

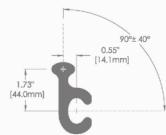
BALL & SOCKET
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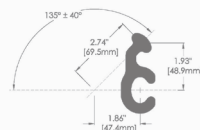
PilePro® Sheet Pile Connectors



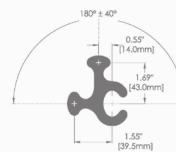
PZ 90



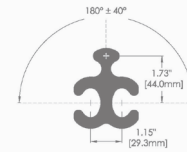
Colt



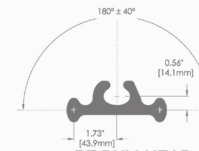
Cobra



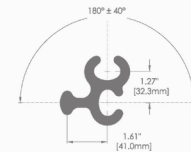
PZ Tee



Joker



Bullhead



PZT-S

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



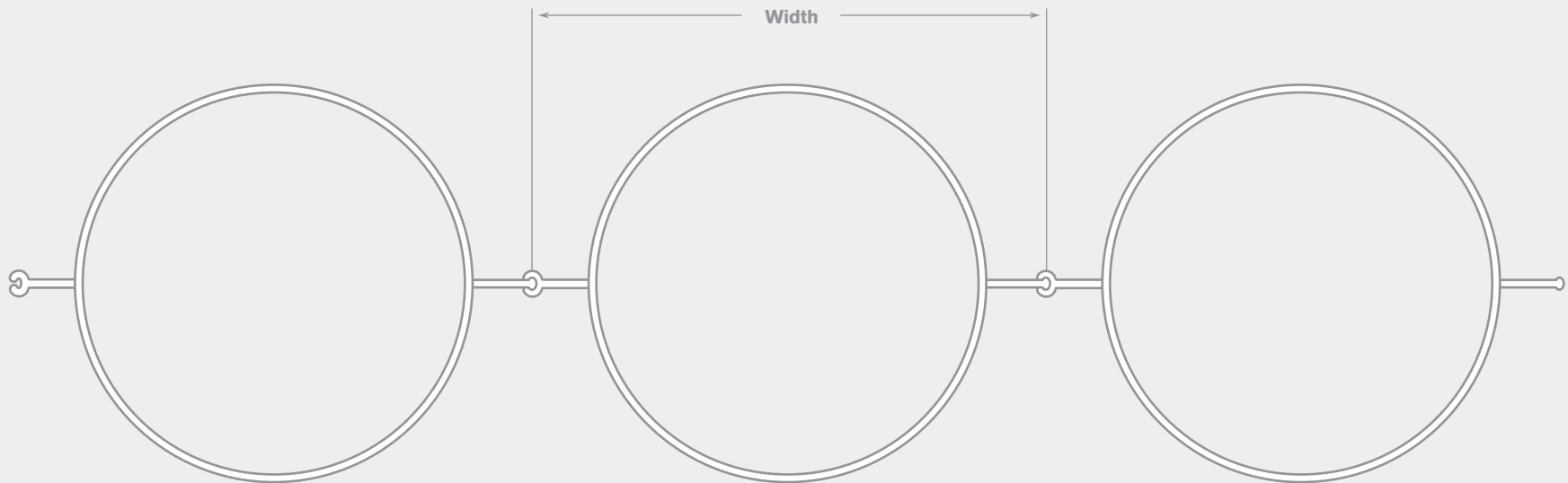
Hot rolled and 100% melted and manufactured
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BALL & SOCKET
HOT ROLLED / MULTI-USE

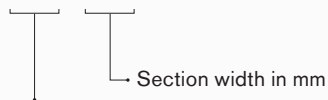


W: 180mm (7.1in)



SECTION NAME:

101 - 978



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)
27-688	O	20	0.375	49.3	32.01	36.88	41.74	0.472	7.1	493.3	205.5	246.6	267.2	211.7	256.4	286.2	453.1
		508	9.525	2652.1	156.31	180.05	203.78	12	180	67363.6	914.3	1097.1	1188.6	941.5	1140.4	1273	2015.6
28-688	O	20	0.394	51.6	33.38	38.41	43.44	0.472	7.1	516.4	215.2	258.2	279.7	221.6	268.4	299.6	474.4
		508	10	2776.5	162.96	187.53	212.1	12	180	70523.6	957.2	1148.6	1244.3	985.7	1193.9	1332.7	2110.2
30-739	O	22	0.375	55.7	32.46	37.32	42.18	0.472	7.1	613	232.2	278.7	301.9	239.1	289.6	323.3	511.9
		558.8	9.525	2996.3	158.48	182.2	205.92	12	180	83717.3	1032.9	1239.5	1342.8	1063.7	1288.4	1438.2	2277.2
31-688	O	20	0.438	57	36.56	41.99	47.42	0.472	7.1	570.1	237.5	285.1	308.8	244.6	296.3	330.7	523.7
		508	11.112	3065.1	178.49	205	231.52	12	180	77852.9	1056.6	1268	1373.6	1088.1	1318	1471.2	2329.5
32-739	O	22	0.394	58.5	33.86	38.89	43.93	0.472	7.1	643.6	243.8	292.5	316.9	251	304.1	339.4	537.4
		558.8	10	3145.5	165.32	189.9	214.47	12	180	87886	1084.4	1301.3	1409.7	1116.7	1352.6	1509.9	2390.6
33-688	O	20	0.472	61.2	39.09	44.83	50.58	0.472	7.1	612.4	255.2	306.2	331.7	262.8	318.3	355.3	562.5
		508	12	3292.4	190.83	218.89	246.94	12	180	83628	1135	1362	1475.5	1168.8	1415.8	1580.4	2502.3
34-790	O	24	0.375	62.5	32.85	37.7	42.56	0.472	7.1	749.8	260.3	312.4	338.4	268.1	324.7	362.5	573.9
		609.6	9.525	3359.1	160.38	184.08	207.79	12	180	102386.8	1158	1389.6	1505.4	1192.5	1444.4	1612.4	2553
35-688	O	20	0.5	64.5	41.07	47.07	53.06	0.472	7.1	645.4	268.9	322.7	349.6	276.9	335.4	374.4	592.9
		508	12.7	3470	200.54	229.8	259.07	12	180	88138.5	1196.2	1435.5	1555.1	1231.9	1492.1	1665.6	2637.2
35-790	O	24	0.394	65.4	34.28	39.32	44.35	0.472	7.1	785.3	272.7	327.2	354.5	280.8	340.1	379.7	601.1
		609.6	10	3518.4	167.38	191.96	216.54	12	180	107240.4	1212.9	1455.5	1576.8	1249	1512.9	1688.8	2674
37-739	O	22	0.472	69.5	39.73	45.5	51.27	0.472	7.1	764	289.4	347.3	376.2	298	361	402.9	638
		558.8	12	3734.1	193.99	222.15	250.31	12	180	104329.9	1287.3	1544.7	1673.5	1325.6	1605.7	1792.4	2837.9
39-688	O	20	0.562	71.9	45.56	52.11	58.67	0.472	7.1	719.3	299.7	359.6	389.6	308.6	373.8	417.3	660.7
		508	14.288	3867.1	222.43	254.44	286.44	12	180	98223.1	1333.1	1599.7	1733.1	1372.8	1662.8	1856.2	2939
39-790	O	24	0.438	72.3	37.63	43.09	48.54	0.472	7.1	867.9	301.3	361.6	391.8	310.3	375.9	419.6	664.3
		609.6	11.112	3888.3	183.74	210.36	236.99	12	180	118516.7	1340.5	1608.5	1742.6	1380.4	1672	1866.4	2955.1
39-739	O	22	0.5	73.2	41.78	47.8	53.82	0.472	7.1	805.5	305.1	366.1	396.6	314.2	380.6	424.8	672.6
		558.8	12.7	3937	203.98	233.38	262.79	12	180	109998.8	1357.2	1628.7	1764.4	1397.6	1692.9	1889.7	2992.1
41-891	O	28	0.375	75.9	33.49	38.34	43.19	0.472	7.1	1062	316.1	379.3	410.9	325.5	394.2	440.1	696.8
		711.2	9.525	4078.3	163.52	187.2	210.88	12	180	145023.6	1405.9	1687.1	1827.7	1447.8	1753.7	1957.6	3099.5



