

**SERVICE
STEEL
WAREHOUSE**

PILING PRODUCT GUIDE

2023 Edition

**PIPE PILING
HOT ROLLED & COLD FORMED SHEET
PILING
OIL & GAS PIPE
WATER PIPE
H-PILING
STRUCTURAL SHAPES
TIE-BACK SYSTEMS**



SERVICESTEEL.ORG

800-675-9929 | 713-210-9323

STRONG FOUNDATIONS

START WITH SERVICE STEEL

Service Steel Supplies **All Your Foundation Products**

From industry leading **Pipe for Piling, Oil & Gas or Water**, Service Steel has partnered exclusively with Europe's top Pipe mill to bring you the highest quality and most cost effective options available. **Partnerships extend to the latest mill production of state of the art hot rolled steel sheet piling.** These key products are complimented with **channel, angle, walings and struts, wide flange beams, tie rod anchor systems, piling points and shoes.**

Supported by a dynamic sales team and backed by unmatched engineering expertise, Service Steel is ideally positioned to service its foundation and structural customers nationwide.

Service Steel is a full service company serving the foundation market with a range of top quality products and services. We employ highly qualified people to give you quick and dependable support for your questions and project needs.

Products include:

- I Hot & Cold Rolled Steel Sheet Piles**
- II Pipe Piling, Oil & Gas pipe,
Water pipe**
- III H-Piles / WF Shapes**
- IV Tie-Rod Anchorages**
- V Channels / Angles**

Services include:

- I Fabrication**
- II Coating / Galvanizing**
- III Sealants**
- IV Design & Engineering**
- V Technical Information**

You Are Our Number One Priority

Our goal is to offer you a product package for all of your construction piling needs. We supply straight from stock at our various locations and directly from mill production runs with fast delivery times to your site location.

I hope you enjoy browsing through the catalogue, and please, reach out to me if you need anything.

Best wishes,



Gerry McShane

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RE-INTRODUCING HOESCH LARSEN Z SERIES STEEL SHEET PILES

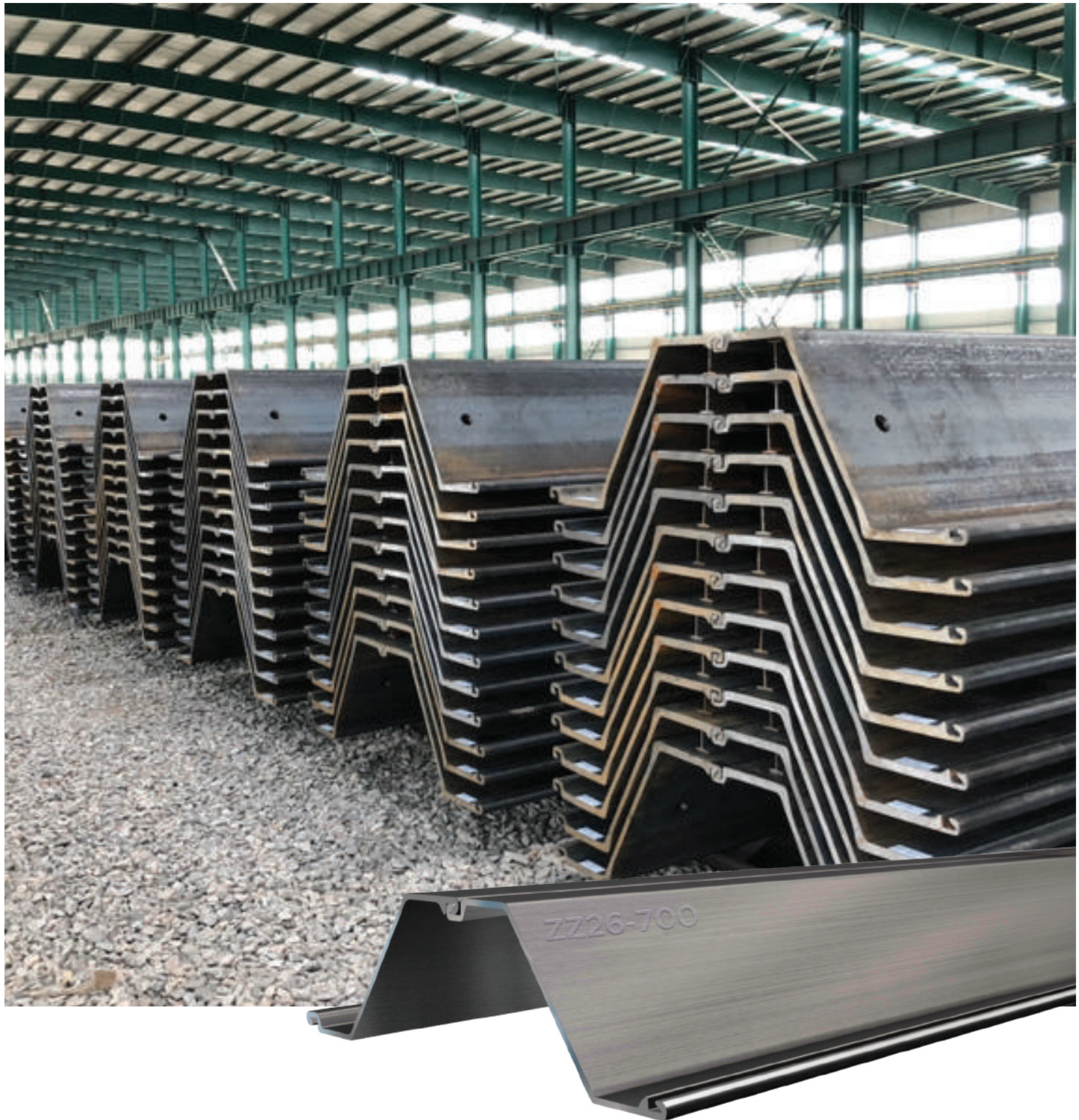
Section	Width (w)	Height (h)	Thickness		Weight		Section Modulus		Moment of Inertia	Cross Sectional Area	Coating Area	
			Flange	Web	Pile	Wall	Elastic	Plastic			Both Sides of Single ¹	Wall Surface
			in (mm)	in (mm)	lb/ft (kg/m)	lb/ft ² (kg/m)	in ³ /ft (cm ³ /m)	in ³ /ft (cm ³ /m)			ft ² /ft (m ² /m)	ft ² /ft ² (m ² /m ²)
Hoesch 1207	27.56 700	12.32 313	0.339 8.6	0.335 8.5	45.42 67.6	19.78 96.6	22.4 1205	26.3 1415	137.9 18,833	5.81 123.1	5.60 1.71	1.22 1.22
Hoesch 1307	27.56 700	12.36 314	0.378 9.6	0.374 9.5	49.66 73.9	21.63 105.6	24.3 1307	28.7 1541	150.1 20,494	6.36 134.6	5.60 1.71	1.22 1.22
Hoesch 1407	27.56 700	12.40 315	0.417 10.6	0.413 10.5	53.96 80.3	23.49 114.7	26.2 1409	31.0 1667	162.3 22,156	6.90 146.1	5.60 1.71	1.22 1.22
Hoesch 1208	30.31 770	13.84 354	0.335 8.5	0.335 8.5	49.19 73.2	19.45 95.0	24.2 1301	27.0 1540	137.9 18,833	5.71 121.0	6.13 1.87	1.21 1.21
Hoesch 1308	30.31 770	13.84 354	0.354 9.0	0.354 9.0	51.47 76.6	20.37 99.5	25.3 1357	30.3 1609	150.1 20,494	5.98 126.8	6.13 1.87	1.21 1.21
Hoesch 1408	30.31 770	13.88 355	0.375 9.5	0.375 9.5	53.82 80.1	21.29 104.0	26.3 1412	31.3 1678	162.3 22,156	6.25 132.5	6.13 1.87	1.21 1.21
Hoesch 1707	27.56 700	16.54 420	0.335 8.5	0.335 8.5	49.19 73.2	21.42 104.6	32.2 1731	37.8 2031	265.9 36,304	6.29 133.2	6.10 1.86	1.33 1.33
Hoesch 1807	27.56 700	16.54 420	0.354 9.0	0.354 9.0	51.54 76.7	22.42 109.5	33.6 1804	39.5 2121	277.5 37,894	6.59 139.5	6.10 1.86	1.33 1.33
Hoesch 1907	27.56 700	16.57 421	0.375 9.5	0.375 9.5	53.82 80.1	23.45 114.5	34.9 1878	41.2 2212	289.2 39,485	6.89 145.9	6.10 1.86	1.33 1.33
Hoesch 2007	27.56 700	16.57 421	0.394 10.0	0.394 10.0	56.18 83.6	24.45 119.4	36.3 1951	42.9 2303	300.8 41,076	7.19 152.2	6.10 1.86	1.33 1.33
Hoesch 2407	27.56 700	17.28 439	0.433 11.0	0.443 11.0	63.90 95.1	27.83 135.9	45.2 2432	52.5 2819	390.9 53,379	8.18 173.1	6.34 1.93	1.39 1.39
Hoesch 2607	27.56 700	17.32 440	0.480 12.2	0.480 12.2	68.88 102.5	30.00 146.5	48.5 2606	56.4 3030	420.0 57,329	8.82 186.6	6.34 1.93	1.39 1.39
Hoesch 2807	27.56 700	17.36 441	0.512 13.0	0.512 13.0	73.85 109.9	32.15 157.0	51.7 2779	60.3 3241	448.8 61,279	9.45 200.0	6.34 1.93	1.39 1.39
Hoesch 3607	27.56 700	19.65 499	0.669 17.0	0.433 11.0	79.36 118.1	34.57 168.8	67.0 3600	76.5 4111	657.8 89,826	10.16 215.0	6.72 2.05	1.45 1.45
Hoesch 3807	27.56 700	19.69 500	0.709 18.0	0.472 12.0	84.60 125.9	36.84 179.9	70.7 3800	81.1 4357	695.8 95,004	10.83 229.2	6.72 2.05	1.45 1.45
Hoesch 4007	27.56 700	19.72 501	0.748 19.0	0.512 13.0	89.84 133.7	39.12 191.0	74.4 4000	85.7 4604	733.7 100,184	11.49 243.3	6.72 2.05	1.45 1.45
Hoesch 4807	27.56 700	19.96 507	0.925 23.5	0.571 14.5	104.89 156.1	45.69 223.1	88.6 4760	102.0 5478	883.7 120,667	13.42 284.1	6.72 2.05	1.45 1.45
Hoesch 5007	27.56 700	20.00 508	0.965 24.5	0.610 15.5	110.20 164.0	47.98 234.3	92.3 4959	106.6 5729	922.5 125,966	13.67 289.4	6.72 2.05	1.45 1.45
Hoesch 5207	27.56 700	20.00 508	1.004 25.5	0.650 16.5	115.44 171.8	50.26 245.4	96.0 5158	111.3 5979	961.3 131,266	14.76 312.6	6.72 2.05	1.45 1.45

DOUBLE Z HOT ROLLED SHEET PILE SERIES

Section	Width (w)	Height (h)	Thickness		Weight		Section Modulus		Moment of Inertia	Cross Sectional Area	Coating Area	
			Flange	Web	Pile	Wall	Elastic	Plastic			Both Sides of Single ¹	Wall Surface
	in (mm)	in (mm)	in (mm)	in (mm)	lb/ft (kg/m)	lb/ft ² (kg/m)	in ³ /ft (cm ³ /m)	in ³ /ft (cm ³ /m)			ft ² /ft (m ² /m)	ft ² /ft ² (m ² /m ²)
ZZ12-700	27.56 700	12.37 314.2	0.339 8.6	0.335 8.5	45.62 67.9	19.86 97.0	22.5 1208	26.4 1418	138.9 18,971	5.84 123.5	5.62 1.72	1.23 1.23
ZZ13-700	27.56 700	12.41 315.2	0.378 9.6	0.374 9.5	49.84 74.2	21.70 105.9	24.3 1308	28.7 1543	150.9 20,611	6.38 135.0	5.62 1.72	1.23 1.23
ZZ14-700	27.56 700	12.45 316.2	0.417 10.6	0.413 10.5	54.07 80.5	23.54 114.9	26.2 1408	31.0 1669	163.0 22,262	6.92 146.4	5.62 1.72	1.23 1.23
ZZ12-770	30.31 770	13.52 343.5	0.339 8.6	0.335 8.5	48.92 72.8	19.37 94.5	23.3 1252	23.3 1488	157.4 21,496	5.71 120.8	6.07 1.85	1.32 1.32
ZZ13-770	30.31 770	13.54 344	0.358 9.1	0.354 9.0	51.22 76.2	20.28 99.0	24.3 1304	24.3 1551	164.3 22,433	5.98 126.5	6.07 1.85	1.32 1.32
ZZ14-770	30.31 770	13.56 344.5	0.378 9.6	0.375 9.5	53.52 79.6	21.19 103.4	25.2 1357	25.2 1613	171.1 23,370	6.25 132.2	6.07 1.85	1.32 1.32
ZZ17-700	27.56 700	16.54 420	0.335 8.5	0.331 8.4	49.26 73.3	21.45 104.7	32.3 1735	37.8 2032	266.7 36,425	6.28 132.8	6.10 1.86	1.33 1.33
ZZ18-700	27.56 700	16.56 420.5	0.358 9.1	0.354 9.0	51.58 76.7	22.46 109.6	33.6 1807	39.8 2132	278.3 38,001	6.57 139.1	6.10 1.86	1.33 1.33
ZZ19-700	27.56 700	16.57 421	0.378 9.6	0.375 9.5	53.90 80.2	23.47 114.6	35.0 1880	41.2 2210	289.8 39,578	6.87 145.4	6.10 1.86	1.33 1.33
ZZ20-700	27.56 700	16.59 421.5	0.398 10.1	0.394 10.0	56.22 83.7	24.48 119.5	36.3 1953	42.9 2304	301.4 41,155	7.17 151.7	6.10 1.86	1.33 1.33
ZZ24-700	27.56 700	18.08 459.2	0.445 11.3	0.441 11.2	64.39 95.8	28.04 136.9	45.3 2437	53.7 2875	409.7 55,949	8.24 174.4	6.34 1.93	1.38 1.38
ZZ26-700	27.56 700	18.12 460.2	0.484 12.3	0.480 12.2	69.21 103.0	30.13 147.1	48.4 2601	57.1 3071	438.2 59,843	8.85 187.4	6.34 1.93	1.38 1.38
ZZ27-700	27.56 700	18.14 460.7	0.504 12.8	0.500 12.7	71.48 106.4	31.12 152.0	49.8 2676	57.5 3089	451.4 61,641	9.14 193.6	6.34 1.93	1.38 1.38
ZZ28-700	27.56 700	18.16 461.2	0.524 13.3	0.520 13.2	74.02 110.1	32.23 157.3	51.4 2764	61.0 3278	466.8 63,740	9.47 200.4	6.34 1.93	1.38 1.38
ZZ36-700	27.56 700	19.65 499.2	0.594 15.1	0.441 11.2	79.80 118.7	34.75 169.6	66.9 3596	77.3 4151	657.2 89,753	10.21 216.1	6.74 2.05	1.46 1.46
ZZ38-700	27.56 700	19.69 500.2	0.634 16.1	0.480 12.2	85.02 126.5	37.02 180.7	70.6 3798	81.2 4363	695.6 94,984	10.88 230.2	6.74 2.05	1.46 1.46
ZZ40-700	27.56 700	19.73 501.2	0.673 17.1	0.520 13.2	90.24 134.3	39.29 191.8	74.4 3999	85.8 4610	733.9 100,219	11.54 244.4	6.74 2.05	1.46 1.46
ZZ42-700	27.56 700	19.65 499.2	0.713 18.1	0.551 14	96.08 143.0	41.83 204.2	78.7 4228	90.9 4882	772.9 105,543	12.29 260.2	6.76 2.06	1.47 1.47
ZZ44-700	27.56 700	19.69 500.2	0.752 19.1	0.591 15	101.30 150.7	44.11 215.3	82.5 4436	94.8 5096	812.4 110,942	12.96 296.6	6.76 2.06	1.47 1.47
ZZ46-700	27.56 700	19.73 501.2	0.791 20.1	0.630 16	106.53 158.5	46.38 226.5	86.2 4635	99.4 5343	850.6 116,159	13.63 288.5	6.76 2.06	1.47 1.47
ZZ48-700	27.56 700	19.81 503.2	0.870 22.1	0.591 15	107.09 159.3	46.63 227.6	89.1 4788	102.9 5528	882.2 120,467	13.70 290.0	6.76 2.06	1.47 1.47
ZZ50-700	27.56 700	19.85 504.2	0.909 23.1	0.630 16	112.06 166.7	48.79 238.2	92.5 4973	106.3 5713	918.0 125,358	14.34 303.4	6.76 2.06	1.47 1.47
ZZ52-700	27.56 700	19.89 505.2	0.949 24.1	0.669 17	117.15 174.3	51.01 249.0	96.0 5162	110.7 5951	954.9 130,403	14.99 317.2	6.76 2.06	1.47 1.47
ZZ48-580	22.83 580	18.98 482	0.756 19.2	0.594 15.1	93.99 139.9	49.40 241.1	89.3 4801	103.3 5555	847.3 115,712	14.52 307.2	6.20 1.90	1.64 1.64

