

Appendix C

Ultra-Span Structural Properties



MEMBER DESIGNATION	DESIGN THICKNESS (inches) (mm)	WEIGHT (lbs/ft) (kg/m)	GROSS SECTION PROPERTIES					EFFECTIVE SECTION PROPERTIES			YIELD Fy (ksi) (N/mm2)	ALLOWABLE MOMENT		TORSIONAL SECTION PROPERTIES							
			Area (in2) (mm2)	Ix (in4) (mm4)	Iy (in4) (mm4)	rx (in) (mm)	ry (in) (mm)	Ix (in4) (mm4)	Sx (in3) (mm3)	Ae (in2) (mm2)		+Ma (in.- lbs.) (m.-kg)	-Ma (in.- lbs.) (m.-kg)	Xo (in) (mm)	J (in4) (mm4)	Cw (in6) (cm6)	Ro (in) (mm)				
			25USC 035 50	0.035	0.720	0.191	0.176	0.961	0.037	0.438		0.164	0.154	0.159	50	3433	4014	-0.0378	0.000078	0.03752	1.301
				0.889	1.07	123.206	73352.464	24.39924	15217.421	11.1125		68336.875	2516.5614	102.36754	344	39.48	46.161	-0.96012	32.457727	10.0755	33.0454
25USC 046 50	0.046	0.91	0.24714	0.22406	0.9522	0.04589	0.4309	0.22031	0.2165	0.2194	50	4470	5284	-0.0345	0.0001743	0.04593	1.2922				
	1.1684	1.36	159.445	93260.813	24.18588	19100.86	10.94486	91699.945	3547.7994	141.5481	344	51.405	60.766	-0.8763	72.5533	12.3333	32.8219				
35USC 035 50	0.035	0.98	0.2834	0.4560	1.2709	0.0751	0.5158	0.4223	0.2679	0.2366	50	6564	6050	0.0306	0.000115	0.20022	1.8578				
	0.889	1.46	182.838	189814.02	32.28086	31263.142	13.10132	175774.53	4390.5861	152.65131	344	75.486	69.575	0.77724	47.987321	53.7663	47.1881				
35USC 046 50	0.046	1.24	0.3677	0.5911	1.2680	0.0963	0.5118	0.5820	0.3866	0.3427	50	8711	8435	0.0300	0.000259	0.25123	1.8577				
	1.1684	1.85	237.193	246034.4	32.2072	40083.086	12.99972	242255.01	6335.2389	221.10924	344	100.18	97.003	0.762	107.93713	67.4643	47.1856				
35USC 057 50	0.057	1.54	0.4512	0.7215	1.2645	0.1164	0.5080	0.7215	0.4856	0.4470	50	10683	10645	0.0301	0.000489	0.29641	1.8573				
	1.4478	2.29	291.116	300310.97	32.1183	48449.338	12.9032	300294.32	7957.3944	288.38652	344	122.85	122.42	0.76454	203.40397	79.5967	47.1754				
35USC 073 50	0.073	1.94	0.5693	0.8990	1.2566	0.1439	0.5158	0.8990	0.6068	0.5693	50	13315	13315	0.0306	0.001011	0.35192	1.8533				
	1.8542	2.89	367.277	374192.05	31.91764	59895.702	13.10132	374187.89	9943.1788	367.27668	344	153.12	153.12	0.77724	420.89322	94.5031	47.0738				
35USD 035 50	0.035	1.20	0.3520	0.5999	1.3055	0.2715	0.8783	0.5038	0.3206	0.2701	50	7812	7349	0.1094	0.000144	0.53257	2.0409				
	0.889	1.79	227.09	249697.23	33.1597	113006.83	22.30882	209705.72	5253.6927	174.27062	344	89.838	84.514	2.77876	59.812456	143.014	51.8389				
35USD 046 50	0.046	1.56	0.4592	0.7792	1.3027	0.3511	0.8744	0.7085	0.4796	0.3940	50	10457	10314	0.1071	0.000324	0.67510	2.0364				
	1.1684	2.32	296.251	324327.53	33.08858	146138.85	22.20976	294912.45	7859.8914	254.16723	344	120.26	118.61	2.72034	134.81736	181.289	51.7246				
