

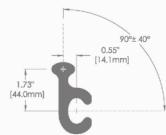
BALL & SOCKET
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-Pile

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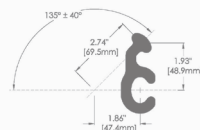
PilePro® Sheet Pile Connectors



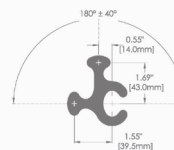
PZ 90



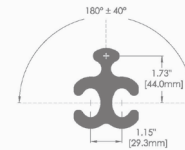
Colt



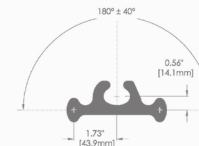
Cobra



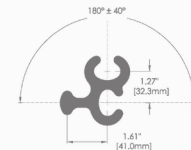
PZ Tee



Joker



Bullhead



PZT-S

Sheet Pile LLC is the owner and assignee of US 7,390,145, related to these connectors.



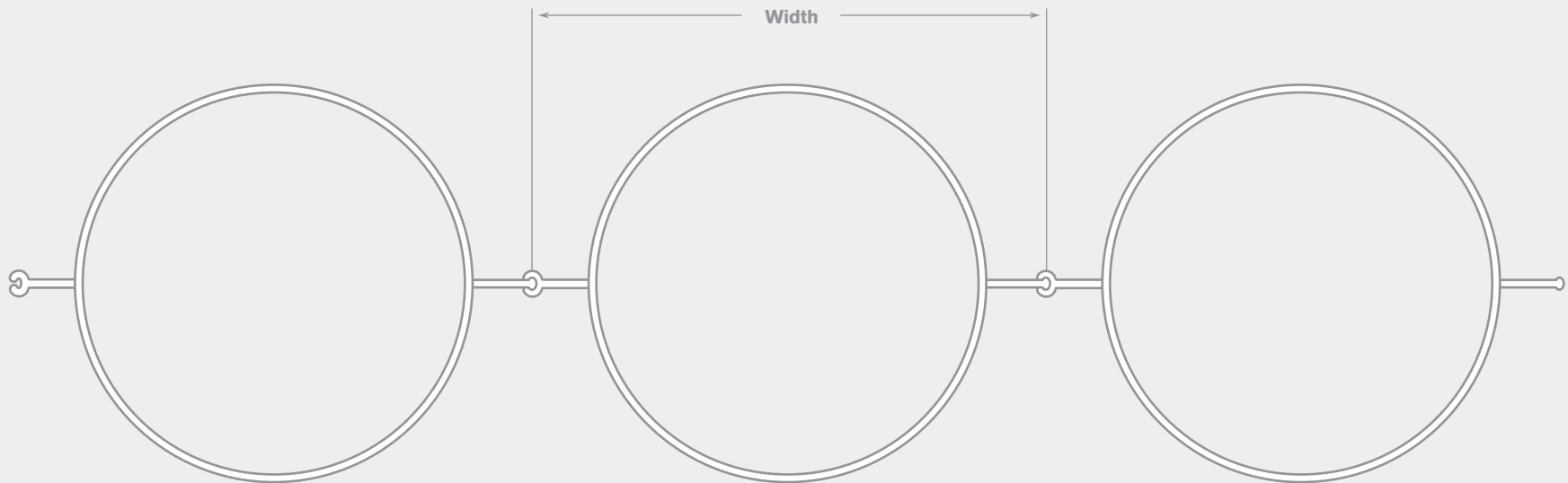
Hot rolled and 100% melted and manufactured
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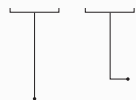


W: 100mm (3.9in)



SECTION NAME:

101 - 978



Section width in mm

Section modulus (elastic) in $\text{cm}^3/\text{m} \div 100$

These are examples from a large variety of possible O-Pile® solutions.

Please configure your own system on sheet-pile.com/opile

WOF® and WOM® are available in a wide range of sizes — 100% melted and manufactured in the USA and BABA 2021 compliant. Sheet Pile LLC is the owner and assignee of numerous patents and trademarks related to the O-Pile® system, including, but not limited to, United States Patent Nos. 8,088,469, 8,323,765, and 7,935,406.



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
30-608	O	20	0.375	55.8	34.9	39.96	45.02	0.472	3.9	558.2	232.6	279.1	302.4	239.5	290.1	323.8	512.7
		508	9.525	3001.1	170.41	195.12	219.82	12	100	76227.2	1034.6	1241.5	1345	1065.4	1290.5	1440.5	2280.8
31-608	O	20	0.394	58.4	36.44	41.7	46.95	0.472	3.9	584.4	243.5	292.2	316.5	250.7	303.7	339	536.8
		508	10	3141.9	177.94	203.59	229.23	12	100	79803	1083.1	1299.7	1408	1115.4	1351	1508.1	2387.8
34-659	O	22	0.375	62.5	35.18	40.22	45.26	0.472	3.9	687.5	260.4	312.5	338.5	268.2	324.8	362.6	574.1
		558.8	9.525	3360.2	171.76	196.37	220.99	12	100	93883.4	1158.4	1390.1	1505.9	1192.9	1444.9	1612.9	2553.7
35-608	O	20	0.438	64.5	40.04	45.75	51.45	0.472	3.9	645.1	268.8	322.6	349.4	276.8	335.3	374.3	592.6
		508	11.112	3468.4	195.52	223.36	251.2	12	100	88096.7	1195.7	1434.8	1554.4	1231.3	1491.4	1664.8	2636
35-659	O	22	0.394	65.6	36.75	41.99	47.23	0.472	3.9	721.7	273.4	328.1	355.4	281.5	341	380.6	602.7
		558.8	10	3527.5	179.43	205	230.57	12	100	98558.2	1216.1	1459.3	1580.9	1252.3	1516.8	1693.2	2680.9
37-608	O	20	0.472	69.3	42.91	48.97	55.03	0.472	3.9	693	288.7	346.5	375.4	297.3	360.2	402	636.5
		508	12	3725.7	209.48	239.07	268.66	12	100	94631.7	1284.4	1541.2	1669.7	1322.6	1602	1788.3	2831.5
37-710	O	24	0.375	69.5	35.42	40.44	45.47	0.472	3.9	834.3	289.7	347.6	376.6	298.3	361.3	403.3	638.6
		609.6	9.525	3737.9	172.92	197.45	221.98	12	100	113929.8	1288.6	1546.3	1675.2	1326.9	1607.3	1794.2	2840.8
39-710	O	24	0.394	72.8	37.01	42.24	47.46	0.472	3.9	873.8	303.4	364.1	394.4	312.4	378.5	422.5	668.9
		609.6	10	3915	180.71	206.22	231.72	12	100	119330.6	1349.7	1619.6	1754.6	1389.8	1683.5	1879.2	2975.4
39-608	O	20	0.5	73	45.15	51.49	57.84	0.472	3.9	730.3	304.3	365.2	395.6	313.4	379.6	423.7	670.9
		508	12.7	3926.6	220.46	251.42	282.38	12	100	99735.7	1353.6	1624.4	1759.7	1393.9	1688.4	1884.8	2984.2
42-659	O	22	0.472	77.9	43.34	49.4	55.46	0.472	3.9	856.8	324.5	389.4	421.9	334.2	404.8	451.9	715.5
		558.8	12	4187.5	211.58	241.17	270.76	12	100	116999	1443.6	1732.3	1876.7	1486.6	1800.6	2010	3182.5
43-710	O	24	0.438	80.5	40.74	46.43	52.12	0.472	3.9	965.7	335.3	402.4	435.9	345.3	418.3	466.9	739.2
		609.6	11.112	4326.7	198.91	226.69	254.48	12	100	131878.2	1491.6	1789.9	1939.1	1536	1860.5	2076.8	3288.3
44-608	O	20	0.562	81.4	50.23	57.2	64.18	0.472	3.9	813.9	339.1	407	440.9	349.2	423	472.2	747.6
		508	14.288	4375.9	245.24	279.3	313.36	12	100	111147.2	1508.5	1810.2	1961.1	1553.4	1881.6	2100.4	3325.7
44-659	O	22	0.5	82.1	45.63	51.98	58.32	0.472	3.9	903.3	342.2	410.6	444.8	352.4	426.8	476.4	754.3
		558.8	12.7	4415	222.78	253.77	284.76	12	100	123356.3	1522	1826.4	1978.6	1567.3	1898.5	2119.2	3355.4
45-811	O	28	0.375	83.3	35.8	40.8	45.8	0.472	3.9	1166.7	347.2	416.7	451.4	357.6	433.1	483.5	765.5
		711.2	9.525	4480.5	174.8	199.2	223.6	12	100	159325.7	1544.6	1853.5	2008	1590.6	1926.6	2150.6	3405.2



