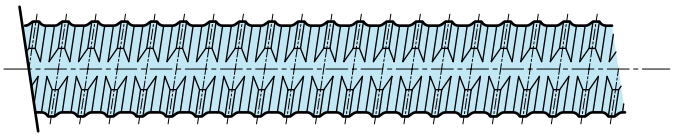
- Encapsulating: Grease or Grout
- Epoxy Coating
- Galvanizing
- Painting
- Plating
- Taping

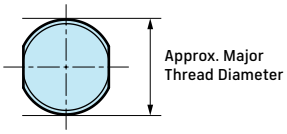
Oversized accessories are provided to accommodate galvanized and coated bars.

Please contact your Nucor Skyline Geostructural Solutions Representative for recommendations on the system that will best suit your requirements.

Please note: As we continuously improve the design of our products, product details are subject to change.

FULLY THREADED BAR





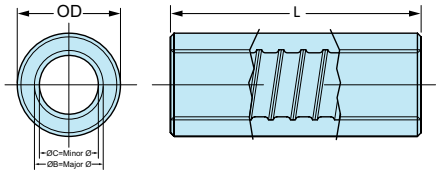
Grade 80 ksi Yield Strength / 100 ksi Ultimate Strength									
Bar Designation	**Grade**	**Nominal Diameter** in mm	**Min. Net Area Thru Threads** in² mm²	**Min. Ultimate Strength** kips kN	**Min. Yield Strength** kips kN	**Nominal Weight** lbs/ft kg/m	**Approx. Major Thread Diameter** in mm	**Thread Orientation**	**Max. Length** ft m
#6	80	¾ 20	0.44 284	44 196	35.2 157	1.5 2.2	0.86 21.8	Left Hand	60 18.3
#7	80	⅞ 22	0.60 387	60 267	48.0 214	2.0 3.0	0.99 25.1	Left Hand	60 18.3
#8	80	1 25	0.79 510	79 351	63.2 281	2.7 4.0	1.12 28.4	Left Hand	60 18.3
#9	80	1 ⅛ 28	1.00 645	100 445	80.0 356	3.4 5.1	1.26 32	Left Hand	60 18.3
#10	80	1 ¼ 32	1.27 819	127 565	101.6 452	4.3 6.4	1.43 36.3	Left Hand	60 18.3
#11	80	1 ⅜ 35	1.56 1006	156 694	124.8 555	5.3 7.9	1.61 40.9	Left Hand	60 18.3
#14	80	1 ¾ 45	2.25 1452	225 1001	180.0 801	7.7 11.4	1.86 47.2	Right Hand	60 18.3
#18	80	2 ¼ 55	4.00 2581	400 1779	320.0 1423	13.6 20.3	2.50 63.5	Right Hand	60 18.3
#20	80	2 ½ 64	4.91 3168	491 2184	392.8 1747	16.8 24.9	2.70 68.6	Left Hand	60 18.3
#24	80	3 76	7.07 4561	707 3145	565.6 2516	24.1 35.8	3.25 82.6	Left Hand	60 18.3

Hot rolled threaded bars conform to the physical and chemical requirements of ASTM A615 Grade 80 ksi "Standard Specification for Deformed Carbon Steel Bars for Concrete Reinforcement". Grade 100 bar availability may be subject to minimum order size and mill rolling schedule. Please contact your local sales representative for more information.

Please note: As we continuously improve the design of our products, product details are subject to change.

FULLY THREADED BAR

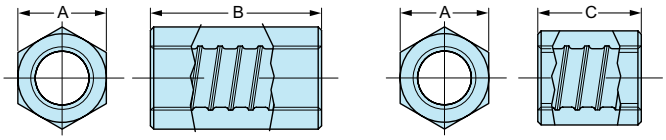
COUPLER



Grade 80/100 – ASTM A576, A108				
Bar Designation	Nominal Diameter in mm	OD in mm	L in mm	Weight lbs kg
#6	¾ 20	1.25 31.75	3.125 79.37	0.62 0.28
#7	⅞ 22	1.50 38.10	3.75 95.25	1.14 0.19
#8	1 25	1.625 41.27	5.50 139.70	1.90 0.86
#9	1 ⅛ 28	2.00 50.80	5.00 127.00	2.84 1.29
#10	1 ¼ 32	2.00 50.80	5.75 146.05	2.77 1.26
#11	1 ⅜ 35	2.25 57.15	6.40 162.56	3.79 1.72
#14	1 ¾ 45	3.00 76.20	7.62 193.55	9.8 4.45
#18*	2 ¼ 55	3.75 95.25	12.00 304.8	21.9 9.93
#20	2 ½ 64	4.25 107.95	10.15 257.81	25.1 11.39
#24	3 76	4.75 120.65	13.25 366.55	38.4 17.4

* Length (L) shown is for oversized coupler. Standard length (L) is 9.75 in.