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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)
42-790	O	24	0.472	77.8	40.3	46.08	51.87	0.472	7.1	933.1	324	388.8	421.2	333.6	404.1	451.1	714.3
		609.6	12	4180.5	196.74	224.99	253.25	12	180	127421.5	1441.2	1729.4	1873.5	1484.1	1797.6	2006.6	3177.2
43-688	O	20	0.625	79.2	50.01	57.12	64.24	0.472	7.1	791.7	329.9	395.8	428.8	339.7	411.4	459.3	727.2
		508	15.875	4256.3	244.19	278.91	313.63	12	180	108109.3	1467.3	1760.8	1907.5	1511	1830.2	2043	3234.8
43-891	O	28	0.394	79.5	34.98	40.02	45.05	0.472	7.1	1112.7	331.2	397.4	430.5	341	413.1	461.1	730.1
		711.2	10	4273	170.79	195.38	219.97	12	180	151949.1	1473.1	1767.7	1915	1516.9	1837.4	2051.1	3247.5
44-790	O	24	0.5	82	42.39	48.44	54.49	0.472	7.1	984.1	341.7	410	444.2	351.9	426.2	475.8	753.3
		609.6	12.7	4409	206.97	236.5	266.03	12	180	134387	1520	1823.9	1975.9	1565.2	1895.9	2116.3	3350.9
44-942	O	30	0.375	82.6	33.76	38.61	43.46	0.472	7.1	1239.1	344.2	413	447.4	354.4	429.3	479.2	758.8
		762	9.525	4441.2	164.83	188.5	212.17	12	180	169208.1	1531	1837.2	1990.3	1576.6	1909.7	2131.8	3375.3
47-942	O	30	0.394	86.6	35.27	40.31	45.35	0.472	7.1	1298.4	360.7	432.8	468.9	371.4	449.9	502.2	795.1
		762	10	4653.9	172.22	196.81	221.41	12	180	177312.1	1604.4	1925.2	2085.7	1652.1	2001.2	2233.9	3536.9
47-891	O	28	0.438	87.9	38.46	43.93	49.4	0.472	7.1	1230.7	366.3	439.5	476.2	377.2	456.9	510	807.5
		711.2	11.112	4726.1	187.78	214.5	241.21	12	180	168059.9	1629.3	1955.1	2118	1677.8	2032.2	2268.5	3591.8
48-993	O	32	0.375	89.4	34	38.85	43.69	0.472	7.1	1430.2	372.4	446.9	484.2	383.5	464.6	518.6	821.1
		812.8	9.525	4805.8	166.01	189.67	213.34	12	180	195306.2	1656.7	1988.1	2153.7	1706	2066.5	2306.8	3652.4
48-739	O	22	0.625	90.1	50.99	58.16	65.33	0.472	7.1	991.2	375.4	450.5	488.1	386.6	468.3	522.7	827.7
		558.8	15.875	4844.4	248.93	283.96	318.98	12	180	135351.2	1670	2004	2171	1719.7	2083.1	2325.3	3681.7
49-790	O	24	0.562	91.5	47.12	53.76	60.4	0.472	7.1	1098.4	381.4	457.7	495.8	392.8	475.7	531	840.8
		609.6	14.288	4921.3	230.08	262.5	294.92	12	180	150001.3	1696.6	2035.9	2205.5	1747.1	2116.2	2362.2	3740.2
50-688	O	20	0.75	93.2	58.84	67.05	75.26	0.472	7.1	932.2	388.4	466.1	504.9	400	484.5	540.8	856.3
		508	19.05	5011.7	287.26	327.36	367.47	12	180	127297.1	1727.7	2073.3	2246	1779.2	2155	2405.6	3808.9
50-993	O	32	0.394	93.7	35.54	40.57	45.61	0.472	7.1	1498.9	390.3	468.4	507.4	402	486.9	543.5	860.5
		812.8	10	5036.6	173.5	198.1	222.7	12	180	204685.7	1736.3	2083.5	2257.2	1788	2165.7	2417.5	3827.8
51-891	O	28	0.472	94.6	41.23	47.05	52.87	0.472	7.1	1324	394	472.8	512.3	405.8	491.5	548.6	868.7
		711.2	12	5084.4	201.3	229.71	258.11	12	180	180800	1752.8	2103.3	2278.6	1804.9	2186.3	2440.5	3864.1
52-942	O	30	0.438	95.8	38.81	44.29	49.77	0.472	7.1	1436.6	399	478.9	518.8	410.9	497.7	555.6	879.7
		762	11.112	5148.9	189.48	216.23	242.98	12	180	196174.1	1775	2130	2307.5	1827.9	2214	2471.5	3913.2



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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)
52-1044	O	34	0.375	96.2	34.22	39.07	43.91	0.472	7.1	1635.4	400.8	481	521.1	412.8	500	558.1	883.6
		863.6	9.525	5171.9	167.08	190.73	214.39	12	180	223323.1	1783	2139.5	2317.8	1836	2223.9	2482.5	3930.7
54-891	O	28	0.5	99.8	43.41	49.5	55.59	0.472	7.1	1397	415.8	498.9	540.5	428.2	518.6	578.9	916.6
		711.2	12.7	5365	211.94	241.68	271.41	12	180	190778.7	1849.5	2219.4	2404.4	1904.6	2306.9	2575.2	4077.4
54-1044	O	34	0.394	100.8	35.77	40.81	45.85	0.472	7.1	1714.1	420.1	504.1	546.1	432.6	524	585	926.2
		863.6	10	5420.8	174.66	199.26	223.86	12	180	234071.5	1868.8	2242.5	2429.4	1924.4	2331	2602	4119.8
54-790	O	24	0.625	100.9	51.83	59.06	66.29	0.472	7.1	1210.9	420.5	504.5	546.6	433	524.4	585.4	926.9
		609.6	15.875	5425.2	253.07	288.36	323.65	12	180	165360.9	1870.3	2244.3	2431.4	1926	2332.8	2604.1	4123.2
55-1094	O	36	0.375	103	34.42	39.26	44.1	0.472	7.1	1854.6	429.3	515.2	558.1	442.1	535.5	597.7	946.4
		914.4	9.525	5539.3	168.05	191.69	215.34	12	180	253257.5	1909.6	2291.5	2482.5	1966.5	2381.9	2658.9	4209.9
55-942	O	30	0.472	103.1	41.62	47.45	53.28	0.472	7.1	1545.8	429.4	515.3	558.2	442.2	535.6	597.9	946.6
		762	12	5540.6	203.22	231.68	260.15	12	180	211098.7	1910.1	2292.1	2483.1	1966.9	2382.5	2659.5	4210.9
56-993	O	32	0.438	103.7	39.12	44.61	50.09	0.472	7.1	1658.8	432	518.4	561.6	444.8	538.8	601.5	952.3
		812.8	11.112	5573.8	191	217.79	244.57	12	180	226521	1921.5	2305.8	2498	1978.7	2396.8	2675.4	4236.1
57-739	O	22	0.75	106.1	60.08	68.39	76.7	0.472	7.1	1167.4	442.2	530.6	574.9	455.4	551.6	615.7	974.9
		558.8	19.05	5705.8	293.35	333.93	374.51	12	180	159421.4	1967	2360.4	2557.1	2025.6	2453.5	2738.8	4336.4
58-1094	O	36	0.394	108	35.99	41.03	46.07	0.472	7.1	1944	450	540	585	463.4	561.3	626.6	992.1
		914.4	10	5806.5	175.71	200.31	224.92	12	180	265471.5	2001.7	2402	2602.2	2061.3	2496.8	2787.1	4412.9
59-942	O	30	0.5	108.8	43.84	49.94	56.05	0.472	7.1	1631.5	453.2	543.8	589.1	466.7	565.3	631	999.1
		762	12.7	5847.6	214.02	243.84	273.66	12	180	222794.1	2015.9	2419.1	2620.7	2075.9	2514.5	2806.9	4444.2
59-1145	O	38	0.375	109.9	34.6	39.44	44.28	0.472	7.1	2087.8	457.9	549.4	595.2	471.5	571.1	637.5	1009.4
		965.2	9.525	5907.9	168.93	192.57	216.21	12	180	285113.5	2036.7	2444	2647.7	2097.3	2540.4	2835.8	4490
59-790	O	24	0.688	110.1	56.51	64.33	72.14	0.472	7.1	1321.6	458.9	550.6	596.5	472.5	572.4	638.9	1011.6
		609.6	17.462	5920.9	275.92	314.07	352.22	12	180	180469.9	2041.2	2449.4	2653.5	2101.9	2546	2842	4499.9
60-891	O	28	0.562	111.5	48.33	55.04	61.75	0.472	7.1	1561.1	464.6	557.5	604	478.5	579.5	646.9	1024.3
		711.2	14.288	5995.1	235.99	268.73	301.47	12	180	213185.6	2066.7	2480.1	2686.8	2128.3	2577.9	2877.6	4556.3
60-993	O	32	0.472	111.6	41.97	47.82	53.66	0.472	7.1	1785.4	464.9	557.9	604.4	478.8	579.9	647.4	1025
		812.8	12	5999.2	204.93	233.46	261.98	12	180	243808.4	2068.2	2481.8	2688.6	2129.7	2579.7	2879.6	4559.4



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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)
60-1044	O	34	0.438	111.6	39.4	44.89	50.39	0.472	7.1	1897.4	465	558.1	604.6	478.9	580.1	647.5	1025.2
		863.6	11.112	6000.6	192.38	219.19	246.01	12	180	259105	2068.6	2482.3	2689.2	2130.2	2580.2	2880.3	4560.4
62-1145	O	38	0.394	115.2	36.18	41.22	46.26	0.472	7.1	2188.7	480	576	624	494.3	598.7	668.3	1058.2
		965.2	10	6193.3	176.67	201.27	225.88	12	180	298888.4	2135.1	2562.1	2775.6	2198.6	2663.1	2972.8	4706.9
63-1196	O	40	0.375	116.8	34.76	39.6	44.45	0.472	7.1	2335.2	486.5	583.8	632.4	501	606.8	677.4	1072.5
		1016	9.525	6277.4	169.74	193.37	217	12	180	318890.5	2164	2596.9	2813.3	2228.5	2699.3	3013.1	4770.8
63-993	O	32	0.5	117.8	44.22	50.34	56.47	0.472	7.1	1884.6	490.8	588.9	638	505.4	612.2	683.4	1082
		812.8	12.7	6332.7	215.89	245.79	275.69	12	180	257362	2183.1	2619.8	2838.1	2248.1	2723.1	3039.7	4812.9
64-790	O	24	0.75	119.2	61.17	69.57	77.96	0.472	7.1	1430.4	496.7	596	645.7	511.4	619.5	691.5	1094.9
		609.6	19.05	6408.5	298.66	339.65	380.64	12	180	195330.5	2209.2	2651.1	2872	2275	2755.6	3076.1	4870.4
64-1094	O	36	0.438	119.6	39.66	45.16	50.65	0.472	7.1	2152.4	498.2	597.9	647.7	513.1	621.5	693.7	1098.4
		914.4	11.112	6428.9	193.63	220.47	247.31	12	180	293927.3	2216.3	2659.5	2881.1	2282.2	2764.4	3085.9	4885.9
65-1044	O	34	0.472	120.2	42.29	48.14	54	0.472	7.1	2042.6	500.6	600.8	650.8	515.5	624.5	697.1	1103.7
		863.6	12	6459.8	206.48	235.06	263.64	12	180	278933.5	2226.9	2672.3	2895	2293.2	2777.7	3100.7	4909.4
65-942	O	30	0.562	121.6	48.84	55.57	62.31	0.472	7.1	1823.9	506.6	608	658.6	521.7	632	705.4	1116.9
		762	14.288	6537.4	238.46	271.34	304.21	12	180	249073.2	2253.7	2704.4	2929.8	2320.8	2811.1	3137.9	4968.4
66-1196	O	40	0.394	122.4	36.36	41.4	46.44	0.472	7.1	2448.2	510	612	663.1	525.2	636.2	710.2	1124.4
		1016	10	6581.2	177.54	202.15	226.76	12	180	334322.7	2268.8	2722.5	2949.4	2336.3	2829.9	3159	5001.7
66-891	O	28	0.625	123.1	53.24	60.55	67.87	0.472	7.1	1722.9	512.8	615.3	666.6	528	639.6	714	1130.5
		711.2	15.875	6616.5	259.92	295.65	331.39	12	180	235281.6	2280.9	2737.1	2965.2	2348.8	2845.1	3175.9	5028.5
67-1247	O	42	0.375	123.6	34.92	39.76	44.59	0.472	7.1	2596.6	515.2	618.2	669.8	530.5	642.6	717.3	1135.8
		1066.8	9.525	6647.7	170.48	194.1	217.73	12	180	354591	2291.7	2750.1	2979.2	2360	2858.5	3190.9	5052.3
68-1044	O	34	0.5	126.9	44.56	50.7	56.84	0.472	7.1	2156.5	528.5	634.3	687.1	544.3	659.3	735.9	1165.2
		863.6	12.7	6819.9	217.58	247.55	277.51	12	180	294484.5	2351.1	2821.3	3056.4	2421.1	2932.6	3273.6	5183.1
69-1145	O	38	0.438	127.6	39.89	45.39	50.9	0.472	7.1	2423.8	531.5	637.8	691	547.4	663	740.1	1171.8
		965.2	11.112	6858.5	194.76	221.63	248.5	12	180	330989.3	2364.4	2837.2	3073.7	2434.8	2949.1	3292.1	5212.4
69-790	O	24	0.812	128.1	65.8	74.77	83.75	0.472	7.1	1537.4	533.8	640.6	694	549.7	665.8	743.3	1176.8
		609.6	20.638	6888	321.26	365.08	408.9	12	180	209945.5	2374.5	2849.5	3086.9	2445.2	2961.8	3306.2	5234.9