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in ³ /ft (cm ³ /m)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	in (mm)	in (mm)	in ⁴ /ft (cm ⁴ /m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
47-710	O	24	0.472	86.5	43.7	49.77	55.83	0.472	3.9	1038.3	360.5	432.6	468.7	371.2	449.7	502	794.8
		609.6	12	4651.8	213.39	242.98	272.57	12	100	141786.9	1603.7	1924.4	2084.7	1651.4	2000.3	2232.9	3535.4
47-811	O	28	0.394	87.3	37.44	42.64	47.84	0.472	3.9	1222.4	363.8	436.6	473	374.6	453.8	506.6	802.1
		711.2	10	4694.4	182.79	208.19	233.59	12	100	166934.2	1618.4	1942	2103.9	1666.5	2018.6	2253.3	3567.8
48-608	O	20	0.625	89.6	55.27	62.88	70.48	0.472	3.9	895.8	373.3	447.9	485.2	384.4	465.6	519.7	822.9
		508	15.875	4816.3	269.85	306.99	344.12	12	100	122334.2	1660.4	1992.4	2158.5	1709.8	2071	2311.8	3660.4
49-862	O	30	0.375	90.3	35.96	40.95	45.93	0.472	3.9	1354.1	376.1	451.4	489	387.3	469.2	523.7	829.2
		762	9.525	4853.3	175.57	199.92	224.27	12	100	184911.8	1673.1	2007.7	2175.1	1722.9	2086.9	2329.6	3688.5
49-710	O	24	0.5	91.3	46.04	52.39	58.74	0.472	3.9	1095	380.2	456.3	494.3	391.5	474.3	529.4	838.2
		609.6	12.7	4906.1	224.77	255.78	286.79	12	100	149537.8	1691.3	2029.6	2198.7	1741.7	2109.6	2354.9	3728.6
51-862	O	30	0.394	94.6	37.61	42.81	48	0.472	3.9	1418.9	394.1	473	512.4	405.9	491.6	548.8	868.9
		762	10	5085.8	183.64	209	234.36	12	100	193768	1753.3	2103.9	2279.2	1805.4	2186.9	2441.2	3865.2
52-811	O	28	0.438	96.6	41.26	46.94	52.62	0.472	3.9	1352	402.4	482.9	523.1	414.4	501.9	560.3	887.1
		711.2	11.112	5192.2	201.46	229.19	256.93	12	100	184633.9	1789.9	2147.9	2326.9	1843.2	2232.6	2492.2	3946.1
52-913	O	32	0.375	97.2	36.1	41.08	46.05	0.472	3.9	1555.5	405.1	486.1	526.6	417.1	505.3	564	893
		812.8	9.525	5227	176.26	200.56	224.86	12	100	212423.3	1801.9	2162.3	2342.5	1855.6	2247.6	2508.9	3972.5
54-659	O	22	0.625	101	55.95	63.59	71.23	0.472	3.9	1111.5	421	505.2	547.3	433.6	525.2	586.2	928.2
		558.8	15.875	5432.6	273.19	310.49	347.78	12	100	151787.3	1872.8	2247.4	2434.7	1928.6	2336	2607.7	4128.8
55-710	O	24	0.562	101.9	51.3	58.31	65.32	0.472	3.9	1222.3	424.4	509.3	551.7	437	529.4	590.9	935.6
		609.6	14.288	5476.1	250.48	284.71	318.94	12	100	166912.3	1887.8	2265.4	2454.2	1944	2354.7	2628.5	4161.9
55-913	O	32	0.394	101.9	37.77	42.95	48.14	0.472	3.9	1630.2	424.5	509.5	551.9	437.2	529.5	591.1	935.9
		812.8	10	5478	184.4	209.72	235.04	12	100	222624.9	1888.5	2266.2	2455	1944.7	2355.5	2629.4	4163.3
56-811	O	28	0.472	103.9	44.3	50.36	56.43	0.472	3.9	1454.5	432.9	519.5	562.8	445.8	540	602.8	954.4
		711.2	12	5585.8	216.31	245.9	275.49	12	100	198630.4	1925.6	2310.8	2503.3	1983	2401.9	2681.2	4245.2
56-964	O	34	0.375	104.2	36.23	41.19	46.16	0.472	3.9	1771.1	434.1	520.9	564.3	447	541.5	604.4	957
		863.6	9.525	5601.3	176.87	201.13	225.39	12	100	241863.8	1931	2317.2	2510.3	1988.5	2408.6	2688.6	4257
56-862	O	30	0.438	104.7	41.48	47.15	52.83	0.472	3.9	1569.9	436.1	523.3	566.9	449.1	543.9	607.2	961.4
		762	11.112	5626.8	202.51	230.22	257.94	12	100	214380.5	1939.8	2327.7	2521.7	1997.5	2419.5	2700.9	4276.4



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
57-608	O	20	0.75	105.5	65.25	74.11	82.96	0.472	3.9	1054.8	439.5	527.4	571.4	452.6	548.2	612	968.9
		508	19.05	5671.1	318.59	361.82	405.05	12	100	144046.7	1955.1	2346.1	2541.6	2013.3	2438.6	2722.1	4310.1
59-964	O	34	0.394	109.2	37.91	43.09	48.26	0.472	3.9	1856.4	455	546	591.5	468.5	567.5	633.5	1003.1
		863.6	10	5870.9	185.08	210.36	235.65	12	100	253504.6	2023.9	2428.7	2631.1	2084.2	2524.5	2818	4461.9
59-811	O	28	0.5	109.6	46.7	53.06	59.42	0.472	3.9	1534.8	456.8	548.1	593.8	470.4	569.8	636	1007
		711.2	12.7	5894.1	228	259.05	290.1	12	100	209593.2	2031.9	2438.3	2641.5	2092.4	2534.5	2829.2	4479.5
60-1014	O	36	0.375	111.2	36.34	41.3	46.26	0.472	3.9	2000.8	463.2	555.8	602.1	476.9	577.7	644.9	1021.1
		914.4	9.525	5976.2	177.43	201.64	225.86	12	100	273230.5	2060.2	2472.3	2678.3	2121.5	2569.8	2868.6	4541.9
60-710	O	24	0.625	112.3	56.54	64.21	71.87	0.472	3.9	1347.4	467.9	561.4	608.2	481.8	583.6	651.4	1031.4
		609.6	15.875	6036.9	276.06	313.48	350.91	12	100	184003.7	2081.1	2497.4	2705.5	2143.1	2595.9	2897.7	4588
61-862	O	30	0.472	112.6	44.55	50.61	56.67	0.472	3.9	1689.3	469.3	563.1	610	483.2	585.3	653.4	1034.5
		762	12	6054.9	217.52	247.11	276.7	12	100	230690.3	2087.3	2504.8	2713.5	2149.5	2603.6	2906.3	4601.7
61-913	O	32	0.438	112.8	41.67	47.34	53.01	0.472	3.9	1804.2	469.8	563.8	610.8	483.8	586	654.2	1035.8
		812.8	11.112	6062.3	203.44	231.14	258.83	12	100	246373.8	2089.9	2507.9	2716.9	2152.1	2606.8	2909.9	4607.4
63-1014	O	36	0.394	116.5	38.03	43.2	48.38	0.472	3.9	2097.3	485.5	582.6	631.1	499.9	605.6	676	1070.3
		914.4	10	6264.4	185.69	210.95	236.2	12	100	286407.7	2159.6	2591.5	2807.4	2223.9	2693.7	3006.9	4760.9
64-1065	O	38	0.375	118.1	36.44	41.4	46.35	0.472	3.9	2244.6	492.2	590.7	639.9	506.9	614	685.4	1085.2
		965.2	9.525	6351.6	177.93	202.11	226.29	12	100	306526.5	2189.6	2627.5	2846.5	2254.8	2731.2	3048.8	4827.2
64-862	O	30	0.5	118.9	46.97	53.33	59.7	0.472	3.9	1782.9	495.3	594.3	643.8	510	617.7	689.6	1091.8
		762	12.7	6390.3	229.33	260.4	291.46	12	100	243471	2203	2643.6	2863.9	2268.6	2747.8	3067.4	4856.6
64-659	O	22	0.75	119	66.16	75.07	83.98	0.472	3.9	1309.2	495.9	595.1	644.7	510.7	618.6	690.5	1093.3
		558.8	19.05	6398.7	323.01	366.52	410.04	12	100	178780.4	2205.9	2647.1	2867.6	2271.5	2751.5	3071.4	4863
65-964	O	34	0.438	120.9	41.84	47.51	53.18	0.472	3.9	2054.9	503.7	604.4	654.8	518.6	628.2	701.3	1110.3
		863.6	11.112	6498.8	204.27	231.95	259.64	12	100	280616.4	2240.4	2688.4	2912.5	2307.1	2794.5	3119.4	4939.1
65-913	O	32	0.472	121.4	44.77	50.83	56.89	0.472	3.9	1941.8	505.7	606.8	657.4	520.7	630.8	704.1	1114.8
		812.8	12	6525	218.59	248.18	277.77	12	100	265176.4	2249.4	2699.3	2924.2	2316.4	2805.8	3132	4959
66-811	O	28	0.562	122.5	52.11	59.14	66.18	0.472	3.9	1715.1	510.4	612.5	663.6	525.6	636.7	710.7	1125.3
		711.2	14.288	6586.3	254.42	288.77	323.12	12	100	234209.8	2270.6	2724.7	2951.7	2338.1	2832.1	3161.4	5005.6



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in ³ /ft (cm ³ /m)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	in (mm)	in (mm)	in ⁴ /ft (cm ⁴ /m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
66-710	O	24	0.688	122.5	61.75	70.07	78.38	0.472	3.9	1470.5	510.6	612.7	663.8	525.8	636.9	710.9	1125.7
		609.6	17.462	6588.4	301.49	342.1	382.7	12	100	200816	2271.3	2725.5	2952.7	2338.9	2833	3162.5	5007.2
67-1065	O	38	0.394	123.8	38.15	43.31	48.48	0.472	3.9	2353.1	516	619.2	670.8	531.4	643.7	718.5	1137.6
		965.2	10	6658.4	186.25	211.47	236.69	12	100	321335.9	2295.4	2754.5	2984	2363.7	2863.1	3196	5060.4
67-1116	O	40	0.375	125.1	36.54	41.48	46.43	0.472	3.9	2502.6	521.4	625.6	677.8	536.9	650.3	725.9	1149.4
		1016	9.525	6727.4	178.38	202.53	226.69	12	100	341750	2319.2	2783	3014.9	2388.2	2892.8	3229.1	5112.8
69-913	O	32	0.5	128.1	47.21	53.58	59.94	0.472	3.9	2049.8	533.8	640.6	693.9	549.7	665.8	743.2	1176.8
		812.8	12.7	6887.7	230.51	261.59	292.67	12	100	279917.8	2374.5	2849.4	3086.8	2445.1	2961.7	3306.1	5234.7
69-1014	O	36	0.438	129	41.99	47.66	53.33	0.472	3.9	2322.1	537.5	645	698.8	553.5	670.5	748.4	1185
		914.4	11.112	6935.9	205.02	232.69	260.36	12	100	317107.6	2391.1	2869.3	3108.4	2462.2	2982.4	3329.2	5271.3
70-964	O	34	0.472	130.1	44.97	51.03	57.09	0.472	3.9	2212.2	542.2	650.6	704.9	558.3	676.3	754.9	1195.3
		863.6	12	6996.1	219.54	249.14	278.73	12	100	302091.1	2411.8	2894.2	3135.4	2483.6	3008.3	3358.1	5317
71-1116	O	40	0.394	131.2	38.25	43.41	48.57	0.472	3.9	2623.7	546.6	655.9	710.6	562.9	681.8	761.1	1205
		1016	10	7052.9	186.75	211.95	237.15	12	100	358288.5	2431.4	2917.7	3160.8	2503.8	3032.8	3385.4	5360.2
71-1167	O	42	0.375	132.1	36.62	41.56	46.5	0.472	3.9	2774.6	550.5	660.6	715.7	566.9	686.7	766.5	1213.7
		1066.8	9.525	7103.5	178.8	202.92	227.04	12	100	378903	2448.9	2938.6	3183.5	2521.8	3054.5	3409.7	5398.7
71-710	O	24	0.75	132.6	66.93	75.9	84.86	0.472	3.9	1591.6	552.7	663.2	718.4	569.1	689.3	769.5	1218.4
		609.6	19.05	7131	326.79	370.55	414.32	12	100	217352	2458.3	2950	3195.8	2531.5	3066.3	3422.9	5419.5
71-862	O	30	0.562	132.9	52.44	59.49	66.53	0.472	3.9	1993.2	553.7	664.4	719.8	570.1	690.6	770.9	1220.6
		762	14.288	7144.1	256.03	290.44	324.85	12	100	272189.1	2462.8	2955.4	3201.7	2536.1	3072	3429.2	5429.5
73-811	O	28	0.625	135.2	57.49	65.2	72.91	0.472	3.9	1892.8	563.3	676	732.4	580.1	702.7	784.4	1241.9
		711.2	15.875	7269	280.71	318.35	355.99	12	100	258485	2505.9	3007.1	3257.7	2580.5	3125.7	3489.1	5524.4
74-1065	O	38	0.438	137.1	42.13	47.79	53.46	0.472	3.9	2605.8	571.5	685.7	742.9	588.5	712.8	795.7	1259.8
		965.2	11.112	7373.6	205.7	233.35	261.01	12	100	355847.7	2541.9	3050.3	3304.5	2617.6	3170.6	3539.3	5603.9
74-964	O	34	0.5	137.4	47.43	53.8	60.17	0.472	3.9	2335.5	572.4	686.9	744.2	589.5	714	797	1262
		863.6	12.7	7386.1	231.57	262.66	293.76	12	100	318933.2	2546.3	3055.5	3310.2	2622.1	3176	3545.3	5613.5
75-1167	O	42	0.394	138.5	38.34	43.5	48.66	0.472	3.9	2909.1	577.2	692.6	750.4	594.4	720	803.7	1272.5
		1066.8	10	7447.8	187.21	212.38	237.56	12	100	397265.2	2567.5	3081	3337.8	2644	3202.6	3574.9	5660.3