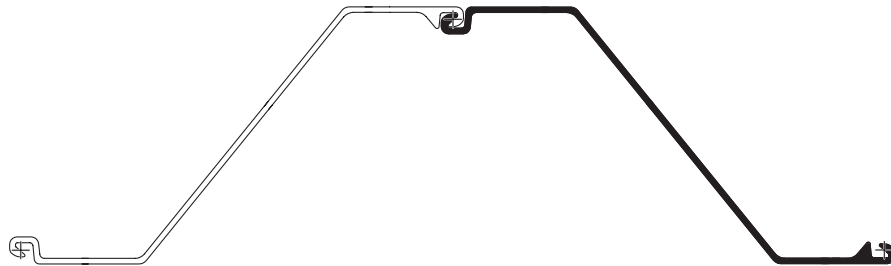
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DOUBLE Z SHEET PILES READY FOR DELIVERY TO OUR CUSTOMERS



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ESZ HOT ROLLED SHEET PILE SERIES

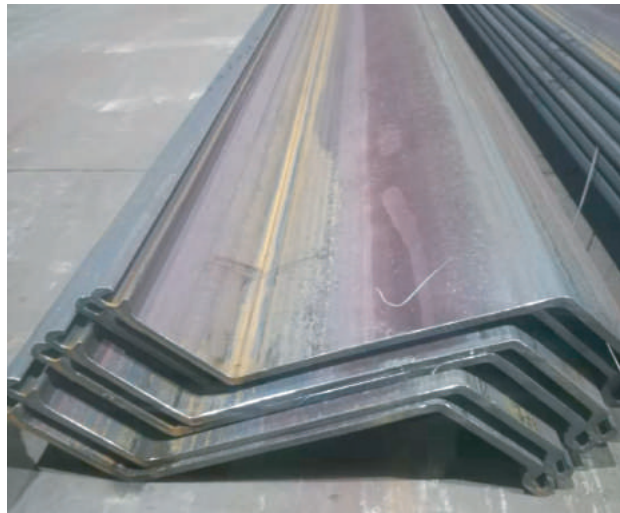


Sheet Pile Section	Width (w)	Height (h)	Thickness		Mass		Elastic Section Modulus	Moment of Inertia	Cross Sectional Area	Coating Area	
			Flange (t _f)	Web (t _w)	Pile	Wall				Both Sides of Single	Wall Surface
	in (mm)	in (mm)	in (mm)	in (mm)	lb/ft (kg/m)	lb/ft² (kg/m²)	ln³/ft (cm³/m)	ln⁴/ft (cm⁴/m)	ln²/ft (cm²/m)	ft²/ft (m²/m)	ft²/ft² (m²/m²)
ESZ 17	24.80 630	14.72 374	0.335 8.5	0.335 8.5	46.91 69.81	22.69 110.8	31.1 1670	229.2 31300	6.67 141.2	5.58 1.70	1.35 1.35
ESZ 18	24.80 630	14.76 375	0.375 9.5	0.375 9.5	51.07 76.00	24.72 120.7	33.6 1805	247.9 33850	7.26 153.7	5.58 1.70	1.35 1.35
ESZ 19	24.80 630	14.8 376	0.413 10.5	0.413 10.5	55.24 82.20	26.73 130.5	36.1 1940	266.6 36410	7.86 166.3	5.58 1.70	1.35 1.35
ESZ 20	24.80 630	14.82 377	0.433 11.0	0.433 11.0	57.32 85.40	27.75 135.6	37.3 2004	276.3 37734	8.16 172.8	5.58 1.70	1.35 1.35
ESZ 17-700	27.56 700	16.54 420	0.335 8.5	0.335 8.5	49.73 74.0	21.65 105.7	32.3 1735	266.3 36360	6.36 134.6	6.04 1.84	1.31 1.31
ESZ 18-700	27.56 700	16.54 420	0.354 9.0	0.354 9.0	52.01 77.4	22.65 110.6	33.6 1805	277.5 37890	6.66 140.9	6.04 1.84	1.31 1.31
ESZ 19-700	27.56 700	16.57 421	0.375 9.5	0.375 9.5	54.29 80.8	23.64 115.4	34.9 1875	288.7 39420	6.95 147.1	6.04 1.84	1.31 1.31
ESZ 20-700	27.56 700	16.61 422	0.413 10.5	0.413 10.5	58.80 87.5	25.60 125.0	37.4 2010	310.3 42380	7.53 159.3	6.04 1.84	1.31 1.31
ESZ 24-700	27.56 700	18.07 459	0.472 12.0	0.354 9.0	60.14 89.50	26.19 127.90	45.3 2435	409.1 55870	7.7 162.9	6.30 1.92	1.37 1.37
ESZ 26-700	27.56 700	18.11 460	0.512 13.0	0.394 10.0	64.98 96.70	28.29 138.10	48.4 2600	438.0 59810	8.32 176.0	6.30 1.92	1.37 1.37
ESZ 28-700	27.56 700	18.14 461	0.551 14.0	0.433 11.0	69.82 103.90	30.40 148.40	51.4 2763	466.8 63750	8.93 189.1	6.30 1.92	1.37 1.37
ESZ 36-700	27.56 700	20.04 509	0.551 14.0	0.453 11.5	78.09 116.2	34.02 166.1	66.8 3585	667.3 91130	10.00 211.5	6.92 2.11	1.48 1.48
ESZ 38-700	27.56 700	20.08 510	0.591 15.0	0.492 12.5	83.46 124.2	36.33 177.4	70.8 3800	709.3 96860	10.68 226.0	6.92 2.11	1.48 1.48
ESZ 40-700	27.56 700	20.12 511	0.630 16.0	0.532 13.5	88.84 132.2	38.66 188.8	74.8 4015	751.2 102590	11.40 240.5	6.92 2.11	1.48 1.48

SHEET PILING



SHEET PILING



SHEET PILE AND COMBINED PIPE & SHEET PILE STEEL GRADES

Available Steel Grades - Sheet Piling								
American			Canadian			European		
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 1034	Yield Strength	
	ksi	Mpa		ksi	Mpa		ksi	Mpa
A 572 Grade 50	50	345	Grade 350 W	51	355	S 320 GP	46	315
A 572 Grade 55	55	380	Grade 400 W	58	400	S 355 GP	51	355
A 572 Grade 60	60	415				S 390 GP	57	390
A 572 Grade 65	65	450				S 430 GP	62	430
A 690*	50	345					65	450

* Subject to mill inquiry

Available Steel Grades - Pipe in Combined Walls					
American					
ASTM	Yield Strength		ASTM	Yield Strength	
	ksi	Mpa		ksi	Mpa
A 139 Gr A	30	205	A 252 Gr 1	30	205
A 139 Gr B	35	240	A 252 Gr 2	35	240
A 139 Gr C	42	290	A 252 Gr 3	45	310
A 139 Gr D	46	315	A 252 Gr 3 m	50 - 80	345-555
A 139 Gr E	52	360			

Available Steel Grades - Sheet Piling in Combined Walls							
American			Canadian			European	
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 1034	Yield Strength
	ksi	Mpa		ksi	Mpa		ksi Mpa
A 572 Grade 50	50	345	Grade 350 W	51	355	S 320 GP	46 315
A 572 Grade 55	55	380	Grade 400 W	58	400	S 355 GP	51 355
A 572 Grade 60	60	415				S 390 GP	57 390
A 572 Grade 65	65	450				S 430 GP	62 430
A 690*	50	345					65 450

* Subject to mill inquiry

PIPE STANDARDS / COATINGS & LININGS

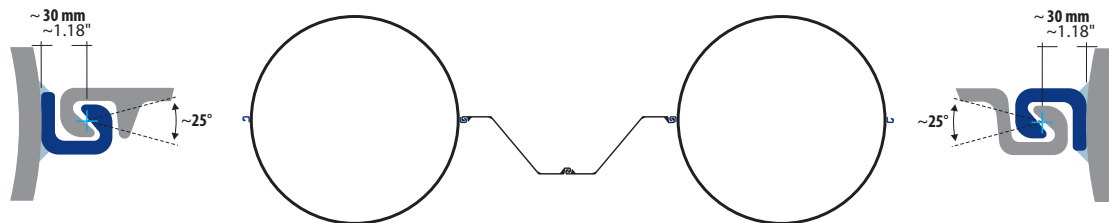


Oil & Gas Pipes	Water Pipes	Piling Pipes
API 5L PSL-2	API 5L PSL-1	ASTM A-252
ISO 3183	EN10217-1	ASTM A-253
EN 10208-2	DIM 1626	ASTM A-53
CSA Z245.1	AWWA C-200	EN 10219
IPS	NFA 49150	
GOST	DIN 2460	
	BS 534	
	UNI 6363	
	EN 10224	
	GOST	



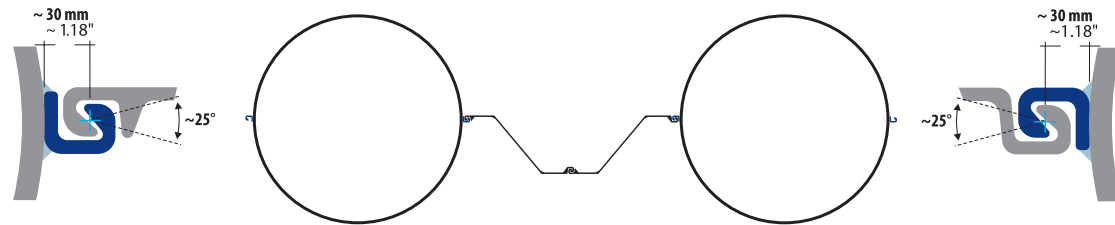
Coating	Lining
Epoxy	Solvent Free Epoxy
Glass Flake Epoxy	Flow Coat Epoxy
Fusion Bonded Epoxy (FBE)	Cement Mortar
Polyethylene (PE)	Polyurethane (PU)
Polypropylene (PP)	
Polyurethane (PU)	
Polyurea	
Reinforced Concrete Coating	