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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)
69-1094	O	36	0.472	128.7	42.58	48.44	54.3	0.472	7.1	2317.5	536.5	643.7	697.4	552.4	669.1	746.9	1182.7
		914.4	12	6922	207.89	236.51	265.14	12	180	316474.8	2386.3	2863.5	3102.2	2457.3	2976.5	3322.6	5260.7
70-1247	O	42	0.394	129.6	36.53	41.57	46.61	0.472	7.1	2722.5	540.2	648.2	702.2	556.2	673.8	752.1	1190.8
		1066.8	10	6969.9	178.35	202.96	227.57	12	180	371774.9	2402.8	2883.3	3123.6	2474.3	2997.1	3345.6	5297.1
70-1298	O	44	0.375	130.6	35.06	39.89	44.73	0.472	7.1	2872.1	544	652.8	707.2	560.2	678.5	757.4	1199.2
		1117.6	9.525	7018.9	171.16	194.78	218.4	12	180	392214.1	2419.7	2903.6	3145.6	2491.7	3018.1	3369.1	5334.3
71-993	O	32	0.562	131.7	49.3	56.05	62.81	0.472	7.1	2107.7	548.9	658.7	713.6	565.2	684.6	764.3	1210.1
		812.8	14.288	7082.5	240.68	273.68	306.67	12	180	287831.4	2441.6	2929.9	3174.1	2514.3	3045.5	3399.6	5382.7
71-840	O	26	0.75	132.1	62.13	70.59	79.06	0.472	7.1	1717	550.3	660.4	715.4	566.7	686.4	766.3	1213.2
		660.4	19.05	7101	303.32	344.67	386.03	12	180	234474.3	2448	2937.6	3182.4	2520.8	3053.4	3408.5	5396.7
72-942	O	30	0.625	134.3	53.82	61.18	68.54	0.472	7.1	2013.9	559.4	671.3	727.2	576.1	697.8	778.9	1233.3
		762	15.875	7218.2	262.8	298.71	334.63	12	180	275013.8	2488.4	2986.1	3234.9	2562.5	3103.8	3464.7	5485.8
72-891	O	28	0.688	134.5	58.12	66.04	73.97	0.472	7.1	1882.5	560.3	672.3	728.3	576.9	698.8	780.1	1235.1
		711.2	17.462	7229.2	283.74	322.45	361.16	12	180	257070.2	2492.2	2990.6	3239.8	2566.4	3108.6	3470	5494.2
73-1196	O	40	0.438	135.6	40.1	45.61	51.12	0.472	7.1	2711.6	564.9	677.9	734.4	581.7	704.6	786.6	1245.4
		1016	11.112	7289.2	195.8	222.69	249.58	12	180	370293.5	2512.9	3015.4	3266.7	2587.7	3134.4	3498.8	5539.8
73-1094	O	36	0.5	135.9	44.88	51.03	57.18	0.472	7.1	2447	566.4	679.7	736.4	583.3	706.5	788.7	1248.8
		914.4	12.7	7308.9	219.11	249.14	279.17	12	180	334163.9	2519.7	3023.6	3275.6	2594.7	3142.8	3508.3	5554.8
74-1298	O	44	0.394	136.9	36.68	41.72	46.76	0.472	7.1	3011.5	570.4	684.4	741.5	587.3	711.4	794.1	1257.4
		1117.6	10	7359.5	179.09	203.7	228.31	12	180	411247.7	2537.1	3044.5	3298.2	2612.6	3164.6	3532.5	5593.2
74-790	O	24	0.875	136.9	70.4	79.95	89.5	0.472	7.1	1642.6	570.4	684.4	741.5	587.3	711.4	794.2	1257.4
		609.6	22.225	7359.5	343.74	390.37	437	12	180	224317.4	2537.1	3044.5	3298.2	2612.6	3164.6	3532.6	5593.2
74-1145	O	38	0.472	137.4	42.84	48.71	54.58	0.472	7.1	2610.1	572.4	686.9	744.1	589.4	714	797	1261.9
		965.2	12	7385.7	209.17	237.83	266.5	12	180	356435.6	2546.1	3055.4	3310	2621.9	3175.9	3545.2	5613.2
76-802	O	24.5	0.875	140.7	70.71	80.29	89.86	0.472	7.1	1723.7	586.3	703.5	762.2	603.7	731.3	816.3	1292.5
		622.3	22.225	7565	345.24	392	438.75	12	180	235383.9	2607.9	3129.5	3390.3	2685.6	3252.9	3631.2	5749.4
76-1044	O	34	0.562	141.9	49.71	56.49	63.27	0.472	7.1	2412.6	591.3	709.6	768.7	608.9	737.6	823.3	1303.6
		863.6	14.288	7630	242.69	275.79	308.9	12	180	329463.4	2630.4	3156.4	3419.5	2708.6	3280.9	3662.4	5798.8



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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)
77-1247	O	42	0.438	143.6	40.3	45.81	51.32	0.472	7.1	3015.8	598.4	718.1	777.9	616.2	746.4	833.2	1319.2
		1066.8	11.112	7721	196.76	223.67	250.58	12	180	411840.7	2661.7	3194.1	3460.3	2741	3320.1	3706.1	5868
78-1399	O	48	0.375	144.4	35.31	40.14	44.98	0.472	7.1	3465.4	601.6	722	782.1	619.5	750.4	837.7	1326.4
		1219.2	9.525	7763.1	172.38	195.99	219.6	12	180	473236.1	2676.2	3211.5	3479.1	2755.9	3338.1	3726.3	5899.9
78-1145	O	38	0.5	145.1	45.16	51.33	57.49	0.472	7.1	2756.4	604.5	725.4	785.8	622.5	754	841.6	1332.6
		965.2	12.7	7799.5	220.51	250.59	280.68	12	180	376404.1	2688.8	3226.5	3495.4	2768.8	3353.8	3743.8	5927.6
78-790	O	24	0.938	145.5	74.98	85.1	95.23	0.472	7.1	1746.1	606.3	727.6	788.2	624.3	756.2	844.2	1336.6
		609.6	23.812	7823.1	366.1	415.52	464.94	12	180	238448.6	2696.9	3236.3	3506	2777.2	3363.9	3755.1	5945.6
78-993	O	32	0.625	145.5	54.35	61.74	69.13	0.472	7.1	2328.2	606.3	727.6	788.2	624.3	756.3	844.2	1336.6
		812.8	15.875	7823.2	265.37	301.46	337.54	12	180	317934.1	2696.9	3236.3	3506	2777.2	3364	3755.1	5945.6
78-891	O	28	0.75	145.7	62.97	71.51	80.04	0.472	7.1	2039.8	607.1	728.5	789.2	625.2	757.2	845.3	1338.4
		711.2	19.05	7833.3	307.46	349.13	390.8	12	180	278553.6	2700.5	3240.5	3510.6	2780.8	3368.3	3760	5953.3
79-1196	O	40	0.472	146	43.08	48.96	54.84	0.472	7.1	2920.5	608.4	730.1	791	626.5	758.9	847.2	1341.3
		1016	12	7850.7	210.34	239.04	267.75	12	180	398816.9	2706.4	3247.7	3518.4	2787	3375.8	3768.3	5966.6
79-942	O	30	0.688	146.8	58.79	66.76	74.74	0.472	7.1	2201.4	611.5	733.8	794.9	629.7	762.7	851.4	1348.1
		762	17.462	7890.2	287.02	325.97	364.91	12	180	300617.8	2720.1	3264.1	3536.1	2801	3392.8	3787.3	5996.6
81-1450	O	50	0.375	151.3	35.42	40.25	45.09	0.472	7.1	3783.2	630.5	756.6	819.7	649.3	786.5	877.9	1390.1
		1270	9.525	8136	172.92	196.53	220.14	12	180	516635.9	2804.8	3365.7	3646.2	2888.3	3498.5	3905.3	6183.4
81-1399	O	48	0.394	151.4	36.95	41.99	47.03	0.472	7.1	3634	630.9	757.1	820.2	649.7	786.9	878.4	1390.9
		1219.2	10	8140.7	180.41	205.03	229.64	12	180	496254.3	2806.4	3367.7	3648.3	2889.9	3500.5	3907.5	6186.9
82-1298	O	44	0.438	151.7	40.48	46	51.51	0.472	7.1	3336.5	631.9	758.3	821.5	650.7	788.2	879.9	1393.1
		1117.6	11.112	8153.8	197.64	224.57	251.5	12	180	455631.9	2810.9	3373.1	3654.2	2894.6	3506.1	3913.8	6196.9
82-1094	O	36	0.562	152.1	50.08	56.88	63.68	0.472	7.1	2738.5	633.9	760.7	824.1	652.8	790.7	882.7	1397.5
		914.4	14.288	8179.6	244.51	277.71	310.92	12	180	373973	2819.8	3383.8	3665.8	2903.8	3517.2	3926.2	6216.5
83-790	O	24	1	154	79.54	90.23	100.92	0.472	7.1	1847.9	641.6	769.9	834.1	660.7	800.3	893.4	1414.5
		609.6	25.4	8279	388.32	440.52	492.72	12	180	252343	2854.1	3424.9	3710.3	2939	3560	3973.9	6292
83-1196	O	40	0.5	154.2	45.42	51.6	57.77	0.472	7.1	3084.4	642.6	771.1	835.4	661.7	801.5	894.7	1416.6
		1016	12.7	8291.5	221.78	251.92	282.06	12	180	421205.7	2858.4	3430	3715.9	2943.5	3565.3	3979.9	6301.5