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
75-1014	O	36	0.472	138.9	45.14	51.2	57.26	0.472	3.9	2500.3	578.8	694.5	752.4	596	721.9	805.9	1275.9
		914.4	12	7467.9	220.41	250	279.59	12	100	341433.4	2574.5	3089.4	3346.8	2651.1	3211.2	3584.6	5675.6
75-1218	O	44	0.375	139.1	36.7	41.63	46.57	0.472	3.9	3060.8	579.7	695.6	753.6	597	723.1	807.2	1278
		1117.6	9.525	7480	179.18	203.27	227.37	12	100	417983.7	2578.6	3094.4	3352.2	2655.4	3216.4	3590.4	5684.8
77-710	O	24	0.812	142.6	72.08	81.69	91.3	0.472	3.9	1710.7	594	712.8	772.2	611.7	740.9	827.1	1309.5
		609.6	20.638	7664.5	351.94	398.85	445.76	12	100	233614.7	2642.3	3170.7	3434.9	2720.9	3295.7	3679	5825
77-913	O	32	0.562	143.3	52.73	59.79	66.85	0.472	3.9	2292.5	597	716.4	776.1	614.8	744.7	831.2	1316.1
		812.8	14.288	7703.2	257.47	291.93	326.38	12	100	313057.6	2655.6	3186.7	3452.3	2734.6	3312.4	3697.5	5854.4
78-1116	O	40	0.438	145.3	42.26	47.92	53.58	0.472	3.9	2906	605.4	726.5	787	623.4	755.1	843	1334.7
		1016	11.112	7811.8	206.32	233.96	261.6	12	100	396837.8	2693	3231.6	3500.9	2773.2	3359.1	3749.6	5936.9
78-1218	O	44	0.394	145.9	38.43	43.58	48.73	0.472	3.9	3209.4	607.8	729.4	790.2	625.9	758.2	846.3	1340
		1117.6	10	7843	187.63	212.78	237.94	12	100	438267.9	2703.8	3244.5	3514.9	2784.3	3372.5	3764.6	5960.7
79-760	O	26	0.75	146	67.6	76.61	85.62	0.472	3.9	1897.7	608.2	729.9	790.7	626.3	758.7	846.9	1340.9
		660.4	19.05	7848.1	330.07	374.05	418.03	12	100	259142.8	2705.5	3246.6	3517.2	2786.1	3374.7	3767.1	5964.5
79-1014	O	36	0.5	146.7	47.62	53.99	60.37	0.472	3.9	2640	611.1	733.3	794.4	629.3	762.3	850.9	1347.2
		914.4	12.7	7885.3	232.52	263.62	294.73	12	100	360517.5	2718.4	3262	3533.9	2799.3	3390.7	3785	5992.9
79-862	O	30	0.625	146.7	57.89	65.61	73.34	0.472	3.9	2200.8	611.3	733.6	794.7	629.5	762.5	851.2	1347.7
		762	15.875	7888.1	282.63	320.36	358.08	12	100	300537.1	2719.3	3263.2	3535.1	2800.3	3391.9	3786.3	5995
79-1065	O	38	0.472	147.7	45.3	51.36	57.42	0.472	3.9	2806.2	615.4	738.5	800	633.7	767.6	856.8	1356.7
		965.2	12	7940.4	221.19	250.78	280.37	12	100	383205	2737.4	3284.8	3558.6	2818.9	3414.4	3811.4	6034.7
79-811	O	28	0.688	147.7	62.85	71.23	79.61	0.472	3.9	2068.1	615.5	738.6	800.2	633.8	767.7	857	1357
		711.2	17.462	7942.1	306.88	347.79	388.71	12	100	282422.3	2738	3285.5	3559.3	2819.5	3415.1	3812.2	6036
82-710	O	24	0.875	152.3	77.21	87.46	97.7	0.472	3.9	1827.8	634.7	761.6	825.1	653.6	791.6	883.7	1399.2
		609.6	22.225	8189.2	376.96	426.99	477.03	12	100	249606.8	2823.1	3387.7	3670.1	2907.2	3521.4	3930.8	6223.8
82-1319	O	48	0.375	153.1	36.84	41.76	46.69	0.472	3.9	3675.6	638.1	765.7	829.6	657.1	795.9	888.5	1406.8
		1219.2	9.525	8233.8	179.85	203.9	227.95	12	100	501934.5	2838.5	3406.2	3690.1	2923	3540.5	3952.2	6257.7
83-1167	O	42	0.438	153.5	42.37	48.03	53.69	0.472	3.9	3222.6	639.4	767.3	831.2	658.4	797.6	890.3	1409.6
		1066.8	11.112	8250.4	206.88	234.51	262.15	12	100	440078	2844.2	3413.1	3697.5	2928.9	3547.7	3960.2	6270.3



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in ³ /ft (cm ³ /m)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	in (mm)	in (mm)	in ⁴ /ft (cm ⁴ /m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
83-964	O	34	0.562	153.7	53	60.06	67.13	0.472	3.9	2612.9	640.4	768.5	832.5	659.5	798.8	891.7	1411.9
		863.6	14.288	8263.5	258.76	293.25	327.75	12	100	356816.1	2848.7	3418.5	3703.3	2933.5	3553.3	3966.5	6280.2
84-1065	O	38	0.5	156	47.8	54.17	60.55	0.472	3.9	2963.4	649.9	779.8	844.8	669.2	810.6	904.8	1432.7
		965.2	12.7	8385.3	233.38	264.49	295.61	12	100	404673.3	2890.7	3468.9	3757.9	2976.8	3605.7	4024.9	6372.8
84-722	O	24.5	0.875	156.3	77.43	87.69	97.96	0.472	3.9	1914.6	651.2	781.5	846.6	670.6	812.3	906.7	1435.7
		622.3	22.225	8402.8	378.04	428.16	478.28	12	100	261454.4	2896.8	3476.1	3765.8	2983	3613.2	4033.4	6386.2
84-1116	O	40	0.472	156.5	45.45	51.51	57.57	0.472	3.9	3129.8	652	782.5	847.7	671.5	813.3	907.9	1437.5
		1016	12	8413.5	221.89	251.49	281.08	12	100	427405.9	2900.5	3480.5	3770.6	2986.8	3617.8	4038.5	6394.3
85-913	O	32	0.625	158.3	58.23	65.98	73.72	0.472	3.9	2532.2	659.4	791.3	857.3	679.1	822.5	918.2	1453.8
		812.8	15.875	8508.8	284.33	322.14	359.94	12	100	345798.6	2933.3	3520	3813.3	3020.6	3658.8	4084.2	6466.7
86-811	O	28	0.75	160.1	68.19	77.24	86.28	0.472	3.9	2241	667	800.3	867	686.8	831.9	928.6	1470.4
		711.2	19.05	8605.9	332.93	377.1	421.27	12	100	306024.4	2966.8	3560.1	3856.8	3055.1	3700.5	4130.8	6540.5
86-1370	O	50	0.375	160.2	36.9	41.82	46.74	0.472	3.9	4004.2	667.4	800.8	867.6	687.2	832.4	929.2	1471.2
		1270	9.525	8611.1	180.15	204.18	228.21	12	100	546804.4	2968.6	3562.3	3859.1	3056.9	3702.8	4133.3	6544.4
86-862	O	30	0.688	160.4	63.31	71.71	80.12	0.472	3.9	2405.7	668.2	801.9	868.7	688.1	833.5	930.4	1473.2
		762	17.462	8622.5	309.1	350.14	391.18	12	100	328517.4	2972.5	3567	3864.3	3061	3707.7	4138.8	6553.1
86-1319	O	48	0.394	160.6	38.58	43.73	48.87	0.472	3.9	3854.4	669.2	803	869.9	689.1	834.7	931.7	1475.2
		1219.2	10	8634.3	188.37	213.49	238.6	12	100	526348.5	2976.6	3571.9	3869.6	3065.2	3712.8	4144.5	6562.1
87-1218	O	44	0.438	161.6	42.48	48.14	53.79	0.472	3.9	3555.7	673.4	808.1	875.5	693.5	840	937.7	1484.6
		1117.6	11.112	8689.5	207.39	235.02	262.64	12	100	485568.3	2995.6	3594.7	3894.3	3084.8	3736.5	4171	6604
87-710	O	24	0.938	161.9	82.3	93.19	104.07	0.472	3.9	1943	674.6	809.6	877	694.7	841.5	939.4	1487.3
		609.6	23.812	8705.1	401.83	454.98	508.12	12	100	265331.2	3001	3601.2	3901.3	3090.3	3743.2	4178.4	6615.9
88-1014	O	36	0.562	164.1	53.24	60.31	67.38	0.472	3.9	2954.5	683.9	820.7	889.1	704.3	853.1	952.3	1507.7
		914.4	14.288	8824.7	259.92	294.45	328.98	12	100	403466.1	3042.2	3650.7	3954.9	3132.8	3794.6	4235.9	6706.8
89-1116	O	40	0.5	165.3	47.96	54.33	60.71	0.472	3.9	3305.5	688.7	826.4	895.2	709.2	859	958.9	1518.2
		1016	12.7	8885.8	234.16	265.29	296.41	12	100	451399.6	3063.3	3675.9	3982.3	3154.5	3820.9	4265.2	6753.2
89-1167	O	42	0.472	165.3	45.58	51.64	57.7	0.472	3.9	3471.3	688.7	826.5	895.4	709.3	859.1	959	1518.4
		1066.8	12	8887.1	222.54	252.13	281.72	12	100	474035.8	3063.7	3676.4	3982.8	3154.9	3821.4	4265.8	6754.2