PSEZ - COMBINED PIPE AND SHEET PILE



Pipe EZ System	Sheet Pile Section	Properties of Pipe Pile			Properties of Combined Wall					
		Outside Diameter in mm	Wall Thickness in mm	Pipe Weight lb/ft kg/m	System Width in mm	System Inertia in ⁴ /ft cm ⁴ /m	Section Modulus in ³ /ft cm ³ /m	Weight		
								100% lb/ft ² kg/m ²	80% lb/ft ² kg/m ²	60% lb/ft ² kg/m ²
PESZ 24/ESZ 18	ESZ 18	24 609.6	0.375 9.5	94.71 140.9	75.96 1929.4	469 64046	39.1 2100.0	32.9 160.5	29.3 143.1	25.7 125.5
PESZ 30/ESZ 17-700	ESZ 17-700	30 762.0	0.375 9.5	118.76 176.7	87.48 2222.0	693 94635	46.2 2483.9	31.5 153.8	28.4 138.7	25.4 124.0
PESZ 30/ESZ 18	ESZ 18	30 762.0	0.375 9.5	118.76 176.7	81.96 2081.8	711 97093	47.4 2547.3	34.0 166.0	30.7 149.7	27.4 133.5
PESZ 36/ESZ 18	ESZ 18	36 914.4	0.375 9.5	142.81 212.5	87.97 2234.4	1048 143114	58.2 3129.0	41.4 201.9	35.2 171.7	35.2 171.9
PESZ 36/ESZ 18	ESZ 18	36 914.4	0.500 12.7	189.75 282.4	87.96 2234.2	1338 182716	74.4 3997.8	41.4 201.9	35.2 171.7	35.2 171.9
PESZ 36/ESZ 17-700	ESZ 17-700	36 914.4	0.500 12.7	189.75 282.4	93.48 2374.4	1285 175478	71.4 3838.7	39.7 193.8	35.7 174.3	32.9 160.6
PESZ 36/ESZ 19-700	ESZ 17-700	36 914.4	0.500 12.7	189.75 282.4	93.48 2374.4	1298 177253	72.1 3876.3	38.6 188.5	36.7 179.2	33.6 164.0
PESZ 42/ESZ 18	ESZ 18	42 1066.8	0.500 12.7	221.82 330.1	93.96 2386.6	1923 262603	91.6 4924.2	42.8 209.0	39.9 194.9	37.0 180.7
PESZ 42/ESZ 19-700	ESZ 19-700	42 1066.8	0.500 12.7	221.82 330.1	99.48 2526.8	1853 253044	88.2 4741.9	41.2 201.2	38.3 187.0	35.4 172.8
PESZ 42/ESZ 26-700	ESZ 26-700	42 1066.8	0.625 15.9	276.44 411.4	99.48 2526.8	2340 319548	111.4 5989.2	50.4 246.1	47.0 229.5	43.6 212.9
PESZ 42/ESZ 38-700	ESZ 38-700	42 1066.8	0.750 19.1	330.73 492.2	99.48 2526.8	2888 394382	137.5 7392.5	61.4 299.8	57.1 278.8	52.8 257.8
PESZ 48/ESZ 18	ESZ 18	48 1219.2	0.500 12.7	253.89 377.8	99.96 2539.0	2649 361745	110.4 5935.5	44.1 215.3	41.4 202.1	38.6 188.5
PESZ 48/ESZ 19-700	ESZ 19-700	48 1219.2	0.625 15.9	316.53 471.0	105.48 2679.2	3120 426064	130.0 6989.2	49.6 242.2	46.9 229.0	44.2 215.8
PESZ 48/ESZ 28-700	ESZ 28-700	48 1219.2	0.750 19.1	378.83 563.8	105.48 2679.2	3779 516056	157.5 8467.7	60.3 294.4	56.8 277.3	53.4 260.7
PESZ 48/ESZ 38-700	ESZ 38-700	48 1219.2	0.875 22.2	440.80 656.0	105.48 2679.2	4463 609462	186.0 10000.0	70.4 343.7	66.4 324.2	62.3 304.2
PESZ 54/ESZ 18	ESZ 18	54 1371.6	0.563 14.3	321.61 478.6	105.96 2691.4	3937 537632	145.8 7838.7	49.3 240.7	46.7 228.0	44.1 215.3
PESZ 54/ESZ 19-700	ESZ 19-700	54 1371.6	0.625 15.9	356.62 530.7	111.48 2831.6	4161 568222	154.1 8284.9	51.3 250.5	48.7 237.8	46.1 225.1
PESZ 54/ESZ 28-700	ESZ 28-700	54 1371.6	0.750 19.1	426.94 635.4	111.48 2831.6	5019 685389	185.9 9994.6	62.2 303.7	59.0 288.1	55.7 272.0

PSEZ - COMBINED PIPE AND SHEET PILE

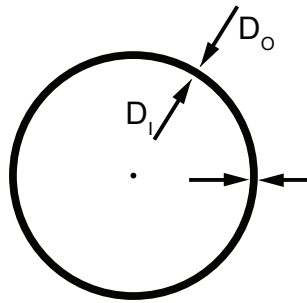


Pipe EZ System	Sheet Pile Section	Properties of Pipe Pile			Properties of Combined Wall					
		Outside Diameter	Wall Thickness	Pipe Weight	System Width	System Inertia	Section Modulus	Weight		
		in mm	in mm	lb/ft kg/m	in mm	in ⁴ /ft ⁴ cm ⁴ /m	in ³ /ft ³ cm ³ /m	100% lb/ft ² kg/m ²	80% lb/ft ² kg/m ²	60% lb/ft ² kg/m ²
PESZ 54/ESZ 38-700	ESZ 38-700	54 1371.6	0.875 22.2	496.92 739.5	111.48 2831.6	5898 805424	218.4 11741.9	72.7 355.0	68.8 335.9	65.0 317.4
PESZ 60/ESZ 17-700	ESZ 17-700	60 1524.0	0.625 15.9	396.70 590.4	117.48 2984.0	5373 733731	179.1 9629.0	51.8 252.9	49.6 242.2	47.3 230.9
PESZ 60/ESZ 19-700	ESZ 19-700	60 1524.0	0.750 19.1	475.04 706.9	117.43 2982.7	6394 873158	213.1 11457.0	60.8 296.9	58.3 284.6	55.9 272.9
PESZ 60/ESZ 28-700	ESZ 28-700	60 1524.0	0.875 22.2	553.05 823.0	117.48 2984.0	7475 1020778	249.2 13397.8	71.9 351.0	68.8 335.9	65.7 320.8
PESZ 60/ESZ 38-700	ESZ 38-700	60 1524.0	1.000 25.4	630.72 938.6	117.48 2984.0	8574 1170856	285.8 15365.6	82.6 403.3	79.0 385.7	75.3 367.6
PESZ 66/ESZ 17-700	ESZ 17-700	66 1676.4	0.688 17.5	480.36 714.9	123.48 3136.4	7435 1015315	225.3 12112.9	57.4 280.3	55.3 270.0	53.1 259.3
PESZ 66/ESZ 19-700	ESZ 19-700	66 1676.4	0.750 19.1	523.15 778.5	123.48 3136.4	8071 1102167	244.6 13150.5	61.6 300.8	59.5 290.5	57.3 279.8
PESZ 66/ESZ 28-700	ESZ 28-700	66 1676.4	0.875 22.2	609.17 906.5	123.48 3136.4	9434 1288297	285.9 15370.9	73.9 360.8	70.9 346.2	68.0 332.0
PESZ 66/ESZ 38-700	ESZ 38-700	66 1676.4	1.000 25.4	694.86 1034.1	123.48 3136.4	10800 1474836	327.3 17596.7	84.8 414.0	81.4 397.4	77.9 380.3
PESZ 72/ESZ 17-700	ESZ 17-700	72 1828.8	0.688 17.5	518.45 771.5	129.48 3288.8	9092 1241594	252.6 13580.6	58.3 284.6	56.3 274.9	54.2 264.6
PESZ 72/ESZ 19-700	ESZ 19-700	72 1828.8	0.750 19.1	571.25 850.1	129.48 3288.8	9997 1365179	277.7 14930.1	64.1 313.0	61.8 301.7	59.6 291.0
PESZ 72/ESZ 28-700	ESZ 28-700	72 1828.8	0.875 22.2	665.29 990.1	129.48 3288.8	11659 1592140	323.9 17413.9	75.6 369.1	72.8 355.4	70.1 342.3
PESZ 72/ESZ 38-700	ESZ 38-700	72 1828.8	1.000 25.4	759.00 1129.5	129.48 3288.8	13331 1820467	370.3 19908.5	86.9 424.3	83.6 408.2	80.3 392.1
PESZ 78/ESZ 19-700	ESZ 19-700	78 1981.2	0.750 19.1	619.36 921.7	135.48 3441.2	12145 1658508	311.4 16741.9	65.5 319.8	63.4 309.5	61.2 298.8
PESZ 78/ESZ 28-700	ESZ 28-700	78 1981.2	0.875 22.2	721.42 1073.6	135.48 3441.2	14154 1932855	362.9 19510.7	77.3 377.4	74.6 364.2	71.9 351.0
PESZ 78/ESZ 38-700	ESZ 38-700	78 1981.2	1.000 25.4	823.14 1225.0	135.48 3441.2	16171 2208294	414.6 22290.3	88.7 433.1	85.5 417.4	82.4 402.3
PESZ 84/ESZ 28-700	ESZ 28-700	84 2133.6	0.875 22.2	777.54 1157.1	141.48 3593.6	16924 2311123	402.9 21661.2	78.8 384.7	76.2 372.0	73.6 359.3
PESZ 84/ESZ 38-700	ESZ 38-700	84 2133.6	1.000 25.4	887.28 1320.4	141.48 3593.6	19324 2638864	460.1 24736.5	90.4 441.4	87.3 426.2	84.3 411.6

The size combinations above are a sample only of the hundreds of possible combinations of Pipe-Z wall systems.

The Pipe-Z system using large diameter pipe and wide sheet piling gives a wide footprint that optimizes wall strength while minimizing system weight. Compared to an equivalent beam pile the Pipe-Z of a similar capacity will produce a lower weight per square foot overall.

SPIRALWELD PIPE



PIPE WEIGHT lbs/ft (kg/m)												
Outside Diameter in (mm)	Wall Thickness (t) in (mm)											
	0.179 4.55	0.188 4.78	0.203 5.16	0.219 5.56	0.250 6.35	0.312 7.92	0.375 9.53	0.500 12.70	0.625 15.88	0.750 19.05	1.000 25.40	
8.625 219.1	16.16 24.05	16.96 25.23	18.28 27.20	19.68 29.29	22.38 33.31							
10.0 254.0	18.79 27.97	19.72 29.23	21.26 31.64	22.90 34.08	26.06 38.78							
10.75 273.1	20.23 30.10	21.23 31.59	22.89 34.06	24.65 36.69	28.06 41.76	34.81 51.81	40.52 60.30					
12.0 304.8	22.62 33.66	23.74 35.33	25.60 38.10	27.58 41.04	31.40 46.73	38.98 58.01	46.60 69.35					
12.75 323.9	24.05 35.80	25.25 37.57	27.23 40.52	29.34 43.66	33.41 49.71	41.48 61.74	49.61 73.83					
14.0 355.6	26.45 39.36	27.76 41.31	29.94 44.56	32.26 48.01	36.75 54.69	45.65 67.94	54.62 81.28	72.16 107.38				
16.0 406.4	30.27 45.05	31.78 47.29	34.28 51.02	36.95 54.98	42.09 62.64	52.32 77.87	62.64 93.21	82.85 123.29				
18.0 457.2	34.10 50.75	35.80 53.27	38.62 57.47	41.63 61.95	47.44 70.59	58.99 87.79	70.65 105.15	93.54 139.20				
20.0 508.0	37.93 56.44	39.82 59.25	42.96 63.93	46.31 68.92	52.78 78.55	65.66 97.72	78.67 117.08	104.23 155.11	129.45 192.64			
24.0 609.6	45.58 67.83	47.86 71.22	51.64 76.85	55.67 82.85	63.47 94.46	79.01 117.57	94.71 140.94	125.61 186.92	156.17 232.41	186.41 277.40		

SPIRALWELD PIPE

PIPE WEIGHT lbs/ft (kg/m)											
Outside Diameter in (mm)	Wall Thickness (t) in (mm)										
	0.179 4.55	0.188 4.78	0.203 5.16	0.219 5.56	0.250 6.35	0.312 7.92	0.375 9.53	0.500 12.70	0.625 15.88	0.750 19.05	1.000 25.40
30.0 762.0					79.51 118.32	99.02 147.36	118.76 176.73	157.68 234.65	196.26 292.07	234.51 348.99	310.01 461.35
36.0 914.4					95.54 142.18	119.03 177.14	142.81 212.53	189.75 282.38	236.35 351.73	282.62 420.58	374.15 556.80
42.0 1067					111.58 116.05	139.04 206.92	166.86 248.32	221.82 330.10	276.44 411.38	330.72 492.17	438.29 652.25
48.0 1219					127.61 189.91	159.05 236.70	190.92 284.12	253.89 377.83	316.52 471.04	378.83 563.76	502.43 747.70
54.0 1372							214.97 319.91	285.96 425.55	356.61 530.70	426.93 635.35	566.57 843.15
60.0 1524							239.02 355.70	318.03 473.28	396.70 609.35	475.04 706.93	630.71 938.60
72.0 1829							287.13 427.29	382.17 568.73	476.87 709.67	571.25 850.11	758.99 1129.50
84.0 2134							335.23 498.88	446.31 664.18	557.05 828.98	667.46 993.29	887.27 1320.41
96.0 2438								510.45 759.63	637.22 948.30	760.67 1136.46	1015.55 1511.31
108.0 2743								574.59 855.08	717.40 1067.61	859.88 1279.64	1143.83 1702.21

Please inquire about other sizes

Pipe Weight (lbs/ft) = 10.69 x t x (d-t)
d (in) = outside diameter
t (in) = thickness

Pipe Weight (kg/m) = 0.0247 x t x (d-t)
d (mm) = outside diameter
t (mm) = thickness

Available Steel Grades							
American			Canadian			European	
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 10034	Yield Strength
	ksi	Mpa		ksi	Mpa		ksi Mpa
A 139 Gr A	30	205	A 252 Gr 1	30	205	A 588	50 345
A 139 Gr B	35	240	A 252 Gr 2	35	240	A 690	50 345
A 139 Gr C	42	290	A 252 Gr 3	45	310	A 572	50 345
A 139 Gr D	46	315	A 252 Gr 3 m	50 - 80	345-555		
A 139 Gr E	52	360					

PIPE PILING



PIPE PILING



PIPE PILING



PIPE PILING



PIPE PILING



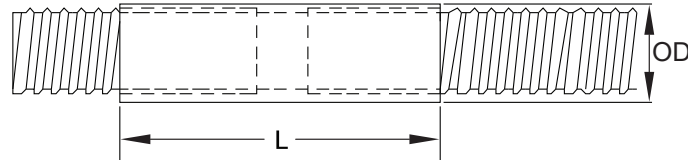
TIE ROD ANCHORAGE SYSTEMS



Grade 75 All-Thread Rebar				
Bar Desig. & Nominal Diameter	Approx. Thread Major Dia. & Threads per Inch	Weight per Linear ft. (Meters)	Minimum Yield Strength of Rebar	Minimum Ultimate Strength of Rebar
#8 - 1" (25 mm)	1-1/8" - 3-1/2 (29 mm)	2.7 lbs (1.2 KG)	59.3 kips (264 kN)	79.0 kips (351 kN)
#9 - 1-1/8" (29 mm)	1-1/4" - 3-1/2 (32 mm)	3.4 lbs (1.5 KG)	75.0 kips (334 kN)	100.0 kips (445 kN)
#10 - 1-1/4" (32 mm)	1-3/8" - 3 (35 mm)	4.30 lbs (2.0 KG)	95.3 kips (424 kN)	127.0 kips (565 kN)
#11 - 1-3/8" (35 mm)	1-1/2" - 3 (38 mm)	5.30 lbs (2.4 KG)	117.0 kips (520 kN)	156.0 kips (694 kN)
#14 - 1-3/4" (44 mm)	1-7/8" - 3 (48 mm)	7.65 lbs (3.5 KG)	168.7 kips (750 kN)	225.0 kips (1001 kN)
#18 - 2-1/4" (57 mm)	2-7/16" - 3 (62 mm)	13.60 lbs (6.2 KG)	300.0 kips (1334 kN)	400.0 kips (1779 kN)
#20 - 2-1/2" (64 mm)	2-3/4" - 2-3/4 (70 mm)	16.69 lbs (7.6 KG)	368.0 kips (1637 kN)	491.0 kips (2184 kN)
#24 - 3" (76 mm)	3-3/16" - 2-3/4 (81 mm)	24.0 lbs (35.8 KG)	511 kips (2273 kN)	682 kips (3034 kN)
#28 - 3-1/2" (89 mm)	3-3/4" - 2-3/4 (95 mm)	32.7 lbs (14.8 KG)	720.0 kips (3203 kN)	960.0 kips (4270 kN)

