



SIN Beam Shear

Imperial

Constants

ν	0.3	Poissons Ratio
E	29008 ksi	Youngs Modulus
Fy web	51 ksi	Web Material Yield Strength
ϕ_s	0.75	Material Resistance Factor (Per CSA S136)

Shear Capacity

Designation	Web Depth in	t_{web} in	Shear Distortion Area in ²	Local Buckling (EN)			Global Buckling			Shear Resistance Vr kip
				$\tau_{cr,l}$ ksi	$\lambda_{cr,l}$	$\chi_{cr,l}$	$\tau_{cr,g}$ ksi	$\lambda_{cr,g}$	$\chi_{cr,g}$	
a	b	c	d	e	f	g	h	i	j	k
WTA333	13.11	0.075	0.853	130.8	0.473	0.84	343.7	0.292	1.00	18.0
WTB333	13.11	0.105	1.194	218.8	0.366	0.91	373.7	0.280	1.00	27.4
WTC333	13.11	0.120	1.328	270.9	0.329	0.94	460.0	0.252	1.00	32.3
WTF333	13.11	0.164	1.826	453.4	0.254	1.00	424.8	0.263	1.00	47.2
WTH333	13.11	0.194	2.158	599.8	0.221	1.00	407.4	0.268	1.00	56.0
WTK333	13.11	0.239	2.655	856.0	0.185	1.00	386.8	0.275	1.00	68.9
WTA440	17.32	0.075	1.127	114.4	0.506	0.82	196.8	0.386	1.00	23.3
WTB440	17.32	0.105	1.578	195.9	0.387	0.89	214.1	0.370	1.00	35.6
WTC440	17.32	0.120	1.755	243.3	0.347	0.92	263.5	0.334	1.00	42.0
WTF440	17.32	0.164	2.412	415.5	0.266	0.99	243.3	0.347	1.00	61.8
WTH440	17.32	0.194	2.851	555.0	0.230	1.00	233.4	0.354	1.00	74.0
WTK440	17.32	0.239	3.508	800.8	0.191	1.00	221.6	0.364	1.00	91.0
WTA500	19.69	0.075	1.280	108.3	0.520	0.81	152.4	0.438	1.00	26.2
WTB500	19.69	0.105	1.793	187.4	0.395	0.89	165.8	0.420	1.00	40.2
WTC500	19.69	0.120	1.994	233.0	0.355	0.92	204.0	0.379	1.00	47.4
WTF500	19.69	0.164	2.741	401.3	0.270	0.98	188.4	0.394	1.00	69.9
WTH500	19.69	0.194	3.240	538.2	0.233	1.00	180.7	0.403	1.00	84.1
WTK500	19.69	0.239	3.987	780.2	0.194	1.00	171.6	0.413	1.00	103.5
WTA610	24.00	0.075	1.561	100.3	0.541	0.80	102.5	0.535	1.00	31.5
WTB610	24.00	0.105	2.186	176.1	0.408	0.88	111.5	0.513	1.00	48.5
WTC610	24.00	0.120	2.431	219.4	0.365	0.91	137.3	0.462	1.00	57.3
WTF610	24.00	0.164	3.342	382.6	0.277	0.98	126.8	0.481	1.00	84.8
WTH610	24.00	0.194	3.950	516.2	0.238	1.00	121.6	0.491	1.00	102.5
WTK610	24.00	0.239	4.860	753.0	0.197	1.00	115.4	0.504	1.00	126.1
WTA750	29.53	0.075	1.921	93.4	0.560	0.79	67.7	0.658	1.00	38.2
WTB750	29.53	0.105	2.689	166.5	0.420	0.87	73.7	0.631	1.00	59.2
WTC750	29.53	0.120	2.991	207.8	0.376	0.90	90.7	0.569	1.00	70.0
WTF750	29.53	0.164	4.112	366.7	0.283	0.97	83.7	0.592	1.00	103.8
WTH750	29.53	0.194	4.859	497.3	0.243	1.00	80.3	0.604	1.00	126.1
WTK750	29.53	0.239	5.980	729.8	0.200	1.00	76.3	0.620	1.00	155.2
WTA900	35.43	0.075	2.305	88.5	0.576	0.78	47.0	0.789	1.00	45.3
WTB900	35.43	0.105	3.227	159.5	0.429	0.87	51.2	0.757	1.00	70.5
WTC900	35.43	0.120	3.589	199.4	0.383	0.90	63.0	0.682	1.00	83.5
WTF900	35.43	0.164	4.934	355.1	0.287	0.97	58.2	0.710	1.00	124.0
WTH900	35.43	0.194	5.831	483.7	0.246	1.00	55.8	0.725	1.00	151.3
WTK900	35.43	0.239	7.176	713.0	0.203	1.00	53.0	0.744	1.00	186.2



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a	b	c	d	e	f	g	h	i	j	k
WTA1000	39.37	0.075	2.561	86.0	0.584	0.78	38.1	0.877	1.00	50.1
WTB1000	39.37	0.105	3.586	156.1	0.433	0.86	41.4	0.841	1.00	78.1
WTC1000	39.37	0.120	3.988	195.2	0.387	0.89	51.0	0.758	1.00	92.4
WTF1000	39.37	0.164	5.482	349.4	0.290	0.97	47.1	0.789	1.00	137.5
WTH1000	39.37	0.194	6.479	476.8	0.248	1.00	45.2	0.805	1.00	168.1
WTK1000	39.37	0.239	7.973	704.6	0.204	1.00	42.9	0.827	1.00	206.9
WTA1219	48.00	0.075	3.122	82.0	0.598	0.77	25.6	1.069	0.91	60.5
WTB1219	48.00	0.105	4.372	150.4	0.441	0.86	27.9	1.025	0.97	94.6
WTC1219	48.00	0.120	4.862	188.4	0.394	0.89	34.3	0.924	1.00	112.1
WTF1219	48.00	0.164	6.684	340.0	0.294	0.96	31.7	0.962	1.00	167.1
WTH1219	48.00	0.194	7.899	465.8	0.251	1.00	30.4	0.982	1.00	204.9
WTK1219	48.00	0.239	9.721	691.1	0.206	1.00	28.9	1.008	0.99	249.7
WTA1500	59.06	0.075	3.841	78.5	0.611	0.76	16.9	1.315	0.67	65.2
WTB1500	59.06	0.105	5.379	145.6	0.449	0.85	18.4	1.261	0.72	97.4
WTC1500	59.06	0.120	5.982	182.6	0.401	0.88	22.7	1.137	0.84	129.9
WTF1500	59.06	0.164	8.223	332.0	0.297	0.96	20.9	1.183	0.79	168.5
WTH1500	59.06	0.194	9.719	456.4	0.253	1.00	20.1	1.208	0.77	193.1
WTK1500	59.06	0.239	11.960	679.5	0.208	1.00	19.1	1.240	0.74	228.5

Physical Properties

Designation	t_w ga	t_w in	a_3 in	w in	s in	Iz in ⁴	Dx kip ft	Dz kip ft
WTO	16	0.060	1.57	3.05	3.50	0.0559	0.0038	4.11
WTA	14	0.075	1.57	3.05	3.50	0.0746	0.0075	5.49
WTB	12	0.105	1.57	3.05	3.50	0.0933	0.0205	6.87
WTC	11	0.120	1.69	3.05	3.60	0.1295	0.0301	9.53
WTF	8	0.164	1.69	3.05	3.60	0.1295	0.0782	9.53
WTH	6	0.194	1.69	3.05	3.60	0.1295	0.1290	9.53
WTK	3	0.239	1.69	3.05	3.60	0.1295	0.2405	9.53