35USD 057 50	0.057	1.91	0.5647	0.9532	1.2992	0.4280	0.8706	0.8985	0.6248	0.5026	50	12999	13240	0.1056	0.000612	0.80519	2.0314				
	1.4478	2.85	364.296	396751.79	32.99968	178147.05	22.11324	374000.59	10239.129	324.24451	344	149.49	152.26	2.68224	254.52552	216.222	51.5976				
35 USD 073 50	0.073	2.43	0.7146	1.1918	1.2915	0.5352	0.8655	1.1463	0.8105	0.6467	50	16432	16609	0.1044	0.001269	0.97154	2.0210				
	1.8542	3.62	460.999	496064.61	32.8041	222767.06	21.9837	477126.08	13281.879	417.24433	344	188.97	191	2.65176	528.32255	260.893	51.3334				
35 USD 097 50	0.097	3.31	0.9231	1.5168	1.2818	0.6761	0.8558	1.5164	1.1238	0.8605	50	21063	21061	0.1069	0.002895	1.15670	2.0086				
	2.4638	4.93	595.56	631339.83	32.55772	281414.07	21.73732	631173.33	18415.783	555.17308	344	242.22	242.2	2.71526	1205.0732	310.615	51.0184				
55USC 035 50	0.035	1.25	0.3592	1.3969	1.9719	0.0756	0.4589	1.2995	0.5186	0.2490	50	12976	11207	-0.0688	0.000147	0.45576	2.7146				
	0.889	1.86	231.767	581433.68	50.08626	31467.096	11.65606	540892.74	8498.1675	160.62549	344	149.22	128.88	-1.74752	61.056988	122.388	68.9508				

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MEMBER DESIGNATION	DESIGN THICKNESS (inches) (mm)	WEIGHT (lbs/ft) (kg/m)	GROSS SECTION PROPERTIES					EFFECTIVE SECTION PROPERTIES			YIELD Fy (ksi) (N/mm2)	ALLOWABLE MOMENT		TORSIONAL SECTION PROPERTIES					
			Area (in2) (mm2)	Ix (in4) (mm4)	Iy (in4) (mm4)	rx (in) (mm)	ry (in) (mm)	Ix (in4) (mm4)	Sx (in3) (mm3)	Ae (in2) (mm2)		+Ma (in.- lbs.) (m.-kg)	-Ma (in.- lbs.) (m.-kg)	Xo (in) (mm)	J (in4) (mm4)	Cw (in6) (cm6)	Ro (in) (mm)		
55USC 046 50	0.046	1.58	0.4680	1.8093	1.9663	0.0970	0.4552	1.7768	0.7365	0.3652	50	17228	16641	-0.0660	0.000330	0.57127	2.7172		
	1.1684	2.35	301.922	753087.52	49.94402	40374.448	11.56208	739560	12068.909	235.61243	344	198.12	191.37	-1.6764	137.3597	153.406	69.0169		
55USC 057 50	0.057	1.96	0.5750	2.2136	1.9621	0.1172	0.4515	2.2136	0.9303	0.4879	50	21236	21139	-0.0628	0.000623	0.67525	2.7219		
	1.4478	2.92	370.941	921369.88	49.83734	48782.323	11.4681	921369.88	15244.066	314.75421	344	244.21	243.1	-1.59512	259.17898	181.329	69.1363		
55 USC 073 50	0.073	2.47	0.7272	2.7817	1.9559	0.1447	0.4461	2.7817	1.1695	0.6501	50	26679	26679	-0.0579	0.001292	0.80594	2.7291		
	1.8542	3.68	469.128	1157831	49.67986	60228.687	11.33094	1157831	19164.671	419.42497	344	306.81	306.81	-1.47066	537.64613	216.424	69.3191		
55 USD 035 50	0.035	1.61	0.4289	1.7768	2.0354	0.2718	0.7961	1.5220	0.6147	0.2825	50	15046	13197	-0.0546	0.000175	1.21910	2.9085		