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		Diameter	Thickness		60%	80%	100%				G50	G60	G65	S 355 GP	S 430 GP	x70	x110
		in (mm)	in (mm)	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)
83-1247	O	42	0.472	154.7	43.3	49.19	55.08	0.472	7.1	3248.6	644.6	773.5	837.9	663.7	804	897.5	1421
		1066.8	12	8316.8	211.41	240.16	268.9	12	180	443619.7	2867.1	3440.5	3727.3	2952.5	3576.2	3992.1	6320.8
84-891	O	28	0.812	156.8	67.81	76.95	86.08	0.472	7.1	2194.9	653.2	783.9	849.2	672.7	814.8	909.6	1440.1
		711.2	20.638	8429	331.06	375.68	420.3	12	180	299735.2	2905.8	3487	3777.5	2992.3	3624.5	4045.9	6406
84-1044	O	34	0.625	156.8	54.83	62.25	69.67	0.472	7.1	2665.9	653.4	784.1	849.4	672.8	815	909.8	1440.5
		863.6	15.875	8430.9	267.7	303.93	340.16	12	180	364046.6	2906.5	3487.7	3778.4	2993	3625.3	4046.8	6407.5
85-1501	O	52	0.375	158.3	35.52	40.36	45.19	0.472	7.1	4115.2	659.5	791.4	857.3	679.1	822.6	918.2	1453.9
		1320.8	9.525	8509.4	173.43	197.03	220.64	12	180	561961	2933.5	3520.2	3813.6	3020.8	3659	4084.5	6467.1
85-1450	O	50	0.394	158.7	37.07	42.11	47.16	0.472	7.1	3967.4	661.2	793.5	859.6	680.9	824.8	920.7	1457.8
		1270	10	8532.1	181	205.62	230.24	12	180	541789.7	2941.3	3529.6	3823.7	3028.9	3668.8	4095.4	6484.4
86-942	O	30	0.75	159.1	63.73	72.32	80.92	0.472	7.1	2386.4	662.9	795.5	861.8	682.6	826.8	923	1461.4
		762	19.05	8553.5	311.14	353.1	395.06	12	180	325887.5	2948.7	3538.4	3833.3	3036.5	3678	4105.7	6500.6
86-993	O	32	0.688	159.1	59.39	67.41	75.43	0.472	7.1	2545.9	663	795.6	861.9	682.7	827	923.1	1461.6
		812.8	17.462	8554.9	289.96	329.12	368.27	12	180	347671.2	2949.2	3539	3834	3037	3678.6	4106.4	6501.7
87-1145	O	38	0.562	162.4	50.42	57.24	64.06	0.472	7.1	3085.6	676.7	812	879.7	696.8	844	942.2	1491.7
		965.2	14.288	8731.1	246.17	279.46	312.75	12	180	421361.3	3009.9	3611.9	3912.9	3099.5	3754.4	4190.9	6635.6
88-1298	O	44	0.472	163.4	43.5	49.4	55.29	0.472	7.1	3594.4	680.8	816.9	885	701	849.1	947.9	1500.8
		1117.6	12	8783.9	212.41	241.18	269.96	12	180	490846.2	3028.2	3633.8	3936.6	3118.3	3777.1	4216.3	6675.8
88-1247	O	42	0.5	163.4	45.67	51.85	58.03	0.472	7.1	3431.3	680.8	817	885.1	701.1	849.2	947.9	1500.9
		1066.8	12.7	8784.6	222.96	253.14	283.33	12	180	468570.7	3028.4	3634.1	3936.9	3118.5	3777.4	4216.6	6676.3
89-1552	O	54	0.375	165.2	35.62	40.45	45.29	0.472	7.1	4461.2	688.5	826.1	895	708.9	858.7	958.6	1517.7
		1371.6	9.525	8883.2	173.9	197.5	221.1	12	180	609213.1	3062.4	3674.9	3981.1	3153.6	3819.8	4264	6751.3
89-1501	O	52	0.394	166	37.19	42.23	47.27	0.472	7.1	4315.7	691.6	829.9	899.1	712.2	862.7	963	1524.7
		1320.8	10	8924.1	181.55	206.17	230.79	12	180	589347.7	3076.5	3691.8	3999.4	3168.1	3837.4	4283.6	6782.3
90-891	O	28	0.875	167.7	72.62	82.36	92.1	0.472	7.1	2347.8	698.8	838.5	908.4	719.6	871.6	972.9	1540.5
		711.2	22.225	9016.3	354.54	402.1	449.66	12	180	320618.3	3108.2	3729.9	4040.7	3200.8	3877	4327.8	6852.4
90-1399	O	48	0.438	167.8	40.8	46.32	51.85	0.472	7.1	4027.2	699.2	839	908.9	720	872.1	973.5	1541.4
		1219.2	11.112	9021.5	199.21	226.17	253.14	12	180	549950.7	3110.1	3732.1	4043.1	3202.6	3879.2	4330.3	6856.3



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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)	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)
90-1094	O	36	0.625	168.2	55.26	62.71	70.16	0.472	7.1	3026.9	700.7	840.8	910.9	721.5	874	975.6	1544.7
		914.4	15.875	9041	269.81	306.18	342.55	12	180	413355.3	3116.8	3740.1	4051.8	3209.6	3887.6	4339.7	6871.2
92-942	O	30	0.812	171.3	68.65	77.85	87.06	0.472	7.1	2569.1	713.6	856.4	927.7	734.9	890.1	993.6	1573.2
		762	20.638	9208.1	335.16	380.12	425.08	12	180	350828	3174.4	3809.2	4126.7	3268.9	3959.5	4419.9	6998.1
92-1044	O	34	0.688	171.5	59.93	67.99	76.05	0.472	7.1	2916.2	714.8	857.7	929.2	736	891.5	995.2	1575.7
		863.6	17.462	9222.7	292.62	331.97	371.31	12	180	398235.9	3179.4	3815.3	4133.2	3274.1	3965.8	4426.9	7009.2
93-1602	O	56	0.375	172.2	35.71	40.54	45.37	0.472	7.1	4821.3	717.5	860.9	932.7	738.8	894.9	999	1581.7
		1422.4	9.525	9257.5	174.35	197.94	221.54	12	180	658393.7	3191.4	3829.7	4148.8	3286.4	3980.7	4443.6	7035.7
93-993	O	32	0.75	172.6	64.41	73.05	81.7	0.472	7.1	2761	719	862.8	934.7	740.4	896.9	1001.1	1585.1
		812.8	19.05	9277.7	314.45	356.67	398.89	12	180	377045.7	3198.4	3838	4157.9	3293.6	3989.4	4453.3	7051.1
93-1298	O	44	0.5	172.6	45.89	52.08	58.27	0.472	7.1	3796.9	719.1	862.9	934.8	740.5	897	1001.3	1585.3
		1117.6	12.7	9278.8	224.04	254.27	284.5	12	180	518500.3	3198.8	3838.5	4158.4	3294	3989.9	4453.8	7051.9
93-1196	O	40	0.562	172.7	50.73	57.57	64.4	0.472	7.1	3453.7	719.5	863.4	935.4	740.9	897.5	1001.8	1586.2
		1016	14.288	9284.1	247.68	281.06	314.44	12	180	471631.3	3200.6	3840.7	4160.7	3295.8	3992.2	4456.4	7055.9
93-1552	O	54	0.394	173.3	37.29	42.33	47.38	0.472	7.1	4678.8	722	866.4	938.6	743.5	900.6	1005.3	1591.8
		1371.6	10	9316.5	182.07	206.69	231.31	12	180	638928.2	3211.8	3854.1	4175.3	3307.4	4006.1	4471.9	7080.6
95-1450	O	50	0.438	175.9	40.94	46.47	52	0.472	7.1	4397.2	732.9	879.4	952.7	754.7	914.1	1020.4	1615.7
		1270	11.112	9456.4	199.91	226.89	253.87	12	180	600479.3	3260	3912	4238	3357	4066.2	4539.1	7186.8
96-891	O	28	0.938	178.5	77.4	87.74	98.08	0.472	7.1	2498.6	743.6	892.4	966.7	765.8	927.5	1035.4	1639.4
		711.2	23.812	9595.2	377.92	428.4	478.88	12	180	341205.1	3307.8	3969.4	4300.2	3406.3	4125.9	4605.7	7292.3
97-1145	O	38	0.625	179.5	55.66	63.13	70.6	0.472	7.1	3411.4	748.1	897.7	972.6	770.4	933.2	1041.7	1649.3
		965.2	15.875	9653.2	271.74	308.23	344.72	12	180	465863.6	3327.8	3993.4	4326.2	3426.9	4150.9	4633.5	7336.4
97-1602	O	56	0.394	180.6	37.39	42.43	47.48	0.472	7.1	5056.7	752.5	903	978.2	774.9	938.6	1047.7	1658.9
		1422.4	10	9709.4	182.55	207.17	231.8	12	180	690533	3347.2	4016.6	4351.4	3446.8	4175	4660.5	7379.1
97-1399	O	48	0.472	180.8	43.87	49.77	55.68	0.472	7.1	4339.3	753.4	904	979.4	775.8	939.7	1048.9	1660.8
		1219.2	12	9720.7	214.17	243.01	271.85	12	180	592572.9	3351.1	4021.3	4356.4	3450.8	4179.9	4665.9	7387.7
98-1247	O	42	0.562	183	51.01	57.87	64.72	0.472	7.1	3842.9	762.5	915	991.2	785.2	951.1	1061.7	1681
		1066.8	14.288	9838.5	249.08	282.53	315.98	12	180	524785	3391.7	4070	4409.2	3492.7	4230.6	4722.5	7477.3