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		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
90-1421	O	52	0.375	167.2	36.95	41.87	46.79	0.472	3.9	4346.9	696.6	835.9	905.6	717.3	868.9	969.9	1535.7
		1320.8	9.525	8988.5	180.43	204.44	228.45	12	100	593602.9	3098.7	3718.4	4028.3	3190.9	3865.1	4314.5	6831.3
90-1370	O	50	0.394	168	38.65	43.79	48.93	0.472	3.9	4199.1	699.9	839.8	909.8	720.7	872.9	974.4	1542.9
		1270	10	9030.3	188.7	213.8	238.9	12	100	573427	3113.1	3735.7	4047	3205.8	3883	4334.6	6863.1
91-964	O	34	0.625	169.8	58.55	66.3	74.06	0.472	3.9	2887.2	707.6	849.2	919.9	728.7	882.7	985.3	1560.1
		863.6	15.875	9130.9	285.85	323.73	361.61	12	100	394270.4	3147.8	3777.3	4092.1	3241.5	3926.3	4382.8	6939.5
92-710	O	24	1	171.3	87.37	98.89	110.4	0.472	3.9	2056.2	714	856.7	928.1	735.2	890.5	994.1	1574
		609.6	25.4	9212.3	426.57	482.8	539.04	12	100	280792	3175.8	3811	4128.6	3270.4	3961.3	4421.9	7001.4
93-811	O	28	0.812	172.2	73.5	83.21	92.92	0.472	3.9	2411.4	717.7	861.2	933	739	895.2	999.3	1582.2
		711.2	20.638	9260.3	358.86	406.27	453.68	12	100	329294.9	3192.4	3830.8	4150.1	3287.4	3981.9	4444.9	7037.8
93-913	O	32	0.688	173.1	63.71	72.14	80.57	0.472	3.9	2769.1	721.1	865.3	937.4	742.6	899.5	1004.1	1589.7
		812.8	17.462	9304.7	311.07	352.22	393.38	12	100	378142	3207.7	3849.2	4170	3303.2	4001	4466.2	7071.6
94-862	O	30	0.75	173.9	68.71	77.79	86.87	0.472	3.9	2607.9	724.4	869.3	941.7	746	903.6	1008.7	1597
		762	19.05	9347.3	335.46	379.79	424.13	12	100	356132.3	3222.4	3866.8	4189.1	3318.3	4019.3	4486.7	7104
94-1218	O	44	0.472	174.1	45.7	51.76	57.82	0.472	3.9	3830.6	725.5	870.6	943.1	747.1	904.9	1010.1	1599.4
		1117.6	12	9361.1	223.13	252.73	282.32	12	100	523096.3	3227.1	3872.5	4195.2	3323.2	4025.3	4493.3	7114.4
94-1472	O	54	0.375	174.2	37.01	41.92	46.84	0.472	3.9	4703.7	725.9	871.1	943.6	747.5	905.4	1010.7	1600.3
		1371.6	9.525	9366.2	180.69	204.68	228.67	12	100	642331.5	3228.9	3874.6	4197.5	3325	4027.5	4495.8	7118.3
94-1065	O	38	0.562	174.6	53.45	60.53	67.61	0.472	3.9	3317.3	727.5	873	945.7	749.1	907.4	1012.9	1603.8
		965.2	14.288	9386.8	260.97	295.53	330.09	12	100	453006.9	3236	3883.2	4206.8	3332.3	4036.3	4505.7	7134
94-1167	O	42	0.5	174.6	48.11	54.48	60.86	0.472	3.9	3666.5	727.5	873	945.7	749.1	907.4	1012.9	1603.8
		1066.8	12.7	9386.9	234.88	266.01	297.14	12	100	500697.6	3236	3883.2	4206.8	3332.4	4036.4	4505.7	7134
94-1421	O	52	0.394	175.3	38.71	43.85	48.99	0.472	3.9	4558.7	730.6	876.7	949.7	752.3	911.2	1017.2	1610.6
		1320.8	10	9426.6	189.01	214.09	239.18	12	100	622531.7	3249.7	3899.6	4224.6	3346.4	4053.4	4524.8	7164.2
96-1319	O	48	0.438	178	42.66	48.32	53.97	0.472	3.9	4271.4	741.6	889.9	964	763.6	925	1032.5	1634.8
		1219.2	11.112	9568.6	208.31	235.91	263.52	12	100	583301.2	3298.7	3958.4	4288.2	3396.8	4114.5	4592.9	7272.1
97-1522	O	56	0.375	181.2	37.06	41.97	46.88	0.472	3.9	5074.7	755.2	906.2	981.7	777.6	941.9	1051.5	1664.8
		1422.4	9.525	9744	180.93	204.9	228.88	12	100	692991.3	3359.1	4030.9	4366.8	3459.1	4189.9	4677.1	7405.4



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in³/ft (cm³/m)	lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)	in (mm)	in (mm)	in⁴/ft (cm⁴/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
98-1014	O	36	0.625	181.4	58.83	66.6	74.37	0.472	3.9	3265.7	755.9	907.1	982.7	778.4	942.9	1052.5	1666.5
		914.4	15.875	9754	287.22	325.16	363.11	12	100	445954.3	3362.6	4035.1	4371.4	3462.7	4194.2	4681.9	7413.1
98-1472	O	54	0.394	182.7	38.77	43.91	49.04	0.472	3.9	4933.1	761.3	913.5	989.7	783.9	949.6	1060	1678.3
		1371.6	10	9823	189.3	214.37	239.43	12	100	673662	3386.4	4063.6	4402.3	3487.2	4223.9	4715	7465.5
99-1218	O	44	0.5	183.9	48.24	54.62	61	0.472	3.9	4046.4	766.4	919.6	996.3	789.2	955.9	1067	1689.5
		1117.6	12.7	9888.5	235.53	266.67	297.81	12	100	552567.3	3408.9	4090.7	4431.6	3510.4	4252	4746.5	7515.2
99-811	O	28	0.875	184.2	78.79	89.16	99.53	0.472	3.9	2579.4	767.7	921.2	998	790.5	957.5	1068.9	1692.4
		711.2	22.225	9905.4	384.66	435.3	485.93	12	100	352237.4	3414.8	4097.7	4439.2	3516.4	4259.3	4754.6	7528.1
100-1116	O	40	0.562	185.1	53.64	60.73	67.82	0.472	3.9	3701.3	771.1	925.3	1002.4	794	961.8	1073.6	1699.9
		1016	14.288	9949.6	261.92	296.51	331.11	12	100	505440	3430	4116	4459	3532.1	4278.3	4775.8	7561.7
100-964	O	34	0.688	185.8	64.07	72.52	80.97	0.472	3.9	3158.3	774.1	928.9	1006.3	797.1	965.6	1077.8	1706.6
		863.6	17.462	9988.4	312.84	354.09	395.34	12	100	431298.3	3443.4	4132	4476.4	3545.9	4295	4794.4	7591.2
100-1370	O	50	0.438	186.2	42.75	48.4	54.05	0.472	3.9	4654	775.7	930.8	1008.4	798.8	967.5	1080	1710
		1270	11.112	10008.6	208.71	236.31	263.91	12	100	635543.8	3450.3	4140.4	4485.4	3553	4303.7	4804.1	7606.5
101-862	O	30	0.812	187.2	74.08	83.84	93.59	0.472	3.9	2807.5	779.9	935.8	1013.8	803.1	972.7	1085.8	1719.3
		762	20.638	10062.7	361.71	409.32	456.93	12	100	383387.5	3469	4162.8	4509.7	3572.2	4326.9	4830.1	7647.6
101-913	O	32	0.75	187.7	69.17	78.28	87.39	0.472	3.9	3003	782	938.4	1016.7	805.3	975.5	1088.9	1724.1
		812.8	19.05	10090.8	337.71	382.19	426.67	12	100	410090.9	3478.7	4174.4	4522.3	3582.2	4339.1	4843.6	7669
102-1522	O	56	0.394	190.1	38.83	43.96	49.09	0.472	3.9	5322.4	792	950.4	1029.6	815.6	987.9	1102.8	1746.1
		1422.4	10	10219.6	189.56	214.62	239.67	12	100	726819.5	3523.1	4227.7	4580	3628	4394.4	4905.4	7766.9
103-1319	O	48	0.472	191.8	45.92	51.98	58.04	0.472	3.9	4602.5	799	958.8	1038.8	822.8	996.7	1112.6	1761.5
		1219.2	12	10310.2	224.18	253.77	283.37	12	100	628508.2	3554.3	4265.2	4620.6	3660.1	4433.4	4948.9	7835.7
104-1065	O	38	0.625	193	59.08	66.86	74.65	0.472	3.9	3667.7	804.3	965.2	1045.6	828.3	1003.2	1119.9	1773.2
		965.2	15.875	10378.2	288.46	326.46	364.46	12	100	500851.5	3577.8	4293.3	4651.1	3684.3	4462.6	4981.5	7887.4
105-1421	O	52	0.438	194.3	42.82	48.48	54.13	0.472	3.9	5053	809.8	971.7	1052.7	833.9	1010.1	1127.5	1785.2
		1320.8	11.112	10448.8	209.09	236.68	264.27	12	100	690038	3602.1	4322.5	4682.7	3709.3	4493	5015.4	7941.1
105-1167	O	42	0.562	195.5	53.82	60.91	68.01	0.472	3.9	4106.4	814.8	977.7	1059.2	839	1016.3	1134.4	1796.2
		1066.8	14.288	10513.1	262.79	297.41	332.03	12	100	560766.2	3624.2	4349.1	4711.5	3732.1	4520.6	5046.3	7989.9