	0.889	2.40	276.703	739560	51.69916	113131.7	20.22094	633504.23	10073.784	182.2448	344	173.03	151.77	-1.38684	72.882123	327.372	73.8759		
55 USD 046 50	0.046	2.09	0.5595	2.3059	2.0301	0.3514	0.7925	2.1131	0.8980	0.4164	50	20102	19660	-0.5240	0.000395	1.54360	2.9041		
	1.1684	3.11	360.98	959788.04	51.56454	146263.72	20.1295	879538.63	14715.583	268.67043	344	231.17	226.09	-13.3096	164.24492	414.512	73.7641		
55USD 057 50	0.057	2.57	0.6884	2.8265	2.0263	0.4284	0.7889	2.6585	1.1507	0.5435	50	24950	25460	-0.0498	0.000746	1.84390	2.9018		
	1.4478	3.83	444.122	1176478.1	51.46802	178313.54	20.03806	1106551.2	18856.595	350.6122	344	286.93	292.79	-1.26492	310.30053	495.153	73.7057		
55USD 073 50	0.073	3.27	0.8724	3.5620	2.0206	0.5358	0.7837	3.4137	1.4975	0.7276	50	31735	32197	-0.0457	0.001550	2.23630	2.8983		
	1.8542	4.87	562.85	1482616.3	51.32324	223016.8	19.90598	1420889.2	24539.628	469.39261	344	364.95	370.27	-1.16078	645.03384	600.527	73.6168		
55USD 097 50	0.097	4.45	1.1413	4.6266	2.0134	0.6870	0.7759	4.6062	2.0958	1.0214	50	41712	71745	-0.0385	0.003579	2.73490	2.8951		
	2.4638	6.63	736.321	1925736.3	51.14036	285950.99	19.70786	1917245.2	34344.009	658.96642	344	479.69	825.07	-0.9779	1489.8588	734.419	73.5355		
725USC 046 50	0.046	1.82	0.5485	3.6309	2.5730	0.0974	0.4212	3.5604	1.1011	0.3619	50	26542	25890	-0.1018	0.000387	0.94482	3.4846		
	1.1684	2.71	353.838	1511294.7	65.3542	40540.941	10.69848	1481950.4	18043.796	233.4705	344	305.23	297.74	-2.58572	161.01496	253.718	88.5088		
725USC 057 50	0.057	2.24	0.6747	4.4498	2.5681	0.1176	0.4176	4.4498	1.3949	0.4977	50	32811	32657	-0.0981	0.000731	1.12000	3.4933		
	1.4478	3.34	435.296	1852146.6	65.22974	48948.816	10.60704	1852146.6	22858.316	321.12194	344	377.33	375.56	-2.49174	304.14447	300.76	88.7298		
725USC 073 50	0.073	2.84	0.8545	5.5930	2.5583	0.1450	0.4123	5.5927	1.7544	0.6574	50	41269	41269	-0.0909	0.001518	1.33750	3.5056		
	1.8542	4.23	551.302	2327982.4	64.98082	60353.557	10.47242	2327857.5	28749.465	424.12818	344	474.59	474.59	-2.30886	631.79768	359.167	89.0422		
725USD 046 50	0.046	2.38	0.6402	4.5350	2.6619	0.3516	0.7412	4.1702	1.3225	0.4126	50	30476	30256	-0.1096	0.000451	2.57130	3.7109		
	1.1684	3.55	413.031	1887609.5	67.61226	146346.97	18.82648	1735768.3	21671.892	266.18011	344	350.47	347.94	-2.78384	187.88687	690.486	94.2569		
725USD 057 50	0.057	2.93	0.7881	5.5660	2.6574	0.4290	0.7374	5.2275	1.6813	0.5418	50	37794	38634	-0.1059	0.000854	3.07760	3.7110		

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MEMBER DESIGNATION	DESIGN THICKNESS (inches)	WEIGHT (lbs/ft)	GROSS SECTION PROPERTIES					EFFECTIVE SECTION PROPERTIES			YIELD Fy (ksi)	ALLOWABLE MOMENT		TORSIONAL SECTION PROPERTIES			