150 KSI All-Thread-Bar				
Nominal Bar Diameter	Approx. Thread Major Dia. & Threads per Inch	Weight per Linear ft. (Meters)	Minimum Yield Strength of Bar	Minimum Ultimate Strength of Bar
1" (25 mm)	1-1/8" - 4 (29 mm)	3.09 lbs (4.6 Kg)	102 kips (454 kN)	127.5 kips (567 kN)
1-1/4" (32 mm)	1-7/16" - 4 (37 mm)	4.51 lbs (6.71 Kg)	150 kips (667 kN)	187.5 kips (834 kN)
1-3/8" (35 mm)	1-9/16" - 4 (40 mm)	5.71 lbs (8.50 Kg)	189.6 kips (843 kN)	237.0 kips (1054 kN)
1-3/4" (44 mm)	2" - 3-1/2 (51 mm)	9.06 lbs (13.48 Kg)	312 kips (1388 kN)	390 kips (1734 kN)
2-1/4" (57 mm)	2-1/2" - 3-1/2 (64 mm)	14.1 lbs (20.8 Kg)	490 kips (2181 kN)	613 kips (2727 kN)
2-1/2" (64 mm)	2-3/4" - 3 (70 mm)	18.20 lbs (27.1 Kg)	622.4 kips (2766 kN)	778.0 kips (3461 kN)

TIE ROD ANCHORAGE SYSTEMS



Turnbuckles		
Bar Desig. & Nominal Dia.	Overall Length	Part Number
Grade 75 All-Thread Rebar		
#8 - 1" (25 mm)	12-5/8" (321 mm)	32044
#9 - 1-1/8" (28 mm)	13-1/2" (343 mm)	32045
#10 - 1-1/4" (32 mm)	14-3/8" (365 mm)	32059
#11 - 1-3/8" (35 mm)	14-3/4" (375 mm)	32048
#14 - 1-3/4" (45 mm)	16-7/8" (429 mm)	32085
#18 - 2-1/4" (55 mm)	22-1/2" (572 mm)	32098
#20 - 2-1/2" (64 mm)	N/A	N/A
#24 - 3" (76 mm)	N/A	N/A
#28 - 3-1/2" (89 mm)	N/A	N/A

Sleeve Nuts		
Bar Desig. & Nominal Dia.	Across Flats	Overall Length
Grade 75 All-Thread Rebar		
#8 - 1" (25 mm)	1-5/8" (41 mm)	7-1/2" (191 mm)
#9 - 1-1/8" (28 mm)	1-7/8" (48 mm)	8-1/2" (216 mm)
#10 - 1-1/4" (32 mm)	2-1/8" (54 mm)	9-1/4" (235 mm)
#11 - 1-3/8" (35 mm)	2-3/8" (60 mm)	10" (254 mm)
#14 - 1-3/4" (45 mm)	3" (76 mm)	12-1/2" (318 mm)
#18 - 2-1/4" (55 mm)	3-1/2" (89 mm)	14-1/2" (368 mm)
#20 - 2-1/2" (64 mm)	4" (102 mm)	16-1/2" (419 mm)
#24 - 3" (76 mm)	4-1/2" (114 mm)	16" (486 mm)
#28 - 3-1/2" (89 mm)	5-1/2" (140 mm)	18" (457 mm)

Turnbuckles		
Bar Desig. & Nominal Dia.	Overall Length	Part Number
150 KSI All-Thread Bar		
1" (26 mm)	14-3/8" (365 mm)	32059
1-1/4" (32 mm)	16-5/8" (422 mm)	32049
1-3/8" (36 mm)	16-7/8" (429 mm)	32085
1-3/4" (45 mm)	22-1/2" (572 mm)	32098
2-1/4" (57 mm)	N/A	N/A
2-1/2" (65 mm)	N/A	N/A
3" (75 mm)	N/A	N/A

Sleeve Nuts		
Bar Desig. & Nominal Dia.	Across Flats	Overall Length
150 KSI All-Thread Bar		
1" (26 mm)	2" (51 mm)	6-1/2" (159 mm)
1-1/4" (32 mm)	2-1/2" (65 mm)	8" (203 mm)
1-3/8" (36 mm)	2-3/4" (70 mm)	9-1/2" (241 mm)
1-3/4" (45 mm)	3" (76 mm)	13" (330 mm)
2-1/4" (57 mm)	N/A	N/A
2-1/2" (65 mm)	4" (102 mm)	16-1/2" (419 mm)
3" (75 mm)	N/A	N/A

Other accessory data on request.

TIE ROD ANCHORAGE SYSTEMS



Washers			
Bar Desig. & Nominal Dia.	Hardened Washers	Beveled Washers	Degree of Bevel
Grade 75 All-Thread Rebar			
#8 - 1" (25 mm)	R9F-09-436	R8M-09S	15°
#9 - 1-1/8" (28 mm)	R9F-09-436	R8M-09S	15°
#10 - 1-1/4" (32 mm)	R9F-10-436	R8M-12S	15°
#11 - 1-3/8" (35 mm)	R9F-12-436	R8M-13S	10°
#14 - 1-3/4" (45 mm)	R9F-14-436	R8M-16	5°
#18 - 2-1/4" (55 mm)	R9F-20-436	R8M-18	15°
#20 - 2-1/2" (64 mm)	R9F-22-436	R8M-20	10°
#24 - 3" (76 mm)	R9F-24-436	R8M-24	10°
#28 - 3-1/2" (89 mm)	R9F-30-436	R8M-28	10°

Two Bevel Washers are required for angle adjustment

Hex Nuts			
Bar Desig. & Nominal Dia.	Across Flats	Thickness	Part Number
Grade 75 All-Thread Rebar			
#8 - 1" (25 mm)	1-5/8" (41.3 mm)	2" (50.8 mm)	R63-08
#9 - 1-1/8" (28 mm)	1-7/8" (47.8 mm)	2" (51 mm)	R63-09
#10 - 1-1/4" (32 mm)	2" (50.8 mm)	2-3/16" (55.6 mm)	R63-10
#11 - 1-3/8" (35 mm)	2-1/4" (57.2 mm)	2-13/32" (61.1 mm)	R63-11
#14 - 1-3/4" (45 mm)	2-3/4" (73.0 mm)	3-1/4" (82.6 mm)	R63-14
#18 - 2-1/4" (55 mm)	3-1/2" (88.9 mm)	3-1/2" (88.9 mm)	R63-18
#20 - 2-1/2" (64 mm)	4" (102 mm)	4" (102 mm)	R63-20
#24 - 3" * (76 mm)	4-1/2" (114 mm)	5" (127 mm)	R64-24*
#28 - 3-1/2" * (89 mm)	5-1/2" (140 mm)	6" (142 mm)	R64-28*

* Rounded Collar Nut

Spherical Washers/Hex Nuts			
Bar Desig. & Nominal Dia.	Thickness	Outside Dome	Part Number
Grade 75 All-Thread Rebar			
#8 - 1" (25 mm)	5/8" (15.9 mm)	2-1/2" (64 mm)	R81-0875
#9 - 1-1/8" (28 mm)	3/4" (19.1 mm)	2-3/4" (70 mm)	R81-0975
#10 - 1-1/4" (32 mm)	53/64" (21.0 mm)	3" (76 mm)	R81-1075
#11 - 1-3/8" (35 mm)	29/32" (23.0 mm)	3-1/4" (83 mm)	R81-1175
#14 - 1-3/4" (45 mm)	1-7/64" (28.2 mm)	3-3/4" (95 mm)	R81-1475
#18 - 2-1/4" (55 mm)	1-13/32" (35.7 mm)	5" (127 mm)	R81-1875
#20 - 2-1/2" (64 mm)	1-1/2" (38.1 mm)	5-1/4" (133 mm)	R81-2075
#24 - 3" (76 mm)	1-7/8" (48 mm)	6-1/2" (165 mm)	R81-2475
#28 - 3-1/2" (89 mm)	1-1/2" (38.1 mm)	7" (178 mm)	R81-2875

TIE ROD ANCHORAGE SYSTEMS



Washers			
Bar Desig. & Nominal Dia.	Hardened Washers	Beveled Washers	Degree of Bevel
150 KSI All-Thread Bar			
1" (26 mm)	R9F-09-436	R8M-08-150	10°
1-1/4" (32 mm)	R9F-11-436	R8M-10-150	15°
1-3/8" (36 mm)	R9F-12-436	R8M-11-150	15°
1-3/4" (45 mm)	R9F-16-436	R8M-14-150	10°
2-1/4" (57 mm)	R9F-20-436	R8M-20-150	10°
2-1/2" (65 mm)	R9F-22-436	R8M-20-150	10°
3" (75 mm)	R9F-26-436	R8M-26-150	10°

Two Bevel Washers are required for angle adjustment

Hex Nuts			
Bar Desig. & Nominal Dia.	Across Flats	Thickness	Part Number
150 KSI All-Thread Bar			
1" (26 mm)	1-3/4" (45 mm)	2" (51 mm)	R73-08
1-1/4" (32 mm)	2-1/4" (57 mm)	2-1/2" (64 mm)	R73-10
1-3/8" (36 mm)	2-1/2" (63.5 mm)	2-3/4" (70 mm)	R73-11
1-3/4" (45 mm)	3" (76 mm)	3-1/2" (89 mm)	R73-14
2-1/4" (57 mm)	3-1/2" (89 mm)	4-1/4" (105 mm)	R73-18
2-1/2" (65 mm)	4-1/4" (108 mm)	4-3/4" (120 mm)	R73-20
3" * (75 mm)	4-1/4" (108 mm)	6-1/8" (156 mm)	R74-24*

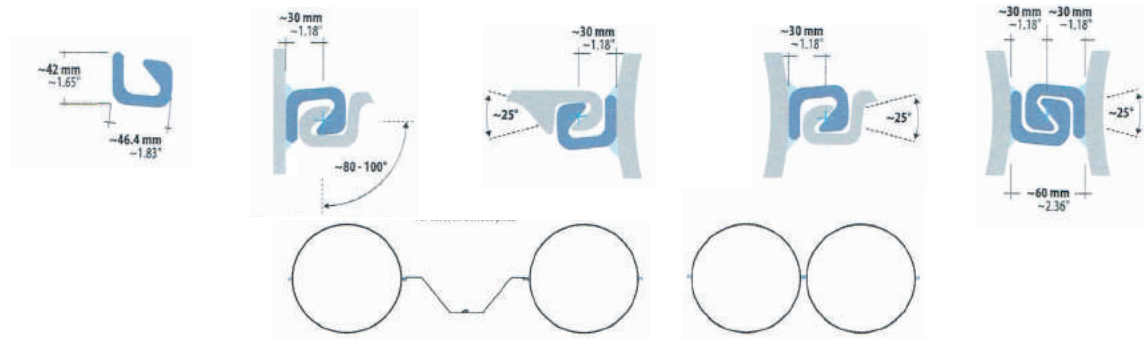
* Rounded Collar Nut

Spherical Washers/Hex Nuts			
Bar Desig. & Nominal Dia.	Thickness	Outside Dome	Part Number
150 KSI All-Thread Bar			
1" * (26 mm)	2-1/4" (57 mm)	2-1/2" (63.5 mm)	R88-08*
1-1/4" * (32 mm)	2-3/4" (70 mm)	3-1/8" (79.5 mm)	R88-10*
1-3/8" * (36 mm)	3-1/4" (82.5 mm)	3-5/8" (90.2 mm)	R88-11*
1-3/4" * (45 mm)	3-1/2" (89 mm)	4" (102 mm)	R88-14*
2-1/4" (57 mm)	5-3/4" (146 mm)	5-1/2" (140 mm)	R73-18 R81-18
2-1/2" (65 mm)	6-1/2" (165 mm)	6" (152 mm)	R73-20 R81-20
3" (75 mm)	8-1/8" (206 mm)	7" (178 mm)	R74-24 R81-24