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		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
105-811	O	28	0.938	196.1	84.05	95.07	106.1	0.472	3.9	2745	817	980.4	1062.1	841.3	1019	1137.5	1801.1
		711.2	23.812	10541.5	410.34	464.19	518.03	12	100	374854.5	3634	4360.8	4724.3	3742.2	4532.8	5059.9	8011.5
107-1014	O	36	0.688	198.5	64.4	72.87	81.33	0.472	3.9	3573.5	827.2	992.6	1075.3	851.8	1031.8	1151.7	1823.6
		914.4	17.462	10673.4	314.42	355.77	397.11	12	100	487987	3679.5	4415.4	4783.4	3789.1	4589.6	5123.2	8111.8
108-862	O	30	0.875	200.3	79.43	89.86	100.28	0.472	3.9	3004.4	834.6	1001.5	1084.9	859.4	1041	1162	1839.9
		762	22.225	10768.6	387.83	438.72	489.6	12	100	410284.2	3712.4	4454.8	4826.1	3822.9	4630.5	5168.9	8184.1
108-1370	O	50	0.472	200.6	46.01	52.07	58.13	0.472	3.9	5015.1	835.9	1003	1086.6	860.7	1042.6	1163.8	1842.7
		1270	12	10785.2	224.65	254.24	283.83	12	100	684860.6	3718.1	4461.7	4833.5	3828.7	4637.6	5176.9	8196.8
108-964	O	34	0.75	201.6	69.58	78.72	87.85	0.472	3.9	3426.4	839.8	1007.8	1091.7	864.8	1047.5	1169.3	1851.4
		863.6	19.05	10836.1	339.72	384.33	428.94	12	100	467902.7	3735.6	4482.7	4856.3	3846.8	4659.5	5201.3	8235.4
109-913	O	32	0.812	202.1	74.6	84.39	94.18	0.472	3.9	3234.1	842.2	1010.7	1094.9	867.3	1050.5	1172.7	1856.7
		812.8	20.638	10867.4	364.24	412.03	459.83	12	100	441651	3746.4	4495.7	4870.3	3857.9	4673	5216.3	8259.2
109-1472	O	54	0.438	202.5	42.9	48.55	54.2	0.472	3.9	5468.6	843.9	1012.7	1097.1	869	1052.6	1175	1860.5
		1371.6	11.112	10889.3	209.44	237.03	264.61	12	100	746785.8	3753.9	4504.7	4880.1	3865.7	4682.4	5226.8	8275.8
109-1319	O	48	0.5	202.6	48.48	54.86	61.24	0.472	3.9	4862.5	844.2	1013	1097.4	869.3	1053	1175.4	1861.1
		1219.2	12.7	10892.8	236.69	267.84	299	12	100	664022.9	3755.1	4506.2	4881.7	3866.9	4683.9	5228.5	8278.5
110-1116	O	40	0.625	204.7	59.31	67.11	74.9	0.472	3.9	4093.2	852.7	1023.3	1108.6	878.1	1063.7	1187.3	1879.9
		1016	15.875	11003.2	289.58	327.64	365.69	12	100	558961.5	3793.2	4551.8	4931.2	3906.1	4731.4	5281.5	8362.4
111-1218	O	44	0.562	206	53.99	61.08	68.18	0.472	3.9	4532.7	858.5	1030.2	1116	884	1070.8	1195.3	1892.6
		1117.6	14.288	11077	263.58	298.23	332.88	12	100	618984.9	3818.7	4582.4	4964.3	3932.3	4763.1	5317	8418.5
112-811	O	28	1	207.7	89.28	100.96	112.65	0.472	3.9	2908.3	865.6	1038.7	1125.2	891.3	1079.6	1205.2	1908.2
		711.2	25.4	11168.4	435.9	492.94	549.98	12	100	397148.7	3850.2	4620.2	5005.2	3964.8	4802.4	5360.8	8488
113-1421	O	52	0.472	209.4	46.1	52.16	58.22	0.472	3.9	5445.6	872.7	1047.2	1134.5	898.7	1088.5	1215.1	1923.9
		1320.8	12	11260.5	225.08	254.67	284.26	12	100	743644.4	3881.9	4658.3	5046.5	3997.5	4842	5405	8558
113-1522	O	56	0.438	210.7	42.96	48.61	54.26	0.472	3.9	5900.6	878.1	1053.7	1141.5	904.2	1095.2	1222.6	1935.8
		1422.4	11.112	11329.9	209.77	237.35	264.93	12	100	805780.3	3905.8	4687	5077.6	4022.1	4871.8	5438.3	8610.7
114-1065	O	38	0.688	211.3	64.69	73.18	81.66	0.472	3.9	4014.5	880.4	1056.4	1144.5	906.6	1098.1	1225.8	1940.8
		965.2	17.462	11359.5	315.86	357.28	398.71	12	100	548209.7	3916.1	4699.3	5090.9	4032.6	4884.6	5452.6	8633.2



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		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in ³ /ft (cm ³ /m)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	in (mm)	in (mm)	in ⁴ /ft (cm ⁴ /m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
114-1370	O	50	0.5	212	48.58	54.97	61.35	0.472	3.9	5298.9	883.1	1059.8	1148.1	909.4	1101.6	1229.7	1947
		1270	12.7	11395.4	237.2	268.36	299.52	12	100	723609.5	3928.4	4714.1	5107	4045.4	4900	5469.8	8660.5
115-862	O	30	0.938	213.3	84.76	95.85	106.94	0.472	3.9	3198.8	888.6	1066.3	1155.1	915	1108.3	1237.2	1958.9
		762	23.812	11465.3	413.85	467.98	522.11	12	100	436827.1	3952.5	4743	5138.3	4070.2	4930.1	5503.3	8713.6
116-1014	O	36	0.75	215.4	69.95	79.11	88.27	0.472	3.9	3877.9	897.7	1077.2	1167	924.4	1119.7	1249.9	1979
		914.4	19.05	11582.8	341.53	386.26	430.99	12	100	529566.2	3993	4791.6	5190.9	4111.9	4980.6	5559.8	8802.9
116-1167	O	42	0.625	216.3	59.52	67.33	75.13	0.472	3.9	4542.3	901.2	1081.5	1171.6	928.1	1124.1	1254.9	1986.9
		1066.8	15.875	11628.9	290.61	328.71	366.81	12	100	620285.4	4008.9	4810.7	5211.6	4128.3	5000.4	5581.9	8838
116-913	O	32	0.875	216.4	80.01	90.48	100.94	0.472	3.9	3462.4	901.7	1082	1172.2	928.5	1124.7	1255.5	1987.8
		812.8	22.225	11634.4	390.65	441.75	492.85	12	100	472823.2	4010.8	4813	5214.1	4130.2	5002.8	5584.5	8842.2
117-964	O	34	0.812	217.1	75.06	84.89	94.71	0.472	3.9	3691.4	904.7	1085.7	1176.2	931.7	1128.5	1259.7	1994.6
		863.6	20.638	11674.1	366.5	414.46	462.42	12	100	504086.8	4024.5	4829.4	5231.8	4144.3	5019.9	5603.6	8872.3
117-1472	O	54	0.472	218.3	46.18	52.24	58.3	0.472	3.9	5893.9	909.5	1091.5	1182.4	936.6	1134.5	1266.4	2005.2
		1371.6	12	11736.1	225.48	255.08	284.67	12	100	804858.7	4045.9	4855	5259.6	4166.3	5046.5	5633.3	8919.4
119-1421	O	52	0.5	221.3	48.68	55.06	61.45	0.472	3.9	5754.1	922.1	1106.5	1198.8	949.6	1150.2	1283.9	2032.9
		1320.8	12.7	11898.4	237.68	268.85	300.01	12	100	785768.6	4101.8	4922.2	5332.4	4223.9	5116.3	5711.2	9042.8
121-1116	O	40	0.688	224.1	64.96	73.46	81.96	0.472	3.9	4481.3	933.6	1120.3	1213.7	961.4	1164.5	1299.9	2058.2
		1016	17.462	12046.6	317.16	358.66	400.16	12	100	611966.8	4152.9	4983.5	5398.8	4276.5	5180	5782.4	9155.4
122-862	O	30	1	226	90.07	101.82	113.57	0.472	3.9	3390.6	941.8	1130.2	1224.4	969.9	1174.8	1311.4	2076.3
		762	25.4	12152.7	439.75	497.12	554.49	12	100	463017.4	4189.5	5027.4	5446.3	4314.2	5225.7	5833.3	9236
122-1319	O	48	0.562	227	54.27	61.38	68.49	0.472	3.9	5449	946	1135.2	1229.8	974.2	1180	1317.2	2085.5
		1219.2	14.288	12206.4	264.99	299.69	334.38	12	100	744103.2	4208	5049.6	5470.4	4333.3	5248.8	5859.1	9276.9
122-1522	O	56	0.472	227.1	46.26	52.32	58.38	0.472	3.9	6359.9	946.4	1135.7	1230.3	974.6	1180.5	1317.8	2086.4
		1422.4	12	12211.8	225.86	255.45	285.04	12	100	868503.7	4209.9	5051.8	5472.8	4335.2	5251.1	5861.7	9281
123-1218	O	44	0.625	227.9	59.72	67.53	75.34	0.472	3.9	5014.9	949.8	1139.7	1234.7	978.1	1184.7	1322.4	2093.9
		1117.6	15.875	12255.3	291.56	329.7	367.84	12	100	684823.4	4224.9	5069.8	5492.3	4350.6	5269.8	5882.5	9314
123-1065	O	38	0.75	229.4	70.29	79.47	88.65	0.472	3.9	4357.7	955.6	1146.8	1242.3	984.1	1192	1330.6	2106.8
		965.2	19.05	12330.8	343.16	388	432.84	12	100	595086.4	4250.9	5101.1	5526.2	4377.4	5302.3	5918.8	9371.4