FULL LOAD HEX NUT AND JAM NUT

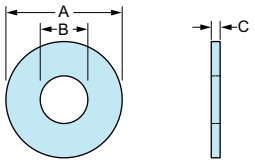


Full Load Hex Nut Jam Nut

Grade 80/100 – ASTM A576, A108						
Bar Designation	Nominal Diameter in mm	A in mm	B in mm	C in mm	Weight lbs / kg Full	Weight lbs / kg Jam
#6	¾ 20	1.125 28.57	1.45 36.83	0.87 22.10	0.26 0.12	0.16 0.07
#7	⅞ 22	1.50 38.10	1.75 44.45	0.87 22.10	0.61 0.28	0.21 0.10
#8	1 25	1.50 38.10	2.50 63.50	0.87 22.10	0.76 0.34	0.26 0.12
#9	1 ⅛ 28	2.00 50.80	2.25 57.15	0.87 22.10	1.49 0.68	0.57 0.26
#10	1 ¼ 32	2.00 50.80	2.50 63.50	1.00 25.40	1.43 0.65	0.56 0.25
#11	1 ⅜ 35	2.25 57.15	2.75 69.85	1.00 25.40	1.90 0.86	0.70 0.32
#14	1 ¾ 45	3.00 76.2	3.50 88.9	1.00 25.40	5.2 2.36	0.82 0.37
#18**[1]	2 ¼ 55	3.75 95.25	6.00 152.4	1.50 38.1	11.0 5.0	2.71 1.23
#20**	2 ½ 64	4.25 107.95	4.25 107.95	1.50 38.1	12.3 5.58	4.34 1.97
#24**	3 76	4.75 120.65	6.50 165.1	1.75 44.45	18.7 8.48	5.0 2.1

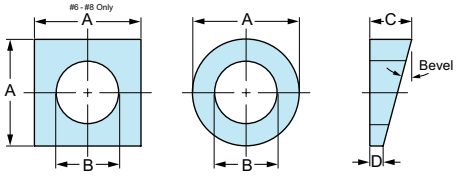
[1] Length (B) shown for oversized collar nut. Standard nut length is 4.88 in.
** Round collar nut with flats.

HARDENED WASHER



Grade 80/100 – ASTM F436						
Bar Designation	Nominal Diameter in mm	A in mm	B in mm	C in mm	Weight lbs kg
#6	¾ 20	1.75 44.45	0.938 23.83	0.136 3.45	0.07 0.03
#7	⅞ 22	2.00 50.80	1.063 27.00	0.136 3.45	0.09 0.04
#8	1 25	2.25 57.15	1.188 30.18	0.136 3.45	0.11 0.05
#9	1 ⅛ 28	2.50 63.50	1.375 34.92	0.136 3.45	0.13 0.06
#10	1 ¼ 32	2.75 69.85	1.531 38.89	0.136 3.45	0.16 0.07
#11	1 ⅜ 35	3.00 76.20	1.625 41.27	0.136 3.45	0.19 0.09
#14	1 ¾ 45	3.75 95.25	2.125 53.975	0.178 4.521	0.38 0.17
#18	2 ¼ 55	4.50 114.3	2.625 66.7	0.240 6.10	0.70 0.32
#20	2 ½ 64	5.50 139.7	3.157 80.2	0.240 6.10	1.09 0.49