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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)
99-942	O	30	0.875	183.3	73.54	83.36	93.19	0.472	7.1	2749.3	763.7	916.4	992.8	786.4	952.6	1063.3	1683.6
		762	22.225	9854.1	359.07	407.02	454.97	12	180	375440.6	3397.1	4076.5	4416.2	3498.2	4237.3	4730	7489.1
99-1501	O	52	0.438	184	41.08	46.61	52.14	0.472	7.1	4783.7	766.6	919.9	996.6	789.4	956.2	1067.4	1690.1
		1320.8	11.112	9891.8	200.56	227.56	254.55	12	180	653255.6	3410.1	4092.1	4433.1	3511.6	4253.5	4748.1	7517.8
99-1094	O	36	0.688	184	60.43	68.52	76.61	0.472	7.1	3312.2	766.7	920.1	996.7	789.5	956.4	1067.6	1690.3
		914.4	17.462	9893.2	295.03	334.55	374.07	12	180	452315.4	3410.5	4092.7	4433.7	3512.1	4254.1	4748.7	7518.8
100-993	O	32	0.812	185.8	69.4	78.67	87.94	0.472	7.1	2973.5	774.4	929.2	1006.7	797.4	965.9	1078.2	1707.1
		812.8	20.638	9991.7	338.84	384.11	429.37	12	180	406062.7	3444.5	4133.4	4477.9	3547.1	4296.4	4796	7593.7
100-1044	O	34	0.75	186.1	65.02	73.71	82.41	0.472	7.1	3163.7	775.4	930.5	1008	798.5	967.2	1079.7	1709.5
		863.6	19.05	10005.4	317.44	359.89	402.34	12	180	432034.3	3449.3	4139.1	4484	3551.9	4302.3	4802.6	7604.1
102-891	O	28	1	189.1	82.17	93.1	104.04	0.472	7.1	2647.2	787.9	945.4	1024.2	811.3	982.7	1097	1736.9
		711.2	25.4	10165.9	401.18	454.57	507.96	12	180	361498	3504.6	4205.5	4555.9	3608.9	4371.3	4879.6	7726.1
102-1450	O	50	0.472	189.5	44.03	49.94	55.85	0.472	7.1	4738.4	789.7	947.7	1026.7	813.2	985.1	1099.6	1741
		1270	12	10190.2	214.96	243.83	272.69	12	180	647075.2	3512.9	4215.5	4566.8	3617.5	4381.8	4891.3	7744.5
103-1196	O	40	0.625	191	56.02	63.51	71.01	0.472	7.1	3819.4	795.7	954.8	1034.4	819.4	992.5	1107.9	1754.2
		1016	15.875	10267.2	273.5	310.1	346.71	12	180	521572.7	3539.5	4247.4	4601.3	3644.8	4414.9	4928.2	7803.1
103-1399	O	48	0.5	191	46.28	52.49	58.7	0.472	7.1	4584.5	795.9	955.1	1034.7	819.6	992.8	1108.2	1754.7
		1219.2	12.7	10270	225.96	256.27	286.58	12	180	626057	3540.4	4248.5	4602.6	3645.8	4416.1	4929.6	7805.2
103-1552	O	54	0.438	192.1	41.2	46.74	52.27	0.472	7.1	5186.6	800.4	960.5	1040.5	824.2	998.4	1114.5	1764.6
		1371.6	11.112	10327.8	201.17	228.18	255.19	12	180	708281.8	3560.4	4272.5	4628.5	3666.4	4441	4957.4	7849.1
104-1298	O	44	0.562	193.3	51.28	58.14	65.01	0.472	7.1	4253.3	805.5	966.7	1047.2	829.5	1004.8	1121.6	1775.9
		1117.6	14.288	10394.1	250.36	283.88	317.4	12	180	580823.1	3583.2	4299.9	4658.2	3689.9	4469.5	4989.2	7899.5
105-942	O	30	0.938	195.1	78.42	88.85	99.28	0.472	7.1	2927.2	813.1	975.7	1057	837.3	1014.2	1132.1	1792.5
		762	23.812	10491.6	382.87	433.8	484.73	12	180	399729.3	3616.8	4340.2	4701.9	3724.5	4511.4	5036	7973.6
106-1145	O	38	0.688	196.5	60.88	69	77.13	0.472	7.1	3734	818.9	982.6	1064.5	843.2	1021.4	1140.2	1805.2
		965.2	17.462	10566	297.22	336.9	376.58	12	180	509913.6	3642.5	4371	4735.2	3750.9	4543.4	5071.7	8030.1
107-1501	O	52	0.472	198.3	44.18	50.1	56.01	0.472	7.1	5155.3	826.2	991.4	1074	850.8	1030.5	1150.3	1821.4
		1320.8	12	10660.3	215.7	244.59	273.48	12	180	704004.5	3675	4410	4777.5	3784.4	4583.9	5116.9	8101.8



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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)		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)
107-993	O	32	0.875	199	74.38	84.27	94.16	0.472	7.1	3183.4	829	994.8	1077.7	853.7	1034	1154.3	1827.6
		812.8	22.225	10696.9	363.13	411.43	459.74	12	180	434723	3687.6	4425.2	4793.9	3797.4	4599.7	5134.5	8129.7
107-1094	O	36	0.75	199.7	65.57	74.31	83.05	0.472	7.1	3594.5	832.1	998.5	1081.7	856.8	1037.8	1158.5	1834.3
		914.4	19.05	10736.1	320.15	362.81	405.47	12	180	490855.3	3701.1	4441.4	4811.5	3811.3	4616.5	5153.3	8159.4
108-1602	O	56	0.438	200.2	41.32	46.86	52.39	0.472	7.1	5606	834.2	1001.1	1084.5	859.1	1040.6	1161.5	1839.1
		1422.4	11.112	10764.2	201.75	228.77	255.79	12	180	765551.7	3710.8	4453	4824.1	3821.3	4628.6	5166.8	8180.8
108-1450	O	50	0.5	200.3	46.46	52.67	58.89	0.472	7.1	5006.5	834.4	1001.3	1084.7	859.3	1040.8	1161.8	1839.5
		1270	12.7	10766.7	226.82	257.17	287.52	12	180	683686.2	3711.7	4454	4825.2	3822.2	4629.7	5168	8182.7
108-1044	O	34	0.812	200.5	70.08	79.41	88.74	0.472	7.1	3408.4	835.4	1002.5	1086	860.3	1042	1163.2	1841.7
		863.6	20.638	10779.2	342.17	387.71	433.25	12	180	465444.6	3716	4459.2	4830.8	3826.6	4635	5174	8192.2
109-1247	O	42	0.625	202.4	56.35	63.87	71.38	0.472	7.1	4250.8	843.4	1012.1	1096.4	868.5	1052	1174.3	1859.4
		1066.8	15.875	10882.7	275.12	311.82	348.53	12	180	580485.2	3751.7	4502	4877.2	3863.4	4679.6	5223.7	8270.9
111-942	O	30	1	206.8	83.27	94.31	105.35	0.472	7.1	3102.7	861.8	1034.2	1120.4	887.5	1075	1200	1900
		762	25.4	11120.6	406.57	460.46	514.35	12	180	423695.3	3833.7	4600.4	4983.8	3947.8	4781.9	5337.9	8451.7
111-1552	O	54	0.472	207	44.32	50.24	56.16	0.472	7.1	5590	862.7	1035.2	1121.4	888.3	1076	1201.1	1901.8
		1371.6	12	11130.9	216.39	245.3	274.21	12	180	763360.4	3837.3	4604.7	4988.4	3951.5	4786.3	5342.9	8459.5
112-1196	O	40	0.688	209.1	61.29	69.44	77.6	0.472	7.1	4181.6	871.2	1045.4	1132.5	897.1	1086.6	1213	1920.5
		1016	17.462	11240.8	299.23	339.05	378.87	12	180	571032.6	3875.1	4650.2	5037.7	3990.5	4833.5	5395.6	8543
113-1501	O	52	0.5	209.5	46.62	52.84	59.07	0.472	7.1	5447.3	873	1047.6	1134.9	899	1088.9	1215.5	1924.5
		1320.8	12.7	11264.1	227.63	258.01	288.39	12	180	743883.3	3883.2	4659.8	5048.1	3998.8	4843.6	5406.8	8560.7
114-993	O	32	0.938	211.9	79.33	89.84	100.35	0.472	7.1	3390.7	883	1059.6	1147.9	909.3	1101.4	1229.4	1946.6
		812.8	23.812	11393.5	387.32	438.65	489.97	12	180	463029.8	3927.8	4713.3	5106.1	4044.7	4899.2	5468.9	8659
115-1145	O	38	0.75	213.3	66.08	74.85	83.63	0.472	7.1	4053.3	888.9	1066.7	1155.5	915.3	1108.7	1237.6	1959.6
		965.2	19.05	11469.4	322.62	365.47	408.32	12	180	553515.5	3954	4744.7	5140.1	4071.7	4931.9	5505.3	8716.8
115-1298	O	44	0.625	213.9	56.65	64.19	71.73	0.472	7.1	4705.7	891.2	1069.5	1158.6	917.8	1111.6	1240.9	1964.8
		1117.6	15.875	11499.7	276.61	313.41	350.21	12	180	642602.5	3964.4	4757.2	5153.7	4082.4	4944.9	5519.8	8739.8
115-1399	O	48	0.562	214.1	51.75	58.64	65.53	0.472	7.1	5137.4	891.9	1070.3	1159.5	918.5	1112.5	1241.9	1966.3
		1219.2	14.288	11508.5	252.65	286.3	319.94	12	180	701558.7	3967.4	4760.9	5157.6	4085.5	4948.7	5524.1	8746.5