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		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
124-913	O	32	0.938	230.5	85.4	96.54	107.68	0.472	3.9	3687.9	960.4	1152.5	1248.5	989	1197.9	1337.2	2117.2
		812.8	23.812	12392	416.96	471.35	525.74	12	100	503610.9	4272	5126.4	5553.6	4399.2	5328.6	5948.2	9417.9
124-1472	O	54	0.5	230.7	48.77	55.16	61.54	0.472	3.9	6228.1	961.1	1153.4	1249.5	989.7	1198.8	1338.2	2118.9
		1371.6	12.7	12401.6	238.12	269.3	300.47	12	100	850502.9	4275.3	5130.4	5557.9	4402.6	5332.7	5952.8	9425.2
125-1014	O	36	0.812	232.2	75.48	85.34	95.19	0.472	3.9	4179.1	967.4	1160.9	1257.6	996.2	1206.7	1347	2132.7
		914.4	20.638	12482.4	368.53	416.64	464.75	12	100	570697	4303.2	5163.8	5594.1	4431.3	5367.4	5991.6	9486.7
125-964	O	34	0.875	232.5	80.53	91.03	101.54	0.472	3.9	3953.3	968.9	1162.7	1259.6	997.8	1208.6	1349.1	2136.1
		863.6	22.225	12502.4	393.17	444.47	495.77	12	100	539854.7	4310.1	5172.1	5603.1	4438.4	5376	6001.2	9501.8
127-976	O	34.5	0.875	236.6	80.65	91.16	101.68	0.472	3.9	4081.1	985.8	1182.9	1281.5	1015.1	1229.6	1372.6	2173.2
		876.3	22.225	12719.7	393.76	445.11	496.45	12	100	557314.6	4385	5262	5700.5	4515.5	5469.5	6105.5	9667
127-1167	O	42	0.688	236.9	65.2	73.72	82.23	0.472	3.9	4974.1	986.9	1184.3	1283	1016.3	1231	1374.2	2175.8
		1066.8	17.462	12734.5	318.35	359.92	401.49	12	100	679259.5	4390.1	5268.1	5707.1	4520.8	5475.8	6112.6	9678.2
128-1370	O	50	0.562	237.6	54.4	61.51	68.62	0.472	3.9	5938.8	989.8	1187.8	1286.7	1019.3	1234.6	1378.2	2182.1
		1270	14.288	12771.7	265.62	300.33	335.05	12	100	811000	4402.9	5283.4	5723.7	4533.9	5491.8	6130.4	9706.5
129-1522	O	56	0.5	240	48.86	55.24	61.63	0.472	3.9	6721	1000.1	1200.2	1300.2	1029.9	1247.5	1392.6	2204.9
		1422.4	12.7	12905.1	238.54	269.72	300.89	12	100	917807.4	4448.9	5338.6	5783.5	4581.3	5549.2	6194.4	9807.8
131-1116	O	40	0.75	243.3	70.59	79.79	89	0.472	3.9	4865.7	1013.7	1216.4	1317.8	1043.9	1264.4	1411.4	2234.8
		1016	19.05	13079.9	344.65	389.59	434.52	12	100	664460.6	4509.1	5411	5861.9	4643.4	5624.4	6278.4	9940.7
131-913	O	32	1	244.4	90.77	102.58	114.39	0.472	3.9	3910.5	1018.4	1222	1323.9	1048.7	1270.2	1417.9	2245.1
		812.8	25.4	13140.2	443.16	500.83	558.49	12	100	534018.4	4529.9	5435.9	5888.9	4664.8	5650.3	6307.3	9986.6
133-1065	O	38	0.812	247.2	75.86	85.74	95.62	0.472	3.9	4697.5	1030.2	1236.2	1339.2	1060.8	1284.9	1434.3	2271
		965.2	20.638	13292.2	370.38	418.62	466.86	12	100	641483.3	4582.3	5498.8	5957	4718.7	5715.7	6380.3	10102.1
133-964	O	34	0.938	247.8	85.97	97.16	108.34	0.472	3.9	4212.2	1032.4	1238.9	1342.1	1063.1	1287.7	1437.5	2276
		863.6	23.812	13321.2	419.75	474.37	528.98	12	100	575208.6	4592.3	5510.8	5970	4729	5728.1	6394.2	10124.1
133-1421	O	52	0.562	248.1	54.52	61.64	68.75	0.472	3.9	6450	1033.6	1240.4	1343.7	1064.4	1289.3	1439.2	2278.8
		1320.8	14.288	13337.4	266.2	300.93	335.66	12	100	880799.5	4597.9	5517.5	5977.3	4734.8	5735.1	6401.9	10136.4
134-1014	O	36	0.875	248.7	80.99	91.54	102.08	0.472	3.9	4477.1	1036.4	1243.6	1347.3	1067.2	1292.7	1443	2284.7
		914.4	22.225	13372.3	395.44	446.91	498.39	12	100	611381.1	4609.9	5531.9	5992.9	4747.2	5750.1	6418.7	10162.9



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in ³ /ft (cm ³ /m)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	in (mm)	in (mm)	in ⁴ /ft (cm ⁴ /m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
134-1218	O	44	0.688	249.7	65.43	73.95	82.48	0.472	3.9	5492.8	1040.3	1248.4	1352.4	1071.3	1297.6	1448.5	2293.4
		1117.6	17.462	13423.2	319.45	361.08	402.71	12	100	750087.9	4627.5	5553	6015.7	4765.2	5772	6443.1	10201.6
135-1319	O	48	0.625	251.3	60.06	67.89	75.71	0.472	3.9	6030.7	1047	1256.4	1361.1	1078.2	1305.9	1457.8	2308.2
		1219.2	15.875	13509.6	293.22	331.44	369.67	12	100	823544.6	4657.3	5588.7	6054.4	4795.9	5809.1	6484.6	10267.3
138-1167	O	42	0.75	257.2	70.87	80.09	89.31	0.472	3.9	5402	1071.8	1286.2	1393.4	1103.7	1336.9	1492.4	2362.9
		1066.8	19.05	13830	346.01	391.03	436.06	12	100	737692	4767.7	5721.3	6198	4909.6	5946.9	6638.4	10510.8
139-1472	O	54	0.562	258.6	54.63	61.75	68.87	0.472	3.9	6982.2	1077.5	1293	1400.8	1109.6	1344	1500.3	2375.4
		1371.6	14.288	13903.3	266.74	301.49	336.24	12	100	953486	4793	5751.6	6230.9	4935.7	5978.4	6673.6	10566.5
139-1624	O	60	0.5	258.8	49.01	55.4	61.79	0.472	3.9	7763.2	1078.2	1293.9	1401.7	1110.3	1344.9	1501.3	2377
		1524	12.7	13912.5	239.29	270.48	301.66	12	100	1060135.5	4796.2	5755.4	6235	4939	5982.4	6678	10573.5
141-1116	O	40	0.812	262.3	76.2	86.11	96.01	0.472	3.9	5246.4	1093	1311.6	1420.9	1125.5	1363.3	1521.9	2409.6
		1016	20.638	14103.3	372.05	420.41	468.77	12	100	716445.3	4861.9	5834.3	6320.5	5006.7	6064.4	6769.6	10718.5
141-964	O	34	1	262.8	91.39	103.26	115.12	0.472	3.9	4468.1	1095.1	1314.1	1423.6	1127.7	1366	1524.8	2414.3
		863.6	25.4	14130.4	446.22	504.14	562.07	12	100	610152.6	4871.3	5845.6	6332.7	5016.3	6076.1	6782.6	10739.1
141-1370	O	50	0.625	263	60.21	68.04	75.88	0.472	3.9	6573.9	1095.7	1314.8	1424.4	1128.3	1366.6	1525.6	2415.5
		1270	15.875	14137.5	293.96	332.22	370.48	12	100	897729.9	4873.7	5848.5	6335.8	5018.8	6079.1	6786	10744.5
142-1065	O	38	0.875	264.9	81.41	91.99	102.56	0.472	3.9	5033.8	1103.9	1324.7	1435.1	1136.8	1376.9	1537	2433.6
		965.2	22.225	14243.8	397.5	449.13	500.76	12	100	687404.2	4910.4	5892.4	6383.5	5056.5	6124.8	6837	10825.3
143-1014	O	36	0.938	265.1	86.48	97.71	108.94	0.472	3.9	4771.7	1104.6	1325.5	1435.9	1137.4	1377.8	1538	2435.1
		914.4	23.812	14252.4	422.25	477.08	531.9	12	100	651621.6	4913.4	5896	6387.4	5059.6	6128.6	6841.2	10831.9
145-1522	O	56	0.562	269.1	54.74	61.86	68.98	0.472	3.9	7535.7	1121.4	1345.7	1457.8	1154.8	1398.7	1561.4	2472.2
		1422.4	14.288	14469.4	267.25	302.01	336.78	12	100	1029065.9	4988.2	5985.8	6484.6	5136.6	6221.9	6945.3	10996.8
146-1218	O	44	0.75	271.2	71.12	80.36	89.6	0.472	3.9	5966.5	1130	1356	1469	1163.7	1409.5	1573.4	2491.2
		1117.6	19.05	14580.9	347.25	392.36	437.47	12	100	814779.9	5026.6	6031.9	6534.6	5176.2	6269.8	6998.8	11081.5
148-1421	O	52	0.625	274.6	60.35	68.19	76.03	0.472	3.9	7140.7	1144.3	1373.2	1487.6	1178.4	1427.4	1593.3	2522.8
		1320.8	15.875	14765.7	294.65	332.94	371.23	12	100	975126.7	5090.3	6108.3	6617.4	5241.8	6349.3	7087.5	11221.9
148-1319	O	48	0.688	275.3	65.82	74.37	82.92	0.472	3.9	6607.8	1147.2	1376.6	1491.3	1181.3	1430.9	1597.3	2529
		1219.2	17.462	14802.3	321.38	363.12	404.86	12	100	902349.9	5102.9	6123.5	6633.8	5254.8	6365	7105.1	11249.8



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in³/ft (cm³/m)	lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)	in (mm)	in (mm)	in⁴/ft (cm⁴/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
149-1167	O	42	0.812	277.4	76.52	86.44	96.37	0.472	3.9	5826	1155.9	1387.1	1502.7	1190.4	1441.8	1609.5	2548.4
		1066.8	20.638	14915.4	373.58	422.05	470.52	12	100	795585.4	5141.9	6170.3	6684.5	5295	6413.6	7159.4	11335.7
151-1116	O	40	0.875	281.2	81.8	92.4	103	0.472	3.9	5623.4	1171.5	1405.8	1523	1206.4	1461.3	1631.2	2582.7
		1016	22.225	15116.6	399.36	451.14	502.91	12	100	767924.7	5211.3	6253.5	6774.7	5366.4	6500.2	7256	11488.6
151-1014	O	36	1	281.3	91.96	103.87	115.78	0.472	3.9	5063.2	1172	1406.4	1523.6	1206.9	1461.9	1631.9	2583.8
		914.4	25.4	15123	448.97	507.13	565.29	12	100	691423.3	5213.5	6256.2	6777.5	5368.7	6502.9	7259	11493.5
152-1065	O	38	0.938	282.5	86.95	98.22	109.48	0.472	3.9	5366.6	1176.9	1412.3	1529.9	1211.9	1468	1638.6	2594.5
		965.2	23.812	15185.5	424.52	479.53	534.54	12	100	732853	5235	6282	6805.5	5390.9	6529.8	7289	11541
154-1472	O	54	0.625	286.3	60.48	68.33	76.18	0.472	3.9	7731	1193.1	1431.7	1551	1228.6	1488.1	1661.2	2630.2
		1371.6	15.875	15394.3	295.29	333.61	371.93	12	100	1055742	5307	6368.4	6899.1	5465	6619.6	7389.3	11699.7
155-1370	O	50	0.688	288.2	66	74.56	83.12	0.472	3.9	7204.1	1200.7	1440.8	1560.9	1236.4	1497.6	1671.8	2647
		1270	17.462	15492.7	322.23	364.03	405.82	12	100	983788.3	5340.9	6409.1	6943.2	5499.9	6661.9	7436.5	11774.5
156-1624	O	60	0.562	290.2	54.92	62.05	69.18	0.472	3.9	8706.3	1209.2	1451	1572	1245.2	1508.3	1683.6	2665.8
		1524	14.288	15602.6	268.16	302.96	337.75	12	100	1188916.3	5378.8	6454.6	6992.4	5538.9	6709.1	7489.2	11858
157-1218	O	44	0.812	292.5	76.8	86.75	96.7	0.472	3.9	6436.1	1219	1462.7	1584.6	1255.2	1520.4	1697.2	2687.3
		1117.6	20.638	15728.4	374.98	423.55	472.13	12	100	878901.1	5422.2	6506.6	7048.8	5583.6	6763.2	7549.6	11953.6
160-1167	O	42	0.875	297.4	82.14	92.78	103.41	0.472	3.9	6246	1239.3	1487.1	1611.1	1276.2	1545.8	1725.5	2732.1
		1066.8	22.225	15990.7	401.07	452.97	504.88	12	100	852943.9	5512.6	6615.1	7166.4	5676.7	6876	7675.5	12152.9
160-1522	O	56	0.625	298	60.6	68.46	76.31	0.472	3.9	8344.9	1241.8	1490.2	1614.3	1278.8	1548.9	1729	2737.7
		1422.4	15.875	16023.3	295.89	334.23	372.58	12	100	1139575.7	5523.8	6628.6	7181	5688.3	6890	7691.2	12177.7
161-1319	O	48	0.75	299.2	71.57	80.84	90.11	0.472	3.9	7180.2	1246.6	1495.9	1620.5	1283.7	1554.9	1735.7	2748.2
		1219.2	19.05	16084.7	349.46	394.71	439.96	12	100	980526.1	5545	6654	7208.5	5710.1	6916.4	7720.7	12224.4
161-1065	O	38	1	299.8	92.47	104.42	116.38	0.472	3.9	5695.9	1249.1	1498.9	1623.8	1286.3	1558	1739.2	2753.8
		965.2	25.4	16117.5	451.46	509.83	568.21	12	100	777832.3	5556.3	6667.6	7223.2	5721.7	6930.5	7736.4	12249.3
161-1116	O	40	0.938	299.8	87.37	98.67	109.97	0.472	3.9	5996.7	1249.3	1499.2	1624.1	1286.5	1558.3	1739.5	2754.2
		1016	23.812	16120.1	426.58	481.76	536.94	12	100	818902.3	5557.2	6668.7	7224.4	5722.6	6931.7	7737.7	12251.3
162-1421	O	52	0.688	301	66.16	74.73	83.3	0.472	3.9	7826.4	1254.2	1505.1	1630.5	1291.6	1564.4	1746.3	2765
		1320.8	17.462	16183.6	323.03	364.87	406.7	12	100	1068764.1	5579.1	6694.9	7252.8	5745.2	6958.9	7768.1	12299.5