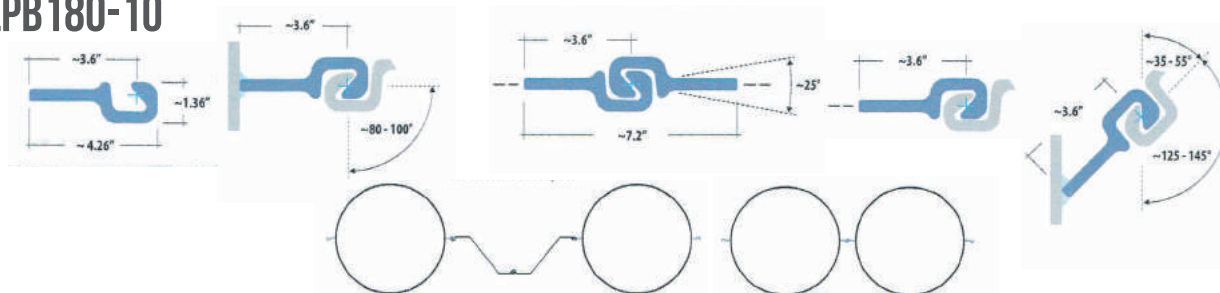
* Spherical Hex Nut

PIPE / BEAM / SHEET PILE CONNECTORS

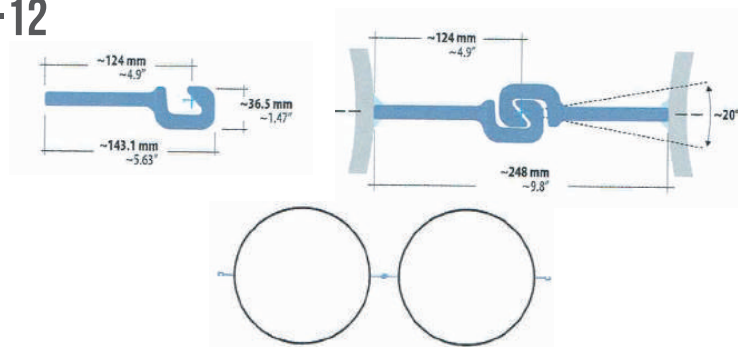
L8



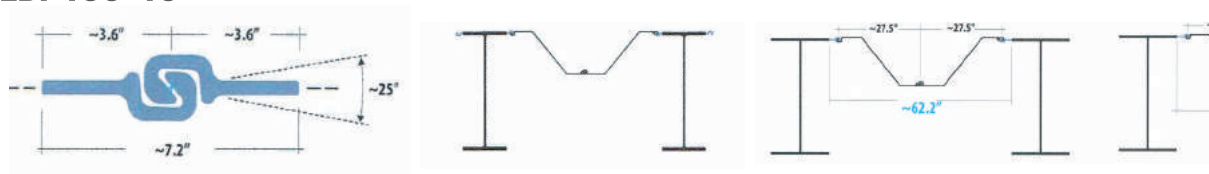
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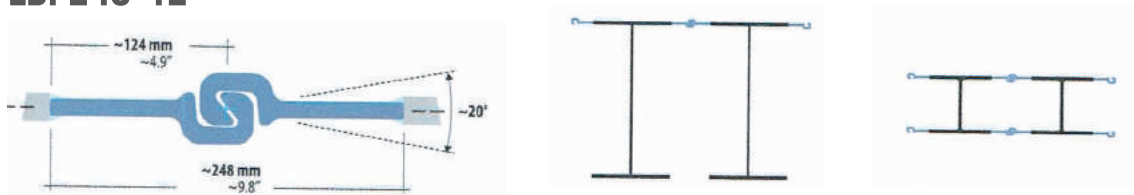
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LBP180-10

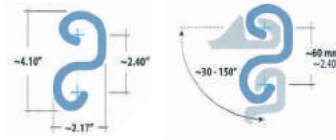


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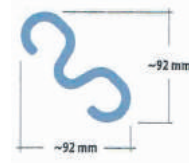


SHEET PILE CONNECTORS

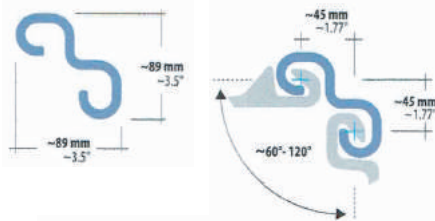
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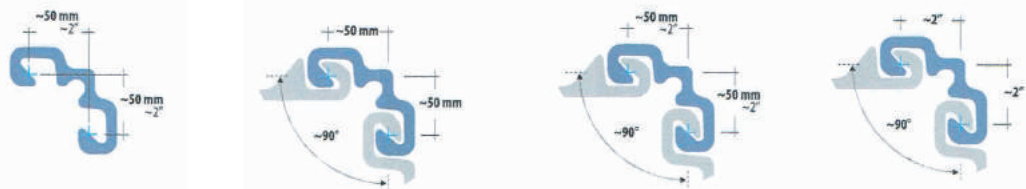
LV OMEGA



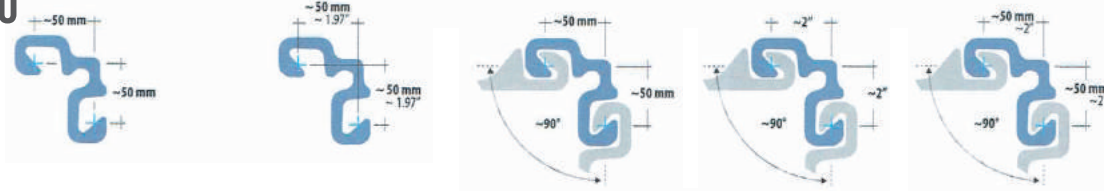
LVO



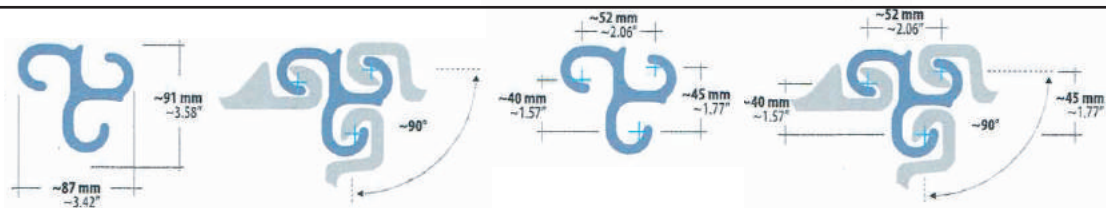
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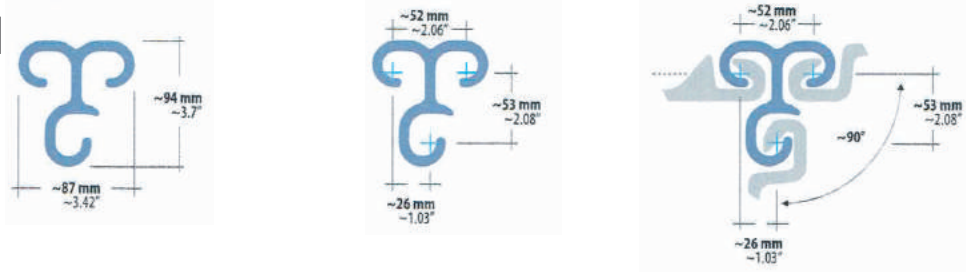
LLS 90



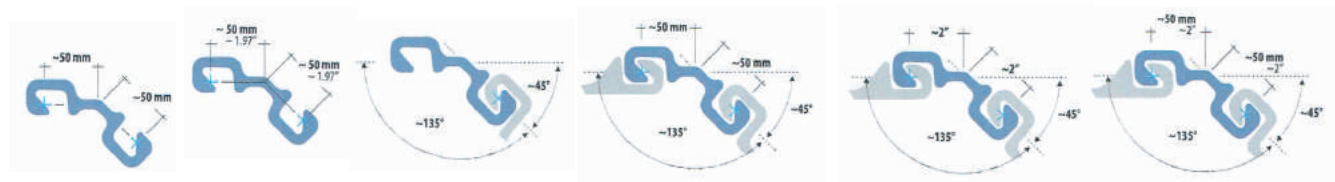
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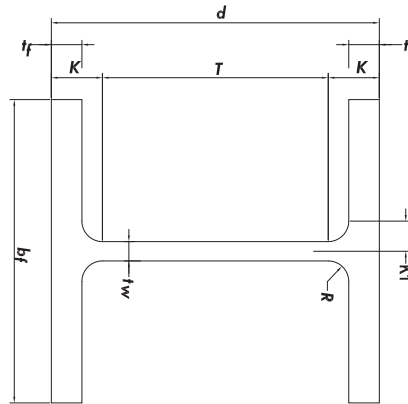
LOTN



LLS 10-170



WIDE FLANGE BEAMS



Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus	
				Width	Flange	Web												
t _f	t _w	T	K	K1	I _x	S _x	r _x	I _y	S _y	r _y	Z _x	Z _y						
in	in	in	in	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³	
W40 x 16	W40 x 431	126.7	41.26	16.22	2.36	1.34	34.05	3.60	1.85	1.18	34800	1690	16.6	1690	208	3.65	1960	328
	W40 x 397	117.0	40.95	16.12	2.2	1.22	34.06	3.44	1.79	1.18	32000	1560	16.6	1540	191	3.64	1800	300
	W40 x 372	109.4	40.63	16.07	2.045	1.16	34.05	3.29	1.76	1.18	29600	1460	16.5	1420	177	3.60	1680	277
	W40 x 362	107.0	40.55	16.02	2.01	1.12	34.04	3.25	1.74	1.18	28900	1420	16.5	1380	173	3.60	1640	270
	W40 x 324	95.3	40.16	15.91	1.81	1.00	34.05	3.05	1.68	1.18	25600	1280	16.4	1220	153	3.58	1460	239
	W40 x 297	87.4	39.84	15.83	1.65	0.93	34.05	2.89	1.65	1.18	23200	1170	16.3	1090	138	3.54	1330	215
	W40 x 277	81.3	39.69	15.83	1.58	0.83	34.05	2.82	1.60	1.18	21900	1100	16.4	1040	132	3.58	1250	204
	W40 x 249	73.3	39.38	15.75	1.42	0.75	34.05	2.66	1.56	1.18	19600	993	16.3	926	118	3.55	1120	182
	W40 x 215	63.3	38.98	15.75	1.22	0.65	34.05	2.46	1.51	1.18	16700	859	16.2	796	101	3.54	964	156
	W40 x 199	58.4	38.67	15.75	1.07	0.65	34.05	2.31	1.51	1.18	14900	770	16.0	695	88.2	3.45	869	137
W40 x 12	W40 x 327	95.9	40.79	12.13	2.13	1.18	34.04	3.37	1.77	1.18	24500	1200	16.0	640	105	2.58	1410	170
	W40 x 294	86.2	40.39	12.01	1.93	1.06	34.04	3.17	1.71	1.18	21900	1080	15.9	562	93.5	2.55	1270	150
	W40 x 278	81.9	40.16	11.97	1.81	1.03	34.06	3.05	1.69	1.18	20500	1020	15.8	521	87.1	2.52	1190	140
	W40 x 264	77.6	40.00	11.93	1.73	0.96	34.05	2.97	1.66	1.18	19400	971	15.8	493	82.6	2.52	1130	132
	W40 x 235	68.9	39.69	11.89	1.58	0.83	34.05	2.82	1.60	1.18	17400	875	15.9	444	74.6	2.54	1010	118
	W40 x 211	62.0	39.37	11.81	1.42	0.75	34.05	2.66	1.56	1.18	15500	786	15.8	390	66.1	2.51	906	105
	W40 x 183	53.7	38.98	11.81	1.2	0.65	34.09	2.44	1.51	1.18	13200	675	15.7	331	56.0	2.49	774	88.3
	W40 x 167	49.1	38.59	11.81	1.03	0.65	34.05	2.27	1.51	1.18	11600	600	15.3	283	47.9	2.40	693	76.0
	W40 x 149	43.8	38.20	11.81	0.83	0.63	34.05	2.07	1.50	1.18	9800	513	15.0	229	38.8	2.29	598	62.2

WIDE FLANGE BEAMS

Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus		
					Width	Flange	Web	T	K		K1	X-X			Y-Y				
				b _f								t _f	t _w	I _x	S _x	r _x	I _y	S _y	r _y
	Inch x Lbs/ft	in ²	in	in	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³	
36 x 16-1/2	W36 x 529	155.6	39.79	17.22	2.91	1.61	31.49	4.15	1.99	1.18	39600	1990	16.0	2490	289	4.00	2330	454	
	W36 x 487	143.2	39.33	17.11	2.68	1.50	31.49	3.92	1.93	1.18	36000	1830	15.8	2250	263	3.96	2130	412	
	W36 x 441	129.7	38.85	16.97	2.44	1.36	31.48	3.68	1.86	1.18	32100	1650	15.7	1910	235	3.92	1910	368	
	W36 x 395	116.2	38.37	16.83	2.20	1.22	31.48	3.44	1.79	1.18	28500	1490	15.7	1750	208	3.88	1710	325	
	W36 x 361	106.1	37.99	16.73	2.01	1.12	31.48	3.25	1.74	1.18	25700	1350	15.6	1570	188	3.85	1550	293	
	W36 x 330	97.0	37.67	16.63	1.85	1.02	31.48	3.09	1.69	1.18	23300	1240	15.5	1420	171	3.83	1410	265	
	W36 x 302	88.8	37.33	16.66	1.68	0.95	31.48	2.92	1.65	1.18	21100	1130	15.4	1300	156	3.82	1280	241	
	W36 x 282	82.9	37.11	16.60	1.57	0.89	31.48	2.81	1.62	1.18	19600	1050	15.4	1200	144	3.80	1190	223	
	W36 x 262	77.0	36.85	16.55	1.44	0.84	31.48	2.68	1.60	1.18	17900	972	15.3	1090	132	3.76	1100	204	
	W36 x 247	72.5	36.67	16.51	1.35	0.80	31.48	2.59	1.58	1.18	16700	913	15.2	1010	123	3.74	1030	190	
	W36 x 231	68.0	36.49	16.47	1.26	0.76	31.48	2.50	1.56	1.18	15600	854	15.1	940	114	3.71	963	176	
36 x 12	W36 x 256	75.4	37.43	12.22	1.73	0.96	31.48	2.97	1.66	1.18	16800	895	14.9	528	86.5	2.65	1040	137	
	W36 x 232	68.1	37.12	12.12	1.57	0.87	31.49	2.81	1.62	1.18	15000	809	14.8	468	77.2	2.62	936	122	
	W36 x 210	61.8	36.69	12.18	1.36	0.83	31.48	2.60	1.60	1.18	13200	719	14.6	411	67.5	2.58	833	107	
	W36 x 194	57.0	36.49	12.12	1.26	0.77	31.48	2.50	1.56	1.18	12100	664	14.6	375	61.9	2.56	767	97.7	
	W36 x 182	53.6	36.33	12.08	1.18	0.73	31.48	2.42	1.54	1.18	11300	623	14.5	347	57.6	2.55	718	90.7	
	W36 x 170	50.0	36.17	12.03	1.10	0.68	31.48	2.34	1.52	1.18	10500	581	14.5	320	53.2	2.53	668	83.8	
	W36 x 160	47.0	36.01	12.00	1.02	0.65	31.48	2.26	1.51	1.18	9760	542	14.4	295	49.1	2.50	624	77.3	
	W36 x 150	44.2	35.85	11.98	0.94	0.63	31.48	2.18	1.49	1.18	9040	504	14.3	270	45.1	2.47	581	70.9	
	W36 x 135	39.7	35.55	11.95	0.79	0.60	31.48	2.03	1.48	1.18	7800	439	14.0	225	37.7	2.38	509	59.7	
33 x 15-3/4	W33 x 387	114.0	35.95	16.20	2.28	1.26	28.90	3.52	1.81	1.18	24300	1350	14.6	1620	200	3.77	1560	312	
	W33 x 354	104.1	35.55	16.10	2.09	1.16	28.88	3.33	1.76	1.18	22000	1240	14.5	1460	181	3.74	1420	282	
	W33 x 318	93.5	35.16	15.99	1.89	1.04	28.89	3.31	1.70	1.18	19500	1110	14.5	1290	161	3.71	1270	250	
	W33 x 291	85.6	34.84	15.91	1.73	0.96	28.89	2.97	1.66	1.18	17700	1020	14.4	1160	146	3.68	1160	226	
	W33 x 263	77.4	34.53	15.81	1.57	0.87	28.90	2.81	1.62	1.18	15900	919	14.3	1040	131	3.66	1040	202	
	W33 x 241	70.9	34.18	15.86	1.40	0.83	28.89	2.64	1.60	1.18	14200	831	14.1	933	118	3.62	940	182	
	W33 x 221	65.0	33.93	15.81	1.28	0.78	28.89	2.52	1.57	1.18	12900	759	14.1	840	106	3.59	857	164	
	W33 x 201	59.1	33.68	15.75	1.15	0.72	28.89	2.39	1.54	1.18	11600	686	14	749	95.2	3.56	773	147	
33 x 11-1/2	W33 x 169	49.5	33.82	11.50	1.22	0.67	28.89	2.46	1.52	1.18	9290	549	13.7	310	53.9	2.50	629	84.4	
	W33 x 152	44.7	33.49	11.57	1.06	0.64	28.89	2.30	1.50	1.18	8160	487	13.5	273	47.2	2.47	559	73.9	
	W33 x 141	41.6	33.3	11.54	0.96	0.61	28.89	2.20	1.48	1.18	7450	448	13.4	246	42.7	2.43	514	66.9	
	W33 x 130	38.3	33.09	11.51	0.86	0.58	28.89	2.10	1.47	1.18	6710	406	13.2	218	37.9	2.39	467	59.5	

