

STEEL PILING & GEOSTRUCTURAL SYSTEMS

V4: August 2026

Fields COMPANIES

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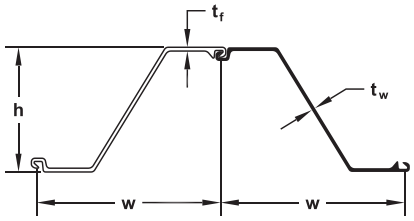
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NOTES



SHEET PILES

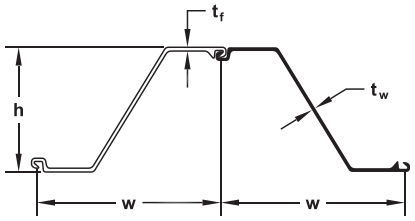
AZ HOT ROLLED STEEL SHEET PILE SERIES



JD FIELDS & COMPANY, INC. A FIELDS COMPANY					THICKNESS			WEIGHT		SECTION MODULUS			COATING AREA	
			Width (w)	Height (h)	Flange (t_f)	Web (t_w)	Cross Sec Area (A)	Single Pile	Wall Area	Elastic	Plastic	Moment of Inertia	Both Sides	Wall Surface
			in	in	in	in	in^2/ft	lb/ft	lb/ft^2	in^3/ft	in^3/ft	in^4/ft	ft^2/ft of single	ft^2/ft^2
SECTION	DWG		mm	mm	mm	mm	cm^2/m	kg/m	kg/m^2	cm^3/m	cm^3/m	cm^4/m	m^2/m	m^2/m^2
AZ 12-770	S	D	**30.31** 770	**13.52** 344	**0.335** 8.5	**0.335** 8.5	**5.67** 120.1	**48.78** 72.6	**19.31** 94.3	**23.2** 1245	**27.5** 1480	**156.9** 21430	**6.07** 1.85	**1.20** 1.20
AZ 13-770	S	D	**30.31** 770	**13.54** 344	**0.354** 9.0	**0.354** 9.0	**5.94** 125.8	**51.14** 76.1	**20.24** 98.8	**24.2** 1300	**28.8** 1546	**163.7** 22360	**6.07** 1.85	**1.20** 1.20
*AZ 14-770	S	D	**30.31** 770	**13.56** 345	**0.375** 9.5	**0.375** 9.5	**6.21** 131.5	**53.42** 79.5	**21.14** 103.2	**25.2** 1355	**30.0** 1611	**170.6** 23300	**6.07** 1.85	**1.20** 1.20
AZ 17-700	S	D	**27.56** 700	**16.52** 420	**0.335** 8.5	**0.335** 8.5	**6.28** 133.0	**49.12** 73.1	**21.38** 104.4	**32.2** 1730	**37.7** 2027	**265.3** 36230	**6.10** 1.86	**1.33** 1.33
AZ 18-700	S	D	**27.56** 700	**16.54** 420	**0.354** 9.0	**0.354** 9.0	**6.58** 139.2	**51.41** 76.5	**22.39** 109.3	**33.5** 1800	**39.4** 2116	**276.8** 37800	**6.10** 1.86	**1.33** 1.33
AZ 19-700	S	D	**27.56** 700	**16.56** 421	**0.375** 9.5	**0.375** 9.5	**6.88** 145.6	**53.76** 80.0	**23.35** 114.3	**34.8** 1870	**41.0** 2206	**288.4** 39380	**6.10** 1.86	**1.33** 1.33
AZ 20-700	S	D	**27.56** 700	**16.57** 421	**0.394** 10.0	**0.394** 10.0	**7.18** 152.0	**56.11** 83.5	**24.43** 119.3	**36.2** 1945	**42.7** 2296	**300.0** 40960	**6.10** 1.86	**1.33** 1.33
AZ 18-800	S	D	**31.5** 800	**17.68** 449	**0.335** 8.5	**0.335** 8.5	**6.07** 128.6	**54.26** 80.7	**20.67** 100.9	**34.2** 1840	**39.7** 2135	**302.6** 41320	**6.82** 2.08	**1.30** 1.30
*AZ 20-800	S	D	**31.5** 800	**17.72** 450	**0.375** 9.5	**0.375** 9.5	**6.66** 141.0	**59.50** 88.6	**22.67** 110.7	**37.2** 2000	**43.3** 2330	**329.9** 45050	**6.82** 2.08	**1.30** 1.30
AZ 22-800	S	D	**31.5** 800	**17.76** 451	**0.413** 10.5	**0.413** 10.5	**7.25** 153.5	**64.77** 96.4	**24.68** 120.5	**40.3** 2165	**47.0** 2525	**357.3** 48790	**6.82** 2.08	**1.30** 1.30
AZ 23-800	S	D	**31.50** 800	**18.66** 474	**0.453** 11.5	**0.354** 9.0	**7.12** 150.6	**63.56** 94.6	**24.22** 118.2	**43.3** 2330	**49.9** 2680	**404.6** 55260	**6.94** 2.11	**1.32** 1.32
*AZ 25-800	S	D	**31.50** 800	**18.70** 475	**0.492** 12.5	**0.394** 10.0	**7.71** 163.3	**68.91** 102.6	**26.26** 128.2	**46.5** 2500	**53.8** 2890	**435.1** 59410	**6.94** 2.11	**1.32** 1.32
AZ 27-800	S	D	**31.50** 800	**18.74** 476	**0.531** 13.5	**0.433** 11.0	**8.31** 176.0	**74.26** 110.5	**28.29** 138.1	**49.7** 2670	**57.6** 3100	**465.5** 63570	**6.94** 2.11	**1.32** 1.32
AZ 24-700	S	D	**27.56** 700	**18.07** 459	**0.441** 11.2	**0.441** 11.2	**8.23** 174.1	**64.30** 95.7	**28.00** 136.7	**45.2** 2430	**53.5** 2867	**408.8** 55820	**6.33** 1.93	**1.38** 1.38
*AZ 26-700	S	D	**27.56** 700	**18.11** 460	**0.480** 12.2	**0.480** 12.2	**8.84** 187.2	**69.12** 102.9	**30.10** 146.9	**48.4** 2600	**57.1** 3070	**437.3** 59720	**6.33** 1.93	**1.38** 1.38
AZ 28-700	S	D	**27.56** 700	**18.15** 461	**0.520** 13.2	**0.520** 13.2	**9.46** 200.2	**73.93** 110.0	**32.19** 157.2	**51.3** 2760	**60.9** 3273	**465.9** 63620	**6.33** 1.93	**1.38** 1.38
AZ 28-750	S	D	**29.53** 750.0	**20.04** 509.0	**0.472** 12.00	**0.394** 10.00	**8.09** 171.2	**67.73** 100.80	**27.53** 134.40	**52.3** 2810	**60.3** 3245	**523.9** 71540	**6.93** 2.11	**1.41** 1.41
AZ 30-750	S	D	**29.53** 750.0	**20.08** 510.0	**0.512** 13.00	**0.433** 11.00	**8.73** 184.7	**73.08** 108.80	**29.70** 145.00	**55.9** 3005	**64.8** 3485	**561.5** 76670	**6.93** 2.11	**1.41** 1.41
AZ 32-750	S	D	**29.53** 750.0	**20.12** 511.0	**0.551** 14.00	**0.472** 12.00	**9.37** 198.3	**78.44** 116.70	**31.88** 155.60	**59.5** 3200	**69.2** 3720	**599.0** 81800	**6.93** 2.11	**1.41** 1.41
AZ 36-700N	S	D	**27.56** 700	**19.65** 499	**0.591** 15.0	**0.441** 11.2	**10.20** 215.9	**79.72** 118.6	**34.71** 169.5	**66.8** 3590	**76.4** 4110	**656.2** 89610	**6.73** 2.05	**1.47** 1.47
*AZ 38-700N	S	D	**27.56** 700	**19.69** 500	**0.630** 16.0	**0.480** 12.2	**10.87** 230.0	**84.94** 126.4	**36.98** 180.6	**70.6** 3795	**81.1** 4360	**694.5** 94840	**6.73** 2.05	**1.47** 1.47
AZ 40-700N	S	D	**27.56** 700	**19.72** 501	**0.669** 17.0	**0.520** 13.2	**11.54** 244.2	**90.16** 134.2	**39.26** 191.7	**74.3** 3995	**85.7** 4605	**732.9** 100080	**6.73** 2.05	**1.47** 1.47
*AZ 42-700N	S	D	**27.56** 700	**19.65** 499	**0.709** 18.0	**0.551** 14.0	**12.22** 258.7	**95.51** 142.1	**41.59** 203.1	**78.2** 4205	**90.3** 4855	**768.4** 104930	**6.75** 2.06	**1.47** 1.47
AZ 44-700N	S	D	**27.56** 700	**19.69** 500	**0.748** 19.0	**0.591** 15.0	**12.89** 272.8	**100.74** 149.9	**43.87** 214.2	**81.9** 4405	**95.0** 5105	**806.6** 110150	**6.75** 2.06	**1.47** 1.47
AZ 46-700N	S	D	**27.56** 700	**19.72** 501	**0.787** 20.0	**0.630** 16.0	**13.56** 287.0	**105.97** 157.7	**46.14** 225.3	**85.7** 4605	**99.5** 5350	**844.9** 115370	**6.75** 2.06	**1.47** 1.47
AZ 48-700	S	D	**27.56** 700.0	**19.80** 503.0	**0.866** 22.00	**0.591** 15.00	**13.63** 288.4	**106.49** 158.50	**46.37** 226.40	**88.4** 4755	**102.1** 5490	**876.2** 119650	**6.70** 2.04	**1.46** 1.46
AZ 50-700	S	D	**27.56** 700.0	**19.84** 504.0	**0.906** 23.00	**0.630** 16.00	**14.30** 302.6	**111.73** 166.30	**48.65** 237.50	**92.2** 4955	**106.7** 5735	**914.6** 124890	**6.70** 2.04	**1.46** 1.46
AZ 52-700	S	D	**27.56** 700.0	**19.88** 505.0	**0.945** 24.00	**0.669** 17.00	**14.97** 317.0	**116.97** 174.10	**50.93** 248.70	**95.9** 5155	**111.3** 5985	**953.0** 130140	**6.70** 2.04	**1.46** 1.46

*Indicates standard stocking sections. Please check with your local sales representative for material availability.

AZ HOT ROLLED STEEL SHEET PILE SERIES

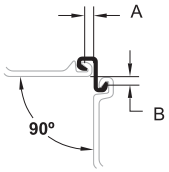


AVAILABLE STEEL GRADES

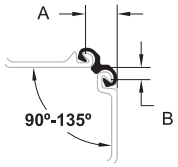
AMERICAN			CANADIAN			EUROPEAN			AMLoCor®**		
ASTM	Yield Strength		Grade	Yield Strength		Grade	Yield Strength		Grade	Yield Strength	
	ksi	MPa		ksi	MPa		ksi	MPa		ksi	MPa
A328	39	270	Grade 260 W	38	260	S240 GP	35	240	Blue 320	46	320
A572 Gr . 42	42	290	Grade 300 W	43	300	S270 GP	39	270	Blue 355	51	355
A572 Gr . 50	50	345	Grade 350 W	51	355	S320 GP	46	320	Blue 390	57	390
A572 Gr . 55	55	380	Grade 400 W	58	400	S355 GP	51	355			
A572 Gr . 60	60	415				S390 GP	57	390			
A572 Gr . 65	65	450				S430 GP	62	430			
A690	50	345				S460 GP	67	460			
A690	57*	390				S500 GP*	72	500			
A690	60*	415									

Highlighted fields represent the most commonly used and readily available steel grades. *On request ** Corrosion resistant steel; check for availability.

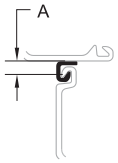
CORNER PILES



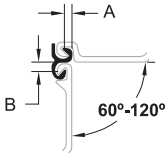
C 14
Gr: S355 GP / Gr. 51
Wt: 9.68 lb/ft
14.4 kg/m
A: ~0.98”
25 mm
B: ~0.98”
25 mm



Omega 18
Gr: S355 GP / Gr. 51
Wt: 12.10 lb/ft
18.0 kg/m
A: ~2.76”
~70 mm
B: ~1.18”
~30 mm



C 9
Gr: S355 GP / Gr. 51
Wt: 6.25 lb/ft
9.3 kg/m
A: ~1.18”
~30 mm

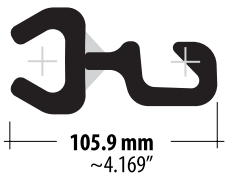


Delta 13
Gr: S355 GP / Gr. 51
Wt: 8.8 lb/ft
13.1 kg/m
A: ~0.59”
~15 mm
B: ~0.79”
~20 mm

DELIVERY CONDITIONS & TOLERANCES

	ASTM A6	EN 10248
Mass	± 2.5%	± 5%
Length	+ 5 in. – 0 in.	± 200 mm
Height	± 7 mm	
Thickness	≤ 8.5 mm	- 0.5 mm
	> 8.5 mm	- 6%
Single Pile Width		± 2%
Double Pile Width		± 3%
Straightness		0.2% of the length
Ends out of Square		20 mm

TRANSITIONAL PILES



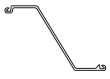
PZ-Larssen-Transition
Gr: S355 GP / A572 Gr. 51
Wt 12.08 lb/ft 18.0 kg/m

MAXIMUM ROLLED LENGTHS†

AZ	101.7 ft.	31.0 m
C6	59.1 ft.	18.0 m
C14	59.1 ft.	18.0 m
Delta 13	55.8 ft.	17.0 m
Omega 18	52.0 ft.	16.0 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

AS 500
STRAIGHT WEB SHEET PILES

STRAIGHT WEB STEEL SHEET PILES

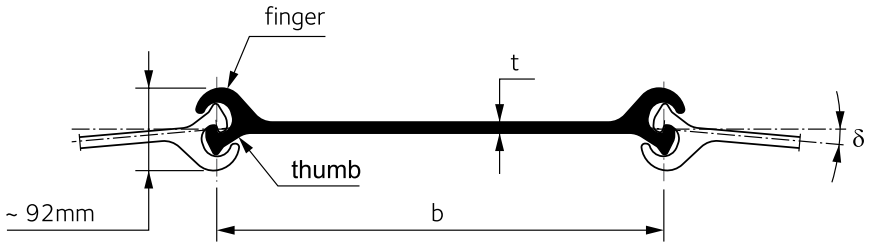


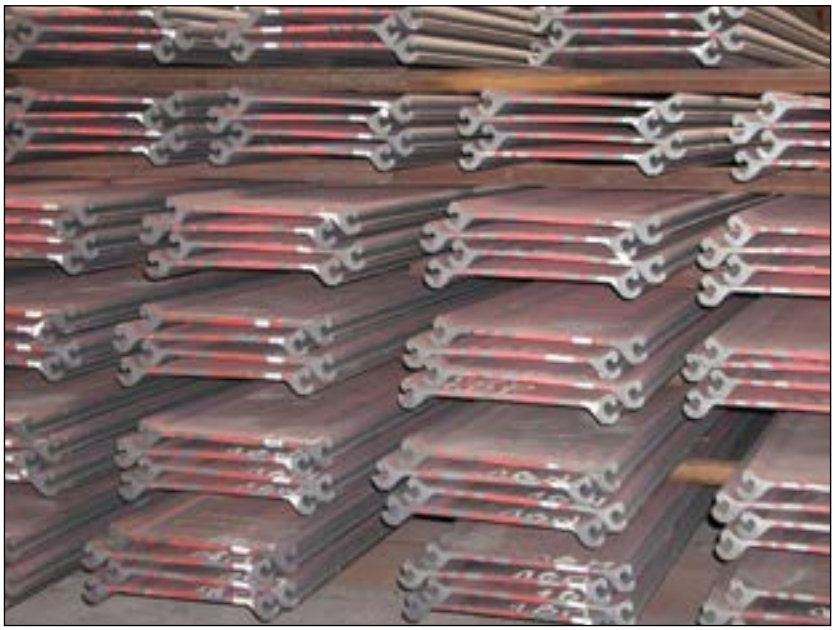
Fig. 2.1. Characteristics of AS 500 straight web sheet piles

CHARACTERISTICS OF AS 500® SECTIONS

JD FIELDS & COMPANY, INC. A FIELDS COMPANY	Width[1]	Web thickness	Deviation angle[2]	Perimeter	Steel section	Mass	Mass per m² of wall	Moment of inertia	Section modulus	Coating area[3]
				(single pile)				(single pile)		
SECTION	b in mm	t in mm	δ °	in cm	in² cm²	lb/ft kg/m	Gw lb/ft² kg/m²	in⁴ cm⁴	in³ cm³	ft²/ft m²/m
AS 500 – 9.5	19.69 500	0.375 9.5	4.5	54.33 138	12.6 81.3	42.87 63.8	26.22 128	4.04 168	2.81 46	1.90 0.58
AS 500 – 11.0	19.69 500	0.433 11.0	4.5	54.72 139	13.9 89.4	47.17 70.2	28.67 140	4.47 186	2.99 49	1.90 0.58
AS 500 – 12.0	19.69 500	0.472 12.0	4.5	54.72 139	14.7 94.6	49.93 74.3	30.52 149	4.71 196	3.11 51	1.90 0.58
AS 500 – 12.5	19.69 500	0.492 12.5	4.5	54.72 139	15.1 97.2	51.27 76.3	31.34 153	4.83 201	3.11 51	1.90 0.58
AS 500 – 12.7	19.69 500	0.500 12.7	4.5	54.72 139	15.2 98.2	51.81 77.1	31.54 154	4.90 204	3.11 51	1.90 0.58
AS 500 – 13.0[4]	19.69 500	0.512 13.0	4.5	55.12 140	15.6 100.6	53.09 79.0	32.36 158	5.12 213	3.30 54	1.90 0.58

Note: All straight web sections interlock with each other.

[1] The calculation width, to be taken into account for design purposes and layout, is 503 mm for all AS 500 sheet piles.
[2] Max. deviation angle 4.0° for pile length > 20 m.
[3] One side, excluding inside of interlocks.
[4] Please contact JD Fields & Company for further information.



JUNCTION PILES

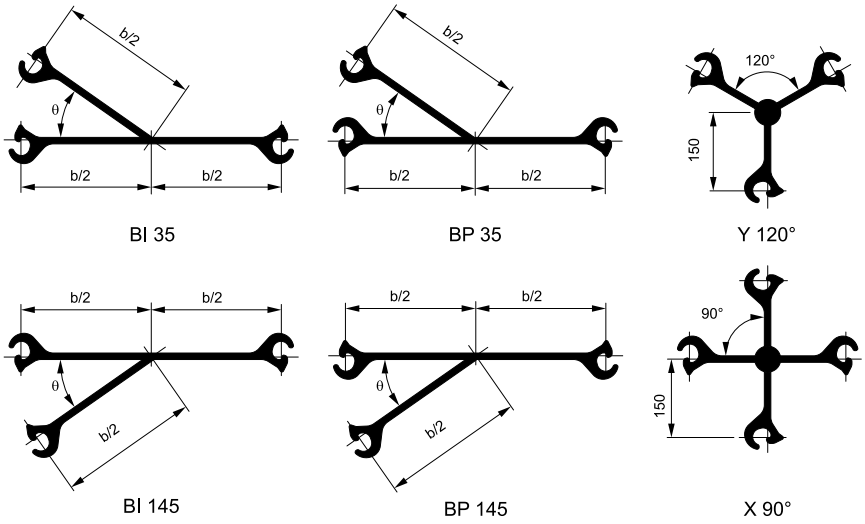


Fig. 2.2.: Characteristics of junction piles.

Connection angles Θ in the range from 30° to 45° are recommended.

It is nevertheless possible to have angles up to 90°.

BENT PILES

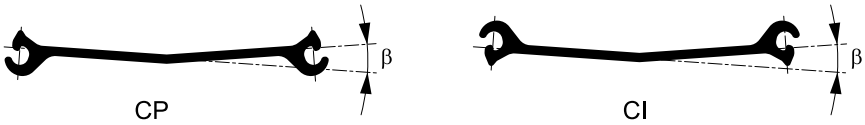


Fig. 2.3.: Bend angel β of AS 500 piles.

If deviation angles δ exceeding the values given in Table 2.1. are required, piles prebent in the mill may be used.

The maximum possible pile bend angle β is about 12°.

DELIVERY CONDITIONS

Interlock resistance

The following characteristic interlock resistance can be guaranteed:

SECTION	$R_{k,s}$ [kN/m][1)]	kips/in
AS 500 – 9.5	3500	20
AS 500 – 11.0	4000	23
AS 500 – 12.0	5000	29
AS 500 – 12.5	5500	31
AS 500 – 12.7	5500	31
AS 500 – 13.0	6000	34

[1)] For the related steel grade and further information, please contact JD Fields & Company.

For verification of the piles both, yielding of the web and failure of the interlock, should be checked.

The test procedure is based on Annex C of EN10248-1 (2023).

SELINE® SEALANT

Seline®



The watertightness of a sheet pile wall essentially depends on the number of interlocks and the interlock geometry. Despite the relatively compact nature of the Larssen interlock, which is a feature of all hot-rolled sheet piles from ArcelorMittal, additional interlock sealants are often used to further reduce water penetration.

SELINE® | PRODUCT FEATURES

Seline® is a completely newly-developed, environmentally friendly sealant for sheet piles from ArcelorMittal. Unlike all other existing sealants, Seline® contains a renewable raw material: balsam resin (also known as colophony or gum rosin). This resin is a natural raw material that was used by the ancient Romans and Egyptians. The tree resin is mainly obtained from pine trees by scratching the tree and collecting the balsam that drips out.

Seline® is heated in a similar way to bitumen-based sealants and then filled into the sheet pile interlocks. After briefly cooling down, Seline® provides an extremely reliable water seal for sheet pile walls.

Seline® is ideally suited for temporary and permanent sheet pile wall structures.



Photo: Ipswich tidal barrier, UK | ©MGF

SELINE® | SEALING PERFORMANCE

Before a new sealing product can be launched on the market, its performance must be evaluated in several tests. ArcelorMittal is the only sheet piling supplier that has implemented a realistic testing procedure to ensure the performance of its products under real-life conditions.

Once the laboratory tests had been completed and validated, the most important step to be followed was installation on site, followed by a direct watertightness test.

For this purpose, the sealed sheet piles were driven into a hard clay soil at the test site in Mittersheim, France, and the watertightness tests were carried out under the supervision of the independent testing institute DNV/GL.

The results showed that, after 24 hours under 100 kPa (1 bar), 24 hours under 200 kPa (2 bar) and again 24 hours under 300 kPa (3 bar) water pressure, Seline® improved the performance compared to the well-established sealants.

These results were verified by DNV/GL and thus provide reliable characteristic values for this newly developed product.

Further tests are planned for 2025. The aim is to examine the behaviour of Seline® in other soil types and different pile-driving methods in more detail.

The average inverse joint resistance ρm was determined according to EN 12063, see table below:

	ρ_m (10-10 m/s) at a water pressure of	
	100 kPa	200 kPa
Seline®	< 600	< 700

SELINE® SEALANT

Seline®

SELINE® | ENVIRONMENTAL COMPATIBILITY

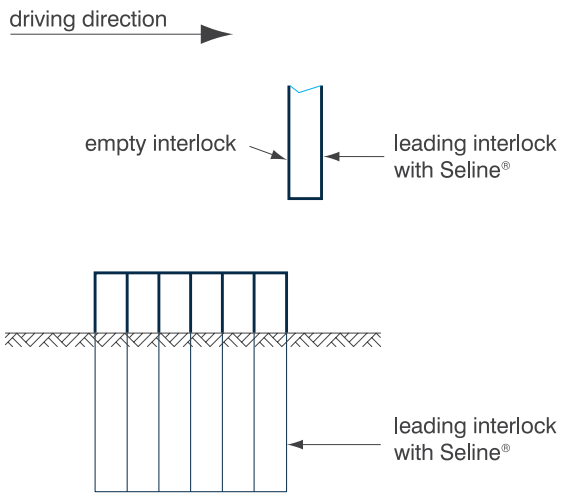
Seline® is a natural product and does not contain any substances that have to be listed in accordance with Regulation (EC) No. 1907/2006 (REACH).

Like all ArcelorMittal sealing systems/materials, Seline® has also been tested by the Hygiene Institute of the Ruhr. The "Ecotoxicological Test" showed that Seline® has no relevant ecotoxicological impact potential on the soil and existing groundwater and that from a water hygiene point of view there would be no negative impact on the living environment due to soluble ingredients. Consequently, the HY Institute came to the conclusion that the use can be assessed as ecotoxilogically harmless.

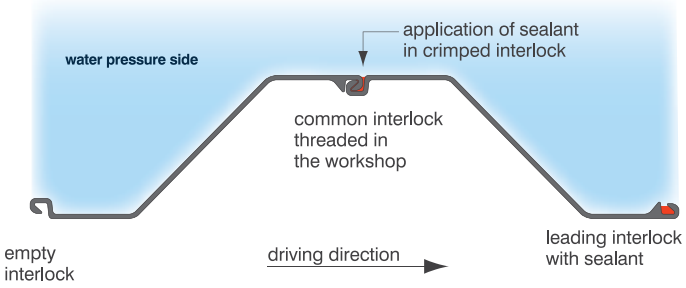
SELINE® | INSTALLATION RECOMMENDATION

The filling of the interlocks with Seline® in the factory takes place under consideration of the following aspects:

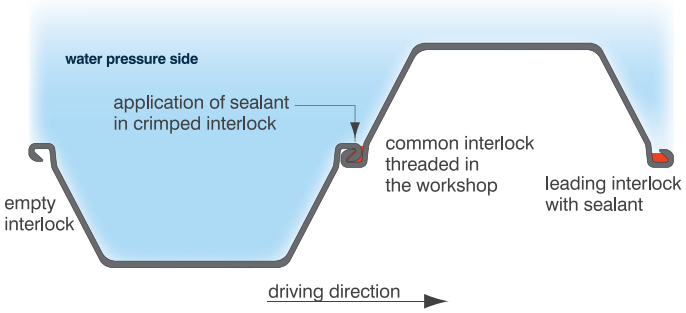
Interlocks must be clean and dry; the sheet piles must be laid out in a perfectly horizontal position. To prevent the hot product from flowing out, the interlock ends must be sealed with putty.



Detail of application in Z-piles



Detail of application in U-piles



SELINE® | SEALING PERFORMANCE

Seline® is heated to processing temperature; stirring ensures the homogeneity of the material; Seline® is then poured into the interlocks using a suitable pouring device.

The driving direction and the position in relation to the water pressure must be observed: The filled interlock must be installed on the side of the water.

If the piles are supplied as single piles, one free interlock per pile is filled. For double piles the crimped middle interlock and one free interlock are filled.

Seline® is suitable for all sheet pile driving methods (impact, vibration and pressing). The outside temperature should not be below 0°C.

Seline® is a registered trademark of ArcelorMittal.



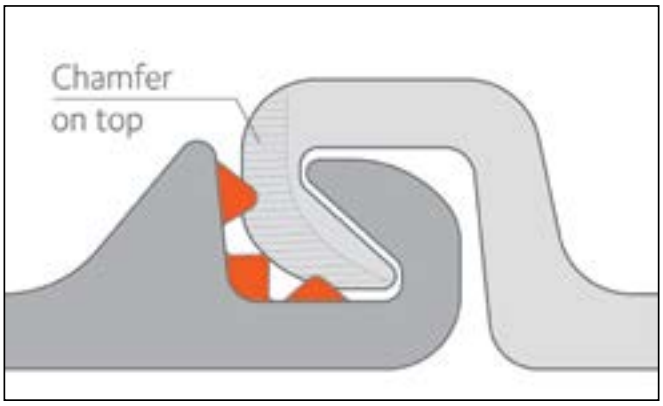
Interlock filling with a suitable can

AKILA® SEALING SYSTEM

PRODUCT PROPERTIES

AKILA® is a well-proven environmentally friendly high performance sealing system for ArcelorMittal sheet piles. The system is based on three compression "lips" - consisting of a product called MSP-1 - mechanically extruded into the free interlocks of single or double piles. In the case of double piles, the intermediary (paired) interlock is sealed with a second product MSP-2.

MSP-1 and MSP-2 both belong to the family of silane modified polymers (also called MS-Polymers), and are single component elastic sealants with a density of 1.41 g/cm^3 and 1.48 g/cm^3, respectively. They are UV-stable and have an excellent adhesion to primerless steel. Both products are resistant to humidity, weathering and temperatures between -40°C and+90°C (even up to 120°C for short periods). They have an elongation at break of at least 380%, a Shore A hardness after complete polymerization of 58 for MSP-1 and 44 (after 14 days) for MSP-2, and are durable in contact with freshwater, seawater, as well as various hydrocarbons, bases and acids (depending on concentration, a complete list is available upon request).





AKILA system: MSP-1 product extruded into the interlock

WATERTIGHTNESS PERFORMANCE

A series of in situ tests were carried out in stiff clays near Mittersheim (FR) and in soft sandy soil near Zeebrugge (BE), in order to determine the inverse joint resistance factor or value ρ_m.

Single sheet piles and crimped double sheet piles fitted out with the AKILA® system were driven into the ground using an impact hammer as well as a vibratory hammer. After installation, watertightness was tested at water pressures of 2 and 3 bar, according to a procedure developed by Deltares and ArcelorMittal. The average inverse joint resistance values p_m were determined according to EN 12063.

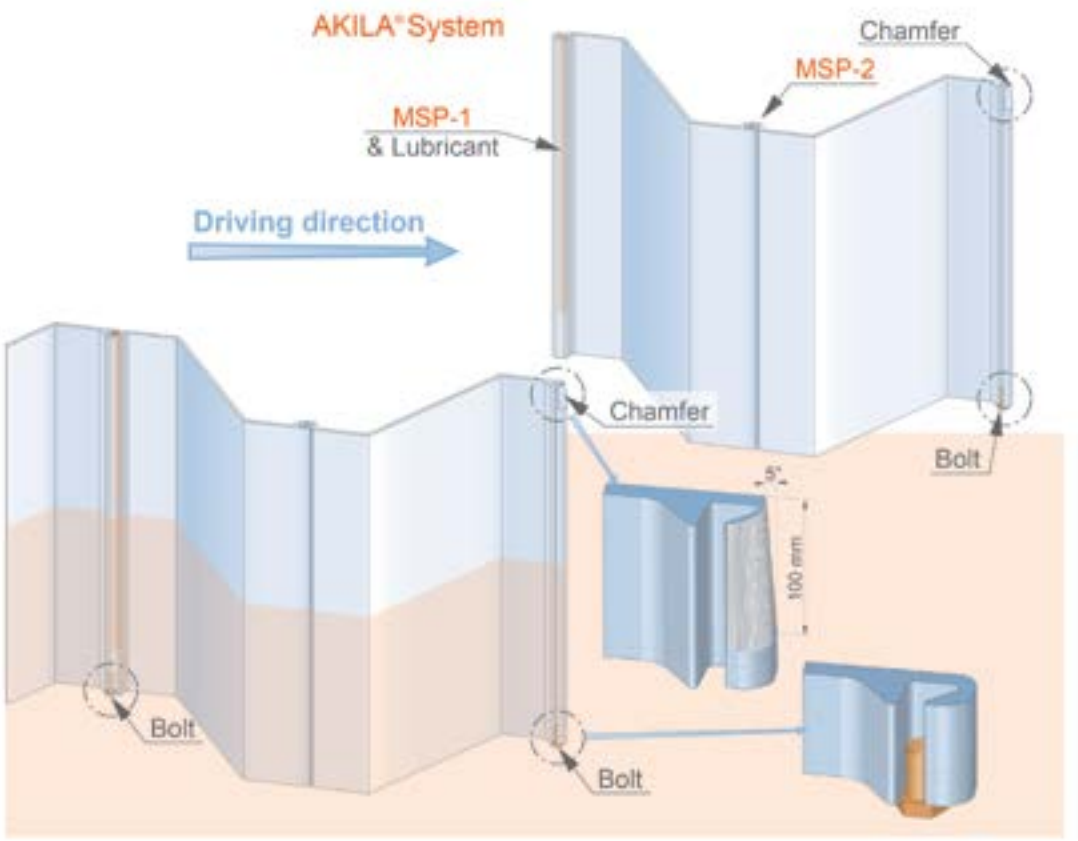
Testing and results were witnessed and certified by an independent third party (Germanischer Lloyd). The results for single and double piles are listed below.

	p_m (m/s) for water pressure of	
	2 bar	3 bar
Single Piles (MSP-1)	$4.9 \cdot 10^{-11}$	$8.6 \cdot 10^{-11}$
Single Piles (MSP-2)	$3.3 \cdot 10^{-11}$	$4.7 \cdot 10^{-11}$

ENVIRONMENTAL CERTIFICATION

MS-Polymers are considered environmentally friendly as they are solvent free and - unlike polyurethanes - do not contain isocyanates.

AKILA® is certified by the "Hygiene-Institut des Ruhrgebiets" as suitable for use in contact with groundwater.



Installation recommendations (driving direction, chamfer, etc.)

DRIVING RECOMMENDATIONS

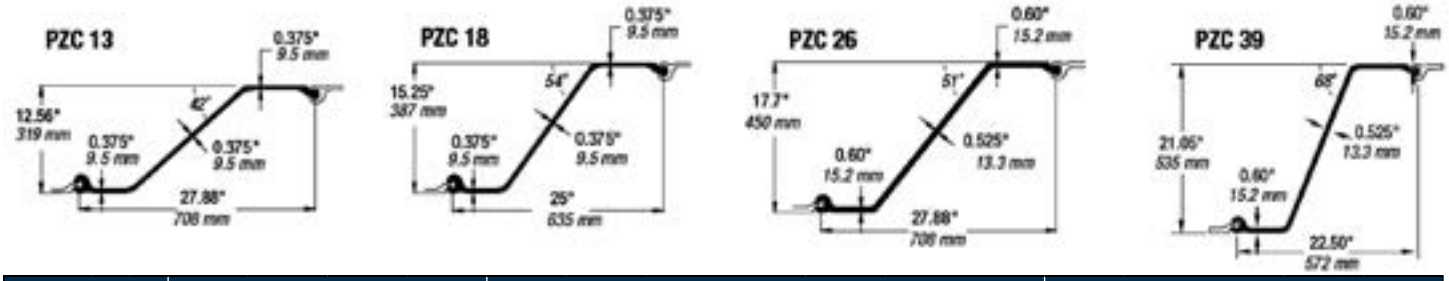
The above mentioned inverse joint resistance ρ_m values for the AKILA® system were determined through driving tests using the impact hammer and vibratory hammer. In the latter case, the driving speed must be faster than 3 m per minute. We recommend prior consultation of ArcelorMittal's technical department in case the press-in method is used.

An environmentally friendly lubricant must be applied to the sealant in the interlocks prior to driving.

During driving, the "empty" interlock must be the leading interlock (see sketch). The leading interlocks are chamfered on the top, and the filling of the free interlock with soil during driving can be prevented by fixing a bolt to the bottom of the interlock (or similar solution). Ambient temperature during installation must be above 0°C.

PZC HOT ROLLED SHEET PILE SERIES

MADE IN USA



JD FIELDS & COMPANY, INC.			Minimum Grade 60 Standard				Per Single Section							Per Unit of Wall				
Section	DWG		Nominal Width	Wall Depth (Height)	Web Thickness	Flange Thickness	Cross Sectional Area	Weight	Moment of Inertia	Elastic Section Modulus	Plastic Section Modulus	Total Surface Area	Nominal Coating Area*	Cross Sectional Area	Weight	Moment of Inertia	Elastic Section Modulus	Plastic Section Modulus
			in (mm)	in (mm)	in (mm)	in (mm)	in^2 (cm^2)	lbs/ft (kg/m)	in^4 (cm^4)	in^3 (cm^3)	in^3 (cm^3)	ft^2/ft (m^2/m)	ft^2/ft (m^2/m)	in^2/ft (cm^2/m)	lbs/ft^2 (kg/m^2)	in^4/ft (cm^4/m)	in^3/ft (cm^3/m)	in^3/ft (cm^3/m)
PZC 12	S	D	**27.88**	**12.52**	**0.335**	**0.335**	**13.64**	**46.4**	**324.5**	**51.8**	**61.51**	**6.1**	**5.6**	**5.87**	**20.0**	**139.7**	**22.3**	**26.47**
			708	318	8.5	8.5	88.0	69.1	13,510	850	1,008	1.86	1.71	124.3	97.6	19,080	1,200	1,423
PZC 13	S	D	**27.88**	**12.56**	**0.375**	**0.375**	**14.82**	**50.4**	**353.0**	**56.2**	**66.93**	**6.1**	**5.6**	**6.38**	**21.7**	**152.0**	**24.2**	**28.81**
			708	319	9.5	9.5	95.6	75.1	14,690	920	1,097	1.86	1.71	135.1	106.0	20,760	1,300	1,549
PZC 14	S	D	**27.88**	**12.60**	**0.420**	**0.420**	**16.15**	**55.0**	**381.6**	**60.5**	**72.61**	**6.1**	**5.6**	**6.95**	**23.7**	**164.3**	**26.0**	**31.25**
			708	320	10.7	10.7	104.2	81.8	15,890	**991**	1,190	1.86	1.71	147.2	115.5	22,440	1,400	1,680
PZC 17	S	D	**25.00**	**15.21**	**0.335**	**0.335**	**13.64**	**46.4**	**491.8**	**64.6**	**76.04**	**6.1**	**5.6**	**6.55**	**22.3**	**236.1**	**31.0**	**36.5**
			635	386	8.5	8.5	88.0	69.1	20,470	1,060	1,246	1.86	1.71	138.6	108.8	32,235	1,670	1,962
PZC 18	S	D	**25.00**	**15.25**	**0.375**	**0.375**	**14.82**	**50.4**	**532.2**	**69.8**	**82.2**	**6.1**	**5.6**	**7.12**	**24.2**	**255.5**	**33.5**	**39.46**
			635	387	9.5	9.5	95.6	75.1	22,150	1,145	1,347	1.86	1.71	150.6	118.2	34,890	1,800	2,121
PZC 19	S	D	**25.00**	**15.30**	**0.420**	**0.420**	**16.16**	**55.0**	**576.3**	**75.3**	**89.14**	**6.1**	**5.6**	**7.75**	**26.4**	**276.6**	**36.1**	**42.79**
			635	388	10.7	10.7	104.2	81.8	23,990	1,235	1,461	1.86	1.71	164.1	128.8	37,780	1,945	2,301
PZC 25	S	D	**27.88**	**17.66**	**0.485**	**0.560**	**20.40**	**69.4**	**938.7**	**106.3**	**126.77**	**6.65**	**6.15**	**8.78**	**29.9**	**404.1**	**45.7**	**54.56**
			708	449	12.3	14.2	131.6	103.3	39,070	1,740	2,077	2.03	1.87	185.9	145.9	55,190	2,455	2,933
PZC 26	S	D	**27.88**	**17.70**	**0.525**	**0.600**	**21.72**	**73.9**	**994.3**	**112.4**	**134.46**	**6.65**	**6.15**	**9.35**	**31.8**	**428.1**	**48.4**	**57.89**
			708	450	13.3	15.2	140.1	110.0	41,390	1,840	2,203	2.03	1.87	197.9	155.4	58,460	2,600	3,112
PZC 28	S	D	**27.88**	**17.75**	**0.570**	**0.645**	**23.22**	**79.0**	**1,057**	**119.1**	**143.07**	**6.65**	**6.15**	**10.00**	**34.0**	**455.1**	**51.3**	**61.58**
			708	451	14.5	16.4	149.8	117.6	44,000	1,950	2,344	2.03	1.87	211.6	166.1	62,150	2,755	3,311
PZC 37	S	D	**22.50**	**21.01**	**0.485**	**0.560**	**20.44**	**69.6**	**1,352**	**128.7**	**152.3**	**6.75**	**6.3**	**10.90**	**37.1**	**721.1**	**68.6**	**81.20**
			572	534	12.3	14.2	131.9	103.6	56,270	2,109	2,496	2.06	1.92	230.7	181.2	98,470	3,688	4,366
PZC 39	S	D	**22.50**	**21.05**	**0.525**	**0.600**	**21.83**	**74.3**	**1,436**	**136.4**	**162.0**	**6.76**	**6.3**	**11.64**	**39.6**	**765.9**	**72.7**	**86.40**
			572	535	13.3	15.2	140.8	110.6	59,770	2,235	2,655	2.06	1.92	246.4	193.5	104,590	3,909	4,645
PZC 41	S	D	**22.50**	**21.09**	**0.562**	**0.637**	**23.10**	**78.6**	**1,512**	**143.4**	**170.8**	**6.76**	**6.3**	**12.32**	**41.9**	**806.4**	**76.5**	**91.10**
			572	536	14.3	16.2	149.0	117.0	62,930	2,350	2,799	2.06	1.92	260.8	204.7	110,120	4,113	4,898

All dimensions given are nominal. Actual flange and web thicknesses vary due to mill rolling practices; however, permitted variations for such dimensions are not addressed.

*Both sides of sheet; excludes interior of interlock.

Manufactured to ASTM A6 specifications.

ASTM DESIGNATION**	YIELD STRENGTH ksi	YIELD STRENGTH MPa	APPLICATION
A572	**60**	**415**	**Mill Standard Produced**
A588	50	345	Atmospheric Corrosion
A690	50	345	Marine Environment

PZC HOT ROLLED SHEET PILE SERIES

MADE IN USA

SPECIFICATIONS

Gerdau Steel Grades for PZC and PS Profiles

North American Grades		
ASTM	Yield Strength	
	(ksi)	(MPa)
A 328	39	270
A 572 Grade 50	50	345
A 572 Grade 60	60	415
A 572 Grade 65	65	450
A 690*	50	345

European Grades		
EN 10248	Yield Strength	
	(ksi)	(MPa)
S 240 GP	35	240
S 270 GP	39	270
S 355 GP	51	355
S 430 GP	62	430
S 450 GP	65	450

* A690 contains specified levels of Ni, Cu, and P at higher levels than the other listed grades on the table.

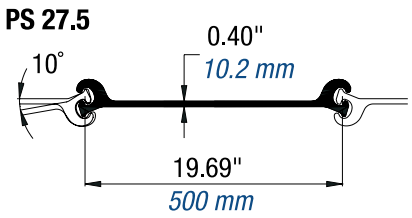
A572 Grade 60 and S 355 GP are the most economical and readily available grades. Please inquire for minimum order requirements for other grades.

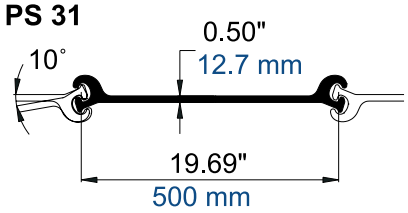
	ASTM A328	ASTM A572-50	ASTM A572-60	ASTM A572-65	ASTM A690
C %	**	0.23 max	0.26 max	0.23 max	0.22 max
Mn %	**	1.35 maxA	1.35 maxA	1.65 maxB	0.60 - 0.90C
P %	0.035 max	0.04 max	0.04 max	0.04 max	0.08 - 0.15
S %	0.04 max	0.05 max	0.05 max	0.05 max	0.04 max
Si %	**	0.40 max	0.40 max	0.40 max	0.40 max
Cu %	**	**	**	**	0.50 min
Ni %	**	**	**	**	0.40 - 0.75
Cr %	**	**	**	**	**
Mo %	**	**	**	**	**
Sn %	**	**	**	**	**
V %	**	0.010 -0.15*	0.010 -0.15*	0.010 -0.15*	**
Cb / Nb %	**	0.005 - 0.05*	0.005 - 0.05*	0.005 - 0.05*	**
Yield ksi [MPa]	39 min [270]	50 min [345]	60 min [415]	65 min [450]	50 min [345]
Tensile ksi [MPa]	65 min [450]	65 min [450]	75 min [520]	80 min [550]	70 min [485]
Elong %	17 @ 8 in.	18 @ 8 in.	16 @ 8 in.	15 @ 8 in.	18 @ 8 in.

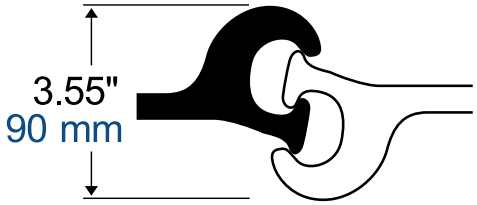
*would contain singly or in combination, dependent on production type (1, 2 or 3)
**= not specified (Where **is shown for copper a minimum of 0.20 may be specified).
(A) For each reduction of 0.01% below C maximum, an increase of 0.06% Mn above specified maximum is permitted, up to a maximum of 1.50%.
(B) For material with thickness of 1/2" (13mm) or less, Mn maximum of 1.35% would apply when C is greater than 0.21%.
(C) For each reduction of 0.01% below C maximum, an increase of 0.06% Mn above specified maximum is permitted, up to a maximum of 1.10%.

MADE IN USA

PS (FLAT SHEET) PILING PROPERTIES





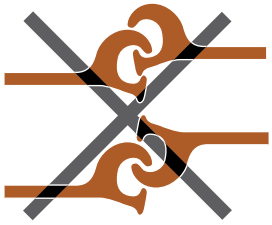


Minimum Grade 60 Standard					Per Single Section						Per Unit of Wall			
JD FIELDS & COMPANY, INC.	Nominal Width	Depth (Height)	Wall Depth (Height)	Web Thickness	Area	Weight	Moment of Inertia	Section Modulus	Total Surface Area	Nominal Coating Area*	Area	Weight	Moment of Inertia	Section Modulus
Section	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in.² (cm²)	lbs/ft (kg/m)	in.⁴ (cm⁴)	in.³ (cm³)	ft²/ft (m²/m)	ft²/ft (m²/m)	in.²/ft (cm²/m)	lbs/ft² (kg/m²)	in.⁴/ft (cm⁴/m)	in.³/ft (cm³/m)
PS 27.5	**19.69**	**2.83**	**3.55**	**0.40**	**13.26**	**45.1**	**5.0**	**3.2**	**4.50**	**3.64**	**8.08**	**27.5**	**3.0**	**1.9**
	500	72	90	10.2	85.5	67.1	207	52	1.37	1.11	171.0	134.2	414	103
PS 31	**19.69**	**2.83**	**3.55**	**0.50**	**14.96**	**50.9**	**5.0**	**3.2**	**4.50**	**3.64**	**9.11**	**31.0**	**3.0**	**1.9**
	500	72	90	12.7	96.5	75.7	207	52	1.37	1.11	192.9	151.4	414	103

*Both sides of sheet; excludes interior of interlock.

All listed dimensions are nominal. Due to rolling practices, variations in web thickness is common. Permitted variations for such dimensions are not addressed.


Proper Interlock


Improper Interlock

Grade	Minimum Interlock Strength(1)	Minimum Swing(2)
A328	16 kips/in. (2,800 kN/m)	10 degrees
A572-50	20 kips/in. (3,500 kN/m)	10 degrees
A572-60	24 kips/in. (4,200 kN/m)	10 degrees

Higher interlock strengths are available; obtainable swing may be reduced in interlock strengths above 24 kips/in (4,200 kN/m).

(1) These minimum ultimate interlock strengths assume proper interlocking of sheets. To verify the strength of PS Sheet Piling, consider both yielding of the web and failure of the interlock.

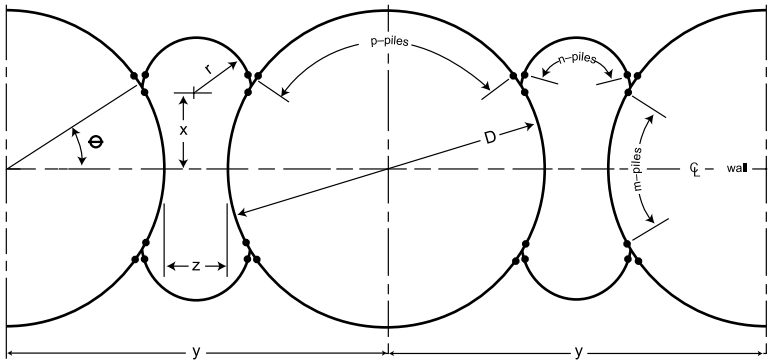
(2) Swing reduces 1.5 degrees for each 10 feet (3 meters) in length over 70 feet (21 meters).

As a general rule, Gerdau advises against interlocking PS sections with other producers' section(s).

Gerdau PS 27.5 and PS 31 can be interlocked together. PS and Z-Piling sections should not be interlocked together.

MADE IN USA

PS FLAT SHEET PILING 30° EXTRUDED WYE LAYOUT



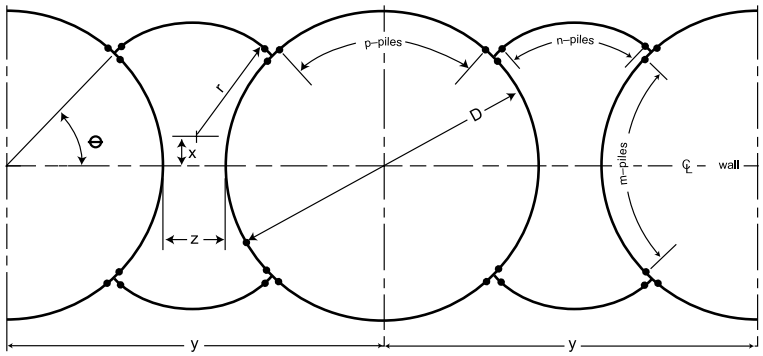
θ is measured to the center of the 30° connection

							Number of Piles			Area			
Number of Piles in Cell†	D ft (m)	z ft (m)	y ft (m)	r ft (m)	X ft (m)	θ deg	m	n	p	Within Circle sg ft (sw m)	Between Circles sg ft (sg m)	Average Width ft (m)	Layout Number (see Website)
78	**39.07**	**12.88**	**51.96**	**9.1**	**9.88**	**31.8**	**13**	**17**	**24**	**1199**	**549**	**33.6**	**2**
	11.91	3.93	15.84	2.77	3.01					111.4	51.0	10.2	
84	**42.21**	**12.47**	**54.61**	**9.1**	**10.66**	**31.6**	**14**	**17**	**26**	**1399**	**566**	**35.9**	**1**
	12.87	3.80	16.65	2.77	3.25					130.0	52.6	10.9	
90	**45.34**	**14.14**	**59.48**	**10.15**	**11.45**	**31.5**	**15**	**19**	**30**	**1615**	**692**	**38.8**	**2**
	13.82	4.31	18.13	3.09	3.49					150.0	64.3	11.8	
96	**48.48**	**13.72**	**62.19**	**10.15**	**12.23**	**31.4**	**16**	**19**	**30**	**1846**	**711**	**41.1**	**1**
	14.78	4.18	18.96	3.09	3.73					171.5	66.1	12.5	
102	**51.61**	**15.39**	**67**	**3.41**	**13.01**	**30.2**	**17**	**21**	**32**	**2092**	**853**	**44**	**2**
	15.73	4.69	20.42	0	3.97					194.4	79.2	13.4	
108	**54.74**	**14.97**	**69.71**	**11.2**	**13.8**	**31.3**	**18**	**21**	**34**	**2354**	**873**	**46.3**	**1**
	16.68	4.56	21.25	3.41	4.21					218.7	81.1	14.1	
114	**57.88**	**16.64**	**74.51**	**12.24**	**14.58**	**31.2**	**19**	**23**	**36**	**2631**	**1029**	**49.1**	**2**
	17.64	5.07	22.71	3.73	4.44					244.4	95.6	15.0	
120	**61.01**	**16.22**	**77.23**	**12.24**	**15.36**	**31.1**	**20**	**23**	**38**	**2923**	**1051**	**51.5**	**1**
	18.60	4.94	23.54	3.73	4.68					271.6	97.6	15.7	
126	**64.14**	**17.89**	**82.03**	**13.28**	**16.15**	**31.1**	**21**	**25**	**40**	**3232**	**1222**	**54.3**	**2**
	19.55	5.45	25.00	4.05	4.92					300.3	113.5	16.6	
132	**67.28**	**19.56**	**86.83**	**14.33**	**16.93**	**31**	**22**	**27**	**42**	**3555**	**1406**	**57.1**	**1**
	20.51	5.96	26.47	4.37	5.16					330.3	130.6	17.4	
138	**70.41**	**19.14**	**89.55**	**14.33**	**17.71**	**31**	**23**	**27**	**44**	**3894**	**1432**	**59.5**	**2**
	21.46	5.83	27.29	4.37	5.40					361.8	133.0	18.1	
144	**73.55**	**20.81**	**94.35**	**15.37**	**18.5**	**31**	**24**	**29**	**46**	**4248**	**1631**	**62.3**	**1**
	22.42	6.34	28.76	4.68	5.64					394.7	151.5	19.0	
150	**76.68**	**20.39**	**97.07**	**15.37**	**19.28**	**30.9**	**25**	**29**	**48**	**4618**	**1657**	**64.6**	**2**
	23.37	6.21	29.59	4.68	5.88					429.0	153.9	19.7	
156	**79.81**	**22.06**	**101.87**	**16.42**	**20.06**	**30.9**	**26**	**31**	**50**	**5003**	**1871**	**67.5**	**1**
	24.33	6.72	31.05	5.00	6.11					464.8	173.8	20.6	

†Includes 4 extruded 30˚ Wye connectors

All dimensions given are nominal.

PS FLAT SHEET PILING 90° EXTRUDED TEE LAYOUT



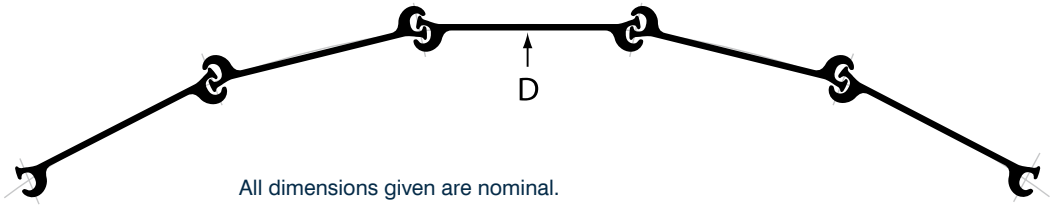
θ *is measured to the center of the 90˚ connection*

							Number of Piles			Area			
Number of Piles in Cell†	D ft (m)	z ft (m)	y ft (m)	r ft (m)	X ft (m)	θ deg	m	n	p	Within Circle sg ft (sw m)	Between Circles sg ft (sg m)	Average Width ft (m)	Layout Number (see Website)
44	21.20 6.46	7.53 2.30	28.73 8.76	9.72 2.96	0.68 0.21	45.3	10	9	10	353 32.8	197 18.3	19.2 5.9	4
48	23.29 7.10	6.84 2.08	30.13 9.18	9.67 2.95	1.45 0.44	45.2	11	9	11	426 39.6	203 18.9	20.9 6.4	6
52	25.38 7.74	6.31 1.92	31.69 9.66	9.73 2.97	2.15 0.66	45.2	12	9	12	506 47.0	210 19.5	22.6 6.9	4
56	27.47 8.37	5.62 1.71	33.09 10.09	9.68 2.95	2.92 0.89	45.2	13	9	13	593 55.1	213 19.8	24.3 7.4	6
60	29.56 9.01	5.09 1.55	34.64 10.56	9.73 2.97	3.62 1.10	45.2	14	9	14	686 63.7	218 20.3	26.1 8.0	4
64	31.65 9.65	5.95 1.81	37.60 11.46	10.76 3.28	3.58 1.09	45	15	10	15	787 73.1	264 24.5	27.9 8.5	3
68	33.73 10.28	5.42 1.65	9.15 11.93	10.82 3.30	4.28 1.30	45	16	10	16	894 83.1	269 25.0	29.7 9.1	5
72	35.82 10.92	4.73 1.44	40.55 12.36	10.76 3.28	5.05 1.54	45.2	17	10	17	1008 93.6	269 25.0	31.5 9.6	3
76	37.91 11.55	5.59 1.70	43.51 13.26	11.83 3.61	5.09 1.55	45.1	18	11	18	1129 104.9	324 30.1	33.4 10.2	4
80	40.00 12.19	4.91 1.50	44.91 13.69	11.77 3.59	5.87 1.79	45.1	19	11	19	1257 116.8	323 30.0	35.2 10.7	6
84	42.09 12.83	5.92 1.80	8.02 14.64	12.91 3.93	5.76 1.76	45	20	12	20	1391 129.2	386 35.9	37.0 11.3	5
88	44.18 13.47	5.24 1.60	49.42 15.06	12.85 3.92	6.53 1.99	45	21	12	21	1533 142.4	384 35.7	38.8 11.8	3
92	46.27 14.10	6.10 1.86	49.42 15.06	13.92 4.24	6.57 2.00	45.1	22	13	22	1681 156.2	450 41.8	40.7 12.4	4
96	48.36 14.74	5.42 1.65	3.77 16.39	13.86 4.22	7.34 2.24	45.1	23	13	23	1837 170.7	448 41.6	42.5 13.0	6
100	50.45 15.38	4.88 1.49	55.33 16.86	13.92 4.24	8.04 2.45	45.1	24	13	24	1999 185.7	451 41.9	44.3 13.5	4
104	52.54 16.01	5.74 1.75	58.28 17.76	14.94 4.55	8.01 2.44	45	25	14	25	2168 201.4	445 41.3	46.1 14.1	3
108	54.63 16.65	6.61 2.01	61.24 18.67	16.01 4.88	8.05 2.45	45.1	26	15	26	2344 217.8	596 55.4	48.0 14.6	4
112	56.72 17.29	5.92 1.80	62.64 19.09	15.95 4.86	8.82 2.69	45.1	27	15	27	2526 234.7	592 55.0	49.8 15.2	6
116	58.80 17.92	5.39 1.64	64.19 19.57	15.95 4.86	9.52 2.90	45.1	28	15	28	2716 252.3	595 55.3	51.6 15.7	4
120	60.89 18.56	6.25 1.91	67.14 20.46	17.03 5.19	9.49 2.89	45	29	16	29	2912 270.5	674 62.6	53.4 16.3	3
124	62.98 19.20	5.71 1.74	68.7 20.94	17.08 5.21	10.19 3.11	45	30	16	30	3116 289.5	677 62.9	55.2 16.8	5
128	65.07 19.83	5.03 1.53	70.1 21.37	17.03 5.19	10.96 3.34	45	31	16	31	3326 309.0	670 62.2	57.0 17.4	3

†Includes 4 extruded 90˚ Tee connectors

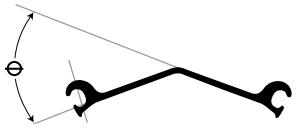
All dimensions given are nominal.

DIAMETERS AND AREAS OF CIRCULAR CELLS USING PS 27.5 AND PS 31



All dimensions given are nominal.

Number of Pieces	PS 27.5 & PS 31 D ft	PS 27.5 & PS 31 Area ft^2	Requires Swing degrees	Theoretical Bend degrees ⊖	Suggested Bend degrees ⊖
12	21.20	7.53	28.73	9.72	0.68
14	7.31	42	25.7	15.7	25.0
16	8.36	55	22.5	12.5	20.0
18	9.40	69	20.0	10.0	15.0
20	10.45	86	18.0	8.0	15.0
22	11.49	104	16.4	6.4	15.0
24	12.53	123	15.0	5.0	10.0
26	13.58	145	13.8	3.6	10.0
28	14.62	168	12.9	2.9	10.0
30	15.67	193	12.0	2.0	10.0
32	16.71	219	11.3	1.3	10.0
34	17.76	248	10.6	0.6	10.0
36	18.80	278	10.0		
38	19.85	309	9.5		
40	20.89	343	9.0		
42	21.94	378	8.6		
44	22.98	415	8.2		
46	24.03	453	7.8		
48	25.07	494	7.5		
50	26.11	536	7.2		
52	27.16	579	6.9		
54	28.20	625	6.7		
56	29.25	672	6.4		
58	30.29	721	6.2		
60	31.34	771	6.0		
62	32.38	824	5.8		
64	33.43	878	5.6		
66	34.47	933	5.5		
68	35.52	999	5.3		
70	36.56	1050	5.1		
72	37.61	1111	5.0		
74	38.65	1173	4.9		
76	39.69	1238	4.7		
78	40.74	1304	4.6		
80	41.78	1371	4.5		
82	42.38	1441	4.4		
84	43.87	1512	4.3		
86	44.92	1585	4.2		
88	45.96	1659	4.1		
90	47.01	1736	4.0		
92	48.05	1813	3.9		
94	49.10	1893	3.8		
96	50.14	1975	3.8		
98	51.18	2057	3.7		
100	52.23	2143	3.6		



Small cells constructed with bent web piles must have half of the piles bent with the fingers inside and half with the fingers outside.

PS 27.5 and PS 31 when properly swing up to 10 degrees (in either direction) for lengths up to 70 feet (21 meters). The ability to obtain a full 10 degrees swing decreases with length because of the difficulty in handling the longer pieces. For lengths over 70 feet (21 meters), it is necessary to anticipate a reduction in obtainable swing of 1.5 degrees for each 10 feet (3 meters) increase in length.