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		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	0	50	0.75	313.2	71.77	81.06	90.34	0.472	3.9	7829.5	1304.9	1565.9	1696.4	1343.8	1627.7	1816.9	2876.8
		1270	19.05	16837.6	350.43	395.75	441.06	12	100	1069189.8	5804.6	6965.5	7545.9	5977.4	7240.2	8082.1	12796.6
	0	44	0.875	313.7	82.46	93.12	103.78	0.472	3.9	6901.5	1307.1	1568.5	1699.2	1346	1630.4	1820	2881.6
		1117.6	22.225	16865.8	402.63	454.65	506.68	12	100	942460.6	5814.3	6977.1	7558.6	5987.4	7252.3	8095.6	12818
	0	54	0.688	313.9	66.31	74.89	83.47	0.472	3.9	8474.6	1307.8	1569.4	1700.1	1346.7	1631.3	1820.9	2883.2
		1371.6	17.462	16874.9	323.77	365.65	407.53	12	100	1157277.8	5817.4	6980.9	7562.6	5990.6	7256.2	8099.9	12824.9
	0	42	0.938	317.2	87.76	99.09	110.42	0.472	3.9	6662.1	1321.8	1586.2	1718.4	1361.2	1648.8	1840.5	2914.1
		1066.8	23.812	17056.1	428.47	483.8	539.13	12	100	909770.3	5879.9	7055.8	7643.8	6054.9	7334.1	8186.9	12962.6
	0	40	1	318.3	92.93	104.92	116.92	0.472	3.9	6366.3	1326.3	1591.6	1724.2	1365.8	1654.4	1846.7	2924
		1016	25.4	17113.8	453.72	512.29	570.85	12	100	869380.3	5899.8	7079.7	7669.7	6075.4	7358.9	8214.6	13006.5
	0	60	0.625	321.4	60.82	68.69	76.55	0.472	3.9	9643.3	1339.4	1607.2	1741.2	1379.2	1670.6	1864.9	2952.7
		1524	15.875	17281.9	296.97	335.37	373.76	12	100	1316884.2	5957.7	7149.3	7745.1	6135.1	7431.2	8295.3	13134.3
	0	48	0.812	322.8	77.31	87.29	97.28	0.472	3.9	7748.1	1345.2	1614.2	1748.7	1385.2	1677.8	1872.9	2965.5
		1219.2	20.638	17356.8	377.46	426.21	474.96	12	100	1058073.1	5983.6	7180.3	7778.6	6161.7	7463.4	8331.3	13191.2
	0	56	0.688	326.7	66.46	75.04	83.63	0.472	3.9	9148.6	1361.4	1633.7	1769.8	1401.9	1698.1	1895.6	3001.3
		1422.4	17.462	17566.4	324.47	366.38	408.3	12	100	1249323.4	6055.8	7267	7872.5	6236.1	7553.6	8431.9	13350.5
	0	52	0.75	327.2	71.96	81.25	90.55	0.472	3.9	8507	1363.3	1636	1772.3	1403.9	1700.5	1898.2	3005.5
		1320.8	19.05	17591	351.34	396.72	442.09	12	100	1161711.7	6064.3	7277.1	7883.6	6244.8	7564.1	8443.7	13369.2
	0	44	0.938	334.7	88.11	99.47	110.83	0.472	3.9	7362.8	1394.5	1673.4	1812.8	1436	1739.4	1941.6	3074.2
		1117.6	23.812	17993.2	430.19	485.66	541.14	12	100	1005461.6	6202.9	7443.5	8063.8	6387.6	7737.1	8636.7	13674.9
	0	42	1	336.9	93.35	105.38	117.42	0.472	3.9	7074.4	1403.6	1684.4	1824.7	1445.4	1750.8	1954.4	3094.4
		1066.8	25.4	18111.5	455.78	514.53	573.27	12	100	966069.1	6243.7	7492.5	8116.8	6429.6	7788	8693.5	13764.8
	0	50	0.812	338	77.54	87.54	97.54	0.472	3.9	8450.1	1408.3	1690	1830.9	1450.3	1756.7	1960.9	3104.8
		1270	20.638	18172.2	378.56	427.39	476.22	12	100	1153934.3	6264.6	7517.6	8144	6451.1	7814	8722.7	13810.9
	0	54	0.75	341.2	72.13	81.44	90.74	0.472	3.9	9212.8	1421.7	1706.1	1848.2	1464	1773.4	1979.6	3134.3
		1371.6	19.05	18344.8	352.19	397.62	443.05	12	100	1258086.4	6324.1	7589	8221.4	6512.4	7888.3	8805.5	13942
	0	42.5	1	341.5	93.45	105.49	117.53	0.472	3.9	7257.3	1423	1707.6	1849.9	1465.4	1774.9	1981.3	3137.1
		1079.5	25.4	18361.2	456.27	515.06	573.85	12	100	991044.6	6329.8	7595.7	8228.7	6518.2	7895.3	8813.4	13954.5

* Length of the intermediate section as percent of the outer section length(s), intermediate sheet pile length is typically 60% to 80% of the length of the outer sections or OZ®.



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BALL & SOCKET
HOT ROLLED / MULTI-USE

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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)		lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)				k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
186-1319	O	48	0.875	346.3	83.03	93.73	104.43	0.472	3.9	8311.4	1443	1731.5	1875.8	1485.9	1799.8	2009.1	3181.1
		1219.2	22.225	18618.7	405.39	457.63	509.87	12	100	1134998.5	6418.6	7702.3	8344.2	6609.7	8006.1	8937	14150.2
190-1624	O	60	0.688	352.5	66.71	75.31	83.91	0.472	3.9	10574.5	1468.7	1762.4	1909.3	1512.4	1831.9	2044.9	3237.8
		1524	17.462	18950.6	325.72	367.71	409.7	12	100	1444039.4	6533	7839.6	8492.9	6727.5	8148.8	9096.3	14402.5
190-1421	O	52	0.812	353.2	77.74	87.76	97.78	0.472	3.9	9182.6	1471.6	1765.9	1913	1515.4	1835.5	2049	3244.2
		1320.8	20.638	18988	379.58	428.49	477.39	12	100	1253969.6	6545.9	7855.1	8509.7	6740.8	8164.9	9114.3	14430.9
190-1345	O	49	0.875	354.1	83.16	93.87	104.58	0.472	3.9	8675.3	1475.4	1770.5	1918	1519.3	1840.3	2054.3	3252.6
		1244.6	22.225	19037.2	406.01	458.3	510.6	12	100	1184685.3	6562.8	7875.4	8531.7	6758.2	8186	9137.9	14468.3
191-1522	O	56	0.75	355.2	72.3	81.61	90.93	0.472	3.9	9946.8	1480.2	1776.2	1924.2	1524.2	1846.3	2061	3263.2
		1422.4	19.05	19099.1	352.98	398.46	443.94	12	100	1358329	6584.2	7901	8559.4	6780.2	8212.6	9167.6	14515.3
191-1218	O	44	1	355.5	93.74	105.8	117.87	0.472	3.9	7820	1481.1	1777.3	1925.4	1525.2	1847.4	2062.2	3265.1
		1117.6	25.4	19110.5	457.67	516.58	575.49	12	100	1067895.9	6588.1	7905.7	8564.6	6784.2	8217.5	9173	14524
195-1370	O	50	0.875	362.6	83.28	94	104.72	0.472	3.9	9065.8	1511	1813.2	1964.3	1556	1884.7	2103.8	3331.1
		1270	22.225	19496.4	406.61	458.95	511.29	12	100	1238021.9	6721.2	8065.4	8737.5	6921.2	8383.5	9358.3	14817.3
198-1472	O	54	0.812	368.4	77.94	87.97	98	0.472	3.9	9945.8	1534.8	1841.8	1995.3	1580.5	1914.4	2137.1	3383.7
		1371.6	20.638	19804.3	380.54	429.51	478.48	12	100	1358181.6	6827.3	8192.8	8875.5	7030.5	8515.9	9506.1	15051.3
199-1319	O	48	0.938	369.6	88.73	100.15	111.56	0.472	3.9	8870.2	1540	1848	2002	1585.8	1920.8	2144.2	3395
		1219.2	23.812	19870.4	433.24	488.96	544.69	12	100	1211302.3	6850.1	8220.1	8905.1	7054	8544.3	9537.8	15101.5
199-1395	O	51	0.875	370.4	83.4	94.13	104.86	0.472	3.9	9445.3	1543.4	1852	2006.4	1589.3	1925.1	2148.9	3402.4
		1295.4	22.225	19914.2	407.19	459.58	511.96	12	100	1289840.6	6865.2	8238.2	8924.7	7069.5	8563.1	9558.8	15134.8
204-1421	O	52	0.875	379	83.51	94.25	104.99	0.472	3.9	9853.2	1579	1894.8	2052.7	1626	1969.6	2198.6	3481.1
		1320.8	22.225	20374.6	407.75	460.18	512.61	12	100	1345537.7	7023.9	8428.7	9131.1	7233	8761.1	9779.8	15484.7
206-1624	O	60	0.75	383.3	72.59	81.92	91.26	0.472	3.9	11499.7	1597.2	1916.6	2076.3	1644.7	1992.2	2223.8	3521.1
		1524	19.05	20608.7	354.41	399.98	445.56	12	100	1570381.8	7104.6	8525.5	9236	7316.1	8861.7	9892.2	15662.6
206-1522	O	56	0.812	383.6	78.12	88.17	98.21	0.472	3.9	10739.5	1598.1	1917.8	2077.6	1645.7	1993.4	2225.2	3523.2
		1422.4	20.638	20621.2	381.42	430.46	479.5	12	100	1466579.1	7108.9	8530.7	9241.6	7320.5	8867.1	9898.2	15672.1
208-1446	O	53	0.875	386.7	83.63	94.37	105.12	0.472	3.9	10248.3	1611.4	1933.6	2094.8	1659.3	2009.9	2243.6	3552.4
		1346.2	22.225	20791.7	408.29	460.76	513.23	12	100	1399492.4	7167.7	8601.2	9318	7381.1	8940.5	9980	15801.7

