## RAIL SECTIONS (From Modern Railway Track, Coenraad Esveld 2<sup>nd</sup> Ed, ISBN 90-8004-324-3-3)

- C <sub>2</sub>		H Rail height		B Base width		C <sub>1</sub> Head width		C <sub>2</sub> Head width		S web		K <sub>1</sub> Total head height		K <sub>2</sub> Head height		F Base height		D Base thickness		A Cross Section		G Weight		Y <sub>h</sub> Neutral axis		J <sub>x</sub> nent of ertia	Section	V <sub>x</sub> n modu- head	Stability index	in	Efficiency index WJG		Rigidity index J <sub>x</sub> /G	
K, K2													20.7																		Î			
H													-																		100			
<b>1</b>	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm <sub>5</sub>	inch <sup>2</sup>	kg/m	lb/yd	mm	inch	cm <sup>4</sup>	inch <sup>4</sup>	cm <sup>3</sup>	inch <sup>3</sup>		cm <sup>3</sup> /kg/	inch <sup>3</sup> / lbs/yd	cm <sup>4</sup> /kg/	inch4/ lbs/vd	
# F # D											1																				,0	-	100,0	
German sections	-	1000		-	100000						-				-	-	-		-	-			-		-			-		-	-		-	
SMR 29	115.00	4.528	90.00	3.543	47.00	1.850	55.00	2.165	12.00	0.472	40.00	1.575	31.00	1.221	19.00	0.748	10.00	0.394	3794	5.880	29.78	60.04	55.00	2.165	624	14.992	103.98	6.35	0.783	3.492	0.106	20.954	0.250	
S 30	108.00	4.252	108.00	4.525	60.30	2.374	60.30	2.374	12.30	0.484	31.00	1.228	24.00	0.945	19.50	0.768	7.00	0.276	3825	5.928	30.03	60.54	52.12	2.052	606	14.559	109.00	6.65	1.000	3.630	0.110	20.180	0.240	
S 33	134.00	5.276	105.00	4.134	58.00	2.383	58.00	2.283	11.00	0.433	39.00	1.535	31.75	1.250	19.00	0.748	9.50	0.374	4264	6.609	33.47	67.47	67.33	2.651	1040	24.986	155.00	9.45	0.784	4.631	0.140	31.073	0.370	
S 41, 10 R	138.00	5.433	125.00	4.921	67.00	2.638	67.00	2.638	12.00	0.472	43.00	1.692	31.83	1.253	24.00	0.944	9.50	0.374	5271	8.170	41.38	83.42	68.23	2.686	1368	32.866	196.00	11.96	0.905	4.736	0.14.3	33.059	0.394	
S 41, 14 R	138.00	5.433	125.00	4.921	67.00	2.638	67.00	2.638	12.00	0.472	43.00	1.692	31.83	1.253	24.00	0.944	9.50	0.374	5216	8.084	40.95	82.56	68.23	2.686	1368	32.866	196.00	11.96	0.905	4.736	0.143	33.059	0.394	
49 E1 (\$ 49)	149.00	5.866	125.00		67.00	2.638	70.00	2.756	14.00	0.551	51.50	2.027	39.80	1.567		1.083	10.50	0.143	6297	9.761		99.65					240.00		0.838	4.855	0.147	36.799	0.439	
54 E3 (S 54)	154.00	6.063	125.00	4.921	67.00	2.638	70.00	2.756	16.00	0.630	55.00	2.165	43.30	1.705	29.00	1.142	12.00	0.472	6948	10.770	54.54	109.95	75.00	2.953	2073	49.804	262.00	15.99	0.811	4.083	0.154	38.000	0.453	
UIC sections			-		-				-		-					-	-	-	-	-			-	-			-	-		-	-		-	
					100								-																					
50 E4 (UIC 50)	152.00	5.984	125.00	4.921	70.00	2.756	72.20	2.843	15.00	0.591	49.40	1.945	36.30	1.429	28.00	1.102	10.00	0.394	6392	9.908	50.18	101.16	76.00	2.992	1940	46.608	253.60	15.48	0.822	5.053	0.153	38.660	0.461	
54 E2 (UIC 54E) (SBB IV)	161.00	6.339	125.00	4.921	67.00	2.638	69.50	2.736	16.00	0.630	51.40	2.024	38.70	1.524	30.20	1.189	12.00	0.472	6855	10.625	53.81	108.48	69.47	2.735	2308	55.450	276.37	16.86	0.778	5.136	0.155	42.892	0.511	
54 E1 (UIC 54) (SBB III)	159.00	6.260	140.00	5.512	70.00	2.756	72.20	2.843	16.00	0.630	49.40	1.945	36.30	1.429	30.20	1.190	11.00	0.433	6934	10.748	54.43	109.73	74.97	2.952	2127	51.101	279.19	17.04	0.880	5.129	0.155	39.077	0.466	