SETTING AND DRIVING TIPS FOR PS FLAT SHEETS:

Although setting and driving techniques vary with the individual contractor and site conditions, several basic principles can generally be applied. It should be realized that the lack of good setting and driving practice can result in job delays and an unsatisfactory structure. The following suggestions are offered to help avoid problems at the site:

Handling of PS sections: These sections have very little modulus (beam strength) and are, therefore, very susceptible to handling damage. It is important that great care be taken when transporting or lifting these sections. When sheets exceed 70 feet (21 meters) in length, they should be lifted at two or more points.

Have an adequate steel template: Longer sheeting lengths will require a two or three tier template with tiers spaced 15 feet (4.5 meters) or more apart. For example, a contractor should consider at least a two-tier template when installing 70 foot (21 meters) or longer sheets as this will facilitate setting and driving and result in a superior product. As with Z-Piling, it is important that each sheet be plumbed and secured when set.

The diameter of the template is predicated on the contractor's experience and method of setting circular cells. It is important that the template diameter be less than the theoretical inside clear cell diameter to easily close the cell. Wood blocking may be utilized to adjust the template to ensure the proper setting width. Upon filling, the finished cell will expand to meet or exceed published values. When a cell with long lengths is being constructed, it may be advisable to stiffen the starter sheet by reinforcing it full length with a structural shape.

Site conditions such as swift water or hard driving may require more sheets to be reinforced.

Splicing: When it is necessary to splice PS sections, the splice point on adjacent sheets should be staggered by several feet.

Mark the driving template for each pile or pair of piles: This allows for wall adjustments to be made during the setting phase, ensuring that the sheets are located properly for cell closure.

Ensure that the sheets are properly interlocked when set: Improper interlocks become the "weak links" and result in job delays and/or failures. A closed cell must have an even number of sections (including connectors) to avoid an improper interlock. Set all sheets in the cell before driving any of the sheets, other than nominal pinning of the starter sheet(s).

"Shake out" several sheets at any closure point: Following good practice as noted above should ideally result in the last sheet sliding smoothly down into the remaining gap. Although the first sheet is set plumb and the next to last sheet is plumb, the chances that the remaining gap is uniform (19.69 inches or 500 mm) the full length is improbable. Picking up and dropping, or "shaking out," several sheets near the closure point until the sheets run smoothly will minimize the chance of driving sheets out of interlock.

Drive piles in pairs: Once sheet piles are threaded and set, it is more economical to drive two at a time. Some experts suggest that the energy needed to drive a pair may be only 50% more than that required to drive a single pile.

Drive piles in stages and work around the entire cell by alternating sheets (pairs): This allows the piles to be guided by those previously driven and lessens the chance of driving sheets out of interlock. The distance a pile, or pair of piles, should be driven at any one time will be governed by the driving conditions. In the first pass around the cell, every other pair is driven perhaps 4 feet (1.2 meters). In the second pass around the cell, the un-driven pairs are driven 8 feet (2.4 meters), 4 feet (1.2 meters) restrained by the adjacent pairs and then 4 feet (1.2 meters) into virgin soil. This procedure is continued until the cell is driven to design tip elevation. A good practice to keep the cell plumb is to reverse the direction of driving for each pass around the cell.

SHEET PILE DRIVE POINTS

We make a “universal” tip to fit all piles, as well as a wide selection of tips made to fit each of the most popular sheet piles used.

WELD PROCEDURE

These points should be welded with a 5/16” fillet along the entire length of the top flange on both sides using 70xx series rod.

FEATURES

- Universal Straight Bar
- Other types can be made





Sheet pile shoes are only available for PZC 13 & 18. All other sizes require bar stock.

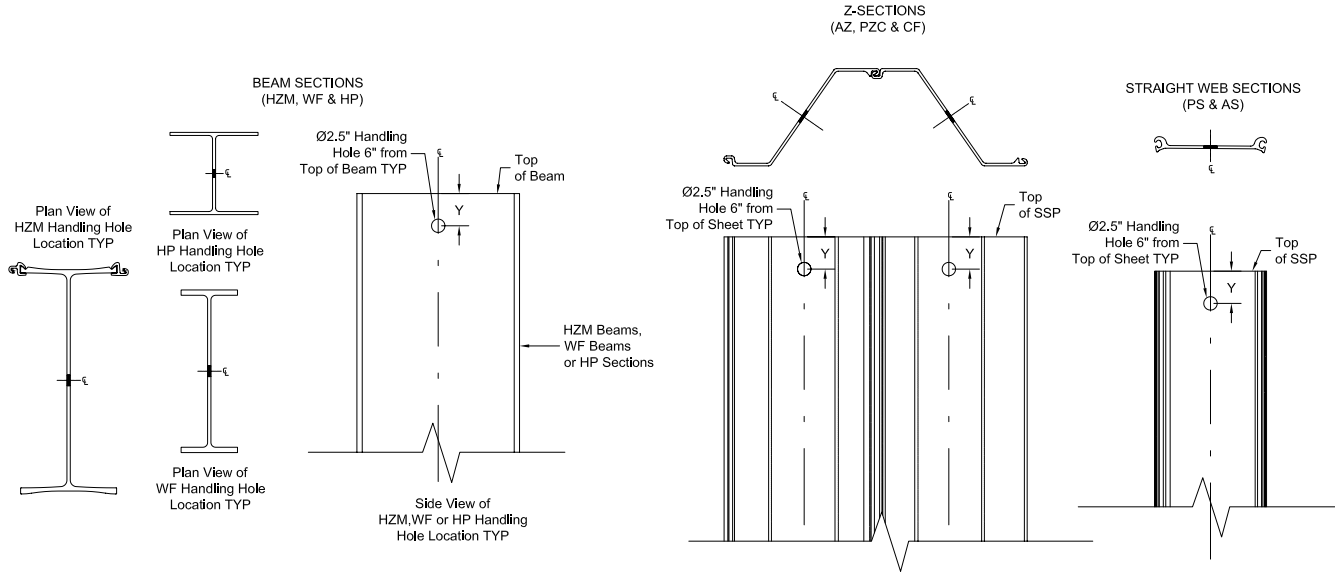
HANDLING HOLES

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

Y = 6” (152.4 mm)

Ø = 2.5” - 2.625” (63.5 mm - 66.7 mm)

Note: The Y location can be adjusted if needed upon request.



NOTES

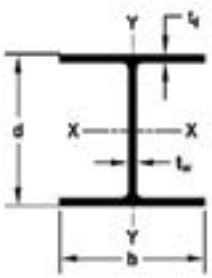


H-PILES



H-PILE SERIES

MADE IN USA



SECTION HP	Weight (m) lb/ft (kg/m)	Area (A) in^2 (cm^2)	Depth (d) in (mm)	Flange Width (b) in (mm)	Thickness		Coating Area ft^2/ft (m^2/m)	ELASTIC PROPERTIES							
								AXIS X-X				AXIS Y-Y			
					Flange (t_f) in (mm)	Web (t_w) in (mm)		I in^4 (cm^4)	S in^3 (cm^3)	Z in^3 (cm^3)	r in (cm)	I in^4 (cm^4)	S in^3 (cm^3)	Z in^3 (cm^3)	r in (cm)
8X8 HP 200	**36**	**10.6**	**8.02**	**8.16**	**0.445**	**0.445**	**3.92**	**119**	**29.8**	**33.6**	**3.36**	**40.3**	**9.88**	**15.2**	**1.95**
	54	68.4	204	207	11.3	11.3	1.19	4953	488	550.6	8.53	1677	162	249.1	4.95
10X10 HP 250	**42**	**12.4**	**9.70**	**10.10**	**0.420**	**0.415**	**4.83**	**210**	**43.4**	**48.3**	**4.13**	**71.7**	**14.2**	**21.8**	**2.41**
	63	80.0	246	257	10.7	10.5	1.47	8741	711	791.5	10.5	2984	233	357.2	6.12
	57	**16.7**	**9.99**	**10.20**	**0.565**	**0.565**	**4.91**	**294**	**58.8**	**66.5**	**4.18**	**101**	**19.7**	**30.3**	**2.45**
	85	108	254	259	14.4	14.4	1.50	12237	964	1089.7	10.6	4204	323	496.5	6.22
12X12 HP 310	**53**	**15.5**	**11.80**	**12.00**	**0.435**	**0.435**	**5.82**	**393**	**66.7**	**74.0**	**5.03**	**127**	**21.1**	**32.2**	**2.86**
	79	100	300	305	11.0	11.0	1.77	16358	1093	1212.6	12.8	5286	346	527.7	7.26
	63	**18.4**	**11.90**	**12.10**	**0.515**	**0.515**	**5.86**	**472**	**79.1**	**88.3**	**5.06**	**153**	**25.3**	**38.7**	**2.88**
	94	119	302	307	13.1	13.1	1.79	19646	1296	1447.0	12.9	6368	415	634.2	7.32
	74	**21.8**	**12.10**	**12.20**	**0.610**	**0.605**	**5.91**	**569**	**93.8**	**105**	**5.11**	**186**	**30.4**	**46.6**	**2.92**
	110	141	307	310	15.5	15.4	1.80	23683	1537	1720.6	13.0	7742	498	763.6	7.42
	84	**24.6**	**12.30**	**12.30**	**0.685**	**0.685**	**5.97**	**650**	**106**	**120**	**5.14**	**213**	**34.6**	**53.2**	**2.94**
	125	159	312	312	17.4	17.4	1.82	27055	1737	1966.4	13.1	8866	567	871.8	7.47
	89	**25.9**	**12.36**	**12.32**	**0.720**	**0.720**	**6.04**	**689**	**111.6**	**126.3**	**5.16**	**225**	**36.5**	**56.2**	**2.94**
	132	167	314	313	18.3	18.3	1.84	28700	1830	2070	13.1	9370	599	922	7.48
	102	**29.9**	**12.56**	**12.64**	**0.819**	**0.819**	**6.17**	**811**	**129.3**	**147.6**	**5.20**	**276**	**43.7**	**67.1**	**3.04**
	152	193	319	321	20.8	20.8	1.88	33800	2120	2420	13.2	11500	716	1100	7.71
	117	**34.4**	**12.76**	**12.87**	**0.929**	**0.929**	**6.26**	**946**	**148.2**	**170.8**	**5.24**	**331**	**51.4**	**79.3**	**3.11**
	174	222	324	327	23.6	23.6	1.91	39400	2430	2800	13.3	13800	843	1300	7.89
14X14 HP 360	**73**	**21.4**	**13.60**	**14.60**	**0.505**	**0.505**	**6.96**	**729**	**107**	**118**	**5.84**	**261**	**35.8**	**54.6**	**3.49**
	109	138	345	371	12.8	12.8	2.12	30343	1753	1933.7	14.8	10864	587	894.7	8.86
	89	**26.1**	**13.80**	**14.70**	**0.615**	**0.615**	**7.02**	**904**	**131**	**146**	**5.88**	**326**	**44.3**	**67.7**	**3.53**
	132	168	351	373	15.6	15.6	2.14	37627	2147	2392.5	14.9	13569	726	1109.4	8.97
	102	**30.1**	**14.00**	**14.80**	**0.705**	**0.705**	**7.06**	**1050**	**150**	**169**	**5.92**	**380**	**51.4**	**78.8**	**3.56**
	152	194	356	376	17.9	17.9	2.15	43704	2458	2769.4	15.0	15817	842	1291.3	9.04
	117	**34.4**	**14.20**	**14.90**	**0.805**	**0.805**	**7.12**	**1220**	**172**	**194**	**5.96**	**443**	**59.5**	**91.4**	**3.59**
	174	222	361	378	20.4	20.4	2.34	50780	2819	3179.1	15.1	18439	975	1497.8	9.12
16X16 HP 410	**88**	**25.8**	**15.30**	**15.70**	**0.540**	**0.540**	**7.52**	**1110**	**145**	**161**	**6.56**	**349**	**44.5**	**68.2**	**3.68**
	131	167	389	399	13.7	13.7	2.29	46201	2376	2638.3	16.7	14526	729	1117.6	9.35
	101	**29.9**	**15.50**	**15.80**	**0.625**	**0.625**	**7.56**	**1300**	**168**	**187**	**6.59**	**412**	**52.2**	**80.1**	**3.71**
	150	193	394	401	15.9	15.9	2.30	54110	2753	3064.4	16.7	17149	855	1312.6	9.42
	121	**35.8**	**15.80**	**15.90**	**0.750**	**0.750**	**7.62**	**1590**	**201**	**226**	**6.66**	**504**	**63.4**	**97.6**	**3.75**
	180	231	401	404	19.1	19.1	2.32	66180	3294	3703.5	16.9	20978	1039	1599.4	9.53
	141	**41.7**	**16.00**	**16.00**	**0.875**	**0.875**	**7.69**	**1870**	**234**	**264**	**6.70**	**599**	**74.9**	**116**	**3.79**
	210	269	406	406	22.2	22.2	2.34	77835	3835	4326.2	17.0	24932	1227	1900.9	9.63

Please contact a JD Fields representative for available material grades and delivery conditions.

MADE IN USA

SPECIFICATIONS

STEEL GRADES FOR HP PROFILES

AVAILABLE STEEL GRADES								
AMERICAN			CANADIAN			EUROPEAN**		
ASTM	YIELD STRENGTH			YIELD STRENGTH		EN 10034	YIELD STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)		(ksi)	(MPa)
A 36	36	250		44	300	**HISTAR 355**	51	355
A 572 Grade 50*	50	345		50	350	**HISTAR 420**	61	420
A 572 Grade 60	60	415				**HISTAR 460**	67	460
A 588	50	345						
A 690	50	345						

DELIVERY CONDITIONS & TOLERANCES

ASTM A 6

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

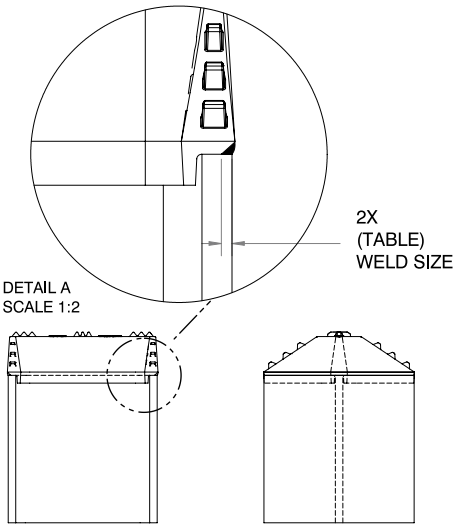
HPs	130’	39.6 m

†Longer lengths may be possible upon request.

H-PILE POINTS

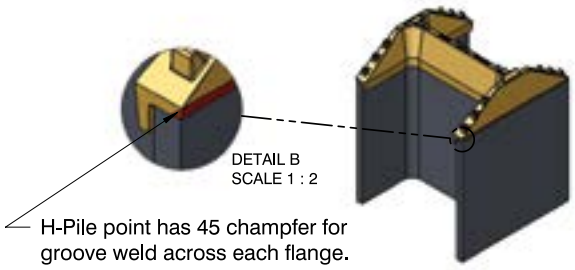
H-Pile points are made of high strength, low alloy cast steel. Cast steel is a superior material choice because it's isotropic – its properties are uniform in all directions. Cast steel points absorb impact and transfer it uniformly to the end of the pile.

Tips are pre-beveled, eliminating pile end preparation. The weld prep is already built into the point; our castings have a 45 degree weld chamfer so there is no need to chamfer piles.



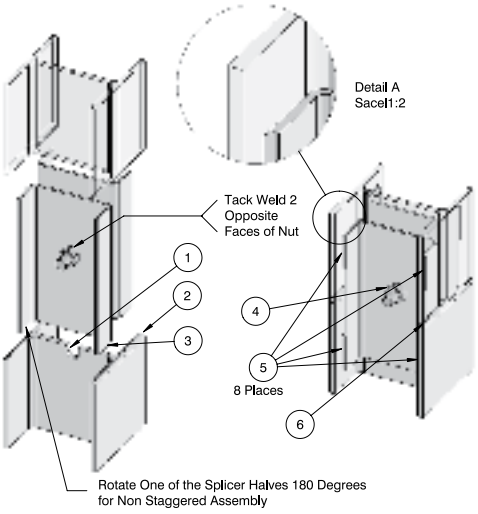
WELD PROCEDURE

1. To ensure proper seating of the tip, remove all flash from end of pile and insert tip.
2. Using a 70xx series rod, make a single pass weld across each flange on the outside only.
3. Do not weld web or inside of flanges.
4. For heavier sections, you may want to use multiple welding passes.



H-PILE SPLICER

H-Pile splicers save time during driving of long piles by eliminating the need for a full penetration weld. Made in ASTM A572 GR.50 or higher strength if requested.

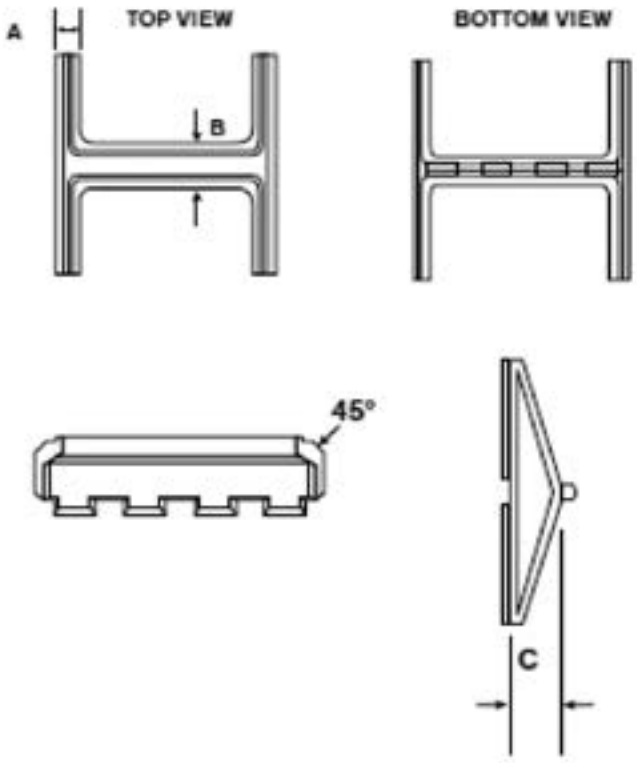


WELD PROCEDURE

1. Cut 1.0" wide x 1.0" long notch in center of web of one pile.
2. Chamfer outside edges of flanges on ends of one or both piles to be spliced. Make chamfer to about 1/2 material thickness.
3. Insert splicer on first pile making sure bolt is completely inside notch.
4. Install the next section of pile and tighten bolt.
5. Using a 70xx series rod, weld the flanges of splicer to the flanges of the pile with (TABLE)" by 3" vertical fillets.
6. Weld the outside flanges of the piles to complete.

H-PILE POINT

DIMENSIONS

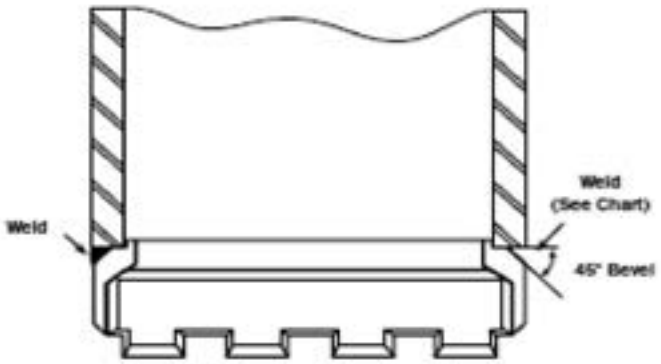


ASTM A148 90/60 - Heat Treated			
	10”	12”	14”
A	1”	1-1/4”	1-1/4”
B	1-1/4”	1-7/16”	1-3/4”
C	2-9/16”	2-5/8”	2-15/16”
WT	14	23	30

Normal Foundry Tolerances Apply

INSTALLATION INSTRUCTIONS

1. Fit point onto the end of the square cut pile end.
2. Weld point to the pile in either flat or vertical position using E70XX electrodes or equivalant filler material.
3. Weld accross full width of flange following chart below for minimum size weld.



Pile Size	Flange Thickness	Minimum Size Groove Weld
HP 14 x 117	.805	7/16
HP 14 x 102	.705	3/8
HP 14 x 89	.615	3/8
HP 14 x 73	.505	5/16
HP 12 x 84	.685	3/8
HP 12 x 74	.610	3/8
HP 12 x 63	.515	5/16
HP 12 x 53	.435	5/16
HP 10 x 57	.565	5/16
HP 10 x 42	.420	5/16





PIPE PILES: SPIRALWELD

PIPE PILE TABLE

SPIRALWELD PIPE

MADE IN USA

HDM STEEL PIPE

OD in (mm)	Wall Thickness in (mm)															
	0.2813	0.3125	0.3438	0.3750	0.4063	0.4375	0.4688	0.5000	0.5625	0.6250	0.6875	0.7500	0.8125	0.8750	0.9375	1.0000
	7.144	7.938	8.731	9.525	10.319	11.113	11.906	12.700	14.288	15.875	14.463	19.050	20.638	22.225	23.813	25.400
16	**47.27**	**52.41**	**57.54**	**62.64**	**67.73**	**72.78**	**77.83**	**82.85**								
406.4	70.45	78.13	85.76	93.37	100.95	108.50	116.01	123.50								
18	**53.28**	**59.09**	**64.89**	**70.65**	**76.42**	**82.14**	**87.86**	**93.54**								
457.2	79.29	87.94	96.57	105.14	113.73	122.24	130.75	139.21								
20	**59.30**	**65.77**	**72.24**	**78.67**	**85.10**	**91.49**	**97.88**	**104.23**	**116.88**	**129.45**						
508.0	88.38	98.05	107.67	117.27	126.85	136.39	145.89	155.37	174.24	192.97						
24	**71.32**	**79.13**	**86.94**	**94.71**	**102.48**	**110.20**	**117.93**	**125.61**	**140.93**	**156.17**	**171.33**	**186.41**				
609.6	106.31	117.97	129.58	141.18	152.74	164.28	175.77	187.24	210.09	232.81	212.60	277.87				
30	**89.37**	**99.17**	**108.99**	**118.76**	**128.54**	**138.26**	**147.99**	**157.68**	**177.01**	**196.26**	**215.43**	**234.51**	**253.51**	**272.43**	**291.26**	**310.01**
762.0	133.20	147.85	162.45	177.03	191.59	206.11	220.59	235.05	263.88	292.56	267.05	349.58	377.92	406.11	434.19	462.13
36		**119.22**	**131.04**	**142.81**	**154.60**	**166.32**	**178.06**	**189.75**	**213.09**	**236.35**	**259.52**	**282.62**	**305.63**	**328.55**	**351.39**	**374.15**
914.4		177.73	195.31	212.89	230.43	247.94	265.40	282.85	317.66	352.32	321.49	421.29	455.60	489.77	523.83	557.74
42			**153.10**	**166.86**	**180.66**	**194.38**	**208.13**	**221.82**	**249.17**	**276.44**	**303.62**	**330.72**	**357.74**	**384.67**	**411.52**	**438.29**
1,066.8			228.18	248.74	269.28	289.78	310.22	330.66	371.45	412.08	375.93	493.00	533.29	573.43	613.47	653.35
48				**190.92**	**206.72**	**222.44**	**238.20**	**253.89**	**285.25**	**316.52**	**347.72**	**378.83**	**409.85**	**440.80**	**471.65**	**502.43**
1,219.2				284.60	308.12	331.61	355.04	378.47	425.23	471.84	430.38	564.71	610.98	657.09	703.10	748.97
54					**232.78**	**250.51**	**268.27**	**285.96**	**321.33**	**356.61**	**391.81**	**426.93**	**461.97**	**496.92**	**531.79**	**566.57**
1,371.6					346.96	373.44	399.86	426.27	479.01	531.60	484.82	636.42	688.66	740.75	792.74	844.58
60						**278.57**	**298.34**	**318.03**	**357.41**	**396.70**	**435.91**	**475.04**	**514.08**	**553.04**	**591.92**	**630.71**
1,524.0						415.27	444.67	474.08	532.80	591.35	539.26	708.13	766.35	824.41	882.38	940.19
66								**350.10**	**393.48**	**436.79**	**480.01**	**523.14**	**566.19**	**609.16**	**652.05**	**694.85**
1,676.4								521.89	586.58	651.11	593.70	779.84	844.04	908.07	972.02	1,035.80
72									**429.56**	**476.87**	**524.10**	**571.25**	**618.31**	**665.29**	**712.18**	**758.99**
1,828.8									640.37	710.87	648.15	851.55	921.73	991.73	1,061.66	1,131.42
78										**516.96**	**568.20**	**619.35**	**670.42**	**721.41**	**772.31**	**823.13**
1,981.2										770.63	702.59	923.26	999.41	1,075.39	1,151.30	1,227.03
84											**612.29**	**667.46**	**722.54**	**777.53**	**832.44**	**887.27**
2,133.6											757.03	994.97	1,077.10	1,159.06	1,240.94	1,322.64
90												**715.56**	**774.65**	**833.65**	**892.57**	**951.41**
2,286.0												1,066.68	1,154.79	1,242.72	1,330.58	1,418.26
96													**826.76**	**889.78**	**952.70**	**1,015.55**
2,438.4													1,232.47	1,326.38	1,420.21	1,513.87
100													**861.51**	**927.19**	**992.79**	**1,058.31**
2,540.0													1,284.27	1,382.15	1,479.97	1,577.61

Unit weight of pipe in **lbs/ft** and kg/m.

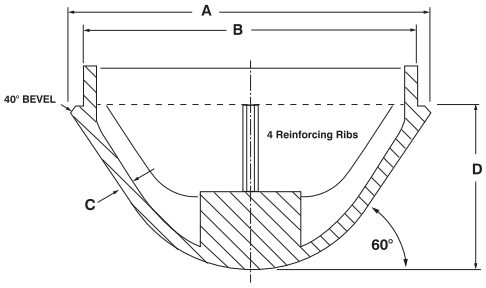
Intermediate, custom diameter sections are avaiable upon request subject to minimum tonnage requirements.
Please inquire with your JDF HDM sales representative for details.

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INSIDE FLANGE CONICAL POINTS

Conical Points are the preferred end closure for pipe piles. The conical shape pushes the earth aside and preserves friction. The snub nose conical is an economical design which provides end protection in most soil conditions.



SIZE:

The snub nose conical point is available for 8-5/8", 10-3/4", 12", 12-3/4", 14", 16", 18", 20", and 24" O.D. pipe.

BENEFITS:

60 degree Conical Points with heavy internal ribs aid in penetration in most soils. On boulders or uneven rock, the point helps to distribute the load around the periphery of the pipe rather than concentration it on a quadrant - as occurs with plate closure.

STEEL GRADE:

High Strength Heat-Treated Cast Steel Grade ASTM A148 80/50 - other grades also available.

INSIDE-FIT CONICAL PIPE POINTS

Inside-fit conical points are manufactured with 60 degree slope for optimum ease in penetration and even distribution of load. The conical points are slip fit and can accommodate schedule 80 and thicker wall pipe. There is an option of a blunt nose if desired.

Our conical points are easy to install with a slip-on fit. The design places the cross-sectional area directly below the wall of the pipe for maximum support during penetration. They are a more heavy-duty construction than other brands.

The inside-fit conical point has a weld prep built into the shoe. These tips are designed with a weld chamfer built into the casting. Slip shoe inside pipe and using a 70xx series rod weld a 5/16" or larger weld all around.

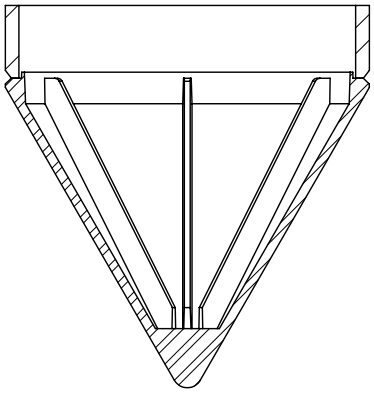
WELD PROCEDURE

Welding for most sizes requires a simple 5/16" fillet weld using 70xx series rod all around the top of the flange.

Type Inside-Fit

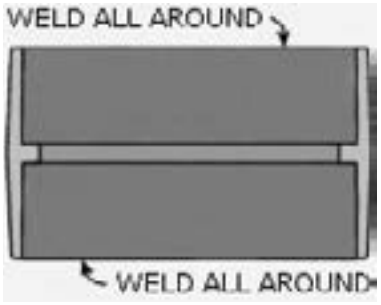


Conical Point and Pipe Cross-Section View



CAST STEEL PIPE SPLICERS

Cast steel splicers have the advantage of uniform sizing — there is no risk of improper fit, compared to fabricated splicers that are individually made. JDF Construction Products casts splicers in ASTM A 27, Grade 65/35, with ASTM A 148 grade 90-60 on request.



WELD PROCEDURE

Pipe splicers are drive fit. Under proper conditions, the drive fit is water tight. If welding is desired, a simple 5/16” fillet using 70xx series rod at the top and bottom is all that is required.

FEATURES

- Compression Fit
- Slip Fit

OPEN ENDED INSIDE-FIT CUTTING SHOES

Both of our cutting shoes are easy to install with a slip-on fit. The design places the cross-sectional area directly below the wall of the pipe for maximum support during penetration. They are a more heavy-duty construction than other brands. The inside-fit cutting shoe has a weld prep built into the shoe.

Inside-Fit



WELD PROCEDURE

These tips are designed with a weld chamfer built into the casting. Slip shoe inside pipe and using a 70xx series rod weld a 5/16” weld all around.

FEATURES

- Fits All Standard Pipe Sizes
- All Steel Alloy Grades

OPEN ENDED OUTSIDE-FIT CUTTING SHOES

Like our inside-fit shoe, this shoe has a slip-on fit, and the cross-sectional area lies below the wall of the pipe. The outside-fit cutting shoe has a natural fillet on top for easy welding.

Outside-Fit



WELD PROCEDURE

These slip fit shoes are easily attached with a 5/16” fillet weld at the top of the flange. For best results, weld all around the shoe with a 70xx series rod.

FEATURES

- Fits All Standard Pipe Sizes
- All Steel Alloy Grades

WELD/CHILL RINGS

We manufacture weld rings to fit all sizes of pipe and wall thicknesses. The standard weld ring is 1/8” thick.

FEATURES

- Spherical Spacers
- Short or Long Pin Spacers
- Stainless and Carbon Steel

The inside diameter of a specific nominal pipe size will vary due to the difference in pipe wall thickness. The JDF Construction Products split commercial ring is designed to compensate for these variations. When inserted into the pipe, the ring can be closed at the split or have a gap, depending on the inside diameter of the pipe. These rings are also designed and manufactured with an opening at the split which permits the welder to compress the ring when it is inserted into the pipe. When released inside the pipe opening, the ring will spring back and make contact throughout the inside circumference of the pipe. The usual procedure followed when using our JDF Construction Products split commercial rings is to insert the ring into one end of the pipe, and then bring the other pipe over the opposite end of the ring, forcing both ends of both pipes against whatever root opening spacers are furnished on that ring.

Type LG
Type LG Ring Spacers are removed in the welding process



Type S
Type S Ring Spacers may be removed or melted into the weld



Type W
Type W Ring is furnished without spacers



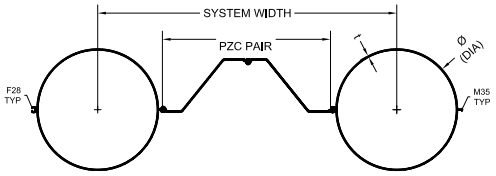
NOTES



COMBINED WALL SYSTEMS



PIPE PZC COMBI-WALL SYSTEM

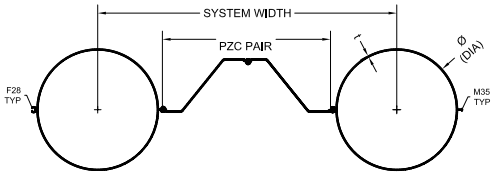


HDM STEEL PIPE	Sheet Pile Section	Pipe-Sheet Connector	System Width	Per Unit of Wall			50 ksi	60 ksi	Mass: Beam/Sheet Ratio			Coating Area	
				Cross Sectional Area (A)	Combined Moment of Inertia (Iy)	Combined Elastic Modulus (Sx)	Ultimate Bend. Moment [No S.F.] (Mmax)		PIPE / PZC 60% (m)"	PIPE / PZC 80% (m)"	PIPE / PZC 100% (m)"	Waterside Surface (A')	Landside Surface (A")
PIPE PZC13			mm	cm^2	cm^4/m	cm^3/m	kN-m/m		kg/m^2	kg/m^2	kg/m^2	m^2/m	m^2/m
			in	**in^2**	**in^4/ ft**	**in^3/ ft**	**kip-ft/ft**		**lbs/ft^2**	**lbs/ft^2**	**lbs/ft^2**	**ft^2/ft**	**ft^2/ft**
JDF 30 ODx0.500/PZC13	PZC13	MF63	2241 **88.23**	1295.1 **79.0**	106762.0 **781.8**	2802.2 **52.1**	966.3 **217.2**	1159.6 **260.6**	149.0 **30.5**	163.8 **33.6**	178.6 **36.6**	2.90 **9.53**	2.90 **9.53**
JDF 30 ODx0.625/PZC13	PZC13	MF63	2241 **88.23**	1480.9 **90.4**	128711.6 **942.5**	3378.3 **62.8**	1165.0 **261.8**	1398.0 **314.2**	174.7 **35.8**	189.4 **38.8**	204.2 **41.8**	2.90 **9.53**	2.90 **9.53**
JDF 30 ODx0.750/PZC13	PZC13	MF63	2241 **88.23**	1665.1 **101.6**	150096.0 **1099.1**	3939.5 **73.3**	1358.6 **305.3**	1630.3 **366.4**	200.1 **41.0**	214.8 **44.0**	229.6 **47.0**	2.90 **9.53**	2.90 **9.53**
JDF 36 ODx0.500/PZC13	PZC13	MF63	2393 **94.23**	1449.6 **88.5**	165073.6 **1208.8**	3610.5 **67.2**	1245.1 **279.8**	1494.1 **335.8**	159.5 **32.7**	173.3 **35.5**	187.2 **38.3**	3.14 **10.31**	3.14 **10.31**
JDF 36 ODx0.625/PZC13	PZC13	MF63	2393 **94.23**	1674.0 **102.2**	201283.5 **1474.0**	4402.5 **81.9**	1518.2 **341.2**	1821.9 **409.4**	188.5 **38.6**	202.3 **41.4**	216.1 **44.3**	3.14 **10.31**	3.14 **10.31**
JDF 36 ODx0.750/PZC13	PZC13	MF63	2393 **94.23**	1896.8 **115.8**	236720.3 **1733.5**	5177.6 **96.3**	1785.5 **401.3**	2142.6 **481.5**	217.2 **44.5**	231.1 **47.3**	244.9 **50.2**	3.14 **10.31**	3.14 **10.31**
JDF 40 ODx0.500/PZC13	PZC13	MF63	2495 **98.23**	1552.5 **94.7**	213682.3 **1564.8**	4206.3 **78.2**	1450.6 **326.0**	1740.7 **391.2**	165.7 **33.9**	179.0 **36.7**	192.3 **39.4**	3.30 **10.84**	3.30 **10.84**
JDF 40 ODx0.625/PZC13	PZC13	MF63	2495 **98.23**	1802.7 **110.0**	261792.8 **1917.1**	5153.4 **95.9**	1777.2 **399.4**	2132.6 **479.3**	196.7 **40.3**	210.0 **43.0**	223.3 **45.7**	3.30 **10.84**	3.30 **10.84**
JDF 40 ODx0.750/PZC13	PZC13	MF63	2495 **98.23**	2051.3 **125.2**	308981.1 **2262.6**	6082.3 **113.1**	2097.5 **471.4**	2517.0 **565.7**	227.5 **46.6**	240.8 **49.3**	254.1 **52.0**	3.30 **10.84**	3.30 **10.84**
JDF 44 ODx0.500/PZC13	PZC13	MF63	2597 **102.23**	1655.5 **101.0**	270422.0 **1980.3**	4839.3 **90.0**	1668.9 **375.1**	2002.6 **450.1**	171.5 **35.1**	184.3 **37.7**	197.0 **40.4**	3.46 **11.36**	3.46 **11.36**
JDF 44 ODx0.625/PZC13	PZC13	MF63	2597 **102.23**	1931.4 **117.9**	332438.4 **2434.4**	5949.2 **110.7**	2051.6 **461.1**	2461.9 **553.3**	204.3 **41.9**	217.1 **44.5**	229.9 **47.1**	3.46 **11.36**	3.46 **11.36**
JDF 44 ODx0.750/PZC13	PZC13	MF63	2597 **102.23**	2205.7 **134.6**	393376.2 **2880.6**	7039.7 **130.9**	2427.7 **545.6**	2913.2 **654.7**	237.0 **48.5**	249.7 **51.2**	262.5 **53.8**	3.46 **11.36**	3.46 **11.36**
JDF 48 ODx0.500/PZC13	PZC13	MF63	2698 **106.23**	1758.5 **107.3**	335537.3 **2457.1**	5504.2 **102.4**	1898.2 **426.6**	2277.8 **511.9**	176.8 **36.2**	189.1 **38.7**	201.4 **41.2**	3.62 **11.88**	3.62 **11.88**
JDF 48 ODx0.625/PZC13	PZC13	MF63	2698 **106.23**	2060.1 **125.7**	413529.0 **3028.2**	6783.6 **126.2**	2339.4 **525.7**	2807.2 **630.9**	211.4 **43.3**	223.7 **45.8**	235.9 **48.3**	3.62 **11.88**	3.62 **11.88**
JDF 48 ODx0.750/PZC13	PZC13	MF63	2698 **106.23**	2360.1 **144.0**	490279.5 **3590.3**	8042.6 **149.6**	2773.5 **623.3**	3328.2 **748.0**	245.8 **50.3**	258.0 **52.8**	270.3 **55.4**	3.62 **11.88**	3.62 **11.88**
JDF 52 ODx0.625/PZC13	PZC13	MF63	2800 **110.23**	2188.8 **133.6**	505328.8 **3700.5**	7651.9 **142.3**	2638.8 **593.0**	3166.5 **711.6**	217.9 **44.6**	229.8 **47.1**	241.6 **49.5**	3.78 **12.41**	3.78 **12.41**
JDF 52 ODx0.750/PZC13	PZC13	MF63	2800 **110.23**	2514.6 **153.5**	600010.6 **4393.8**	9085.6 **169.0**	3133.2 **704.1**	3759.8 **845.0**	253.9 **52.0**	265.7 **54.4**	277.5 **56.8**	3.78 **12.41**	3.78 **12.41**
JDF 52 ODx0.875/PZC13	PZC13	MF63	2800 **110.23**	2838.8 **173.2**	693296.6 **5076.9**	10498.1 **195.3**	3620.3 **813.6**	4344.4 **976.3**	289.7 **59.3**	301.5 **61.8**	313.3 **64.2**	3.78 **12.41**	3.78 **12.41**
JDF 56 ODx0.750/PZC13	PZC13	MF63	2901 **114.23**	2669.0 **162.9**	722844.4 **5293.3**	10163.7 **189.0**	3505.0 **787.7**	4206.0 **945.2**	261.4 **53.5**	272.9 **55.9**	284.3 **58.2**	3.94 **12.93**	3.94 **12.93**
JDF 56 ODx0.875/PZC13	PZC13	MF63	2901 **114.23**	3018.9 **184.2**	836055.3 **6122.3**	11755.6 **218.7**	4054.0 **911.1**	4864.7 **1093.3**	298.7 **61.2**	310.1 **63.5**	321.5 **65.9**	3.94 **12.93**	3.94 **12.93**
JDF 56 ODx1.00/PZC13	PZC13	MF63	2901 **114.23**	3367.2 **205.5**	947711.9 **6940.0**	13325.5 **247.9**	4595.4 **1032.7**	5514.4 **1239.3**	335.8 **68.8**	347.2 **71.1**	358.6 **73.5**	3.94 **12.93**	3.94 **12.93**
JDF 60 ODx0.750/PZC13	PZC13	MF63	3003 **118.23**	2823.5 **172.3**	859018.5 **6290.5**	11273.2 **209.7**	3887.6 **873.7**	4665.1 **1048.4**	268.5 **55.0**	279.5 **57.3**	290.5 **59.5**	4.10 **13.45**	4.10 **13.45**
JDF 60 ODx0.875/PZC13	PZC13	MF63	3003 **118.23**	3199.1 **195.2**	994357.7 **7281.6**	13049.3 **242.7**	4500.1 **1011.3**	5400.1 **1213.6**	307.1 **62.9**	318.2 **65.2**	329.2 **67.4**	4.10 **13.45**	4.10 **13.45**
JDF 60 ODx1.00/PZC13	PZC13	MF63	3003 **118.23**	3573.2 **218.0**	1127965.5 **8260.0**	14802.7 **275.3**	5104.8 **1147.2**	6125.7 **1376.7**	345.6 **70.8**	356.7 **73.1**	367.7 **75.3**	4.10 **13.45**	4.10 **13.45**
JDF 64 ODx0.750/PZC13	PZC13	MF63	3105 **122.23**	2977.9 **181.7**	1008739.6 **7386.9**	12410.7 **230.8**	4279.9 **961.8**	5135.8 **1154.2**	275.1 **56.3**	285.7 **58.5**	296.4 **60.7**	4.26 **13.98**	4.26 **13.98**
JDF 64 ODx0.875/PZC13	PZC13	MF63	3105 **122.23**	3379.3 **206.2**	1168446.7 **8556.4**	14375.6 **267.4**	4957.5 **1114.1**	5949.0 **1336.9**	315.0 **64.5**	325.7 **66.7**	336.4 **68.9**	4.26 **13.98**	4.26 **13.98**
JDF 64 ODx1.00/PZC13	PZC13	MF63	3105 **122.23**	3779.1 **230.6**	1326241.1 **9711.9**	16317.0 **303.5**	5627.0 **1264.6**	6752.4 **1517.5**	354.8 **72.7**	365.5 **74.9**	376.2 **77.0**	4.26 **13.98**	4.26 **13.98**
JDF 68 ODx0.750/PZC13	PZC13	MF63	3206 **126.23**	3132.4 **191.1**	1172188.0 **8583.8**	13573.3 **252.5**	4680.8 **1051.9**	5617.0 **1262.3**	281.2 **57.6**	291.6 **59.7**	301.9 **61.8**	4.42 **14.50**	4.42 **14.50**
JDF 68 ODx0.875/PZC13	PZC13	MF63	3206 **126.23**	3559.5 **217.2**	1358534.5 **9948.4**	15731.1 **292.6**	5424.9 **1219.2**	6509.9 **1463.0**	322.4 **66.0**	332.7 **68.2**	343.1 **70.3**	4.42 **14.50**	4.42 **14.50**
JDF 68 ODx1.00/PZC13	PZC13	MF63	3206 **126.23**	3985.0 **243.2**	1542783.2 **11297.6**	17864.6 **332.3**	6160.7 **1384.5**	7392.8 **1661.4**	363.4 **74.4**	373.8 **76.6**	384.1 **78.7**	4.42 **14.50**	4.42 **14.50**
JDF 72 ODx0.750/PZC13	PZC13	MF63	3308 **130.23**	3286.8 **200.6**	1349521.9 **9882.4**	14758.6 **274.5**	5089.5 **1143.8**	6107.5 **1372.6**	287.0 **58.8**	297.0 **60.8**	307.1 **62.9**	4.58 **15.02**	4.58 **15.02**
JDF 72 ODx0.875/PZC13	PZC13	MF63	3308 **130.23**	3739.7 **228.2**	1564807.1 **11458.9**	17112.9 **318.3**	5901.5 **1326.3**	7081.8 **1591.5**	329.3 **67.5**	339.4 **69.5**	349.4 **71.6**	4.58 **15.02**	4.58 **15.02**
JDF 72 ODx1.00/PZC13	PZC13	MF63	3308 **130.23**	4190.9 **255.7**	1777806.1 **13018.7**	19442.3 **361.6**	6704.8 **1506.8**	8045.7 **1808.1**	371.5 **76.1**	381.5 **78.1**	391.5 **80.2**	4.58 **15.02**	4.58 **15.02**

* Larger, custom pipe sizes and wall thicknesses are available upon request. Please contact us at eng@jdfields.com for availability.

PIPE PZC COMBI-WALL SYSTEM

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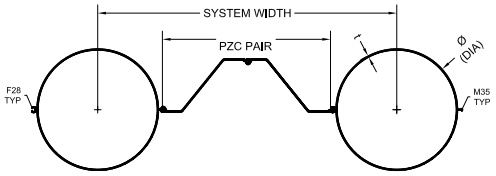


HDM STEEL PIPE	Sheet Pile Section	Pipe-Sheet Connector	System Width	Per Unit of Wall			50 ksi	60 ksi	Mass: Beam/Sheet Ratio			Coating Area	
				Cross Sectional Area (A)	Combined Moment of Inertia (Iy)	Combined Elastic Modulus (Sx)	Ultimate Bend. Moment [No S.F.] (Mmax)		PIPE / PZC 60% (m)"	PIPE / PZC 80% (m)"	PIPE / PZC 100% (m)"	Waterside Surface (A')	Landside Surface (A")
PIPE PZC18			mm	cm^2	cm^4/m	cm^3/m	kN-m/m		kg/m^2	kg/m^2	kg/m^2	m^2/m	m^2/m
			in	**in^2**	**in^4/ ft**	**in^3/ ft**	**kip-ft/ft**		**lbs/ft^2**	**lbs/ft^2**	**lbs/ft^2**	**ft^2/ft**	**ft^2/ft**
JDF 30 ODx0.500/PZC18	PZC18	MF63	2095 **82.48**	1295.2 **79.0**	121326.9 **888.5**	3184.4 **59.2**	1098.2 **246.8**	1317.8 **296.2**	159.4 **32.7**	175.2 **35.9**	191.0 **39.1**	2.90 **9.53**	2.90 **9.53**
JDF 30 ODx0.625/PZC18	PZC18	MF63	2095 **82.48**	1481.0 **90.4**	144806.7 **1060.4**	3800.7 **70.7**	1310.7 **294.6**	1572.8 **353.5**	186.8 **38.3**	202.6 **41.5**	218.4 **44.7**	2.90 **9.53**	2.90 **9.53**
JDF 30 ODx0.750/PZC18	PZC18	MF63	2095 **82.48**	1665.2 **101.6**	167681.9 **1227.9**	4401.1 **81.9**	1517.7 **341.1**	1821.3 **409.3**	214.0 **43.8**	229.8 **47.1**	245.6 **50.3**	2.90 **9.53**	2.90 **9.53**
JDF 36 ODx0.500/PZC18	PZC18	MF63	2247 **88.48**	1449.6 **88.5**	182440.2 **1336.0**	3990.4 **74.2**	1376.1 **309.3**	1651.3 **371.1**	169.9 **34.8**	184.6 **37.8**	199.3 **40.8**	3.14 **10.31**	3.14 **10.31**
JDF 36 ODx0.625/PZC18	PZC18	MF63	2247 **88.48**	1674.0 **102.2**	221003.3 **1618.4**	4833.8 **89.9**	1667.0 **374.6**	2000.4 **449.6**	200.7 **41.1**	215.4 **44.1**	230.2 **47.1**	3.14 **10.31**	3.14 **10.31**
JDF 36 ODx0.750/PZC18	PZC18	MF63	2247 **88.48**	1896.8 **115.8**	258743.0 **1894.7**	5659.3 **105.3**	1951.6 **438.6**	2342.0 **526.3**	231.4 **47.4**	246.1 **50.4**	260.8 **53.4**	3.14 **10.31**	3.14 **10.31**
JDF 40 ODx0.500/PZC18	PZC18	MF63	2349 **92.48**	1552.6 **94.7**	233320.0 **1708.6**	4592.9 **85.4**	1583.9 **356.0**	1900.7 **427.1**	176.1 **36.1**	190.2 **38.9**	204.2 **41.8**	3.30 **10.84**	3.30 **10.84**
JDF 40 ODx0.625/PZC18	PZC18	MF63	2349 **92.48**	1802.7 **110.0**	284421.9 **2082.8**	5598.9 **104.1**	1930.8 **433.9**	2316.9 **520.7**	209.0 **42.8**	223.1 **45.7**	237.2 **48.6**	3.30 **10.84**	3.30 **10.84**
JDF 40 ODx0.750/PZC18	PZC18	MF63	2349 **92.48**	2051.3 **125.2**	334544.1 **2449.8**	6585.5 **122.5**	2271.0 **510.4**	2725.3 **612.5**	241.7 **49.5**	255.8 **52.4**	269.9 **55.3**	3.30 **10.84**	3.30 **10.84**
JDF 44 ODx0.500/PZC18	PZC18	MF63	2451 **96.48**	1655.5 **101.0**	292627.2 **2142.9**	5236.7 **97.4**	1805.9 **405.8**	2167.1 **487.0**	181.7 **37.2**	195.3 **40.0**	208.8 **42.8**	3.46 **11.36**	3.46 **11.36**
JDF 44 ODx0.625/PZC18	PZC18	MF63	2451 **96.48**	1931.4 **117.9**	358339.6 **2624.1**	6412.7 **119.3**	2211.4 **497.0**	2653.7 **596.4**	216.5 **44.3**	230.0 **47.1**	243.6 **49.9**	3.46 **11.36**	3.46 **11.36**
JDF 44 ODx0.750/PZC18	PZC18	MF63	2451 **96.48**	2205.7 **134.6**	422909.2 **3096.9**	7568.2 **140.8**	2609.9 **586.5**	3131.9 **703.8**	251.1 **51.4**	264.6 **54.2**	278.1 **57.0**	3.46 **11.36**	3.46 **11.36**
JDF 48 ODx0.500/PZC18	PZC18	MF63	2552 **100.48**	1758.5 **107.3**	360584.8 **2640.5**	5915.1 **110.0**	2039.8 **458.4**	2447.8 **550.1**	187.0 **38.3**	199.9 **41.0**	212.9 **43.6**	3.62 **11.88**	3.62 **11.88**
JDF 48 ODx0.625/PZC18	PZC18	MF63	2552 **100.48**	2060.1 **125.7**	443039.5 **3244.3**	7267.7 **135.2**	2506.3 **563.3**	3007.6 **675.9**	223.5 **45.8**	236.5 **48.4**	249.4 **51.1**	3.62 **11.88**	3.62 **11.88**
JDF 48 ODx0.750/PZC18	PZC18	MF63	2552 **100.48**	2360.2 **144.0**	524182.1 **3838.5**	8598.8 **159.9**	2965.3 **666.4**	3558.4 **799.7**	259.8 **53.2**	272.8 **55.9**	285.8 **58.5**	3.62 **11.88**	3.62 **11.88**
JDF 52 ODx0.625/PZC18	PZC18	MF63	2654 **104.48**	2188.8 **133.6**	538761.7 **3945.3**	8158.1 **151.7**	2813.4 **632.3**	3376.0 **758.7**	229.9 **47.1**	242.4 **49.6**	254.9 **52.2**	3.78 **12.41**	3.78 **12.41**
JDF 52 ODx0.750/PZC18	PZC18	MF63	2654 **104.48**	2514.6 **153.5**	638654.2 **4676.8**	9670.7 **179.9**	3335.0 **749.5**	4002.0 **899.4**	267.9 **54.9**	280.3 **57.4**	292.8 **60.0**	3.78 **12.41**	3.78 **12.41**
JDF 52 ODx0.875/PZC18	PZC18	MF63	2654 **104.48**	2838.8 **173.2**	737074.2 **5397.5**	11161.0 **207.6**	3848.9 **865.0**	4618.7 **1038.0**	305.6 **62.6**	318.1 **65.1**	330.6 **67.7**	3.78 **12.41**	3.78 **12.41**
JDF 56 ODx0.750/PZC18	PZC18	MF63	2755 **108.48**	2669.1 **162.9**	766573.9 **5613.5**	10778.6 **200.5**	3717.0 **835.3**	4460.5 **1002.4**	275.3 **56.4**	287.3 **58.8**	299.3 **61.3**	3.94 **12.93**	3.94 **12.93**
JDF 56 ODx0.875/PZC18	PZC18	MF63	2755 **108.48**	3019.0 **184.2**	885785.7 **6486.5**	12454.8 **231.7**	4295.1 **965.3**	5154.1 **1158.3**	314.5 **64.4**	326.6 **66.9**	338.6 **69.3**	3.94 **12.93**	3.94 **12.93**
JDF 56 ODx1.00/PZC18	PZC18	MF63	2755 *108.48*	3367.3 *205.5*	1003360.6 *7347.5*	14108.0 *262.4*	4865.2 *1093.4*	5838.2 *1312.1*	353.6 *72.4*	365.6 *74.9*	377.6 *77.3*	3.94 *12.93*	3.94 *12.93*
JDF 60 ODx0.750/PZC18	PZC18	MF63	2857 **112.48**	2823.5 **172.3**	908154.2 **6650.3**	11918.0 **221.7**	4110.0 **923.7**	4932.0 **1108.4**	282.2 **57.8**	293.8 **60.2**	305.4 **62.6**	4.10 **13.45**	4.10 **13.45**
JDF 60 ODx0.875/PZC18	PZC18	MF63	2857 **112.48**	3199.2 **195.2**	1050412.0 **7692.0**	13784.9 **256.4**	4753.8 **1068.3**	5704.5 **1282.0**	322.8 **66.1**	334.4 **68.5**	346.0 **70.9**	4.10 **13.45**	4.10 **13.45**
JDF 60 ODx1.00/PZC18	PZC18	MF63	2857 **112.48**	3573.2 **218.1**	1190849.8 **8720.5**	15628.0 **290.7**	5389.4 **1211.2**	6467.2 **1453.4**	363.3 **74.4**	374.9 **76.8**	386.5 **79.2**	4.10 **13.45**	4.10 **13.45**
JDF 64 ODx0.75/PZC18	PZC18	MF63	2959 **116.48**	2977.9 **181.7**	1063578.9 **7788.5**	13085.4 **243.4**	4512.5 **1014.1**	5415.1 **1216.9**	288.7 **59.1**	299.9 **61.4**	311.0 **63.7**	4.26 **13.98**	4.26 **13.98**
JDF 64 ODx0.875/PZC18	PZC18	MF63	2959 **116.48**	3379.3 **206.2**	1231169.9 **9015.7**	15147.3 **281.7**	5223.6 **1173.9**	6268.3 **1408.7**	330.6 **67.7**	341.8 **70.0**	353.0 **72.3**	4.26 **13.98**	4.26 **13.98**
JDF 64 ODx1.00/PZC18	PZC18	MF63	2959 **116.48**	3779.1 **230.6**	1396753.8 **10228.3**	17184.5 **319.6**	5926.1 **1331.8**	7111.4 **1598.2**	372.3 **76.3**	383.5 **78.6**	394.7 **80.8**	4.26 **13.98**	4.26 **13.98**
JDF 68 ODx0.750/PZC18	PZC18	MF63	3060 **120.48**	3132.4 **191.2**	1233007.3 **9029.2**	14277.5 **265.6**	4923.7 **1106.5**	5908.4 **1327.8**	294.7 **60.4**	305.5 **62.6**	316.3 **64.8**	4.42 **14.50**	4.42 **14.50**
JDF 68 ODx0.875/PZC18	PZC18	MF63	3060 **120.48**	3559.5 **217.2**	1428247.3 **10458.9**	16538.3 **307.6**	5703.3 **1281.7**	6844.0 **1538.1**	337.8 **69.2**	348.6 **71.4**	359.4 **73.6**	4.42 **14.50**	4.42 **14.50**
JDF 68 ODx1.00/PZC18	PZC18	MF63	3060 **120.48**	3985.0 **243.2**	1621289.4 **11872.5**	18773.6 **349.2**	6474.2 **1455.0**	7769.0 **1746.0**	380.8 **78.0**	391.6 **80.2**	402.4 **82.4**	4.42 **14.50**	4.42 **14.50**
JDF 72 ODx0.750/PZC18	PZC18	MF63	3162 **124.48**	3286.8 **200.6**	1416578.3 **10373.4**	15491.9 **288.2**	5342.4 **1200.6**	6410.9 **1440.8**	300.3 **61.5**	310.8 **63.7**	321.2 **65.8**	4.58 **15.02**	4.58 **15.02**
JDF 72 ODx0.875/PZC18	PZC18	MF63	3162 **124.48**	3739.7 **228.2**	1641808.0 **12022.8**	17955.0 **334.0**	6191.9 **1391.5**	7430.2 **1669.8**	344.6 **70.6**	355.0 **72.7**	365.5 **74.9**	4.58 **15.02**	4.58 **15.02**
JDF 72 ODx1.00/PZC18	PZC18	MF63	3162 **124.48**	4191.0 **255.7**	1864645.8 **13654.6**	20392.0 **379.3**	7032.3 **1580.4**	8438.7 **1896.5**	388.7 **79.6**	399.1 **81.7**	409.6 **83.9**	4.58 **15.02**	4.58 **15.02**

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PIPE PZC COMBI-WALL SYSTEM

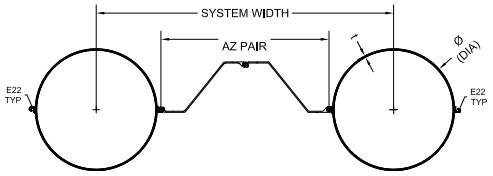
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HDM STEEL PIPE	Sheet Pile Section	Pipe-Sheet Connector	System Width	Per Unit of Wall			50 ksi	60 ksi	Mass: Beam/Sheet Ratio			Coating Area	
				Cross Sectional Area (A)	Combined Moment of Inertia (Iy)	Combined Elastic Modulus (Sx)	Ultimate Bend. Moment [No S.F.] (Mmax)		PIPE / PZC 60% (m)"	PIPE / PZC 80% (m)"	PIPE / PZC 100% (m)"	Waterside Surface (A')	Landside Surface (A")
PIPE PZC26			mm	cm^2	cm^4/m	cm^3/m	kN-m/m		kg/m^2	kg/m^2	kg/m^2	m^2/m	m^2/m
			in	**in^2**	**in^4/ ft**	**in^3/ ft**	**kip-ft/ft**		**lbs/ft^2**	**lbs/ft^2**	**lbs/ft^2**	**ft^2/ft**	**ft^2/ft**
JDF 30 ODx0.500/PZC26	PZC26	MF63	2238 **88.11**	1521.3 **92.8**	130762.3 **957.6**	3432.1 **63.8**	1183.6 **266.0**	1420.3 **319.2**	168.0 **34.4**	189.0 **38.7**	210.1 **43.0**	3.07 **10.08**	3.07 **10.08**
JDF 30 ODx0.625/PZC26	PZC26	MF63	2238 **88.11**	1707.1 **104.2**	152741.8 **1118.5**	4009.0 **74.6**	1382.5 **310.7**	1659.0 **372.8**	193.6 **39.7**	214.7 **44.0**	235.7 **48.3**	3.07 **10.08**	3.07 **10.08**
JDF 30 ODx0.750/PZC26	PZC26	MF63	2238 **88.11**	1891.3 **115.4**	174155.3 **1275.3**	4571.0 **85.0**	1576.3 **354.3**	1891.6 **425.1**	219.1 **44.9**	240.1 **49.2**	261.2 **53.5**	3.07 **10.08**	3.07 **10.08**
JDF 36 ODx0.500/PZC26	PZC26	MF63	2390 **94.11**	1675.7 **102.3**	187618.0 **1373.9**	4103.6 **76.3**	1415.2 **318.0**	1698.2 **381.6**	177.2 **36.3**	196.9 **40.3**	216.6 **44.4**	3.31 **10.86**	3.31 **10.86**
JDF 36 ODx0.625/PZC26	PZC26	MF63	2390 **94.11**	1900.1 **116.0**	223874.1 **1639.4**	4896.6 **91.1**	1688.6 **379.5**	2026.3 **455.4**	206.2 **42.2**	225.9 **46.3**	245.6 **50.3**	3.31 **10.86**	3.31 **10.86**
JDF 36 ODx0.750/PZC26	PZC26	MF63	2390 **94.11**	2123.0 **129.6**	259356.1 **1899.2**	5672.7 **105.5**	1956.3 **439.6**	2347.5 **527.6**	235.1 **48.1**	254.8 **52.2**	274.5 **56.2**	3.31 **10.86**	3.31 **10.86**
JDF 40 ODx0.500/PZC26	PZC26	MF63	2492 **98.11**	1778.7 **108.5**	235367.0 **1723.6**	4633.2 **86.2**	1597.8 **359.1**	1917.3 **430.9**	182.8 **37.4**	201.7 **41.3**	220.6 **45.2**	3.47 **11.39**	3.47 **11.39**
JDF 40 ODx0.625/PZC26	PZC26	MF63	2492 **98.11**	2028.9 **123.8**	283536.4 **2076.3**	5581.4 **103.8**	1924.8 **432.6**	2309.7 **519.1**	213.8 **43.8**	232.7 **47.7**	251.6 **51.5**	3.47 **11.39**	3.47 **11.39**
JDF 40 ODx0.750/PZC26	PZC26	MF63	2492 **98.11**	2277.4 **139.0**	330782.4 **2422.3**	6511.5 **121.1**	2245.5 **504.6**	2694.6 **605.6**	244.6 **50.1**	263.5 **54.0**	282.4 **57.8**	3.47 **11.39**	3.47 **11.39**
JDF 44 ODx0.500/PZC26	PZC26	MF63	2594 **102.11**	1881.6 **114.8**	291324.0 **2133.3**	5213.4 **97.0**	1797.9 **404.0**	2157.4 **484.8**	187.9 **38.5**	206.0 **42.2**	224.2 **45.9**	3.63 **11.91**	3.63 **11.91**
JDF 44 ODx0.625/PZC26	PZC26	MF63	2594 **102.11**	2157.6 **131.7**	353413.2 **2588.0**	6324.5 **117.6**	2181.0 **490.2**	2617.2 **588.2**	220.8 **45.2**	238.9 **48.9**	257.1 **52.7**	3.63 **11.91**	3.63 **11.91**
JDF 44 ODx0.750/PZC26	PZC26	MF63	2594 **102.11**	2431.9 **148.4**	414422.7 **3034.8**	7416.3 **137.9**	2557.5 **574.8**	3069.0 **689.7**	253.4 **51.9**	271.6 **55.6**	289.8 **59.3**	3.63 **11.91**	3.63 **11.91**
JDF 48 ODx0.500/PZC26	PZC26	MF63	2695 **106.11**	1984.6 **121.1**	355725.0 **2604.9**	5835.4 **108.5**	2012.4 **452.2**	2414.8 **542.7**	192.6 **39.4**	210.1 **43.0**	227.6 **46.6**	3.79 **12.43**	3.79 **12.43**
JDF 48 ODx0.625/PZC26	PZC26	MF63	2695 **106.11**	2286.3 **139.5**	433804.9 **3176.7**	7116.2 **132.4**	2454.1 **551.5**	2944.9 **661.8**	227.2 **46.5**	244.7 **50.1**	262.1 **53.7**	3.79 **12.43**	3.79 **12.43**
JDF 48 ODx0.750/PZC26	PZC26	MF63	2695 **106.11**	2586.3 **157.8**	510642.1 **3739.4**	8376.7 **155.8**	2888.7 **649.2**	3466.5 **779.0**	261.6 **53.6**	279.1 **57.2**	296.5 **60.7**	3.79 **12.43**	3.79 **12.43**
JDF 52 ODx0.625/PZC26	PZC26	MF63	2797 **110.11**	2415.0 **147.4**	524968.1 **3844.3**	7949.2 **147.9**	2741.3 **616.1**	3289.6 **739.3**	233.2 **47.8**	250.0 **51.2**	266.8 **54.7**	3.95 **12.96**	3.95 **12.96**
JDF 52 ODx0.750/PZC26	PZC26	MF63	2797 **110.11**	2740.7 **167.3**	619753.1 **4538.4**	9384.5 **174.6**	3236.3 **727.3**	3883.5 **872.8**	269.2 **55.1**	286.0 **58.6**	302.8 **62.0**	3.95 **12.96**	3.95 **12.96**
JDF 52 ODx0.875/PZC26	PZC26	MF63	2797 **110.11**	3064.9 **187.0**	713140.8 **5222.2**	10798.6 **200.9**	3723.9 **836.9**	4468.7 **1004.3**	305.0 **62.5**	321.8 **65.9**	338.6 **69.4**	3.95 **12.96**	3.95 **12.96**
JDF 56 ODx0.750/PZC26	PZC26	MF63	2898 **114.11**	2895.2 **176.7**	742024.0 **5433.8**	10433.4 **194.1**	3598.0 **808.6**	4317.6 **970.3**	276.2 **56.6**	292.4 **59.9**	308.7 **63.2**	4.11 **13.48**	4.11 **13.48**
JDF 56 ODx0.875/PZC26	PZC26	MF63	2898 **114.11**	3245.1 **198.0**	855354.0 **6263.7**	12026.9 **223.7**	4147.5 **932.1**	4977.0 **1118.5**	313.5 **64.2**	329.7 **67.5**	346.0 **70.9**	4.11 **13.48**	4.11 **13.48**
JDF 56 ODx1.00/PZC26	PZC26	MF63	2898 **114.11**	3593.4 **219.3**	967128.1 **7082.2**	13598.5 **252.9**	4689.5 **1053.9**	5627.4 **1264.7**	350.6 **71.8**	366.9 **75.1**	383.1 **78.5**	4.11 **13.48**	4.11 **13.48**
JDF 60 ODx0.750/PZC26	PZC26	MF63	3000 **118.11**	3049.6 **186.1**	877687.0 **6427.2**	11518.2 **214.2**	3972.1 **892.7**	4766.5 **1071.2**	282.7 **57.9**	298.4 **61.1**	314.1 **64.3**	4.27 **14.00**	4.27 **14.00**
JDF 60 ODx0.875/PZC26	PZC26	MF63	3000 **118.11**	3425.3 **209.0**	1013163.7 **7419.3**	13296.1 **247.3**	4585.2 **1030.5**	5502.3 **1236.5**	321.4 **65.8**	337.1 **69.1**	352.8 **72.3**	4.27 **14.00**	4.27 **14.00**
JDF 60 ODx1.00/PZC26	PZC26	MF63	3000 **118.11**	3799.3 **231.8**	1146907.2 **8398.7**	15051.3 **280.0**	5190.5 **1166.5**	6228.6 **1399.8**	360.0 **73.7**	375.7 **76.9**	391.4 **80.2**	4.27 **14.00**	4.27 **14.00**
JDF 64 ODx0.750/PZC26	PZC26	MF63	3102 **122.11**	3204.1 **195.5**	1026943.7 **7520.2**	12634.6 **235.0**	4357.1 **979.2**	5228.5 **1175.0**	288.9 **59.2**	304.0 **62.3**	319.2 **65.4**	4.43 **14.53**	4.43 **14.53**
JDF 64 ODx0.875/PZC26	PZC26	MF63	3102 **122.11**	3605.5 **220.0**	1186807.7 **8690.9**	14601.5 **271.6**	5035.4 **1131.6**	6042.5 **1357.9**	328.9 **67.4**	344.0 **70.5**	359.2 **73.6**	4.43 **14.53**	4.43 **14.53**
JDF 64 ODx1.00/PZC26	PZC26	MF63	3102 **122.11**	4005.2 **244.4**	1344757.2 **9847.5**	16544.8 **307.7**	5705.5 **1282.2**	6846.6 **1538.7**	368.7 **75.5**	383.9 **78.6**	399.1 **81.7**	4.43 **14.53**	4.43 **14.53**
JDF 68 ODx0.750/PZC26	PZC26	MF63	3203 **126.11**	3358.5 **204.9**	1189970.2 **8714.0**	13779.2 **256.3**	4751.8 **1067.9**	5702.2 **1281.5**	294.6 **60.3**	309.3 **63.4**	324.0 **66.4**	4.59 **15.05**	4.59 **15.05**
JDF 68 ODx0.875/PZC26	PZC26	MF63	3203 **126.11**	3785.6 **231.0**	1376494.0 **10079.9**	15939.0 **296.5**	5496.6 **1235.3**	6596.0 **1482.3**	335.8 **68.8**	350.5 **71.8**	365.2 **74.8**	4.59 **15.05**	4.59 **15.05**
JDF 68 ODx1.00/PZC26	PZC26	MF63	3203 **126.11**	4211.2 **257.0**	1560918.0 **11430.4**	18074.6 **336.2**	6233.1 **1400.8**	7479.7 **1680.9**	376.9 **77.2**	391.6 **80.2**	406.3 **83.2**	4.59 **15.05**	4.59 **15.05**
JDF 72 ODx0.750/PZC26	PZC26	MF63	3305 **130.11**	3513.0 **214.4**	1366921.0 **10009.8**	14948.8 **278.1**	5155.2 **1158.5**	6186.2 **1390.3**	300.0 **61.4**	314.2 **64.4**	328.5 **67.3**	4.75 **15.57**	4.75 **15.57**
JDF 72 ODx0.875/PZC26	PZC26	MF63	3305 **130.11**	3965.8 **242.0**	1582404.7 **11587.8**	17305.4 **321.9**	5967.8 **1341.2**	7161.4 **1609.4**	342.3 **70.1**	356.6 **73.0**	370.8 **76.0**	4.75 **15.57**	4.75 **15.57**
JDF 72 ODx1.00/PZC26	PZC26	MF63	3305 **130.11**	4417.1 **269.5**	1795600.1 **13149.0**	19636.9 **365.2**	6771.9 **1521.9**	8126.2 **1826.2**	384.5 **78.8**	398.8 **81.7**	413.0 **84.6**	4.75 **15.57**	4.75 **15.57**

* Larger, custom pipe sizes and wall thicknesses are available upon request. Please contact us at eng@jdfields.com for availability.