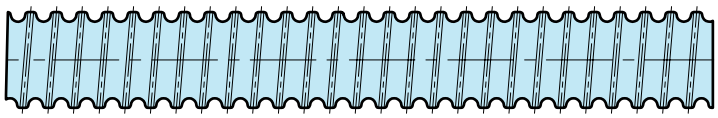
BEVELED WASHER

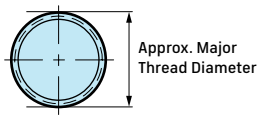


Grade 80/100 – F 436, A536 80-55-06								
Bar Designation	Nominal Diameter in mm	A in mm	B in mm	C in mm	D in mm	Bevel degrees	Weight lbs kg
#6	¾ 20	1.75 44.45	.95 24.13	0.45 11.43	0.14 3.56	10	0.22 .010
#7	⅞ 22	1.75 44.45	1.14 28.96	0.45 11.43	0.14 3.56	10	0.19 0.09
#8	1 25	1.75 44.45	1.14 28.96	0.45 11.43	0.14 3.56	10	0.19 0.09
#9	1 ⅛ 28	2.63 66.80	1.38 31.75	0.93 23.62	0.23 5.84	15	0.64 0.29
#10	1 ¼ 32	2.75 69.85	1.63 41.40	0.97 24.64	0.23 5.84	15	0.66 0.30
#11	1 ⅜ 35	3.09 78.49	1.75 44.45	1.06 26.92	0.23 5.84	15	0.93 0.45
#14	1 ¾ 45	4.00 10.16	2.13 54.10	1.29 32.77	0.23 5.84	15	1.94 0.88
#18	2 ¼ 55	8.00 203.20	3.50 88.90	1.75 44.45	0.43 10.92	10	2.2 1.0
#20	2 ½ 64	8.00 203.20	4.00 101.60	2.25 57.15	0.84 21.34	10	3.1 1.41

Please note: As we continuously improve the design of our products, product details are subject to change.

FULLY THREADED BAR

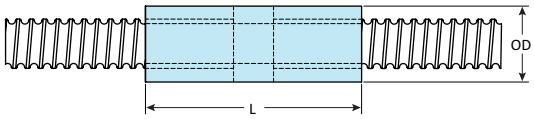




Grade 120 ksi Yield Strength / Grade 150 ksi Ultimate Strength								
Nominal Diameter in mm	Grade	Min. Net Area Thru Threads in² mm²	Min. Ultimate Strength kips kN	Min. Yield Strength kips kN	Nominal Weight lbs/ft kg/m	Approx. Major Thread Diameter in mm	Thread Orientation	Max. Length ft m
1 ¼ 32	150	1.250 807	188 834	150 667	4.5 6.7	1 ½ 38.1	Left Hand	60 18.3
1 ⅜ 36	150	1.580 1019	237 1054	190 843	5.7 8.5	1 ⅝ 41.3	Left Hand	60 18.3
1 ¾ 46	150	2.600 1677	390 1735	320 1423	9.1 13.5	2 50.8	Left Hand	60 18.3
2 ¼ 57	150	4.000 2581	600 2669	480 2135	13.6 20.2	2 ⅜ 62.0	Left Hand	60 18.3
2 ½ 64	150	5.190 3350	778 3457	622 2766	18.3 27.2	2 ¾ 69.9	Left Hand	60 18.3
3 75	150	7.060 4554	1059 4702	847 3766	24.0 35.7	3 ¼ 82.6	Left Hand	60 18.3

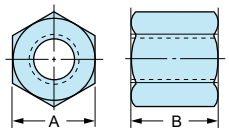
Nucor Skyline's high strength threaded bar is cold roll threaded, quenched and tempered grade 4140 smooth rounds.

COUPLER

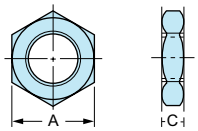


High Strength Threaded Bar – ASTM A108 / A576			
Nominal Diameter in mm	OD in mm	L in mm	Weight lbs kg
1 ¼ **32**	2.125 54.0	5.250 133.4	3.11 1.41
1 ⅜ **36**	2.375 60.3	5.750 146.1	4.22 1.91
1 ¾ **46**	3.00 76.2	8.500 215.9	9.98 4.53
2 ¼ **57**	4.00 101.6	9.000 228.6	21.45 9.73
2 ½ **64**	4.50 114.4	10.000 254.0	28.8 13.1
3 **75**	5.00 127.0	12.000 308.0	41.24 18.71