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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)
115-1044	O	34	0.875	214.7	75.13	85.08	95.04	0.472	7.1	3650.2	894.7	1073.6	1163.1	921.3	1115.9	1245.7	1972.4
		863.6	22.225	11544	366.8	415.42	464.04	12	180	498470.7	3979.7	4775.6	5173.6	4098.1	4963.9	5541.1	8773.5
116-1094	O	36	0.812	215.2	70.7	80.08	89.46	0.472	7.1	3873.6	896.7	1076	1165.7	923.4	1118.4	1248.5	1976.8
		914.4	20.638	11570	345.19	390.97	436.76	12	180	528979.3	3988.6	4786.3	5185.2	4107.3	4975.1	5553.6	8793.2
116-1602	O	56	0.472	215.8	44.45	50.38	56.3	0.472	7.1	6042.4	899.2	1079	1168.9	925.9	1121.6	1252	1982.3
		1422.4	12	11602.1	217.04	245.97	274.9	12	180	825143.5	3999.7	4799.6	5199.6	4118.8	4988.9	5569	8817.6
118-1056	O	34.5	0.875	218.7	75.3	85.28	95.25	0.472	7.1	3772	911.1	1093.3	1184.5	938.2	1136.5	1268.6	2008.6
		876.3	22.225	11756.4	367.66	416.36	465.05	12	180	515105.7	4052.9	4863.4	5268.7	4173.5	5055.2	5643.1	8934.8
118-1552	O	54	0.5	218.8	46.78	53	59.23	0.472	7.1	5907	911.6	1093.9	1185	938.7	1137	1269.2	2009.6
		1371.6	12.7	11762.2	228.38	258.79	289.2	12	180	806651.2	4054.9	4865.8	5271.3	4175.6	5057.7	5645.9	8939.3
119-1247	O	42	0.688	221.7	61.67	69.85	78.03	0.472	7.1	4655	923.6	1108.3	1200.7	951.1	1152	1286	2036.1
		1066.8	17.462	11917.4	301.08	341.03	380.98	12	180	635675.3	4108.4	4930.1	5340.9	4230.7	5124.5	5720.4	9057.2
121-1450	O	50	0.562	224.4	51.96	58.86	65.76	0.472	7.1	5611.2	935.2	1122.2	1215.8	963	1166.5	1302.1	2061.7
		1270	14.288	12067	253.67	287.38	321.08	12	180	766255.2	4160	4991.9	5407.9	4283.8	5188.8	5792.2	9170.9
121-993	O	32	1	224.7	84.26	95.39	106.52	0.472	7.1	3595.4	936.3	1123.6	1217.2	964.2	1167.9	1303.7	2064.2
		812.8	25.4	12081.4	411.41	465.75	520.08	12	180	490987.1	4164.9	4997.9	5414.4	4288.9	5195	5799.1	9181.8
122-1196	O	40	0.75	227	66.54	75.35	84.17	0.472	7.1	4540.3	945.9	1135.1	1229.7	974	1179.8	1317	2085.3
		1016	19.05	12205	324.88	367.91	410.94	12	180	620015.1	4207.5	5049	5469.8	4332.8	5248.2	5858.4	9275.8
123-1602	O	56	0.5	228.1	46.92	53.15	59.39	0.472	7.1	6385.4	950.2	1140.3	1235.3	978.5	1185.2	1323	2094.8
		1422.4	12.7	12260.8	229.08	259.52	289.96	12	180	871985.8	4226.8	5072.1	5494.8	4352.6	5272.1	5885.2	9318.2
123-1044	O	34	0.938	228.8	80.15	90.74	101.32	0.472	7.1	3889.3	953.3	1143.9	1239.2	981.6	1189	1327.3	2101.5
		863.6	23.812	12300	391.34	443.02	494.71	12	180	531114.4	4240.3	5088.3	5512.4	4366.5	5289	5904	9348
124-1145	O	38	0.812	230	71.26	80.69	90.11	0.472	7.1	4369.3	958.2	1149.8	1245.6	986.7	1195.2	1334.1	2112.4
		965.2	20.638	12363.7	347.94	393.95	439.96	12	180	596671.3	4262.2	5114.7	5540.9	4389.1	5316.4	5934.6	9396.4
124-1094	O	36	0.875	230.5	75.81	85.82	95.84	0.472	7.1	4149.8	960.6	1152.7	1248.8	989.2	1198.2	1337.5	2117.7
		914.4	22.225	12394.8	370.13	419.03	467.94	12	180	566689.5	4273	5127.5	5554.8	4400.1	5329.8	5949.5	9420
126-1298	O	44	0.688	234.3	62.01	70.22	78.43	0.472	7.1	5154.1	976.2	1171.4	1269	1005.2	1217.6	1359.2	2152
		1117.6	17.462	12595.6	302.78	342.85	382.93	12	180	703843.2	4342.2	5210.6	5644.8	4471.4	5416.1	6045.9	9572.7

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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)	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)
126-1501	O	52	0.562	234.9	52.15	59.07	65.98	0.472	7.1	6106.1	978.5	1174.3	1272.1	1007.7	1220.6	1362.5	2157.3
		1320.8	14.288	12626.4	254.63	288.38	322.14	12	180	833848.6	4352.8	5223.4	5658.6	4482.4	5429.4	6060.7	9596.1
127-1399	O	48	0.625	236.9	57.2	64.77	72.34	0.472	7.1	5685.9	987.1	1184.6	1283.3	1016.5	1231.3	1374.4	2176.2
		1219.2	15.875	12737.2	279.27	316.24	353.21	12	180	776458	4391	5269.2	5708.3	4521.7	5477	6113.8	9680.3
129-1247	O	42	0.75	240.7	66.97	75.81	84.66	0.472	7.1	5055.4	1003.1	1203.7	1304	1032.9	1251.1	1396.6	2211.3
		1066.8	19.05	12942.6	326.96	370.15	413.33	12	180	690358.5	4461.8	5354.2	5800.3	4594.6	5565.3	6212.5	9836.4
131-1044	O	34	1	242.7	85.16	96.37	107.58	0.472	7.1	4125.5	1011.2	1213.4	1314.5	1041.3	1261.2	1407.9	2229.2
		863.6	25.4	13047.2	415.78	470.52	525.26	12	180	563379.6	4497.9	5397.4	5847.2	4631.8	5610.3	6262.7	9915.9
132-1196	O	40	0.812	244.8	71.78	81.24	90.71	0.472	7.1	4895.5	1019.9	1223.9	1325.9	1050.3	1272.1	1420.1	2248.4
		1016	20.638	13159.9	350.45	396.67	442.89	12	180	668522.6	4536.7	5444.1	5897.7	4671.8	5658.8	6316.7	10001.5
132-1552	O	54	0.562	245.3	52.33	59.26	66.18	0.472	7.1	6622.2	1021.9	1226.3	1328.5	1052.4	1274.7	1422.9	2253
		1371.6	14.288	13186.4	255.52	289.32	323.12	12	180	904324.6	4545.9	5455	5909.6	4681.2	5670.2	6329.5	10021.7
132-1094	O	36	0.938	245.7	80.9	91.55	102.2	0.472	7.1	4422.9	1023.8	1228.6	1331	1054.3	1277	1425.5	2257.1
		914.4	23.812	13210.6	394.98	446.99	499	12	180	603988.5	4554.2	5465	5920.4	4689.8	5680.6	6341.1	10040.1
133-1145	O	38	0.875	246.4	76.43	86.5	96.57	0.472	7.1	4682.1	1026.8	1232.1	1334.8	1057.3	1280.7	1429.6	2263.6
		965.2	22.225	13248.7	373.16	422.33	471.5	12	180	639384.4	4567.3	5480.8	5937.5	4703.3	5697	6359.4	10069
133-1704	O	60	0.5	246.6	47.18	53.43	59.67	0.472	7.1	7398.7	1027.6	1233.1	1335.9	1058.2	1281.8	1430.8	2265.4
		1524	12.7	13259.4	230.36	260.85	291.34	12	180	1010363.8	4571	5485.2	5942.3	4707.1	5701.5	6364.5	10077.1
134-1450	O	50	0.625	248.4	57.44	65.03	72.62	0.472	7.1	6211.2	1035.2	1242.2	1345.8	1066	1291.2	1441.4	2282.2
		1270	15.875	13357.5	280.45	317.5	354.55	12	180	848200	4604.8	5525.8	5986.3	4741.9	5743.7	6411.6	10151.7
137-1298	O	44	0.75	254.5	67.36	76.23	85.11	0.472	7.1	5598.7	1060.4	1272.4	1378.5	1091.9	1322.6	1476.4	2337.6
		1117.6	19.05	13681.9	328.87	372.21	415.54	12	180	764546.9	4716.7	5660	6131.7	4857.1	5883.2	6567.3	10398.3
138-1602	O	56	0.562	255.7	52.51	59.44	66.37	0.472	7.1	7159.5	1065.4	1278.5	1385	1097.1	1328.9	1483.4	2348.7
		1422.4	14.288	13747	256.36	290.2	324.05	12	180	977689.7	4739.1	5686.9	6160.9	4880.2	5911.2	6598.6	10447.8
140-1399	O	48	0.688	259.6	62.63	70.89	79.14	0.472	7.1	6230	1081.6	1297.9	1406.1	1113.8	1349.1	1506	2384.4
		1219.2	17.462	13956	305.81	346.1	386.39	12	180	850757.6	4811.2	5773.4	6254.5	4954.4	6001.1	6698.9	10606.6
140-1247	O	42	0.812	259.6	72.25	81.76	91.26	0.472	7.1	5452.1	1081.8	1298.1	1406.3	1114	1349.3	1506.2	2384.8
		1066.8	20.638	13958.3	352.76	399.17	445.59	12	180	744537.2	4812	5774.4	6255.6	4955.2	6002.1	6700	10608.3