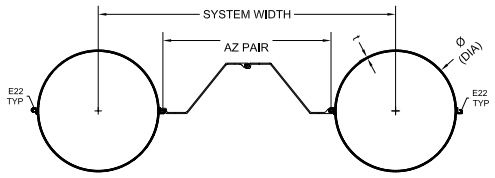
PIPE AZ COMBI-WALL SYSTEM



HDM STEEL PIPE	Sheet Pile Section	Pipe-Sheet Connector	System Width	Per Unit of Wall			50 ksi	60 ksi	Mass: Beam/Sheet Ratio			Coating Area	
				Cross Sectional Area (A)	Combined Moment of Inertia (Iy)	Combined Elastic Modulus (Sx)	Ultimate Bend. Moment [No S.F.] (Mmax)		PIPE / AZ 60% (m)"	PIPE / AZ 80% (m)"	PIPE / AZ 100% (m)"	Waterside Surface (A')	Landside Surface (A")
PIPE AZ18-800			mm	cm^2	cm^4/m	cm^3/m	kN-m/m		kg/m^2	kg/m^2	kg/m^2	m^2/m	m^2/m
			in	**in^2**	**in^4/ ft**	**in^3/ ft**	**kip-ft/ft**		**lbs/ft^2**	**lbs/ft^2**	**lbs/ft^2**	**ft^2/ft**	**ft^2/ft**
JDF 30 ODx0.500/AZ18-800	AZ18-800	E22	2422 **95.35**	1336.2 **81.5**	113956 **834**	2991.0 **55.6**	1031.5 **231.8**	1237.7 **278.2**	142.0 **29.1**	157.0 **32.2**	172.0 **35.2**	3.28 **10.75**	3.28 **10.75**
JDF 30 ODx0.625/AZ18-800	AZ18-800	E22	2422 **95.35**	1522.0 **92.9**	134266 **983**	3524.1 **65.5**	1215.3 **273.1**	1458.3 **327.7**	165.7 **33.9**	180.7 **37.0**	195.7 **40.1**	3.28 **10.75**	3.28 **10.75**
JDF 30 ODx0.750/AZ18-800	AZ18-800	E22	2422 **95.35**	1706.2 **104.1**	154053 **1128**	4043.4 **75.2**	1394.4 **313.4**	1673.3 **376.0**	189.2 **38.7**	204.2 **41.8**	219.2 **44.9**	3.28 **10.75**	3.28 **10.75**
JDF 36 ODx0.500/AZ18-800	AZ18-800	E22	2574 **101.35**	1490.6 **91.0**	167744 **1228**	3668.9 **68.2**	1265.3 **284.3**	1518.3 **341.2**	152.1 **31.2**	166.2 **34.0**	180.4 **36.9**	3.52 **11.53**	3.52 **11.53**
JDF 36 ODx0.625/AZ18-800	AZ18-800	E22	2574 **101.35**	1715.0 **104.7**	201410 **1475**	4405.3 **81.9**	1519.2 **341.4**	1823.0 **409.7**	179.0 **36.7**	193.2 **39.6**	207.3 **42.5**	3.52 **11.53**	3.52 **11.53**
JDF 36 ODx0.750/AZ18-800	AZ18-800	E22	2574 **101.35**	1937.9 **118.3**	234356 **1716**	5125.9 **95.3**	1767.7 **397.3**	2121.2 **476.7**	205.8 **42.1**	219.9 **45.0**	234.0 **47.9**	3.52 **11.53**	3.52 **11.53**
JDF 40 ODx0.500/AZ18-800	AZ18-800	E22	2676 **105.35**	1593.6 **97.2**	212965 **1560**	4192.2 **78.0**	1445.7 **324.9**	1734.9 **389.9**	158.2 **32.4**	171.8 **35.2**	185.4 **38.0**	3.67 **12.06**	3.67 **12.06**
JDF 40 ODx0.625/AZ18-800	AZ18-800	E22	2676 **105.35**	1843.7 **112.5**	257824 **1888**	5075.3 **94.4**	1750.2 **393.3**	2100.3 **472.0**	187.1 **38.3**	200.7 **41.1**	214.3 **43.9**	3.67 **12.06**	3.67 **12.06**
JDF 40 ODx0.750/AZ18-800	AZ18-800	E22	2676 **105.35**	2092.3 **127.7**	301822 **2210**	5941.4 **110.5**	2048.9 **460.5**	2458.7 **552.6**	215.8 **44.2**	229.4 **47.0**	243.0 **49.8**	3.67 **12.06**	3.67 **12.06**
JDF 42 ODx0.500/AZ18-800	AZ18-800	E22	2727 **107.35**	1645.1 **100.4**	238502 **1747**	4471.4 **83.2**	1542.0 **346.5**	1850.4 **415.8**	161.1 **33.0**	174.4 **35.7**	187.8 **38.5**	3.75 **12.32**	3.75 **12.32**
JDF 42 ODx0.625/AZ18-800	AZ18-800	E22	2727 **107.35**	1908.1 **116.4**	289675 **2121**	5430.7 **101.0**	1872.8 **420.9**	2247.4 **505.1**	190.9 **39.1**	204.3 **41.8**	217.6 **44.6**	3.75 **12.32**	3.75 **12.32**
JDF 42 ODx0.750/AZ18-800	AZ18-800	E22	2727 **107.35**	2169.5 **132.4**	339914 **2489**	6372.6 **118.5**	2197.6 **493.9**	2637.1 **592.7**	220.5 **45.2**	233.9 **47.9**	247.2 **50.6**	3.75 **12.32**	3.75 **12.32**
JDF 44 ODx0.500/AZ18-800	AZ18-800	E22	2778 **109.35**	1696.5 **103.5**	266036 **1948**	4760.8 **88.6**	1641.8 **369.0**	1970.2 **442.8**	163.9 **33.6**	177.0 **36.2**	190.1 **38.9**	3.83 **12.58**	3.83 **12.58**
JDF 44 ODx0.625/AZ18-800	AZ18-800	E22	2778 **109.35**	1972.4 **120.4**	324013 **2373**	5798.4 **107.9**	1999.6 **449.4**	2399.5 **539.3**	194.6 **39.9**	207.7 **42.5**	220.8 **45.2**	3.83 **12.58**	3.83 **12.58**
JDF 44 ODx0.750/AZ18-800	AZ18-800	E22	2778 **109.35**	2246.7 **137.1**	380982 **2790**	6817.9 **126.8**	2351.2 **528.4**	2821.4 **634.1**	225.1 **46.1**	238.2 **48.8**	251.3 **51.5**	3.83 **12.58**	3.83 **12.58**
JDF 48 ODx0.500/AZ18-800	AZ18-800	E22	2879 **113.35**	1799.5 **109.8**	327215 **2396**	5367.7 **99.8**	1851.1 **416.0**	2221.3 **499.2**	169.1 **34.6**	181.8 **37.2**	194.4 **39.8**	3.99 **13.10**	3.99 **13.10**
JDF 48 ODx0.625/AZ18-800	AZ18-800	E22	2879 **113.35**	2101.1 **128.2**	400306 **2931**	6566.7 **122.1**	2264.6 **508.9**	2717.5 **610.7**	201.5 **41.3**	214.2 **43.9**	226.8 **46.5**	3.99 **13.10**	3.99 **13.10**
JDF 48 ODx0.750/AZ18-800	AZ18-800	E22	2879 **113.35**	2401.2 **146.5**	472234 **3458**	7746.6 **144.1**	2671.5 **600.4**	3205.7 **720.4**	233.7 **47.9**	246.4 **50.5**	259.0 **53.0**	3.99 **13.10**	3.99 **13.10**
JDF 52 ODx0.625/AZ18-800	AZ18-800	E22	2981 **117.35**	2229.9 **136.1**	486985 **3566**	7374.1 **137.2**	2543.0 **571.5**	3051.6 **685.8**	208.0 **42.6**	220.2 **45.1**	232.4 **47.6**	4.15 **13.63**	4.15 **13.63**
JDF 52 ODx0.750/AZ18-800	AZ18-800	E22	2981 **117.35**	2555.6 **156.0**	575921 **4217**	8720.8 **162.2**	3007.4 **675.9**	3608.9 **811.0**	241.8 **49.5**	254.0 **52.0**	266.2 **54.5**	4.15 **13.63**	4.15 **13.63**
JDF 52 ODx0.875/AZ18-800	AZ18-800	E22	2981 **117.35**	2879.8 **175.7**	663545 **4859**	10047.6 **186.9**	3465.0 **778.7**	4158.0 **934.4**	275.4 **56.4**	287.6 **58.9**	299.8 **61.4**	4.15 **13.63**	4.15 **13.63**
JDF 56 ODx0.750/AZ18-800	AZ18-800	E22	3082 **121.35**	2710.1 **165.4**	692339 **5070**	9734.8 **181.1**	3357.1 **754.5**	4028.5 **905.3**	249.3 **51.1**	261.1 **53.5**	272.9 **55.9**	4.31 **14.15**	4.31 **14.15**
JDF 56 ODx0.875/AZ18-800	AZ18-800	E22	3082 **121.35**	3060.0 **186.7**	798906 **5850**	11233.2 **208.9**	3873.8 **870.6**	4648.6 **1044.7**	284.4 **58.2**	296.2 **60.7**	308.0 **63.1**	4.31 **14.15**	4.31 **14.15**
JDF 56 ODx1.00/AZ18-800	AZ18-800	E22	3082 **121.35**	3408.3 **208.0**	904010 **6620**	12711.1 **236.4**	4383.5 **985.1**	5260.1 **1182.1**	319.3 **65.4**	331.1 **67.8**	342.9 **70.2**	4.31 **14.15**	4.31 **14.15**
JDF 60 ODx0.750/AZ18-800	AZ18-800	E22	3184 **125.35**	2864.5 **174.8**	821750 **6018**	10784.1 **200.6**	3718.9 **835.8**	4462.7 **1002.9**	256.3 **52.5**	267.7 **54.8**	279.2 **57.2**	4.47 **14.67**	4.47 **14.67**
JDF 60 ODx0.875/AZ18-800	AZ18-800	E22	3184 **125.35**	3240.2 **197.7**	949400 **6952**	12459.3 **231.7**	4296.6 **965.6**	5156.0 **1158.7**	292.8 **60.0**	304.2 **62.3**	315.6 **64.6**	4.47 **14.67**	4.47 **14.67**
JDF 60 ODx1.00/AZ18-800	AZ18-800	E22	3184 **125.35**	3614.2 **220.6**	1075416 **7875**	14113.1 **262.5**	4867.0 **1093.8**	5840.3 **1312.5**	329.1 **67.4**	340.5 **69.7**	351.9 **72.1**	4.47 **14.67**	4.47 **14.67**
JDF 64 ODx0.750/AZ18-800	AZ18-800	E22	3286 **129.35**	3019.0 **184.2**	964380 **7062**	11864.9 **220.7**	4091.7 **919.5**	4910.0 **1103.4**	262.9 **53.9**	274.0 **56.1**	285.1 **58.4**	4.63 **15.20**	4.63 **15.20**
JDF 64 ODx0.875/AZ18-800	AZ18-800	E22	3286 **129.35**	3420.4 **208.7**	1115294 **8167**	13721.6 **255.2**	4732.0 **1063.4**	5678.4 **1276.1**	300.7 **61.6**	311.7 **63.9**	322.8 **66.1**	4.63 **15.20**	4.63 **15.20**
JDF 64 ODx1.00/AZ18-800	AZ18-800	E22	3286 **129.35**	3820.1 **233.1**	1264400 **9259**	15556.1 **289.3**	5364.6 **1205.6**	6437.5 **1446.7**	338.3 **69.3**	349.3 **71.6**	360.4 **73.8**	4.63 **15.20**	4.63 **15.20**
JDF 68 ODx0.750/AZ18-800	AZ18-800	E22	3387 **133.35**	3173.4 **193.7**	1120429 **8205**	12973.9 **241.3**	4474.1 **1005.5**	5368.9 **1206.6**	269.1 **55.1**	279.9 **57.3**	290.6 **59.5**	4.79 **15.72**	4.79 **15.72**
JDF 68 ODx0.875/AZ18-800	AZ18-800	E22	3387 **133.35**	3600.5 **219.7**	1296823 **9496**	15016.5 **279.3**	5178.5 **1163.8**	6214.2 **1396.5**	308.1 **63.1**	318.8 **65.3**	329.6 **67.5**	4.79 **15.72**	4.79 **15.72**
JDF 68 ODx1.00/AZ18-800	AZ18-800	E22	3387 **133.35**	4026.1 **245.7**	1471232 **10774**	17036.0 **316.9**	5874.9 **1320.3**	7049.9 **1584.4**	346.9 **71.1**	357.7 **73.3**	368.4 **75.5**	4.79 **15.72**	4.79 **15.72**
JDF 72 ODx0.750/AZ18-800	AZ18-800	E22	3489 **137.35**	3327.9 **203.1**	1290075 **9447**	14108.4 **262.4**	4865.4 **1093.4**	5838.4 **1312.1**	275.0 **56.3**	285.4 **58.5**	295.8 **60.6**	4.95 **16.24**	4.95 **16.24**
JDF 72 ODx0.875/AZ18-800	AZ18-800	E22	3489 **137.35**	3780.7 **230.7**	1494197 **10942**	16340.7 **303.9**	5635.2 **1266.4**	6762.2 **1519.7**	315.1 **64.5**	325.5 **66.7**	335.9 **68.8**	4.95 **16.24**	4.95 **16.24**
JDF 72 ODx1.00/AZ18-800	AZ18-800	E22	3489 **137.35**	4232.0 **258.3**	1696152 **12421**	18549.4 **345.0**	6396.8 **1437.6**	7676.2 **1725.1**	355.0 **72.7**	365.5 **74.9**	375.9 **77.0**	4.95 **16.24**	4.95 **16.24**

* Larger, custom pipe sizes and wall thicknesses are available upon request. Please contact us at eng@jdfields.com for availability.

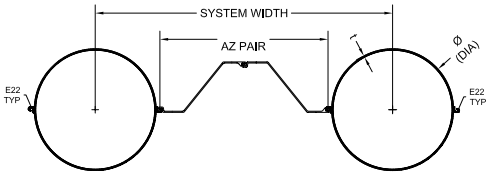
PIPE AZ COMBI-WALL SYSTEM



PIPE AZ23-800	Sheet Pile Section	Pipe-Sheet Connector	System Width	Per Unit of Wall			50 ksi	60 ksi	Mass: Beam/Sheet Ratio			Coating Area	
				Cross Sectional Area (A)	Combined Moment of Inertia (Iy)	Combined Elastic Modulus (Sx)	Ultimate Bend. Moment [No S.F.] (Mmax)		PIPE / AZ 60% (m)"	PIPE / AZ 80% (m)"	PIPE / AZ 100% (m)"	Waterside Surface (A')	Landside Surface (A")
			mm	cm^2	cm^4/m	cm^3/m	kN-m/m		kg/m^2	kg/m^2	kg/m^2	m^2/m	m^2/m
			in	in^2	in^4/ ft	in^3/ ft	kip-ft/ft		lbs/ft^2	lbs/ft^2	lbs/ft^2	ft^2/ft	ft^2/ft
JDF 30 ODx0.500/AZ23-800	AZ23-800	E22	2422 **95.35**	1455.5 **88.8**	123159 **902**	3232.5 **60.1**	1114.7 **250.5**	1337.7 **300.6**	148.8 **30.5**	166.1 **34.0**	183.4 **37.6**	3.31 **10.87**	3.31 **10.87**
JDF 30 ODx0.625/AZ23-800	AZ23-800	E22	2422 **95.35**	1641.3 **100.2**	143469 **1051**	3765.6 **70.0**	1298.6 **291.8**	1558.3 **350.2**	172.5 **35.3**	189.8 **38.9**	207.1 **42.4**	3.31 **10.87**	3.31 **10.87**
JDF 30 ODx0.750/AZ23-800	AZ23-800	E22	2422 **95.35**	1825.6 **111.4**	163256 **1196**	4284.9 **79.7**	1477.7 **332.1**	1773.2 **398.5**	196.0 **40.1**	213.3 **43.7**	230.6 **47.2**	3.31 **10.87**	3.31 **10.87**
JDF 36 ODx0.500/AZ23-800	AZ23-800	E22	2574 **101.35**	1610.0 **98.2**	176402 **1292**	3858.3 **71.8**	1330.6 **299.0**	1596.7 **358.8**	158.5 **32.5**	174.8 **35.8**	191.1 **39.1**	3.55 **11.65**	3.55 **11.65**
JDF 36 ODx0.625/AZ23-800	AZ23-800	E22	2574 **101.35**	1834.4 **111.9**	210068 **1538**	4594.7 **85.5**	1584.5 **356.1**	1901.4 **427.3**	185.5 **38.0**	201.8 **41.3**	218.1 **44.7**	3.55 **11.65**	3.55 **11.65**
JDF 36 ODx0.750/AZ23-800	AZ23-800	E22	2574 **101.35**	2057.2 **125.5**	243014 **1780**	5315.3 **98.9**	1833.0 **411.9**	2199.6 **494.3**	212.2 **43.5**	228.5 **46.8**	244.8 **50.1**	3.55 **11.65**	3.55 **11.65**
JDF 40 ODx0.500/AZ23-800	AZ23-800	E22	2676 **105.35**	1712.9 **104.5**	221295 **1621**	4356.2 **81.0**	1502.3 **337.6**	1802.7 **405.1**	164.4 **33.7**	180.1 **36.9**	195.8 **40.1**	3.71 **12.18**	3.71 **12.18**
JDF 40 ODx0.625/AZ23-800	AZ23-800	E22	2676 **105.35**	1963.1 **119.8**	266153 **1949**	5239.2 **97.5**	1806.8 **406.0**	2168.1 **487.3**	193.3 **39.6**	209.0 **42.8**	224.6 **46.0**	3.71 **12.18**	3.71 **12.18**
JDF 40 ODx0.750/AZ23-800	AZ23-800	E22	2676 **105.35**	2211.7 **135.0**	310151 **2271**	6105.3 **113.6**	2105.5 **473.2**	2526.5 **567.8**	222.0 **45.5**	237.7 **48.7**	253.3 **51.9**	3.71 **12.18**	3.71 **12.18**
JDF 42 ODx0.500/AZ23-800	AZ23-800	E22	2727 **107.35**	1764.4 **107.7**	246677 **1806**	4624.6 **86.0**	1594.8 **358.4**	1913.8 **430.1**	167.2 **34.2**	182.6 **37.4**	197.9 **40.5**	3.79 **12.44**	3.79 **12.44**
JDF 42 ODx0.625/AZ23-800	AZ23-800	E22	2727 **107.35**	2027.5 **123.7**	297849 **2181**	5584.0 **103.9**	1925.7 **432.8**	2310.8 **519.3**	197.0 **40.3**	212.4 **43.5**	227.7 **46.6**	3.79 **12.44**	3.79 **12.44**
JDF 42 ODx0.750/AZ23-800	AZ23-800	E22	2727 **107.35**	2288.9 **139.7**	348088 **2549**	6525.8 **121.4**	2250.5 **505.8**	2700.6 **606.9**	226.6 **46.4**	242.0 **49.6**	257.4 **52.7**	3.79 **12.44**	3.79 **12.44**
JDF 44 ODx0.500/AZ23-800	AZ23-800	E22	2778 **109.35**	1815.9 **110.8**	274061 **2007**	4904.5 **91.2**	1691.3 **380.1**	2029.6 **456.1**	169.9 **34.8**	185.0 **37.9**	200.0 **41.0**	3.87 **12.70**	3.87 **12.70**
JDF 44 ODx0.625/AZ23-800	AZ23-800	E22	2778 **109.35**	2091.8 **127.7**	332038 **2431**	5942.0 **110.5**	2049.1 **460.5**	2458.9 **552.6**	200.6 **41.1**	215.6 **44.2**	230.7 **47.3**	3.87 **12.70**	3.87 **12.70**
JDF 44 ODx0.750/AZ23-800	AZ23-800	E22	2778 **109.35**	2366.1 **144.4**	389007 **2849**	6961.5 **129.5**	2400.7 **539.5**	2880.8 **647.4**	231.1 **47.3**	246.2 **50.4**	261.3 **53.5**	3.87 **12.70**	3.87 **12.70**
JDF 48 ODx0.500/AZ23-800	AZ23-800	E22	2879 **113.35**	1918.9 **117.1**	334956 **2453**	5494.7 **102.2**	1894.9 **425.8**	2273.8 **511.0**	174.9 **35.8**	189.5 **38.8**	204.0 **41.8**	4.03 **13.22**	4.03 **13.22**
JDF 48 ODx0.625/AZ23-800	AZ23-800	E22	2879 **113.35**	2220.5 **135.5**	408048 **2988**	6693.7 **124.5**	2308.3 **518.8**	2770.0 **622.5**	207.3 **42.5**	221.9 **45.4**	236.4 **48.4**	4.03 **13.22**	4.03 **13.22**
JDF 48 ODx0.750/AZ23-800	AZ23-800	E22	2879 **113.35**	2520.6 **153.8**	479976 **3515**	7873.6 **146.5**	2715.2 **610.2**	3258.3 **732.3**	239.5 **49.1**	254.1 **52.0**	268.6 **55.0**	4.03 **13.22**	4.03 **13.22**
JDF 52 ODx0.625/AZ23-800	AZ23-800	E22	2981 **117.35**	2349.2 **143.4**	494463 **3621**	7487.3 **139.3**	2582.0 **580.3**	3098.4 **696.3**	213.6 **43.7**	227.6 **46.6**	241.7 **49.5**	4.19 **13.75**	4.19 **13.75**
JDF 52 ODx0.750/AZ23-800	AZ23-800	E22	2981 **117.35**	2675.0 **163.2**	583398 **4272**	8834.0 **164.3**	3046.4 **684.6**	3655.7 **821.6**	247.3 **50.7**	261.4 **53.5**	275.5 **56.4**	4.19 **13.75**	4.19 **13.75**
JDF 52 ODx0.875/AZ23-800	AZ23-800	E22	2981 **117.35**	2999.2 **183.0**	671023 **4914**	10160.9 **189.0**	3504.0 **787.5**	4204.8 **945.0**	280.9 **57.5**	295.0 **60.4**	309.1 **63.3**	4.19 **13.75**	4.19 **13.75**
JDF 56 ODx0.750/AZ23-800	AZ23-800	E22	3082 **121.35**	2829.4 **172.7**	699571 **5123**	9836.5 **183.0**	3392.2 **762.3**	4070.6 **914.8**	254.7 **52.2**	268.3 **54.9**	281.9 **57.7**	4.35 **14.27**	4.35 **14.27**
JDF 56 ODx0.875/AZ23-800	AZ23-800	E22	3082 **121.35**	3179.4 **194.0**	806137 **5903**	11334.9 **210.8**	3908.9 **878.5**	4690.7 **1054.2**	289.8 **59.3**	303.4 **62.1**	317.0 **64.9**	4.35 **14.27**	4.35 **14.27**
JDF 56 ODx1.00/AZ23-800	AZ23-800	E22	3082 **121.35**	3527.7 **215.3**	911241 **6673**	12812.7 **238.3**	4418.5 **993.0**	5302.2 **1191.6**	324.7 **66.5**	338.3 **69.3**	351.9 **72.1**	4.35 **14.27**	4.35 **14.27**
JDF 60 ODx0.750/AZ23-800	AZ23-800	E22	3184 **125.35**	2983.9 **182.1**	828751 **6069**	10876.0 **202.3**	3750.6 **842.9**	4500.8 **1011.5**	261.5 **53.6**	274.7 **56.3**	287.9 **59.0**	4.51 **14.79**	4.51 **14.79**
JDF 60 ODx0.875/AZ23-800	AZ23-800	E22	3184 **125.35**	3359.5 **205.0**	956400 **7004**	12551.2 **233.5**	4328.3 **972.7**	5194.0 **1167.3**	298.0 **61.0**	311.2 **63.7**	324.3 **66.4**	4.51 **14.79**	4.51 **14.79**
JDF 60 ODx1.00/AZ23-800	AZ23-800	E22	3184 **125.35**	3733.6 **227.8**	1082417 **7926**	14205.0 **264.2**	4898.6 **1100.9**	5878.4 **1321.1**	334.3 **68.5**	347.5 **71.2**	360.6 **73.9**	4.51 **14.79**	4.51 **14.79**
JDF 64 ODx0.75/AZ23-800	AZ23-800	E22	3286 **129.35**	3138.3 **191.5**	971164 **7112**	11948.4 **222.2**	4120.4 **926.0**	4944.5 **1111.2**	268.0 **54.9**	280.7 **57.5**	293.5 **60.1**	4.67 **15.32**	4.67 **15.32**
JDF 64 ODx0.875/AZ23-800	AZ23-800	E22	3286 **129.35**	3539.7 **216.0**	1122078 **8217**	13805.1 **256.8**	4760.7 **1069.9**	5712.9 **1283.9**	305.7 **62.6**	318.5 **65.2**	331.2 **67.8**	4.67 **15.32**	4.67 **15.32**
JDF 64 ODx1.00/AZ23-800	AZ23-800	E22	3286 **129.35**	3939.5 **240.4**	1271184 **9309**	15639.6 **290.9**	5393.4 **1212.1**	6472.0 **1454.5**	343.3 **70.3**	356.1 **72.9**	368.8 **75.5**	4.67 **15.32**	4.67 **15.32**
JDF 68 ODx0.750/AZ23-800	AZ23-800	E22	3387 **133.35**	3292.8 **200.9**	1127010 **8253**	13050.1 **242.7**	4500.4 **1011.4**	5400.5 **1213.7**	274.0 **56.1**	286.4 **58.7**	298.8 **61.2**	4.83 **15.84**	4.83 **15.84**
JDF 68 ODx0.875/AZ23-800	AZ23-800	E22	3387 **133.35**	3719.9 **227.0**	1303404 **9545**	15092.7 **280.7**	5204.8 **1169.7**	6245.7 **1403.6**	313.0 **64.1**	325.4 **66.6**	337.7 **69.2**	4.83 **15.84**	4.83 **15.84**
JDF 68 ODx1.00/AZ23-800	AZ23-800	E22	3387 **133.35**	4145.4 **253.0**	1477812 **10822**	17112.2 **318.3**	5901.2 **1326.2**	7081.5 **1591.4**	351.8 **72.1**	364.2 **74.6**	376.6 **77.1**	4.83 **15.84**	4.83 **15.84**
JDF 72 ODx0.750/AZ23-800	AZ23-800	E22	3489 **137.35**	3447.2 **210.4**	1296464 **9494**	14178.3 **263.7**	4889.4 **1098.8**	5867.3 **1318.6**	279.7 **57.3**	291.7 **59.8**	303.8 **62.2**	4.99 **16.36**	4.99 **16.36**
JDF 72 ODx0.875/AZ23-800	AZ23-800	E22	3489 **137.35**	3900.1 **238.0**	1500586 **10989**	16410.6 **305.2**	5659.3 **1271.8**	6791.1 **1526.2**	319.8 **65.5**	331.9 **68.0**	343.9 **70.4**	4.99 **16.36**	4.99 **16.36**
JDF 72 ODx1.00/AZ23-800	AZ23-800	E22	3489 **137.35**	4351.4 **265.5**	1702541 **12468**	18619.2 **346.3**	6420.9 **1443.0**	7705.1 **1731.6**	359.8 **73.7**	371.8 **76.2**	383.8 **78.6**	4.99 **16.36**	4.99 **16.36**

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PIPE AZ COMBI-WALL SYSTEM



HDM STEEL PIPE	Sheet Pile Section	Pipe-Sheet Connector	System Width	Per Unit of Wall			50 ksi	60 ksi	Mass: Beam/Sheet Ratio			Coating Area	
				Cross Sectional Area (A)	Combined Moment of Inertia (Iy)	Combined Elastic Modulus (Sx)	Ultimate Bend. Moment [No S.F.] (Mmax)		PIPE / AZ 60% (m)"	PIPE / AZ 80% (m)"	PIPE / AZ 100% (m)"	Waterside Surface (A')	Landside Surface (A")
PIPE AZ28-750			mm	cm^2	cm^4/m	cm^3/m	kN-m/m		kg/m^2	kg/m^2	kg/m^2	m^2/m	m^2/m
			in	**in^2**	**in^4/ ft**	**in^3/ ft**	**kip-ft/ft**		**lbs/ft^2**	**lbs/ft^2**	**lbs/ft^2**	**ft^2/ft**	**ft^2/ft**
JDF 30 ODx0.500/AZ28-750	AZ28-750	E22	2322 **91.42**	1466.5 **89.5**	136603 **1000**	3585.4 **66.7**	1236.4 **277.9**	1483.7 **333.4**	158.4 **32.4**	177.6 **36.4**	196.7 **40.3**	3.31 **10.87**	3.31 **10.87**
JDF 30 ODx0.625/AZ28-750	AZ28-750	E22	2322 **91.42**	1652.4 **100.8**	157788 **1155**	4141.4 **77.0**	1428.2 **321.0**	1713.8 **385.2**	183.2 **37.5**	202.3 **41.4**	221.4 **45.3**	3.31 **10.87**	3.31 **10.87**
JDF 30 ODx0.750/AZ28-750	AZ28-750	E22	2322 **91.42**	1836.6 **112.1**	178428 **1307**	4683.1 **87.1**	1615.0 **362.9**	1938.0 **435.5**	207.7 **42.5**	226.8 **46.5**	245.9 **50.4**	3.31 **10.87**	3.31 **10.87**
JDF 36 ODx0.500/AZ28-750	AZ28-750	E22	2474 **97.42**	1621.0 **98.9**	191170 **1400**	4181.3 **77.8**	1441.9 **324.1**	1730.3 **388.9**	168.0 **34.4**	185.9 **38.1**	203.9 **41.8**	3.55 **11.65**	3.55 **11.65**
JDF 36 ODx0.625/AZ28-750	AZ28-750	E22	2474 **97.42**	1845.4 **112.6**	226196 **1656**	4947.4 **92.0**	1706.1 **383.4**	2047.4 **460.1**	196.0 **40.1**	213.9 **43.8**	231.9 **47.5**	3.55 **11.65**	3.55 **11.65**
JDF 36 ODx0.750/AZ28-750	AZ28-750	E22	2474 **97.42**	2068.2 **126.2**	260475 **1907**	5697.2 **106.0**	1964.7 **441.5**	2357.6 **529.8**	223.8 **45.8**	241.8 **49.5**	259.7 **53.2**	3.55 **11.65**	3.55 **11.65**
JDF 40 ODx0.500/AZ28-750	AZ28-750	E22	2576 **101.42**	1724.0 **105.2**	237223 **1737**	4669.8 **86.9**	1610.4 **361.9**	1932.5 **434.3**	173.7 **35.6**	190.9 **39.1**	208.2 **42.6**	3.71 **12.18**	3.71 **12.18**
JDF 40 ODx0.625/AZ28-750	AZ28-750	E22	2576 **101.42**	1974.1 **120.5**	283823 **2078**	5587.1 **103.9**	1926.7 **433.0**	2312.1 **519.6**	203.7 **41.7**	220.9 **45.3**	238.2 **48.8**	3.71 **12.18**	3.71 **12.18**
JDF 40 ODx0.750/AZ28-750	AZ28-750	E22	2576 **101.42**	2222.7 **135.6**	329529 **2413**	6486.8 **120.7**	2237.0 **502.7**	2684.4 **603.3**	233.5 **47.8**	250.8 **51.4**	268.0 **54.9**	3.71 **12.18**	3.71 **12.18**
JDF 42 ODx0.500/AZ28-750	AZ28-750	E22	2627 **103.42**	1775.4 **108.3**	263263 **1928**	4935.6 **91.8**	1702.1 **382.5**	2042.5 **459.0**	176.4 **36.1**	193.3 **39.6**	210.2 **43.1**	3.79 **12.44**	3.79 **12.44**
JDF 42 ODx0.625/AZ28-750	AZ28-750	E22	2627 **103.42**	2038.5 **124.4**	316384 **2317**	5931.5 **110.3**	2045.5 **459.7**	2454.6 **551.6**	207.3 **42.5**	224.2 **45.9**	241.1 **49.4**	3.79 **12.44**	3.79 **12.44**
JDF 42 ODx0.750/AZ28-750	AZ28-750	E22	2627 **103.42**	2299.9 **140.3**	368535 **2699**	6909.2 **128.5**	2382.7 **535.5**	2859.2 **642.6**	238.1 **48.8**	255.0 **52.2**	271.9 **55.7**	3.79 **12.44**	3.79 **12.44**
JDF 44 ODx0.500/AZ28-750	AZ28-750	E22	2678 **105.42**	1826.9 **111.5**	291355 **2134**	5213.9 **97.0**	1798.1 **404.1**	2157.7 **484.9**	179.0 **36.7**	195.6 **40.1**	212.2 **43.5**	3.87 **12.70**	3.87 **12.70**
JDF 44 ODx0.625/AZ28-750	AZ28-750	E22	2678 **105.42**	2102.8 **128.3**	351498 **2574**	6290.2 **117.0**	2169.2 **487.5**	2603.1 **585.0**	210.8 **43.2**	227.4 **46.6**	244.0 **50.0**	3.87 **12.70**	3.87 **12.70**
JDF 44 ODx0.750/AZ28-750	AZ28-750	E22	2678 **105.42**	2377.1 **145.1**	410594 **3007**	7347.8 **136.7**	2533.9 **569.5**	3040.7 **683.3**	242.5 **49.7**	259.1 **53.1**	275.7 **56.5**	3.87 **12.70**	3.87 **12.70**
JDF 48 ODx0.500/AZ28-750	AZ28-750	E22	2779 **109.42**	1929.9 **117.8**	353810 **2591**	5804.0 **108.0**	2001.5 **449.8**	2401.8 **539.8**	183.9 **37.7**	199.9 **40.9**	215.8 **44.2**	4.03 **13.22**	4.03 **13.22**
JDF 48 ODx0.625/AZ28-750	AZ28-750	E22	2779 **109.42**	2231.5 **136.2**	429531 **3145**	7046.1 **131.1**	2429.9 **546.1**	2915.9 **655.3**	217.4 **44.5**	233.4 **47.8**	249.4 **51.1**	4.03 **13.22**	4.03 **13.22**
JDF 48 ODx0.750/AZ28-750	AZ28-750	E22	2779 **109.42**	2531.6 **154.5**	504047 **3691**	8268.5 **153.8**	2851.4 **640.8**	3421.7 **769.0**	250.8 **51.4**	266.8 **54.6**	282.7 **57.9**	4.03 **13.22**	4.03 **13.22**
JDF 52 ODx0.625/AZ28-750	AZ28-750	E22	2881 **113.42**	2360.2 **144.0**	518188 **3795**	7846.6 **145.9**	2705.9 **608.1**	3247.1 **729.7**	223.6 **45.8**	239.0 **48.9**	254.4 **52.1**	4.19 **13.75**	4.19 **13.75**
JDF 52 ODx0.750/AZ28-750	AZ28-750	E22	2881 **113.42**	2686.0 **163.9**	610211 **4469**	9240.0 **171.9**	3186.5 **716.1**	3823.8 **859.3**	258.5 **52.9**	273.9 **56.1**	289.3 **59.3**	4.19 **13.75**	4.19 **13.75**
JDF 52 ODx0.875/AZ28-750	AZ28-750	E22	2881 **113.42**	3010.2 **183.7**	700877 **5132**	10612.9 **197.4**	3659.9 **822.5**	4391.9 **987.0**	293.3 **60.1**	308.7 **63.2**	324.1 **66.4**	4.19 **13.75**	4.19 **13.75**
JDF 56 ODx0.750/AZ28-750	AZ28-750	E22	2982 **117.42**	2840.5 **173.3**	729365 **5341**	10255.4 **190.8**	3536.6 **794.8**	4243.9 **953.8**	265.7 **54.4**	280.6 **57.5**	295.5 **60.5**	4.35 **14.27**	4.35 **14.27**
JDF 56 ODx0.875/AZ28-750	AZ28-750	E22	2982 **117.42**	3190.4 **194.7**	839505 **6148**	11804.1 **219.6**	4070.7 **914.8**	4884.8 **1097.8**	302.0 **61.8**	316.9 **64.9**	331.7 **67.9**	4.35 **14.27**	4.35 **14.27**
JDF 56 ODx1.00/AZ28-750	AZ28-750	E22	2982 **117.42**	3538.7 **215.9**	948133 **6943**	13331.5 **248.0**	4597.4 **1033.2**	5516.9 **1239.8**	338.1 **69.2**	352.9 **72.3**	367.8 **75.3**	4.35 **14.27**	4.35 **14.27**
JDF 60 ODx0.750/AZ28-750	AZ28-750	E22	3084 **121.42**	2994.9 **182.8**	861752 **6311**	11309.1 **210.4**	3900.0 **876.5**	4680.0 **1051.8**	272.4 **55.8**	286.8 **58.7**	301.2 **61.7**	4.51 **14.79**	4.51 **14.79**
JDF 60 ODx0.875/AZ28-750	AZ28-750	E22	3084 **121.42**	3370.5 **205.7**	993541 **7276**	13038.6 **242.5**	4496.4 **1010.5**	5395.7 **1212.6**	310.1 **63.5**	324.5 **66.5**	338.9 **69.4**	4.51 **14.79**	4.51 **14.79**
JDF 60 ODx1.00/AZ28-750	AZ28-750	E22	3084 **121.42**	3744.6 **228.5**	1123644 **8228**	14746.0 **274.3**	5085.2 **1142.8**	6102.3 **1371.4**	347.6 **71.2**	361.9 **74.1**	376.3 **77.1**	4.51 **14.79**	4.51 **14.79**
JDF 64 ODx0.750/AZ28-750	AZ28-750	E22	3186 **125.42**	3149.3 **192.2**	1007584 **7378**	12396.5 **230.6**	4275.0 **960.7**	5130.0 **1152.9**	278.7 **57.1**	292.7 **59.9**	306.6 **62.8**	4.67 **15.32**	4.67 **15.32**
JDF 64 ODx0.875/AZ28-750	AZ28-750	E22	3186 **125.42**	3550.7 **216.7**	1163235 **8518**	14311.5 **266.2**	4935.4 **1109.1**	5922.4 **1331.0**	317.7 **65.1**	331.6 **67.9**	345.5 **70.8**	4.67 **15.32**	4.67 **15.32**
JDF 64 ODx1.00/AZ28-750	AZ28-750	E22	3186 **125.42**	3950.5 **241.1**	1317022 **9644**	16203.5 **301.4**	5587.8 **1255.8**	6705.4 **1506.9**	356.4 **73.0**	370.4 **75.9**	384.3 **78.7**	4.67 **15.32**	4.67 **15.32**
JDF 68 ODx0.750/AZ28-750	AZ28-750	E22	3287 **129.42**	3303.8 **201.6**	1167045 **8546**	13513.7 **251.4**	4660.3 **1047.3**	5592.3 **1256.8**	284.6 **58.3**	298.1 **61.1**	311.6 **63.8**	4.83 **15.84**	4.83 **15.84**
JDF 68 ODx0.875/AZ28-750	AZ28-750	E22	3287 **129.42**	3730.9 **227.7**	1348805 **9877**	15618.4 **290.5**	5386.1 **1210.4**	6463.3 **1452.5**	324.8 **66.5**	338.3 **69.3**	351.8 **72.1**	4.83 **15.84**	4.83 **15.84**
JDF 68 ODx1.00/AZ28-750	AZ28-750	E22	3287 **129.42**	4156.4 **253.6**	1528520 **11193**	17699.4 **329.2**	6103.7 **1371.7**	7324.5 **1646.1**	364.8 **74.7**	378.3 **77.5**	391.8 **80.2**	4.83 **15.84**	4.83 **15.84**
JDF 72 ODx0.750/AZ28-750	AZ28-750	E22	3389 **133.42**	3458.2 **211.0**	1340300 **9815**	14657.7 **272.6**	5054.8 **1136.0**	6065.7 **1363.2**	290.2 **59.4**	303.3 **62.1**	316.4 **64.8**	4.99 **16.36**	4.99 **16.36**
JDF 72 ODx0.875/AZ28-750	AZ28-750	E22	3389 **133.42**	3911.1 **238.7**	1550445 **11354**	16955.9 **315.4**	5847.3 **1314.1**	7016.8 **1576.9**	331.5 **67.9**	344.6 **70.6**	357.7 **73.3**	4.99 **16.36**	4.99 **16.36**
JDF 72 ODx1.00/AZ28-750	AZ28-750	E22	3389 **133.42**	4362.4 **266.2**	1758359 **12876**	19229.7 **357.7**	6631.4 **1490.3**	7957.7 **1788.4**	372.6 **76.3**	385.7 **79.0**	398.8 **81.7**	4.99 **16.36**	4.99 **16.36**

* Larger, custom pipe sizes and wall thicknesses are available upon request. Please contact us at eng@jdfields.com for availability.

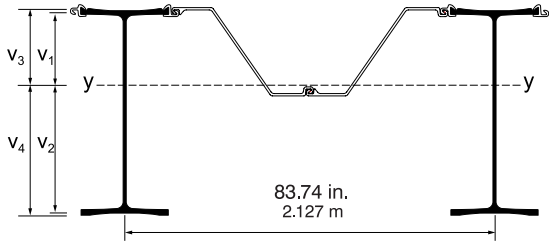
NOTES



HZ®-M STEEL WALL SYSTEMS



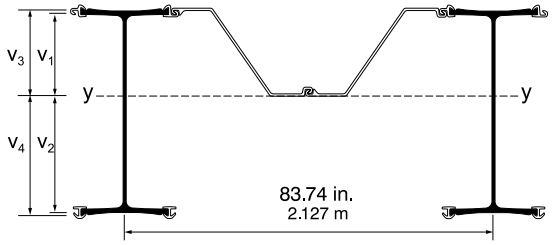
COMBINATION HZ...M-12 / AZ 18-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 18-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**12.55** 265.7	**1,112.0** 151,850	**83.0** 4,465	**93.0** 5,000	**35.13** 172	**38.93** 190	**42.72** 209	**8.73** 2.660	**15.11** 4.605
HZ 880M A	**11.97** 253.4	**1,641.1** 224,100	**93.2** 5,010	**106.7** 5,740	**33.28** 162	**37.01** 181	**40.74** 199	**8.85** 2.699	**16.72** 5.095
HZ 880M B	**12.68** 268.3	**1,763.9** 240,880	**100.7** 5,415	**113.5** 6,100	**35.69** 174	**39.42** 192	**43.14** 211	**8.86** 2.702	**16.72** 5.097
HZ 880M C	**13.00** 275.1	**1,847.3** 252,260	**105.4** 5,665	**118.4** 6,365	**36.78** 180	**40.51** 198	**44.23** 216	**8.86** 2.702	**16.72** 5.097
HZ 1080M A	**13.69** 289.8	**2,964.2** 404,780	**131.7** 7,080	**147.7** 7,940	**39.12** 191	**42.86** 209	**46.59** 227	**8.84** 2.695	**18.15** 5.533
HZ 1080M B	**14.20** 300.6	**3,188.2** 435,370	**141.6** 7,615	**157.9** 8,490	**40.86** 200	**44.60** 218	**48.33** 236	**8.84** 2.696	**18.15** 5.533
HZ 1080M C	**15.12** 320.1	**3,458.0** 472,210	**153.9** 8,270	**169.9** 9,135	**44.00** 215	**47.73** 233	**51.47** 251	**8.85** 2.697	**18.16** 5.535
HZ 1080M D	**15.87** 335.9	**3,721.3** 508,160	**165.2** 8,880	**181.9** 9,780	**46.55** 227	**50.28** 245	**54.01** 264	**8.85** 2.698	**18.16** 5.535
HZ 1180M A	**16.47** 348.6	**3,919.2** 535,180	**173.4** 9,320	**190.9** 10,260	**48.58** 237	**52.31** 255	**56.04** 274	**8.85** 2.699	**18.16** 5.536
HZ 1180M B	**16.85** 356.6	**4,092.7** 558,890	**181.1** 9,735	**198.5** 10,675	**49.88** 244	**53.61** 262	**57.34** 280	**8.86** 2.700	**18.18** 5.540
HZ 1180M C	**17.59** 372.3	**4,347.6** 593,690	**191.0** 10,270	**210.5** 11,315	**52.26** 255	**56.06** 274	**59.85** 292	**8.90** 2.713	**18.20** 5.549
HZ 1180M D	**18.17** 384.7	**4,548.1** 621,070	**200.5** 10,780	**218.6** 11,750	**54.26** 265	**58.05** 283	**61.85** 302	**8.92** 2.719	**18.22** 5.554

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

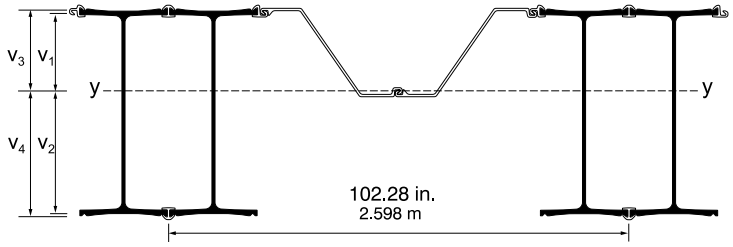
COMBINATION HZ...M-14 / AZ 18-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 18-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	13.39 283.3	1,243.7 169,840	102 .5 5,510	93.9 5,045	36.72 179	41.14 201	45.55 222	8.73 2.660	16.03 4.886
HZ 880M A	12.79 270.8	1,872.7 255,730	118 .2 6,355	108.9 5,855	34.87 170	39.20 191	43.54 213	8.85 2.699	17.49 5.331
HZ 880M B	13.49 285.6	1,991.2 271,910	125 .1 6,725	115.8 6,225	37.25 182	41.58 203	45.92 224	8.86 2.702	17.50 5.334
HZ 880M C	13.81 292.4	2,073.7 283,180	129 .6 6,970	120.6 6,485	38.34 187	42.68 208	47.01 230	8.86 2.702	17.50 5.334
HZ 1080M A	14.52 307.3	3,350.9 457,580	162 .3 8,725	152.3 8,185	40.71 199	45.06 220	49.40 241	8.84 2.695	18.92 5.768
HZ 1080M B	15.02 317.9	3,569.0 487,370	171 .9 9,240	162.2 8,720	42.43 207	46.77 228	51.12 250	8.84 2.696	18.93 5.769
HZ 1080M C	15.94 337.4	3,835.7 523,790	183 .7 9,875	174.3 9,375	45.56 222	49.91 244	54.25 265	8.85 2.697	18.93 5.771
HZ 1080M D	16.69 353.2	4,097.0 559,460	194 .7 10,470	186.2 10,015	48.11 235	52.45 256	56.79 277	8.85 2.698	18.94 5.771
HZ 1180M A	17.28 365.8	4,293.0 586,240	202 .6 10,890	195.4 10,505	50.14 245	54.48 266	58.82 287	8.85 2.699	18.94 5.772
HZ 1180M B	17.64 373.4	4,452.9 608,070	209 .3 11,255	202.4 10,885	51.35 251	55.69 272	60.03 293	8.86 2.700	18.94 5.774
HZ 1180M C	18.60 393.8	4,806.3 656,330	223 .6 12,020	216.0 11,610	54.20 265	58.76 287	63.31 309	8.90 2.713	19.05 5.808
HZ 1180M D	19.14 405.1	4,978.1 679,780	230 .8 12,410	223.8 12,030	56.02 273	60.57 296	65.13 318	8.92 2.719	19.07 5.814

* Referring outside of HZ®-M-flange (highest value of v_1; v_2), ** Referring outside of connector (highest value of v_3; v_4), *** Length of connectors = Length of AZ.