FULL LOAD HEX NUT AND JAM NUT



Full Load Hex Nut



Jam Nut

High Strength Threaded Bar – ASTM A108 / A576					
Nominal Diameter in mm	A in mm	B in mm	C in mm	Weight lbs / kg	
				Full	Jam
1 ¼ **32**	2.250 57.2	2.500 63.5	0.625 15.9	2.07 0.94	0.52 0.24
1 ⅜ **36**	2.500 63.5	2.750 69.9	0.750 19.1	2.78 1.26	0.75 0.34
1 ¾ **46**	3.000 76.2	3.500 88.9	1.250 31.8	6.18 2.80	1.70 0.77
2 ¼ **57**	4.000 101.6	4.250 107.95	1.500 38.10	10.5 4.76	3.54 1.61
2 ½ **64**	4.000 101.6	4.750 120.7	1.750 44.45	10.82 4.91	3.99 1.81
3 **75**	5.000 127.0	6.000 152.4	2.000 50.8	23.9 10.84	5.11 2.32

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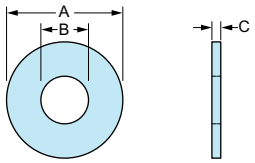
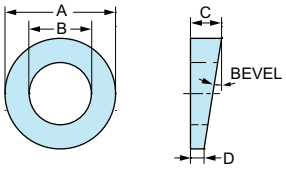
FULLY THREADED BAR

HARDENED WASHER



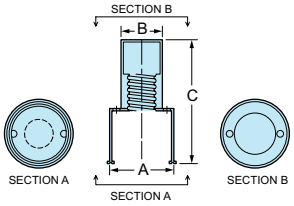
ROUND BEVELED WASHER



High Strength Threaded Bar – ASTM F436				
Nominal Diameter	**A**	**B**	**C**	**Weight**
in mm	in mm	in mm	in mm	lbs kg
1 ¼ 32	2.750 69.850	1.531 38.887	0.136 3.454	0.160 0.07
1 ⅜ 36	3.250 82.550	1.770 44.958	0.178 4.521	0.300 0.13
1 ¾ 46	4.000 101.600	2.407 61.138	0.240 6.096	0.550 0.25
2 ¼ 57	4.500 114.300	2.625 66.700	0.240 6.096	0.70 0.32
2 ½ 64	5.500 139.700	3.157 80.188	0.240 6.096	1.090 0.49
3 75	6.500 165.100	3.625 92.075	0.240 6.096	1.910 0.87

High Strength Threaded Bar – ASTM F436 / A536, 80-55-06 Ductile Cast Iron						
Nominal Diameter	**A**	**B**	**C**	**D**	**Bevel**	**Weight**
in mm	in mm	in mm	in mm	in mm	degrees	lbs kg
1 ¼ 32	2.75 69.85	1.63 41.40	0.97 24.64	0.23 5.84	15	0.66 0.30
1 ⅜ 36	3.09 78.49	1.75 44.45	1.06 26.92	0.23 5.84	15	0.93 0.42
1 ¾ 46	4.00 101.60	2.13 54.10	1.29 32.77	0.23 5.84	15	1.94 0.88
2 ¼ 57	4.60 116.84	2.63 66.80	1.18 29.97	0.37 9.40	10	2.32 1.05
2 ½ 64	5.00 127.00	3.00 76.20	1.31 33.27	0.43 10.92	10	2.83 1.28
3 75	7.50 190.5	3.50 88.90	1.75 44.45	0.43 10.92	10	9.68 4.39

HDPE PLASTIC NUT CAP*



HDPE Plastic Nut Cap for High Strength Bar			
Nominal Diameter	**A**	**B**	**C**
in mm	in mm	in mm	in mm
1 ¼ – 1 ⅜ **26 – 36**	3.5 88.9	2.25 57.2	6.75 171.5
1 ¾ – 3 **46 – 75**	6.5 165.1	4.25 108.0	10.25 260.4

* "O" ring seal in base of cap.