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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)
140-1501	O	52	0.625	260	57.67	65.27	72.87	0.472	7.1	6760.1	1083.3	1300	1408.3	1115.6	1351.3	1508.4	2388.3
		1320.8	15.875	13978.6	281.56	318.68	355.8	12	180	923147.7	4819	5782.7	6264.6	4962.4	6010.8	6709.7	10623.7
140-1094	O	36	1	260.7	85.97	97.26	108.54	0.472	7.1	4693.1	1086.4	1303.6	1412.3	1118.7	1355	1512.6	2395
		914.4	25.4	14017.5	419.74	474.85	529.95	12	180	640880.7	4832.4	5798.8	6282.1	4976.2	6027.5	6728.4	10653.3
141-1196	O	40	0.875	262.4	77	87.12	97.24	0.472	7.1	5247.3	1093.2	1311.8	1421.1	1125.7	1363.5	1522.1	2410
		1016	22.225	14105.5	375.93	425.34	474.75	12	180	716558.5	4862.7	5835.2	6321.5	5007.4	6065.4	6770.6	10720.2
141-1145	O	38	0.938	262.7	81.58	92.29	103.01	0.472	7.1	4991.7	1094.7	1313.6	1423.1	1127.3	1365.4	1524.2	2413.3
		965.2	23.812	14124.7	398.3	450.61	502.92	12	180	681658.2	4869.3	5843.2	6330.1	5014.3	6073.6	6779.9	10734.8
146-1552	O	54	0.625	271.6	57.88	65.5	73.11	0.472	7.1	7332.4	1131.5	1357.9	1471	1165.2	1411.4	1575.5	2494.6
		1371.6	15.875	14600.6	282.6	319.79	356.97	12	180	1001308.3	5033.4	6040	6543.4	5183.2	6278.3	7008.3	11096.4
146-1450	O	50	0.688	272.3	62.91	71.18	79.46	0.472	7.1	6806.7	1134.4	1361.3	1474.8	1168.2	1415	1579.6	2501
		1270	17.462	14638	307.17	347.55	387.94	12	180	929510.3	5046.3	6055.5	6560.1	5196.5	6294.3	7026.2	11124.8
148-1298	O	44	0.812	274.5	72.69	82.23	91.77	0.472	7.1	6039.3	1143.8	1372.6	1486.9	1177.8	1426.7	1592.6	2521.6
		1117.6	20.638	14758.7	354.89	401.48	448.07	12	180	824714.9	5087.9	6105.4	6614.2	5239.3	6346.2	7084.2	11216.6
149-1704	O	60	0.562	276.6	52.82	59.77	66.72	0.472	7.1	8297.5	1152.4	1382.9	1498.2	1186.7	1437.5	1604.6	2540.6
		1524	14.288	14870.1	257.88	291.81	325.74	12	180	1133098.6	5126.3	6151.5	6664.2	5278.9	6394.1	7137.6	11301.2
150-1247	O	42	0.875	278.3	77.52	87.68	97.85	0.472	7.1	5845.2	1159.8	1391.7	1507.7	1194.3	1446.6	1614.8	2556.8
		1066.8	22.225	14964.7	378.48	428.11	477.74	12	180	798215.4	5158.9	6190.7	6706.6	5312.5	6434.8	7183	11373.1
150-1145	O	38	1	278.8	86.71	98.06	109.42	0.472	7.1	5298	1161.9	1394.2	1510.4	1196.4	1449.2	1617.7	2561.4
		965.2	25.4	14991.6	423.35	478.79	534.23	12	180	723495.5	5168.2	6201.8	6718.6	5322	6446.4	7196	11393.6
150-1196	O	40	0.938	279.8	82.2	92.97	103.74	0.472	7.1	5595.6	1165.7	1398.9	1515.5	1200.4	1454.1	1623.1	2570
		1016	23.812	15041.9	401.34	453.92	506.5	12	180	764126.3	5185.5	6222.6	6741.1	5339.9	6468	7220.1	11431.8
152-1399	O	48	0.75	282.1	68.06	76.99	85.92	0.472	7.1	6769.7	1175.3	1410.4	1527.9	1210.3	1466	1636.4	2591
		1219.2	19.05	15165.1	332.28	375.88	419.48	12	180	924464	5228	6273.6	6796.4	5383.6	6521	7279.2	11525.5
152-1602	O	56	0.625	283.2	58.08	65.71	73.34	0.472	7.1	7928.3	1179.8	1415.8	1533.8	1214.9	1471.6	1642.7	2601
		1422.4	15.875	15223.3	283.57	320.82	358.07	12	180	1082682.2	5248.1	6297.7	6822.5	5404.3	6546	7307.2	11569.7
153-1501	O	52	0.688	285	63.17	71.46	79.75	0.472	7.1	7409.2	1187.4	1424.8	1543.6	1222.7	1481	1653.3	2617.7
		1320.8	17.462	15320.9	308.43	348.91	389.39	12	180	1011793.7	5281.7	6338	6866.2	5438.9	6588	7354	11643.9



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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)		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)
158-1298	O	44	0.875	294.4	78	88.21	98.41	0.472	7.1	6476	1226.5	1471.8	1594.5	1263	1529.9	1707.8	2703.9
		1117.6	22.225	15826	380.83	430.66	480.49	12	180	884355.7	5455.8	6547	7092.6	5618.2	6805.2	7596.5	12027.7
159-1450	O	50	0.75	295.9	68.37	77.32	86.28	0.472	7.1	7397.5	1232.9	1479.5	1602.8	1269.6	1537.9	1716.7	2718.1
		1270	19.05	15908.7	333.81	377.53	421.25	12	180	1010200	5484.3	6581.2	7129.6	5647.6	6840.7	7636.2	12090.6
160-1247	O	42	0.938	296.9	82.77	93.59	104.41	0.472	7.1	6234.6	1237	1484.4	1608.1	1273.9	1543	1722.4	2727.1
		1066.8	23.812	15961.7	404.13	456.96	509.79	12	180	851395.6	5502.6	6603.1	7153.4	5666.4	6863.5	7661.6	12130.9
160-1196	O	40	1	297	87.39	98.8	110.22	0.472	7.1	5940.5	1237.6	1485.1	1608.9	1274.4	1543.7	1723.2	2728.4
		1016	25.4	15969.1	426.65	482.4	538.15	12	180	811227.8	5505.1	6606.2	7156.7	5669	6866.7	7665.1	12136.5
160-1552	O	54	0.688	297.7	63.41	71.72	80.03	0.472	7.1	8037.6	1240.4	1488.4	1612.5	1277.3	1547.1	1727.1	2734.5
		1371.6	17.462	16004.8	309.61	350.18	390.74	12	180	1097608.9	5517.5	6620.9	7172.7	5681.7	6882.1	7682.3	12163.6
164-1399	O	48	0.812	304.4	73.46	83.07	92.68	0.472	7.1	7305.1	1268.2	1521.9	1648.7	1306	1581.9	1765.9	2795.9
		1219.2	20.638	16364.5	358.69	405.59	452.49	12	180	997577.2	5641.4	6769.7	7333.9	5809.4	7036.7	7854.9	12437
165-1704	O	60	0.625	306.4	58.44	66.09	73.75	0.472	7.1	9190.6	1276.5	1531.8	1659.4	1314.5	1592.2	1777.3	2814.1
		1524	15.875	16470.6	285.34	322.7	360.06	12	180	1255058.7	5678	6813.6	7381.4	5847.1	7082.4	7905.9	12517.6
167-1501	O	52	0.75	309.8	68.66	77.64	86.61	0.472	7.1	8053.6	1290.6	1548.8	1677.8	1329.1	1609.8	1797	2845.3
		1320.8	19.05	16653.3	335.23	379.06	422.89	12	180	1099786.8	5741	6889.2	7463.3	5911.9	7160.9	7993.6	12656.5
167-1602	O	56	0.688	310.4	63.64	71.96	80.29	0.472	7.1	8691.9	1293.4	1552.1	1681.5	1331.9	1613.3	1800.9	2851.5
		1422.4	17.462	16689.4	310.72	351.36	392	12	180	1186950.8	5753.5	6904.2	7479.5	5924.7	7176.4	8010.9	12684
169-1298	O	44	0.938	314	83.3	94.17	105.03	0.472	7.1	6908.9	1308.5	1570.2	1701.1	1347.5	1632.1	1821.9	2884.7
		1117.6	23.812	16883.9	406.7	459.76	512.82	12	180	943472.6	5820.5	6984.6	7566.7	5993.8	7260.1	8104.3	12831.8
170-1247	O	42	1	315.3	88.01	99.48	110.96	0.472	7.1	6620.5	1313.6	1576.3	1707.7	1352.7	1638.5	1829	2895.9
		1066.8	25.4	16949.4	429.69	485.72	541.74	12	180	904082	5843.1	7011.7	7596	6017	7288.2	8135.7	12881.6
172-1450	O	50	0.812	319.4	73.81	83.45	93.08	0.472	7.1	7983.9	1330.6	1596.8	1729.8	1370.3	1659.7	1852.7	2933.5
		1270	20.638	17169.6	360.38	407.43	454.47	12	180	1090269	5919	7102.8	7694.7	6095.2	7382.9	8241.4	13048.9
172-1260	O	42.5	1	319.8	88.15	99.64	111.13	0.472	7.1	6796.3	1332.6	1599.1	1732.4	1372.3	1662.2	1855.5	2937.8
		1079.5	25.4	17194.9	430.41	486.5	542.6	12	180	928096.1	5927.7	7113.3	7706.1	6104.2	7393.8	8253.6	13068.1
174-1552	O	54	0.75	323.6	68.93	77.93	86.93	0.472	7.1	8737.8	1348.4	1618.1	1752.9	1388.6	1681.9	1877.5	2972.7
		1371.6	19.05	17398.9	336.56	380.49	424.43	12	180	1193219.9	5998.1	7197.7	7797.5	6176.6	7481.5	8351.5	13223.2