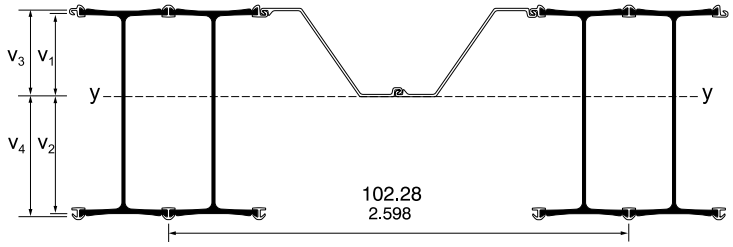
COMBINATION HZ...M-24 / AZ 18-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 18-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**16.79** 355.5	**1,644.7** 224,600	**128.2** 6,895	**118.0** 6,345	**50.87** 248	**54.01** 264	**57.15** 279	**10.32** 3.145	**16.76** 5.109
HZ 880M A	**15.73** 332.9	**2,495.8** 340,810	**148.6** 7,985	**137.5** 7,390	**47.42** 232	**50.47** 246	**53.52** 261	**10.57** 3.222	**18.49** 5.637
HZ 880M B	**16.87** 357.0	**2,689.6** 367,290	**160.2** 8,610	**148.9** 8,005	**51.30** 250	**54.35** 265	**57.40** 280	**10.59** 3.229	**18.51** 5.643
HZ 880M C	**17.39** 368.1	**2,825.1** 385,790	**167.8** 9,020	**156.7** 8,420	**53.09** 259	**56.14** 274	**59.18** 289	**10.59** 3.228	**18.51** 5.643
HZ 1080M A	**18.56** 392.8	**4,656.0** 635,800	**215.0** 11,555	**202.3** 10,875	**57.04** 278	**60.10** 293	**63.16** 308	**10.54** 3.214	**19.92** 6.070
HZ 1080M B	**19.39** 410.3	**5,014.3** 684,730	**230.8** 12,410	**218.4** 11,740	**59.85** 292	**62.91** 307	**65.97** 322	**10.55** 3.216	**19.92** 6.073
HZ 1080M C	**20.88** 442.1	**5,450.3** 744,280	**250.5** 13,470	**238.3** 12,810	**64.96** 317	**68.02** 332	**71.07** 347	**10.56** 3.219	**19.93** 6.076
HZ 1080M D	**22.11** 467.9	**5,877.7** 802,640	**269.0** 14,460	**257.7** 13,855	**69.12** 337	**72.17** 352	**75.23** 367	**10.57** 3.220	**19.94** 6.077
HZ 1180M A	**23.08** 488.4	**6,198.0** 846,370	**282.2** 15,170	**272.2** 14,635	**72.43** 354	**75.48** 369	**78.53** 383	**10.57** 3.222	**19.94** 6.079
HZ 1180M B	**23.66** 500.8	**6,460.1** 882,170	**293.4** 15,770	**284.0** 15,270	**74.41** 363	**77.46** 378	**80.51** 393	**10.58** 3.225	**19.97** 6.088
HZ 1180M C	**24.95** 528.0	**6,919.2** 944,860	**312.7** 16,810	**302.3** 16,255	**78.69** 384	**81.79** 399	**84.90** 415	**10.64** 3.242	**20.02** 6.101
HZ 1180M D	**25.81** 546.4	**7,198.9** 983,050	**324.6** 17,455	**315.0** 16,935	**81.64** 399	**84.74** 414	**87.84** 429	**10.68** 3.254	**20.05** 6.110

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

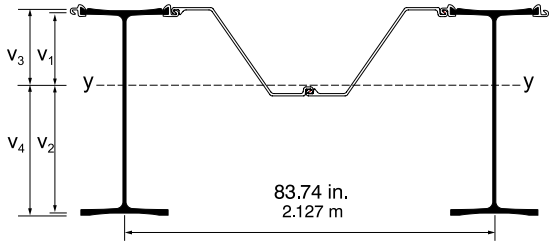
COMBINATION HZ...M-26 / AZ 18-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 18-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**17.55** 371.4	**1,759.4** 240,250	**145.1** 7,800	**132.8** 7,140	**52.40** 256	**56.06** 274	**59.72** 292	**10.32** 3.145	**17.62** 5.371
HZ 880M A	**16.46** 348.4	**2,692.6** 367,690	**170.1** 9,145	**156.7** 8,425	**48.91** 239	**52.46** 256	**56.01** 273	**10.57** 3.222	**19.21** 5.854
HZ 880M B	**17.60** 372.4	**2,885.1** 393,980	**181.4** 9,750	**167.9** 9,025	**52.79** 258	**56.34** 275	**59.88** 292	**10.59** 3.229	**19.23** 5.860
HZ 880M C	**18.12** 383.6	**3,020.2** 412,430	**188.9** 10,160	**175.8** 9,450	**54.58** 266	**58.12** 284	**61.67** 301	**10.59** 3.228	**19.23** 5.860
HZ 1080M A	**19.29** 408.4	**4,986.8** 680,970	**241.7** 12,995	**226.8** 12,190	**58.53** 286	**62.10** 303	**65.66** 321	**10.54** 3.214	**20.63** 6.288
HZ 1080M B	**20.12** 425.9	**5,344.2** 729,790	**257.5** 13,845	**243.0** 13,065	**61.35** 300	**64.91** 317	**68.47** 334	**10.55** 3.216	**20.64** 6.290
HZ 1080M C	**21.62** 457.6	**5,778.4** 789,080	**276.9** 14,885	**262.8** 14,130	**66.46** 324	**70.01** 342	**73.57** 359	**10.56** 3.219	**20.65** 6.293
HZ 1080M D	**22.84** 483.4	**6,204.6** 847,280	**295.1** 15,865	**282.2** 15,170	**70.61** 345	**74.17** 362	**77.72** 379	**10.57** 3.220	**20.65** 6.294
HZ 1180M A	**23.81** 503.9	**6,523.9** 890,880	**308.0** 16,560	**296.7** 15,955	**73.92** 361	**77.47** 378	**81.02** 396	**10.57** 3.222	**20.65** 6.296
HZ 1180M B	**24.39** 516.2	**6,785.7** 926,630	**319.2** 17,160	**308.6** 16,595	**75.90** 371	**79.45** 388	**83.00** 405	**10.58** 3.225	*20.67* 6.299
HZ 1180M C	**25.86** 547.4	**7,323.8** 1,000,110	**342.0** 18,390	**330.3** 17,760	**80.56** 393	**84.29** 412	**88.01** 430	**10.64** 3.242	**20.79** 6.337
HZ 1180M D	**26.73** 565.7	**7,602.6** 1,038,190	**353.8** 19,020	**342.9** 18,435	**83.51** 408	*87.23* 426	**90.96** 444	**10.68** 3.254	**20.83** 6.349

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

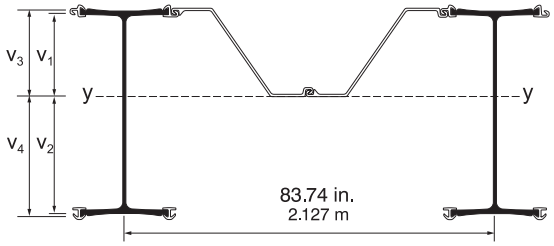
COMBINATION HZ...M-12 / AZ 23-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 23-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**13.35** 282.6	**1,190.2** 162,520	**88.9** 4,780	**99.5** 5,350	**36.76** 179	**41.10** 201	**45.44** 222	**8.84** 2.694	**15.22** 4.639
HZ 880M A	**12.75** 270.0	**1,717.8** 234,580	**97.6** 5,245	**111.7** 6,005	**34.88** 170	**39.14** 191	**43.41** 212	**8.97** 2.733	**16.83** 5.130
HZ 880M B	**13.46** 284.9	**1,840.6** 251,350	**105.1** 5,650	**118.4** 6,365	**37.29** 182	**41.55** 203	**45.81** 224	**8.98** 2.736	**16.84** 5.131
HZ 880M C	**13.78** 291.7	**1,924.0** 262,730	**109.7** 5,900	**123.3** 6,625	**38.38** 187	**42.64** 208	**46.90** 229	**8.98** 2.736	**16.83** 5.131
HZ 1080M A	**14.48** 306.4	**3,041.1** 415,280	**135.1** 7,260	**151.5** 8,145	**40.72** 199	**44.99** 220	**49.26** 241	**8.95** 2.729	**18.27** 5.567
HZ 1080M B	**14.99** 317.2	**3,265.1** 445,870	**145.0** 7,795	**161.7** 8,695	**42.46** 207	**46.74** 228	**51.01** 249	**8.96** 2.730	**18.26** 5.567
HZ 1080M C	**15.91** 336.7	**3,534.8** 482,700	**157.3** 8,455	**173.7** 9,340	**45.60** 223	**49.87** 243	**54.14** 264	**8.96** 2.731	**18.27** 5.569
HZ 1080M D	**16.66** 352.5	**3,798.1** 518,650	**168 .6** 9,065	**185.7** 9,980	**48.15** 235	**52.42** 256	**56.68** 277	**8.96** 2.732	**18.27** 5.569
HZ 1180M A	**17.25** 365.2	**3,995.9** 545,660	**176.8** 9,505	**194.6** 10,465	**50.18** 245	**54.45** 266	**58.71** 287	**8.97** 2.733	**18.27** 5.570
HZ 1180M B	**17.63** 373.2	**4,169.5** 569,370	**184.5** 9,920	**202.3** 10,875	**51.48** 251	**55.74** 272	**60.01** 293	**8.97** 2.734	**18.29** 5.574
HZ 1180M C	**18.37** 388.8	**4,424.3** 604,160	**194.4** 10,450	**214.2** 11,515	**53.86** 263	**58.19** 284	**62.52** 305	**9.01** 2.747	**18.32** 5.583
HZ 1180M D	**18.96** 401.3	**4,624.8** 631,540	**203.9** 10,960	**222.3** 11,950	**55.86** 273	**60.19** 294	**64.51** 315	**9.03** 2.753	**18.33** 5.588

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

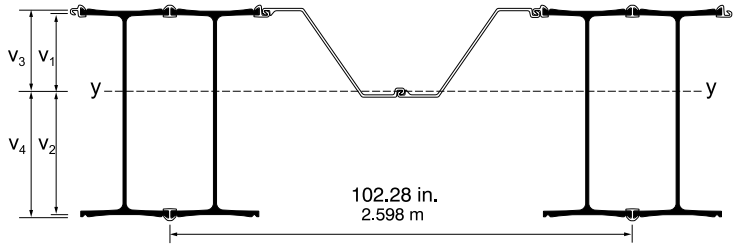
COMBINATION HZ...M-14 / AZ 23-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 23-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**14.18** 300.2	**1,321.9** 180,510	**108.9** 5,855	**99.7** 5,365	**38.35** 187	**43.31** 211	**48.27** 236	**8.84** 2.694	**16.14** 4.920
HZ 880M A	**13.58** 287.4	**1,949.5** 266,210	**123.1** 6,615	**113.4** 6,095	**36.47** 178	**41.34** 202	**46.21** 226	**8.97** 2.733	**17.60** 5.365
HZ 880M B	**14.28** 302.2	**2,067.8** 282,380	**129.9** 6,985	**120.3** 6,465	**38.85** 190	**43.72** 213	**48.58** 237	**8.98** 2.736	**17.61** 5.368
HZ 880M C	**14.60** 309.0	**2,150.4** 293,650	**134.4** 7,230	**125.1** 6,725	**39.94** 195	**44.81** 219	**49.68** 243	**8.98** 2.736	**17.61** 5.368
HZ 1080M A	**15.30** 323.9	**3,427.8** 468,080	**166.0** 8,925	**155.8** 8,375	**42.31** 207	**47.19** 230	**52.08** 254	**8.95** 2.729	**19.04** 5.802
HZ 1080M B	**15.81** 334.6	**3,645.9** 497,860	**175.6** 9,440	**165.7** 8,910	**44.03** 215	**48.91** 239	**53.79** 263	**8.96** 2.730	**19.04** 5.803
HZ 1080M C	**16.72** 354.0	**3,912.6** 534,280	**187.4** 10,075	**177.8** 9,560	**47.17** 230	**52.04** 254	**56.92** 278	**8.96** 2.731	**19.05** 5.805
HZ 1080M D	**17.47** 369.8	**4,173.7** 569,950	**198.4** 10,665	**189.7** 10,200	**49.71** 243	**54.59** 267	**59.46** 290	**8.96** 2.732	**19.05** 5.806
HZ 1180M A	**18.07** 382.4	**4,369.8** 596,720	**206.2** 11,085	**198.9** 10,690	**51.74** 253	**56.62** 276	**61.49** 300	**8.97** 2.733	**19.05** 5.806
HZ 1180M B	**18.42** 390.0	**4,529.7** 618,550	**212.9** 11,450	**205.9** 11,070	**52.95** 259	**57.82** 282	**62.70** 306	**8.97** 2.734	**19.05** 5.808
HZ 1180M C	**19.39** 410.4	**4,883.0** 666,800	**227.2** 12,215	**219.4** 11,795	**55.80** 272	**60.89** 297	**65.98** 322	**9.01** 2.747	**19.17** 5.842
HZ 1180M D	**19.92** 421.6	**5,054.7** 690,250	**234.4** 12,600	**227.2** 12,215	**57.61** 281	**62.70** 306	**67.79** 331	**9.03** 2.753	**19.19** 5.848

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

COMBINATION HZ...M-24 / AZ 23-800

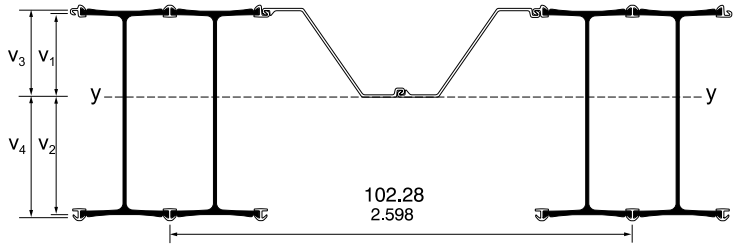


SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 23-800			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**17.46** 369.5	**1,709.4** 233,430	**133.3** 7,165	**122.6** 6,590	**52.22** 255	**55.81** 272	**59.40** 290	**10.43** 3.179	**16.87** 5.143
HZ 880M A	**16.37** 346.5	**2,558.6** 349,390	**152.3** 8,190	**140.9** 7,575	**48.73** 238	**52.22** 255	**55.71** 272	**10.68** 3.256	**18.61** 5.671
HZ 880M B	**17.51** 370.5	**2,752.4** 375,850	**163.9** 8,815	**152.3** 8,190	**52.61** 257	**56.09** 274	**59.58** 291	**10.70** 3.263	**18.63** 5.677
HZ 880M C	**18.03** 381.7	**2,887.8** 394,350	**171.5** 9,220	**160.1** 8,610	**54.40** 266	**57.88** 283	**61.36** 300	**10.70** 3.262	**18.62** 5.677
HZ 1080M A	**19.20** 406.5	**4,719.0** 644,410	**217.9** 11,715	**205.0** 11,025	**58.35** 285	**61.85** 302	**65.35** 319	**10.66** 3.248	**20.03** 6.105
HZ 1080M B	**20.03** 423.9	**5,077.3** 693,340	**233.7** 12,565	**221.1** 11,890	**61.16** 299	**64.66** 316	**68.16** 333	**10.66** 3.250	**20.04** 6.107
HZ 1080M C	**21.53** 455.7	**5,513.2** 752,870	**253.4** 13,625	**241.0** 12,960	**66.27** 324	**69.77** 341	**73.26** 358	**10.67** 3.253	**20.05** 6.110
HZ 1080M D	**22.75** 481.5	**5,940.6** 811,230	**271.9** 14,615	**260.4** 14,000	**70.43** 344	**73.92** 361	**77.41** 378	**10.68** 3.255	**20.05** 6.111
HZ 1180M A	**23.72** 502.0	**6,260.8** 854,950	**285.0** 15,325	**275.0** 14,785	**73.74** 360	**77.23** 377	**80.71** 394	**10.68** 3.256	**20.05** 6.113
HZ 1180M B	**24.30** 514.3	**6,522.9** 890,740	**296.2** 15,925	**286.8** 15,420	**75.72** 370	**79.21** 387	**82.69** 404	**10.69** 3.259	**20.08** 6.122
HZ 1180M C	**25.59** 541.6	**6,981.9** 953,420	**315.5** 16,965	**305.0** 16,400	**80.00** 391	**83.54** 408	**87.08** 425	**10.75** 3.276	**20.13** 6.135
HZ 1180M D	**26.45** 559.9	**7,261.6** 991,610	**327.5** 17,605	**317.7** 17,080	**82.95** 405	**86.49** 422	**90.02** 440	**10.79** 3.289	**20.16** 6.144

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

HZ®-M STEEL WALL SYSTEMS

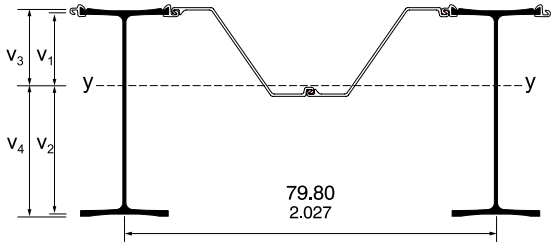
COMBINATION HZ...M-26 / AZ 23-800



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 23-800			COATING AREA	
	Sectional Area in^2/ft cm^2/m	Moment of Inertia in^4/ft cm^4/m	*Elastic Section Modulus in^3/ft cm^3/m	**Elastic Section Modulus in^3/ft cm^3/m	£AZ = 60% £HZ lb/ft^2 kg/m^2	£AZ = 80% £HZ lb/ft^2 kg/m^2	£AZ = £HZ lb/ft^2 kg/m^2	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**18.21** 385.4	**1,824.1** 249,090	**150.4** 8,085	**137.7** 7,405	**53.75** 262	**57.86** 283	**61.97** 303	**10.43** 3.179	**17.73** 5.405
HZ 880M A	**17.10** 362.0	**2,755.4** 376,270	**174.1** 9,360	**160.3** 8,620	**50.22** 245	**54.21** 265	**58.19** 284	**10.68** 3.256	**19.32** 5.888
HZ 880M B	**18.24** 386.0	**2,947.9** 402,550	**185.3** 9,965	*171.5* 9,225	**54.10** 264	**58.08** 284	**62.06** 303	**10.70** 3.263	**19.34** 5.894
HZ 880M C	**18.76** 397.1	**3,082.9** 420,990	**192.9** 10,370	**179.4** 9,645	**55.89** 273	**59.87** 292	**63.85** 312	**10.70** 3.262	**19.34** 5.894
HZ 1080M A	**19.94** 422.0	**5,049.8** 689,580	**244.7** 13,155	**229.6** 12,345	**59.85** 292	**63.85** 312	**67.85** 331	**10.66** 3.248	**20.74** 6.322
HZ 1080M B	**20.76** 439.5	**5,407.2** 738,390	**260.6** 14,010	**245.9** 13,220	**62.66** 306	**66.66** 325	**70.66** 345	**10.66** 3.250	**20.75** 6.324
HZ 1080M C	**22.26** 471.2	**5,841.3** 797,670	**279.9** 15,050	**265.7** 14,285	**67.77** 331	**71.76** 350	**75.75** 370	**10.67** 3.253	**20.76** 6.327
HZ 1080M D	**23.48** 497.0	**6,267.5** 855,860	**298.1** 16,025	**285.1** 15,325	**71.92** 351	**75.91** 371	**79.90** 390	**10.68** 3.255	**20.76** 6.328
HZ 1180M A	**24.45** 517.5	**6,586.7** 899,460	**311.0** 16,720	**299.6** 16,105	**75.23** 367	**79.22** 387	**83.20** 406	**10.68** 3.256	**20.77** 6.330
HZ 1180M B	**25.03** 529.8	**6,848.5** 935,210	**322.1** 17,320	**311.5** 16,745	**77.21** 377	**81.20** 396	**85.18** 416	**10.69** 3.259	**20.78** 6.333
HZ 1180M C	**26.50** 561.0	**7,386.5** 1,008,670	**344.9** 18,545	**333.1** 17,910	**81.87** 400	**86.03** 420	**90.19** 440	**10.75** 3.276	**20.90** 6.371
HZ 1180M D	**27.37** 579.3	**7,665.3** 1,046,740	**356.7** 19,180	**345.8** 18,590	**84.82** 414	**88.98** 434	**93.14** 455	**10.79** 3.289	**20.94** 6.383

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

COMBINATION HZ...M-12 / AZ 28-750

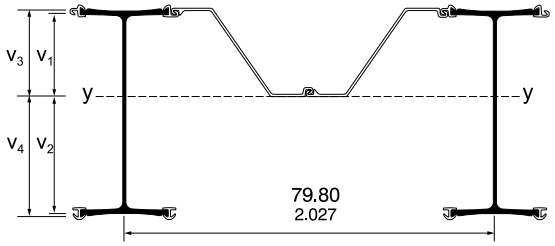


SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 28-750			COATING AREA	
	Sectional Area in^2/ft cm^2/m	Moment of Inertia in^4/ft cm^4/m	*Elastic Section Modulus in^3/ft cm^3/m	**Elastic Section Modulus in^3/ft cm^3/m	£AZ = 60% £HZ lb/ft^2 kg/m^2	£AZ = 80% £HZ lb/ft^2 kg/m^2	£AZ = £HZ lb/ft^2 kg/m^2	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**14.40** 304.8	**1,319.5** 180,190	**98.5** 5,295	**110.3** 5,930	**39.37** 192	**44.19** 216	**49.00** 239	**8.84** 2.693	**15.22** 4.638
HZ 880M A	**13.75** 291.1	**1,870.8** 255,460	**106.2** 5,710	**121.7** 6,540	**37.35** 182	**42.08** 205	**46.80** 229	**8.96** 2.732	**16.83** 5.128
HZ 880M B	**14.49** 306.7	**1,999.5** 273,040	**114.2** 6,135	**128.6** 6,915	**39.88** 195	**44.60** 218	**49.31** 241	**8.97** 2.735	**16.83** 5.130
HZ 880M C	**14.83** 313.8	**2,086.9** 284,980	**119.0** 6,400	**133.7** 7,190	**41.02** 200	**45.74** 223	**50.46** 246	**8.97** 2.735	**16.83** 5.130
HZ 1080M A	**15.56** 329.4	**3,259.8** 445,140	**144.8** 7,785	**162.4** 8,730	**43.49** 212	**48.22** 235	**52.95** 259	**8.95** 2.728	**18.26** 5.566
HZ 1080M B	**16.10** 340.7	**3,494.8** 477,230	**155.2** 8,345	**173.1** 9,305	**45.32** 221	**50.05** 244	**54.78** 267	**8.95** 2.729	**18.26** 5.566
HZ 1080M C	**17.06** 361.1	**3,777.6** 515,860	**168.1** 9,035	**185.7** 9,980	**48.61** 237	**53.33** 260	**58.06** 283	**8.96** 2.730	**18.27** 5.567
HZ 1080M D	**17.85** 377.7	**4,053.7** 553,560	**180.0** 9,675	**198.2** 10,655	**51.28** 250	**56.00** 273	**60.73** 297	**8.96** 2.731	**18.27** 5.568
HZ 1180M A	**18.47** 390.9	**4,261.2** 581,890	**188.5** 10,135	**207.5** 11,155	**53.41** 261	**58.13** 284	**62.86** 307	**8.96** 2.732	**18.27** 5.569
HZ 1180M B	**18.87** 399.4	**4,443.3** 606,760	**196.6** 10,570	**215.5** 11,590	**54.77** 267	**59.49** 290	**64.22** 314	**8.97** 2.733	**18.28** 5.573
HZ 1180M C	**19.64** 415.8	**4,710.6** 643,260	**207.0** 11,130	**228.0** 12,260	**57.27** 280	**62.06** 303	**66.85** 326	**9.01** 2.746	**18.31** 5.582
HZ 1180M D	**20.26** 428.8	**4,920.8** 671,960	**216.9** 11,665	**236.5** 12,715	**59.36** 290	**64.15** 313	**68.94** 337	**9.03** 2.752	**18.33** 5.587

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

HZ®-M STEEL WALL SYSTEMS

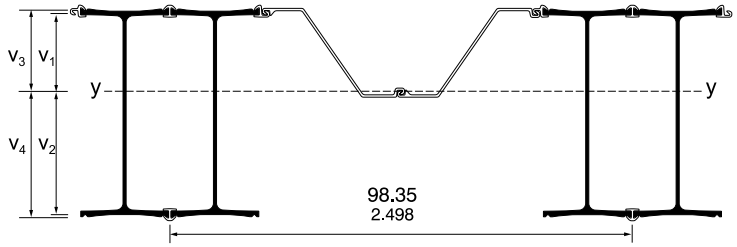
COMBINATION HZ...M-14 / AZ 28-750



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 28-750			COATING AREA	
	Sectional Area in^2/ft cm^2/m	Moment of Inertia in^4/ft cm^4/m	*Elastic Section Modulus in^3/ft cm^3/m	**Elastic Section Modulus in^3/ft cm^3/m	£AZ = 60% £HZ lb/ft^2 kg/m^2	£AZ = 80% £HZ lb/ft^2 kg/m^2	£AZ = £HZ lb/ft^2 kg/m^2	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**15.27** 323.2	**1,457.8** 199,080	**120.1** 6,460	**110.0** 5,915	**41.04** 200	**46.51** 227	**51.97** 254	**8.84** 2.693	**16.14** 4.919
HZ 880M A	**14.62** 309.4	**2,113.8** 288,660	**133.4** 7,175	**122.9** 6,610	**39.02** 190	**44.38** 217	**49.74** 243	8.96 2.732	**17.60** 5.364
HZ 880M B	**15.35** 324.8	**2,237.9** 305,600	**140.6** 7,560	**130.1** 6,995	**41.51** 203	**46.87** 229	**52.23** 255	**8.97** 2.735	**17.61** 5.367
HZ 880M C	**15.68** 332.0	**2,324.5** 317,430	**145.3** 7,815	**135.2** 7,270	**42.66** 208	**48.02** 234	**53.37** 261	**8.97** 2.735	**17.61** 5.367
HZ 1080M A	**16.43** 347.7	**3,665.5** 500,550	**177.5** 9,545	**166.6** 8,955	**45.16** 220	**50.53** 247	**55.90** 273	**8.95** 2.728	**19.03** 5.801
HZ 1080M B	**16.96** 358.9	**3,894.4** 531,800	**187.5** 10,085	**177.0** 9,515	**46.96** 229	**52.33** 256	**57.70** 282	**8.95** 2.729	**19.04** 5.802
HZ 1080M C	**17.92** 379.3	**4,174.0** 569,980	**199.9** 10,745	**189.7** 10,200	**50.25** 245	**55.61** 272	**60.98** 298	**8.96** 2.730	**19.04** 5.804
HZ 1080M D	**18.70** 395.9	**4,447.9** 607,390	**211.4** 11,365	**202.2** 10,870	**52.92** 258	**58.28** 285	**63.65** 311	**8.96** 2.731	**19.04** 5.804
HZ 1180M A	**19.33** 409.1	**4,653.5** 635,460	**219.6** 11,805	**211.8** 11,385	**55.05** 269	**60.41** 295	**65.77** 321	**8.96** 2.732	**19.05** 5.805
HZ 1180M B	**19.70** 417.0	**4,821.3** 658,370	**226.7** 12,185	**219.2** 11,785	**56.32** 275	**61.68** 301	**67.04** 327	**8.97** 2.733	**19.05** 5.807
HZ 1180M C	**20.71** 438.4	**5,191.9** 708,980	**241.6** 12,985	**233.3** 12,545	**59.30** 290	**64.89** 317	70.48 344	**9.01** 2.746	**19.16** 5.841
HZ 1180M D	**21.27** 450.2	**5,371.9** 733,570	**249.1** 13,390	**241.5** 12,980	**61.20** 299	**66.79** 326	**72.38** 353	**9.03** 2.752	**19.18** 5.847

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

COMBINATION HZ...M-24 / AZ 28-750

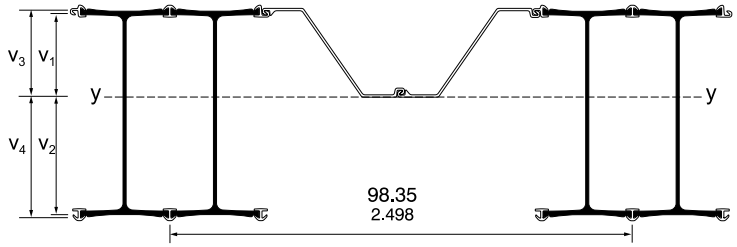


SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 28-750			COATING AREA	
	Sectional Area in²/ft cm²/m	Moment of Inertia in⁴/ft cm⁴/m	*Elastic Section Modulus in³/ft cm³/m	**Elastic Section Modulus in³/ft cm³/m	£AZ = 60% £HZ lb/ft² kg/m²	£AZ = 80% £HZ lb/ft² kg/m²	£AZ = £HZ lb/ft² kg/m²	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**18.48** 391.2	**1,837.0** 250,860	**143.2** 7,700	**131.8** 7,085	**55.00** 269	**58.95** 288	**62.90** 307	**10.43** 3.178	**16.87** 5.142
HZ 880M A	**17.32** 366.6	**2,716.3** 370,930	**161.7** 8,695	**149.6** 8,045	**51.29** 250	**55.12** 269	**58.95** 288	**10.68** 3.255	**18.60** 5.670
HZ 880M B	**18.50** 391.7	**2,917.5** 398,410	**173.8** 9,340	**161.5** 8,680	**55.32** 270	**59.14** 289	**62.97** 307	**10.70** 3.262	**18.62** 5.676
HZ 880M C	**19.05** 403.2	**3,058.4** 417,650	**181.7** 9,765	**169.6** 9,120	**57.18** 279	**61.00** 298	**64.83** 317	**10.70** 3.261	**18.62** 5.676
HZ 1080M A	**20.27** 429.1	**4,963.9** 677,850	**229.2** 12,320	**215.7** 11,595	**61.30** 299	**65.15** 318	**68.99** 337	**10.65** 3.247	**20.02** 6.103
HZ 1080M B	**21.13** 447.3	**5,336.6** 728,740	**245.7** 13,205	**232.4** 12,495	**64.23** 314	**68.07** 332	**71.92** 351	**10.66** 3.249	**20.03** 6.106
HZ 1080M C	**22.69** 480.2	**5,789.6** 790,600	**266.1** 14,310	**253.1** 13,610	**69.54** 340	**73.38** 358	**77.21** 377	**10.67** 3.252	**20.04** 6.109
HZ 1080M D	**23.96** 507.1	**6,233.8** 851,270	**285.3** 15,340	**273.3** 14,690	**73.86** 361	**77.69** 379	**81.53** 398	**10.67** 3.253	**20.05** 6.110
HZ 1180M A	**24.96** 528.4	**6,566.6** 896,710	**298.9** 16,075	**288.4** 15,505	**77.30** 377	**81.13** 396	**84.96** 415	**10.68** 3.255	**20.05** 6.112
HZ 1180M B	**25.57** 541.2	**6,839.2** 933,930	**310.6** 16,700	**300.7** 16,165	**79.35** 387	**83.19** 406	**87.02** 425	**10.69** 3.258	**20.08** 6.121
HZ 1180M C	**26.91** 569.5	**7,316.0** 999,040	330.6 17,775	**319.6** 17,185	**83.80** 409	**87.68** 428	**91.57** 447	**10.75** 3.275	**20.12** 6.134
HZ 1180M D	**27.81** 588.6	**7,606.6** 1,038,720	**343.0** 18,440	**332.8** 17,895	**86.87** 424	**90.75** 443	**94.63** 462	**10.79** 3.287	**20.15** 6.143

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

HZ®-M STEEL WALL SYSTEMS

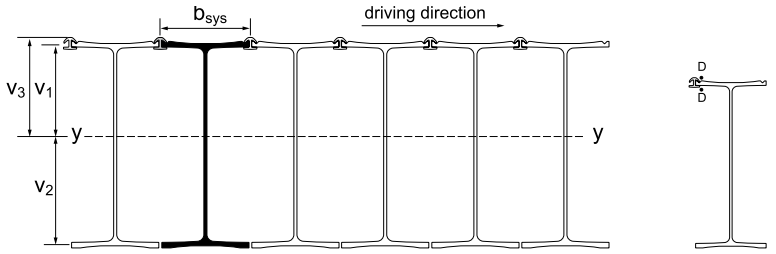
COMBINATION HZ...M-26 / AZ 28-750



SECTION	PROPERTIES PER FOOT OF WALL				MASS OF COMBINATION WITH INTERMEDIARY SECTION				
					*** AZ 28-750			COATING AREA	
	Sectional Area in^2/ft cm^2/m	Moment of Inertia in^4/ft cm^4/m	*Elastic Section Modulus in^3/ft cm^3/m	**Elastic Section Modulus in^3/ft cm^3/m	£AZ = 60% £HZ lb/ft^2 kg/m^2	£AZ = 80% £HZ lb/ft^2 kg/m^2	£AZ = £HZ lb/ft^2 kg/m^2	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**19.27** 407.8	**1,956.4** 267,160	**161.3** 8,670	**147.7** 7,940	**56.60** 276	**61.09** 298	**65.57** 320	**10.43** 3.178	**17.73** 5.404
HZ 880M A	**18.08** 382.7	**2,921.0** 398,880	**184.5** 9,920	**170.0** 9,140	**52.84** 258	**57.19** 279	**61.54** 300	**10.68** 3.255	**19.31** 5.887
HZ 880M B	**19.26** 407.7	**3,120.9** 426,170	**196.2** 10,550	**181.6** 9,765	**56.87** 278	**61.21** 299	**65.55** 320	**10.70** 3.262	**19.34** 5.893
HZ 880M C	**19.81** 419.3	**3,261.3** 445,360	**204.0** 10,970	**189.8** 10,205	**58.73** 287	**63.07** 308	**67.41** 329	**10.70** 3.261	**19.33** 5.893
HZ 1080M A	**21.04** 445.3	**5,308.0** 724,830	**257.2** 13,830	**241.4** 12,980	**62.86** 307	**67.22** 328	**71.59** 350	**10.65** 3.247	**20.74** 6.321
HZ 1080M B	**21.90** 463.5	**5,679.7** 775,600	**273.7** 14,715	**258.3** 13,885	**65.79** 321	**70.15** 343	**74.51** 364	**10.66** 3.249	**20.74** 6.323
HZ 1080M C	**23.45** 496.4	**6,130.8** 837,200	**293.8** 15,795	**278.8** 14,990	**71.09** 347	**75.45** 368	**79.81** 390	**10.67** 3.252	**20.75** 6.326
HZ 1080M D	**24.72** 523.2	**6,573.8** 897,690	**312.7** 16,810	**299.0** 16,075	**75.41** 368	**79.77** 389	**84.12** 411	**10.67** 3.253	**20.76** 6.327
HZ 1180M A	**25.73** 544.5	**6,905.6** 943,000	**326.0** 17,530	**314.1** 16,885	**78.85** 385	**83.20** 406	**87.55** 427	**10.68** 3.255	**20.76** 6.329
HZ 1180M B	**26.33** 557.3	**7,177.8** 980,180	**337.6** 18,150	**326.5** 17,555	**80.91** 395	**85.26** 416	**89.61** 438	**10.69** 3.258	**20.77** 6.332
HZ 1180M C	**27.86** 589.7	**7,736.8** 1,056,500	**361.3** 19,425	**348.9** 18,760	**85.75** 419	**90.28** 441	**94.81** 463	**10.75** 3.275	**20.90** 6.370
HZ 1180M D	**28.76** 608.7	**8,026.4** 1,096,060	**373.5** 20,080	**362.0** 19,465	**88.81** 434	**93.34** 456	**97.87** 478	**10.79** 3.287	**20.94** 6.382

* Referring outside of HZ®-M-flange (v_2), ** Referring outside of connector (v_3), *** Length of connectors = Length of AZ.

COMBINATION C 1

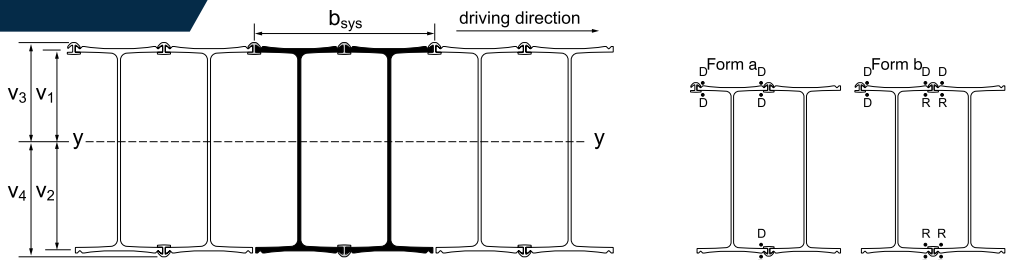


D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe

JD FIELDS & COMPANY, INC.	DIMENSIONS					PROPERTIES PER FOOT OF WALL					COATING AREA	
SECTION	b_{sys} in mm	v_1 in mm	v_2 in mm	v_3 in mm	v_4 in mm	Sectional Area in^2/ft cm^2/m	Mass lb/ft^2 kg/m^2	Moment of Inertia in^4/ft cm^4/m	*Elastic Section Modulus in^3/ft cm^3/m	**Elastic Section Modulus in^3/ft cm^3/m	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**17.09** 0.434	**11.52** 292.6	**12.72** 323.2	**12.63** 320.9	-	**35.78** 757.3	**121.77** 594.5	**3971.6** 542,340	**312.1** 16780	**314.3** 16900	**1.68** 0.513	**8.20** 2.500
HZ 880M A	**18.70** 0.475	**14.96** 379.9	**16.67** 423.5	**16.31** 414.3	-	**31.28** 662.1	**106.46** 519.8	**5939.0** 811,010	**356.2** 19150	**364.1** 19575	**1.81** 0.551	**9.85** 3.001
HZ 880M B	**18.70** 0.475	**15.13** 384.3	**16.66** 423.1	**16.41** 416.7	-	**34.37** 727.6	**116.98** 571.1	**6464.9** 882,820	**388.1** 20865	**394.0** 21185	**1.82** 0.554	**9.85** 3.003
HZ 880M C	**18.70** 0.475	**15.24** 387.1	**16.71** 424.3	**16.44** 417.5	-	**35.81** 758.1	**121.88** 595.1	**6836.8** 933,600	**409.2** 22000	**415.9** 22360	**1.82** 0.554	**9.85** 3.002
HZ 1080M A	**18.50** 0.470	**19.72** 500.8	**21.52** 546.6	**21.07** 535.2	-	**39.25** 830.8	**133.58** 652.2	**11646.2** 1,590,360	**541.2** 29095	**552.7** 29715	**1.79** 0.547	**11.28** 3.439
HZ 1080M B	**18.50** 0.470	**19.90** 505.5	**21.57** 547.9	**21.14** 536.9	-	**41.58** 880.0	**141.49** 690.8	**12654.9** 1,728,110	**586.6** 31540	**598.6** 32185	**1.80** 0.548	**11.28** 3.438
HZ 1080M C	**18.50** 0.470	**20.10** 510.5	**21.61** 548.9	**21.22** 538.9	-	**45.62** 965.7	**155.26** 758.0	**13825.6** 1,887,970	**639.7** 34395	**651.7** 35035	**1.80** 0.549	**11.29** 3.440
HZ 1080M D	**18.50** 0.470	**20.31** 515.8	**21.72** 551.6	**21.27** 540.2	-	**48.93** 1035.8	**166.53** 813.1	**14985.9** 2,046,410	**690.1** 37100	**704.6** 37880	**1.80** 0.550	**11.29** 3.440
HZ 1180M A	**18.70** 0.475	**20.50** 520.8	**21.84** 554.6	**21.31** 541.2	-	**51.55** 1091.2	**175.45** 856.6	**15849.3** 2,164,320	**725.9** 39025	**743.8** 39990	**1.81** 0.551	**11.29** 3.441
HZ 1180M B	**18.70** 0.475	**20.65** 524.5	**21.85** 554.9	**21.37** 542.9	-	**53.27** 1127.6	**181.29** 885.2	**16625.5** 2,270,310	**760.9** 40910	**777.9** 41820	**1.82** 0.553	**11.31** 3.447
HZ 1180M C	**18.70** 0.475	**20.58** 522.7	**22.07** 560.7	**21.34** 542.0	-	**56.34** 1192.6	**191.75** 936.2	**17709.1** 2,418,290	**802.2** 43130	**829.8** 44615	**1.83** 0.558	**11.37** 3.465
HZ 1180M D	**18.70** 0.475	**20.78** 527.8	**22.03** 559.6	**21.46** 545.1	-	**58.89** 1246.5	**200.40** 978.5	**18567.9** 2,535,560	**842.8** 45310	**865.2** 46515	**1.85** 0.564	**11.39** 3.472

* Referring outside of HZ®-M-flange (v_2). ** Referring outside of connector (v_3).

COMBINATION C 23



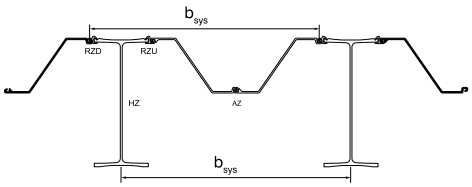
D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe
R = continuous weld, a = 0.236" (6 mm), length 19.68" (500 mm) at top and toe only

JD FIELDS & COMPANY, INC.	DIMENSIONS					PROPERTIES PER FOOT OF WALL					COATING AREA	
SECTION	b_{sys} in mm	v_1 in mm	v_2 in mm	v_3 in mm	v_4 in mm	Sectional Area in^2/ft cm^2/m	Mass lb/ft^2 kg/m^2	Moment of Inertia in^4/ft cm^4/m	*Elastic Section Modulus in^3/ft cm^3/m	**Elastic Section Modulus in^3/ft cm^3/m	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**34.17** 0.868	**11.76** 298.7	**12.48** 317.0	**12.88** 327.1	**13.59** 345.3	**36.50** 772.5	**124.21** 606.4	**4080.4** 557,210	**327 .0** 17580	**300.1** 16135	**3.27** 0.998	**9.82** 2.992
HZ 880M A	**37.40** 0.950	**15.31** 389.0	**16.32** 414.4	**16.67** 423.4	**17.67** 448.9	**31.97** 676.7	**108.81** 531.2	**6126.0** 836,540	**375 .4** 20185	**346.6** 18635	**3.53** 1.074	**11.62** 3.542
HZ 880M B	**37.40** 0.950	**15.44** 392.1	**16.35** 415.3	**16.72** 424.6	**17.63** 447.7	**35.03** 741.5	**119.21** 582.0	**6641.1** 906,880	**406 .2** 21840	**376.7** 20255	**3.55** 1.081	**11.64** 3.549
HZ 880M C	**37.40** 0.950	**15.54** 394.6	**16.41** 416.8	**16.73** 425.1	**17.61** 447.3	**36.47** 772.0	**124.12** 606.0	**7012.4** 957,590	**427 .3** 22975	**398.2** 21410	**3.54** 1.080	**11.64** 3.548
HZ 1080M A	**37.01** 0.940	**20.09** 510.3	**21.14** 537.1	**21.45** 544.8	**22.50** 571.5	**39.95** 845.7	**135.97** 663.8	**11964.3** 1,633,800	**565 .8** 30420	**531.8** 28590	**3.50** 1.066	**13.04** 3.976
HZ 1080M B	**37.01** 0.940	**20.24** 514.1	**21.23** 539.3	**21.48** 545.5	**22.47** 570.8	**42.24** 894.1	**143.75** 701.9	**12954.8** 1,769,060	**610 .1** 32800	**576.5** 30995	**3.51** 1.068	**13.05** 3.978
HZ 1080M C	**37.01** 0.940	**20.40** 518.2	**21.31** 541.2	**21.52** 546.6	**22.43** 569.6	**46.28** 979.7	**157.51** 769.1	**14122.5** 1,928,510	**662 .8** 35635	**629.7** 33855	**3.52** 1.072	**13.06** 3.981
HZ 1080M D	**37.01** 0.940	**20.59** 523.0	**21.43** 544.4	**21.55** 547.4	**22.39** 568.8	**49.60** 1049.8	**168.79** 824.1	**15280.9** 2,086,700	**712 .9** 38330	**682.3** 36685	**3.52** 1.073	**13.07** 3.982
HZ 1180M A	**37.40** 0.950	**20.77** 527.6	**21.57** 547.8	**21.57** 548.0	**22.37** 568.3	**52.21** 1105.1	**177.69** 867.5	**16141.6** 2,204,240	**748 .4** 40235	**721.5** 38790	**3.52** 1.074	**13.07** 3.984
HZ 1180M B	**37.40** 0.950	**20.86** 529.9	**21.64** 549.5	**21.59** 548.3	**22.36** 568.0	**53.81** 1139.1	**183.14** 894.2	**16862.8** 2,302,720	**779 .4** 41905	**754.1** 40545	**3.54** 1.078	**13.11** 3.995
HZ 1180M C	**37.40** 0.950	**20.87** 530.2	**21.78** 553.2	**21.63** 549.5	**22.54** 572.5	**57.14** 1209.4	**194.45** 949.4	**18058.9** 2,466,050	**829 .1** 44575	**801.2** 43075	**3.57** 1.087	**13.18** 4.017
HZ 1180M D	**37.40** 0.950	**20.97** 532.7	**21.84** 554.8	**21.65** 549.9	**22.52** 572.0	**59.44** 1258.2	**202.29** 987.7	**18800.1** 2,567,270	**860 .8** 46280	**834.8** 44880	**3.61** 1.099	**13.21** 4.025

* Referring outside of HZ®-M-flange (v_2). ** Referring outside of connector (v_3).

DEFINITION OF THE HZ®-M STEEL WALL SYSTEM

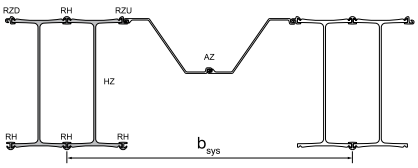
Single Beam



designation of the king pile: HZ 880M A
2 connectors 1 RZD + 1 RZU: 12
AZ 20-800

- HZ 880M A: 1 king pile
- 12: 2 connectors 1 RZD + 1 RZU
- AZ 20-800: intermediary double pile

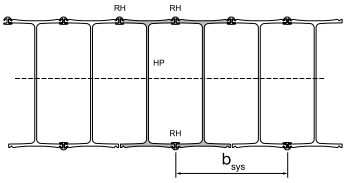
Double Beam



designation of the king pile: HZ 1180M D
6 connectors 1 RZD / 1 RZU / 4 RH: 26
AZ 25-800

- HZ 1180M D: 2 king piles HZ 1180M D
- 26: 6 connectors 1 RZD / 1 RZU / 4 RH
- AZ 25-800: intermediary double pile

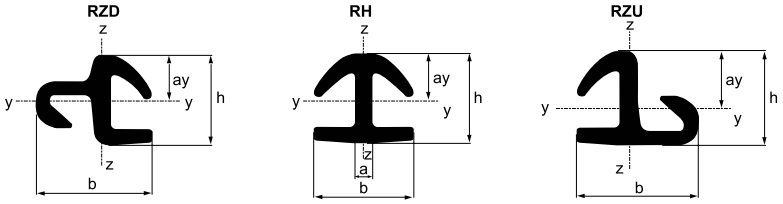
Continuous Beam



designation of the king pile: HZ 1080M B
3 RH connectors: C23

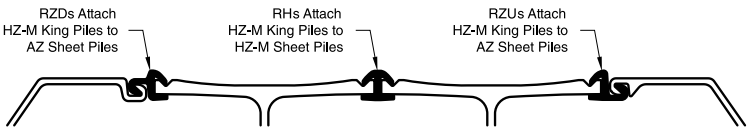
- HZ 1080M B: 2 king piles HZ 1080M B
- C23: 3 RH connectors

CONNECTORS



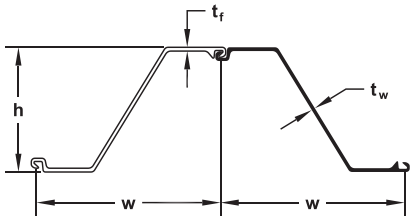
SECTION	DIMENSIONS h in mm	b in mm	a in mm	ay in mm	Suitable King Pile	Sectional Area in² cm²	Mass lb/ft kg/m	MOMENT OF INERTIA y-y in⁴ cm⁴	z-z in⁴ cm⁴	ELASTIC SECTION MODULUS y-y in³ cm³	z-z in³ cm³	COATED AREA Waterside ft²/ft m²/m	Landside ft²/ft m²/m
RZD 16	**2.43** 61.8	**3.19** 80.5	-	**1.24** 31.5	HZ 880M / 1080M / 1180M A-B	**3.21** 20.7	**10.89** 16.2	**1.4** 57	**2.3** 94	**1.1** 18	1.3 22	**0.39** 0.12	**0.20** 0.06
RZU 16	**2.43** 61.8	**3.19** 80.5	-	**1.51** 38.3	HZ 880M / 1080M / 1180M A-B	**3.16** 20.4	**10.82** 16.0	**1.6** 68	**2.3** 94	**1.1** 18	1.3 22	**0.26** 0.08	**0.33** 0.10
RH 16	**2.43** 61.8	**2.69** 68.2	**0.48** 12.2	**1.28** 32.5	HZ 880M / 1080M / 1180M A-B	**3.12** 20.1	**10.75** 15.8	**2.0** 83	**1.3** 54	**1.5** 25	1.0 16	**0.33** 0.10	**0.30** 0.09
RZD 18	**2.65** 67.3	**3.35** 85.0	-	**1.41** 35.9	HZ 1180M C-D	*3.57* 23.0	**12.16** 18.0	**1.9** 78	**2.6** 110	**1.3** 22	1.5 25	**0.39** 0.12	**0.23** 0.07
RZU 18	**2.65** 67.3	**3.35** 85.0	-	**1.66** 42.1	HZ 1180M C-D	**3.50** 22.6	**12.03** 17.8	**2.2** 92	**2.6** 110	**1.3** 22	1.5 25	**0.30** 0.09	**0.33** 0.10
RH 20	**2.65** 67.3	**3.12** 79.2	**0.56** 14.2	**1.44** 36.5	HZ 1180M C-D	**3.91** 25.2	**13.44** 19.8	**2.9** 122	**2.1** 88	**2.0** 33	1.3 22	**0.36** 0.11	**0.33** 0.10

Without other specifications, all the connectors are offered in Grade S 430 GP.



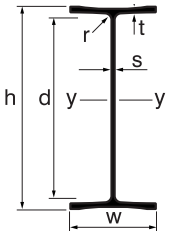
HZ®-M STEEL WALL SYSTEMS

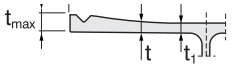
AZ - INTERMEDIARY PILES

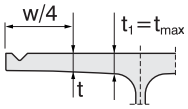


JD FIELDS & COMPANY, INC.	Width (w)	Height (h)	THICKNESS		Cross Sectional Area	WEIGHT		SECTION MODULUS		Moment of Inertia	COATING AREA	
			Flange (t_f)	Web (t_w)		Single Pile	Wall Area	Elastic	Plastic		Both Sides	Wall Surface
SECTION	in mm	in mm	in mm	in mm	in^2/ft cm^2/m	lb/ft kg/m	lb/ft^2 kg/m^2	in^3/ft cm^3/m	in^3/ft cm^3/m	in^4/ft cm^4/m	ft^2/ of single m^2/m^2	ft^2/ft m^2/m^2
AZ 12-770	30.31 770	13.52 344	0.335 8.5	0.335 8.5	5.67 120.1	48.78 72.6	19.31 94.3	23.2 1245	27.5 1480	156.9 21430	6.07 1.85	1.20 1.20
AZ 13-770	30.31 770	13.54 344	0.354 9.0	0.354 9.0	5.94 125.8	51.14 76.1	20.24 98.8	24.2 1300	28.8 1546	163.7 22360	6.07 1.85	1.20 1.20
AZ 14-770	30.31 770	13.56 345	0.375 9.5	0.375 9.5	6.21 131.5	53.42 79.5	21.14 103.2	25.2 1355	30.0 1611	170.6 23300	6.07 1.85	1.20 1.20
AZ 17-700	27.56 700	16.52 420	0.335 8.5	0.335 8.5	6.28 133.0	49.12 73.1	21.38 104.4	32.2 1730	37.7 2027	265.3 36230	6.10 1.86	1.33 1.33
AZ 18-700	27.56 700	16.54 420	0.354 9.0	0.354 9.0	6.58 139.2	51.41 76.5	22.39 109.3	33.5 1800	39.4 2116	276.8 37800	6.10 1.86	1.33 1.33
AZ 19-700	27.56 700	16.56 421	0.375 9.5	0.375 9.5	6.88 145.6	53.76 80.0	23.35 114.3	34.8 1870	41.0 2206	288.4 39380	6.10 1.86	1.33 1.33
AZ 20-700	27.56 700	16.57 421	0.394 10.0	0.394 10.0	7.18 152.0	56.11 83.5	24.43 119.3	36.2 1945	42.7 2296	300.0 40960	6.10 1.86	1.33 1.33
AZ 18-800	31.5 800	17.68 449	0.335 8.5	0.335 8.5	6.07 128.6	54.26 80.7	20.67 100.9	34.2 1840	39.7 2135	302.6 41320	6.82 2.08	1.30 1.30
AZ 20-800	31.5 800	17.72 450	0.375 9.5	0.375 9.5	6.66 141.0	59.50 88.6	22.67 110.7	37.2 2000	43.3 2330	329.9 45050	6.82 2.08	1.30 1.30
AZ 22-800	31.5 800	17.76 451	0.413 10.5	0.413 10.5	7.25 153.5	64.77 96.4	24.68 120.5	40.3 2165	47.0 2525	357.3 48790	6.82 2.08	1.30 1.30
AZ 23-800	31.50 800	18.66 474	0.453 11.5	0.354 9.0	7.12 150.6	63.56 94.6	24.22 118.2	43.3 2330	49.9 2680	404.6 55260	6.94 2.11	1.32 1.32
AZ 25-800	31.50 800	18.70 475	0.492 12.5	0.394 10.0	7.71 163.3	68.91 102.6	26.26 128.2	46.5 2500	53.8 2890	435.1 59410	6.94 2.11	1.32 1.32
AZ 27-800	31.50 800	18.74 476	0.531 13.5	0.433 11.0	8.31 176.0	74.26 110.5	28.29 138.1	49.7 2670	57.6 3100	465.5 63570	6.94 2.11	1.32 1.32
AZ 24-700	27.56 700	18.07 459	0.441 11.2	0.441 11.2	8.23 174.1	64.30 95.7	28.00 136.7	45.2 2430	53.5 2867	408.8 55820	6.33 1.93	1.38 1.38
AZ 26-700	27.56 700	18.11 460	0.480 12.2	0.480 12.2	8.84 187.2	69.12 102.9	30.10 146.9	48.4 2600	57.1 3070	437.3 59720	6.33 1.93	1.38 1.38
AZ 28-700	27.56 700	18.15 461	0.520 13.2	0.520 13.2	9.46 200.2	73.93 110.0	32.19 157.2	51.3 2760	60.9 3273	465.9 63620	6.33 1.93	1.38 1.38
AZ 28-750	29.53 750.0	20.04 509.0	0.472 12.00	0.394 10.00	8.09 171.2	67.73 100.80	27.53 134.40	52.3 2810	60.3 3245	523.9 71540	6.93 2.11	1.41 1.41
AZ 30-750	29.53 750.0	20.08 510.0	0.512 13.00	0.433 11.00	8.73 184.7	73.08 108.80	29.70 145.00	55.9 3005	64.8 3485	561.5 76670	6.93 2.11	1.41 1.41
AZ 32-750	29.53 750.0	20.12 511.0	0.551 14.00	0.472 12.00	9.37 198.3	78.44 116.70	31.88 155.60	59.5 3200	69.2 3720	599.0 81800	6.93 2.11	1.41 1.41
AZ 36-700N	27.56 700	19.65 499	0.591 15.0	0.441 11.2	10.20 215.9	79.72 118.6	34.71 169.5	66.8 3590	76.4 4110	656.2 89610	6.73 2.05	1.47 1.47
AZ 38-700N	27.56 700	19.69 500	0.630 16.0	0.480 12.2	10.87 230.0	84.94 126.4	36.98 180.6	70.6 3795	81.1 4360	694.5 94840	6.73 2.05	1.47 1.47
AZ 40-700N	27.56 700	19.72 501	0.669 17.0	0.520 13.2	11.54 244.2	90.16 134.2	39.26 191.7	74.3 3995	85.7 4605	732.9 100080	6.73 2.05	1.47 1.47
AZ 42-700N	27.56 700	19.65 499	0.709 18.0	0.551 14.0	12.22 258.7	95.51 142.1	41.59 203.1	78.2 4205	90.3 4855	768.4 104930	6.75 2.06	1.47 1.47
AZ 44-700N	27.56 700	19.69 500	0.748 19.0	0.591 15.0	12.89 272.8	100.74 149.9	43.87 214.2	81.9 4405	95.0 5105	806.6 110150	6.75 2.06	1.47 1.47
AZ 46-700N	27.56 700	19.72 501	0.787 20.0	0.630 16.0	13.56 287.0	105.97 157.7	46.14 225.3	85.7 4605	99.5 5350	844.9 115370	6.75 2.06	1.47 1.47
AZ 48-700	27.56 700.0	19.80 503.0	0.866 22.00	0.591 15.00	13.63 288.4	106.49 158.50	46.37 226.40	88.4 4755	102.1 5490	876.2 119650	6.70 2.04	1.46 1.46
AZ 50-700	27.56 700.0	19.84 504.0	0.906 23.00	0.630 16.00	14.30 302.6	111.73 166.30	48.65 237.50	92.2 4955	106.7 5735	914.6 124890	6.70 2.04	1.46 1.46
AZ 52-700	27.56 700.0	19.88 505.0	0.945 24.00	0.669 17.00	14.97 317.0	116.97 174.10	50.93 248.70	95.9 5155	111.3 5985	953.0 130140	6.70 2.04	1.46 1.46

HZ®-M - KING PILE

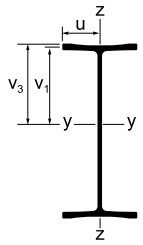






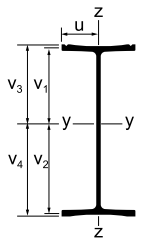
SECTION	DIMENSIONS									Suitable Connector	
	h	h_1	d	w	t_1	t_{max}	t	s	r		
	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm		
HZ 630M	**24.86** 631.4	**24.24** 615.7	**20.08** 510.1	**16.54** 420.0	**0.89** 22.7	**1.14** 29.0	**0.67** 16.9	**0.63** 16.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 880M A	**32.73** 831.3	**31.63** 803.4	**28.72** 729.4	**18.03** 458.0	**0.67** 17.0	**1.14** 29.0	**0.74** 18.9	**0.51** 13.0	**0.79** 20.0	RZD/RZU 16	RH 16
HZ 880M B	**32.73** 831.3	**31.79** 807.4	**28.72** 729.4	**18.11** 460.0	**0.75** 19.0	**1.14** 29.0	**0.82** 20.9	**0.59** 15.0	**0.79** 20.0	RZD/RZU 16	RH 16
HZ 880M C	**32.73** 831.3	**31.94** 811.4	**28.72** 729.4	**18.11** 460.0	**0.83** 21.0	**1.14** 29.0	**0.90** 22.9	**0.59** 15.0	**0.79** 20.0	RZD/RZU 16	RH 16
HZ 1080M A	**42.33** 1075.3	**41.24** 1047.4	**37.23** 945.6	**17.87** 454.0	**0.81** 20.7	**1.14** 29.0	**0.77** 19.6	**0.63** 16.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 1080M B	**42.33** 1075.3	**41.47** 1053.4	**37.23** 945.6	**17.87** 454.0	**0.93** 23.7	**1.14** 29.0	**0.89** 22.6	**0.63** 16.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 1080M C	**42.33** 1075.3	**41.71** 1059.4	**37.23** 945.6	**17.95** 456.0	**1.05** 26.7	**1.14** 29.0	**1.01** 25.7	**0.71** 18.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 1080M D	**42.33** 1075.3	**42.02** 1067.4	**37.23** 945.6	**17.99** 457.0	**1.21** 30.7	**1.21** 30.7	**1.17** 29.7	**0.75** 19.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 1180M A	**42.34** 1075.4	-	**37.23** 945.6	**18.03** 458.0	**1.37** 34.7	**1.36** 34.7	**1.22** 31.0	**0.79** 20.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 1180M B	**42.50** 1079.4	-	**37.23** 945.6	**18.03** 458.0	**1.44** 36.7	**1.44** 36.7	**1.30** 33.0	**0.79** 20.0	**1.18** 30.0	RZD/RZU 16	RH 16
HZ 1180M C	**42.65** 1083.4	-	**37.23** 945.6	**18.07** 459.0	**1.52** 38.7	**1.52** 38.7	**1.38** 35.0	**0.83** 21.0	**1.18** 30.0	RZD/RZU 18	RH 20
HZ 1180M D	**42.81** 1087.4	-	**37.23** 945.6	**18.11** 460.0	**1.60** 40.7	**1.60** 40.7	**1.46** 37.0	**0.87** 22.0	**1.18** 30.0	RZD/RZU 18	RH 20

SOLUTION 100



SECTION	PROPERTIES PER SOLUTION													Coating Area	
	Dimensions					Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus					
	v_1	v_2	v_3	v_4	u			y-y	z-z	y-y*	y-y**	z-z			
	in mm	in mm	in mm	in mm	in mm	in^2 cm^2	lb/ft kg/m	in^4 cm^4	in^4 cm^4	in^3 cm^3	in^3 cm^3	in^3 cm^3	Waterside ft^2/ft m^2/m	Landside ft^2/ft m^2/m
HZ 630M	**12.12** 307.9	-	**12.43** 315.7	-	**8.27** 210.0	**48.37** 312.0	**164.59** 244.9	**5306.2** 220,860	**822.2** 34,220	**437.7** 7,175	-	**99.4** 1,630	**1.38** 0.421	**7.97** 2.430
HZ 880M A	**15.82** 401.7	-	**16.36** 415.7	-	**9.02** 229.0	**45.82** 295.6	**155.92** 232.0	**8571.4** 356,770	**960.8** 39,990	**542.0** 8,880	-	**106.6** 1,745	**1.51** 0.459	**9.73** 2.966
HZ 880M B	**15.89** 403.7	-	**16.36** 415.7	-	**9.06** 230.0	**50.87** 328.2	**173.13** 257.6	**9435.7** 392,750	**1027.5** 42,770	**593.7** 9,730	-	**113.5** 1,860	**1.51** 0.461	**9.74** 2.967
HZ 880M C	**15.97** 405.7	-	**16.36** 415.7	-	**9.06** 230.0	**53.11** 342.7	**180.76** 269.0	**10012.7** 416,760	**1065.5** 44,350	**626.9** 10,275	-	**117.7** 1,930	**1.51** 0.461	**9.73** 2.967
HZ 1080M A	**20.62** 523.7	-	**21.17** 537.7	-	**8.94** 227.0	**57.63** 371.8	**196.13** 291.9	**16805.3** 699,490	**944.7** 39,320	**815.1** 13,355	-	**105.7** 1,730	**1.49** 0.455	**11.17** 3.403
HZ 1080M B	**20.74** 526.7	-	**21.17** 537.7	-	**8.94** 227.0	**61.26** 395.2	**208.46** 310.2	**18373.8** 764,780	**1016.2** 42,300	**886.1** 14,520	-	**113.7** 1,865	**1.49** 0.455	**11.17** 3.403
HZ 1080M C	**20.85** 529.7	-	**21.17** 537.7	-	**8.98** 228.0	**67.77** 437.2	**230.62** 343.2	**20257.8** 843,200	**1079.8** 44,950	**971.4** 15,920	-	**120.3** 1,970	**1.50** 0.457	**11.17** 3.405
HZ 1080M D	**21.01** 533.7	-	**21.17** 537.7	-	**9.00** 228.5	**73.04** 471.2	**248.56** 369.9	**22093.2** 919,590	**1127.5** 46,930	**1051.5** 17,230	-	**125.3** 2,055	**1.50** 0.457	**11.17** 3.405
HZ 1180M A	**21.17** 537.7	-	**21.17** 537.7	-	**9.02** 229.0	**77.26** 498.4	**262.92** 391.3	**23479.2** 977,280	**1151.8** 47,940	**1109.1** 18,175	-	**127.8** 2,095	**1.50** 0.458	**11.18** 3.406
HZ 1180M B	**21.25** 539.7	-	**21.25** 539.7	-	**9.02** 229.0	**80.09** 516.7	**272.57** 405.6	**24755.0** 1,030,390	**1228.6** 51,140	**1165.1** 19,090	-	**136.3** 2,235	**1.50** 0.458	**11.20** 3.414
HZ 1180M C	**21.33** 541.7	-	**21.33** 541.7	-	**9.04** 229.5	**84.61** 545.9	**287.95** 428.5	**26296.4** 1,094,540	**1314.5** 54,720	**1233.0** 20,205	-	**145.5** 2,385	**1.51** 0.459	**11.23** 3.423
HZ 1180M D	**21.41** 543.7	-	**21.41** 543.7	-	**9.06** 230.0	**89.14** 575.1	**303.37** 451.5	**27852.9** 1,159,330	**1401.5** 58,340	**1301.2** 21,325	-	**154.8** 2,535	**1.53** 0.466	**11.24** 3.426