WIDE FLANGE BEAMS

Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus	
											X-X			Y-Y				
				Width							Flange	Web	T	K	K1	I _x	S _x	r _x
	Inch x Lbs/ft	A in ²	d in	b _f in	t _f in	t _w in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³
	W33 x 118	34.7	32.86	11.48	0.74	0.55	28.89	1.98	1.46	1.18	5900	359	13.0	187	32.6	2.32	415	51.3
30 x 15	W30 x 391	115.0	33.19	15.59	2.44	1.36	25.82	3.68	1.86	1.18	20700	1250	13.4	1550	198	3.67	1450	310
	W30 x 357	104.8	32.80	15.47	2.24	1.24	25.88	3.48	1.80	1.18	18700	1140	13.3	1390	179	3.64	1320	279
	W30 x 326	95.7	32.40	15.37	2.05	1.14	25.81	3.29	1.75	1.18	16800	1040	13.2	1240	162	3.6	1190	252
	W30 x 292	85.7	32.01	15.26	1.85	1.02	25.82	3.09	1.69	1.18	14900	930	13.2	1100	144	3.58	1060	223
	W30 x 261	76.7	31.61	15.16	1.65	0.93	25.82	2.89	1.65	1.18	13100	829	13.1	959	127	3.53	943	196
	W30 x 235	69.0	31.30	15.06	1.50	0.83	25.81	2.74	1.60	1.18	11700	748	13.0	855	114	3.51	847	175
	W30 x 211	62.0	30.94	15.11	1.32	0.78	25.82	2.56	1.57	1.18	10300	665	12.9	757	100	3.49	751	155
	W30 x 191	56.1	30.68	15.04	1.19	0.71	25.82	2.43	1.54	1.18	9200	600	12.8	673	89.5	3.46	675	138
	W30 x 173	50.8	30.44	14.99	1.07	0.66	25.82	2.31	1.51	1.18	8230	541	12.7	598	79.8	3.42	607	123
30 x 10-1/2	W30 x 148	43.5	30.67	10.48	1.18	0.65	25.82	2.42	1.51	1.18	6680	436	12.4	227	43.3	2.28	500	68.0
	W30 x 132	38.9	30.31	10.55	1.00	0.62	25.82	2.24	1.49	1.18	5770	380	12.2	196	37.2	2.25	437	58.4
	W30 x 124	36.5	30.17	10.52	0.93	0.59	25.82	2.17	1.47	1.18	5360	355	12.1	181	34.3	2.23	408	54.0
	W30 x 116	34.2	30.01	10.50	0.85	0.57	25.82	2.09	1.46	1.18	4930	329	12.0	164	31.3	2.19	378	49.2
	W30 x 108	31.7	29.83	10.48	0.76	0.55	25.82	2.00	1.45	1.18	4470	299	11.9	146	27.9	2.15	346	43.9
	W30 x 99	29.1	29.65	10.45	0.67	0.52	25.82	1.91	1.44	1.18	3990	269	11.7	128	24.5	2.10	312	38.6
	W30 x 90	26.4	29.53	10.40	0.61	0.47	25.82	1.85	1.42	1.18	3610	245	11.7	115	22.1	2.09	283	34.7
27 x 14	W27 x 368	108.1	30.39	14.67	2.48	1.38	22.94	3.33	1.87	1.18	16200	1060	12.2	1310	179	3.48	1240	279
	W27 x 336	98.7	30.00	14.55	2.28	1.26	22.95	3.17	1.81	1.18	14600	972	12.1	1180	162	3.45	1130	252
	W27 x 307	90.2	29.61	14.45	2.09	1.16	22.94	1.01	1.76	1.18	13100	887	12.0	1050	146	3.41	1030	227
	W27 x 281	82.6	29.29	14.35	1.93	1.06	22.94	2.85	1.71	1.18	11900	814	12.0	953	133	3.39	936	206
	W27 x 258	75.7	28.98	14.27	1.77	0.98	22.95	2.74	1.67	1.18	10800	745	11.9	859	120	3.36	852	187
	W27 x 235	69.1	28.66	14.19	1.61	0.91	22.95	2.58	1.64	1.18	9700	677	11.8	769	108	3.33	772	168
	W27 x 217	63.8	28.43	14.12	1.50	0.83	22.94	2.43	1.60	1.18	8910	627	11.8	704	100	3.32	711	154
	W27 x 194	57.0	28.11	0.40	1.34	0.75	22.94	2.32	1.56	1.18	7860	559	11.7	619	88.1	3.29	631	136
	W27 x 178	52.3	27.81	14.09	1.19	0.73	22.94	2.22	1.54	1.18	7020	505	11.6	555	78.8	3.25	570	122
	W27 x 161	47.4	27.59	14.02	1.08	0.66	22.94	2.59	1.51	1.18	6310	458	11.5	497	70.9	3.23	515	109
	W27 x 146	42.9	27.38	13.97	0.98	0.61	22.94	2.50	1.48	1.18	5660	414	11.5	443	63.5	3.20	464	97.7
27 x 10	W27 x 129	37.8	27.63	10.01	1.10	0.61	22.94	2.34	1.49	1.18	4760	345	11.2	184	36.8	2.21	395	57.6
	W27 x 114	33.5	27.29	10.07	0.93	0.57	22.94	2.17	1.47	1.18	4080	299	11.0	159	31.5	2.18	343	49.3
	W27 x 102	30.0	27.09	10.02	0.83	0.52	22.94	2.07	1.44	1.18	3620	267	11.0	139	27.8	2.15	305	43.4
	W27 x 94	27.7	26.92	9.99	0.75	0.49	22.94	1.99	1.43	1.18	3270	243	10.9	124	24.8	2.12	278	38.8

WIDE FLANGE BEAMS

Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus	
				Width	Flange	Web												
		A	d	b _f	t _f	t _w	T	K	K1	R	I _x	S _x	r _x	I _y	S _y	r _y	Z _x	Z _y
	Inch x Lbs/ft	in ²	in	in	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³
	W27 x 84	24.8	26.71	9.96	0.64	0.46	22.94	1.88	1.41	1.18	2850	213	10.7	106	21.2	2.07	244	33.2
24 x 12-3/4	W24 x 370	108.0	27.99	13.66	2.72	1.52	20.06	3.96	1.94	1.18	13400	957	11.1	1160	170	3.27	1130	267
	W24 x 335	98.4	27.52	13.52	2.48	1.38	20.07	3.72	1.87	1.18	11900	864	11.0	1030	152	3.23	1020	238
	W24 x 306	89.8	27.13	13.41	2.28	1.26	20.08	3.52	1.81	1.18	10700	789	10.9	919	137	3.20	922	214
	W24 x 279	82.0	26.73	13.31	2.09	1.16	20.06	3.33	1.76	1.18	9600	718	10.8	823	124	3.17	835	193
	W24 x 250	73.5	26.34	13.19	1.89	1.04	20.07	3.13	1.70	1.18	8490	644	10.7	724	110	3.14	744	171
	W24 x 229	67.2	26.02	13.11	1.73	0.96	20.07	2.97	1.66	1.18	7650	588	10.7	651	99.4	3.11	675	154
	W24 x 207	60.7	25.71	13.01	1.57	0.87	20.08	2.81	1.62	1.18	6820	531	10.6	578	88.8	3.08	606	137
	W24 x 192	56.3	25.47	12.95	1.46	0.81	20.06	2.70	1.59	1.18	6260	491	10.5	530	81.8	3.07	559	126
	W24 x 176	51.7	25.24	12.89	1.34	0.75	20.07	2.58	1.56	1.18	5680	450	10.5	479	74.3	3.04	511	115
	W24 x 162	47.7	25.00	12.96	1.22	0.71	20.07	2.46	1.53	1.18	5170	414	10.4	443	68.4	3.05	468	105
	W24 x 146	43.0	24.74	12.90	1.09	0.65	20.07	2.33	1.51	1.18	4580	371	10.3	391	60.5	3.01	418	93.2
	W24 x 131	38.5	24.48	12.86	0.96	0.61	20.07	2.20	1.48	1.18	4020	329	10.2	340	53	2.97	370	81.5
	W24 x 117	34.4	24.26	12.80	0.85	0.55	20.07	2.09	1.46	1.18	3540	291	10.1	297	46.5	2.94	327	71.4
	W24 x 104	30.6	24.06	12.75	0.75	0.50	20.07	1.99	1.43	1.18	3100	258	10.1	259	40.7	2.91	289	62.4
24 x 9	W24 x 103	30.3	24.53	9.00	0.98	0.55	20.08	2.22	1.46	1.18	3000	245	10.00	119	26.5	1.99	280	41.5
	W24 x 94	27.7	24.31	9.07	0.88	0.52	20.07	2.12	1.44	1.18	2700	222	9.87	109	24	1.98	254	37.5
	W24 x 84	24.7	24.1	9.02	0.77	0.47	20.07	2.01	1.42	1.18	2370	196	9.79	94.4	20.9	1.95	224	32.6
	W24 x 76	22.4	23.92	8.99	0.68	0.44	20.07	1.92	1.40	1.18	2100	176	9.69	82.5	18.4	1.92	200	28.6
	W24 x 68	20.1	23.73	8.97	0.59	0.42	20.07	1.83	1.39	1.18	1830	154	9.55	70.4	15.7	1.87	177	24.5
	CSA W24 x 61	18.0	23.56	8.93	0.50	0.38	20.07	1.74	1.37	1.18	1602	136	9.45	59.6	13.4	1.82	156	20.9
	CSA W24 x 56	16.6	23.48	8.90	0.46	0.36	20.07	1.70	1.36	1.18	1473	126	9.41	54.3	12.2	1.81	144	19.1
24 x 7	W24 x 62	18.2	23.74	7.04	0.59	0.43	20.94	1.40	0.96	0.75	1550	131	9.23	34.5	9.8	1.38	153	15.7
	W24 x 55	16.2	23.57	7.01	0.51	0.40	20.94	1.32	0.95	0.75	1350	114	9.11	29.1	8.3	1.34	134	13.3
21 x 13	W21 x 275	81.8	24.13	12.89	2.19	1.22	17.26	3.43	1.79	1.18	7710	639	9.71	786	122	3.1	750	190
	W21 x 248	73.8	23.74	12.78	1.99	1.10	17.27	3.23	1.73	1.18	6850	577	9.63	695	109	3.07	672	169
21 x 12-1/4	W21 x 223	66.3	23.35	12.68	1.79	1.36	25.82	3.68	1.86	1.18	20700	1250	13.4	1550	198	3.67	1450	310
	W21 x 201	59.2	23.03	12.58	1.63	1.24	25.88	3.48	1.80	1.18	18700	1140	13.3	1390	179	3.64	1320	279
	W21 x 182	53.7	22.72	12.50	1.48	1.14	25.81	3.29	1.75	1.18	16800	1040	13.2	1240	162	3.6	1190	252
	W21 x 166	48.9	22.48	12.42	1.36	1.02	25.82	3.09	1.69	1.18	14900	930	13.2	1100	144	3.58	1060	223
	W21 x 147	43.2	22.06	12.51	1.15	0.93	25.82	2.89	1.65	1.18	13100	829	13.1	959	127	3.53	943	196
	W21 x 132	38.8	21.83	12.44	1.04	0.83	25.81	2.74	1.60	1.18	11700	748	13.0	855	114	3.51	847	175

