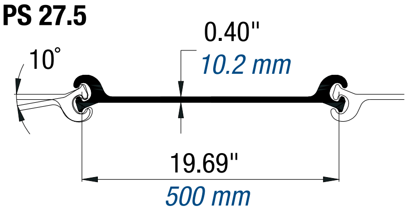
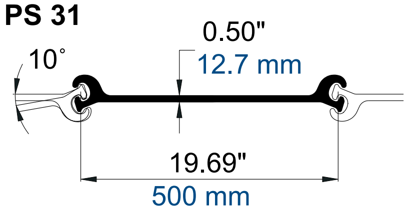
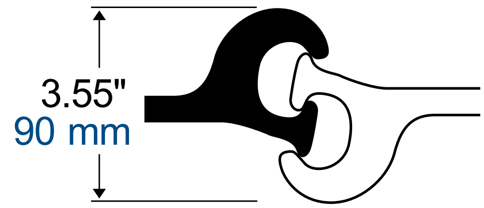
MADE IN USA

PS (FLAT SHEET) PILING PROPERTIES



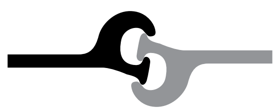




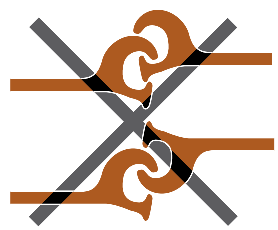
Minimum Grade 60 Standard					Per Single Section						Per Unit of Wall			
JD FIELDS & COMPANY, INC.	Nominal Width	Depth (Height)	Wall Depth (Height)	Web Thickness	Area	Weight	Moment of Inertia	Section Modulus	Total Surface Area	Nominal Coating Area*	Area	Weight	Moment of Inertia	Section Modulus
Section	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.

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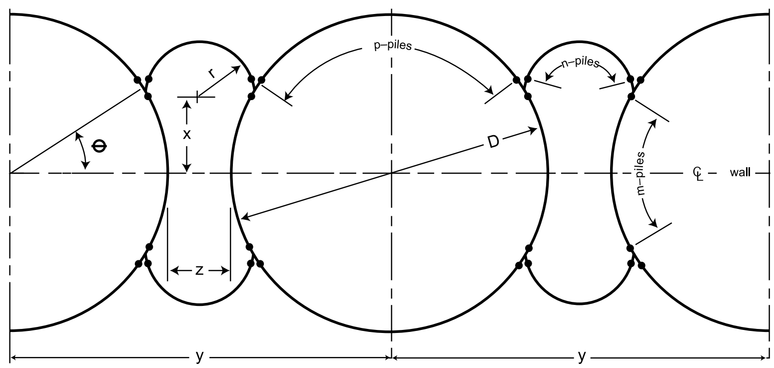
PS FLAT SHEET PILING 30° EXTRUDED WYE LAYOUT



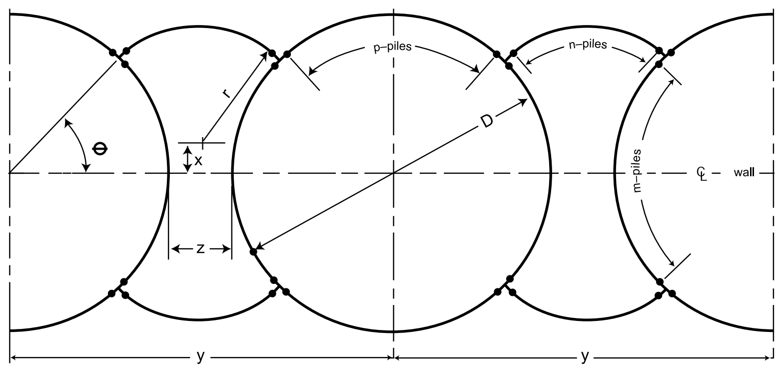
ϴ is measured to the center of the 30° connection

							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



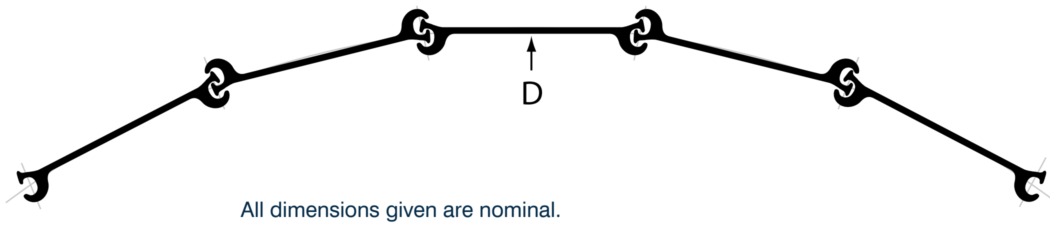
Θ is measured to the center of the 90˚ connection

Number of Piles in Cell†	D ft (m)	z ft (m)	y ft (m)	r ft (m)	X ft (m)	Θ deg	Number of Piles m	n	p	Area 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

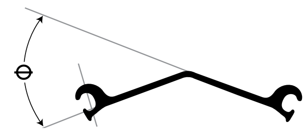
All dimensions given are nominal.

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	 Area ft^2	Requires Swing degrees	Theoretical Bend degrees θ	Suggested Bend degrees θ
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.