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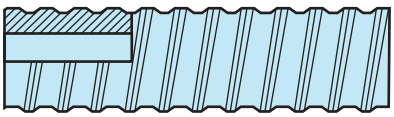
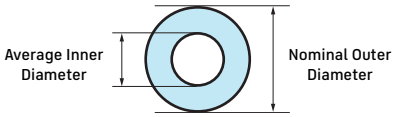
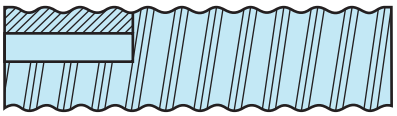
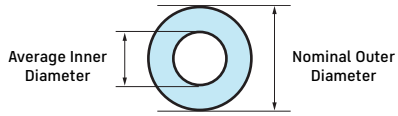
HOLLOW BAR SYSTEMS





"T" Threaded Hollow Bar Systems							
Bar Designation	Nominal Outer Diameter in mm	Average Inner Diameter in mm	Cross Sectional Area in² mm²	Ultimate Load kips kN	Yield Load kips kN	Approx Major Thread Diameter in mm	Nominal Weight lbs/ft kg/m
T76S	2.99 76	1.65 42	3.813 2460	427.1 1900	337.2 1500	2.99 76	16.83 25
T103S	4.06 103	2.05 52	8.06 5200	831.8 3700	600.2 2670	4.06 103	26.93 40





"R" Threaded Hollow Bar							
Bar Designation	Nominal Outer Diameter in mm	Average Inner Diameter in mm	Cross Sectional Area in² mm²	Ultimate Load kips kN	Yield Load kips kN	Approx. Major Thread Diameter in mm	Nominal Weight lbs/ft kg/m
R38Nx19mm	1.50 38	0.75 22	1.178 590	112.4 500	90 400	1.5 37	4.04 4.7
R51N	2.01 51	1.26 32	1.457 940	180 800	141.6 630	2.01 49	5.05 7.4

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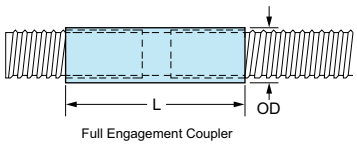
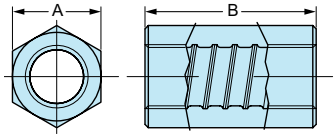
HOLLOW BAR SYSTEMS

COUPLER

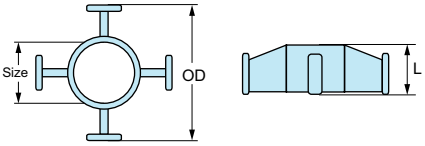


Full Engagement Coupler

HEX NUT



CENTRALIZER



"T" Threaded Hollow Bar Coupler

Bar Designation	OD in mm	L in mm	Weight lbs kg
T76	3.8 97	8.7 220	10.2 4.54
T103	5.2 132	11.5 292	30.5 13.8

"T" Threaded Hollow Bar Hex Nut

Bar Designation	A in mm	B in mm	Weight lbs kg
T76	4.0 102.0	3.1 80.0	6.2 2.81
T103	5.25 133.0	5.125 130	13.0 5.90

Hollow Bar Centralizer

Size	OD in mm	L in mm	Weight lbs kg
T76	5.00 130	1.75 45	2.0 0.89
T103	6.40 165	3.20 80	6.5 2.94

"R" Threaded Hollow Bar Coupler

Bar Designation	OD in mm	L in mm	Weight lbs kg
R38Nx19mm	2.01 51	7.09 180	1.1 1.68
R51N	2.5 64	8.0 200	4.2 1.91

"R" Threaded Hollow Bar Hex Nut

Bar Designation	A in mm	B in mm	Weight lbs kg
R38Nx19mm	2.0 51.0	2.0 60.0	1.3 0.59
R51N	3.0 76.0	2.76 70.0	3.5 1.59

* Dimensions of nuts and couplers are for standard thread sizes. Contact your local Nucor Skyline representative for coated or galvanized bar values.

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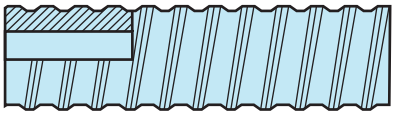
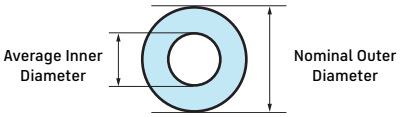
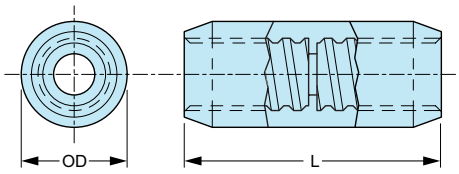
HOLLOW BAR SYSTEMS