* 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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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)
176-1399	O	48	0.875	326.5	78.86	89.14	99.42	0.472	7.1	7836.2	1360.5	1632.5	1768.6	1401	1696.9	1894.2	2999.2
		1219.2	22.225	17554.2	385.02	435.21	485.4	12	180	1070104.3	6051.6	7261.9	7867.1	6231.7	7548.3	8426	13341.2
179-1298	O	44	1	333.5	88.58	100.11	111.64	0.472	7.1	7337.9	1389.8	1667.7	1806.7	1431.1	1733.5	1935	3063.8
		1117.6	25.4	17932.3	432.48	488.77	545.06	12	180	1002057.6	6181.9	7418.3	8036.5	6366	7710.9	8607.5	13628.6
180-1425	O	49	0.875	334.2	79.05	89.35	99.65	0.472	7.1	8188.1	1392.5	1671	1810.3	1434	1736.9	1938.9	3069.9
		1244.6	22.225	17968.1	385.97	436.25	486.52	12	180	1118158	6194.3	7433.2	8052.6	6378.7	7726.3	8624.7	13655.8
180-1501	O	52	0.812	334.4	74.14	83.8	93.46	0.472	7.1	8693.2	1393.1	1671.8	1811.1	1434.6	1737.7	1939.7	3071.3
		1320.8	20.638	17975.9	361.97	409.14	456.31	12	180	1187126.9	6197	7436.4	8056.1	6381.4	7729.6	8628.4	13661.7
181-1704	O	60	0.688	335.9	64.05	72.41	80.76	0.472	7.1	10078	1399.7	1679.7	1819.6	1441.4	1745.9	1948.9	3085.8
		1524	17.462	18060.9	312.73	353.52	394.31	12	180	1376244.1	6226.3	7471.5	8094.2	6411.6	7766.2	8669.3	13726.3
182-1602	O	56	0.75	337.5	69.19	78.21	87.22	0.472	7.1	9450.2	1406.3	1687.5	1828.2	1448.1	1754.1	1958.1	3100.3
		1422.4	19.05	18145.6	337.81	381.84	425.87	12	180	1290514.2	6255.5	7506.6	8132.1	6441.7	7802.6	8709.9	13790.6
184-1450	O	50	0.875	342.6	79.24	89.55	99.87	0.472	7.1	8565.7	1427.6	1713.1	1855.9	1470.1	1780.7	1987.8	3147.3
		1270	22.225	18420.7	386.89	437.24	487.6	12	180	1169717.2	6350.3	7620.4	8255.4	6539.4	7920.9	8842	13999.8
187-1399	O	48	0.938	348.5	84.24	95.19	106.14	0.472	7.1	8363	1451.9	1742.3	1887.5	1495.1	1811	2021.6	3200.9
		1219.2	23.812	18734.3	411.28	464.75	518.23	12	180	1142045.5	6458.4	7750.1	8396	6650.7	8055.8	8992.5	14238.1
188-1552	O	54	0.812	349.4	74.44	84.13	93.81	0.472	7.1	9433	1455.7	1746.8	1892.4	1499	1815.7	2026.9	3209.2
		1371.6	20.638	18783.2	363.45	410.74	458.03	12	180	1288154.2	6475.3	7770.3	8417.9	6668	8076.8	9016	14275.3
188-1475	O	51	0.875	350.3	79.42	89.75	100.08	0.472	7.1	8933.2	1459.7	1751.6	1897.6	1503.1	1820.7	2032.4	3217.9
		1295.4	22.225	18834.4	387.78	438.21	488.64	12	180	1219902.1	6492.9	7791.5	8440.8	6686.2	8098.8	9040.5	14314.1
193-1501	O	52	0.875	358.8	79.6	89.94	100.29	0.472	7.1	9327.9	1494.9	1793.8	1943.3	1539.4	1864.6	2081.4	3295.5
		1320.8	22.225	19288.5	388.64	439.14	489.65	12	180	1273814	6649.5	7979.4	8644.3	6847.4	8294.1	9258.5	14659.3
196-1602	O	56	0.812	364.4	74.72	84.43	94.14	0.472	7.1	10203.4	1518.4	1822	1973.9	1563.6	1893.9	2114.1	3347.3
		1422.4	20.638	19591.7	364.83	412.24	459.65	12	180	1393360	6754	8104.8	8780.2	6955	8424.4	9404	14889.7
196-1704	O	60	0.75	365.3	69.65	78.71	87.76	0.472	7.1	10959.8	1522.2	1826.6	1978.8	1567.5	1898.7	2119.4	3355.8
		1524	19.05	19641.1	340.08	384.28	428.48	12	180	1496654.9	6771	8125.2	8802.4	6972.6	8445.7	9427.7	14927.3
197-1450	O	50	0.938	365.7	84.66	95.65	106.64	0.472	7.1	9143	1523.8	1828.6	1981	1569.2	1900.7	2121.7	3359.4
		1270	23.812	19662.2	413.33	466.99	520.65	12	180	1248551.7	6778.3	8134	8811.8	6980.1	8454.8	9437.9	14943.3



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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)
197-1526	O	53	0.875	366.5	79.77	90.13	100.49	0.472	7.1	9711.1	1526.9	1832.3	1985	1572.4	1904.5	2126	3366.2
		1346.2	22.225	19701.9	389.47	440.04	490.62	12	180	1326134.1	6792	8150.4	8829.6	6994.2	8471.8	9456.9	14973.4
199-1399	O	48	1	370.2	89.6	101.22	112.85	0.472	7.1	8885.6	1542.6	1851.2	2005.4	1588.6	1924.2	2147.9	3400.8
		1219.2	25.4	19904.9	437.47	494.22	550.96	12	180	1213403.1	6862	8234.4	8920.6	7066.2	8559.1	9554.4	15127.7
202-1552	O	54	0.875	374.9	79.93	90.31	100.68	0.472	7.1	10123.2	1562.2	1874.7	2030.9	1608.7	1948.6	2175.2	3444
		1371.6	22.225	20157.7	390.27	440.91	491.56	12	180	1382411.7	6949.1	8338.9	9033.8	7156	8667.8	9675.7	15319.8
204-1425	O	49	1	379.4	89.83	101.48	113.12	0.472	7.1	9296	1580.9	1897.1	2055.2	1628	1972	2201.2	3485.3
		1244.6	25.4	20399.2	438.6	495.46	552.31	12	180	1269445.3	7032.4	8438.9	9142.1	7241.7	8771.7	9791.6	15503.4
206-1577	O	55	0.875	382.6	80.09	90.48	100.87	0.472	7.1	10521.9	1594.2	1913.1	2072.5	1641.7	1988.5	2219.7	3514.6
		1397	22.225	20570.6	391.05	441.76	492.47	12	180	1436855.1	7091.5	8509.7	9218.9	7302.6	8845.3	9873.9	15633.6
206-1501	O	52	0.938	383	85.05	96.07	107.1	0.472	7.1	9958.1	1595.9	1915	2074.6	1643.4	1990.5	2222	3518.2
		1320.8	23.812	20591.6	415.24	469.07	522.9	12	180	1359868.1	7098.7	8518.4	9228.3	7310	8854.4	9884	15649.6
209-1450	O	50	1	388.6	90.06	101.72	113.39	0.472	7.1	9715.7	1619.3	1943.1	2105.1	1667.5	2019.8	2254.6	3569.8
		1270	25.4	20894	439.7	496.65	553.61	12	180	1326770.6	7203	8643.5	9363.8	7417.4	8984.4	10029.1	15879.5
210-1602	O	56	0.875	391.1	80.25	90.65	101.05	0.472	7.1	10951.3	1629.7	1955.6	2118.6	1678.2	2032.7	2269.1	3592.7
		1422.4	22.225	21027.8	391.8	442.58	493.35	12	180	1495500.5	7249.1	8698.9	9423.8	7464.9	9042	10093.4	15981.2
212-1704	O	60	0.812	394.5	75.24	84.99	94.75	0.472	7.1	11835.9	1643.9	1972.6	2137	1692.8	2050.4	2288.9	3624
		1524	20.638	21211.2	367.36	414.97	462.59	12	180	1616291.1	7312.3	8774.7	9506	7530	9120.8	10181.4	16120.5
214-1475	O	51	1	397.8	90.27	101.96	113.64	0.472	7.1	10144.9	1657.7	1989.2	2155	1707	2067.6	2308.1	3654.4
		1295.4	25.4	21389.2	440.76	497.81	554.86	12	180	1385379.2	7373.7	8848.4	9585.8	7593.2	9197.4	10266.8	16255.8
215-1552	O	54	0.938	400.3	85.41	96.47	107.53	0.472	7.1	10808.5	1668	2001.6	2168.4	1717.6	2080.5	2322.4	3677.2
		1371.6	23.812	21522.2	417.03	471.02	525.01	12	180	1475992.5	7419.5	8903.4	9645.4	7640.4	9254.5	10330.7	16356.9
219-1501	O	52	1	407.1	90.48	102.19	113.89	0.472	7.1	10583.5	1696.1	2035.3	2204.9	1746.6	2115.6	2361.6	3739.1
		1320.8	25.4	21884.8	441.78	498.92	556.07	12	180	1445271.4	7544.5	9053.4	9807.9	7769.1	9410.5	10504.7	16632.4
224-1526	O	53	1	416.3	90.69	102.41	114.13	0.472	7.1	11031.5	1734.5	2081.4	2254.9	1786.1	2163.5	2415.1	3823.9
		1346.2	25.4	22380.7	442.76	500	557.24	12	180	1506447.2	7715.5	9258.6	10030.1	7945.2	9623.7	10742.8	17009.4
225-1602	O	56	0.938	417.6	85.76	96.85	107.93	0.472	7.1	11694.2	1740.2	2088.2	2262.3	1792	2170.6	2423	3836.4
		1422.4	23.812	22454.2	418.7	472.84	526.98	12	180	1596942.1	7740.8	9289	10063	7971.2	9655.3	10778	17065.2



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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)	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)
228-1704	O	60	0.875	423.5	80.82	91.27	101.72	0.472	7.1	12706.4	1764.8	2117.7	2294.2	1817.3	2201.2	2457.2	3890.6
		1524	22.225	22771.3	394.58	445.6	496.62	12	180	1735170.2	7850.1	9420.1	10205.1	8083.8	9791.6	10930.2	17306.2
229-1552	O	54	1	425.5	90.88	102.62	114.36	0.472	7.1	11488.9	1773	2127.6	2304.9	1825.8	2211.5	2468.6	3908.7
		1371.6	25.4	22877	443.72	501.05	558.37	12	180	1568906.9	7886.6	9463.9	10252.5	8121.3	9837.1	10981	17386.5
234-1577	O	55	1	434.8	91.07	102.83	114.59	0.472	7.1	11955.7	1811.5	2173.8	2354.9	1865.4	2259.5	2522.2	3993.5
		1397	25.4	23373.7	444.64	502.06	559.47	12	180	1632650.6	8057.8	9669.3	10475.1	8297.7	10050.7	11219.4	17764
239-1602	O	56	1	444	91.25	103.03	114.81	0.472	7.1	12431.8	1850	2220	2405	1905	2307.5	2575.8	4078.4
		1422.4	25.4	23870.6	445.54	503.04	560.53	12	180	1697678.5	8229.1	9874.9	10697.8	8474.1	10264.4	11457.9	18141.7
243-1704	O	60	0.938	452.4	86.38	97.53	108.67	0.472	7.1	13571.3	1884.9	2261.9	2450.4	1941	2351.1	2624.5	4155.4
		1524	23.812	24321.3	421.75	476.16	530.57	12	180	1853280.5	8384.5	10061.3	10899.8	8634	10458.1	11674.2	18484.2
259-1704	O	60	1	481	91.93	103.77	115.61	0.472	7.1	14430.7	2004.3	2405.1	2605.5	2063.9	2500	2790.7	4418.5
		1524	25.4	25861.3	448.85	506.66	564.46	12	180	1970633.8	8915.4	10698.4	11590	9180.8	11120.4	12413.4	19654.6

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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