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

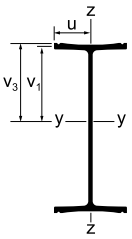


SOLUTION 102

SECTION	PROPERTIES PER SOLUTION													Coating Area	
	Dimensions					Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus					
	v_1	v_2	v_3	v_4	u			y-y	z-z	y-y*	y-y**	z-z		Waterside	Landside
	in mm	in mm	in mm	in mm	in mm	in^2 cm^2	lb/ft kg/m	in^4 cm^4	in^4 cm^4	in^3 cm^3	in^3 cm^3	in^3 cm^3		ft^2/ft m^2/m	ft^2/ft m^2/m
HZ 630M	**12.26** 311.4	**11.98** 304.4	**12.57** 319.2	**12.29** 312.2	**8.27** 210.0	**47.83** 308.6	**162.77** 242.2	**5224.5** 217,460	**793.1** 33010	**426.2** 6,985	-	**95.9** 1,570		**1.44** 0.440	**7.97** 2.430
HZ 880M A	**15.99** 406.2	**15.64** 397.2	**16.54** 420.1	**16.19** 411.2	**9.02** 229.0	**45.32** 292.4	**154.24** 229.5	**8441.1** 351,350	**928.4** 38640	**527.9** 8,650	-	**103.0** 1,685		**1.57** 0.478	**9.73** 2.966
HZ 880M B	**16.07** 408.1	**15.72** 399.3	**16.54** 420.0	**16.19** 411.3	**9.06** 230.0	**50.33** 324.7	**171.30** 254.9	**9293.2** 386,810	**991.9** 41280	**578.4** 9,480	-	**109.5** 1,795		**1.58** 0.481	**9.74** 2.967
HZ 880M C	**16.14** 409.9	**15.81** 401.5	**16.53** 419.9	**16.20** 411.4	**9.06** 230.0	**52.58** 339.2	**178.93** 266.3	**9870.3** 410,830	**1029.8** 42870	**611.6** 10,025	-	**113.7** 1,865		**1.58** 0.480	**9.73** 2.967
HZ 1080M A	**20.80** 528.2	**20.44** 519.2	**21.34** 542.2	**20.99** 533.1	**8.94** 227.0	**57.15** 368.7	**194.49** 289.4	**16590.8** 690,560	**913.4** 38020	**797.8** 13,075	-	**102.2** 1,675		**1.55** 0.473	**11.17** 3.403
HZ 1080M B	**20.92** 531.4	**20.55** 522.0	**21.35** 542.4	**20.98** 532.9	**8.94** 227.0	**60.72** 391.7	**206.63** 307.5	**18134.7** 754,830	**981.6** 40860	**866.8** 14,205	-	**109.8** 1,800		**1.56** 0.475	**11.17** 3.403
HZ 1080M C	**21.02** 534.0	**20.69** 525.4	**21.34** 541.9	**21.00** 533.4	**8.98** 228.0	**67.23** 433.7	**228.79** 340.5	**20018.9** 833,250	**1044.9** 43490	**952.3** 15,605	-	**116.4** 1,910		**1.56** 0.476	**11.17** 3.405
HZ 1080M D	**21.17** 537.7	**20.86** 529.7	**21.32** 541.6	**21.01** 533.7	**9.00** 228.5	**72.50** 467.7	**246.73** 367.2	**21854.4** 909,650	**1092.3** 45470	**1032.5** 16,920	-	**121.4** 1,990		**1.56** 0.477	**11.17** 3.405
HZ 1180M A	**21.32** 541.5	**21.02** 533.9	**21.32** 541.5	**21.02** 533.9	**9.02** 229.0	**76.72** 494.9	**261.08** 388.5	**23238.6** 967,270	**1116.2** 46460	**1090.1** 17,865	-	**123.8** 2,030		**1.57** 0.477	**11.18** 3.406
HZ 1180M B	**21.44** 544.5	**21.06** 534.9	**21.44** 544.5	**21.06** 534.9	**9.02** 229.0	**79.37** 512.1	**270.13** 402.0	**24433.5** 1,017,000	**1181.4** 49170	**1139.7** 18,675	-	**131.0** 2,145		**1.58** 0.481	**11.20** 3.414
HZ 1180M C	**21.51** 546.3	**21.15** 537.1	**21.51** 546.3	**21.15** 537.1	**9.04** 229.5	**83.89** 541.2	**285.51** 424.9	**25972.6** 1,081,070	**1267.1** 52740	**1207.6** 19,790	-	**140.2** 2,300		**1.58** 0.482	**11.23** 3.423
HZ 1180M D	**21.67** 550.4	**21.14** 537.0	**21.67** 550.4	**21.14** 537.0	**9.06** 230.0	**88.05** 568.1	**299.66** 445.9	**27355.6** 1,138,630	**1329.5** 55340	**1262.5** 20,690	-	**146.8** 2,405		**1.60** 0.487	**11.24** 3.426

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

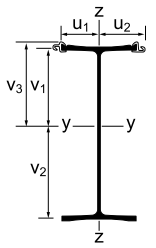
SOLUTION 104



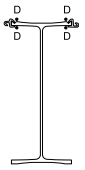
JD FIELDS & COMPANY, INC.	PROPERTIES PER SOLUTION													
	Dimensions					Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus			Coating Area	
SECTION	v_1 in mm	v_2 in mm	v_3 in mm	v_4 in mm	u in mm	in² cm²	lb/ft kg/m	y-y in⁴ cm⁴	z-z in⁴ cm⁴	y-y* in³ cm³	y-y** in³ cm³	z-z in³ cm³	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**12.12** 307.9	**12.12** 307.9	**12.43** 315.7	**12.43** 315.7	**8.27** 210.0	**47.29** 305.1	**160.94** 239.5	**5144.6** 214,130	**764.0** 31800	**424.4** 6,955	-	**92.4** 1,515	**1.44** 0.440	**8.04** 2.449
HZ 880M A	**15.82** 401.7	**15.82** 401.7	**16.36** 415.7	**16.36** 415.7	**9.02** 229.0	**44.83** 289.2	**152.57** 227.0	**8313.6** 346,040	**895.9** 37290	**525.7** 8,615	-	**99.4** 1,630	**1.57** 0.478	**9.79** 2.984
HZ 880M B	**15.89** 403.7	**15.89** 403.7	**16.36** 415.7	**16.36** 415.7	**9.06** 230.0	**49.80** 321.3	**169.47** 252.2	**9153.7** 381,010	**956.2** 39800	**575.9** 9,440	-	**105.6** 1,730	**1.58** 0.481	**9.80** 2.987
HZ 880M C	**15.97** 405.7	**15.97** 405.7	**16.36** 415.7	**16.36** 415.7	**9.06** 230.0	**52.04** 335.7	**177.10** 263.6	**9730.7** 405,030	**994.2** 41380	**609.2** 9,985	-	**109.8** 1,800	**1.58** 0.480	**9.80** 2.987
HZ 1080M A	**20.62** 523.7	**20.62** 523.7	**21.17** 537.7	**21.17** 537.7	**8.94** 227.0	**56.67** 365.6	**192.84** 287.0	**16379.9** 681,790	**882.1** 36720	**794.4** 13,020	-	**98.7** 1,620	**1.55** 0.473	**11.23** 3.421
HZ 1080M B	**20.74** 526.7	**20.74** 526.7	**21.17** 537.7	**21.17** 537.7	**8.94** 227.0	**60.18** 388.3	**204.80** 304.8	**17899.8** 745,050	**947.0** 39420	**863.2** 14,145	-	**106.0** 1,735	**1.56** 0.475	**11.23** 3.423
HZ 1080M C	**20.85** 529.7	**20.85** 529.7	**21.17** 537.7	**21.17** 537.7	**8.98** 228.0	**66.69** 430.3	**226.96** 337.8	**19783.7** 823,460	**1009.9** 42040	**948.7** 15,545	-	**112.5** 1,845	**1.56** 0.476	**11.23** 3.424
HZ 1080M D	**21.01** 533.7	**21.01** 533.7	**21.17** 537.7	**21.17** 537.7	**9.00** 228.5	**71.96** 464.3	**244.90** 364.4	**21619.1** 899,860	**1057.2** 44000	**1028.9** 16,860	-	**117.5** 1,925	**1.56** 0.477	**11.24** 3.425
HZ 1180M A	**21.17** 537.7	**21.17** 537.7	**21.17** 537.7	**21.17** 537.7	**9.02** 229.0	**76.17** 491.4	**259.23** 385.8	**23001.4** 957,390	**1080.6** 44980	**1086.6** 17,805	-	**119.9** 1,965	**1.57** 0.477	**11.24** 3.426
HZ 1180M B	**21.25** 539.7	**21.25** 539.7	**21.25** 539.7	**21.25** 539.7	**9.02** 229.0	**78.66** 507.5	**267.68** 398.4	**24117.8** 1,003,860	**1134.2** 47210	**1135.1** 18,600	-	**125.8** 2,060	**1.58** 0.481	**11.28** 3.437
HZ 1180M C	**21.33** 541.7	**21.33** 541.7	**21.33** 541.7	**21.33** 541.7	**9.04** 229.5	**83.17** 536.6	**283.06** 421.2	**25654.4** 1,067,820	**1219.6** 50760	**1202.9** 19,710	-	**135.0** 2,210	**1.58** 0.482	**11.31** 3.446
HZ 1180M D	**21.41** 543.7	**21.41** 543.7	**21.41** 543.7	**21.41** 543.7	**9.06** 230.0	**86.96** 561.0	**295.94** 440.4	**26870.5** 1,118,440	**1257.5** 52340	**1255.3** 20,570	-	**138.9** 2,275	**1.60** 0.487	**11.31** 3.447

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

SOLUTION 12



Delivery Form



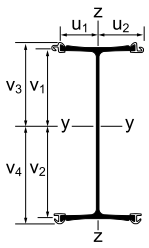
D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe

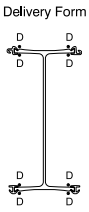
R = continuous weld, a = 0.236" (6 mm), length 19.68" (500 mm) at top and toe only

JD FIELDS & COMPANY, INC.	PROPERTIES PER SOLUTION														
	Dimensions						Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus			Coating Area	
SECTION	v_1 in mm	v_2 in mm	v_3 in mm	v_4 in mm	u_1 in mm	u_2 in mm	in² cm²	lb/ft kg/m	y-y in⁴ cm⁴	z-z in⁴ cm⁴	y-y* in³ cm³	y-y** in³ cm³	z-z in³ cm³	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**10.85** 275.5	**13.39** 340.2	**11.96** 303.8	-	**8.26** 209.9	**10.39** 263.9	**54.20** 349.7	**184.45** 274.5	**6036.6** 251,260	**1282.9** 53400	**450.7** 7,385	**504.8** 8270	**123.5** 2,025	**1.91** 0.582	**8.29** 2.527
HZ 880M A	**14.02** 356.2	**17.61** 447.2	**15.37** 390.5	-	**9.01** 228.9	**11.14** 282.9	**51.70** 333.5	**175.93** 261.8	**9868.8** 410,770	**1504.9** 62640	**560.5** 9,185	**641.9** 10520	**135.1** 2,215	**2.04** 0.621	**9.90** 3.017
HZ 880M B	**14.27** 362.5	**17.51** 444.9	**15.55** 394.9	-	**9.05** 229.9	**11.18** 283.9	**56.71** 365.8	**192.98** 287.2	**10738.1** 446,960	**1573.2** 65480	**613.1** 10,045	**690.8** 11320	**140.8** 2,305	**2.05** 0.624	**9.91** 3.019
HZ 880M C	**14.41** 366.1	**17.53** 445.3	**15.61** 396.4	-	**9.05** 229.9	**11.18** 283.9	**58.95** 380.3	**200.61** 298.5	**11320.8** 471,210	**1611.2** 67060	**645.7** 10,580	**725.3** 11885	**144.2** 2,360	**2.05** 0.624	**9.90** 3.019
HZ 1080M A	**18.72** 475.6	**22.51** 571.8	**20.07** 509.9	-	**8.93** 226.9	**11.06** 280.9	**63.52** 409.8	**216.17** 321.7	**19067.5** 793,650	**1480.5** 61620	**846.9** 13,880	**949.9** 15565	**133.9** 2,195	**2.02** 0.617	**11.34** 3.455
HZ 1080M B	**18.96** 481.5	**22.51** 571.9	**20.19** 512.9	-	**8.93** 226.9	**11.06** 280.9	**67.09** 432.8	**228.32** 339.8	**20628.1** 858,610	**1548.7** 64460	**916.2** 15,015	**1021.7** 16740	**140.1** 2,295	**2.03** 0.618	**11.33** 3.455
HZ 1080M C	**19.23** 488.5	**22.48** 570.9	**20.35** 516.8	-	**8.97** 227.9	**11.10** 281.9	**73.60** 474.8	**250.48** 372.8	**22531.1** 937,820	**1616.7** 67290	**1002.5** 16,430	**1107.3** 18145	**145.7** 2,385	**2.03** 0.619	**11.34** 3.456
HZ 1080M D	**19.50** 495.3	**22.53** 572.1	**20.46** 519.6	-	**8.99** 228.4	**11.12** 282.4	**78.87** 508.8	**268.41** 399.4	**24379.5** 1,014,760	**1666.5** 69370	**1082.3** 17,735	**1191.9** 19530	**149.9** 2,455	**2.03** 0.620	**11.34** 3.457
HZ 1180M A	**19.73** 501.2	**22.61** 574.2	**20.53** 521.5	-	**9.01** 228.9	**11.14** 282.9	**83.09** 536.0	**282.76** 420.8	**25773.1** 1,072,760	**1692.8** 70460	**1140.1** 18,685	**1255.2** 20570	**152.0** 2,490	**2.04** 0.621	**11.34** 3.458
HZ 1180M B	**19.89** 505.3	**22.60** 574.1	**20.61** 523.6	-	**9.01** 228.9	**11.14** 282.9	**85.75** 553.2	**291.81** 434.3	**26985.0** 1,123,200	**1758.2** 73180	**1193.9** 19,565	**1309.0** 21450	**157.9** 2,585	**2.04** 0.622	**11.36** 3.462
HZ 1180M C	**19.90** 505.4	**22.76** 578.0	**20.66** 524.7	-	**9.03** 229.4	**11.16** 283.4	**90.96** 586.8	**309.55** 460.7	**28778.5** 1,197,860	**1897.2** 78970	**1264.6** 20,725	**1393.2** 22830	**170.1** 2,785	**2.08** 0.635	**11.39** 3.471
HZ 1180M D	**20.13** 511.2	**22.68** 576.2	**20.81** 528.5	-	**9.05** 229.9	**11.18** 283.9	**95.12** 613.7	**323.70** 481.7	**30194.1** 1,256,780	**1962.2** 81670	**1331.1** 21,815	**1451.1** 23780	**175.6** 2,875	**2.10** 0.641	**11.40** 3.476

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

SOLUTION 14





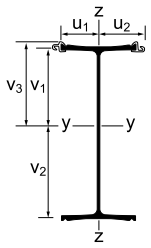
D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe

R = continuous weld, a = 0.236" (6 mm), length 19.68" (500 mm) at top and toe only

JD FIELDS & COMPANY, INC.	PROPERTIES PER SOLUTION														
	Dimensions						Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus			Coating Area	
SECTION	v_1 in mm	v_2 in mm	v_3 in mm	v_4 in mm	u_1 in mm	u_2 in mm	in² cm²	lb/ft kg/m	y-y in⁴ cm⁴	z-z in⁴ cm⁴	y-y* in³ cm³	y-y** in³ cm³	z-z in³ cm³	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**12.10** 307.5	**12.14** 308.3	**13.22** 335.7	**13.25** 336.6	**8.26** 209.9	**10.39** 263.9	**59.90** 386.5	**203.85** 303.4	**6939.7** 288,850	**1711.8** 71250	**571.8** 9,370	**523.7** 8580	**164.8** 2,700	**1.91** 0.582	**9.21** 2.808
HZ 880M A	**15.79** 401.1	**15.84** 402.4	**17.14** 435.4	**17.20** 436.8	**9.01** 228.9	**11.14** 282.9	**57.44** 370.6	**195.49** 290.9	**11486.0** 478,080	**2013.6** 83810	**725.1** 11,880	**667.9** 10945	**180.8** 2,965	**2.04** 0.621	**10.67** 3.253
HZ 880M B	**15.87** 403.1	**15.92** 404.3	**17.14** 435.4	**17.19** 436.8	**9.05** 229.9	**11.18** 283.9	**62.41** 402.6	**212.38** 316.1	**12326.1** 513,050	**2083.3** 86710	**774.4** 12,690	**716.9** 11745	**186.4** 3,055	**2.05** 0.624	**10.68** 3.256
HZ 880M C	**15.95** 405.1	**16.00** 406.3	**17.14** 435.5	**17.19** 436.7	**9.05** 229.9	**11.18** 283.9	**64.65** 417.1	**220.02** 327.4	**12903.1** 537,070	**2121.3** 88290	**806.7** 13,220	**750.4** 12300	**189.8** 3,110	**2.05** 0.624	**10.68** 3.255
HZ 1080M A	**20.59** 522.9	**20.65** 524.5	**21.94** 557.2	**22.00** 558.9	**8.93** 226.9	**11.06** 280.9	**69.28** 446.9	**235.76** 350.9	**21761.8** 905,800	**1981.3** 82470	**1053.9** 17,270	**989.0** 16205	**179.2** 2,935	**2.02** 0.617	**12.11** 3.690
HZ 1080M B	**20.71** 526.0	**20.77** 527.4	**21.94** 557.3	**22.00** 558.9	**8.93** 226.9	**11.06** 280.9	**72.79** 469.6	**247.72** 368.6	**23281.5** 969,050	**2046.2** 85170	**1121.2** 18,375	**1058.2** 17340	**185.0** 3,030	**2.03** 0.618	**12.11** 3.691
HZ 1080M C	**20.83** 529.0	**20.88** 530.4	**21.94** 557.3	**22.00** 558.8	**8.97** 227.9	**11.10** 281.9	**79.30** 511.6	**269.88** 401.6	**25165.6** 1,047,480	**2118.4** 88170	**1205.2** 19,750	**1143.9** 18745	**190.9** 3,130	**2.03** 0.619	**12.12** 3.693
HZ 1080M D	**20.99** 533.1	**21.04** 534.3	**21.94** 557.4	**22.00** 558.8	**8.99** 228.4	**11.12** 282.4	**84.57** 545.6	**287.81** 428.3	**27001.0** 1,123,870	**2170.3** 90340	**1283.5** 21,035	**1227.4** 20115	**195.2** 3,200	**2.03** 0.620	**12.12** 3.693
HZ 1180M A	**21.15** 537.1	**21.19** 538.3	**21.94** 557.4	**21.97** 558.1	**9.01** 228.9	**11.14** 282.9	**88.78** 572.8	**302.15** 449.6	**28383.2** 1,181,400	**2198.4** 91500	**1339.3** 21,945	**1291.7** 21170	**197.4** 3,235	**2.04** 0.621	**12.12** 3.694
HZ 1180M B	**21.22** 539.1	**21.27** 540.3	**21.95** 557.4	**22.00** 558.7	**9.01** 228.9	**11.14** 282.8	**91.27** 588.8	**310.60** 462.2	**29499.6** 1,227,870	**2251.9** 93730	**1386.8** 22,725	**1341.1** 21975	**202.2** 3,315	**2.04** 0.622	**12.13** 3.696
HZ 1180M C	**21.49** 545.9	**21.16** 537.5	**22.25** 565.2	**21.92** 556.8	**9.03** 229.4	**11.16** 283.4	**98.07** 632.7	**333.73** 496.7	**31982.3** 1,331,210	**2538.0** 105640	**1488.0** 24,385	**1437.2** 23550	**227.5** 3,730	**2.08** 0.635	**12.24** 3.730
HZ 1180M D	**21.57** 547.8	**21.25** 539.6	**22.25** 565.1	**21.93** 556.9	**9.05** 229.9	**11.18** 283.9	**101.85** 657.1	**346.61** 515.8	**33198.4** 1,381,830	**2581.4** 107440	**1539.4** 25,225	**1492.3** 24455	**231.0** 3,785	**2.10** 0.641	**12.26** 3.736

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

SOLUTION 124



Delivery Form



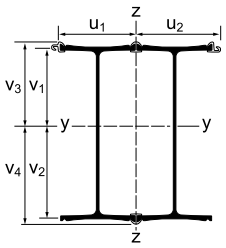
D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe

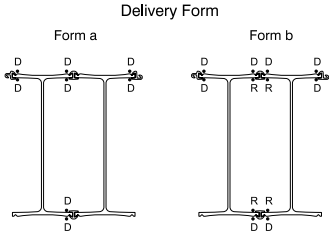
R = continuous weld, a = 0.236" (6 mm), length 19.68" (500 mm) at top and toe only

JD FIELDS & COMPANY, INC.	PROPERTIES PER SOLUTION														
	Dimensions						Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus			Coating Area	
SECTION	v_1 in mm	v_2 in mm	v_3 in mm	v_4 in mm	u_1 in mm	u_2 in mm	in² cm²	lb/ft kg/m	y-y in⁴ cm⁴	z-z in⁴ cm⁴	y-y* in³ cm³	y-y** in³ cm³	z-z in³ cm³	Waterside ft²/ft m²/m	Landside ft²/ft m²/m
HZ 630M	**10.71** 272.1	**13.53** 343.6	**11.82** 300.3	-	**8.26** 209.9	**10.39** 263.9	**53.66** 346.2	**182.65** 271.8	**5931.1** 247,130	**1252.6** 52190	**438.6** 7,190	**502.0** 8230	**120.8** 1,980	**1.91** 0.582	**8.35** 2.546
HZ 880M A	**13.85** 351.8	**17.78** 451.6	**15.20** 386.1	-	**9.01** 228.8	**11.14** 282.9	**51.20** 330.3	**174.25** 259.3	**9698.2** 404,090	**1471.0** 61290	**546.0** 8,950	**638.4** 10465	**132.1** 2,165	**2.04** 0.621	**9.90** 3.019
HZ 880M B	**14.10** 358.2	**17.69** 449.2	**15.37** 390.5	-	**9.05** 229.9	**11.18** 283.9	**56.17** 362.4	**191.18** 284.5	**10554.7** 439,780	**1536.0** 64000	**597.2** 9,790	**686.9** 11260	**137.6** 2,255	**2.05** 0.624	**9.91** 3.022
HZ 880M C	**14.25** 361.9	**17.70** 449.5	**15.44** 392.3	-	**9.05** 229.9	**11.18** 283.9	**58.40** 376.8	**198.78** 295.8	**11138.2** 464,090	**1573.9** 65580	**629.8** 10,325	**721.6** 11830	**140.9** 2,310	**2.05** 0.624	**9.91** 3.021
HZ 1080M A	**18.54** 470.8	**22.70** 576.6	**19.89** 505.1	-	**8.93** 226.9	**11.06** 280.9	**63.04** 406.7	**214.57** 319.3	**18793.0** 783,040	**1447.7** 60320	**828.4** 13,580	**945.5** 15500	**131.2** 2,150	**2.02** 0.617	**11.39** 3.473
HZ 1080M B	**18.76** 476.6	**22.71** 576.8	**20.00** 507.9	-	**8.93** 226.9	**11.06** 280.9	**66.56** 429.4	**226.46** 337.0	**20325.6** 846,900	**1512.5** 63020	**895.8** 14,685	**1017.2** 16675	**136.9** 2,245	**2.03** 0.618	**11.40** 3.474
HZ 1080M C	**19.06** 484.1	**22.65** 575.3	**20.17** 512.4	-	**8.97** 227.9	**11.10** 281.9	**73.07** 471.4	**248.64** 370.0	**22230.7** 926,280	**1580.2** 65840	**982.1** 16,100	**1102.9** 18080	**142.4** 2,335	**2.03** 0.619	**11.40** 3.476
HZ 1080M D	**19.34** 491.2	**22.69** 576.3	**20.30** 515.5	-	**8.99** 228.4	**11.12** 282.4	**78.34** 505.4	**266.58** 396.7	**24079.9** 1,003,330	**1629.6** 67900	**1062.0** 17,410	**1187.4** 19465	**146.7** 2,405	**2.03** 0.620	**11.41** 3.476
HZ 1180M A	**19.58** 497.3	**22.76** 578.1	**20.38** 517.6	-	**9.01** 228.9	**11.14** 282.9	**82.55** 532.6	**280.96** 418.1	**25471.9** 1,061,330	**1655.5** 68980	**1120.0** 18,360	**1250.8** 20505	**148.8** 2,440	**2.04** 0.621	**11.41** 3.477
HZ 1180M B	**19.70** 500.5	**22.79** 578.9	**20.43** 518.8	-	**9.01** 228.9	**11.14** 282.9	**85.03** 548.6	**289.36** 430.6	**26593.2** 1,108,050	**1709.0** 71210	**1167.5** 19,140	**1303.0** 21360	**153.4** 2,515	**2.04** 0.622	**11.43** 3.484
HZ 1180M C	**19.72** 500.8	**22.94** 582.6	**20.48** 520.1	-	**9.03** 229.4	**11.16** 283.4	**90.24** 582.2	**307.10** 457.0	**28380.2** 1,182,510	**1847.8** 76990	**1238.3** 20,300	**1386.8** 22735	**165.6** 2,715	**2.08** 0.635	**11.46** 3.493
HZ 1180M D	**19.86** 504.5	**22.95** 582.9	**20.54** 521.8	-	**9.05** 229.9	**11.18** 283.9	**94.02** 606.6	**320.01** 476.2	**29604.2** 1,233,510	**1888.3** 78680	**1290.8** 21,160	**1442.0** 23640	**169.0** 2,770	**2.10** 0.641	**11.47** 3.497

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

SOLUTION 24





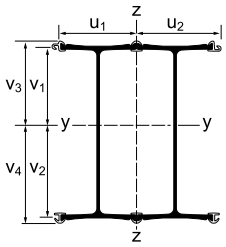
D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe

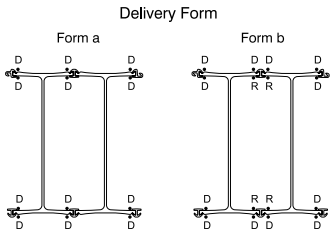
R = continuous weld, a = 0.236" (6 mm), length 19.68" (500 mm) at top and toe only

SECTION	PROPERTIES PER SOLUTION														
	Dimensions						Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus			Coating Area	
	v_1	v_2	v_3	v_4	u_1	u_2			y-y	z-z	y-y*	y-y**	z-z	Waterside	Landside
	in mm	in mm	in mm	in mm	in mm	in mm	in^2 cm^2	lb/ft kg/m	in^4 cm^4	in^4 cm^4	in^3 cm^3	in^3 cm^3	in^3 cm^3	ft^2/ft m^2/m	ft^2/ft m^2/m
HZ 630M	**11.42** 290.0	**12.83** 325.8	**12.53** 318.3	**13.94** 354.1	**16.81** 426.9	**18.93** 480.9	**107.19** 691.5	**364.79** 542.9	**12031.0** 500,770	**10338.8** 430330	**938.1** 15,370	**863.0** 14140	**546.1** 8,950	**3.50** 1.067	**9.94** 3.031
HZ 880M A	**14.83** 376.7	**16.80** 426.7	**16.19** 411.2	**18.16** 461.2	**18.30** 464.8	**20.43** 518.9	**102.27** 659.8	**348.05** 518.0	**19700.6** 820,000	**11783.3** 490460	**1172.7** 19,220	**1217.0** 19945	**576.8** 9,450	**3.75** 1.144	**11.68** 3.559
HZ 880M B	**15.00** 380.9	**16.79** 426.5	**16.27** 413.4	**18.07** 458.9	**18.38** 466.9	**20.51** 520.9	**112.20** 723.9	**381.85** 568.3	**21389.6** 890,310	**12853.1** 534990	**1273.9** 20,875	**1314.3** 21540	**626.7** 10,270	**3.77** 1.150	**11.70** 3.565
HZ 880M C	**15.11** 383.8	**16.83** 427.6	**16.31** 414.3	**18.03** 458.1	**18.38** 466.9	**20.51** 520.9	**116.69** 752.8	**397.12** 591.0	**22547.1** 938,480	**13319.6** 554410	**1339.3** 21,950	**1382.5** 22655	**649.5** 10,645	**3.77** 1.150	**11.69** 3.565
HZ 1080M A	**19.58** 497.2	**21.66** 550.2	**20.93** 531.7	**23.02** 584.6	**18.14** 460.9	**20.27** 514.9	**125.94** 812.5	**428.61** 637.8	**38005.0** 1,581,890	**13596.5** 565930	**1754.6** 28,755	**1815.7** 29755	**670.7** 10,990	**3.73** 1.136	**13.10** 3.992
HZ 1080M B	**19.75** 501.6	**21.72** 551.8	**20.99** 533.1	**22.96** 583.2	**18.14** 460.9	**20.27** 514.9	**132.97** 857.9	**452.52** 673.4	**41051.9** 1,708,720	**14322.7** 596160	**1889.8** 30,970	**1956.2** 32055	**706.6** 11,580	**3.73** 1.138	**13.11** 3.995
HZ 1080M C	**19.96** 506.9	**21.75** 552.5	**21.07** 535.3	**22.87** 581.0	**18.22** 462.9	**20.35** 516.9	**145.99** 941.9	**496.84** 739.4	**44831.4** 1,866,030	**15669.5** 652220	**2060.9** 33,770	**2127.3** 34860	**770.1** 12,620	**3.74** 1.141	**13.12** 3.998
HZ 1080M D	**20.17** 512.4	**21.85** 555.0	**21.14** 536.8	**22.81** 579.4	**18.26** 463.9	**20.39** 517.9	**156.53** 1009.9	**532.71** 792.8	**48510.1** 2,019,150	**16728.2** 696280	**2220.2** 36,380	**2295.3** 37615	**820.5** 13,445	**3.75** 1.142	**13.12** 3.999
HZ 1180M A	**20.37** 517.5	**21.97** 557.9	**21.18** 537.9	**22.77** 578.3	**18.30** 464.9	**20.43** 518.9	**164.96** 1064.2	**561.38** 835.4	**51280.2** 2,134,450	**17564.3** 731080	**2334.7** 38,260	**2421.5** 39680	**859.9** 14,090	**3.75** 1.144	**13.13** 4.001
HZ 1180M B	**20.48** 520.1	**22.02** 559.3	**21.20** 538.5	**22.75** 577.7	**18.30** 464.9	**20.43** 518.9	**169.92** 1096.3	**578.28** 860.6	**53516.1** 2,227,520	**18099.9** 753380	**2430.4** 39,825	**2524.3** 41365	**886.1** 14,520	**3.76** 1.147	**13.15** 4.009
HZ 1180M C	**20.53** 521.3	**22.13** 562.1	**21.29** 540.6	**22.89** 581.4	**18.38** 466.9	**20.51** 520.9	**181.24** 1169.3	**616.79** 917.9	**57523.0** 2,394,300	**19477.8** 810730	**2599.6** 42,600	**2702.5** 44285	**949.8** 15,565	**3.82** 1.164	**13.20** 4.022
HZ 1180M D	**20.64** 524.2	**22.17** 563.2	**21.32** 541.5	**22.86** 580.5	**18.42** 467.9	**20.55** 521.9	**188.81** 1218.1	**642.55** 956.2	**59959.8** 2,495,730	**20289.8** 844530	**2704.0** 44,310	**2812.7** 46095	**987.5** 16,180	**3.86** 1.176	**13.23** 4.032

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

SOLUTION 26





D = discontinuous weld, a = 0.236" (6 mm), 10% of length (3.94" per 3.28', 100 mm/m) over the whole pile length + 19.68" (500 mm) continuous weld at top and toe

R = continuous weld, a = 0.236" (6 mm), length 19.68" (500 mm) at top and toe only

SECTION	PROPERTIES PER SOLUTION														
	Dimensions						Sectional Area	Mass	Moment of Inertia		Elastic Section Modulus			Coating Area	
	v_1	v_2	v_3	v_4	u_1	u_2			y-y	z-z	y-y*	y-y**	z-z	Waterside	Landside
	in mm	in mm	in mm	in mm	in mm	in mm	in² cm²	lb/ft kg/m	in⁴ cm⁴	in⁴ cm⁴	in³ cm³	in³ cm³	in³ cm³	ft²/ft m²/m	ft²/ft m²/m
HZ 630M	**12.11** 307.6	**12.13** 308.1	**13.23** 336.0	**13.24** 336.4	**16.81** 426.9	**18.93** 480.9	**113.43** 731.8	**386.02** 574.5	**12980.3** 540,280	**12162.8** 506260	**1070.2** 17,535	**980.1** 16060	**642.4** 10,530	**3.50** 1.067	**10.80** 3.292
HZ 880M A	**15.80** 401.4	**15.83** 402.0	**17.16** 435.8	**17.19** 436.5	**18.31** 464.9	**20.43** 518.8	**108.51** 700.1	**369.28** 549.6	**21379.6** 889,890	**13940.2** 580240	**1350.7** 22,135	**1246.1** 20420	**682.5** 11,185	**3.75** 1.144	**12.39** 3.776
HZ 880M B	**15.88** 403.4	**15.91** 404.0	**17.16** 435.8	**17.18** 436.5	**18.38** 467.0	**20.50** 520.8	**118.44** 764.1	**403.08** 599.9	**23059.8** 959,830	**15028.4** 625530	**1449.8** 23,755	1343.9 22020	**733.0** 12,010	**3.77** 1.150	**12.41** 3.782
HZ 880M C	**15.96** 405.4	**15.98** 406.0	**17.16** 435.9	**17.18** 436.5	**18.38** 467.0	**20.50** 520.8	**122.93** 793.1	**418.35** 622.6	**24213.8** 1,007,860	**15494.9** 644950	**1514.9** 24,825	**1411.1** 23125	**755.7** 12,385	**3.77** 1.150	**12.41** 3.782
HZ 1080M A	**20.60** 523.3	**20.63** 524.1	**21.96** 557.7	**21.99** 558.5	**18.14** 460.9	**20.27** 514.9	**132.18** 852.8	**449.84** 669.4	**40817.8** 1,698,970	**15717.1** 654200	**1978.2** 32,415	**1859.0** 30465	**775.4** 12,705	**3.73** 1.136	**13.81** 4.209
HZ 1080M B	**20.72** 526.3	**20.75** 527.1	**21.96** 557.7	**21.99** 558.5	**18.14** 460.9	**20.27** 514.9	**139.21** 898.1	**473.75** 705.0	**43857.5** 1,825,490	**16443.3** 684420	**2113.5** 34,635	**1997.4** 32730	**811.2** 13,295	**3.73** 1.138	**13.82** 4.212
HZ 1080M C	**20.84** 529.4	**20.87** 530.1	**21.96** 557.8	**21.99** 558.5	**18.22** 462.9	**20.35** 516.9	**152.23** 982.1	**518.07** 771.0	**47625.5** 1,982,330	**17808.3** 741240	**2282.2** 37,400	**2168.8** 35540	**875.2** 14,340	**3.74** 1.141	**13.83** 4.215
HZ 1080M D	**21.00** 533.4	**21.02** 534.0	**21.96** 557.8	**21.99** 558.5	**18.26** 463.9	**20.39** 517.9	**162.77** 1050.1	**553.94** 824.4	**51296.2** 2,135,120	**18876.0** 785680	**2439.8** 39,980	**2335.9** 38280	**925.9** 15,170	**3.75** 1.142	**13.83** 4.216
HZ 1180M A	**21.16** 537.4	**21.18** 538.0	**21.96** 557.8	**21.99** 558.4	**18.30** 464.9	**20.43** 518.9	**171.20** 1104.5	**582.61** 867.0	**54060.7** 2,250,190	**19721.2** 820860	**2552.3** 41,825	**2461.7** 40340	**965.4** 15,820	**3.75** 1.144	**13.84** 4.217
HZ 1180M B	**21.24** 539.4	**21.26** 540.0	**21.96** 557.8	**21.99** 558.4	**18.30** 464.9	**20.43** 518.8	**176.16** 1136.5	**599.51** 892.2	**56293.6** 2,343,130	**20256.9** 843160	**2647.9** 43,390	**2563.3** 42005	**991.7** 16,250	**3.76** 1.147	**13.85** 4.221
HZ 1180M C	**21.41** 543.9	**21.24** 539.5	**22.17** 563.2	**22.00** 558.8	**18.38** 466.9	**20.51** 520.9	**189.07** 1219.8	**643.42** 957.5	**60979.6** 2,538,170	**22216.2** 924710	**2847.8** 46,665	**2750.2** 45070	**1083.4** 17,755	**3.82** 1.164	**13.97** 4.259
HZ 1180M D	**21.49** 545.8	**21.32** 541.6	**22.17** 563.1	**22.00** 558.9	**18.42** 467.9	**20.55** 521.9	**196.63** 1268.6	**669.18** 995.9	**63411.7** 2,639,410	**23041.8** 959080	**2951.0** 48,360	**2860.4** 46875	**1121.5** 18,380	**3.86** 1.176	**14.01** 4.271

* Referring outside of HZ®-M-flange. ** Referring outside of connector.

AVAILABLE STEEL GRADES

AMERICAN			CANADIAN			EUROPEAN		
ASTM	Yield Strength		Grade	Yield Strength		Grade	Yield Strength	
	ksi	MPa		ksi	MPa		ksi	MPa
A328	39	270	Grade 260 W	38	260	S240 GP	35	240
A572 Grade 42	42	290	Grade 300 W	43	297	S270 GP	39	270
A572 Grade 50	50	345	Grade 355 W	51	355	S320 GP	46	315
A572 Grade 55	55	380	Grade 400 W	58	400	S355 GP	51	355
A572 Grade 60	60	415				S390 GP	57	390
A572 Grade 65	65	450				S430 GP	62	430
A690	50	345				S460 GP	67	460
A690	57*	390				S500 GP*	72	500
A690	60*	415						

* On request

DELIVERY CONDITIONS & TOLERANCES

HZ®-M & AZ PILES	ASTM A6		EN 10248	
Mass	± 2.5%		± 5%	
Length	+ 5 in.	– 0 in.	± 200 mm	
Height			± 5 mm	
Width			± 2%	
Width Interlocked			± 3%	
Straightness			0.2% of the length	
Ends out of Square			20 mm	
AZ Pile				
Thickness			≤ 8.5 mm	- 0.5 mm
			> 8.5 mm	- 6%
HZ®-M Pile				
Thickness			≤ 12.5 mm	+ 2.0, -1.0 mm
			> 12.5	+ 2.5, -1.5 mm

MAXIMUM ROLLED LENGTHS†

HZ®-M	108.3 ft.	33.0 m	
AZ	101.7 ft.	31.0 m	
RZD/RZU	78.7 ft.	24.0 m	(Length does not restrict wall height)
RH	78.7 ft.	24.0 m	(Length does not restrict wall height)

† Longer lengths may be possible upon request.

NOTES



PILE CONNECTORS

LARSSEN
CORNER CONNECTORS

ULTRA-S

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.35“ (9 mm)
Standard lengths: 38.7 ft (11.8 m)
Weight: 17 lbs/ft (25.3 kg/m)
ULTRA-S corner section can be driven individually up to a length of 38.7 ft (11.8 meters), provided that there are no weld joints.





LV20n

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths:
38.7 ft (11.8 m), 44 ft (13.4 m)
Weight: 9.45 lbs/ft (14.07 kg/m)

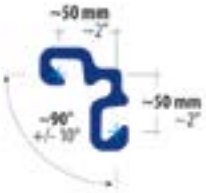




LLS90

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.35“ (9 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 11.87 lbs/ft (17.66 kg/m)

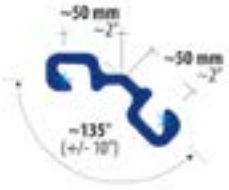




LLS135

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.35“ (9 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 11.87 lbs/ft (17.66 kg/m)



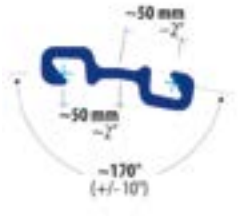


LARSSEN
CORNER CONNECTORS

LLS170

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.35“ (9 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 11.85 lbs/ft (17.63 kg/m)





LARSSEN
T CONNECTORS

LTn

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths:
38.7 ft (11.8 m), 45.2 ft (13.8 m)
Weight: 10.42 lbs/ft (15.5 kg/m)



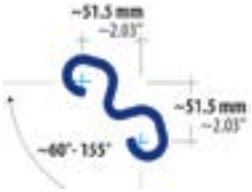


LARSSEN
OMEGA CORNER CONNECTOR

LVOn

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths:
38.7 ft (11.8 m), 44 ft (13.4 m)
Weight: 9.515 lbs/ft (14.16 kg/m)

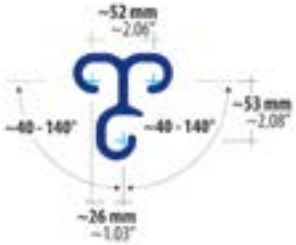




LOTn

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard length S355J2:
38.7 ft (11.8 m), 45.2 ft (13.8 m)
Weight: 11.56 lbs/ft (17.2 kg/m)





Pipe pile combi walls

LARSSEN
T CONNECTORS

LLTS

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.35“ (9 mm)
Standard length: 35.4 ft (10.8 m)
Weight: 17.605 lbs/ft (26.2 kg/m)



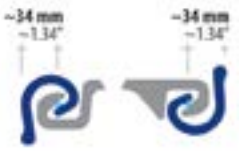


LARSSEN
WELD-ON CONNECTORS

LV22

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard length: 38.7 ft (11.8 m)
Weight: 5.39 lbs/ft (8.02 kg/m)



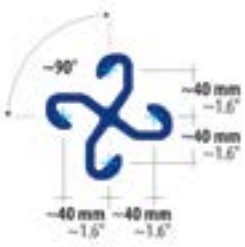


LARSSEN
CROSS CONNECTOR

L4S

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard length: 38.7 ft (11.8 m)
Weight: 15.6 lbs/ft (23.2 kg/m)





L8

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.375“ (9.5 mm)
Standard length: 38.7 ft (11.8 m)
Weight: 5.69 lbs/ft (8.47 kg/m)





Pipe pile walls
Pipe pile combi walls
H-pile combi walls

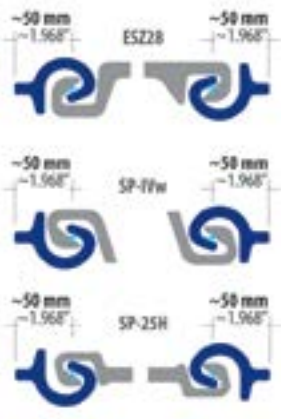
LARSSEN
CONNECTORS FOR HIGH SECTION MODULUS SHEET PILE WALLS

LPB100-FU

Compatible with Larssen sheet piles of these manufacturers:

Arcelor Mittal,
NSSMC,
Nucor,
Hoesch,
Anshan-Zizhu,
JFE,
Vitkovice,
Emirates Steel,
Terra Infrastructure

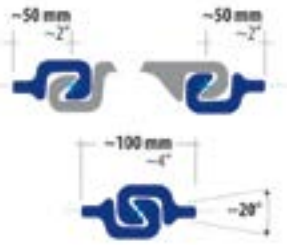
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.39“ (10 mm)
Standard lengths: 38.7 ft (11.8 m) - Available to order up to 59 ft (18 m)
Weight: 6.592 lbs/ft (9.81 kg/m)



LPB100-10

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.39“ (10 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 6.652 lbs/ft (9.9 kg/m)

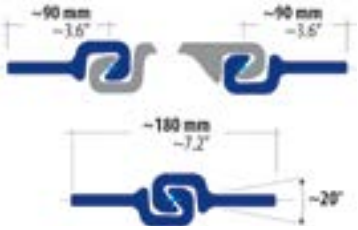




LPB180-10

For Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.39“ (10 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 8.628 lbs/ft (12.84 kg/m)



LPB180-12

Not compatible with Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 9.74 lbs/ft (14.5 kg/m)
Max. tensile strength: 8.58 kips/in (1,502 kN/m)





LPB180-16

Not compatible with Larssen sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.63“ (16 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 15.05 lbs/ft (22.4 kg/m)

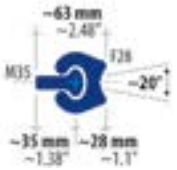


Pipe pile walls
Pipe pile combi walls
H-pile walls
H-pile combi walls

MF
HIGH-STRENGTH CONNECTORS FOR PIPE PILE, H-PILE AND COMBI-WALLS (BALL + SOCKET)

MF63

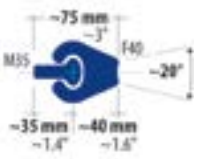
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M35: 3.2 lbs/ft (4.76 kg/m)
Weight F28: 7.19 lbs/ft (10.7 kg/m)
Max. tensile strength:
14.57 kips/in (2,552 kN/m), (FEM)





MF75

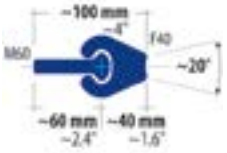
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M35: 3.2 lbs/ft (4.76 kg/m)
Weight F40: 9.6 lbs/ft (14.28 kg/m)
Max. tensile strength:
19.52 kips/in (3,419 kN/m)





MF100

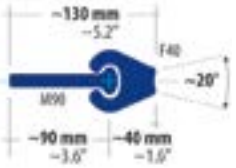
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M60: 4.64 lbs/ft (6.9 kg/m)
Weight F40: 9.6 lbs/ft (14.28 kg/m)
Max. tensile strength:
19.52 kips/in (3,419 kN/m)





MF130

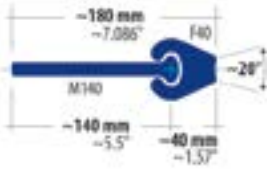
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m),
38.7 ft (11.8 m)
Weight M90: 6.56 lbs/ft (9.76 kg/m)
Weight F40: 9.6 lbs/ft (14.28 kg/m)
Max. tensile strength:
19.52 kips/in (3,419 kN/m)





MF180a

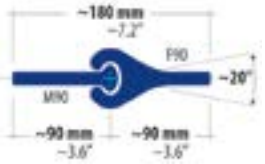
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M140: 9.92 lbs/ft (14.77 kg/m)
Weight F40: 9.6 lbs/ft (14.28 kg/m)
Max. tensile strength:
19.52 kips/in (3,419 kN/m)





MF180b

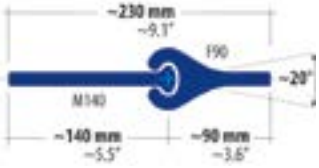
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M90: 6.56 lbs/ft (9.76 kg/m)
Weight F90: 12.377 lbs/ft (18.42 kg/m)
Max. tensile strength:
17.88 kips/in (3,132 kN/m) FEM





MF230

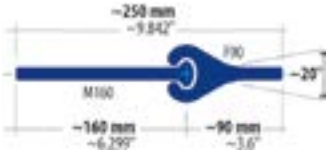
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M140: 9.92 lbs/ft (14.77 kg/m)
Weight F90: 12.377 lbs/ft (18.42 kg/m)
Max. tensile strength:
17.88 kips/in (3,132 kN/m) FEM





MF250

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M160: 11.15 lbs/ft (16.6 kg/m)
Weight F90: 12.377 lbs/ft (18.42 kg/m)
Max. tensile strength:
17.88 kips/in (3,132 kN/m) FEM



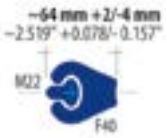
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DTH driving method

MF
HIGH-STRENGTH CONNECTORS FOR DTH DRIVING METHOD

MF64

Exclusively for DTH driving method



Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M22: 2.3 lbs/ft (3.42 kg/m)
Weight F40: 9.6 lbs/ft (14.28 kg/m)
Max. tensile strength: 19.52 kips/in (3,419 kN/m)







MF64-IC

Exclusively for DTH driving method



Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.39 - 0.47“ (10 - 12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M22: 2.3 lbs/ft (3.42 kg/m)
Weight F40-IC: 9.1 lbs/ft (13.55 kg/m)
Max. tensile strength: 18.07 kips/in (3,164 kN/m)

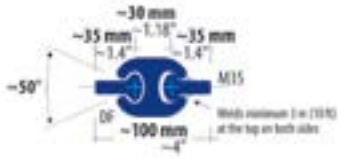




Pipe pile walls
Pipe pile combi walls
H-pile walls
H-pile combi walls

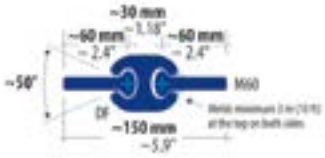
MDF
CONNECTORS FOR HIGH SECTION MODULUS SHEET PILE WALLS

MDF100



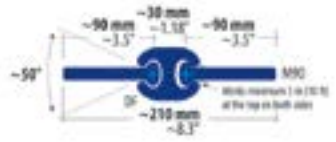
Steel grades:
S355J2, 572 Gr. 50 (M35),
S430GP, Gr. 60 (DF)
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M35: 3.2 lbs/ft (4.76 kg/m)
Weight DF: 9.82 lbs/ft (14.62 kg/m)
Max. tensile strength: 18.3 kips/in (3,271 kN/m) FEM

MDF150



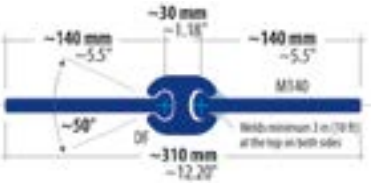
Steel grades:
S355J2, 572 Gr. 50 (M60),
S430GP, Gr. 60 (DF)
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M60: 4.64 lbs/ft (6.9 kg/m)
Weight DF: 9.82 lbs/ft (14.62 kg/m)
Max. tensile strength: 18.3 kips/in (3,271 kN/m) FEM

MDF210



Steel grades:
S355J2, 572 Gr. 50 (M90),
S430GP, Gr. 60 (DF)
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M90: 6.56 lbs/ft (9.76 kg/m)
Weight DF: 9.82 lbs/ft (14.62 kg/m)
Max. tensile strength: 18.3 kips/in (3,271 kN/m) FEM

MDF310

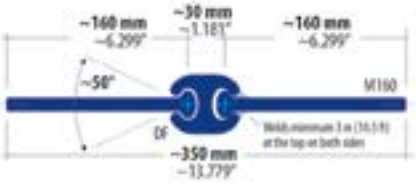


Steel grades:
S355J2, 572 Gr. 50 (M140),
S430GP, Gr. 60 (DF)
Steel thickness: 0.47“ (12 mm)
Standard lengths:
26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M140: 9.92 lbs/ft (14.77 kg/m)
Weight DF: 9.82 lbs/ft (14.62 kg/m)
Max. tensile strength: 18.3 kips/in (3,271 kN/m) FEM



MDF350

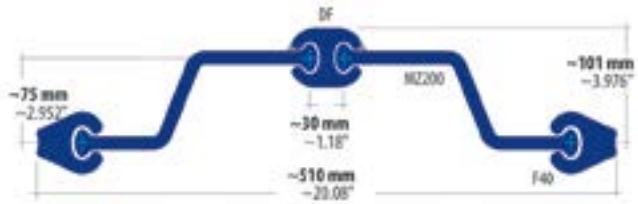
Steel grades: S355J2, 572 Gr. 50 (M160), S430GP, Gr. 60 (DF)
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight M160: 11.15 lbs/ft (16.6 kg/m), Weight DF: 9.82 lbs/ft (14.62 kg/m)
Max. tensile strength: 18.3 kips/in (3,271 kN/m) FEM



MZ
CONNECTOR SYSTEM WITH TOLERANCE COMPENSATION

MZ510

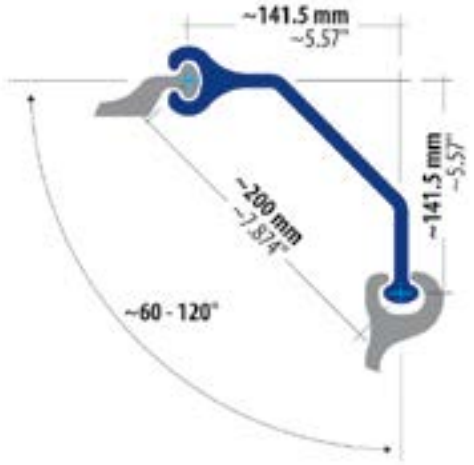
Steel grades: S355J2, 572 Gr. 50 (MZ200 and F40), S430GP, Gr. 60 (DF)
Steel thickness: 0.47“ (12 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight MZ200: 17.652 lbs/ft (26.27 kg/m)
Weight DF: 9.82 lbs/ft (14.62 kg/m),
max. tensile strength: 18.295 kips/in (3,271 kN/m) FEM
Weight F40: 9.6 lbs/ft (14.28 kg/m),
max. tensile strength: 19.52 kips/in (3,419 kN/m)



BALL + SOCKET
CORNER CONNECTORS

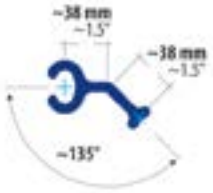
MFU200

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.35“ (9 mm)
Standard lengths: 26.25 ft (8 m), 38.7 ft (11.8 m)
Weight: 15.92 lbs/ft (23.7 kg/m)
Wy max (each sheet pile): 2.685 inch^3 (44 cm^3)



US-135

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request, variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 6.92 lbs/ft (10.3 kg/m)

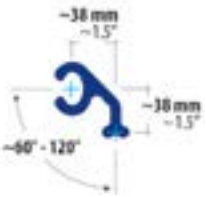




BALL + SOCKET
T CONNECTORS

US-90

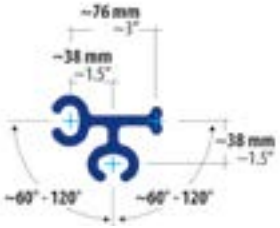
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request, variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 6.85 lbs/ft (10.1 kg/m)





US-TS

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request, variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 11.1 lbs/ft (16.5 kg/m)

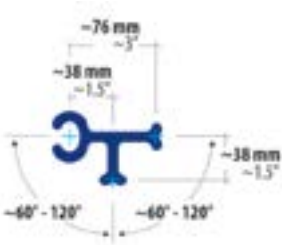




BALL + SOCKET
T CONNECTORS

US-T

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request,
variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 9 lbs/ft (13.4 kg/m)





US-Universal

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request,
variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 8.33 lbs/ft (12.4 kg/m)

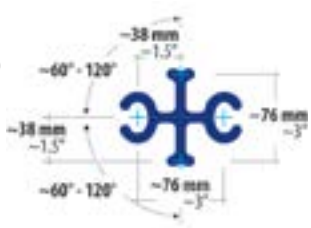




BALL + SOCKET
CROSS CONNECTORS

US-Cross I

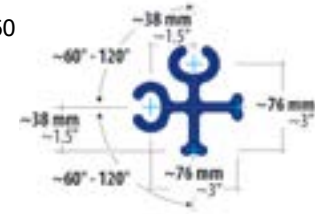
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request,
variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 13.4 lbs/ft (20 kg/m)





US-Cross II

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard lengths on request,
variable from
25 to 35 ft (7.6 m - 10.6 m)
Weight: 13.4 lbs/ft (20 kg/m)



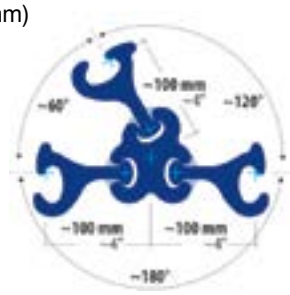


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FLAT SHEET PILE CONNECTORS
FOR PS AND YSP STRAIGHT WEB PILES ONLY

FSC60 Center, FSC Leg

Steel grades: S355J2, 572 Grade 50
Steel thickness FSC60 Center: 0.63“ (16 mm)
Steel thickness FSC Leg: 0.5“ (12.7 mm)
Length FSC60 Center: 31.2 ft (9.5 m)
Length FSC Leg: up to 59 ft (18 m)
Weight FSC60 Center:
20.5 lbs/ft (30.5 kg/m)
Weight FSC Leg: 13.1 lbs/ft (19.5 kg/m)
Max. tensile strength FSC60 Center:
32 kips/in (5,604 kN/m) FEM



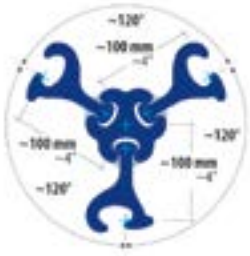
FSC90 Center, FSC Leg

Steel grades: S355J2, 572 Grade 50
Steel thickness FSC90 Center: 0.63“ (16 mm)
Steel thickness FSC Leg: 0.5“ (12.7 mm)
Length FSC90 Center: 32.8 ft (10 m)
Length FSC Leg: up to 59 ft (18 m)
Weight FSC90 Center:
19.62 lbs/ft (29.2 kg/m)
Weight FSC Leg: 13.1 lbs/ft (19.5 kg/m)
Max. tensile strength FSC90 Center:
35 kips/in (6,129 kN/m) FEM



FSC120 Center, FSC Leg

Steel grades: S355J2, 572 Grade 50
Steel thickness FSC120 Center: 0.63“ (16 mm)
Steel thickness FSC Leg: 0.5“ (12.7 mm)
Length FSC120 Center: 36.8 ft (11.2 m)
Length FSC Leg: up to 59 ft (18 m)
Weight FSC120 Center:
17.67 lbs/ft (26.3 kg/m)
Weight FSC Leg: 13.1 lbs/ft (19.5 kg/m)
Max. tensile strength FSC120 Center:
36 kips/in (6,129 kN/m) FEM

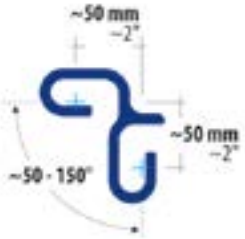


COLD-FORMED
CORNER AND WELD-ON CONNECTORS

CF90

Corner connector for midsize cold-formed sheet piles

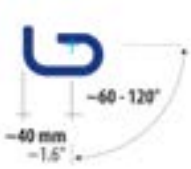
Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard length: 44.1 ft (13.45 m)
Weight: 11.76 lbs/ft (17.5 kg/m)



CF-Junction

Weld-on connector for midsize cold-formed sheet piles

Steel grades: S355J2, 572 Grade 50
Steel thickness: 0.32“ (8 mm)
Standard length: 38.7 ft (11.8 m)
Weight: 6 lbs/ft (8.87 kg/m)



NOTES



GEOSTRUCTURALS



TIE RODS

KEY FEATURES

Tie Rods produced from THREADBAR® are used for marine bulkheads, docking facilities, barge and ship docks as well as offshore platforms. They are a cost effective alternative to large diameter A36 Tie Rods with upset threads.

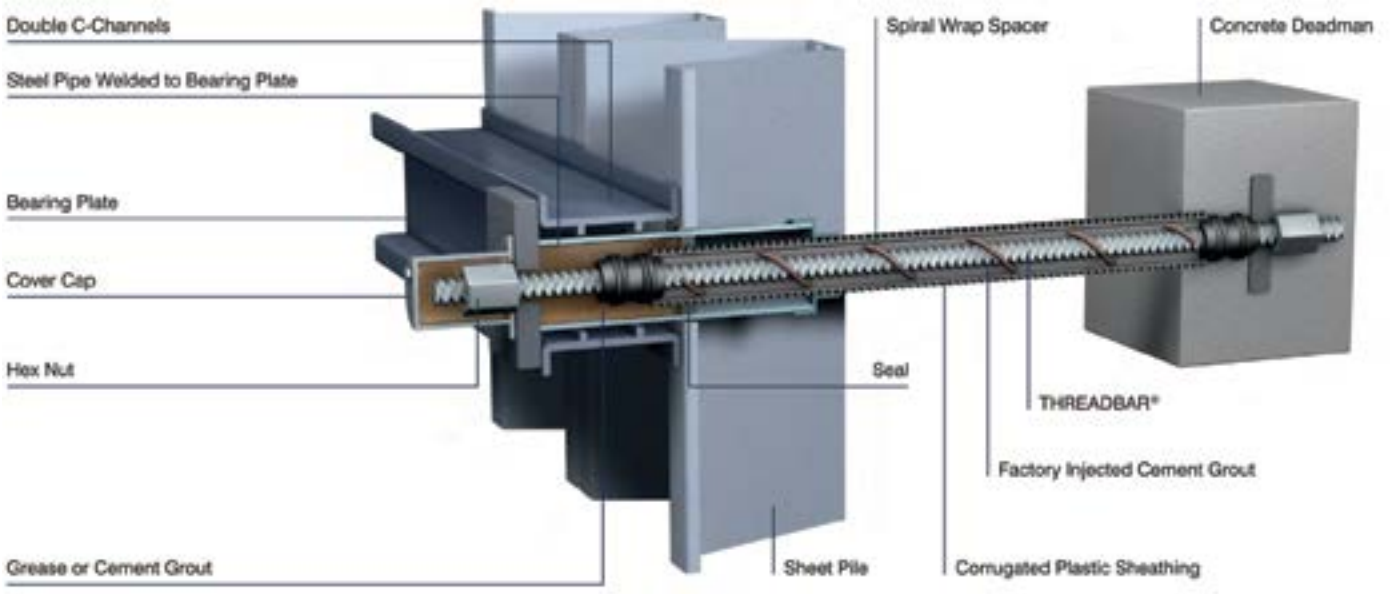
Continuous, coarse thread allows for rough site handling and for easy on site length adjustments since cutting or coupling of the rod is possible along its entire length.