			Area (in ²)	Ix (in ⁴)	Iy (in ⁴)	rx (in)	ry (in)	Ix (in ⁴)	Sx (in ³)	Ae (in ²)		+Ma (in.- lbs.)	-Ma (in.- lbs.)	Xo (in)	J (in ⁴)	Cw (in ⁶)	Ro (in)
			(mm ²)	(mm ⁴)	(mm ⁴)	(mm)	(mm)	(mm ⁴)	(mm ³)	(mm ²)		(m.- kg)		(mm)	(mm ⁴)	(cm ⁶)	(mm)
			(mm)	(kg/m)	(mm ²)	(mm ⁴)	(mm)	(mm ⁴)	(mm)	(mm ⁴)		(mm ³)	(mm ²)	(N/mm ²)	(m.- kg)		(mm)
	1.4478	4.37	508.476	2316744.1	67.49796	178563.28	18.72996	2175849.8	27551.571	349.56059	344	434.63	444.29	-2.68986	355.29514	826.446	94.2594
725USD 073 50	0.073	3.73	0.9998	7.0150	2.6488	0.5360	0.7322	6.6927	2.1769	0.7328	50	48042	48917	-0.1002	0.001776	3.73900	3.7088
	1.8542	5.56	645.031	2919863.5	67.27952	223100.04	18.59788	2785712.1	35673	472.74744	344	552.48	562.55	-2.54508	739.22701	1004.06	94.2035
725USD 097 50	0.097	5.07	1.3105	9.1340	2.6400	0.6870	0.7241	9.0446	3.0347	1.0460	50	63439	63439	-0.0911	0.004110	4.59360	3.7112
	2.4638	7.55	845.482	3801857.8	67.056	285950.99	18.39214	3764646.8	49729.823	674.83736	344	729.55	729.55	-2.31394	1710.836	1233.55	94.2645
15USW 035 50	0.035	0.46	0.1259	0.0467	0.6089	0.0151	0.3457	0.0460	0.0605	0.1177	50	1632	1632	-0.7883	0.000051	0.00755	1.0543
	0.889	0.69	81.2385	19429.683	15.46606	6264.283	8.78078	19151.64	992.22034	75.954687	344	18.768	18.768	-20.0228	21.400955	2.02785	26.7792
15USW 046 50	0.046	0.58	0.1630	0.0594	0.6038	0.0189	0.3406	0.0594	0.0793	0.1630	50	2135	2135	-0.7747	0.000115	0.00925	1.0396
	1.1684	0.86	105.18	24740.796	15.33652	7870.9363	8.65124	24739.963	1298.6748	105.18043	344	24.553	24.553	-19.6774	47.862452	2.48471	26.4058
25USWD 035 50	0.035	0.80	0.2248	0.2363	1.0254	0.0873	0.6231	0.02206	0.03085	0.16531	50	1139	1139	-1.4677	0.000092	0.14020	1.8958
	0.889	1.19	145	98363.81	26.04516	36316.192	15.82674	9182.0652	505.54092	106.6514	344	13.099	13.099	-37.2796	38.197558	37.6487	48.1533
30USW 035 50	0.035	0.70	0.2025	0.1882	0.9640	0.0221	0.3300	0.16139	0.09707	0.16734	50	2906	2872	-0.0733	0.000083	0.03086	1.0219
	0.889	1.04	130.632	78322.267	24.4856	9182.0652	8.382	67175.59	1590.6923	107.96107	344	33.419	33.028	-1.86182	34.414014	8.28729	25.9563
30USW 046 50	0.046	0.89	0.2630	0.2395	0.9543	0.0280	0.3263	0.22329	0.13985	0.23802	50	4187	4156	-0.0689	0.000185	0.03849	1.0112
	1.1684	1.33	169.645	99666.615	24.23922	11654.48	8.28802	92940.315	2291.7309	153.56098	344	48.151	47.794	-1.75006	77.198443	10.3354	25.6845
30USW 057 50	0.057	1.11	0.3219	0.2872	0.9446	0.0335	0.3226	0.28297	0.18271	0.31164	50	5470	5489	-0.0645	0.000349	0.04523	1.0005
	1.4478	1.65	207.671	119537.5	23.99284	13943.753	8.19404	117781.01	2994.0805	201.05766	344	62.905	63.124	-1.6383	145.10244	12.1445	25.4127