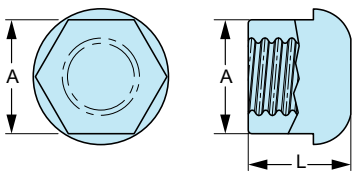
"T" Threaded Hollow Bar Systems*							
Bar Designation	Nominal Outer Diameter in mm	Average Inner Diameter in mm	Cross Sectional Area in² (mm²)	Minimum Ultimate Load kips kN	Minimum Yield Load kips kN	Approx. Major Thread Diameter in mm	Nominal Weight lbs/ft kg/m
T40/20	1.58 40	0.79 20	1.125 726	121.4 540	95.8 426	1.58 40	3.5 5.2
T40/16	1.58 40	0.63 16	1.085 770	148.4 660	118 525	1.58 40	4.04 6
T52/26	2.05 52	1.18 30	1.783 1150	208.9 929	164.1 730	2.05 52	6.06 9
T76/51	3.00 76	1.93 49	3.224 2080	359.7 1600	269.8 1200	2.99 76	10.97 16.3
T76/45	3.00 76	1.66 42	3.81 2460	390 1467	330 1467	3.00 76	13.2 19.7

COUPLER



"T" Threaded Hollow Bar Coupler*			
Bar Designation	OD in mm	L in mm	Weight lbs kg
HBCPL 40	2.25 57	5.50 140	4.7 2.1
HBCPL 40C	2.50 64	5.50 140	5.1 2.31
HBCPL 52	2.7 68.5	6.25 160	5.2 2.36
HBCPL 76	4.0 101.6	8.5 215.9	13.6 6.2

ANCHOR HEX NUT



"T" Threaded Hollow Bar Anchor Hex Nut*			
Bar Designation	A in mm	L in mm	Weight lbs kg
HBHN 40	2.52 64	2.68 68	2.87 1.3
HBHN 52	3.2 81	2.5 63.5	5.1 2.31
HBHN 76	4.0 102	3.1 80	6.2 2.81

* Meets "Buy America" requirements.

HOLLOW BAR SYSTEMS

Carbide Cross, Steel Cross Cut , and Button Bits		
Bar Sizes	Size in mm	Weight lbs/unit kg/unit
T40	3.5 88.9	3.5 1.59
	4.0 101.6	5.5 2.49
	4.5 114.3	7.0 3.18
	5.0 127.0	10.5 4.76
	6.0 152.4	13.0 5.90
T52	4.5 114.3	7.0 3.18
	5.0 127.0	10.5 4.76
	6.0 152.4	13.0 5.90
T76	5.0 127.0	10.5 4.76
	6.0 152.4	13.0 5.90
	7.0 177.8	14.5 6.58
	8.0 203.2	16.0 7.26
T103	7.0 175.0	23.45 10.64
	8.0 200.0	27.9 12.66
	10.0 250.0	44.45 20.16
R32	2.0 50.8	1.0 0.45
	2.5 63.5	2.0 0.91
	3.0 76.2	2.9 1.32
R38	3.0 76.2	2.9 1.32
	3.5 88.9	3.5 1.59
R51	4.0 101.6	5.5 2.49
	4.5 114.3	7.0 3.18
	5.0 127.0	10.5 4.76
	6.0 152.4	13.0 5.90

All bits subject to availability. Call for stock quantities. Specialty bits available upon request.

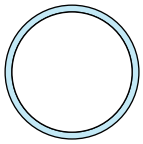
Drill Bit Adaptors	
Adaptors	Weight lbs/unit kg/unit
R32 x R38	0.20 0.09
R38 x R51	0.30 0.13
T30 x T40	0.30 0.13

Call for job specific quotes. Price depends on quantities.