60 E1 (UIC 60)	172.00	6.771	150.00	5.906	72.00	2.835	74.30	2.925	16.50	0.650	51.00	2.008	37.50	1.476	31.50	1.240	11.50	0.453	7687	11.915	60.34	121.64	80.90	3.185	3055	73,396	335.50	20.47	0.872	5,560	0.168	50.630	0.603	
American sections											-				-		-		-	-	-					-				-	-		-	
				_			-				-					-	_	-		-										-	_		-	
ASCE 60	107.95	4.250	107.95	4.250	60.33	2.375	60.33	2.375	12.30	0.484	30.96	1.218	23.99	0.944	19.45	0.765	6.99	0.275	3825	5.928	30.03	60.54	52.07	2.050	606	14.559	108.50	6.62	1.000	3.613	0.109	20.179	0.240	
ASCE 75	122.20	4.811	122.20	4.811	62.70	2.468	72.20	2.862	13.50	0.531	36.10	1.422	28.90	1.138	21.40	0.842	7.30	0.287	4727	7.326	37.11	74.81	58.40	2.299	952	22.872	149.00	9.09	1.000	4.015	0.122	25.653	0.306	
ASCE 80	127.00	5.000	127.00	5.000	63.50	2.500	63.50	2.500	13.90	0.547	38.10	1.500	30.80	1.213	22.20	0.874	7.60	0.299	5070	7.857	39.80	80.23	61.20	2.409	1098	29.379	165.00	10.07	1.000	4.145	0.126	27.587	0.329	
ASCE 90	142.90	100000000000000000000000000000000000000	130.20	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		2.421	65.10	2.563	14.30	0.562	37.30	1.469	29.20	1.150	25.40	1.000	9.10	0.358	5686	8.813	44.64						205.49		0.911	4.603				
ASCE 100	152.40	100000000000000000000000000000000000000	136.50	0.000	100000000000000000000000000000000000000		68.30	2.689	14.30	0.562	42.10	1.657	33.50	1.319	27.00	1.062	9.90	0.390	6414	9.942	50.35	101.50	0.555	2.970	100000000000000000000000000000000000000	11/2/2/2010/00/00		0.7.6711	0.895	4.905		40.516	100000	
ASCE 115	168.27	6.625	139.70	1400000000	69.06	2.719	69.06	2.740	15.87	0.625	42.86	1.687	34.23	1.687	28.57	1125	11.10	0.437	7236	11.215	56.80	114.50	75.69			65.588	295.00	18.00	0.830	5.193	0.157	48.063		
ASCE 132	180.98	7.125	152.40		74.45	2.931	76.20	3.000	16.67	0.656	44.45	100000000000000000000000000000000000000	34.93	1.375	30.16	1.187	11.11	0.437	7633	11.830						88.196			0.842	6.153			0.730	
ASCE 133	179.39	2500,01015	152,40	20000	71.10		76.20	3.000	17.46	0.687	49.21	1.937	36.51	1.437	30.16	1.187	11.60	0.457	8429	13.064	100000000000000000000000000000000000000	100000	81.28		100000000	HOTELSTICE	364.70		0.849	5.511		100000000000000000000000000000000000000	0.644	
ASCE 136	185.74	10000	152.40	1000000	72.62	2.859	74.61	2.937	17.46	0.687	49.21	1.937	39.89	1.570	30.16	1.187	11.11	0.437	8606	The court of	67.56	The second second		1000000		The Control of the Co	391.50		0.820	5.794	0.175	1,730000000	0.697	
CB 122	172.21	6.780	152.40	6.000	71.14	2.801	74.68	2.940	16.51	0.650	49.02	1.930	36.00	1.417	31.50	1.240	11.43	0.450	7743	12.002	60.78	122.53	80.77	3.160	3080	73.997	337.00	20.56	0.884	5.544	0.168	50.674	0.604	
British sections					Contract of the Contract of th																											1000		
BS 60 R	114.30	4 500	109.54	4.312	57.20	2 252	57.20	2 252	11.11	0.437	35.70	1.406	20.00	1.031	16.70	0657	7.60	0.299	3792	5.878	29.77	60.01	66.70	2.193	677	10 200	115.40	7.04	0.958	2 076	0.117	22.471	0.271	
BS 70 A	123.80		111.10		60.30		50.30	2.374	12.30	0.484	39.70	1.562	26.20	1.110	10110	0.906		0.255	4438			70.24				21.911		-10.	0.897		0.117			
BS 80 A	133.40	120000000000000000000000000000000000000	117.50		63.50	100000000000000000000000000000000000000	65.40	2.570	13.10	0.516	42.50		30.60	1.205	25.00			0.343	5071	7.860	39.80		1000000				178.00	100000	0.880		0.135	100000000000000000000000000000000000000		