CORROSION PROTECTION OPTIONS

- Double Corrosion Protection (DCP)
- Hot dip galvanizing
- Epoxy coating
- Tape coating

TIE ROD WITH DOUBLE CORROSION PROTECTION (DCP)

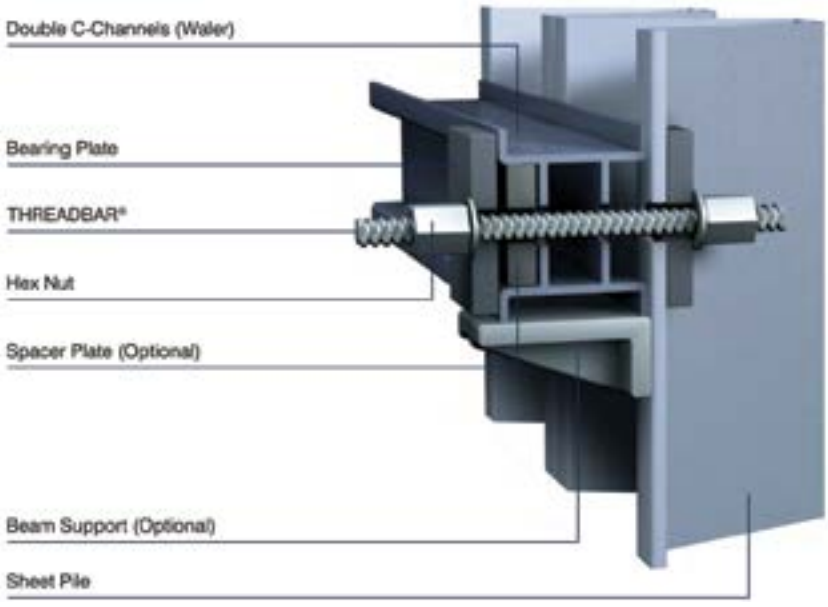
Recommended for permanent applications in agressive enviroments



WALER CONNECTION

Short bolts are needed to connect a standard sheet pile wall or a modular sheet pile wall to a load distributing double channel beam. This can be done with Grade 75 or Grade 80 THREADBAR®.

The required length of the bar depends on the depth of the sheet pile profile, the width of the beam, the plate thickness and the nut length.



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TIE ROD CONNECTIONS

Anchorages in different variations for steel and concrete structures

- Clevis connection
- Eye anchor connection
- Welded connection
- Embedded connection
- Plate-nut connection

FEATURES

- Articulated
- Angle compensating
- Self-aligning under load
- Tensionable

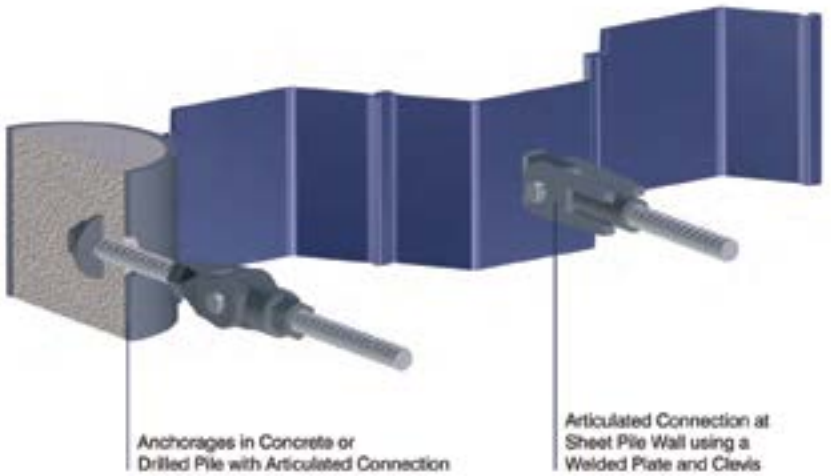
COUPLERS AND CONNECTIONS

COUPLER



TURNBUCKLE





DOUBLE EYE ANCHOR CONNECTION



GRADE 75, 80 & 100 THREADBAR® – REINFORCING STEEL PER ASTM A615

THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimum Yield Stress (f_y)		Nominal Cross Section Area (A_s)		Minimum Yield Load (f_y x A_s)		Nominal Weight	
	mm	in	mm	ksi	MPa	in²	mm²	kips	kN	lbs/ft	kg/m
GRADE 75 and 80											
#6	19	0.86	22	75	517	0.44	284	33.0	147	1.50	2.23
#7	22	0.99	25	75	517	0.60	387	45.0	200	2.04	3.04
#8	25	1.12	28	75	517	0.79	510	59.3	264	2.67	3.97
#9	29	1.26	32	75	517	1.00	645	75.0	334	3.40	5.06
#10	32	1.43	36	75	517	1.27	819	95.3	424	4.30	6.40
#11	36	1.61	41	75	517	1.56	1,006	117.0	520	5.31	7.90
#14	43	1.86	47	80	552	2.25	1,452	180.0	801	7.65	11.38
#18	57	2.50	64	80	552	4.00	2,581	320.0	1,423	13.60	20.24
#20	63	2.72	69	80	552	4.91	3,168	393.0	1,748	16.70	24.85
#24 [1)]	75	3.18	81	75	517	7.06	4,555	529.5	2,355	24.09	35.85
#28 [1)]	90	3.68	94	75	517	9.62	6,206	721.5	3,209	32.79	48.80
GRADE 100											
#6	19	19	22	100	689	0.44	284	44.0	196	1.50	2.23
#7	22	22	25	100	689	0.60	387	60.0	267	2.04	3.04
#8	25	25	28	100	689	0.79	510	79.0	351	2.67	3.97
#9	29	29	32	100	689	1.00	645	100.0	445	3.40	5.06
#10	32	32	36	100	689	1.27	819	127.0	565	4.30	6.40
#11	36	36	41	100	689	1.56	1,006	156.0	694	5.31	7.90
#14	43	43	47	100	689	2.25	1,452	225.0	1,001	7.65	11.38
#18	57	57	64	100	689	4.00	2,581	400.0	1,779	13.60	20.24
#20	63	63	69	100	689	4.91	3,168	491.0	2,184	16.70	24.85

Note: Maximum allowable temporary tension is 90% of yield load. Mill length is 60 ft (#6 through #20) and 53 ft for #24 and #28.
[1)] Threadbar sizes not listed by ASTM A 615 but yield strength is in conformance with A615 standard.

INTRODUCTION

THREADBAR® Reinforcing Steel is available in Grades 75, 80, 100 for sizes #6 through #20, and Grade 75 to #24 and #28. Threadbars conform to the requirements of ASTM A615, except in markings. Threadbars may be shipped to the job in mill lengths or fabricated to specifications.

THREADBAR® Reinforcing Steel has a continous rolled-in pattern of thread-like deformations along its entire length. More durable than machined threads, the deformations allow nuts couplers to thread onto a Threadbar at any point along its length.

Threadbars may be epoxy coated in accordance with ASTM A775 or galvanized in accordance to ASTM A123. Threaded accessories for coated bars thread over the coating.

ADVANTAGES OF HIGH-STRENGTH THREADBAR® REINFORCEMENT

- Fewer bars to handle
- Less congestion
- Lighter reinforcement assemblies
- Faster construction
- Easy to install coupler system
- Can replace rebar terminator with a bearing plate with top and bottom nuts

Having to hoist, handle and place a lower volume of reinforcing steel makes installation simpler and faster. And, less congestion results in higher quality concrete placement with reduced risk of consolidation issues. All these advantages result in a reduced volume of steel and shorter construction time leading to a lower overall cost of the reinforced concrete structure.

FIELDS OF APPLICATION

- Concrete reinforcement
- Micropiles
- Auger cast piles
- Caissons
- Drilled shafts

THREADBAR® PROPERTIES – REINFORCING STEEL PER ASTM A615R

THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimum Yield Stress (f_y)		Nominal Cross Section Area (A_s)		Minimum Yield Load (f_y x A_s)		Nominal Weight	
	mm	in	mm	ksi	MPa	in²	mm²	kips	kN	lbs/ft	kg/m
GRADE 75, 80 THREADBAR®											
#6	19	0.86	22	75	517	0.44	284	33.0	147	1.50	2.23
#7	22	0.99	25	75	517	0.60	387	45.0	200	2.04	3.04
#8	25	1.12	28	75	517	0.79	510	59.3	264	2.67	3.97
#9	29	1.26	32	75	517	1.00	645	75.0	334	3.40	5.06
#10	32	1.43	36	75	517	1.27	819	95.3	424	4.30	6.40
#11	36	1.61	41	75	517	1.56	1,006	117.0	520	5.31	7.90
#14	43	1.86	47	80	552	2.25	1,452	180.0	801	7.65	11.38
#18	57	2.50	64	80	552	4.00	2,581	320.0	1,423	13.60	20.24
#20	63	2.72	69	80	552	4.91	3,168	393.0	1,748	16.70	24.85
#24 [1)]	75	3.18	81	75	517	7.06	4,555	529.5	2,355	24.09	35.85
#28 [1)]	90	3.68	94	75	517	9.62	6,206	721.5	3,209	32.79	48.80
GRADE 100 THREADBAR®											
#6	19	0.86	22	100	689	0.44	284	44.0	196	1.50	2.23
#7	22	0.99	25	100	689	0.60	387	60.0	267	2.04	3.04
#8	25	1.12	28	100	689	0.79	510	79.0	351	2.67	3.97
#9	29	1.26	32	100	689	1.00	645	100.0	445	3.40	5.06
#10	32	1.43	36	100	689	1.27	819	127.0	565	4.30	6.40
#11 [2)]	36	1.61	41	100	689	1.56	1,006	156.0	694	5.31	7.90
#14 [2)]	43	1.86	47	100	689	2.25	1,452	225.0	1,001	7.65	11.38
#18 [2)]	57	2.50	64	100	689	4.00	2,581	400.0	1,779	13.60	20.24
#20 [2)]	63	2.72	69	100	689	4.91	3,168	491.0	2,184	16.70	24.85

Note: Mill length is 60 ft (#6 through #20) and 53 ft for #24 and #28.
[1)] Threadbar sizes not listed by ASTM A 615 but yield strength is in conformance with A615 standard.
[2)] #11, #14, #18 and #20 Threadbars and their Couplers have ICC-ES Evaluation Report Approval ESR-3367.

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COUPLER SYSTEM

Couplers and hex nuts develop the full ultimate load of the Threadbar. Slippage of the coupler under stress is controlled by torquing opposing Threadbars together or by using nuts. The magnitude of the torque required varies with the allowable slip and Threadbar size.

The THREADBAR® reinforcing system offers a simple, reliable and economical splice. A splice requires less crane time and less labor time for assembly than required for other splices.

Unlike some splices, the splice may be installed in adverse weather conditiions and does not create a fire hazard. Opposing Threadbars need only to be chalk marked before assembly to assure proper engagement, supervision and quality control requirements are minimized.

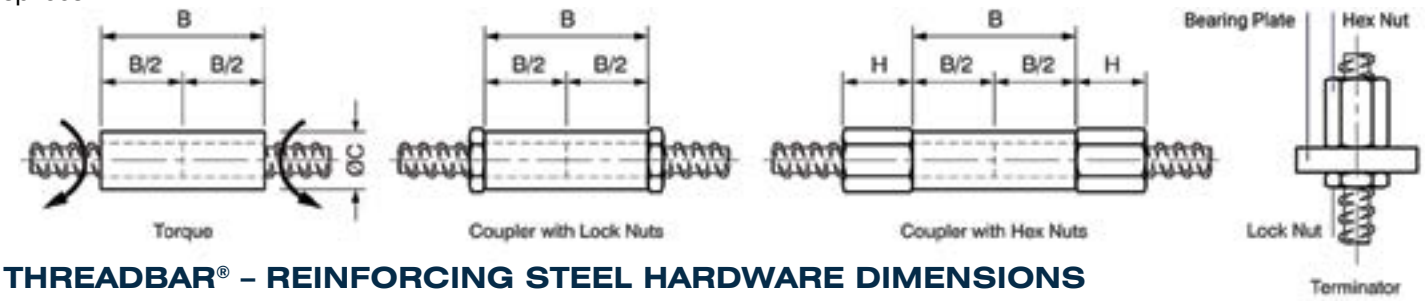
COUPLER WITH HEXNUTS

When opposing threadbars are not torqued together, hex nuts will be used on each end of the coupler and tightened against the coupler.

The splice will develop the full ultimate load of the bar in tension and compression.

COUPLER WITH LOCKNUTS

Locknuts can also be used each side end of the coupler similar to hex nuts. The splice will develop the full load ultimate load of the bar in tension and about half the ultimate load in compression.



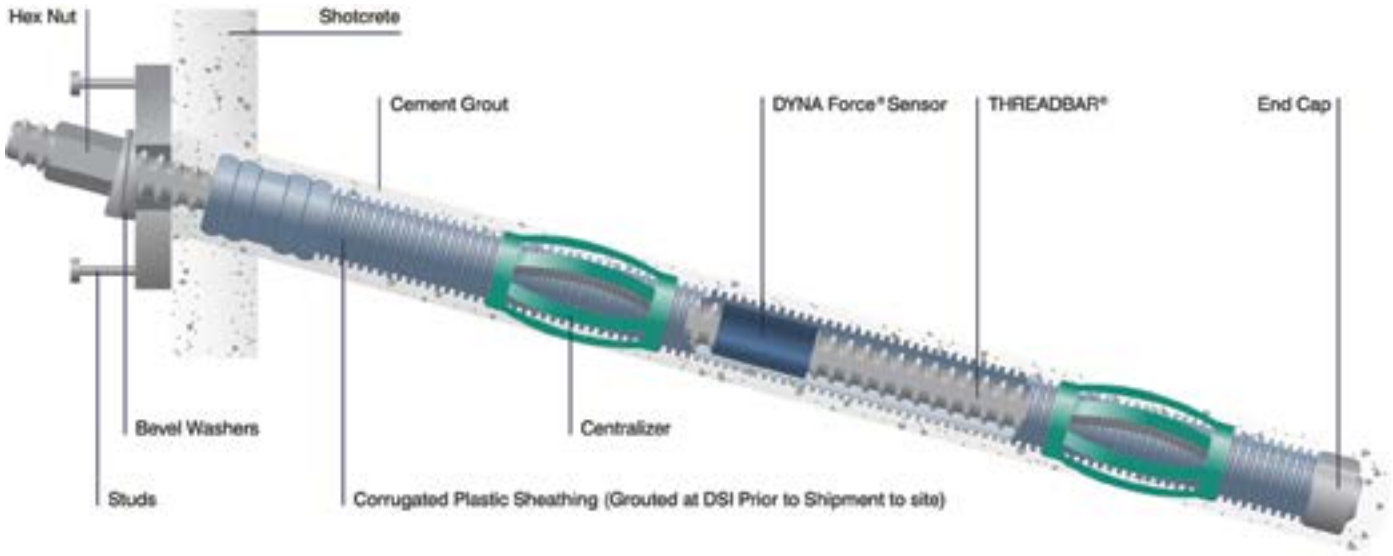
THREADBAR® – REINFORCING STEEL HARDWARE DIMENSIONS

THREADBAR® Designation	Hexnut Length H		Coupler Length B		Coupler Outer Diameter ØC	
	in	mm	in	mm	in	mm
GRADE 75, 80 THREADBAR®						
#6	1.43	36	3.12	79	1.22	31
#7	1.71	43	3.73	95	1.41	36
#8	1.84	47	4.03	102	1.59	40
#9	2.30	58	5.02	128	1.79	45
#10	2.56	65	5.70	145	2.02	51
#11	2.89	73	6.37	162	2.25	57
#14	3.55	90	7.82	199	2.65	67
#18	4.23	107	9.35	237	3.50	89
#20	4.85	123	10.38	264	3.86	98
"#24	4.10	104	9.20	234	4.75	121
#28	4.80	122	10.61	269	5.38	137
GRADE 100 THREADBAR®						
#6	2.88	73	6.25	159	1.25	32
#7	3.13	80	7.00	178	1.50	38
#8	3.38	86	7.13	181	1.75	44
#9	3.50	89	7.25	184	1.88	48
#10	3.75	95	7.50	191	2.13	54
#11	3.88	99	8.00	203	2.38	60
#14	4.50	114	8.25	210	2.75	70
#18	5.25	133	10.50	267	3.63	92
#20	6.00	152	12.25	311	4.00	102

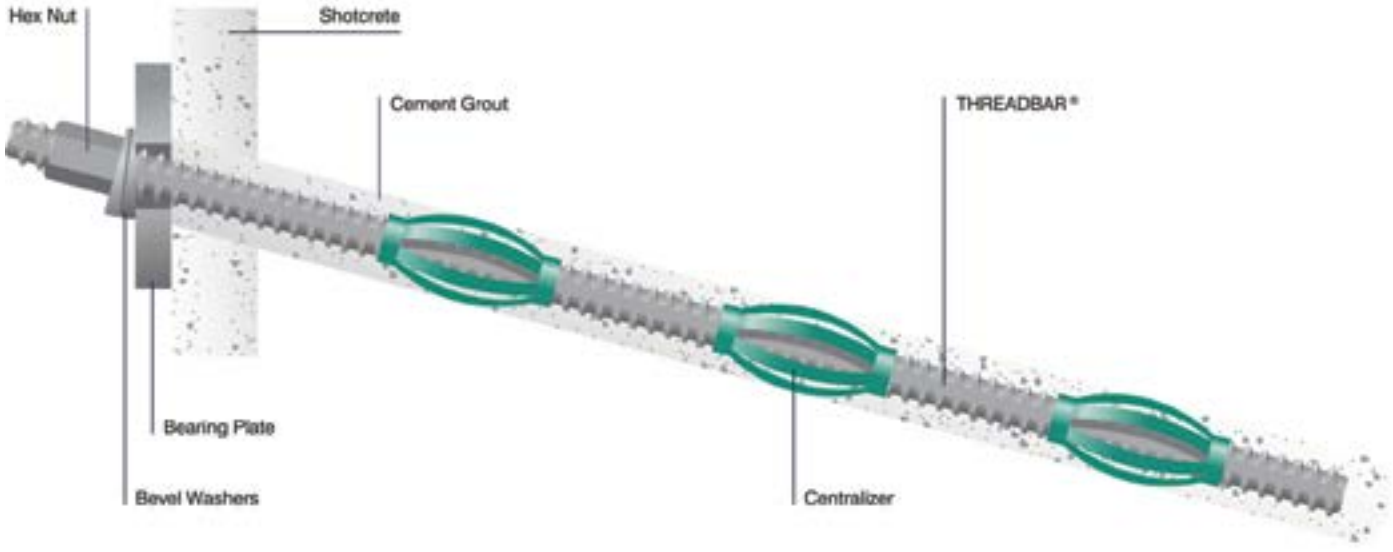




THREADBAR® SOIL NAIL WITH DCP FOR THE MOST AGGRESSIVE SOIL CONDITIONS



THREADBAR® SOIL NAIL – BARE, EPOXY COATED OR GALVANIZED



KEY FEATURES

- Top-down construction
- Lower construction costs versus tieback walls with soldier beams and lagging
- Can be used for temporary and permanent applications
- Simple components and assembly
- Easy to install and test
- Durable full length threads allow for cutting and coupling the bar at any point along its length

GRADE 75, 80 & 100 THREADBAR® – REINFORCING STEEL PER ASTM A615

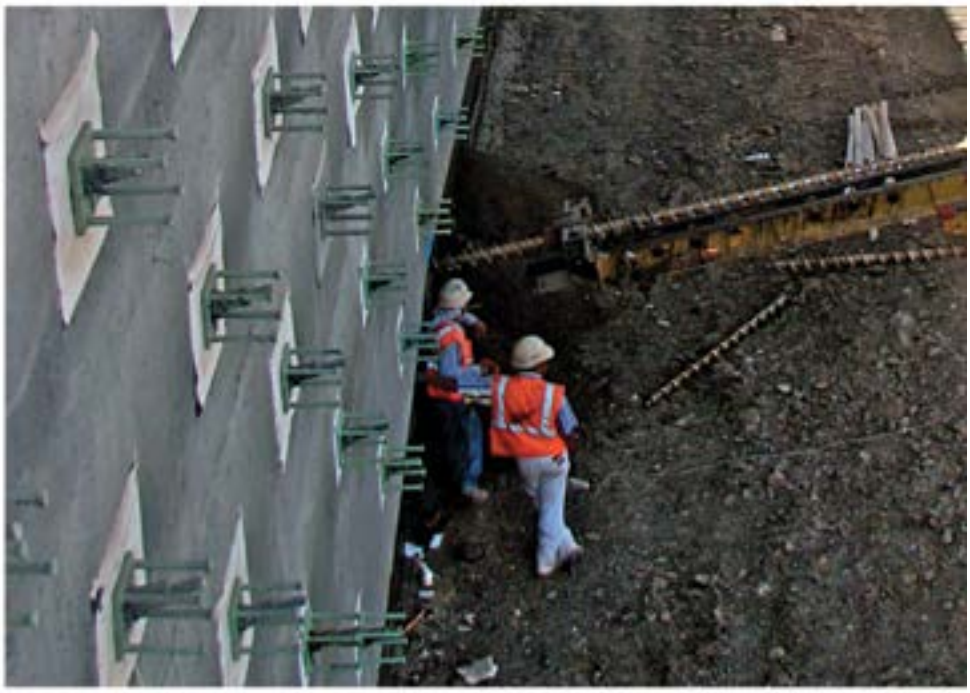
THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimun Yield Stress (f_y)		Nominal Cross Section Area (A_s)		Minimun Yield Load (f_y x A_s)		Nominal Weight	
	mm	in	mm	ksi	MPa	in^2	mm^2	kips	kN	lbs/ft	kg/m
Grade 75 and 80 [1)]											
#6	19	0.86	22	75	517	0.44	284	33.0	147	1.50	2.23
#7	22	0.99	25	75	517	0.60	387	45.0	200	2.04	3.04
#8	25	1.12	28	75	517	0.79	510	59.3	264	2.67	3.97
#9	29	1.26	32	75	517	1.00	645	75.0	334	3.40	5.06
#10	32	1.43	36	75	517	1.27	819	95.3	424	4.30	6.40
#11	36	1.61	41	75	517	1.56	1,006	117.0	520	5.31	7.90
#14	43	1.86	47	80	552	2.25	1,452	180.0	801	7.65	11.38
Grade 100											
#6	19	0.86	22	100	689	0.44	284	44.0	196	1.50	2.23
#7	22	0.99	25	100	689	0.60	387	60.0	267	2.04	3.04
#8	25	1.12	28	100	689	0.79	510	79.0	351	2.67	3.97
#9	29	1.26	32	100	689	1.00	645	100.0	445	3.40	5.06
#10	32	1.43	36	100	689	1.27	819	127.0	565	4.30	6.40
#11	36	1.61	41	100	689	1.56	1,006	156.0	694	5.31	7.90
#14	43	1.86	47	100	689	2.25	1,452	225.0	1,001	7.65	11.38

[1)] Note: Maximum allowable temporary tension is 90% of minimum yield load.
Mill length is 60 ft.



THREADBAR® with Centralizer





THREADBAR® ANCHORS

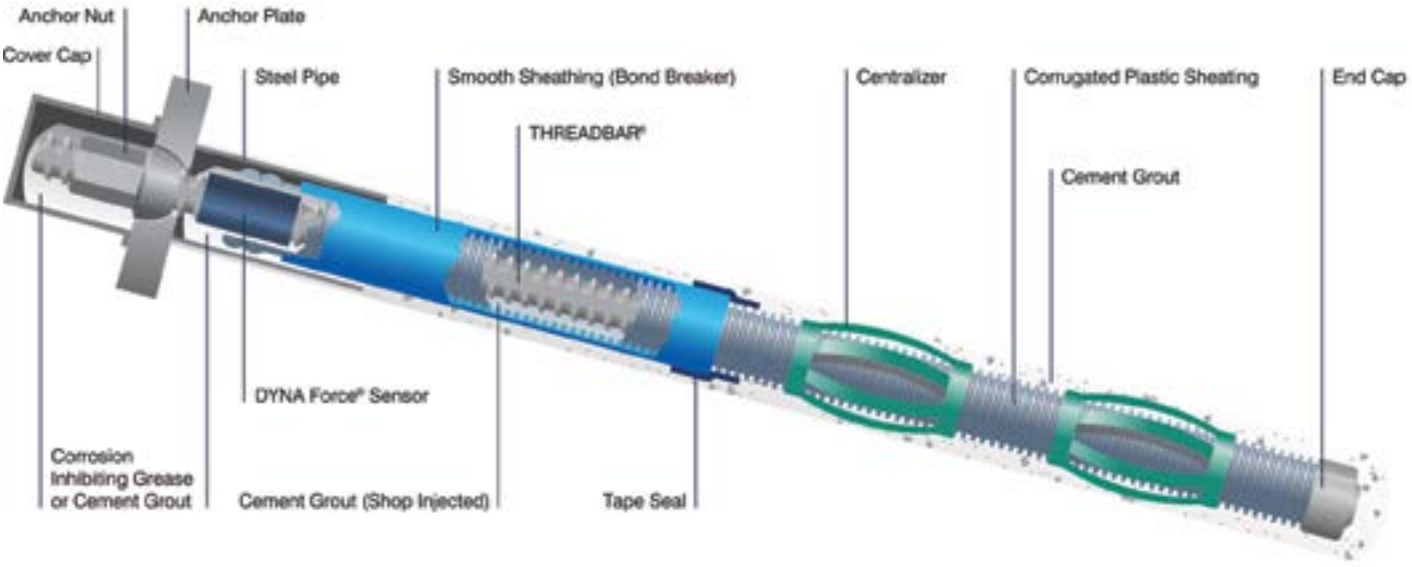
KEY FEATURES

- Threadbars with proven coarse thread along the entire length. Bar
- length can be adjusted on site without any problems
- Variable anchor head and angle compensation designs
- Easy handling, tensioning, retensioning or detensioning
- Can be utilized for fully or partially removable anchors
- Can be supplied with Double Corrosion
- Protection (DCP) for permanent applications

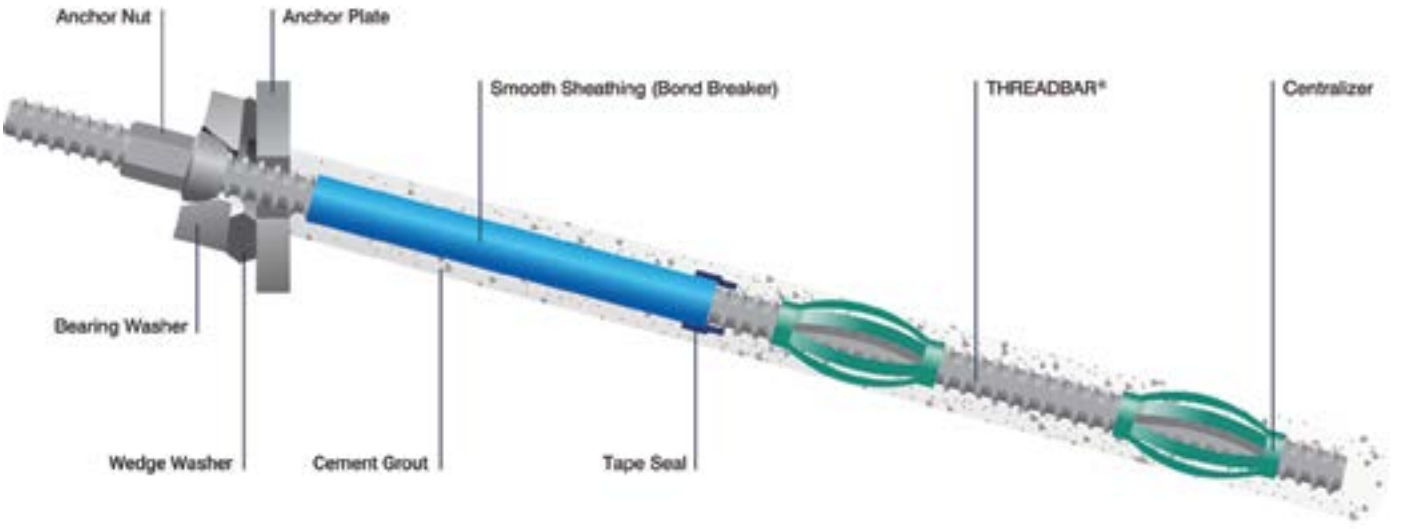
FIELDS OF APPLICATION

- Excavations
- Tiebacks
- Rock and slope stabilization
- Tiedown anchors

THREADBAR® ANCHOR – PERMANENT (DCP)



THREADBAR® ANCHOR – TEMPORARY



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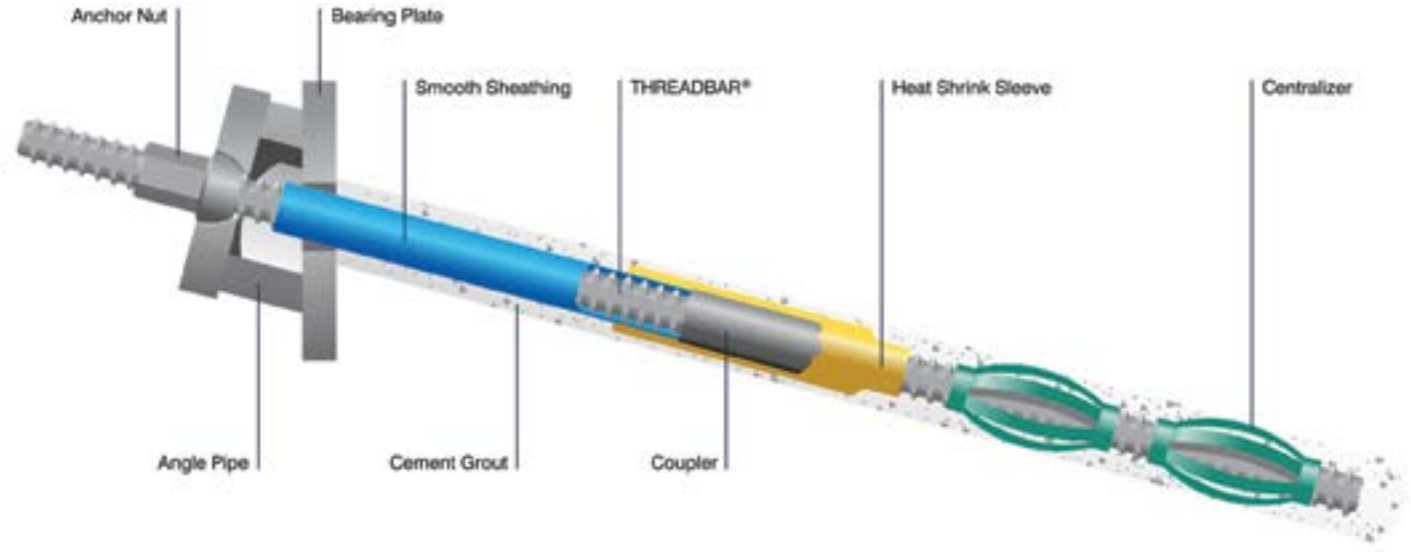
GRADE 150 THREADBAR® – PRESTRESSING STEEL PER ASTM A722

THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimum Ultimate Tensile Strength (f_u)		Nominal Cross Section Area (A_s)		Minimum Ultimate Tensile Load (f_u x A_s)		Nominal Weight	
in	mm	in	mm	ksi	MPa	in²	mm²	kips	kN	lbs/ft	kg/m
1	26	1.20	30	150	1,034	0.85	548	127.5	567	3.01	4.48
1 ¼	32	1.445	37	150	1,034	1.25	806	187.5	834	4.39	6.53
1 ⅜	36	1.630	41	150	1,034	1.58	1,019	237.0	1,054	5.56	8.27
1 ¾	46	2.08	53	150	1,034	2.58	1,665	387.0	1,721	9.37	13.94
2 ¼ [1)]	57	2.482	63	150	1,034	4.08	2,632	612.0	2,722	14.55	21.65
2 ½	65	2.790	71	150	1,034	5.16	3,329	774.0	3,443	18.20	27.08
3	75	3.146	80	150	1,034	6.85	4,419	1,028	4,571	24.09	35.85

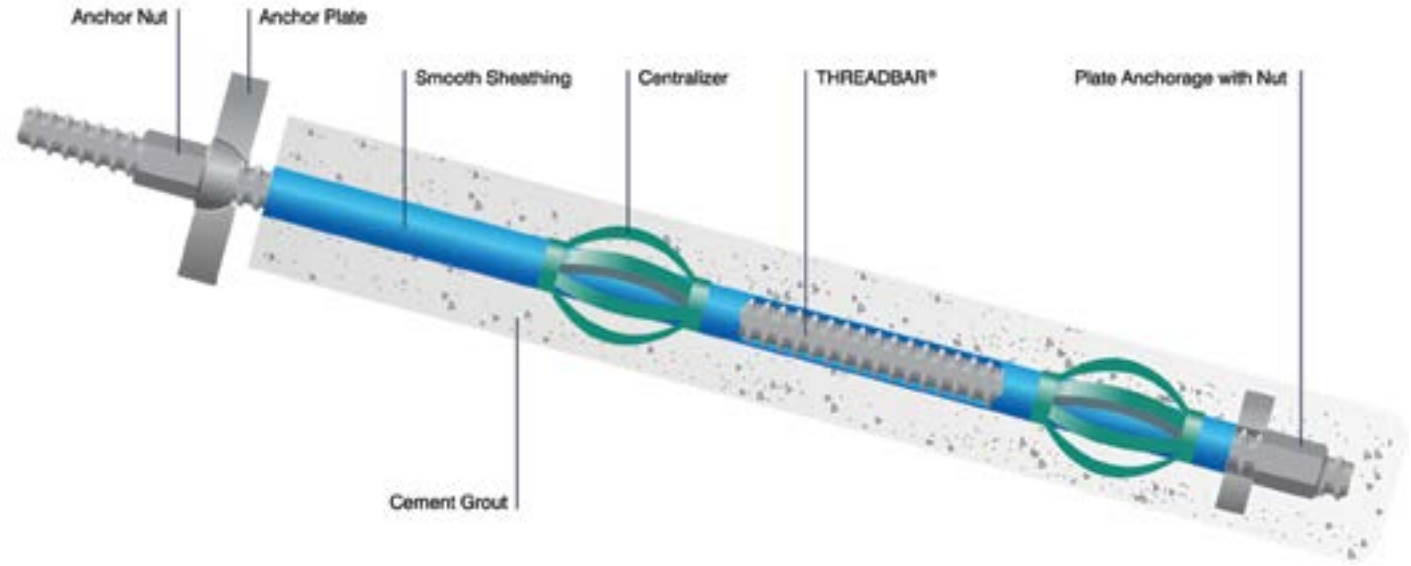
Note: Maximum allowable temporary test tension is 80% of minimum ultimate tensile load. Mill lengths are 60 ft for 1", 1 ¼", 1 ⅜" and 1 ¾" and 45 ft for 2 ¼", 2 ½" and 3" bars.

[1)] Threadbar size not listed in the ASTM A 722 but its strength is in conformance with this standard.
WARNING: DO NOT WELD on or near A722 prestressing bars or their anchorages.

THREADBAR® ANCHOR – PARTIALLY REMOVABLE



THREADBAR® ANCHOR – FULLY REMOVABLE

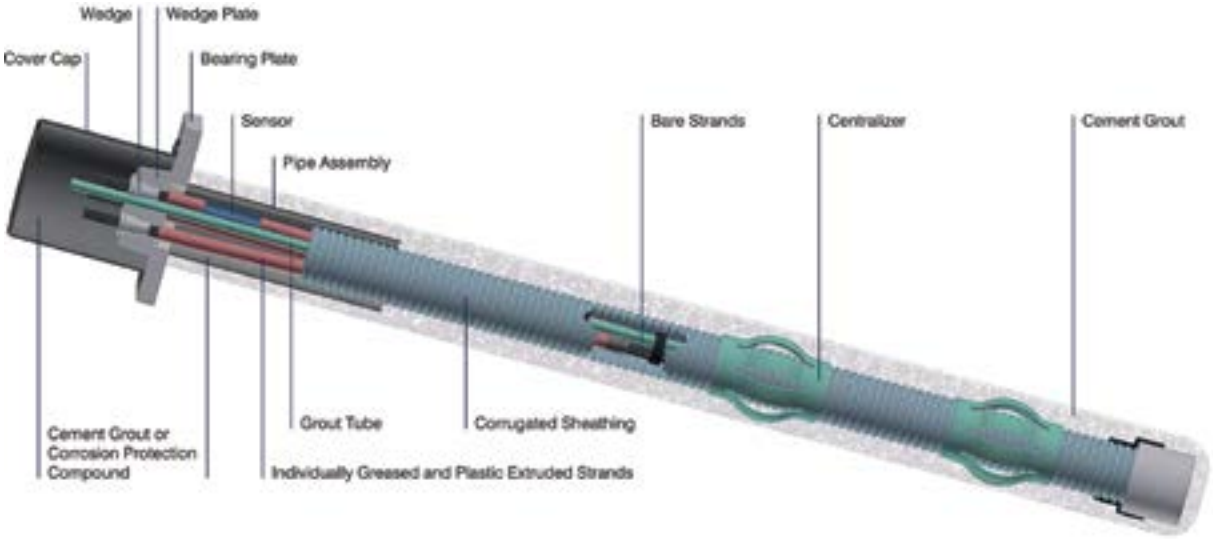


PERMANENT (DCP) ANCHOR – KEY FEATURES

- Long-lasting system for permanent use
- Variable anchor head and angle compensation designs
- Double Corrosion Protection (DCP) is achieved by protecting the strands with barrier against corrosion. It consists of a corrugated sheathing, a pipe welded to the bearing plate and a cover cap along with encasement in cement grout.

FIELDS OF APPLICATION

- Retaining walls
- Rock and slope stabilization
- Tiedown anchors
- Excavations

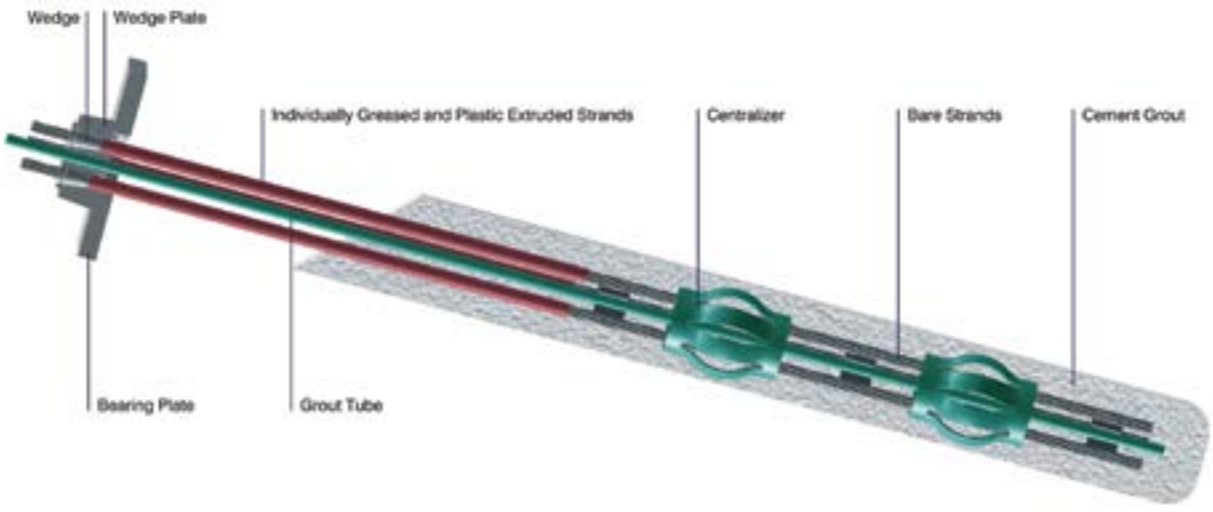


TEMPORARY ANCHOR – KEY FEATURES

- Temporary system for a service life of up to two years
-
- Variable anchor head and angle compensation designs
-

FIELDS OF APPLICATION

- Excavations
- Temporary structures



STRAND ANCHORS PROPERTIES

Strand Anchors utilize 0.6” dia. 7-wire, low relaxation 270 ksi Strand conforming to ASTM A416 (bare strand) or ASTM A882 (epoxy coated strand).

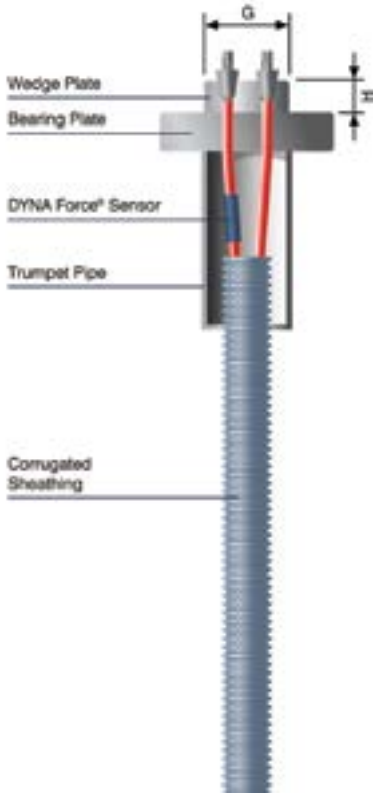
Number of Strands	Nominal Cross Section Area (A_{ps})		Ultimate Strength (F_{pu} x A_{ps})		Prestressing Force						Nominal Weight (Bare Steel only)	
					0.80 F_{pu} x A_{ps}		0.70 F_{pu} x A_{ps}		0.60 F_{pu} x A_{ps}			
ea	in^2	mm^2	kips	kN	kips	kN	kips	kN	kips	kN	lbs/ft	kg/m
1	0.217	140	58.6	261	46.9	208	41	182	35.2	156	0.74	1.09
2	0.434	280	117.2	521	93.7	417	82	365	70.3	313	1.48	1.64
3	0.651	420	175.8	782	140.6	625	123	547	105.5	469	2.22	3.27
4	0.868	560	234.4	1,043	187.5	834	164.1	730	140.6	626	2.96	4.46
5	1.085	700	293.0	1,303	234.4	1,043	205.1	912	175.8	782	3.70	5.51
6	1.302	840	351.6	1,564	281.3	1,251	246.1	1,095	210.9	938	4.44	6.55
7	1.519	980	410.2	1,825	328.2	1,460	287.2	1,277	246.2	1,095	5.18	7.74
8	1.736	1,120	468.8	2,085	375.0	1,668	328.1	1,460	281.3	1,251	5.92	8.78
9	1.953	1,260	527.4	2,346	421.9	1,877	369.2	1,642	316.4	1,408	6.66	9.97
12	2.604	1,680	703.2	3,128	562.6	2,503	492.3	2,190	422.0	1,877	8.88	13.24
15	3.255	2,100	879.0	3,910	703.2	3,128	615.3	2,737	527.4	2,346	11.10	16.52
19	4.123	2,660	1,113.4	4,953	890.7	3,962	779.4	3,467	668.0	2,972	14.06	20.98
27	5.859	3,780	1,582.2	7,038	1,265.8	5,631	1,107.6	4,927	949.4	4,223	19.98	29.76
37	8.029	5,180	2,168.2	9,645	1,734.6	7,716	1,517.8	6,751	1,301.0	5,787	27.38	40.78
48	10.416	6,720	2,812.8	12,512	2,250.2	10,009	1,968.9	8,758	1,687.7	7,507	35.52	52.83
54	11.718	7,560	3,164.4	14,076	2,531.5	11,261	2,215.1	9,853	1,898.6	8,446	39.96	59.38
61	13.237	8,540	3,574.6	15,901	2,859.7	12,721	2,502.2	11,131	2,144.8	9,540	45.14	67.12

A_{ps} = Area Prestressing Steel.
F_{pu} = Minimum Ultimate Strength.
Please consult your local sales office for systems exceeding 61 strands.

DCP STRAND ANCHOR AND WEDGE PLATE DIMENSIONS

Strand Range Inside Sheathing [1]	HDPE Corrugated			Trumpet Pipe		Wedge Plate Dimensions			
ea	Nom. Size in	O.D. in	O.D. mm	O.D. in	O.D. mm	ØG in	ØG mm	H in	H mm
1-3	2	2.44	62	4.5	114	4.69	119	1.8	46
4	2.5	2.92	74	4.5	114	4.69	119	1.8	46
5-6	2.5	2.92	74	4.5	114	5.61	142	2.2	56
7	3	3.60	91	4.5	114	5.61	142	2.2	56
8-9	3	3.60	91	5.63	143	5.75	146	1.69	43
10-12	4	4.60	117	5.63	143	6.75	171	1.95	50
13-15	4	4.60	117	6.63	168	7.09	180	1.97	50
16-17	4	4.60	117	8.63	219	7.87	200	2.17	55
18-19	5	5.85	149	8.63	219	7.87	200	2.17	55
20-24	5	5.85	149	8.63	219	9.45	240	2.95	75
25-27	6	6.8	173	8.63	219	9.45	240	2.95	75

[1] Based on the use of a single 0.5” ID x 0.75” OD internal grout tube. Bearing plate sizes subject to project specific requirements.
Strand anchors larger than 27 strand systems also available.



MICROPILES

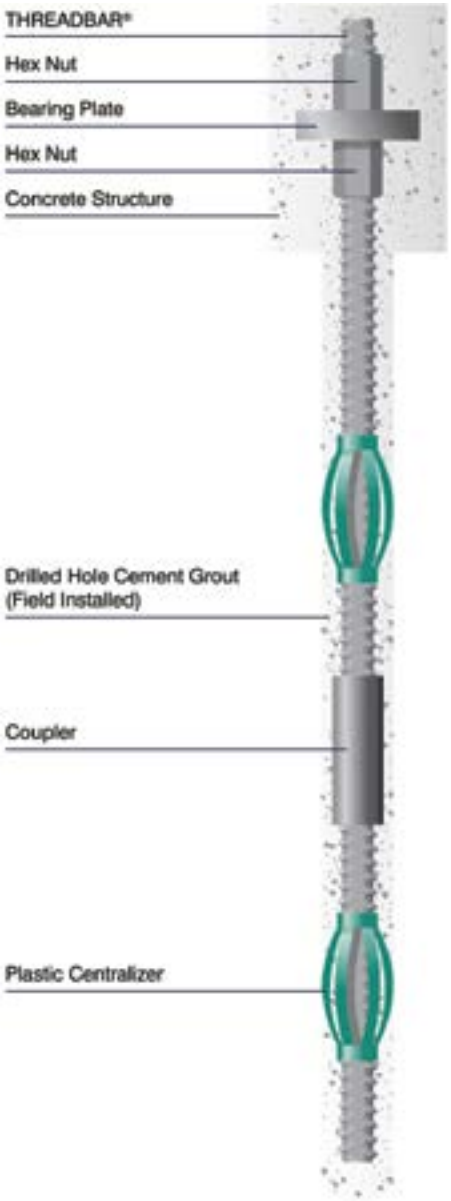
BASIC CONCEPT

A drilled and grouted micropile, with a diameter of less than 12 inches. It is centrally reinforced with either one or a group of THREADBARS®. The deformations on the bar transfer the load into the surrounding grout body and friction transfers the load from the grout into the ground.

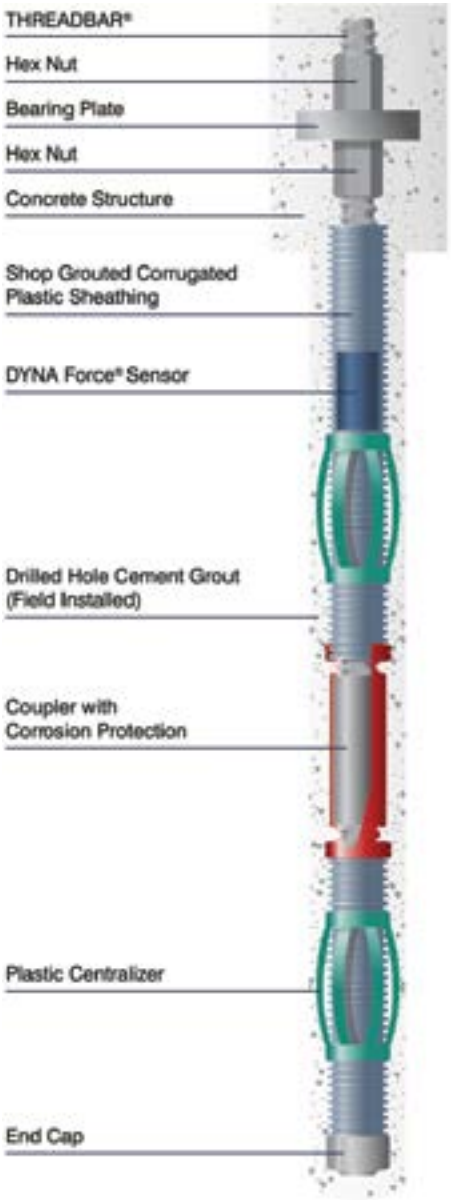
KEY FEATURES

- Compact lightweight drilling equipment allows for pile installation even in areas with low headroom
- Small economic drill hole diameters
- Drill holes can be placed closely to existing walls or structures
- Vibration free drilling prevents damage to adjacent structures
- Double Corrosion Protected (DCP) bars may be utilized for piles in aggressive ground
- Multiple bars can be installed into a single borehole
- Short bar sections with couplers can be utilized in low headroom locations
- Continuous, coarse thread allows for rough site handling and for easy on site length adjustments since cutting or coupling of the rod is possible along its entire length

SINGLE CORROSION PROTECTION (SCP)



DOUBLE CORROSION PROTECTION (DCP)





THREADED CASING FOR MICROPILE

Outside Diameter	Thickness	Inside Diameter	Weight	Cross Sectional Area	Total Area of Shaft	Internal Volume	External Surface Area	Moment of Inertia	Section Modulus
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
5.5	**0.415**	**4.670**	**22.56**	**6.63**	**23.76**	**0.12**	**1.44**	**21.57**	**7.84**
139.700	10.541	118.618	33.57	42.77	153.28	0.011	0.44	897.80	128.47
7	**0.408**	**6.184**	**28.75**	**8.45**	**38.48**	**0.21**	**1.83**	**46.07**	**13.16**
177.800	10.363	157.073	42.79	54.51	248.29	0.019	0.56	1917.56	215.65
7	**0.453**	**6.094**	**31.70**	**9.32**	**38.48**	**0.20**	**1.83**	**50.16**	**14.33**
177.800	11.506	154.787	47.18	60.11	248.29	0.019	0.56	2087.80	234.83
7.625	**0.430**	**6.765**	**33.07**	**9.72**	**45.66**	**0.25**	**2.00**	**63.12**	**16.56**
193.675	10.922	171.831	49.21	62.71	294.60	0.023	0.61	2627.23	271.31
7.625	**0.500**	**6.625**	**38.08**	**11.19**	**45.66**	**0.24**	**2.00**	**71.37**	**18.72**
193.675	12.700	168.275	56.67	72.21	294.60	0.022	0.61	2970.62	306.76
8.625	**0.500**	**7.625**	**43.43**	**12.76**	**58.43**	**0.32**	**2.26**	**105.72**	**24.51**
219.075	12.700	193.675	64.63	82.34	376.94	0.029	0.69	4400.36	401.65
9.625	**0.472**	**8.681**	**46.18**	**13.57**	**72.76**	**0.41**	**2.52**	**142.51**	**29.61**
244.475	11.989	220.497	68.73	87.56	469.42	0.038	0.77	5931.67	485.22
9.625	**0.545**	**8.535**	**52.90**	**15.55**	**72.76**	**0.40**	**2.52**	**160.80**	**33.41**
244.475	13.843	216.789	78.73	100.30	469.42	0.037	0.77	6692.95	547.49
9.875	**0.625**	**8.625**	**61.80**	**18.16**	**31.02**	**0.41**	**2.59**	**195.14**	**39.52**
250.83	15.875	219.075	91.97	117.16	200.13	0.038	0.79	8122.23	647.62
10.75	**0.500**	**9.750**	**54.79**	**16.10**	**90.76**	**0.52**	**2.81**	**211.95**	**39.43**
273.050	12.700	247.650	81.54	103.87	585.56	0.048	0.86	8821.95	646.14
10.75	**0.545**	**9.660**	**59.46**	**17.47**	**90.76**	**0.51**	**2.81**	**228.10**	**42.44**
273.050	13.843	245.364	88.49	112.73	585.56	0.047	0.86	9494.16	695.46
10.75	**0.595**	**9.560**	**64.59**	**18.98**	**90.76**	**0.50**	**2.81**	**245.53**	**45.68**
273.050	15.113	242.824	96.12	122.47	585.56	0.046	0.86	10219.65	748.56
11.875	**0.582**	**10.711**	**70.26**	**20.65**	**110.75**	**0.63**	**3.11**	**330.04**	**55.59**
301.624	14.783	272.059	104.56	133.21	714.53	0.058	0.95	13737.19	910.95
12.75	**0.500**	**11.750**	**65.48**	**19.24**	**127.68**	**0.75**	**3.34**	**361.54**	**56.71**
323.849	12.700	298.449	97.45	124.14	823.71	0.070	1.02	15048.31	929.31
13.375	**0.480**	**12.415**	**66.17**	**19.45**	**140.50**	**0.84**	**3.50**	**404.73**	**60.52**
339.724	12.192	315.340	98.47	125.45	906.45	0.078	1.07	16846.00	991.74
13.375	**0.514**	**12.347**	**70.67**	**20.77**	**140.50**	**0.83**	**3.50**	**430.07**	**64.31**
339.724	13.056	313.613	105.17	133.98	906.45	0.077	1.07	17900.72	1053.85

Dimensions based on theoretical.

Contact Chris Gabuzda for additional diameters, lengths, and starter details.

cgabuzda@jdfields.com
Cell: (412) 414 0044

THREADBAR® PROPERTIES

GRADE 75, 80 THREADBAR® – REINFORCING STEEL PER ASTM A615

THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimun Yield Stress (f_y)		Nominal Cross Section Area (A_s)		Minimun Yield Load (f_y x A_s)		Nominal Weight	
	mm	in	mm	ksi	MPa	in²	mm²	kips	kN	lbs/ft	kg/m
#6	19	0.86	22	75	517	0.44	284	33.0	147	1.50	2.23
#7	22	0.99	25	75	517	0.60	387	45.0	200	2.04	3.04
#8	25	1.12	28	75	517	0.79	510	59.3	264	2.67	3.97
#9	29	1.26	32	75	517	1.00	645	75.0	334	3.40	5.06
#10	32	1.43	36	75	517	1.27	819	95.3	424	4.30	6.40
#11	36	1.61	41	75	517	1.56	1,006	117.0	520	5.31	7.90
#14	43	1.86	47	80	552	2.25	1,452	180.0	801	7.65	11.38
#18	57	2.50	64	80	552	4.00	2,581	320.0	1,423	13.60	20.24
#20	63	2.72	69	80	552	4.91	3,168	393.0	1,748	16.70	24.85
#24 [1)]	75	3.18	81	75	517	7.06	4,555	529.5	2,355	24.09	35.85
#28 [1)]	90	3.68	94	75	517	9.62	6,206	721.5	3,209	32.79	48.80

Note: Maximum allowable temporary tension is 90% of minimum yield load. Mill length is 60 ft (#6 through #20) and 53 ft for #24 and #28.
[1)] Threadbar sizes not listed by ASTM A 615 but yield strength is in conformance with A615 standard.

GRADE 100 THREADBAR® – REINFORCING STEEL PER ASTM A615

THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimun Yield Stress (f_y)		Nominal Cross Section Area (A_s)		Minimun Yield Load (f_y x A_s)		Nominal Weight	
	mm	in	mm	ksi	MPa	in²	mm²	kips	kN	lbs/ft	kg/m
#6	19	0.86	22	100	689	0.44	284	44.0	196	1.50	2.23
#7	22	0.99	25	100	689	0.60	387	60.0	267	2.04	3.04
#8	25	1.12	28	100	689	0.79	510	79.0	351	2.67	3.97
#9	29	1.26	32	100	689	1.00	645	100.0	445	3.40	5.06
#10	32	1.43	36	100	689	1.27	819	127.0	565	4.30	6.40
#11	36	1.61	41	100	689	1.56	1,006	156.0	694	5.31	7.90
#14	43	1.86	47	100	689	2.25	1,452	225.0	1,001	7.65	11.38
#18	57	2.50	64	100	689	4.00	2,581	400.0	1,779	13.60	20.24
#20	63	2.72	69	100	689	4.91	3,168	491.0	2,184	16.70	24.85

Note: Maximum allowable temporary tension is 90% of minimum yield load. Mill length is 60 ft.

GRADE 150 THREADBAR® – PRESTRESSING STEEL PER ASTM A722

THREADBAR® Designation		Maximum THREADBAR® Diameter		Minimum Ultimate Tensile Strength (f_u)		Nominal Cross Section Area (A_s)		Minimum Ultimate Tensile Load (f_u x A_s)		Nominal Weight	
in	mm	in	mm	ksi	MPa	in²	mm²	kips	kN	lbs/ft	kg/m
1	26	1.20	30	150	1,034	0.85	548	127.5	567	3.01	4.48
1 ¼	32	1.445	37	150	1,034	1.25	806	187.5	834	4.39	6.53
1 ⅜	36	1.630	41	150	1,034	1.58	1,019	237.0	1,054	5.56	8.27
1 ¾	46	2.08	53	150	1,034	2.58	1,665	387.0	1,721	9.37	13.94
2 ¼ [1)]	57	2.482	63	150	1,034	4.08	2,632	612.0	2,722	14.55	21.65
2 ½	65	2.790	71	150	1,034	5.16	3,329	774.0	3,443	18.20	27.08
3	75	3.146	80	150	1,034	6.85	4,419	1,028	4,571	24.09	35.85

Note: Maximum allowable temporary test tension is 80% of minimum ultimate tensile load. Mill lengths are 60 ft for 1", 1 ¼", 1 ⅜" and 1 ¾" and 45 ft for 2 ¼", 2 ½" and 3" bars.
[1)] Threadbar size not listed in the ASTM A 722 but its strength is in conformance with this standard.
WARNING: DO NOT WELD on or near A722 prestressing bars or their anchorages.

DRILL HOLLOW BAR SYSTEM

BASIC CONCEPT

The Drill Hollow Bar System consists of fully threaded steel bar sections, couplers, nuts and drill bits.

It can be drilled and grouted into loose or collapsible soil without a casing.

The bar sections feature a hollow center that allows for a simultaneous drilling and grouting operation.

The Drill Hollow Bar serves as a drill rod. It is fitted with a lost drill bit at the front that can be adapted to different ground conditions. After each single bar section of 1 to 6 m, the subsequent bar is coupled to the previously installed section.

During drilling, cement grout is injected into the hollow core of the bar using an injection adapter that is mounted on the drill rig. The cement grout exits at the bottom end through openings in the drill bit. The injected grout initially serves

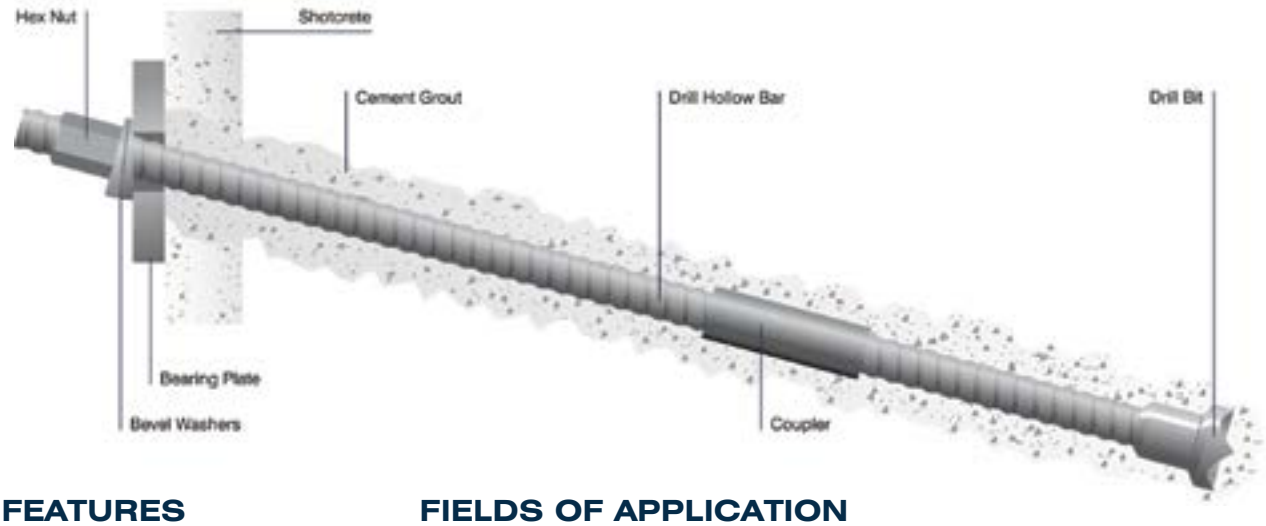
as slurry to stabilize the borehole and ensures the efficient flushing of the drill spoils. Once the grout reached strength it bonds the bar to the ground.

Once the required installation depth has been reached, the hollow bar serves as a steel tendon and can carry out its function as a soil nail, rock bolt or pile upon the grout reaching its required strength.

The comprehensive Drill Hollow Bar System product range offers tendons with ultimate loads from 45 kips to 832 kips including all system components such as drill bits, couplers, spacers and anchor heads.

Additional installation tools such as injection adapters can be produced customized or adjusted to job site requirements on short notice.