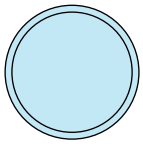
MICROPILE CASING

Outside Diameter	Thickness	Inside Diameter	Weight	Cross Sectional Area	Total Area of Pile	Internal Volume	External Surface Area	Moment of Inertia	SECTION MODULUS	
									Elastic	Plastic
in mm	in mm	in mm	lbs/ft kg/m	in^2 cm^2	in^2 cm^2	ft^3/ft m^3/m	ft^2/ft m^2/m	in^4 cm^4	in^3 cm^3	in^3 cm^3
7 **177.8**	0.5 12.7	6 152.4	34.74 51.71	10.21 65.87	38.48 248.29	0.196 0.018	1.83 0.56	54.24 2257.7	15.5 253.96	21.17 346.86
8.625 **219.075**	0.5 12.7	7.625 193.675	43.43 64.63	12.76 82.34	58.43 376.94	0.32 0.029	2.26 0.69	105.72 4400.36	24.51 401.65	33.05 541.58
9.625 **244.475**	0.5 12.7	8.625 219.075	48.77 72.59	14.33 92.47	72.76 469.42	0.406 0.038	2.52 0.77	149.63 6228.24	31.09 509.52	41.67 682.92
10.75 **273.05**	0.5 12.7	9.75 247.65	54.79 81.54	16.1 103.88	90.76 585.56	0.518 0.048	2.81 0.86	211.95 8822.03	39.43 646.18	52.57 861.52
12.75 **323.85**	0.5 12.7	11.75 298.45	65.48 97.45	19.24 124.14	127.68 823.72	0.753 0.07	3.34 1.02	361.54 15048.59	56.71 929.36	75.07 1230.22
14 **355.6**	0.5 12.7	13 330.2	72.16 107.4	21.21 136.81	153.94 993.15	0.922 0.086	3.67 1.12	483.76 20135.45	69.11 1132.48	91.17 1493.95
16 **406.4**	0.5 12.7	15 381	82.85 123.31	24.35 157.08	201.06 1297.17	1.227 0.114	4.19 1.28	731.94 30465.73	91.49 1499.3	120.17 1969.18
18 **457.2**	0.5 12.7	17 431.8	93.54 139.22	27.49 177.35	254.47 1642	1.576 0.146	4.71 1.44	1053.17 43836	117.02 1918	153.17 2510

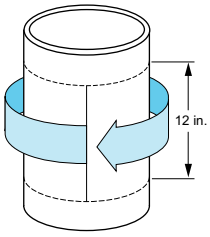
Contact your Nucor Skyline representative for additional diameters, lengths, and starter details.



CROSS SECTIONAL AREA



TOTAL AREA OF PILE



EXTERNAL SURFACE AREA

MICROPILE CASING ACCESSORIES

Nucor Skyline's Geostructural Group delivers complete accessory packages with your threaded casing. We understand the urgency of your project and stock a wide range of casing accessories for immediate delivery.

TOOLING ITEMS

In-house custom fabrication and machining is available for duplex and flange adapters to match casing and drill system requirements. We can also fabricate crossover subs to fit any existing tooling items. Nucor Skyline offers API drill rods, bits, and tool subs with select items in stock.

Nucor Skyline can provide threaded micropile casing up to 40 feet.

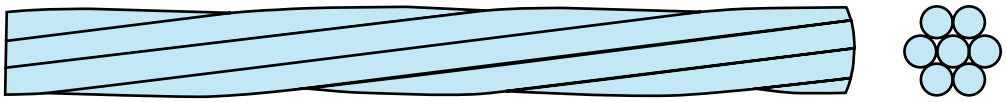
Female and male casing, cut and bundled to specifications