BS 90 R	142.90		136.50	N. D. O. C. C. C.		2.626	66.70	2.626	13.90	0.547	43.70		32.50	1.280	20.60	0.811	9.30	0.366	5684	8.810							214.00		0.955		0.145			
BS 90 A	142.90		127.00		66.70	2.626	68.75	2.707	13.90	0.547	46.00	1.811	33.50	1.319	26.20	1.031	9.10	0.358	5735	8.888	45.02						214.00		0.888		0.144			
BS 113 A	158.75	A STANSACTORY	139.70			2.750	72.06	2.837	20.00	0.787	49.21	1.937	36.12	1.422	30.16	1.187	11.11	0.437		11.134	1			3.319			278.61		0.880	4.940	_	41.656		
Various sections									-	7																								
	-									0-0-0-0		S 4																-						
U 33	145.00	10000000	134.00	5.276	100000000000000000000000000000000000000	2.441	64.30	2.531	15.00	0.591	47.00	1.850	36.60	1.429	27.00	1.062	10.50	0.413	5898	9.142	46.30	93.34	67.20	2.646	1588	38.152	204.00	12.44		4.406	0.133	34.298	0.409	
India 52	156.00				100000	2.638	67.00	2.638	15.50	0.610	51.00	2.008	36.82	1.528	29.00	1.142		0.354	6610	10.245	-	104.60							0.872					
Netherlands SA 42	80.00	3.150	80.00	3.150	70.00	2.756	72.2	2.843	40.00	1.575	46.90	1.846	36.30	+1.429	30.6	1.181	25.0	0.984	5352	8.296		84.70			1 100000	7.107	57.10	3.48	1.000		0.041	7.041		
Netherlands 46 E3 (NP 46)	142.00	P. C.	120.00		THE OFFICE	100000	76.00	2.992	14.00	0.551	42.50	1.673	34.00	1.338	25.00	0.984	10.00		-	9.191	46.55	1000	10000	10000000	1,000	7.010	224.00		0.845	4.612		100000000000000000000000000000000000000		
Denmark Form V	141.00	5. 2000000	126.00		69.30	2.728	71.30	2.807	13.80	0.543	43.00	1.692	34.10	1.343	24.00			0.327	5791	8.976		1000000	-				209.00		0.894	4.597	-	10000000		
Denmark Form VII	172.00	10/25/25/25	150.00				74.30	2.925	16.50	0.650	51.00	2.008	37.50	1.476	31.50	25.7 (22.2)		0.453	7687	11.915		2.0		100 CO 100 CO			335.50		0.872		0.168	1000	0.603	
Switzerland SBB I	145.00	120000000		100000000000000000000000000000000000000	65.00		65.00	2.559	14.00	0.551		1.772	36.88	1.452	25.00	10000		0.370		9.114	10000	1000000				100000000000000000000000000000000000000	216.30		0.862		0.142	15.555.05.0		
Turkey 145/46.303	145.00	1175000430000		100000000000000000000000000000000000000	62.00	C. Control of the Control	64.30	2.531	15.00	0.591	47.00	1.850	36.30	1.429	27.00	1.062			5898	9.142		100000000000000000000000000000000000000		1			204.00		0.824	10.07.0	0.133	10.00000		
South Africa SAR 48	150.00	100000000000000000000000000000000000000	127.00		68.00	The state of the s	68.00	2.677	14.00	0.551	43.00	1.692	35.00	1.377	25.00				6114	9.476			72.20				234.00		0.846		0.147			
China 43	140.00	100000000000000000000000000000000000000	114.00	110000	100000000000000000000000000000000000000	2.756	70.00	2.756	14.50	0.571	42.00	1.654	29.50	1.161	27.00	1.062				8.816		10.00000	7.0727-03	2.709	100000	N 1000000000000000000000000000000000000	208.30		0.814	4.665		10.00000000	0.397	
China 50	152.00	5.984	132.00	5.197	70.00	2.756	70.00	2.756	15.50	0.610	42.00	1.654	33.30	1.311	27.00	1.062	10.50	0.413	6562	10.170	51.51	103.80	70.90	2.791	2037	48.939	251.30	15.37	0.868	4.879	0.148	39.546	0.471	

## DEVAL COEFFICIENT FOR BALLAST (From Railway Engineering, V.A.Profillides, ISBN 0 7546 1279 1)