DRILL HOLLOW BAR – SOIL NAIL



KEY FEATURES

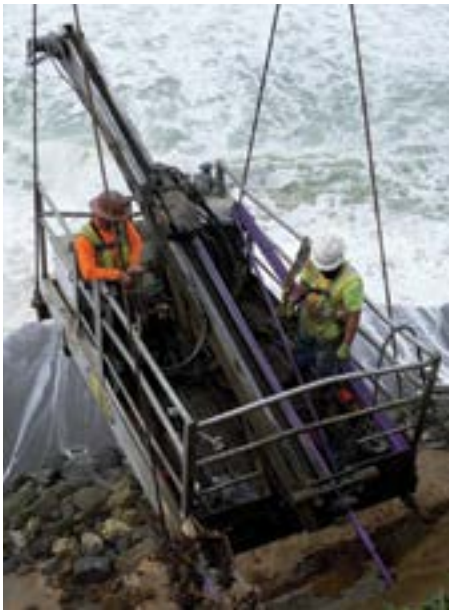
- The tendon simultaneously serves as a drill rod
- Extremely fast installation because borehole drilling is made redundant by simultaneous drilling and grouting
- System can be installed in confined spaces utilizing simple and compact drilling equipment
- Variable anchorage and angle compensation designs
- Irregular grout body enhances capacity
- Drill bits are available for various ground conditions
- Can be used as a soil nail, rock bolt or a pile

FIELDS OF APPLICATION

- Slope, embankment and rock stabilization
- Shoring and excavations
- Fixation of rock fall mesh
- Avalanche barriers
- Foundations

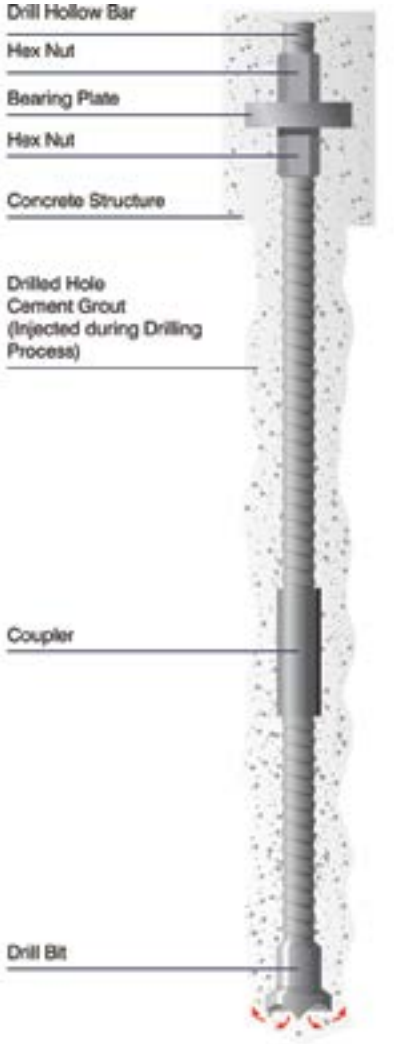


Various Style Drill Bits for DYWI ® Drill



DRILL HOLLOW BAR MICROPILE

DRILL HOLLOW BAR – MICROPILE





Simultaneous Drilling and Grouting

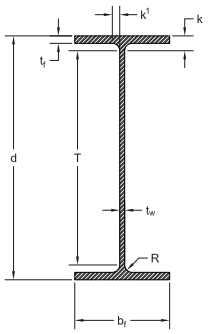
DRILL HOLLOW BAR PROPERTIES

Bar Des.	Nominal Outer Diameter		Average Yield Strength (f_y)		Average Ultimate Tensile Strength (f_u)		Average Cross Section Area (A_s)		Yield Load (f_y x A_s)		Ultimate Load (f_u x A_s)		Nominal Weight	
	in	mm	ksi	Mpa	ksi	MPa	in^2	mm^2	kips	kN	kips	kN	lbs/ft	kg/m
R25N	1.00	25	90	620	120	830	0.37	240	34	150	45	200	1.28	1.90
R32N	1.26	32	94	650	116	800	0.54	350	52	230	63	280	1.81	2.70
R32S	1.26	32	94	650	120	830	0.67	430	63	280	81	360	2.28	3.40
R38N	1.50	38	97	670	122	840	0.91	590	90	400	112	500	3.16	4.70
R51L	2.00	51	87	600	107	740	1.15	740	101	450	124	550	3.97	5.90
T40N	1.57	40	99	680	123	850	1.19	770	118	525	148	660	4.03	6.00
R51N	2.00	51	97	670	123	850	1.46	940	142	630	180	800	4.97	7.40
T76N	3.00	76	83	570	110	760	3.22	2,080	270	1,200	360	1,600	10.95	16.30
T76S	3.00	76	87	600	112	770	3.81	2,460	337	1,500	427	1,900	12.97	19.30
T103N	4.00	103	81	560	103	710	4.96	3,200	405	1,800	517	2,300	16.80	25.00
T103S	4.00	103	74	510	103	710	8.06	5,200	600	2,670	832	3,700	26.88	40.00

Note: Maximum allowable temporary tension is the yield load. Cross section area is based on average internal diameter of the bar.
The ultimate tensile and yield strength are calculated average values.
Standard length = 9'-10" (3 m). Other lengths available on special order.

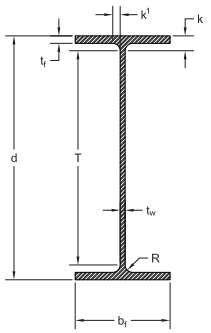


STRUCTURALS



W44 & W1100

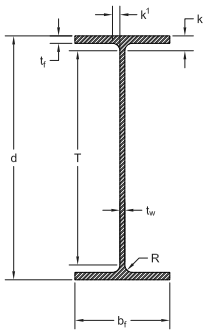
Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
44 x 16 1100 x 400	**W44 x 335** W1100 x 499	**98.7** 63.677	**44.02** 1118	**1.025** 26.0	**15.945** 405	**1.770** 45.0	**37.993** 965	**3.014** 77	**1.694** 43	**1.18** 30	**31100** 12945	**1410** 23106	**17.8** 452	**1200** 499	**150** 2458	**3.49** 88.6	**1620** 26547	**236** 3.867
	W44 x 290 W1100 x 433	**85.8** 55355	**43.62** 1108	**0.865** 22.0	**15.825** 402	**1.575** 40.0	**37.983** 965	**2.819** 72	**1.614** 41	**1.18** 30	**27000** 11238	**1240** 20320	**17.8** 452	**1040** 433	**132** 2163	**3.49** 88.6	**1410** 23106	**205** 3.359
	W44 x 262 W1100 x 390	**77.2** 49806	**43.31** 1100	**0.785** 20.0	**15.750** 400	**1.415** 36.0	**37.993** 965	**2.659** 68	**1.574** 40	**1.18** 30	**24100** 10031	**1110** 18190	**17.7** 450	**923** 384	**117** 1917	**3.47** 88.1	**1270** 20811	**182** 2.982
	W44 x 230 W1100 x 343	**67.9** 43806	**42.91** 1090	**0.710** 18.0	**15.750** 400	**1.220** 31.0	**37.983** 965	**2.464** 63	**1.536** 39	**1.18** 30	**20800** 8658	**971** 15912	**17.5** 445	**796** 331.3	**101** 1655	**3.43** 87.1	**1100** 18026	**157** 2.573



W40 & W1100

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
40 x 16 1000 x 400	**W40 x 431** W1000 x 642	**126.7** 81742	**41.26** 1048	**1.340** 34.0	**16.220** 412	**2.360** 60.0	**34.053** 865	**3.604** 92	**1.851** 47	**1.18** 30	**34800** 14485	**1690** 27694	**16.6** 422	**1690** 703	**208** 3408	**3.65** 92.7	**1960** 32119	**328** 5.375
	W40 x 397 W1000 x 591	**117.0** 75484	**40.95** 1040	**1.220** 31.0	**16.120** 409	**2.200** 55.9	**34.063** 865	**3.444** 87	**1.791** 46	**1.18** 30	**32000** 13319	**1560** 25564	**16.6** 422	**1540** 641	**191** 3130	**3.64** 92.5	**1800** 29497	**300** 4.916
	W40 x 372 W1000 x 554	**109.4** 70581	**40.63** 1032	**1.160** 29.5	**16.065** 408	**2.045** 52.0	**34.053** 865	**3.289** 84	**1.761** 45	**1.18** 30	**29600** 12320	**1460** 23925	**16.5** 419	**1420** 591	**177** 2900	**3.60** 91.4	**1680** 27530	**277** 4.539
	W40 x 362 W1000 x 539	**107.0** 69032	**40.55** 1030	**1.120** 28.4	**16.020** 407	**2.010** 51.1	**34.043** 865	**3.254** 83	**1.741** 44	**1.18** 30	**28900** 12029	**1420** 23270	**16.5** 419	**1380** 574	**173** 2835	**3.60** 91.4	**1640** 26875	**270** 4 424
	W40 x 324 W1000 x 483	**95.3** 61484	**40.16** 1020	**1.000** 25.4	**15.910** 404	**1.810** 46.0	**34.053** 865	**3.054** 78	**1.681** 43	**1.18** 30	**25600** 10656	**1280** 20975	**16.4** 417	**1220** 508	**153** 2507	**3.58** 90.9	**1460** 23925	**239** 3.916
	W40 x 297 W1000 x 443	**87.4** 56387	**39.84** 1012	**0.930** 23.6	**15.825** 402	**1.650** 41.9	**34.053** 865	**2.894** 73	**1.646** 42	**1.18** 30	**23200** 9657	**1170** 19173	**16.3** 414	**1090** 454	**138** 2261	**3.54** 89.9	**1330** 21795	**215** 3.523
	W40 x 277 W1000 x 412	**81.3** 52452	**39.69** 1008	**0.830** 21.1	**15.830** 402	**1.575** 40.0	**34.053** 865	**2.819** 72	**1.596** 41	**1.18** 30	**21900** 9115	**1100** 18026	**16.4** 417	**1040** 433	**132** 2163	**3.58** 90.9	**1250** 20484	**204** 3.343
	W40 x 249 W1000 x 371	**73.3** 47290	**39.38** 1000	**0.750** 19.0	**15.750** 400	**1.420** 36.1	**34.053** 865	*2.664* 68	**1.556** 40	**1.18** 30	**19600** 8158	**993** 16272	**16.3** 414	**926** 385	**118** 1934	**3.55** 90.2	**1120** 18353	**182** 2.982
	W40 x 215 W1000 x 321	**63.3** 40839	**38.98** 990	**0.650** 16.5	**15.750** 400	**1.220** 31.0	**34.053** 865	**2.464** 63	**1.506** 38	**1.18** 30	**16700** 6951	**859** 14076	**16.2** 411	**796** 331	**101** 1655	**3.54** 89.9	**964** 15797	**156** 2.556
	W40 x 199 W1000 x 296	**58.4** 37678	**38.67** 982	**0.650** 16.5	**15.750** 400	**1.065** 27.1	**34.053** 865	**2.309** 59	**1.506** 38	**1.18** 30	**14900** 6202	**770** 12618	**16.0** 406	**695** 289	**88.2** 1445	**3.45** 87.6	**869** 14240	**137** 2.245
40 x 12 1000 x 300	**W40 x 327** W1000 x 486	**95.9** 61871	**40.79** 1036	**1.180** 30.0	**12.130** 308	**2.130** 54.1	**34.043** 865	**3.374** 86	**1.771** 45	**1.18** 30	**24500** 10198	**1200** 19664	**16.0** 406	**640** 266	**105** 1721	**2.58** 65.5	**1410** 23106	**170** 2.786
	W40 x 294 W1000 x 438	**86.2** 55613	**40.39** 1026	**1.060** 26.9	**12.010** 305	**1.930** 49.0	**34.043** 865	**3.174** 81	**1.711** 43	**1.18** 30	**21900** 9115	**1080** 17698	**15.9** 404	**562** 234	**93.5** 1532	**2.55** 64.8	**1270** 20811	**150** 2.458
	W40 x 264 W1000 x 393	**77.6** 50064	**40.00** 1016	**0.960** 24.4	**11.930** 303	*1.730* 43.9	**34.053** 865	**2.974** 75	**1.661** 42	*1.18* 30	**19400** 8075	**971** 15912	**15.8** 401	**493** 205	**82.6** 1354	**2.52** 64.0	**1130** 18517	**132** 2.163
	W40 x 235 W1000 x 350	**68.9** 44452	**39.69** 1008	**0.830** 21.1	**11.890** 302	**1.575** 40.0	**34.053** 865	**2.819** 72	**1.596** 41	**1.18** 30	**17400** 7242	**875** 14339	**15.9** 404	**444** 185	**74.6** 1222	**2.54** 64.5	**1010** 16551	**118** 1.934
	W40 x 211 W1000 x 314	**62.0** 40000	**39.37** 1000	**0.750** 19.1	**11.810** 300	**1.415** 35.9	**34.053** 865	**2.659** 67	**1.556** 40	**1.18** 30	**15500** 6452	**786** 12880	**15.8** 401	**390** 162	**66.1** 1083	**2.51** 63.8	**906** 14847	**105** 1.721
	W40 x 183 W1000 x 272	**53.7** 34645	**38.98** 990	**0.650** 16.5	**11.810** 300	**1.200** 31.0	**34.093** 865	**2.444** 63	**1.506** 38	**1.18** 30	**13200** 5494	**675** 11061	**15.7** 399	**331** 138	**56.0** 918	**2.49** 63.2	**774** 12684	**88.3** 1.447
	W40 x 167 W1000 x 249	**49.1** 31677	**38.59** 980	**0.650** 16.5	**11.810** 300	**1.025** 26.0	**34.053** 865	**2.269** 58	**1.506** 38	**1.18** 30	**11600** 4828	**600** 9832	**15.3** 389	**283** 118	**47.9** 7856	**2.40** 61.0	**693** 11356	**76.0** 1.245
	W40 x 149 W1000 x 222	**43.8** 28258	**38.20** 970	**0.630** 16.0	**11.810** 300	**0.830** 21.1	**34.053** 865	**2.074** 53	**1.496** 38	**1.18** 30	**9800** 4079	**513** 8407	**15.0** 381	**229** 95.3	**38.8** 636	**2.29** 58.2	**598** 9799	**62.2** 1.019

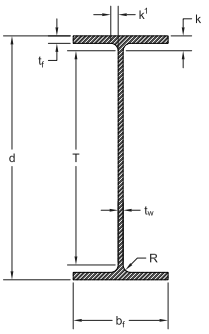
WIDE FLANGE BEAMS



W36 & W920

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
	W36 x 441 W920 x 656	**129.7** 83677	**38.85** 987	**1.360** 34.5	**16.965** 431	**2.440** 62.0	**31.483** 800	**3.684** 94	**1.861** 47	**1.18** 30	**32100** 13361	**1650** 27039	**15.7** 399	**1910** 795	**235** 3851	**3.92** 99.6	**1910** 31299	**368** 6.030
	W36 x 395 W920 x 588	**116.2** 74968	**38.37** 975	**1.220** 31.0	**16.830** 427	**2.200** 55.9	**31.483** 800	**3.444** 87	**1.791** 46	**1.18** 30	**28500** 11863	**1490** 24417	**15.7** 399	**1750** 728	**208** 3408	**3.88** 98.6	**1710** 28022	**325** 5.326
	W36 x 361 W920 x 537	**106.1** 684515	**37.99** 965	**1.120** 28.4	**16.730** 425	**2.010** 51.1	**31.483** 800	**3.254** 83	**1.741** 44	**1.18** 30	**25700** 10697	**1350** 22122	**15.6** 396	**1570** 653	**188** 3081	**3.85** 97.8	**1550** 25400	**293** 4.801
	W36 x 330 W920 x 491	**97.0** 62581	**37.67** 957	**1.020** 25.9	**16.630** 422	**1.850** 47.0	**31.483** 800	**3.094** 79	**1.691** 43	**1.18** 30	**23300** 9698	**1240** 20320	**15.5** 394	**1420** 591	**171** 2802	**3.83** 97.3	**1410** 23106	**265** 4.343
36 x 16.5 920 x 420	**W36 x 302** W920 x 449	**88.8** 57290	**37.33** 948	**0.945** 24.0	**16.655** 423	**1.680** 42.7	**31.483** 800	**2.924** 74	**1.654** 42	**1.18** 30	**21100** 8782	**1130** 18517	**15.4** 391	**1300** 541	**156** 2556	**3.82** 97.0	**1280** 20975	**241** 3.949
	W36 x 282 W920 x 420	**82.9** 53484	**37.11** 943	**0.885** 22.5	**16.595** 422	**1.570** 39.9	**31.483** 800	**2.814** 71	**1.624** 41	**1.18** 30	**19600** 8158	**1050** 17206	**15.4** 391	**1200** 499	**144** 2360	**3.80** 96.5	**1190** 19501	**223** 3.654
	W36 x 262 W920 x 390	**77.0** 49677	**36.85** 936	**0.840** 21.3	**16.550** 420	**1.440** 36.6	**31.483** 800	**2.684** 68	**1.601** 41	**1.18** 30	**17900** 7451	**972** 15928	**15.3** 389	**1090** 454	**132** 2163	**3.76** 95.5	**1100** 18026	**204** 3.343
	W36 x 247 W920 x 368	**72.5** 46774	**36.67** 931	**0.800** 20.3	**16.510** 419	**1.350** 34.3	**31.483** 799	**2.594** 66	**1.581** 40	**1.18** 30	**16700** 6951	**913** 14961	**15.2** 386	**1010** 420	**123** 2016	**3.74** 95.0	**1030** 16879	**190** 3.114
	W36 x 231 W920 x 344	**68.0** 43871	**36.49** 927	**0.760** 19.3	**16.470** 418	**1.260** 32.0	**31.483** 800	**2.504** 64	**1.561** 40	**1.18** 30	**15600** 6493	**854** 13994	**15.1** 384	**940** 391	**114** 1868	**3.71** 94.2	**963** 15781	**176** 2.884
	W36 x 256 W920 x 381	**75.4** 48645	**37.43** 951	**0.960** 24.4	**12.215** 310	**1.730** 43.9	**31.483** 800	**2.974** 75	**1.661** 42	**1.18** 30	**16800** 6993	**895** 14666	**14.9** 378	**528** 220	**86.5** 1417	**2.65** 67.3	**1040** 17042	**137** 2.245
	W36 x 232 W920 x 345	**68.1** 43935	**37.12** 943	**0.870** 22.1	**12.120** 308	**1.570** 39.9	**31.493** 800	**2.814** 71	**1.616** 41	**1.18** 30	**15000** 6243	**809** 13257	**14.8** 376	**468** 195	**77.2** 1265	**2.62** 66.5	**936** 15338	**122** 1.999
	W36 x 210 W920 x 313	**61.8** 39871	**36.69** 932	**0.830** 21.1	**12.180** 309	**1.360** 34.5	**31.483** 800	**2.604** 66	**1.596** 41	**1.18** 30	**13200** 5494	**719** 11782	**14.6** 371	**411** 171	**67.5** 1106	**2.58** 65.5	**833** 13650	**107** 1.753
	W36 x 194 W920 x 289	**57.0** 36774	**36.49** 927	**0.765** 19.4	**12.115** 308	**1.260** 32.0	**31.483** 800	**2.504** 64	**1.564** 40	**1.18** 30	**12100** 5036	**664** 10881	**14.6** 371	**375** 156	**61.9** 1014	**2.56** 65.0	**767** 12569	**97.7** 1.601
36 x 12 920 x 300	**W36 x 182** W920 x 271	**53.6** 34581	**36.33** 923	**0.725** 18.4	**12.075** 307	**1.180** 30.0	**31.483** 800	**2.424** 62	**1.544** 39	**1.18** 30	**11300** 4703	**623** 10209	**14.5** 368	**347** 144	**57.6** 944	**2.55** 64.8	**718** 11766	**90.7** 1.486
	W36 x 170 W920 x 253	**50.0** 32258	**36.17** 919	**0.680** 17.3	**12.030** 306	**1.100** 27.9	**31.483** 800	**2.344** 59	**1.521** 39	**1.18** 30	**10500** 4370	**581** 9521	**14.5** 368	**320** 133	**53.2** 872	**2.53** 64.3	**668** 10947	**83.8** 1.373
	W36 x 160 W920 x 238	**47.0** 30323	**36.01** 915	**0.650** 16.5	**12.000** 305	**1.020** 25.9	**31.483** 800	**2.264** 57	**1.506** 38	**1.18** 30	**9760** 4062	**542** 8882	**14.4** 366	**295** 123	**49.1** 805	**2.50** 63.5	**624** 10225	**77.3** 1.267
	W36 x 150 W920 x 223	**44.2** 28516	**35.85** 911	**0.625** 15.9	**11.975** 304	**0.940** 23.9	**31.483** 800	**2.184** 55	**1.494** 38	**1.18** 30	**9040** 3763	**504** 8259	**14.3** 363	**270** 112	**45.1** 739	**2.47** 62.7	**581** 9521	**70.9** 1 162
	W36 x 135 W920 x 201	**39.7** 25613	**35.55** 903	**0.600** 15.2	**11.950** 304	**0.790** 20.1	**31.483** 800	**2.034** 52	**1.481** 38	**1.18** 30	**7800** 3247	**439** 7194	**14.0** 356	**225** 93.7	**37.7** 618	**2.38** 60.5	**509** 8341	**59.7** 978

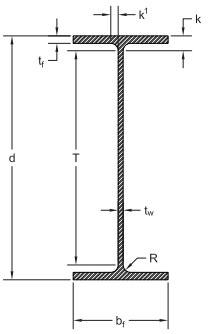
WIDE FLANGE BEAMS



W33 & W840

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
33 x 15.75 840 x 400	**W33 x 387** W840 x 576	**114.0** 73548	**35.95** 913	**1.260** 32.0	**16.200** 411	**2.280** 57.9	**28.903** 734	**3.524** 89	**1.811** 46	**1.18** 30	**24300** 10114	**1350** 22122	**14.6** 371	**1620** 674	**200** 3277	**3.77** 95.8	**1560** 25564	**312** 5.113
	W33 x 354 W840 x 527	**104.1** 67161	**35.55** 903	**1.160** 29.5	**16.100** 409	**2.090** 53.1	**28.883** 734	**3.334** 85	**1.761** 45	**1.18** 30	**22000** 9157	**1240** 20320	**14.5** 368	**1460** 608	**181** 2966	**3.74** 95.0	**1420** 23270	**282** 4.621
	W33 x 318 W840 x 473	**93.5** 60322	**35.16** 893	**1.040** 26.4	**15.985** 406	**1.890** 48.0	**28.893** 734	**3.134** 80	**1.701** 43	**1.18** 30	**19500** 8117	**1110** 18190	**14.5** 368	**1290** 537	**161** 2638	**3.71** 94.2	**1270** 20811	**250** 4.097
	W33 x 291 W840 x 433	**85.6** 55226	**34.84** 885	**0.960** 24.4	**15.905** 404	**1.730** 43.9	**28.893** 734	**2.974** 75	**1.661** 42	**1.18** 30	**17700** 7367	**1020** 16715	**14.4** 366	**1160** 483	**146** 2393	**3.68** 93.5	**1160** 19009	**226** 3.703
	W33 x 263 W840 x 392	**77.4** 49935	**34.53** 877	**0.870** 22.1	**15.805** 401	**1.570** 39.9	**28.903** 734	**2.814** 71	**1.616** 41	**1.18** 30	**15900** 6618	**919** 15060	**14.3** 363	**1040** 433	**131** 2147	**3.66** 93.0	**1040** 17042	**202** 3.310
	W33 x 241 W840 x 359	**70.9** 45742	**34.18** 868	**0.830** 21.1	**15.860** 403	**1.400** 35.6	**28.893** 734	**2.644** 67	**1.596** 41	**1.18** 30	**14200** 5910	**831** 13618	**14.1** 358	**933** 388	**118** 1934	**3.62** 91.9	**940** 15404	**182** 2.982
	W33 x 221 W840 x 329	**65.0** 41935	**33.93** 862	**0.775** 19.7	**15.805** 401	**1.275** 32.4	**28.893** 734	**2.519** 64	**1.569** 40	**1.18** 30	**12900** 5369	**759** 12438	**14.1** 358	**840** 350	**106** 1737	**3.59** 91.2	**857** 14044	**164** 2.687
	W33 x 201 W840 x 299	**59.1** 38129	**33.68** 855	**0.715** 18.2	**15.745** 400	**1.150** 29.2	**28.893** 734	**2.394** 61	**1.539** 39	**1.18** 30	**11600** 4828	**686** 11241	**14.0** 356	**749** 312	**95.2** 1560	**3.56** 90.4	**773** 12667	**147** 2.409
33 x 11.5 840 x 290	**W33 x 169** W840 x 251	**49.5** 31935	**33.82** 859	**0.670** 17.0	**11.500** 292	**1.220** 31.0	**28.893** 734	**2.464** 63	**1.516** 39	**1.18** 30	**9290** 3867	**549** 8996	**13.7** 348	**310** 129	**53.9** 883	**2.50** 63.5	**629** 10307	**84.4** 1.383
	W33 x 152 W840 x 226	**44.7** 28839	**33.49** 851	**0.635** 16.1	**11.565** 294	**1.055** 26.8	**28.893** 734	**2.299** 58	**1.499** 38	**1.18** 30	**8160** 3396	**487** 7980	**13.5** 343	**273** 114	**47.2** 773	**2.47** 62.7	**559** 9160	**73.9** 1.211
	W33 x 141 W840 x 210	**41.6** 26839	**33.30** 846	**0.605** 15.4	**11.535** 293	**0.960** 24.4	**28.893** 734	**2.204** 56	**1.484** 38	**1.18** 30	**7450** 3101	**448** 7341	**13.4** 340	**246** 102	**42.7** 700	**2.43** 61.7	**514** 8423	**66.9** 1.096
	W33 x 130 W840 x 193	**38.3** 24710	**33.09** 840	**0.580** 14.7	**11.510** 292	**0.855** 21.7	**28.893** 734	**2.099** 53	**1.471** 37	**1.18** 30	**6710** 2793	**406** 6653	**13.2** 335	**218** 90.7	**37.9** 621	**2.39** 60.7	**467** 7653	**59.5** 975
	W33 x 118 W840 x 176	**34.7** 22387	**32.86** 835	**0.550** 14.0	**11.480** 292	**0.740** 18.8	**28.893** 734	**1.984** 50	**1.456** 37	**1.18** 30	**5900** 2456	**359** 5883	**13.0** 330	**187** 77.8	**32.6** 534	**2.32** 58.9	**415** 6801	**51.3** 841

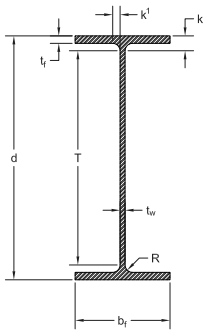
WIDE FLANGE BEAMS



W30 & W760

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
30 x 15 760 x 380	**W30 x 391** W760 x 582	**115.0** 74193	**33.19** 843	**1.360** 34.5	**15.590** 396	**2.440** 62.0	**26.5** 673	**3.67** 93.2	**1.861** 47	**1.18** 30	**20700** 8616	**1250** 20.484	**13.4** 340	**1550** 645	**198** 3.245	**3.67** 93.2	**1450** 23761	**310** 5.080
	W30 x 357 W760 x 531	**104.8** 67613	**32.80** 833	**1.240** 31.5	**15.470** 393	**2.240** 56.9	**26.5** 673	**3.64** 92.5	**1.801** 46	**1.18** 30	**18700** 7784	**1140** 18.681	**13.3** 338	**1390** 579	**179** 2.933	**3.64** 92.5	**1320** 21631	**279** 4.572
	W30 x 326 W760 x 484	**95.7** 61742	**32.40** 823	**1.140** 29.0	**15.370** 390	**2.050** 52.1	**26.5** 673	**3.60** 91.4	**1.751** 45	**1.18** 30	**16800** 6993	**1040** 17.042	**13.2** 335	**1240** 516	**162** 2.655	**3.60** 91.4	**1190** 19501	**252** 4.130
	W30 x 292 W760 x 434	**85.7** 55290	**32.01** 813	**1.020** 25.9	**15.255** 387	**1.850** 47.0	**26.5** 673	**3.58** 90.9	**1.691** 43	**1.18** 30	**14900** 6202	**930** 15.240	**13.2** 335	**1100** 458	**144** 2.360	**3.58** 90.9	**1060** 17370	**223** 3.654
	W30 x 261 W760 x 389	**76.7** 49484	**31.61** 803	**0.930** 23.6	**15.155** 385	**1.650** 41.9	**26.5** 673	**3.53** 89.7	**1.646** 42	**1.18** 30	**13100** 5453	**829** 13.585	**13.1** 333	**959** 399	**127** 2.081	**3.53** 89.7	**943** 15453	**196** 3.212
	W30 x 235 W760 x 350	**69.0** 44516	**31.30** 795	**0.830** 21.1	**15.055** 382	**1.500** 38.1	**26.5** 673	**3.51** 89.2	**1.596** 41	**1.18** 30	**11700** 4870	**748** 12.257	**13.0** 330	**855** 356	**114** 1.868	**3.51** 89.2	**847** 13880	**175** 2.868
	W30 x 211 W760 x 314	**62.0** 40000	**30.94** 786	**0.775** 19.7	**15.105** 384	**1.315** 33.4	**26.5** 673	**3.49** 88.6	**1.569** 40	**1.18** 30	**10300** 4287	**665** 10.897	**12.9** 328	**757** 315	**100** 1.639	**3.49** 88.6	**751** 12307	**155** 2.540
	W30 x 191 W760 x 284	**56.1** 36193	**30.68** 779	**0.710** 18.0	**15.040** 382	**1.185** 30.1	**26.5** 673	**3.46** 87.9	**1.536** 39	**1.18** 30	**9200** 3829	**600** 9.832	**12.8** 325	**673** 280	**89.5** 1.467	**3.46** 87.9	**675** 11061	**138** 2.261
	W30 x 173 W760 x 257	**50.8** 32774	**30.44** 773	**0.655** 16.6	**14.985** 381	**1.065** 27.1	**26.5** 673	**3.42** 86.9	**1.509** 38	**1.18** 30	**8230** 3426	**541** 8.865	**12.7** 323	**598** 249	**79.8** 1.308	**3.42** 86.9	**607** 9947	**123** 2.016
30 x 10.5 760 x 270	**W30 x 148** W760 x 220	**43.5** 28064	**30.67** 779	**0.650** 16.5	**10.480** 266	**1.180** 30.0	**26.5** 673	**2.28** 57.9	**1.506** 38	**1.18** 30	**6680** 2780	**436** 7.145	**12.4** 315	**227** 94.5	**43.3** 710	**2.28** 57.9	**500** 8194	**68.0** 1.114
	W30 x 132 W760 x 196	**38.9** 25097	**30.31** 770	**0.615** 15.6	**10.545** 268	**1.000** 25.4	**26.5** 673	**2.25** 57.2	**1.489** 38	**1.18** 30	**5770** 2402	**380** 6.227	**12.2** 310	**196** 81.6	**37.2** 610	**2.25** 57.2	**437** 7161	**58.4** 957
	W30 x 124 W760 x 185	**36.5** 23548	**30.17** 766	**0.585** 14.9	**10.515** 267	**0.930** 23.6	**26.5** 673	**2.23** 56.6	**1.474** 37	**1.18** 30	**5360** 2231	**355** 5.817	**12.1** 307	**181** 75.3	**34.4** 564	**2.23** 56.6	**408** 6686	**54.0** 885
	W30 x 116 W760 x 173	**34.2** 22064	**30.01** 762	**0.565** 14.4	**10.495** 267	**0.850** 21.6	**26.5** 673	**2.19** 55.6	**1.464** 37	**1.18** 30	**4930** 2052	**329** 5.391	**12.0** 305	**164** 68.3	**31.3** 513	**2.19** 55.6	**378** 6194	**49.2** 806
	W30 x 108 W760 x 161	**31.7** 20452	**29.83** 758	**0.545** 13.8	**10.475** 266	**0.760** 19.3	**26.5** 673	**2.15** 54.6	**1.454** 37	**1.18** 30	**4470** 1861	**299** 4.900	**11.9** 302	**146** 60.8	**27.9** 457	**2.15** 54.6	**346** 5670	**43.9** 719
	W30 x 99 W760 x 147	**29.1** 18774	**29.65** 753	**0.520** 13.2	**10.450** 265	**0.670** 17.0	**26.5** 673	**2.10** 53.3	**1.441** 37	**1.18** 30	**3990** 1661	**269** 4.408	**11.7** 297	**128** 53.3	**24.5** 401	**2.10** 53.3	**312** 5113	**38.6** 633
	W30 x 90 W760 x 134	**26.4** 17032	**29.53** 750	**0.470** 11.9	**10.400** 264	**0.610** 15.5	**26.5** 673	**22.1** 362	**1.416** 36	**1.18** 30	**3610** 1503	**245** 4.015	**11.7** 297	**115** 47.9	**22.1** 362	**2.09** 53.1	**283** 4638	**34.7** 569

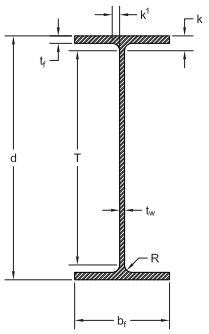
WIDE FLANGE BEAMS



W27 & W690

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
	W27 x 368 W690 x 548	**108.1** 69742	**30.39** 772	**1.380** 35.1	**14.665** 372	**2.480** 63.0	**22.943** 583	**3.724** 95	**1.871** 48	**1.18** 30	**16200** 6743	**1060** 17370	**12.2** 310	**1310** 545	**179** 2933	**3.48** 88.4	**1240** 20320	**279** 4.572
	W27 x 336 W690 x 500	**98.7** 63677	**30.00** 762	**1.260** 32.0	**14.550** 370	**2.280** 57.9	**22.953** 583	**3.524** 89	**1.811** 46	**1.18** 30	**14600** 6.077	**972** 15928	**12.1** 307	**1180** 491	**162** 2655	**3.45** 87.6	**1130** 18517	**252** 4.130
	W27 x 307 W690 x 457	**90.2** 58193	**29.61** 752	**1.160** 29.5	**14.445** 367	**2.090** 53.1	**22.943** 583	**3.334** 85	**1.761** 45	**1.18** 30	**13100** 5.453	**887** 14535	**12.0** 305	**1050** 437	**146** 2393	**3.41** 86.6	**1030** 16879	**227** 3.720
	W27 x 281 W690 x 419	**82.6** 53290	**29.29** 744	**1.060** 26.9	**14.350** 365	**1.930** 49.0	**22.943** 583	**3.174** 81	**1.711** 43	**1.18** 30	**11900** 4.953	**814** 13339	**12.0** 305	**953** 397	**133** 2179	**3.39** 86.1	**936** 15338	**206** 3.376
	W27 x 258 W690 x 384	**75.7** 48839	**28.98** 736	**0.980** 24.9	**14.270** 362	**1.770** 45.0	**22.953** 583	**3.014** 77	**1.671** 42	**1.18** 30	**10800** 4.495	**745** 12208	**11.9** 302	**859** 358	**120** 1966	**3.36** 85.3	**852** 13962	**187** 3.064
27 x 14 690 x 360	**W27 x 235** W690 x 350	**69.1** 44581	**28.66** 728	**0.910** 23.1	**14.190** 360	**1.610** 40.9	**22.953** 583	**2.854** 72	**1.636** 42	**1.18** 30	**9700** 4.037	**677** 11094	**11.8** 300	**769** 320	**108** 1770	**3.33** 84.6	**772** 12651	**168** 2.753
	W27 x 217 W690 x 323	**63.8** 41161	**28.43** 722	**0.830** 21.1	**14.115** 359	**1.500** 38.1	**22.943** 583	**2.744** 70	**1.596** 41	**1.18** 30	**8910** 3.709	**627** 10275	**11.8** 300	**704** 293	**100.0** 1639	**3.32** 84.3	**711** 11651	**154** 2.524
	W27 x 194 W690 x 289	**57.0** 36774	**28.11** 714	**0.750** 19.0	**14.035** 356	**1.340** 34.0	**22.943** 583	**2.584** 66	**1.556** 40	**1.18** 30	**7860** 3.272	**559** 9160	**11.7** 297	**619** 258	**88.1** 1444	**3.29** 83.6	**631** 10340	**136** 2.229
	W27 x 178 W690 x 265	**52.3** 33742	**27.81** 706	**0.725** 18.4	**14.085** 358	**1.190** 30.2	**22.943** 583	**2.434** 62	**1.544** 39	**1.18** 30	**7020** 2.922	**505** 8275	**11.6** 295	**555** 231	**78.8** 1291	**3.25** 82.6	**570** 9341	**122** 1.999
	W27 x 161 W690 x 240	**47.4** 30581	**27.59** 701	**0.660** 16.8	**14.020** 356	**1.080** 27.4	**22.943** 583	**2.324** 59	**1.511** 38	**1.18** 30	**6310** 2.626	**458** 7505	**11.5** 292	**497** 207	**70.9** 1162	**3.23** 82.0	**515** 8439	**109** 1.786
	W27 x 146 W690 x 217	**42.9** 27677	**27.38** 695	**0.605** 15.4	**13.965** 355	**0.975** 24.8	**22.943** 582	**2.219** 56	**1.484** 38	**1.18** 30	**5660** 2.356	**414** 6784	**11.5** 292	**443** 184	**63.5** 1041	**3.20** 81.3	**464** 7604	**97.7** 1.601
	W27 x 129 W690 x 192	**37.8** 24387	**27.63** 702	**0.610** 15.5	**10.010** 254	**1.100** 27.9	**22.943** 583	**2.344** 59	**1.486** 38	**1.18** 30	**4760** 1.981	**345** 5654	**11.2** 284	**184** 76.6	**36.8** 603	**2.21** 56.1	**395** 6473	**57.6** 944
	W27 x 114 W690 x 170	**33.5** 21613	**27.29** 693	**0.570** 14.5	**10.070** 256	**0.930** 23.6	**22.943** 583	**2.174** 55	**1.466** 37	**1.18** 30	**4080** 1.698	**299** 4900	**11.0** 279	**159** 66.2	**31.5** 516	**2.18** 55.4	**343** 5621	**49.3** 808
27 x 10 690 x 250	**W27 x 102** W690 x 152	**30.0** 19355	**27.09** 688	**0.515** 13.1	**10.015** 254	**0.830** 21.1	**22.943** 583	**2.074** 53	**1.439** 37	**1.18** 30	**3620** 1.507	**267** 4375	**11.0** 279	**139** 57.9	**27.8** 456	**2.15** 54.6	**305** 4998	**43.4** 711
	W27 x 94 W690 x 140	**27.7** 17871	**26.92** 684	**0.490** 12.4	**9.990** 254	**0.745** 18.9	**22.943** 583	**1.989** 50	**1.426** 36	**1.18** 30	**3270** 1.361	**243** 3982	**10.9** 277	**124** 51.6	**24.8** 406	**2.12** 53.8	**278** 4556	**38.8** 636
	W27 x 84 W690 x 125	**24.8** 16.000	**26.71** 678	**0.460** 11.7	**9.960** 253	**0.640** 16.3	**22.943** 582	**1.884** 48	**1.411** 36	**1.18** 30	**2850** 1.186	**213** 3490	**10.7** 272	**106** 44.1	**21.2** 347	**2.07** 52.6	**244** 3998	**33.2** 544

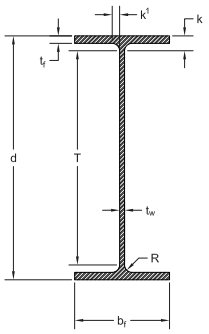
WIDE FLANGE BEAMS



W24 & W610

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	X - X S_x Inch³ (10^3 mm³)	X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Y - Y S_y Inch³ (10^3 mm³)	Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
24 x 12.75 610 x 320	**W24 x 370** W610 x 551	**108.0** 69677	**27.99** 711	**1.520** 38.6	**13.660** 347	**2.720** 69.1	**20.063** 510	**3.964** 101	**1.941** 49	**1.18** 30	**13400** 5577	**957** 15682	**11.1** 282	**1160** 483	**170** 2786	**3.27** 83.1	**1130** 18517	**267** 4.375
	W24 x 335 W610 x 498	**98.4** 63484	**27.52** 699	**1.380** 35.1	**13.520** 343	**2.480** 63.0	**20.073** 510	**3.724** 94	**1.871** 48	**1.18** 30	**11900** 4953	**864** 14158	**11.0** 279	**1030** 429	**152** 2491	**3.23** 82.0	**1020** 16715	**238** 3.900
	W24 x 306 W610 x 455	**89.8** 57935	**27.13** 689	**1.260** 32.0	**13.405** 340	**2.280** 57.9	**20.083** 510	**3.524** 89	**1.811** 46	**1.18** 30	**10700** 4454	**789** 12929	**10.9** 277	**919** 383	**137** 2245	**3.20** 81.3	**922** 15109	**214** 3.507
	W24 x 279 W610 x 415	**82.0** 52903	**26.73** 679	**1.160** 29.5	**13.305** 338	**2.090** 53.1	**20.063** 510	**3.334** 85	**1.761** 45	**1.18** 30	**9600** 3996	**718** 11766	**10.8** 274	**823** 343	**124** 2032	**3.17** 80.5	**835** 13683	**193** 3.163
	W24 x 250 W610 x 372	**73.5** 47419	**26.34** 669	**1.040** 26.4	**13.185** 335	**1.890** 48.0	**20.073** 510	**3.134** 80	**1.701** 43	**1.18** 30	**8490** 3534	**644** 10553	**10.7** 272	**724** 301	**110** 1803	**3.14** 79.8	**744** 12192	**171** 2.802
	W24 x 229 W610 x 341	**67.2** 43355	**26.02** 661	**0.960** 24.4	**13.110** 333	**1.730** 43.9	**20.073** 510	**2.974** 75	**1.661** 42	**1.18** 30	**7650** 3184	**588** 9636	**10.7** 272	**651** 271	**99.4** 1629	**3.11** 79.0	**675** 11061	**154** 2.524
	W24 x 207 W610 x 307	**60.7** 39161	**25.71** 653	**0.870** 22.1	**13.010** 330	**1.570** 39.9	**20.083** 510	**2.814** 71	**1.616** 41	**1.18** 30	**6820** 2839	**531** 8701	**10.6** 269	**578** 241	**88.8** 1455	**3.08** 78.2	**606** 9931	**137** 2.245
	W24 x 192 W610 x 285	**56.3** 36323	**25.47** 647	**0.810** 20.6	**12.950** 329	**1.460** 37.1	**20.063** 510	**2.704** 69	**1.586** 40	**1.18** 30	**6260** 2606	**491** 8046	**10.5** 267	**530** 221	**81.8** 1340	**3.07** 78.0	**559** 9160	**126** 2.065
	W24 x 176 W610 x 262	**51.7** 33355	**25.24** 641	**0.750** 19.0	**12.890** 327	**1.340** 34.0	**20.073** 510	**2.584** 66	**1.556** 40	**1.18** 30	**5680** 2364	**450** 7374	**10.5** 267	**479** 199	**74.3** 1218	**3.04** 77.2	**511** 8374	**115** 1.885
	W24 x 162 W610 x 241	**47.7** 30774	**25.00** 635	**0.705** 17.9	**12.955** 329	**1.220** 31.0	**20.073** 510	**2.464** 63	**1.534** 39	**1.18** 30	**5170** 2152	**414** 6784	**10.4** 264	**443** 184	**68.4** 1121	**3.05** 77.5	**468** 7669	**105** 1.721
	W24 x 146 W610 x 217	**43.0** 27742	**24.74** 628	**0.650** 16.5	**12.900** 328	**1.090** 27.7	**20.073** 510	**2.334** 59	**1.506** 38	**1.18** 30	**4580** 1906	**371** 6080	**10.3** 262	**391** 163	**60.5** 991	**3.01** 76.5	**418** 6850	**93.2** 1.527
	W24 x 131 W610 x 195	**38.5** 24839	**24.48** 622	**0.605** 15.4	**12.855** 327	**0.960** 24.4	**20.073** 510	**2.204** 56	**1.484** 38	**1.18** 30	**4020** 1673	**329** 5391	**10.2** 259	**340** 142	**53.0** 869	**2.97** 75.4	**370** 6063	**81.5** 1.336
	W24 x 117 W610 x 174	**34.4** 22194	**24.26** 616	**0.550** 14.0	**12.800** 325	**0.850** 21.6	**20.073** 510	**2.094** 53	**1.456** 37	**1.18** 30	**3540** 1473	**291** 4769	**10.1** 257	**297** 124	**46.5** 762	**2.94** 74.7	**327** 5359	**71.4** 1.170
	W24 x 104 W610 x 155	**30.6** 19742	**24.06** 611	**0.500** 12.7	*12.750* 324	**0.750** 19.0	**20.073** 510	**1.994** 51	**1.431** 36	**1.18** 30	**3100** 1290	**258** 4228	**10.1** 257	**259** 108	**40.7** 667	**2.91** 73.9	**289** 4736	**62.4** 1.023
24 x 9 610 x 230	**W24 x 103** W610 x 153	**30.3** 19548	**24.53** 623	**0.550** 14.0	**9.000** 229	**0.980** 24.9	**20.083** 510	**2.224** 56	**1.456** 37	**1.18** 30	**3000** 1249	**245** 4015	**10.00** 254	**119** 49.5	**26.5** 434	**1.99** 50.5	**280** 4588	**41.5** 680
	W24 x 94 W610 x 140	**27.7** 17871	**24.31** 617	**0.515** 13.1	**9.065** 230	**0.875** 22.2	**20.073** 510	**2.119** 54	**1.439** 37	**1.18** 30	**2700** 1124	**222** 3638	**9.87** 251	**109** 45.4	**24.0** 393	**1.98** 50.3	**254** 4162	**37.5** 615
	W24 x 84 W610 x 125	**24.7** 15935	**24.10** 612	**0.470** 11.9	**9.020** 229	**0.770** 19.6	**20.073** 510	**2.014** 51	**1.416** 36	**1.18** 30	**2370** 986	**196** 3212	**9.79** 249	**94.4** 39.3	**20.9** 342	**1.95** 49.5	**224** 3671	**32.6** 534
	W24 x 76 W610 x 113	**22.4** 14452	**23.92** 608	**0.440** 11.2	**8.990** 228	**0.680** 17.3	**20.073** 510	**1.924** 49	**1.401** 36	**1.18** 30	**2100** 874	**176** 2884	**9.69** 246	**82.5** 34.3	**18.4** 302	**1.92** 48.8	**200** 3277	**28.6** 469
	W24 x 68 W610 x 101	**20.1** 12968	**23.73** 603	**0.415** 10.5	**8.965** 228	**0.585** 14.9	**20.073** 510	**1.829** 46	**1.389** 35	**1.18** 30	**1830** 762	**154** 2524	**9.55** 243	**70.4** 29.3	**15.7** 257	**1.87** 47.5	**177** 2900	**24.5** 401
CSA	**W24 x 61** W610 x 91	**18.0** 11613	**23.56** 598	**0.380** 9.7	**8.930** 227	**0.500** 12.7	**20.073** 510	**1.744** 44	**1.371** 35	**1.18** 30	**1602** 667	**136** 2230	**9.45** 240	**59.6** 24.8	**13.4** 219	**1.82** 46.3	**156** 2560	**20.9** 343
	W24 x 56 W610 x 84	**16.6** 10710	**23.48** 596	**0.355** 9.0	**8.900** 226	**0.460** 11.7	**20.073** 510	**1.704** 43	**1.359** 35	**1.18** 30	**1473** 613	**126** 2060	**9.41** 239	**54.3** 22.6	**12.2** 200	**1.81** 45.9	**144** 2360	**19.1** 313
24 x 7 610 x 180	**W24 x 62** W610 x 92	**18.2** 11742	**23.74** 603	**0.430** 10.9	**7.040** 179	**0.590** 15.0	**20.939** 532	**1.401** 36	**0.963** 24	**0.75** 19	**1550** 645	**131** 2147	**9.23** 234	**34.5** 14.4	**9.8** 161	**1.38** 35.1	**153** 2507	**15.7** 257
	W24 x 55 W610 x 82	**16.2** 10452	**23.57** 599	**0.395** 10.0	**7.005** 178	**0.505** 12.8	**20.939** 532	**1.316** 33	**0.946** 24	**0.75** 19	**1350** 562	**114** 1868	**9.11** 231	**29.1** 12.1	**8.30** 136	**1.34** 34.0	**134** 2196	**13.3** 218

WIDE FLANGE BEAMS

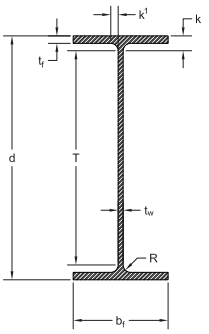


W21 & W530

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
21 x 13 530 x 330	**W21 x 275*** W530 x 409*	**81.8** 52744	**24.13** 613	**1.220** 31.0	**12.890** 327	**2.190** 55.6	**17.263** 439	**3.434** 87	**1.791** 45	**1.18** 30	**7710** 3210	**639** 10500	**9.71** 247	**786** 327	**122** 2000	**3.10** 78.7	**750** 12300	**190** 3.120
	W21 x 248* W530 x 369*	**73.8** 47613	**23.74** 603	**1.100** 27.9	**12.775** 324	**1.990** 50.5	**17.273** 439	**3.234** 82	**1.731** 44	**1.18** 30	**6850** 2850	**577** 9450	**9.63** 245	**695** 289	**109** 1780	**3.07** 77.9	**672** 11000	**169** 2.770
	W21 x 223* W530 x 332*	**66.3** 42774	**23.35** 593	**1.000** 25.4	**12.675** 322	**1.790** 45.5	**17.283** 439	**3.034** 77	**1.681** 43	**1.18** 30	**6040** 2510	**517** 8480	**9.54** 242	**610** 254	**96.2** 1580	**3.03** 77.0	**598** 9800	**150** 2.450
	W21 x 201 *W530 x 300*	**59.2** 38193	**23.03** 585	**0.910** 23.1	**12.575** 319	**1.630** 41.4	**17.283** 439	**2.874** 73	**1.636** 42	**1.18** 30	**5310** 2210	**461** 7554	**9.47** 241	**542** 226	**86.1** 1411	**3.02** 76.7	**530** 8685	**133** 2.179
	W21 x 182 W530 x 272	**53.7** 34645	**22.72** 577	**0.830** 21.1	**12.500** 317	**1.480** 37.6	**17.273** 439	*2.724* 69	**1.596** 41	**1.18** 30	**4730** 1969	**417** 6833	**9.40** 239	*483* 201	**77.2** 1265	**3.00** 76.2	**476** 7800	**119** 1.950
	W21 x 166 W530 x 248	**48.9** 31548	**22.48** 571	**0.750** 19.0	**12.420** 315	**1.360** 34.5	**17.273** 439	**2.604** 66	**1.556** 40	**1.18** 30	**4280** 1781	**380** 6227	**9.36** 238	**435** 181	**70.0** 1147	**2.99** 75.9	**432** 7079	**108** 1.770
21 x 12.25 530 x 310	**W21 x 147** W530 x 219	**43.2** 27871	**22.06** 560	**0.720** 18.3	**12.510** 318	**1.150** 29.2	**17.273** 439	**2.394** 61	**1.541** 39	**1.18** 30	**3630** 1511	**329** 5391	**9.17** 233	**376** 157	**60.1** 985	**2.95** 74.9	**373** 6112	**92.6** 1.517
	W21 x 132 W530 x 196	**38.8** 25032	**21.83** 554	**0.650** 16.5	**12.440** 316	**1.035** 26.3	**17.273** 438	**2.279** 58	**1.506** 38	**1.18** 30	**3220** 1340	**295** 4834	**9.12** 232	**333** 139	**53.5** 877	**2.93** 74.4	**333** 5457	**82.3** 1.349
	W21 x 122 W530 x 182	**35.9** 23161	**21.68** 551	**0.600** 15.2	**12.390** 315	**0.960** 24.4	**17.273** 439	**2.204** 56	**1.481** 38	**1.18** 30	**2960** 1232	**273** 4474	**9.09** 231	**305** 127	**49.2** 806	**2.92** 74.2	**307** 5031	**75.6** 1.239
	W21 x 111 W530 x 165	**32.7** 21097	**21.51** 546	**0.550** 14.0	**12.340** 313	**0.875** 22.2	**17.273** 439	**2.119** 54	**1.456** 37	**1.18** 30	**2670** 1111	**249** 4080	**9.05** 230	**274** 114	**44.5** 729	**2.90** 73.7	**279** 4572	**68.2** 1.118
	W21 x 101 W530 x 150	**29.8** 19226	**21.36** 543	**0.500** 12.7	**12.290** 312	**0.800** 20.3	**17.273** 439	**2.044** 52	**1.431** 36	**1.18** 30	**2420** 1007	**227** 3720	**9.02** 229	**248** 103	**40.3** 660	**2.89** 73.4	**253** 4146	**61.7** 1.011
	W21 x 93 W530 x 138	**27.3** 17613	**21.62** 549	**0.580** 14.7	**8.420** 214	**0.930** 23.6	**18.139** 461	**1.741** 44	**1.038** 26	**0.75** 19	**2070** 862	**192** 3146	**8.70** 221	**92.9** 39	**22.1** 362	**1.84** 46.7	**221** 3622	*34.7* 569
	W21 x 83 W530 x 123	**24.3** 15677	**21.43** 544	**0.515** 13.1	**8.355** 212	**0.835** 21.2	**18.139** 461	**1.646** 42	**1.006** 26	**0.75** 19	**1830** 762	**171** 2802	**8.67** 220	**81.4** 34	**19.5** 320	**1.83** 46.5	**196** 3212	**30.5** 500
	W21 x 73 W530 x 109	**21.5** 13871	**21.24** 539	**0.455** 11.6	**8.295** 211	**0.740** 18.8	**18.139** 460	**1.551** 39	**0.976** 25	**0.75** 19	**1600** 666	**151** 2474	**8.64** 219	**70.6** 29	**17.0** 279	**1.81** 46.0	**172** 2819	**26.6** 436
21 x 8.25 530 x 210	**W21 x 68** W530 x 101	**20.0** 12903	**21.13** 537	**0.430** 10.9	**8.270** 210	**0.685** 17.4	**18.139** 461	**1.496** 38	**0.963** 24	**0.75** 19	**1480** 616	**140** 2294	**8.60** 218	**64.7** 27	**15.7** 257	**1.80** 45.7	**160** 2622	**24.4** 400
	W21 x 62 W530 x 92	**18.3** 11806	**20.99** 533	**0.400** 10.2	**8.240** 209	**0.615** 15.6	**18.139** 461	**1.426** 36	**0.948** 24	**0.75** 19	**1330** 554	**127** 2081	**8.54** 217	**57.5** 24	**14.0** 229	**1.77** 45.0	**144** 2360	**21.7** 356
	W21 x 55 W530 x 82	**16.2** 10452	**20.80** 528	**0.375** 9.5	**8.220** 209	**0.522** 13.3	**18.135** 460	**1.333** 34	**0.936** 24	**0.75** 19	**1140** 475	**110** 1803	**8.40** 213	**48.4** 20	**11.8** 193	**1.73** 43.9	**126** 2065	**18.4** 302
	W21 x 48 W530 x 72	**14.1** 9097	**20.62** 524	**0.350** 9.0	**8.140** 207	**0.430** 10.9	**18.139** 461	**1.241** 31	**0.923** 23	**0.75** 19	**959** 399	**93** 1524	**8.24** 209	**38.7** 16	**9.52** 156	**1.66** 42.2	**107** 1753	**14.9** 244
	W21 x 57 W530 x 85	**16.7** 10774	**21.06** 535	**0.405** 10.3	**6.555** 166	**0.650** 16.5	**18.139** 461	**1.461** 37	**0.951** 24	**0.75** 19	**1170** 487	**111** 1819	**8.36** 212	**30.6** 13	**9.35** 153	**1.35** 34.3	**129** 2114	**14.8** 243
21 x 6.5 530 x 170	**W21 x 50** W530 x 74	**14.7** 9484	**20.83** 529	**0.380** 9.7	**6.530** 166	**0.535** 13.6	**18.139** 461	**1.346** 34	**0.938** 24	**0.75** 19	**984** 410	**94.5** 1549	**8.18** 208	**24.9** 10	**7.64** 125	**1.30** 33.0	**110** 1803	**12.2** 200
	W21 x 44 W530 x 66	**13.0** 8387	**20.66** 525	**0.350** 8.9	**6.500** 165	**0.450** 11.4	**18.139** 461	**1.261** 32	**0.923** 23	**0.75** 19	**843** 351	**81.6** 1337	**8.06** 205	**20.7** 9	**6.37** 104	**1.26** 32.0	**95.4** 1563	**10.2** 167

* Non ASTM A6 Sections

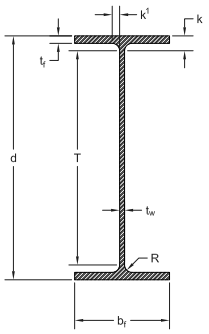
WIDE FLANGE BEAMS



W18 & W460

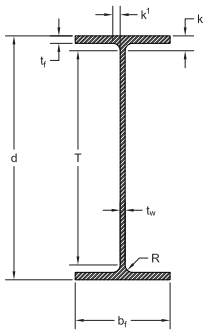
Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k¹ Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
18 x 11 460 x 280	**W18 x 234**	**68.8**	**21.06**	**1.16**	**11.65**	**2.11**	**15.502**	**2.779**	**1.249**	**0.669**	**4900**	**466**	**8.44**	**558**	**95.8**	**2.85**	**549**	**149**
	W460x349	44387	534.9	29.5	295.9	53.6	393.8	70.6	31.7	17.0	203952	7636	214.4	23226	1570	72.39	8996	2442
	W18x211	**62.3**	**20.7**	**1.06**	**11.6**	**1.91**	**15.5**	**2.31**	**1.375**	**0.669**	**4330**	**419**	**8.35**	**493**	**85.3**	**2.82**	**409**	**132**
	W460x315	40193	525.8	26.9	294.6	48.5	393.7	58.7	34.9	17.0	180227	6866	212.09	20520	1398	71.628	6702	2163
	W18x192	**56.2**	**20.4**	**0.96**	**11.5**	**1.75**	**15.5**	**2.15**	**1.125**	**0.669**	**3870**	**380**	**8.28**	**440**	**76.8**	**2.79**	**442**	**119**
	W460x286	36258	518.2	24.4	292.1	44.5	393.7	54.6	28.6	17.0	161080	6227	210.312	18314	1259	70.866	7243	1950
	W18x175	**51.4**	**20**	**0.89**	**11.4**	**1.59**	**15.125**	**1.99**	**1.25**	**0.669**	**3450**	**344**	**8.2**	**391**	**68.8**	**2.76**	**398**	**106**
	W460x260	33161	508.0	22.6	289.6	40.4	384.2	50.5	31.8	17.0	143599	5637	208.28	16275	1127	70.104	6522	1737
	W18x158	**46.3**	**19.7**	**0.81**	**11.3**	**1.44**	**15.125**	**1.84**	**1.25**	**0.669**	**3060**	**310**	**8.12**	**347**	**61.4**	**2.74**	**356**	**94.8**
	W460x235	29871	500.4	20.6	287.0	36.6	384.2	46.7	31.8	17.0	127366	5080	206.248	14443	1006	69.596	5834	1553
	W18x143	**42**	**19.5**	**0.73**	**11.2**	**1.32**	**15.125**	**1.72**	**1.1875**	**0.669**	**2750**	**282**	**8.09**	**311**	**55.5**	**2.72**	**322**	**85.4**
	W460x213	27097	495.3	18.5	284.5	33.5	384.2	43.7	30.2	17.0	114463	4621	205.486	12945	909	69.088	5277	1399
	W18x130	**38.3**	**19.3**	**0.67**	**11.2**	**1.2**	**15.125**	**1.6**	**1.1875**	**0.669**	**2460**	**256**	**8.03**	**278**	**49.9**	**2.70**	**290**	**76.7**
	W460x193	24710	490.2	17.0	284.5	30.5	384.2	40.6	30.2	17.0	102392	4195	203.962	11571	818	68.58	4752	1257
	W18x119	**35.1**	**19**	**0.655**	**11.3**	**1.06**	**15.125**	**1.46**	**1.1875**	**0.669**	**2190**	**231**	**7.9**	**253**	**44.9**	**2.69**	**262**	**69.1**
	W460x177	22645	482.6	16.6	287.0	26.9	384.2	37.1	30.2	17.0	91154	3785	200.66	10531	736	68.326	4293	1132
	W18x106	**31.1**	**18.7**	**0.59**	**11.2**	**0.940**	**15.125**	**1.34**	**1.125**	**0.669**	**1910**	**204**	**7.84**	**220**	**39.4**	**2.66**	**230**	**60.5**
	W460x158	20064	475.0	15.0	284.5	23.9	384.2	34.0	28.6	17.0	79410	3343	199.136	9157	646	67.564	3769	991
	W18x97	**28.5**	**18.6**	**0.535**	**11.1**	**0.870**	**15.125**	**1.27**	**1.125**	**0.669**	**1750**	**188**	**7.82**	**201**	**36.1**	**2.65**	**211**	**55.3**
	W460x144	18387	472.4	13.6	281.9	22.1	384.2	32.3	28.6	17.0	72840	3081	198.628	8366	592	67.31	3458	906
	W18x86	**25.3**	**18.4**	**0.48**	**11.1**	**0.770**	**15.125**	**1.17**	**1.0625**	**0.669**	**1530**	**166**	**7.77**	**175**	**31.6**	**2.63**	**186**	**48.4**
	W460x128	16323	467.4	12.2	281.9	19.6	384.2	29.7	27.0	17.0	63683	2720	197.358	7284	518	66.802	3048	793
	W18x76	**22.3**	**18.2**	**0.425**	**11.0**	**0.680**	**15.125**	**1.1**	**1.1**	**0.669**	**1330.0**	**146.0**	**7.73**	**152.0**	**27.6**	**2.61**	**163.0**	**42.2**
	W460x113	14387	462.3	10.8	279.4	17.3	384.2	27.4	27.0	17.0	55358	2393	196.342	6327	452	66.294	2671	692
18 x 75 460 x 190	**W18 x 71**	**20.9**	**18.47**	**0.495**	**7.635**	**0.81**	**15.125**	**1.21**	**0.875**	**0.669**	**1170**	**127**	**7.50**	**60.3**	**15.8**	**1.70**	**146**	**24.7**
	W460x106	13484	469.1	12.6	193.9	20.6	384.2	30.7	22.2	17.0	48699	2081	190.5	2510	259	43.18	2393	405
	W18x65	**19.1**	**18.35**	**0.450**	**7.59**	**0.75**	**15.125**	**1.15**	**0.875**	**0.669**	**1070**	**117**	**7.49**	**54.8**	**14.4**	**1.69**	**133**	**22.5**
	W460x106	12323	466.1	11.4	192.8	19.1	384.2	29.2	22.2	17.0	44536	1917	190.246	2281	236	42.926	2179	369
	W18x60	**17.6**	**18.24**	**0.415**	**7.555**	**0.695**	**15.125**	**1.1**	**0.8125**	**0.669**	**984**	**108**	**7.47**	**50.1**	**13.3**	**1.68**	**123**	**20.6**
	W460x106	11355	463.3	10.5	191.9	17.7	384.2	27.9	20.6	17.0	40957	1770	189.738	2085	218	42.672	2016	338
	W18x55	**16.2**	**18.11**	**0.390**	**7.53**	**0.63**	**15.125**	**1.03**	**0.8125**	**0.669**	**890**	**98.3**	**7.41**	**44.9**	**11.9**	**1.67**	**112**	**18.5**
	W460x106	10452	460.0	9.9	191.3	16.0	384.2	26.2	20.6	17.0	37044	1611	188.214	1869	195	42.418	1835	303
	W18x50	**14.7**	**17.99**	**0.355**	**7.495**	**0.57**	**15.125**	**0.972**	**0.8125**	**0.669**	**800**	**88.9**	**7.38**	**40.1**	**10.7**	**1.65**	**101**	**16.6**
	W460x106	9484	456.9	9.0	190.4	14.5	384.2	24.7	20.6	17.0	33299	1457	187.452	1670	175	41.91	1655	272
18 x 6 460 x 150	**W18x46**	**13.5**	**18.06**	**0.360**	**6.06**	**0.605**	**15.125**	**1.01**	**0.8125**	**0.669**	**712**	**78.8**	**7.25**	**22.5**	**7.43**	**1.29**	**90.7**	**11.7**
	W460x106	8710	458.7	9.1	153.9	15.4	384.2	25.7	20.6	17.0	29635	1291	184.15	937	122	32.766	1486	192
	W18x40	**11.8**	**17.9**	**0.315**	**6.015**	**0.525**	**15.125**	**0.927**	**0.8125**	**0.669**	**612**	**68.4**	**7.21**	**19.1**	**6.35**	**1.27**	**78.4**	**10**
	W460x106	7613	454.7	8.0	152.8	13.3	384.2	23.5	20.6	17.0	254733	1121	183.134	795	104	32.258	1285	164
	W18x35	**10.3**	**17.7**	**0.300**	**6**	**0.425**	**15.512**	**0.827**	**0.75**	**0.669**	**510**	**57.6**	**7.04**	**15.3**	**5.12**	**1.22**	**66.5**	**8.06**
	W460x106	6645	449.6	7.6	152.4	10.8	394.0	21.0	19.1	17.0	21228	944	178.816	637	84	30.988	1090	132