WIDE FLANGE BEAMS

Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus						
					Width	Flange	Web				X-X			Y-Y									
				t _f							t _w	T	K	K1	I _x	S _x	r _x	I _y	S _y	r _y	Z _x	Z _y	
																							Inch x Lbs/ft
	W21 x 122	35.9	21.68	12.39	0.96	0.78	25.82	2.56	1.57	1.18	10300	665	12.9	757	100	3.49	751	155					
	W21 x 111	32.7	21.51	12.34	0.88	0.71	25.82	2.43	1.54	1.18	9200	600	12.8	673	89.5	3.46	675	138					
	W21 x 101	29.8	21.36	12.29	0.80	0.66	25.82	2.31	1.51	1.18	8230	541	12.7	598	79.8	3.42	607	123					
21 x 8-1/4	W21 x 93	27.3	21.62	8.42	0.93	0.58	18.14	1.74	1.04	0.75	2070	192	8.7	92.9	22.10	1.84	221	34.7					
	W21 x 83	24.3	21.43	8.36	0.84	0.52	18.14	1.65	1.01	0.75	1830	171	8.7	81.4	19.50	1.83	196	30.5					
	W21 x 73	21.5	21.24	8.30	0.74	0.46	18.14	1.55	0.98	0.75	1600	151	8.6	70.6	17.00	1.81	172	26.6					
	W21 x 68	20.0	21.13	8.27	0.69	0.43	18.14	1.50	0.96	0.75	1480	140	8.6	64.7	15.70	1.80	160	24.4					
	W21 x 62	18.3	20.99	8.24	0.62	0.40	18.14	1.43	0.95	0.75	1330	127	8.5	57.5	14.00	1.77	144	21.7					
	W21 x 55	16.2	20.80	8.22	0.52	0.38	18.14	1.33	0.94	0.75	1140	110	8.4	48.4	11.80	1.73	126	18.4					
	W21 x 48	14.1	20.62	8.14	0.43	0.35	18.14	1.24	0.92	0.75	959	93	8.2	38.7	9.52	1.66	107	14.9					
21 x 6-1/2	W21 x 57	16.7	21.06	6.56	0.65	0.41	18.14	1.46	0.95	0.75	1170	111	8.36	30.6	9.35	1.35	129	14.8					
	W21 x 50	14.7	20.83	6.53	0.54	0.38	18.14	1.35	0.94	0.75	984	94.5	8.18	24.9	7.64	1.3	110	12.2					
	W21 x 44	13.0	20.66	6.50	0.45	0.35	18.14	1.26	0.92	0.75	843	81.6	8.06	20.7	6.37	1.26	95.4	10.2					
18 x 11	W18 x 311	91.5	22.32	12.01	2.74	1.52	14.14	3.59	1.55	0.79	6970	624	8.72	795	132	2.95	754	207					
	W18 x 283	83.2	21.85	11.89	2.50	1.40	15.15	3.35	1.49	0.79	6170	565	8.61	704	118	2.91	676	185					
	W18 x 258	75.9	21.46	11.77	2.30	1.28	15.16	3.15	1.43	0.79	5510	514	8.53	628	107	2.88	611	166					
	W18 x 234	68.8	21.06	11.65	2.11	1.16	15.14	2.96	1.37	0.79	4900	466	8.44	558	95.8	2.85	549	149					
	W18 x 211	62.1	20.67	11.56	1.91	1.06	15.15	2.76	1.32	0.79	4330	419	8.35	493	85.3	2.82	490	132					
	W18 x 192	56.4	20.35	11.46	1.75	0.96	15.15	2.60	1.27	0.79	3870	380	8.28	440	76.8	2.79	442	119					
	W18 x 175	51.3	20.04	11.38	1.59	0.89	15.16	2.44	1.23	0.79	3450	344	8.20	391	68.8	2.76	398	106					
	W18 x 158	46.3	19.72	11.30	1.44	0.81	15.14	2.29	1.19	0.79	3060	310	8.12	347	61.4	2.74	356	94.8					
	W18 x 143	42.1	19.49	11.22	1.32	0.73	15.15	2.17	1.15	0.79	2750	282	8.09	311	55.5	2.72	322	85.4					
	W18 x 130	38.2	19.25	11.16	1.20	0.67	15.15	2.05	1.12	0.79	2460	256	8.03	278	49.9	2.70	290	76.7					
	W18 x 119	35.1	18.97	11.27	1.06	0.66	15.15	1.91	1.12	0.79	2190	231	7.90	253	44.9	2.69	262	69.1					
	W18 x 106	31.1	18.73	11.20	0.94	0.59	15.15	1.79	1.08	0.79	1910	204	7.84	220	39.4	2.66	230	60.5					
	W18 x 97	28.5	18.59	11.15	0.87	0.54	15.15	1.72	1.06	0.79	1750	188	7.82	201	36.1	2.65	211	55.3					
	W18 x 86	25.3	18.39	11.09	0.77	0.48	15.15	1.62	1.03	0.79	1530	166	7.77	175	31.6	2.63	186	48.4					
	W18 x 76	22.3	18.21	11.04	0.68	0.43	15.15	1.53	1.00	0.79	1330	146	7.73	152	27.6	2.61	163	42.2					
18 x 7-1/2	W18 x 71	20.8	18.47	7.64	0.81	0.50	15.54	1.46	0.84	0.59	1170	127	7.50	60.3	15.80	1.70	146	24.7					
	W18 x 65	19.1	18.35	7.59	0.75	0.45	15.54	1.40	0.82	0.59	1070	117	7.49	54.8	14.40	1.69	133	22.5					
	W18 x 60	17.6	18.24	7.56	0.70	0.42	15.54	1.35	0.80	0.59	984	108	7.47	50.1	13.30	1.68	123	20.6					
	W18 x 55	16.2	18.11	7.53	0.63	0.39	15.54	1.28	0.79	0.59	890	98.3	7.41	44.9	11.90	1.67	112	18.5					

WIDE FLANGE BEAMS

Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus	
				Width	Flange	Web	T	K	K1		X-X			Y-Y				
	b _f	t _f	t _w	I _x	S _x	r _x				I _y	S _y	r _y	Z _x	Z _y				
	Inch x Lbs/ft	in ²	in	in	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³
CSA CSA	W18 x 50	14.7	17.99	7.50	0.57	0.36	15.54	1.22	0.77	0.59	800	88.9	7.38	40.1	10.70	1.65	101	16.6
	W18 x 45	13.3	17.86	7.48	0.50	0.34	15.55	1.15	0.76	0.59	711	79.3	7.32	34.8	9.34	1.62	90.3	14.5
	W18 x 41	11.9	17.70	7.45	0.43	0.32	15.33	1.08	0.75	0.59	613	69	7.17	29.3	7.87	1.57	78.7	12.3
18 x 6	W18 x 46	13.5	18.06	6.06	0.61	0.36	15.54	1.26	0.77	0.59	712	78.8	7.25	22.5	7.43	1.29	90.7	11.7
	W18 x 40	11.8	17.90	6.02	0.53	0.32	15.54	1.18	0.75	0.59	612	68.4	7.21	19.1	6.35	1.27	78.4	10.0
	W18 x 35	10.3	17.70	6.00	0.43	0.30	15.54	1.08	0.74	0.59	510	57.6	7.04	15.3	5.12	1.22	66.5	8.1
16 x 10-1/4	W16 x 100	29.40	16.97	10.43	0.99	0.59	13.38	1.80	1.04	0.75	1490	175	7.10	186	35.70	2.51	198	54.9
	W16 x 89	26.20	16.75	10.37	0.88	0.53	13.38	1.69	1.01	0.75	1300	155	7.05	163	31.40	2.49	175	48.1
	W16 x 77	22.60	16.52	10.30	0.76	0.46	13.38	1.57	0.98	0.75	1110	134	7.00	138	26.90	2.47	150	41.1
	W16 x 67	19.70	16.33	10.24	0.67	0.40	13.38	1.48	0.95	0.75	954	117	6.96	119	23.20	2.46	130	35.5
16 x 7	W16 x 57	16.8	16.43	7.12	0.72	0.43	13.38	1.53	0.96	0.75	758	92.2	6.72	43.1	12.10	1.60	105	18.9
	W16 x 50	14.7	16.26	7.07	0.63	0.38	13.38	1.44	0.94	0.75	659	81	6.68	37.2	10.50	1.59	92	16.3
	W16 x 45	13.3	16.13	7.04	0.57	0.35	13.38	1.38	0.92	0.75	586	72.7	6.65	32.8	9.34	1.57	82.3	14.5
	W16 x 40	11.8	16.01	7.00	0.51	0.31	13.38	1.32	0.90	0.75	518	64.7	6.63	28.9	8.25	1.57	73	12.7
	W16 x 36	10.6	15.86	6.99	0.43	0.30	13.38	1.24	0.90	0.75	448	56.5	6.51	24.5	7.00	1.52	64	10.8
16 x 5-1/2	W16 x 31	9.12	15.88	5.53	0.44	0.28	13.69	1.09	0.73	0.59	375	47.2	6.41	12.4	4.49	1.17	54	7.0
	W16 x 26	7.68	15.69	5.50	0.35	0.25	13.69	1.00	0.72	0.59	301	38.4	6.26	9.59	3.49	1.12	44.2	5.5
14 x 16	W14 x 730	215.0	22.42	17.89	4.91	3.07	10.11	6.15	2.72	1.18	14300	1280	8.17	4720	527	4.69	1660	816
	W14 x 665	196.0	21.64	17.65	4.52	2.83	10.11	5.76	2.60	1.18	12400	1150	7.98	4170	472	4.62	1480	730
	W14 x 605	178.0	20.92	17.42	4.16	2.60	10.11	5.40	2.48	1.18	10800	1040	7.80	3680	423	4.55	1320	652
	W14 x 550	162.0	20.24	17.20	3.82	2.38	10.11	5.06	2.37	1.18	9430	931	7.63	3250	378	4.49	1180	583
	W14 x 500	147.0	19.60	17.01	3.50	2.19	10.11	4.74	2.28	1.18	8210	838	7.48	2880	339	4.43	1050	522
	W14 x 455	134.0	19.02	16.84	3.21	2.02	10.11	4.45	2.19	1.18	7190	756	7.33	2560	304	4.38	936	468
	W14 x 426	125.0	18.67	16.70	3.04	1.88	10.11	4.28	2.12	1.18	6600	706	7.26	2360	283	4.34	869	434
	W14 x 398	117.0	18.29	16.59	2.85	1.77	10.11	4.09	2.07	1.18	6000	656	7.16	2170	262	4.31	801	402
	W14 x 370	109.0	17.92	16.48	2.66	1.66	10.11	3.90	2.01	1.18	5440	607	7.07	1190	241	4.27	736	370
	W14 x 342	101.0	17.54	16.36	2.47	1.54	10.11	3.71	1.95	1.18	4900	558	6.98	1810	221	4.24	672	338
	W14 x 311	91.4	17.12	16.23	2.26	1.41	10.11	3.50	1.89	1.18	4330	506	6.88	1610	199	4.20	603	304
	W14 x 283	83.3	16.74	16.11	2.07	1.29	10.11	3.31	1.83	1.18	3840	459	6.79	1440	179	4.17	542	274
	W14 x 257	75.6	16.38	16.00	1.89	1.18	10.11	3.13	1.77	1.18	3400	415	6.71	1290	161	4.13	487	246
	W14 x 233	68.5	16.04	15.89	1.72	1.07	10.11	2.96	1.72	1.18	3010	375	6.63	1150	145	4.10	436	221
	W14 x 211	62.0	15.72	15.80	1.56	0.98	10.11	2.80	1.67	1.18	2660	338	6.55	1030	130	4.07	390	198

WIDE FLANGE BEAMS

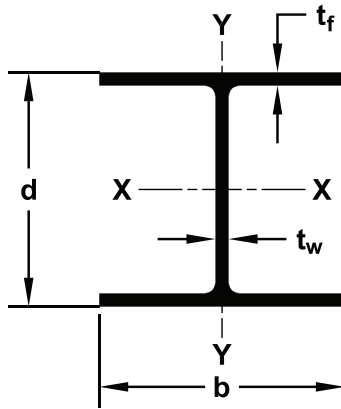
Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus				
					Width	Flange	Web				X-X			Y-Y							
				t _f							t _w	T	K	K1	I _x	S _x	r _x	I _y	S _y	r _y	
																					Z _x
	Inch x Lbs/ft	in ²	in	b _f	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³			
	W14 x 193	56.8	15.48	15.71	1.44	0.89	10.11	2.68	1.63	1.18	2400	310	6.5	931	119	4.05	355	180			
	W14 x 176	51.8	15.22	15.65	1.31	0.83	10.11	2.55	1.60	1.18	2140	281	6.43	838	107	4.02	320	163			
	W14 x 159	46.7	14.98	15.57	1.19	0.75	10.11	2.43	1.55	1.18	1900	254	6.38	748	96.2	4.00	287	146			
	W14 x 145	42.7	14.78	15.50	1.09	0.68	10.11	2.33	1.52	1.18	1710	232	6.33	677	87.3	3.98	260	133			
14 x 14-1/2	W14 x 132	38.80	14.66	14.73	1.03	0.65	10.11	2.27	1.50	1.18	1530	209	6.28	548	74.50	3.76	234	113.0			
	W14 x 120	35.30	14.48	14.67	0.94	0.59	10.11	2.18	1.48	1.18	1380	190	6.24	495	67.50	3.74	212	102.0			
	W14 x 109	32.00	14.32	14.61	0.86	0.53	10.11	2.10	1.44	1.18	1240	173	6.22	447	61.20	3.73	192	92.7			
	W14 x 99	29.10	14.16	14.57	0.78	0.49	10.11	2.02	1.42	1.18	1110	157	6.17	402	55.20	3.71	173	83.6			
	W14 x 90	26.50	14.02	14.52	0.71	0.44	10.11	1.95	1.40	1.18	999	143	6.14	362	49.90	3.70	157	75.6			
14 x 10	W14 x 82	24.10	14.31	10.13	0.86	0.51	10.98	1.67	1.00	0.75	881	123	6.05	148	29.30	2.48	139	44.8			
	W14 x 74	21.80	14.17	10.07	0.79	0.45	10.98	1.60	0.97	0.75	795	112	6.04	134	26.60	2.48	126	40.5			
	W14 x 68	20.00	14.04	10.04	0.72	0.42	10.98	1.53	0.96	0.75	722	103	6.01	121	24.20	2.46	115	36.9			
	W14 x 61	17.90	13.89	10.00	0.65	0.38	10.98	1.46	0.94	0.75	640	92.1	5.98	107	21.50	2.45	102	32.8			
14 x 8	W14 x 53	15.60	13.92	8.06	0.66	0.37	10.98	1.47	0.93	0.75	541	77.8	5.89	57.7	14.30	1.92	87.1	22.0			
	W14 x 48	14.10	13.79	8.03	0.60	0.34	10.98	1.41	0.92	0.75	484	70.2	5.85	51.4	12.80	1.91	78.4	19.6			
	W14 x 43	12.60	13.66	8.00	0.53	0.31	10.98	1.34	0.90	0.75	428	62.6	5.82	45.2	11.30	1.89	69.6	17.3			
14 x 6-3/4	W14 x 38	11.20	14.10	6.77	0.52	0.31	12.16	0.55	0.55	0.39	385	54.6	5.87	26.7	7.88	1.55	61.5	12.1			
	W14 x 34	10.00	13.98	6.75	0.46	0.29	12.16	0.54	0.54	0.39	340	48.6	5.83	23.3	6.91	1.53	54.6	10.6			
	W14 x 30	8.85	13.84	6.73	0.39	0.27	12.16	0.53	0.53	0.39	291	42	5.73	19.6	5.82	1.49	47.3	9.0			
14 x 5	W14 x 26	7.69	13.91	5.03	0.42	0.26	12.16	0.52	0.52	0.39	245	35.3	5.65	8.91	3.55	1.08	40.2	5.5			
	W14 x 22	6.49	13.74	5.00	0.34	0.23	12.16	0.51	0.51	0.39	199	29	5.54	7	2.80	1.04	33.2	4.4			
12 x 12	W12 x 336	98.8	16.82	13.39	2.96	1.78	9.21	3.81	1.68	0.79	4060	483	6.41	1190	177	3.47	603	274			
	W12 x 305	89.6	16.32	13.24	2.71	1.63	9.21	3.56	1.60	0.79	3550	435	6.29	1050	159	3.42	537	244			
	W12 x 279	81.9	15.85	13.14	2.47	1.53	9.21	3.32	1.55	0.79	3110	393	6.16	937	143	3.38	481	220			
	W12 x 252	74.1	15.41	13.01	2.25	1.40	9.21	3.10	1.49	0.79	2720	353	6.06	828	127	3.34	428	196			
	W12 x 230	67.7	15.05	12.90	2.07	1.29	9.21	2.92	1.43	0.79	2420	321	5.97	742	115	3.31	386	177			
	W12 x 210	61.8	14.71	12.79	1.90	1.18	9.21	2.75	1.38	0.79	2140	292	5.89	664	104	3.28	348	159			
	W12 x 190	55.8	14.38	12.67	1.74	1.06	9.21	2.59	1.32	0.79	1890	263	5.82	589	93	3.25	311	143			
	W12 x 170	50.0	14.03	12.57	1.56	0.96	9.21	2.41	1.27	0.79	1650	235	5.74	517	82.3	3.22	275	126			
	W12 x 152	44.7	13.71	12.48	1.40	0.87	9.21	2.25	1.22	0.79	1430	209	5.66	454	72.8	3.19	243	111			
	W12 x 136	39.9	13.41	12.40	1.25	0.79	9.21	2.10	1.18	0.79	1240	186	5.58	398	64.2	3.16	214	98			
	W12 x 120	35.3	13.12	12.32	1.11	0.71	9.21	1.96	1.14	0.79	1070	163	5.51	345	56	3.13	186	85.4			