362USWD 035 50	0.035	0.95	0.2641	0.5541	1.4484	0.0997	0.6144	0.51294	0.26927	0.1683	50	8062	8062	-1.3045	0.000108	0.28481	2.0438
	0.889	1.42	170.4	230633.83	36.78936	41498.273	15.60576	213501.75	4412.5447	108.58043	344	92.713	92.713	-33.1343	44.890559	76.4817	51.9125
362USWD 046 50	0.046	1.27	0.3447	0.7177	1.4430	0.1279	0.6092	0.67738	0.35914	0.24253	50	10753	10753	-1.2915	0.000243	0.36182	2.0301
	1.1684	1.89	222.367	298729.29	36.6522	53235.999	15.47368	281946.84	5885.2502	156.47065	344	123.66	123.66	-32.8041	101.19002	97.1616	51.5645
362USWD 057 50	0.057	1.46	0.4241	0.8763	1.4375	0.1547	0.6041	0.86419	0.47138	0.34453	50	14113	14113	-1.2786	0.000446	0.43325	2.0165
	1.4478	2.18	273.58	364743.6	36.5125	64391.002	15.34414	359703.04	7724.5342	222.27697	344	162.3	162.3	-32.4764	185.60592	116.343	51.2191
362USWD 073 50	0.073	1.89	0.5374	1.0983	1.4296	0.1913	0.5967	1.0983	0.60596	0.48761	50	18143	18143	-1.2596	0.000955	0.52761	1.9966
	1.8542	2.82	346.709	457146.97	36.31184	79625.072	15.15618	457146.97	9929.9053	314.58647	344	208.64	208.64	-31.9938	397.33452	141.682	50.7136

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MEMBER DESIGNATION	DESIGN THICKNESS (inches)	WEIGHT (lbs/ft)	GROSS SECTION PROPERTIES					EFFECTIVE SECTION PROPERTIES			YIELD Fy (ksi)	ALLOWABLE MOMENT		TORSIONAL SECTION PROPERTIES			
			Area (in ²)	Ix (in ⁴)	Iy (in ⁴)	rx (in)	ry (in)	Ix (in ⁴)	Sx (in ³)	Ae (in ²)		+Ma	-Ma	Xo (in)	J (in ⁴)	Cw (in ⁶)	Ro (in)
			(mm ²)	(mm ⁴)	(mm ⁴)	(mm)	(mm)	(mm ⁴)	(mm ³)	(mm ²)		(N/mm ²)	(in.- lbs.)	(m.-kg)	(mm)	(mm ⁴)	(cm ⁶)
60USWD 035 50	0.035	1.25	0.3473	1.8042	2.2794	0.1167	0.5797	1.5929	0.48693	0.17077	50	14579	14579	-1.0658	0.000142	0.82888	2.5822
	0.889	1.86	224.032	750964.74	57.89676	48574.207	14.72438	663015.04	7979.3531	110.17397	344	167.66	167.66	-27.0713	59.021616	222.584	65.5879
60USWD 046 50	0.046	1.68	0.4539	2.3449	2.2729	0.1498	0.5744	2.2207	0.71662	0.24819	50	21456	21456	-1.0539	0.000320	1.05780	2.5703
	1.1684	2.50	292.851	976021.07	57.73166	62351.468	14.58976	924325.13	11743.298	160.12226	344	246.74	246.74	-26.7691	133.2773	284.057	65.2856
60USWD 057 50	0.057	1.93	0.5594	2.8732	2.2663	0.1812	0.5691	2.8296	0.93373	0.35541	50	27956	27956	-1.0420	0.000606	1.27240	2.5584
	1.4478	2.88	360.915	1195916.1	57.56402	75421.134	14.45514	1177768.4	15301.093	229.29632	344	321.49	321.49	-26.4668	252.19462	341.685	64.9834
60USWD 073 50	0.073	2.52	0.7108	3.6198	2.2567	0.2241	0.5615	3.6198	1.2066	0.51082	50	36126	36126	-1.0246	0.001263	1.56000	2.5412
	1.8542	3.75	458.567	1506674.5	57.32018	93277.462	14.2621	1506674.5	19772.631	329.56063	344	415.45	415.45	-26.0248	525.5338	418.916	64.5465