WIDE FLANGE BEAMS



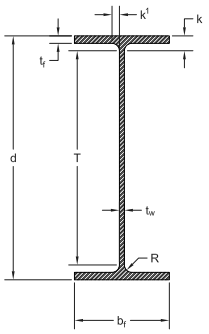
W16 & W410

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
16 x 10.25 410 x 260	**W16 x 100**	**29.4**	**16.97**	**0.585**	**10.425**	**0.985**	**13.25**	**1.39**	**1.125**	**0.669**	**1490**	**175**	**7.1**	**186**	**35.7**	**2.51**	**198**	**54.9**
	W410x149	18968	431	15	265	25	337	35	29	17	62018	2868	180	7742	585	64	3245	900
	W16x89	**26.2**	**16.75**	**0.525**	**10.365**	**0.875**	**13.25**	**1.28**	**1.0625**	**0.669**	**1300**	**155**	**7.05**	**163**	**31.4**	**2.49**	**175**	**48.1**
	W410x132	16903	425	13	263	22	337	33	27	17	54110	2540	179	6785	515	63	2868	788
	W16x77	**22.6**	**16.52**	**0.455**	**10.295**	**0.76**	**13.25**	**1.16**	**1.0625**	**0.669**	**1110**	**134**	**7**	**138**	**26.9**	**2.47**	**150**	**41.1**
	W410x114	14581	420	12	261	19	337	29	27	17	46201	2196	178	5744	441	63	2458	674
	W16x67	**19.7**	**16.33**	**0.395**	**10.235**	**0.665**	**13.25**	**1.07**	**1**	**0.669**	**954**	**117**	**6.96**	**119**	**23.2**	**2.46**	**130**	**35.5**
	W410x100	12710	415	10	260	17	337	27	25	17	39708	1917	177	4953	380	62	2130	582
16 x 7 410 x 190	**W16 x 57**	**16.8**	**16.43**	**0.43**	**7.12**	**0.715**	**13.625**	**1.12**	**0.875**	**0.669**	**758**	**92.2**	**6.72**	**43.1**	**12.1**	**1.6**	**105**	**18.9**
	W410x85	10839	417	11	181	18	346	28	22	17	31550	1511	171	1794	198	41	1721	310
	W16x50	**14.7**	**16.26**	**0.38**	**7.07**	**0.63**	**13.625**	**1.03**	**0.8125**	**0.669**	**659**	**81**	**6.68**	**37.2**	**10.5**	**1.59**	**92**	**16.3**
	W410x75	9484	413	10	180	16	346	26	21	17	27429	1327	170	1548	172	40	1508	267
	W16x45	**13.3**	**16.13**	**0.345**	**7.035**	**0.565**	**13.625**	**0.967**	**0.8125**	**0.669**	**586**	**72.7**	**6.65**	**32.8**	**9.34**	**1.57**	**82.3**	**14.5**
	W410x67	8581	410	9	179	14	346	25	21	17	24391	1191	169	1365	153	40	1349	238
	W16x40	**11.8**	**16.01**	**0.305**	**6.995**	**0.505**	**13.625**	**0.907**	**0.8125**	**0.669**	**518**	**64.7**	**6.63**	**28.9**	**8.25**	**1.57**	**73**	**12.7**
	W410x60	7613	407	8	178	13	346	23	21	17	21561	1060	168	1203	135	40	1196	208
	W16x36	**10.6**	**15.86**	**0.295**	**6.985**	**0.43**	**13.625**	**0.832**	**0.75**	**0.669**	**448**	**56.5**	**6.51**	**24.5**	**7**	**1.52**	**64**	**10.8**
	W410x53	6839	403	7	177	11	346	21	19	17	18647	926	165	1020	115	39	1049	177
16 x 5.5 410 x 140	**W16x31**	**9.12**	**15.88**	**0.275**	**5.525**	**0.44**	**13.625**	**0.842**	**0.75**	**0.669**	**375**	**47.2**	**6.41**	**12.4**	**4.49**	**1.17**	**54**	**7.03**
	W410x46.1	5884	403	7	140	11	346	21	19	17	15609	773	163	516	74	30	885	115
	W16x26	**7.68**	**15.69**	**0.25**	**5.5**	**0.345**	**13.625**	**0.747**	**0.75**	**0.669**	**301**	**38.4**	**6.26**	**9.59**	**3.49**	**1.12**	**44.2**	**5.48**
	W410x38.8	4955	399	6	140	9	346	19	19	17	12528	629	159	399	57	28	724	90



W14 & W360

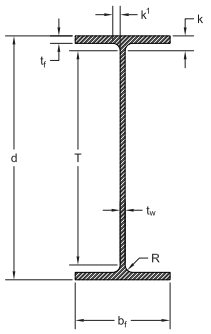
Prime Section Group	Section Size	Area A	Depth d	Web Thickness	Flange		Distance			Fillet Radius	Elastic Properties						Plastic Modulus	
											X - X			Y - Y				
	Inch x lbs/ft (mm x kg/m)	Inch² (mm²)	Inch (mm)	t_w Inch (mm)	Width b_f Inch (mm)	Thickness t_f Inch (mm)	T Inch (mm)	k Inch (mm)	k^1 Inch (mm)	R Inch (mm)	I_x Inch⁴ (10^6 mm⁴)	S_x Inch³ (10^3 mm³)	r_x Inch (mm)	I_y Inch⁴ (10^6 mm⁴)	S_y Inch³ (10^3 mm³)	r_y Inch (mm)	Z_x Inch³ (10^3 mm³)	Z_y Inch³ (10^3 mm³)
14 x 16 360 x 406	**W14x283**	**83.3**	**16.74**	**1.29**	**16.11**	**2.07**	**10**	**2.67**	**1.875**	**0.787**	**3840**	**459**	**6.79**	**1440**	**179**	**4.17**	**179**	**274**
	W360x421	53739	425	33	409	53	254	68	48	20	159832	7522	172	59937	2933	106	2933	4490
	W14x257	**75.6**	**16.38**	**1.175**	**15.995**	**1.89**	**10**	**2.49**	**1.8125**	**0.787**	**3400**	**415**	**6.71**	**1290**	**161**	**4.13**	**161**	**246**
	W360x382	48772	416	30	406	48	254	63	46	20	141518	6801	170	53693	2638	105	2638	4031
	W14x233	**68.5**	**16.04**	**1.070**	**15.89**	**1.72**	**10**	**2.32**	**1.75**	**0.787**	**3010**	**375**	**6.63**	**1150**	**145**	**4.1**	**145**	**221**
	W360x247	44191	407	27	404	44	254	59	44	20	125285	6145	168	47866	2376	104	2376	3622
	W14x211	**62**	**15.72**	**0.980**	**15.8**	**1.56**	**10**	**2.16**	**1.6875**	**0.787**	**2660**	**338**	**6.55**	**1030**	**130**	**4.07**	**130**	**198**
	W360x314	39998	399	25	401	40	254	55	43	20	110717	5539	166	42871	2130	103	2130	3245
	W14x193	**56.8**	**15.48**	**0.890**	**15.71**	**1.44**	**10**	**2.04**	**1.6875**	**0.787**	**2400**	**310**	**6.50**	**931**	**119**	**4.05**	**119**	**180**
	W360x287	36643	393	23	399	37	254	52	43	20	99895	5080	165	38751	1950	103	1950	2950
	W14x176	**51.8**	**15.22**	**0.830**	**15.65**	**1.31**	**10**	**1.91**	**1.625**	**0.787**	**2140**	**281**	**6.43**	**838**	**107**	**4.02**	**107**	**163**
	W360x262	33418	387	21	398	33	254	49	41	20	89073	4605	163	34880	1753	102	1753	2671
	W14x159	**46.7**	**14.98**	**0.745**	**15.565**	**1.19**	**10**	**1.79**	**1.5625**	**0.787**	**1900**	**254**	**6.38**	**748**	**96.2**	**4**	**96.2**	**146**
	W360x237	30128	380	19	395	30	254	45	40	20	79083	4162	162	31134	1576	102	1576	2393
	W14x145	**42.7**	**14.78**	**0.68**	**15.5**	**1.09**	**10**	**1.69**	**1.5625**	**0.787**	**1710**	**232**	**6.33**	**677**	**87.3**	**3.98**	**87.3**	**133**
	W360x216	27547	375	17	394	28	254	43	40	20	71175	3802	161	28179	1431	101	1431	2179
14 x 14.5 360 x 370	**W14x132**	**38.8**	**14.66**	**0.645**	**14.725**	**1.03**	**10**	**1.63**	**1.5625**	**0.787**	**1530**	**209**	**6.28**	**548**	**74.5**	**3.76**	**234**	**113**
	W360x196	25031	372	16	374	26	254	41	40	20	63683	3425	160	22809	1221	96	3835	1852
	W14x120	**35.3**	**14.48**	**0.590**	**14.670**	**0.94**	**10**	**1.54**	**1.5**	**0.787**	**1380**	**190**	**6.24**	**495**	**67.5**	**3.74**	**212**	**102**
	W360x179	22773	368	15	373	24	254	39	38	20	57439	3114	158	20603	1106	95	3474	1671
	W14x109	**32**	**14.32**	**0.525**	**14.605**	**0.86**	**10**	**1.46**	**1.5**	**0.787**	**1240**	**173**	**6.22**	**447**	**61.2**	**3.73**	**192**	**92.7**
	W360x162	20644	364	13	371	22	254	37	38	20	51612	2835	158	18605	1003	95	3146	1519
	W14x99	**29.1**	**14.16**	**0.485**	**14.565**	**0.78**	**10**	**1.38**	**1.4375**	**0.787**	**1110**	**157**	**6.17**	**402**	**55.2**	**3.71**	**173**	**83.6**
	W360x147	18773	360	12	370	20	254	35	37	20	46201	2573	157	16732	905	94	2835	1370
	W14x90	**26.5**	**14.02**	**0.440**	**14.520**	**0.71**	**10**	**1.31**	**1.4375**	**0.787**	**999**	**143**	**6.14**	**362**	**49.9**	**3.7**	**157**	**75.6**
	W360x134	17096	356	11	369	18	254	33	37	20	41581	2343	156	15067	818	94	2573	1239
14 x 10 360 x 250	**W14x82**	**24.1**	**14.31**	**0.510**	**10.130**	**0.855**	**10.875**	**1.45**	**1.0625**	**0.787**	**881**	**123**	**6.05**	**148**	**29.3**	**2.48**	**139**	**44.8**
	W360x122	15548	363	13	257	22	276	37	27	20	36670	2016	154	6160	480	63	2278	734
	W14x74	**21.8**	**14.17**	**0.450**	**10.070**	**0.785**	**10.875**	**1.38**	**1.0625**	**0.787**	**795**	**112**	**6.04**	**134**	**26.6**	**2.48**	**126**	**40.5**
	W360x110	14064	360	11	256	20	276	35	27	20	33090	1835	153	5577	436	63	2065	664
	W14x68	**20**	**14.04**	**0.415**	**10.035**	**0.72**	**10.875**	**1.31**	**1.0625**	**0.787**	**722**	**103**	**6.01**	**121**	**24.2**	**2.46**	**115**	**36.9**
	W360x101	12903	357	11	255	18	276	33	27	20	30052	1688	153	5036	397	62	1885	605
	W14x61	**17.9**	**13.89**	**0.375**	**9.995**	**0.645**	**10.875**	**1.24**	**1.000**	**0.787**	**640**	**92.1**	**5.98**	**107**	**21.5**	**2.45**	**102**	**32.8**
	W360x91	11548	353	10	254	16	276	31	25	20	26639	1509	152	4454	352	62	1671	537
14 x 8 360 x 200	**W14x53**	**15.6**	**13.92**	**0.370**	**8.060**	**0.66**	**10.875**	**1.25**	**1.000**	**0.787**	**541**	**77.8**	**5.89**	**57.7**	**14.3**	**1.92**	**87.1**	**22**
	W360x79	10064	354	9	205	17	276	32	25	20	22518	1275	150	2402	234	49	1427	361
	W14x48	**14.1**	**13.79**	**0.340**	**8.030**	**0.595**	**10.875**	**1.19**	**1.000**	**0.787**	**484**	**70.2**	**5.85**	**51.4**	**12.8**	**1.91**	**78.4**	**19.6**
	W360x72	9096	350	9	204	15	276	30	25	20	20145	1150	149	2139	210	49	1285	321
	W14x43	**12.6**	**13.66**	**0.305**	**7.995**	**0.53**	**10.875**	**1.12**	**1.000**	**0.787**	**428**	**62.6**	**5.82**	**45.2**	**11.3**	**1.89**	**69.6**	**17.3**
	W360x64	8129	347	8	203	13	276	28	25	20	17815	1026	148	1881	185	48	1141	283
14 x 6.75 360 x 170	**W14x38**	**11.2**	**14.1**	**0.310**	**6.770**	**0.515**	**11.625**	**0.915**	**0.8125**	**0.400**	**385**	**54.6**	**5.87**	**26.7**	**7.88**	**1.55**	**61.5**	**12.1**
	W360x58	7225	358	8	172	13	295	23	21	10	16025	895	149	1111	129	39	1008	198
	W14x34	**10**	**13.98**	**0.285**	**6.745**	**0.455**	**11.625**	**0.855**	**0.750**	**0.400**	**340**	**48.6**	**5.83**	**23.3**	**6.91**	**1.53**	**54.6**	**10.6**
	W360x51	6451	355	7	171	12	295	22	19	10	14152	796	148	970	113	39	895	174
	W14x30	**8.85**	**13.84**	**0.270**	**6.730**	**0.385**	**11.625**	**0.785**	**0.750**	**0.400**	**291**	**42**	**5.73**	**19.6**	**5.82**	**1.49**	**47.3**	**8.99**
	W360x44.6	5709	352	7	171	10	295	20	19	10	12112	688	146	816	95	38	775	147
14 x 5 360 x 130	**W14x26**	**7.69**	**13.91**	**0.255**	**5.025**	**0.42**	**11.625**	**0.820**	**0.750**	**0.400**	**245**	**35.3**	**5.65**	**8.91**	**3.55**	**1.08**	**40.2**	**5.54**
	W360x39	4961	353	6	128	11	295	21	19	10	10198	578	144	371	58	27	659	91
	W14x22	**6.49**	**13.74**	**0.230**	**5.000**	**0.335**	**11.625**	**0.735**	**0.750**	**0.400**	**199**	**29**	**5.54**	**7.00**	**2.8**	**1.05**	**33.2**	**4.39**
	W360x32.9	4187	349	6	127	9	295	19	19	10	8283	475	141	291	46	27	544	72



W12 & W310

Prime Section Group	Section Size	Area A	Depth d	Web Thickness	Flange		Distance			Fillet Radius	Elastic Properties						Plastic Modulus	
											X - X			Y - Y				
	Inch x lbs/ft (mm x kg/m)	Inch² (mm²)	Inch (mm)	t_w Inch (mm)	Width b_f Inch (mm)	Thickness t_f Inch (mm)	T Inch (mm)	k Inch (mm)	k^1 Inch (mm)	R Inch (mm)	I_x Inch⁴ (10^6 mm⁴)	S_x Inch³ (10^3 mm³)	r_x Inch (mm)	I_y Inch⁴ (10^6 mm⁴)	S_y Inch³ (10^3 mm³)	r_y Inch (mm)	Z_x Inch³ (10^3 mm³)	Z_y Inch³ (10^3 mm³)
12 x 12 310 x 310	**W12x252**	**74.10**	**15.41**	**1.395**	**13.005**	**2.250**	**9.125**	**2.850**	**1.500**	**0.787**	**2720**	**353**	**6.06**	**6.06**	**127**	**3.34**	**428**	**196**
	W310x375	47806	391	35	330	57	232	72	38	20	113214	5785	154	154	2081	85	7014	3212
	W12x230	**67.70**	**15.05**	**1.285**	**12.895**	**2.070**	**9.125**	**2.670**	**1.500**	**0.787**	**2420**	**321**	**5.97**	**5.97**	**115**	**3.31**	**386**	**177**
	W310x342	43677	382	33	328	53	232	68	38	20	100727	5260	152	152	1885	84	6325	2900
	W12x210	**61.80**	**14.71**	**1.180**	**12.790**	**1.900**	**9.125**	**2.500**	**1.438**	**0.787**	**2140**	**292**	**5.89**	**5.89**	**104**	**3.28**	**348**	**159**
	W310x313	39871	374	30	325	48	232	64	37	20	89073	4785	150	150	1704	83	5703	2606
	W12x190	**56.00**	**14.38**	**1.060**	**12.670**	**1.735**	**9.125**	**2.330**	**1.375**	**0.787**	**1890**	**263**	**5.82**	**5.82**	**93**	**3.25**	**311**	**143**
	W310x283	36129	365	27	322	44	232	59	35	20	78667	4310	148	148	1524	83	5096	2343
	W12x170	**50.00**	**14.03**	**0.960**	**12.570**	**1.560**	**9.125**	**2.160**	**1.313**	**0.787**	**1650**	**235**	**5.74**	**5.74**	**82.3**	**3.22**	**275**	**126**
	W310x253	32258	356	24	319	40	232	55	33	20	68678	3851	146	146	1349	82	4506	2065
	W12x152	**44.70**	**13.71**	**0.870**	**12.480**	**1.400**	**9.125**	**2.000**	**1.250**	**0.787**	**1430**	**209**	**5.66**	**5.66**	**72.8**	**3.19**	**243**	**111**
	W310x226	28839	348	22	317	36	232	51	32	20	59521	3425	144	144	1193	81	3982	1819
	W12x136	**39.90**	**13.41**	**0.790**	**12.400**	**1.250**	**9.125**	**1.850**	**1.250**	**0.787**	**1240**	**186**	**5.58**	**5.58**	**64.2**	**3.16**	**214**	**98**
	W310x202	25742	341	20	315	32	232	47	32	20	51612	3048	142	142	1052	80	3507	1606
	W12x120	**35.20**	**13.12**	**0.710**	**12.320**	**1.105**	**9.125**	**1.700**	**1.188**	**0.787**	**1070**	**163**	**5.51**	**5.51**	**56**	**3.13**	**186**	**85.4**
	W310x179	22710	333	18	313	28	232	43	30	20	44536	2671	140	140	918	80	3048	1399
	W12x106	**31.20**	**12.89**	**0.610**	**12.220**	**0.990**	**9.125**	**1.590**	**1.125**	**0.787**	**933**	**145**	**5.47**	**5.47**	**49.3**	**3.11**	**164**	**75.1**
	W310x158	20129	327	15	310	25	232	40	29	20	38834	2376	139	139	808	79	2687	1231
	W12x96	**28.20**	**12.71**	**0.550**	**12.160**	**0.900**	**9.125**	**1.500**	**1.125**	**0.787**	**833**	**131**	**5.44**	**5.44**	**44.4**	**3.09**	**147**	**67.5**
	W310x143	18194	323	14	309	23	232	38	29	20	34672	2147	138	138	728	78	2409	1106
	W12x87	**25.60**	**12.53**	**0.515**	**12.125**	**0.810**	**9.125**	**1.410**	**1.063**	**0.787**	**740**	**118**	**5.38**	**5.38**	**39.7**	**3.07**	**132**	**60.4**
	W310x129	16516	318	13	308	21	232	36	27	20	30801	1934	137	137	651	78	2163	990
	W12x79	**23.20**	**12.38**	**0.470**	**12.080**	**0.735**	**9.125**	**1.330**	**1.063**	**0.787**	**662**	**107**	**5.34**	**5.34**	**35.8**	**3.05**	**119**	**54.3**
	W310x117	14968	314	12	307	19	232	34	27	20	27554	1753	136	136	587	77	1950	890
	W12x72	**21.10**	**12.25**	**0.430**	**12.040**	**0.670**	**9.125**	**1.270**	**1.063**	**0.787**	**597**	**97.4**	**5.31**	**5.31**	**32.4**	**3.04**	**108**	**49.2**
	W310x107	13613	311	11	306	17	232	32	27	20	24849	1596	135	135	531	77	1770	806
	W12x65	**19.10**	**12.12**	**0.390**	**12.000**	**0.605**	**9.125**	**1.200**	**1.000**	**0.787**	**533**	**87.9**	**5.28**	**5.28**	**29.1**	**3.02**	**96.8**	**44.1**
	W310x97	12323	308	10	305	15	232	30	25	20	22185	1440	134	134	477	77	1586	723
12 x 10 310 x 250	**W12x58**	**17.00**	**12.19**	**0.360**	**10.010**	**0.640**	**9.250**	**1.240**	**0.938**	**0.787**	**475**	**78**	**5.28**	**5.28**	**21.4**	**2.51**	**86.4**	**32.5**
	W310x86	10968	310	9	254	16	235	31	24	20	19771	1278	134	134	351	64	1416	533
	W12x53	**15.60**	**12.06**	**0.345**	**9.995**	**0.575**	**9.250**	**1.180**	**0.938**	**0.787**	**425**	**70.6**	**5.23**	**5.23**	**19.2**	**2.48**	**77.9**	**29.1**
	W310x79	10064	306	9	254	15	235	30	24	20	17690	1157	133	133	315	63	1277	477
12 x 8 310 x 200	**W12x50**	**14.60**	**12.19**	**0.370**	**8.808**	**0.640**	**9.250**	**1.140**	**0.938**	**0.787**	**391**	**64.2**	**5.18**	**5.18**	**13.9**	**1.96**	**71.9**	**21.3**
	W310x74	9419	310	9	224	16	235	29	24	20	16275	1052	132	132	228	50	1178	349
	W12x45	**13.10**	**12.06**	**0.335**	**8.045**	**0.575**	**9.250**	**1.080**	**0.938**	**0.787**	**348**	**57.7**	**5.15**	**5.15**	**12.4**	**1.95**	**64.2**	**19**
	W310x67	8452	306	9	204	15	235	27	24	20	14485	946	131	131	203	50	1052	311
	W12x40	**11.70**	**11.94**	**0.295**	**8.005**	**0.515**	**9.250**	**1.020**	**0.875**	**0.787**	**307**	**51.5**	**5.13**	**5.13**	**11**	**1.94**	**57**	**16.8**
	W310x60	7548	303	7	203	13	235	26	22	20	12778	844	130	130	180	49	934	275
12 x 6.5 310 x 170	**W12x35**	**10.30**	**12.5**	**0.300**	**6.560**	**0.520**	**10.125**	**0.820**	**0.750**	**0.400**	**285**	**45.6**	**5.25**	**5.25**	**7.47**	**1.54**	**51.2**	**11.5**
	W310x52	6645	318	8	167	13	257	21	19	10	11862	747	133	133	122	39	839	188
	W12x30	**8.79**	**12.34**	**0.260**	**6.520**	**0.440**	**10.125**	**0.740**	**0.750**	**0.400**	**238**	**38.6**	**5.21**	**5.21**	**6.24**	**1.52**	**43.1**	**9.56**
	W310x44.5	5671	313	7	166	11	257	19	19	10	9906	633	132	132	102	39	706	157
	W12x26	**7.65**	**12.22**	**0.230**	**6.490**	**0.380**	**10.125**	**0.680**	**0.750**	**0.400**	**204**	**33.4**	**5.17**	**5.17**	**5.34**	**1.51**	**37.2**	**8.17**
	W310x38.7	4935	310	6	165	10	257	17	19	10	8491	547	131	131	88	38	610	134
12 x 4 310 x 130	**W12x22**	**6.48**	**12.31**	**0.260**	**4.030**	**0.425**	**10.375**	**0.725**	**0.625**	**0.400**	**156**	**25.4**	**4.91**	**4.91**	**2.31**	**0.848**	**29.3**	**3.66**
	W310x32.7	4181	313	7	102	11	264	18	16	10	6493	416	125	125	38	22	480	60
	W12x19	**5.57**	**12.16**	**0.235**	**4.005**	**0.350**	**10.375**	**0.650**	**0.563**	**0.400**	**130**	**21.3**	**4.82**	**4.82**	**1.88**	**0.822**	**24.7**	**2.98**
	W310x28.3	3594	309	6	102	9	264	17	14	10	5411	349	122	122	31	21	405	49
	W12x16	**4.71**	**11.99**	**0.220**	**3.990**	**0.265**	**10.375**	**0.565**	**0.563**	**0.400**	**103**	**17.1**	**4.67**	**4.67**	**1.41**	**0.773**	**20.1**	**2.26**
	W310x23.8	3039	305	6	101	7	264	14	14	10	4287	280	119	119	23	20	329	37
	W12x14	**4.16**	**11.91**	**0.200**	**3.970**	**0.225**	**10.375**	**0.525**	**0.563**	**0.400**	**88.6**	**14.9**	**4.62**	**4.62**	**1.19**	**0.753**	**17.4**	**1.9**
	W310x21.0	2684	303	5	101	6	264	13	14	10	3688	244	117	117	20	19	285	31

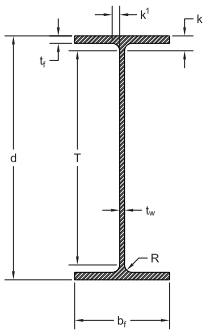
WIDE FLANGE BEAMS



W10 & W250

Prime Section Group	Section Size	Area A	Depth d	Web Thickness	Flange		Distance			Fillet Radius	Elastic Properties						Plastic Modulus	
					Width	Thickness					X - X			Y - Y				
	Inch x lbs/ft (mm x kg/m)	Inch² (mm²)	Inch (mm)	t_w Inch (mm)	b_f Inch (mm)	t_f Inch (mm)	T Inch (mm)	k Inch (mm)	k^1 Inch (mm)	R Inch (mm)	I_x Inch⁴ (10^6 mm⁴)	S_x Inch³ (10^3 mm³)	r_x Inch (mm)	I_y Inch⁴ (10^6 mm⁴)	S_y Inch³ (10^3 mm³)	r_y Inch (mm)	Z_x Inch³ (10^3 mm³)	Z_y Inch³ (10^3 mm³)
10 x 10 250 x 250	**W10x112**	**32.90**	**11.36**	**0.755**	**10.415**	**1.250**	**7.546**	**1.907**	**1.035**	**0.657**	**716**	**126**	**4.66**	**236**	**45.3**	**2.68**	**147**	**69.2**
	W250x167	21226	289	19	265	32	192	48	26	17	29802	2065	118	9823	742	68	2409	1134
	W10x100	**29.30**	**11.10**	**0.680**	**10.340**	**1.120**	**7.546**	**1.777**	**0.997**	**0.657**	**623**	**112**	**4.6**	**207**	**40**	**2.65**	**130**	**61**
	W250x149	18903	282	17	263	28	192	45	25	17	25931	1835	117	8616	655	67	2130	1000
	W10x88	**26.00**	**10.84**	**0.605**	**10.265**	**0.990**	**7.546**	**1.647**	**0.960**	**0.657**	**534**	**98.5**	**4.54**	**179**	**34.8**	**2.63**	**113**	**53.1**
	W250x131	16774	275	15	261	25	192	42	24	17	22227	1614	115	7450	570	67	1852	870
	W10x77	**22.70**	**10.60**	**0.530**	**10.190**	**0.870**	**7.546**	**1.527**	**0.922**	**0.657**	**455**	**85.9**	**4.49**	**154**	**30.1**	**2.6**	**97.6**	**45.9**
	W250x115	14645	269	13	259	22	192	39	23	17	18938	1408	114	6410	493	66	1599	752
	W10x68	**19.90**	**10.40**	**0.470**	**10.130**	**0.770**	**7.546**	**1.427**	**0.892**	**0.657**	**394**	**75.7**	**4.44**	**134**	**26.4**	**2.59**	**85.3**	**40.1**
	W250x101	12839	264	12	257	20	192	36	23	17	16399	1240	113	5577	433	66	1398	657
	W10x60	**17.70**	**10.22**	**0.420**	**10.080**	**0.680**	**7.546**	**1.337**	**0.867**	**0.657**	**341**	**66.7**	**4.39**	**116**	**23**	**2.57**	**74.6**	**35**
	W250x89	11419	260	11	256	17	192	34	22	17	14193	1093	112	4828	377	65	1222	574
	W10x54	**15.80**	**10.09**	**0.370**	**10.030**	**0.615**	**7.546**	**1.272**	**0.842**	**0.657**	**303**	**60**	**4.37**	**103**	**20.6**	**2.56**	**66.6**	**31.3**
	W250x80	10194	256	9	255	16	192	32	21	17	12612	983	111	4287	338	65	1091	513
	W10x49	**14.40**	**9.98**	**0.340**	**10.000**	**0.560**	**7.546**	**1.217**	**0.827**	**0.657**	**272**	**54.6**	**4.35**	**93.4**	**18.7**	**2.54**	**60.4**	**28.3**
	W250x73	9290	253	9	254	14	192	31	21	17	11321	895	110	3888	306	65	990	464
10 x 8 250 x 200	**W10x45**	**13.30**	**10.10**	**0.350**	**8.020**	**0.620**	**7.546**	**1.277**	**0.832**	**0.657**	**248**	**49.1**	**4.32**	**53.4**	**13.3**	**2.01**	**54.9**	**20.3**
	W250x67	8581	257	9	204	16	192	32	21	17	10322	805	110	2223	218	51	900	333
	W10x39	**11.50**	**9.92**	**0.315**	**7.985**	**0.530**	**7.546**	**1.187**	**0.815**	**0.657**	**209**	**42.1**	**4.27**	**45**	**11.3**	**1.98**	**46.8**	**17.2**
	W250x58	7419	252	8	203	13	192	30	21	17	8699	690	108	1873	185	50	767	282
	W10x33	**9.71**	**9.73**	**0.290**	**7.960**	**0.435**	**7.546**	**1.092**	**0.802**	**0.657**	**171**	**35**	**4.19**	**36.6**	**9.2**	**1.94**	**38.8**	**14**
	W250x49.1	6265	247	7	202	11	192	28	20	17	7117	574	106	1523	151	49	636	229
10 x 5.75 250 x 150	**W10x30**	**8.84**	**10.47**	**0.300**	**5.810**	**0.510**	**8.506**	**0.982**	**0.622**	**0.472**	**170**	**32.4**	**4.38**	**16.7**	**5.75**	**1.37**	**36.6**	**8.84**
	W250x44.8	5703	266	8	148	13	216	25	16	12	7076	531	111	695	94	35	600	145
	W10x26	**7.61**	**10.33**	**0.260**	**5.770**	**0.440**	**8.506**	**0.912**	**0.602**	**0.472**	**144**	**27.9**	**4.35**	**14.1**	**4.89**	**1.36**	**31.3**	**7.5**
	W250x38.5	4910	262	7	147	11	216	23	15	12	5994	457	110	587	80	35	513	123
	W10x22	**6.49**	**10.17**	**0.240**	**5.750**	**0.360**	**8.506**	**0.832**	**0.592**	**0.472**	**118**	**23.2**	**4.27**	**11.4**	**3.97**	**1.33**	**26**	**6.1**
	W250x32.7	4187	258	6	146	9	216	21	15	12	4911	380	108	474	65	34	426	100
10 x 4 250 x 100	**W10x19**	**5.62**	**10.24**	**0.250**	**4.020**	**0.395**	**8.506**	**0.867**	**0.597**	**0.472**	**96.3**	**18.8**	**4.14**	**4.29**	**2.14**	**0.874**	**21.6**	**3.35**
	W250x28.4	3626	260	6	102	10	216	22	15	12	4008	308	105	179	35	22	354	55
	W10x17	**4.99**	**10.11**	**0.240**	**4.010**	**0.330**	**8.506**	**0.802**	**0.592**	**0.472**	**81.9**	**16.2**	**4.05**	**3.56**	**1.78**	**0.845**	**18.7**	**2.8**
	W250x25.3	3219	257	6	102	8	216	20	15	12	3409	265	103	148	29	21	306	46
	W10x15	**4.41**	**9.99**	**0.230**	**4.000**	**0.270**	**8.506**	**0.742**	**0.587**	**0.472**	**68.9**	**13.8**	**3.95**	**2.89**	**1.45**	**0.81**	**16**	**2.3**
	W250x22.3	2845	254	6	102	7	216	19	15	12	2868	226	100	120	24	21	262	38
	W10x12	**3.54**	**9.87**	**0.190**	**3.960**	**0.210**	**8.506**	**0.682**	**0.567**	**0.472**	**53.8**	**10.9**	**3.9**	**2.18**	**1.1**	**0.785**	**12.6**	**1.74**
	W250x17.9	2284	251	5	101	5	216	17	14	12	2239	179	99	91	18	20	206	29

WIDE FLANGE BEAMS



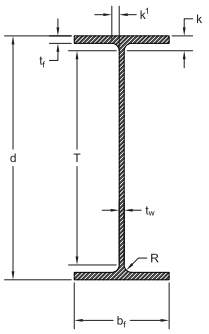
W8 & W200

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X-X I_x Inch⁴ (10^6 mm⁴)	X-X S_x Inch³ (10^3 mm³)	X-X r_x Inch (mm)	Elastic Properties Y-Y I_y Inch⁴ (10^6 mm⁴)	Y-Y S_y Inch³ (10^3 mm³)	Y-Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
8 x 8 200 x 200	**W8x67**	**19.7**	**9.00**	**0.570**	**8.280**	**0.935**	**5.75**	**1.33**	**0.9375**	**0.51**	**272**	**60.4**	**3.72**	**88.6**	**21.4**	**2.12**	**70.1**	**32.7**
	W200x100	12709	229	14	210	24	146	34	24	13	11321	990	94	3688	351	54	1149	536
	W8x58	**17.1**	**8.75**	**0.510**	**8.220**	**0.810**	**5.75**	**1.2**	**0.875**	**0.51**	**228**	**52**	**3.65**	**75.1**	**18.3**	**2.1**	**59.8**	**27.9**
	W200x86	11032	222	13	209	21	146	30	22	13	9490	852	93	3126	300	53	980	457
	W8x48	**14.1**	**8.50**	**0.400**	**8.110**	**0.685**	**5.75**	**1.08**	**0.875**	**0.51**	**184**	**43.2**	**3.61**	**60.9**	**15**	**2.08**	**49.0**	**22.9**
	W200x71	9096	216	10	206	17	146	27	22	13	7659	708	92	2535	246	53	803	375
	W8x40	**11.7**	**8.25**	**0.360**	**8.070**	**0.560**	**5.75**	**0.954**	**0.8125**	**0.51**	**146**	**35.5**	**3.53**	**49.1**	**12.2**	**2.04**	**39.8**	**18.5**
	W200x59	7548	210	9	205	14	146	24	21	13	6077	582	90	2044	200	52	652	303
	W8x35	**10.3**	**8.12**	**0.310**	**8.020**	**0.495**	**5.75**	**0.889**	**0.8125**	**0.51**	**127**	**31.2**	**3.51**	**42.6**	**10.6**	**2.03**	**34.7**	**16.1**
	W200x52	6645	206	8	204	13	146	23	21	13	5286	511	89	1773	174	52	569	264
	W8x31	**9.13**	**8.00**	**0.285**	**7.995**	**0.435**	**5.75**	**0.829**	**0.75**	**0.51**	**110**	**27.5**	**3.47**	**37.1**	**9.27**	**2.02**	**30.4**	**14.1**
	W200x46.1	5890	203	7	203	11	146	21	19	13	4579	451	88	1544	152	51	498	231
8 x 6.5 200 x 170	**W8x28**	**8.25**	**8.06**	**0.285**	**6.535**	**0.465**	**6.125**	**0.859**	**0.625**	**0.51**	**98**	**24.3**	**3.45**	**21.7**	**6.63**	**1.62**	**27.2**	**10.1**
	W200x41.7	5322	205	7	166	12	156	22	16	13	4079	398	88	903	109	41	446	166
	W8x24	**7.08**	**7.93**	**0.245**	**6.495**	**0.400**	**6.125**	**0.794**	**0.5625**	**0.51**	**82.7**	**20.9**	**3.42**	**18.3**	**5.63**	**1.61**	**23.1**	**8.57**
	W200x35.9	4568	201	6	165	10	156	20	14	13	3442	342	87	762	92	41	379	140.4
8 x 5.25 200 x 130	**W8x21**	**6.16**	**8.28**	**0.250**	**5.270**	**0.400**	**6.5**	**0.7**	**0.5625**	**0.39**	**75.3**	**18.2**	**3.49**	**9.77**	**3.71**	**1.26**	**20.4**	**5.69**
	W200x31.3	3974	210	6	134	10	165	18	14	10	3134	298	89	407	61	32	334	93
	W8x18	**5.26**	**8.14**	**0.23**	**5.250**	**0.330**	**6.5**	**0.63**	**0.5625**	**0.39**	**61.9**	**15.2**	**3.43**	**7.97**	**3.04**	**1.23**	**17.0**	**4.66**
	W200x26.6	3393	207	6	133	8	165	16	14	10	2576	249	87	332	50	31	279	76
8 x 4 200 x 100	**W8x15**	**4.44**	**8.11**	**0.245**	**4.015**	**0.315**	**6.5**	**0.615**	**0.5625**	**0.472**	**48**	**11.8**	**3.29**	**3.41**	**1.7**	**0.876**	**13.6**	**2.67**
	W200x22.5	2864	206	6	102	8	165	16	14	12	1998	193	84	142	28	22	223	44
	W8x13	**3.84**	**7.99**	**0.230**	**4.000**	**0.255**	**6.5**	**0.555**	**0.5625**	**0.472**	**39.6**	**9.91**	**3.21**	**2.73**	**1.37**	**0.843**	**11.4**	**2.15**
	W200x19.3	2477	203	6	102	6	165	14	14	12	1648	162	82	114	22	21	187	35
	W8x10	**2.96**	**7.89**	**0.170**	**3.940**	**0.205**	**6.5**	**0.505**	**0.5**	**0.472**	**30.8**	**7.81**	**3.22**	**2.09**	**1.06**	**0.841**	**8.87**	**1.66**
	W200x15	1910	200	4	100	5	165	13	13	12	1282	128	82	87	17	21	145	27

W6 & W150

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X-X I_x Inch⁴ (10^6 mm⁴)	X-X S_x Inch³ (10^3 mm³)	X-X r_x Inch (mm)	Elastic Properties Y-Y I_y Inch⁴ (10^6 mm⁴)	Y-Y S_y Inch³ (10^3 mm³)	Y-Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
6 x 6 150 x 150	**W6x25**	**7.34**	**6.38**	**0.32**	**6.08**	**0.455**	**4.526**	**0.828**	**0.47**	**0.472**	**53.6**	**16.8**	**2.7**	**17.1**	**5.61**	**1.52**	**19**	**8.57**
	W150x37.1	4735	162	8	154	12	115	21	12	12	2231	275	69	712	92	39	311	140
	W6x20	**5.87**	**6.2**	**0.26**	**6.02**	**0.365**	**4.526**	**0.738**	**0.44**	**0.472**	**41.5**	**13.4**	**2.66**	**13.3**	**4.41**	**1.5**	**15**	**6.72**
	W150x29.8	3787	157	7	153	9	115	19	11	12	1727	220	68	554	72	38	246	110
	W6x15	**4.43**	**5.99**	**0.23**	**5.99**	**0.26**	**4.53**	**0.63**	**0.43**	**0.472**	**29.30**	**9.77**	**2.56**	**9.32**	**3.11**	**1.45**	**10.80**	**4.75**
	W150x22.5	2858	152	6	152	7	115	16	11	12	1220	160	65	388	51	37	177	78
6 x 4 150 x 100	**W6x16**	**4.74**	**6.28**	**0.26**	**4.03**	**0.405**	**4,526**	**0.655**	**0.5625**	**0.472**	**32.1**	**10.2**	**2.6**	**4.43**	**2.2**	**0.96**	**11.7**	**3.39**
	W150x24	3058	160	7	102	10	114960	17	14	12	1336	167	66	184	36	24	192	56
	W6x12	**3.55**	**6.03**	**0.23**	**4**	**0.28**	**4.526**	**0.53**	**0.5625**	**0.472**	**22.1**	**7.31**	**2.49**	**2.99**	**1.5**	**0.918**	**8.3**	**2.32**
	W150x18	2290	153	6	102	7	115	13	14	12	920	120	63	124	25	23	136	38
	W6x9	**2.68**	**5.90**	**0.17**	**3.94**	**0.215**	**4.526**	**0.465**	**0.5**	**0.472**	**16.4**	**5.56**	**2.47**	**2.2**	**1.11**	**0.905**	**6.23**	**1.72**
	W150x13.5	1729	150	4	100	5	115	12	13	12	683	91	63	92	18	23	102	28
	W6x8.5	**2.52**	**5.83**	**0.17**	**3.94**	**0.19**	**4.50**	**0.45**	**0.50**	**0.472**	**14.90**	**5.10**	**2.43**	**1.99**	**1.01**	**0.89**	**5.73**	**1.56**
	W150x13.5	1626	148	4	100	5	114	11	13	12	620	84	62	83	17	23	94	26

WIDE FLANGE BEAMS



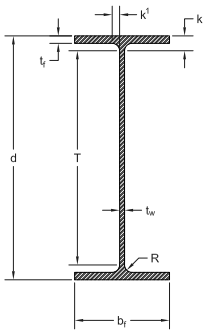
W5 & W130

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X-X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X-X S_x Inch³ (10^3 mm³)	Elastic Properties X-X r_x Inch (mm)	Elastic Properties Y-Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y-Y S_y Inch³ (10^3 mm³)	Elastic Properties Y-Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
5 x 5 130 x 130	**W5x19**	**5.56**	**5.15**	**0.27**	**5.03**	**0.43**	**3.5**	**0.835**	**0.540**	**0.405**	**26.3**	**10.2**	**2.17**	**9.13**	**3.63**	**1.28**	**11.6**	**5.53**
	W130x28.1	3587	131	7	128	11	89	21	14	10	1095	167	55	380	59	33	190	91
	W5x16	**4.71**	**5.05**	**0.24**	**5**	**0.36**	**3.5**	**0.765**	**0.525**	**0.405**	**21.4**	**8.55**	**2.13**	**7.51**	**3.00**	**1.26**	**9.63**	**4.58**
	W130x23.8	3039	128	6	127	9	89	19	13	10	891	140	54	313	49	32	158	75

W4 & W100

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Distance k^1 Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X-X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X-X S_x Inch³ (10^3 mm³)	Elastic Properties X-X r_x Inch (mm)	Elastic Properties Y-Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y-Y S_y Inch³ (10^3 mm³)	Elastic Properties Y-Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
4 x4 100 x 100	**W4 x 13**	**3.83**	**4.16**	**0.28**	**4.060**	**0.345**	**2.660**	**0.750**	**0.545**	**0.405**	**11.300**	**5.460**	**1.720**	**3.860**	**1.900**	**1.000**	**6.280**	**2.920**
	W100x19.3	2471	106	7	103	9	68	19	14	10	470	89	44	161	31	25	23	48

WIDE FLANGE ASTM TABLE



STRUCTURAL SECTIONS

BEAM Available Steel Grades								
American			Canadian			European *		
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 10025 & EN 10113	Yield Strength	
	ksi	MPa		ksi	MPa		ksi	MPa
A 36	36	250	Grade 350 W	50	350	S 235	34	235
A 572 Grade 50	50	345				S 275	40	275
A 588	50	345				S 355	51	355
A 709	50	345				S 460 HISTAR	67	460
A 913	50	345						
A 913	65	450						
A 992	50	345						

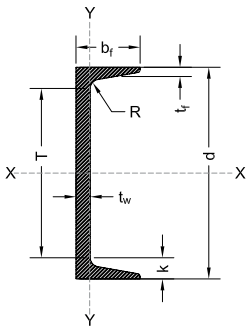
* HISTAR only available in some sizes

DELIVERY CONDITIONS & TOLERANCES

ASTM A 6

Mass	± 2.5%		
Depth	± 0.125 inches		
Length	30 feet and Under	Over 30 Feet	
Beams W 24 and Under	± 0.375 inches	+ (0.375 inches + (Length - 30) / 80	-0.375 inches
Beams Over W 24	± 0.5 inches	+ (0.5 inches + (Length - 30) / 80	-0.375 inches
Flanges out of Square			
Beams W 12 and Under	≤ 0.25 inches		
Beams Over W 12	≤ 0.3125 inches		
Web off Center	≤ 0.1875 inches		
Greatest Depth over Theoretical	≤ 0.25 inches		
Camber and Sweep	(0.125 in) * (Length / 10)		
Camber and Sweep for Columns			
45 Feet and Under	(0.125 in) * (Length / 10) but not over 0.375 inches		
Over 45 Feet	(0.375 in) + (0.125 in * (Length - 45) / 10		

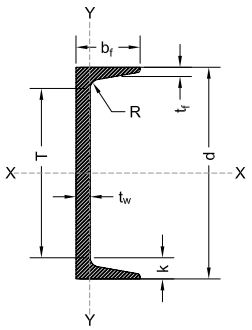
*W 8 x 31 and heavier, W 10 x 49 and heavier, W 12 x 65 and heavier, and W 14 x 90 and heavier order as columns.
If other sections are ordered as columns, the tolerances are subject to negotiation with manufacturer.



MC

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
18 x 4 460 x 100	**MC18 x 58.0** MC460 x 86	**17.1** 11032	**18.00** 457	**0.700** 17.8	**4.200** 107	**0.625** 15.9	**15.375** 390	**1.313** 33	**0.625** 16	**675** 281	**75.0** 1229	**6.29** 159.8	**17.6** 7.3	**5.28** 87	**1.020** 25.9	**95.4** 1563	**10.70** 175
	MC18 x 51.9 MC460 x 77.2	**15.3** 9871	**18.00** 457	**0.600** 15.2	**4.100** 104	**0.625** 15.9	**15.375** 390	**1.313** 33	**0.625** 16	**627** 261	**69.6** 1141	**6.41** 162.8	**16.3** 6.8	**5.02** 82	**1.030** 26.2	**87.3** 1431	**9.86** 162
	MC18 x 45.8 MC460 x 68.2	**13.5** 8710	**18.00** 457	**0.500** 12.7	**4.000** 102	**0.625** 15.9	**15.375** 390	**1.313** 33	**0.625** 16	**578** 241	**64.2** 1052	**6.55** 166.4	**14.9** 6.2	**4.77** 78	**1.050** 26.7	**79.2** 1298	**9.14** 150
	MC18 x 42.7 MC460 x 63.5	**12**.60 8129	**18.00** 457	**0.450** 11.4	**3.950** 100	**0.625** 15.9	**15.375** 390	**1.313** 33	**0.625** 16	**554** 231	**61.5** 1008	**6.64** 168.7	**14.3** 6.0	**4.64** 76	**1.070** 27.2	**75.1** 1231	**8.82** 145
13 x 4 330 x 100	**MC13 x 50.0** MC330 x 74	**14.70** 9484	**13.00** 330	**0.787** 20.0	**4.412** 112	**0.610** 15.5	**10.655** 270	**1.173** 30	**0.500** 13	**314** 131	**48.3** 791	**4.62** 117.3	**16.4** 6.8	**4.77** 78	**1.060** 26.9	**60.8** 996	**10.20** 167
	MC13 x 40.0 MC330 x 60	**11.80** 7613	**13.00** 330	**0.560** 14.2	**4.185** 106	**0.610** 15.5	**10.655** 270	**1.173** 30	**0.500** 13	**273** 114	**41.9** 687	**4.82** 122.4	**13.7** 5.7	**4.24** 69	**1.080** 27.4	**51.2** 839	**8.66** 142
	MC13 x 35.0 MC330 x 52	**10.30** 6645	**13.00** 330	**0.447** 11.4	**4.072** 103	**0.610** 15.5	**10.655** 270	**1.173** 30	**0.500** 13	**252** 105	**38.8** 636	**4.95** 125.7	**12.3** 5.1	**3.97** 65	**1.090** 27.7	**46.5** 762	**8.04** 132
	MC13 x 31.8 MC330 x 47.3	**9.35** 6032	**13.00** 330	**0.375** 9.5	**4.000** 102	**0.610** 15.5	**10.655** 270	**1.173** 30	**0.500** 13	**239** 99	**36.7** 601	**5.05** 128.3	**11.4** 4.7	**3.79** 62	**1.100** 27.9	**43.4** 711	**7.69** 126
12 x 4 310 x 100	**MC12 x 50.0** MC310 x 74	**14.70** 9484	**12.00** 305	**0.835** 21.2	**4.135** 105	**0.700** 17.8	**9.475** 240	**1.263** 32	**0.500** 13	**269** 112	**44.9** 736	**4.28** 108.7	**17.4** 7.2	**5.64** 92	**1.090** 27.7	**56.5** 926	**10.90** 179
	MC12 x 45.0 MC310 x 67	**13.20** 85.16	**12.00** 305	**0.710** 18.0	**4.010** 102	**0.700** 17.8	**9.475** 240	**1.263** 32	**0.500** 13	**251** 104	**41.9** 687	**4.36** 110.7	**15.8** 6.6	**5.30** 87	**1.090** 27.7	**52.0** 852	**10.10** 166
	MC12 x 40.0 MC310 x 60	**11.80** 7613	**12.00** 305	**0.590** 15.0	**3.890** 98	**0.700** 17.8	**9.475** 240	**1.263** 32	**0.500** 13	**234** 97	**39.0** 639	**4.46** 113.3	**14.2** 5.9	**4.98** 82	**1.100** 27.9	**47.7** 782	**9.31** 153
	MC12 x 35.0 MC310 x 52	**10.30** 6645	**12.00** 305	**0.465** 11.8	**3.765** 96	**0.700** 17.8	**9.475** 240	**1.263** 32	**0.500** 13	**216** 90	**36.0** 590	**4.59** 116.6	**12.6** 5.2	**4.64** 76	**1.110** 28.2	**43.2** 708	**8.62** 141
	MC12 x 31.0 MC310 x 46	**9.12** 5884	**12.00** 305	**0.370** 9.4	**3.670** 93	**0.700** 17.8	**9.475** 240	**1.263** 32	**0.500** 13	**202** 84	**33.7** 552	**4.71** 119.6	**11.3** 4.7	**4.37** 72	**1.110** 28.2	**39.7** 651	**8.15** 134

CHANNEL



C

Prime Section Group	Section Size Inch x lbs/ft (mm x kg/m)	Area A Inch² (mm²)	Depth d Inch (mm)	Web Thickness t_w Inch (mm)	Flange Width b_f Inch (mm)	Flange Thickness t_f Inch (mm)	Distance T Inch (mm)	Distance k Inch (mm)	Fillet Radius R Inch (mm)	Elastic Properties X - X I_x Inch⁴ (10^6 mm⁴)	Elastic Properties X - X S_x Inch³ (10^3 mm³)	Elastic Properties X - X r_x Inch (mm)	Elastic Properties Y - Y I_y Inch⁴ (10^6 mm⁴)	Elastic Properties Y - Y S_y Inch³ (10^3 mm³)	Elastic Properties Y - Y r_y Inch (mm)	Plastic Modulus Z_x Inch³ (10^3 mm³)	Plastic Modulus Z_y Inch³ (10^3 mm³)
	C15 x 50.0 C380 x 74	**14.7** 9484	**15.00** 381	**0.716** 18.2	**3.716** 94	**0.650** 16.5	**12.575** 319	**1.213** 31	**0.50** 13	**404** 168	**53.8** 882	**5.24** 133.1	**11.0** 4.6	**3.77** 62	**0.865** 22.0	**68.5** 1123	**8.14** 133
15 x 3.375 380 x 85	**C15 x 40.0** C380 x 60	**11.8** 7613	**15.00** 381	**0.520** 13.2	**3.520** 89	**0.650** 16.5	**12.575** 319	**1.213** 31	**0.50** 13	**348** 144.8	**46.5** 762	**5.45** 138.4	**9.2** 3.8	**3.34** 55	**0.883** 22.4	**57.5** 942	**6.84** 112
	C15 x 33.9 C380 x 50	**9.96** 6426	**15.00** 381	**0.400** 10.2	**3.400** 86	**0.650** 16.5	**12.575** 319	**1.213** 31	**0.50** 13	**315** 131.1	**42.0** 688	**5.62** 142.7	**8.1** 3.4	**3.09** 51	**0.901** 22.9	**50.8** 832	**6.19** 101
	C12 x 30.0 C310 x 45	**8.82** 5690	**12.00** 305	**0.510** 13.0	**3.170** 80	**0.501** 12.7	**10.123** 257	**0.939** 24	**0.375** 10	**162** 67.4	**27.0** 442	**4.29** 109.0	**5.1** 2.1	**2.05** 34	**0.762** 19.4	**33.8** 554	**4.32** 71
12 x 3 310 x 75	**C12 x 25.0** C310 x 37	**7.35** 4742	**12.00** 305	**0.387** 9.8	**3.047** 77	**0.501** 12.7	**10.123** 257	**0.939** 24	**0.375** 10	**144** 59.9	**24.0** 393	**4.43** 112.5	**4.5** 1.9	**1.87** 31	**0.779** 19.8	**29.4** 482	**3.82** 63
	C12 x 20.7 C310 x 31	**6.09** 3929	**12.00** 305	**0.282** 7.2	**2.942** 74	**0.501** 12.7	**10.123** 257	**0.939** 24	**0.375** 10	**129** 53.7	**21.5** 352	**4.61** 117.1	**3.9** 1.6	**1.72** 28	**0.797** 20.2	**25.6** 420	**3.47** 57
	C10 x 30.0 C250 x 45	**8.82** 5690	**10.00** 254	**0.673** 17.1	**3.033** 77	**0.436** 11.1	**7.965** 202	**1.018** 26	**0.472** 12	**103** 42.8	**20.7** 339	**3.43** 87.1	**3.93** 1.6	**1.65** 27	**0.668** 17.0	**26.7** 438	**3.78** 62
10 x 2.755 250 x 70	**C10 x 25.0** C250 x 37	**7.35** 4742	**10.00** 254	**0.526** 13.4	**2.886** 73	**0.436** 11.1	**7.965** 202	**1.018** 26	**0.472** 12	**91** 37.8	**18.2** 298	**3.52** 89.4	**3.34** 1.4	**1.47** 24	**0.675** 17.1	**23.1** 379	**3.18** 52
	C10 x 20.0 C250 x 30	**5.88** 3794	**10.00** 254	**0.379** 9.6	**2.739** 70	**0.436** 11.1	**7.965** 202	**1.018** 26	**0.472** 12	**79** 32.8	**15.8** 259	**3.67** 93.2	**2.80** 1.2	**1.31** 21	**0.690** 17.5	**19.4** 318	**2.70** 44
	C10 x 15.3 C250 x 23	**4.49** 2897	**10.00** 254	**0.240** 6.1	**2.600** 66	**0.436** 11.1	**7.965** 202	**1.018** 26	**0.472** 12	**67** 27.8	**13.5** 221	**3.88** 98.5	**2.27** 0.9	**1.15** 19	**0.711** 18.0	**15.9** 261	**2.34** 38
	C8 x 18.75 C200 x 28	**5.51** 3555	**8.00** 203	**0.487** 12.4	**2.527** 64	**0.390** 9.9	**6.394** 162	**0.803** 20	**0.315** 8	**44** 18.3	**11.0** 180	**2.82** 71.6	**1.97** 0.8	**1.01** 17	**0.598** 15.2	**13.9** 228	**2.17** 36
8 x 2.5 200 x 60	**C8 x 13.75** C200 x 21	**4.04** 2606	**8.00** 203	**0.303** 7.7	**2.343** 60	**0.390** 9.9	**6.394** 162	**0.803** 20	**0.375** 8	**36** 14.9	**9.02** 148	**2.99** 75.9	**1.52** 0.6	**0.84** 14	**0.613** 15.6	**11.0** 180	**1.73** 28
	C8 x 11.5 C200 x 17	**6.09** 3929	**8.00** 203	**0.220** 5.6	**2.260** 57	**0.390** 9.9	**6.394** 162	**0.803** 20	**0.375** 8	**33** 13.7	**8.14** 133	**3.11** 79.0	**1.31** 0.5	**0.78** 13	**0.623** 15.8	**9.63** 158	**1.57** 26

CHANNEL ASTM TABLE



STRUCTURAL SECTIONS

BEAM Available Steel Grades								
American			Canadian			European *		
ASTM	Yield Strength		CSA G40.21	Yield Strength		EN 10248	Yield Strength	
	ksi	MPa		ksi	MPa		ksi	MPa
A 36	36	250	Grade 350 W	50	350	S 235 GP	34	235
A 572 Grade 50	50	345				S 355 GP	51	355
A 572 Grade 60	60	415						
A 588	50	345						
A 242	50	345						

DELIVERY CONDITIONS & TOLERANCES

	ASTM A 6					
Mass	± 2.5%					
Depth	**3 to 7 in**		**7 to 14 in**		**Over 14 in**	
	+1 in	– 0.0625 in	+ 0.125 in	– 1 in	+ 0.1875 in	– 0.125
Length	**5 to 10 ft**	**10 to 20 ft**	**20 to 30 ft**	**30 to 40 ft**	**40 to 50 ft**	**50 to 65 ft**
	+ 1.0 in	+1.5 in	+ 1.75 in	+ 2.25 in	+ 2.75 in	+ 2.75 in
Flange Width	**3 to 7 in**		**7 to 14 in**		**Over 14 in**	
	± 0.125 in		+ 0.125 in	– 1 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					

CONVERSION CHART

	IMPERIAL TO METRIC				METRIC TO IMPERIAL		
Dimensions, Area, Volume	1 in	=	2.5400 cm	Dimensions, Area, Volume	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	Mass, Force, Pressure	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 US Ton	=	0.9072 Metric Tons		1 Metric Ton	=	1.1023 US Tons
Moment of Inertia	1 in^4	=	41.6228 cm^4	Moment of Inertia	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	Section Modulus	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	Bending Moment	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

NOTES

JD FIELDS & COMPANY, INC.

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SCAN FOR THE LATEST STEEL PILING & GEOSTRUCTURAL SYSTEMS DIGITAL CATALOG