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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in ³ /ft (cm ³ /m)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	lb/ft ² (kg/m ²)	in (mm)	in (mm)	in ⁴ /ft (cm ⁴ /m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
208-1370	O	50	0.938	387.1	89.01	100.45	111.88	0.472	3.9	9676.9	1612.8	1935.4	2096.7	1660.8	2011.7	2245.6	3555.6
		1270	23.812	20810.4	434.6	490.43	546.27	12	100	1321459.9	7174.1	8608.9	9326.4	7387.7	8948.5	9989	15815.9
211-1319	O	48	1	392.7	94.42	106.55	118.67	0.472	3.9	9424.4	1636.2	1963.4	2127	1684.9	2040.9	2278.2	3607.1
		1219.2	25.4	21112	461.02	520.21	579.41	12	100	1286987.2	7278.1	8733.7	9461.5	7494.8	9078.2	10133.8	16045.1
213-1472	O	54	0.875	395.3	83.73	94.49	105.24	0.472	3.9	10673.5	1647.1	1976.6	2141.3	1696.2	2054.5	2293.4	3631.3
		1371.6	22.225	21253.5	408.81	461.32	513.83	12	100	1457563.2	7326.9	8792.2	9524.9	7545	9139	10201.7	16152.6
216-1345	O	49	1	402	94.58	106.72	118.85	0.472	3.9	9849	1675	2010	2177.5	1724.9	2089.3	2332.2	3692.7
		1244.6	25.4	21612.9	461.78	521.04	580.3	12	100	1344973.8	7450.8	8941	9686	7672.6	9293.6	10374.2	16425.8
217-1497	O	55	0.875	403.1	83.83	94.6	105.36	0.472	3.9	11084.2	1679.4	2015.3	2183.2	1729.4	2094.8	2338.4	3702.4
		1397	22.225	21669.9	409.32	461.87	514.41	12	100	1513640.9	7470.4	8964.5	9711.6	7692.8	9318	10401.5	16469.1
218-1421	O	52	0.938	404.6	89.27	100.73	112.18	0.472	3.9	10518.8	1685.7	2022.8	2191.4	1735.9	2102.6	2347.1	3716.3
		1320.8	23.812	21751	435.86	491.79	547.73	12	100	1436437.2	7498.4	8998.1	9747.9	7721.6	9352.9	10440.5	16530.8
221-1370	O	50	1	411.3	94.73	106.88	119.03	0.472	3.9	10283.1	1713.8	2056.6	2228	1764.9	2137.7	2386.3	3778.3
		1270	25.4	22114.1	462.51	521.83	581.15	12	100	1404246.2	7623.6	9148.3	9910.6	7850.5	9509.1	10614.8	16806.7
221-1522	O	56	0.875	411.7	83.93	94.7	105.48	0.472	3.9	11526.8	1715.3	2058.4	2229.9	1766.4	2139.5	2388.3	3781.5
		1422.4	22.225	22132.8	409.8	462.39	514.98	12	100	1574087	7630	9156	9919	7857.2	9517.1	10623.8	16821
223-1624	O	60	0.812	414	78.45	88.52	98.59	0.472	3.9	12418.9	1724.8	2069.8	2242.3	1776.2	2151.4	2401.6	3802.6
		1524	20.638	22256.1	383.03	432.19	481.34	12	100	1695911.3	7672.5	9207	9974.3	7900.9	9570.1	10682.9	16914.6
226-1395	O	51	1	420.6	94.87	107.04	119.2	0.472	3.9	10726.5	1752.7	2103.2	2278.5	1804.9	2186.2	2440.4	3864
		1295.4	25.4	22615.5	463.21	522.59	581.98	12	100	1464804.7	7796.4	9355.7	10135.3	8028.5	9724.7	10855.4	17187.8
227-1472	O	54	0.938	422.1	89.51	100.99	112.46	0.472	3.9	11396	1758.6	2110.4	2286.2	1811	2193.6	2448.7	3877.1
		1371.6	23.812	22692.2	437.03	493.06	549.1	12	100	1556231.3	7822.9	9387.4	10169.7	8055.7	9757.6	10892.3	17246.1
231-1421	O	52	1	430	95.01	107.19	119.36	0.472	3.9	11179.4	1791.6	2149.9	2329	1844.9	2234.7	2494.5	3949.7
		1320.8	25.4	23117	463.89	523.33	582.77	12	100	1526649.3	7969.3	9563.2	10360.1	8206.5	9940.3	11096.2	17568.9
236-1446	O	53	1	439.3	95.15	107.33	119.52	0.472	3.9	11641.7	1830.5	2196.5	2379.6	1884.9	2283.2	2548.7	4035.4
		1346.2	25.4	23618.8	464.54	524.04	583.54	12	100	1589779.9	8142.3	9770.7	10585	8384.7	10156.1	11337	17950.3
236-1522	O	56	0.938	439.6	89.73	101.23	112.72	0.472	3.9	12308.7	1831.6	2198	2381.1	1886.2	2284.7	2550.3	4038
		1422.4	23.812	23634.1	438.12	494.25	550.37	12	100	1680859.2	8147.6	9777.1	10591.8	8390.1	10162.7	11344.4	17961.9



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Section	Solution Type	Pipe		Section Modulus	Panel Weight by Ratio			Minimum Thickness	Connector Width	Moment of Inertia	Bending Moment by Grade						
		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	in³/ft (cm³/m)	lb/ft² (kg/m²)	lb/ft² (kg/m²)	lb/ft² (kg/m²)	in (mm)	in (mm)	in⁴/ft (cm⁴/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)	k-ft/ft (kN·m/m)
239-1624	O	60	0.875	444.4	84.3	95.1	105.9	0.472	3.9	13332.3	1851.7	2222.1	2407.2	1906.8	2309.7	2578.3	4082.2
		1524	22.225	23893	411.6	464.32	517.05	12	100	1820646.6	8236.8	9884.2	10707.9	8482	10274	11468.6	18158.7
241-1472	O	54	1	448.6	95.27	107.47	119.67	0.472	3.9	12113.4	1869.4	2243.2	2430.2	1925	2331.7	2602.8	4121.1
		1371.6	25.4	24120.7	465.17	524.72	584.28	12	100	1654196.7	8315.3	9978.4	10809.9	8562.8	10371.9	11577.9	18331.7
246-1497	O	55	1	458	95.4	107.61	119.82	0.472	3.9	12594.6	1908.3	2289.9	2480.7	1965.1	2380.2	2657	4206.9
		1397	25.4	24622.8	465.78	525.39	584.99	12	100	1719899.8	8488.4	10186.1	11034.9	8741.1	10587.8	11818.9	18713.3
251-1522	O	56	1	467.3	95.52	107.74	119.96	0.472	3.9	13085.1	1947.2	2336.6	2531.3	2005.2	2428.8	2711.2	4292.7
		1422.4	25.4	25125	466.37	526.03	585.68	12	100	1786889.1	8661.5	10393.8	11260	8919.4	10803.7	12060	19095
255-1624	O	60	0.938	474.7	90.14	101.67	113.2	0.472	3.9	14239.8	1977.8	2373.3	2571.1	2036.6	2466.9	2753.8	4360.1
		1524	23.812	25519.4	440.1	496.39	552.68	12	100	1944575.1	8797.5	10557	11436.7	9059.4	10973.3	12249.3	19394.7
271-1624	O	60	1	504.7	95.97	108.22	120.48	0.472	3.9	15141.5	2103	2523.6	2733.9	2165.6	2623.1	2928.1	4636.2
		1524	25.4	27135.3	468.54	528.39	588.23	12	100	2067709.4	9354.6	11225.5	12160.9	9633	11668.2	13024.9	20622.8

Specifications

When using steel sheet pile, it is necessary to make allowances for deviations from theoretical exactness. The degree of precision obtainable in the production of sheet pile is limited by the basic character of the rolling processes and normal limitations of mill equipment. Care must be taken during installation to assure that each element is being set at the desired driving dimension.

- Dimensions typically shown are nominal.
- Actual thicknesses vary due to mill rolling practices; however, permitted variations for such dimensions are not addressed.
- Interlocks should be reasonably free-sliding when threaded.
- Terms, tolerance, dimensions, and delivery conditions are in accordance with EN 10248 and/or ASTM A6.
- Welding is in accordance with AWS D1.1.

	AMERICAN ASTM A 6		EUROPEAN EN 10248
Mass	5%	-2.5%	± 5%
Length	+ 5in.	-0 in.	± 200mm
Height			± 7mm
Thickness			± 0.5mm for ≤ 8.5mm ± 6% for > 8.5mm
Width Interlocked			± 3%
Straightness			0.2% of the length
Ends ou of Square			2% of the width

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 328	39	270	Grade 260 W	38	260	S 240 GP	35	240
A 572 Grade 42	42	290	Grade 300 W	44	300	S 270 GP	39	270
A 572 Grade 50	50	345	Grade 355 W	50	350	S 320 GP	46	320
A 572 Grade 55	55	380	Grade 400 W	58	400	S 355 GP	51	355
A 572 Grade 60	60	415				S 390 GP	57	390
A 572 Grade 65*	65	450				S 430 GP	62	430
A 588 Grade 50	50	345				S 450 GP*	65	450
API 5L x70	70	485						
ASTM A 690 MARINER®	50	345						

ENGINEERING DISCLAIMER

This publication contains information on the properties of hot-rolled sheet pile based on accepted engineering practices related to sheet pile products and projects. The use of the data contained herein must be supplemented with qualified professional judgment.

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