WIDE FLANGE BEAMS

Section Group	SECTION SIZE	AREA	DEPTH	FLANGE	THICKNESS		DISTANCE			Radius	ELASTIC PROPERTIES						Plastic Modulus				
					Width	Flange	Web	T			K			X-X					Y-Y		
				I _x										S _x	r _x	I _y			S _y	r _y	Z _x
																	t _f	t _w			
	Inch x Lbs/ft	A	d	b _f	t _f	t _w	T	K	K1	R	I _x	S _x	r _x	I _y	S _y	r _y	Z _x	Z _y			
		in ²	in	in	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³			
	W12 x 106	31.2	12.89	12.22	0.99	0.61	9.21	1.84	1.09	0.79	933	145	5.47	301	49.3	3.11	164	75.1			
	W12 x 96	28.2	12.71	12.16	0.90	0.55	9.21	1.75	1.06	0.79	833	131	5.44	270	44.4	3.09	147	67.5			
	W12 x 87	25.6	12.53	12.13	0.81	0.52	9.21	1.66	1.05	0.79	740	118	5.38	241	39.7	3.07	132	60.4			
	W12 x 79	23.2	12.38	12.08	0.74	0.47	9.21	1.59	1.02	0.79	662	107	5.34	216	35.8	3.05	119	54.3			
	W12 x 72	21.1	12.25	12.04	0.67	0.43	9.21	1.52	1.00	0.79	597	97.4	5.31	195	32.4	3.04	108	49.2			
	W12 x 65	19.1	12.12	12.00	0.61	0.39	9.21	1.46	0.98	0.79	533	87.9	5.28	174	29.1	3.02	96.8	44.1			
12 x 10	W12 x 58	17.00	12.19	10.01	0.64	0.36	9.29	1.45	0.93	0.75	475	78	5.28	107	21.40	2.51	86.4	32.50			
	W12 x 53	15.60	12.06	10.00	0.58	0.35	9.29	1.39	0.92	0.75	425	70.6	5.23	95.8	19.20	2.48	77.9	29.10			
12 x 8	W14 x 38	14.70	12.19	8.08	0.64	0.37	9.29	1.45	0.93	0.75	391	64.2	5.18	56.3	13.90	1.96	71.9	21.30			
	W14 x 34	13.20	12.06	8.05	0.58	0.34	9.29	1.39	0.92	0.75	348	57.7	5.15	50	12.40	1.95	64.2	19.00			
	W14 x 30	11.80	11.94	8.01	0.52	0.30	9.29	1.33	0.90	0.75	307	51.5	5.13	44.1	11.00	1.94	57	16.80			
12 x 6-1/2	W14 x 38	10.30	12.50	6.56	0.52	0.30	10.67	0.92	0.49	0.75	285	45.6	5.25	24.5	7.47	1.54	51.2	11.50			
	W14 x 34	8.79	12.34	6.52	0.44	0.26	10.67	0.84	0.47	0.75	238	38.6	5.21	20.3	6.24	1.52	43.1	9.56			
	W14 x 30	7.65	12.22	6.49	0.38	0.23	10.67	0.78	0.45	0.75	204	33.4	5.17	17.3	5.34	1.51	37.2	8.17			
12 x 4	W14 x 38	6.48	12.31	4.03	0.43	0.26	10.67	0.82	0.47	0.75	156	25.4	4.91	4.7	2.31	0.85	29.3	3.66			
	W14 x 34	5.57	12.16	4.01	0.35	0.24	10.67	0.75	0.45	0.75	130	21.3	4.82	3.7	1.88	0.82	24.7	2.98			
	W14 x 30	4.71	11.99	3.99	0.27	0.22	12.16	0.66	0.45	0.75	103	17.1	4.67	2.8	1.41	0.77	20.1	2.26			

Wide Flange Available Steel Grades							
American			Canadian			European	
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 10025	Yield Strength
	ksi	Mpa		ksi	Mpa		ksi Mpa
A36	36	250	Gr 350 W	50	350	S 235	34 235
A 572 Gr 50	50	345				S 275	40 275
A 588	50	345				S 355	51 355
A 709	50	345				Histar 460	67 460
A 913	50	345					
A 992	50	345					

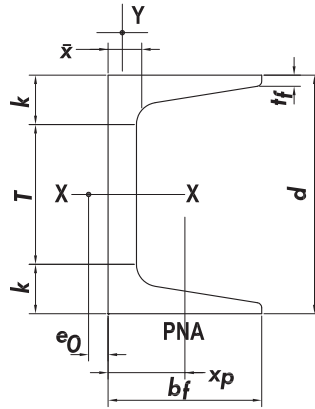
STEEL H-PILE



Section	Weight	Area	Depth d	Flange Width	Thickness		Coating Area	Elastic Properties					
					Flange	Web		Axis X - X			Axis Y - Y		
								I	S	r	I	S	r
	lb/ft	in ²	in	in	in	in	ft ² /ft	in ⁴	in ³	in	in ⁴	in ³	in
HP 8	36	10.6	8.02	8.16	0.45	0.45	3.92	119	29.8	3.36	40.3	9.88	1.95
HP 10	42	12.4	9.70	10.10	0.42	0.42	4.83	210	43.4	4.13	71.7	14.2	2.41
	57	16.7	9.99	10.20	0.57	0.57	4.91	294	58.8	4.18	101	19.7	2.45
HP 12	53	15.5	11.80	12.00	0.44	0.44	5.82	393	66.7	5.03	127	21.1	2.86
	63	18.4	11.90	12.10	0.52	0.52	5.86	472	79.1	5.06	153	25.3	2.88
	74	21.8	12.10	12.20	0.61	0.61	5.91	569	93.8	5.11	186	30.4	2.92
	84	24.6	12.30	12.30	0.69	0.69	5.97	650	106.0	5.14	213	34.6	2.94
HP 14	73	21.4	13.60	14.60	0.51	0.51	6.96	729	107.0	5.84	261	35.8	3.49
	89	26.1	13.80	14.70	0.62	0.62	7.02	904	131.0	5.88	326	44.3	3.53
	102	30.1	14.00	14.80	0.71	0.71	7.06	1050	150.0	5.92	380	51.4	3.56
	117	34.4	14.20	14.90	0.81	0.81	7.12	1220	172.0	5.96	443	59.5	3.59

Available Steel Grades							
American			Canadian			European	
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 10034	Yield Strength
	ksi	Mpa		ksi	Mpa		ksi Mpa
A36	36	250	Gr 300 W	44	300	Histar 355	51 355
A572 Gr 50	50	345	Gr 350 W	50	350	Histar 420	61 420
A 588	50	345				Histar 460	67 460
A690	50	345					

C-CHANNEL



Section Group	Section Size Inch x Lbs/ft	Area A in ²	Depth d in	Flange	Thickness		Distance			Radius R in	Elastic Properties						Plastic Modulus	
				Width b _f in	Flange t _f in	Web t _w in	T in	K in	K1 in		X-X			Y-Y			Z _x in ³	Z _y in ³
											I _x in ⁴	S _x in ³	r _x in	I _y in ⁴	S _y in ³	r _y in		
15 x 3-3/8	C15 x 50.0	14.7	15.00	3.72	0.65	0.72	12.58	1.21	0.86	0.5	404	53.8	5.2	11	3.77	0.87	68.5	8.14
	C15 x 40.0	11.8	15.00	3.52	0.65	0.52	12.58	1.21	0.76	0.5	348	46.5	5.5	9.2	3.34	0.88	57.5	6.84
	C15 x 33.9	10.0	15.00	3.40	0.65	0.40	12.58	1.21	0.70	0.5	315	42.0	5.6	8.1	3.09	0.90	50.8	6.19
12 x 3	C12 x 30.0	8.8	12.00	3.17	0.50	0.51	10.12	0.94	0.63	0.38	162	27.0	4.3	5.1	2.05	0.76	33.8	4.32
	C12 x 25.0	7.4	12.00	3.05	0.50	0.39	10.12	0.94	0.57	0.38	144	24.0	4.4	4.5	1.87	0.78	29.4	3.82
	C12 x 6.09	6.1	12.00	2.94	0.50	0.28	10.12	0.94	0.52	0.38	129	21.5	4.6	3.9	1.72	0.80	25.6	3.47

MC-CHANNEL

Section Group	Section Size	Area	Depth	Flange	Thickness		Distance			Radius	Elastic Properties						Plastic Modulus			
				Width	Flange	Web	T	K	K1		X-X			Y-Y			Z _x	Z _y		
											t _f	t _w	I _x	S _x	r _x	I _y			S _y	r _y
A	d	b _f	t _f	t _w	T	K	K1	R	I _x	S _x	r _x	I _y	S _y	r _y	Z _x	Z _y				
Inch x Lbs/ft	in ²	in	in	in	in	in	in	in	in	in ⁴	in ³	in	in ⁴	in ³	in	in ³	in ³			
18 x 4	MC18 x 58.0	17.1	18.00	4.20	0.63	0.70	15.38	1.31	0.98	0.63	675	75.0	6.29	17.6	5.28	1.02	95.40	10.70		
	MC18 x 51.9	15.3	18.00	4.10	0.63	0.60	15.38	1.31	0.93	0.63	627	69.6	6.41	16.3	5.02	1.03	87.30	9.86		
	MC18 x 45.8	13.5	18.00	4.00	0.63	0.50	15.38	1.31	0.88	0.63	578	64.2	6.55	14.9	4.77	1.05	79.20	9.14		
	MC18 x 42.7	12.6	18.00	3.95	0.63	0.45	15.38	1.31	0.85	0.63	554	61.5	6.64	14.3	4.64	1.07	75.10	8.82		
13 x 4	MC13 x 50.0	14.7	13.00	4.41	0.61	0.79	10.66	1.17	0.89	0.5	314	48.3	4.62	16.4	4.77	1.06	60.80	10.20		
	MC13 x 40.0	11.8	13.00	4.19	0.61	0.56	10.66	1.17	0.78	0.5	273	41.9	4.82	13.7	4.24	1.08	51.20	8.66		
	MC13 x 35.0	10.3	13.00	4.07	0.61	0.45	10.66	1.17	0.72	0.5	252	38.8	4.95	12.3	3.97	1.09	46.50	8.04		
	MC13 x 31.8	9.4	13.00	4.00	0.61	0.38	10.66	1.17	0.69	0.5	239	36.7	5.05	11.4	3.79	1.10	43.40	7.69		
12 x 4	MC12 x 50.0	14.7	12.00	4.14	0.70	0.84	9.48	1.26	0.92	0.5	269	44.9	4.28	17.4	5.64	1.09	56.50	10.90		
	MC12 x 45.0	13.2	12.00	4.01	0.70	0.71	9.48	1.26	0.86	0.5	251	41.9	4.36	15.8	5.30	1.09	52.00	10.10		
	MC12 x 40.0	11.8	12.00	3.89	0.70	0.59	9.48	1.26	0.80	0.5	234	39.0	4.46	14.2	4.98	1.10	47.70	9.31		
	MC12 x 35.0	10.3	12.00	3.77	0.70	0.46	9.48	1.26	0.73	0.5	216	36.0	4.59	12.6	4.64	1.11	43.20	8.62		
	MC12 x 31.0	9.1	12.00	3.67	0.70	0.37	9.48	1.26	0.69	0.5	202	33.7	4.71	11.3	4.37	1.11	39.70	8.15		

Channel Available Steel Grades							
American			Canadian			European	
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 10025	Yield Strength
	ksi	Mpa		ksi	Mpa		ksi Mpa
A36	36	250	Gr 350 W	50	350	S 235	34 235
A 572 Gr 50	50	345				S 355	51 355
A 588	50	345					
A 242	50	345					

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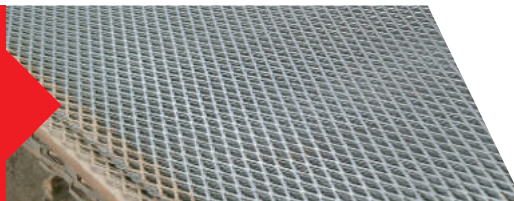
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