Casing accessories include duplex and flange adapters

API drill rods and casing subs are typical tooling items

Saver-subs available to fit all sizes of casing

MULTI-STRAND ANCHORS

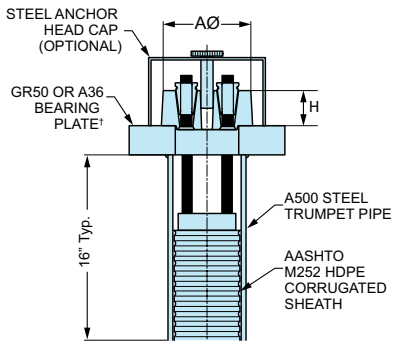


Multi-Strand Anchors - ASTM A416						
No. of 0.6″ Strands	Nominal Cross Section Area (Aps) in² mm²	Ultimate Strength (Fpu x Aps) kips kN	Maximum Jacking Load (0.8 x Fpu x Aps) kips kN	Maximum Design Load (0.6 x Fpu x Aps) kips kN	Minimum Lockoff Load (0.5 x Fpu x Aps) kips kN	Nominal Steel Weight (Bare Strand) lbs/ft kg/m
1	0.217 140	58.6 261	46.9 209	35.2 156	29.3 130	0.74 1.10
2	0.434 280	117.2 521	93.8 417	70.3 313	58.6 261	1.48 2.20
3	0.651 420	175.8 782	140.6 626	105.5 469	87.9 391	2.22 3.31
4	0.868 560	234.4 1043	187.5 834	140.6 626	117.2 521	2.96 4.41
5	1.085 700	293.0 1303	234.4 1043	175.8 782	146.5 652	3.70 5.51
6	1.302 840	351.6 1564	281.3 1251	211.0 938	175.8 782	4.44 6.61
7	1.519 980	410.2 1825	328.2 1460	246.1 1095	205.1 912	5.18 7.71
8	1.736 1120	468.8 2085	375.0 1668	281.3 1251	234.4 1043	5.92 8.82
9	1.953 1260	527.4 2346	421.9 1877	316.4 1408	263.7 1173	6.66 9.92
10	2.170 1400	586.0 2607	468.8 2085	351.6 1564	293.0 1303	7.40 11.02
11	2.387 1540	644.6 2867	515.7 2294	386.8 1720	322.3 1434	8.14 12.12
12	2.604 1680	703.2 3128	562.6 2503	421.9 1877	351.6 1564	8.88 13.22
13	2.821 1820	761.8 3389	609.4 2711	457.1 2033	380.9 1694	9.62 14.33
14	3.038 1960	820.4 3649	656.3 2920	492.2 2190	410.2 1825	10.36 15.43
15	3.255 2100	879.0 3910	703.2 3128	527.4 2346	439.5 1955	11.10 16.53
16	3.472 2240	937.6 4171	750.1 3337	562.6 2503	468.8 2085	11.84 17.63
17	3.689 2380	996.2 4432	797.0 3545	597.7 2659	498.1 2216	12.58 18.73
18	3.906 2520	1054.8 4692	843.8 3754	632.9 2815	527.4 2346	13.32 19.84
19	4.123 2660	1113.4 4953	890.7 3962	668.0 2972	556.7 2476	14.06 20.94

Aps = Area Prestressing Steel, Fpu = Minimum Ultimate Tensile Strength
Strand Anchors utilize 0.6″ (15.2mm) dia. 7-wire, Low Relaxation 270 KSI Steel Strand conforming to ASTM A416.
*Maximum lockoff load shall not exceed (0.7 x Fpu x Aps), maximum jacking load shall not exceed (0.8xFpu x Aps)
Now available: Hot Melt Extrusion Coated Strand. Consult your sales representative for information on load distributive or removable strand anchors.

Please note: As we continuously improve the design of our products, product details are subject to change.

PTI CLASS I DCP STRAND ANCHOR HEAD



† Nucor Skyline can provide a customized bearing plate solution.

Anchor Head & Duct Dimensions for DCP Strand Anchors

Max. No. of Strands	Corrugated Sheath		Trumpet Pipe		Anchor Head		Anchor Head Cap	
	OD	ID	OD	ID	AØ	H	OD	Height
	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm
2-3*	2.33 59.18	2.00 50.80	4.00 101.60	3.548 90.12	4.70 119.38	1.80 45.72	5.56 141.29	3.50 88.90
4**	3.00 76.20	2.50 63.50	4.00 101.60	3.548 90.12	4.70 119.38	1.80 45.72	5.56 141.29	3.50 88.90
6*	3.00 76.20	2.50 63.50	4.50 114.30	4.026 102.26	5.61 142.49	2.20 55.88	6.63 168.28	4.50 114.30
8**	3.60 91.44	3.00 76.20	5.56 141.22	5.047 128.19	6.33 160.78	2.06 52.32	8.63 219.08	4.50 114.30
12**	4.60 116.84	4.00 101.60	6.63 168.28	6.065 154.05	6.50 165.10	2.90 73.66	8.63 219.08	4.75 120.65
19**	5.63 142.88	5.00 127.00	8.63 219.08	7.981 202.72	8.78 223.01	4.00 101.60	10.75 273.05	6.25 158.75

* Based on ½″ ID PE Grout Tube. ** Based on ¾″ ID PE Grout Tube. Note: Consult your sales representative about additional variations.









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As we are constantly evolving, here is where you'll find our latest updates.

10/24 Edition