Table 5.5 Bending strength p_b (N/mm^2) for rolled sections (BS 5950 Part 1 1990 Table 11)

	p_y								
λ_{LT}	245	265	275	325	340	355	415	430	450
30	245	265	275	325	340	355	408	421	438
35	245	265	273	316	328	341	390	402	418
40	238	254	262	302	313	325	371	382	397
45	227	242	250	287	298	309	350	361	374
50	217	231	238	272	282	292	329	338	350
55	206	219	226	257	266	274	307	315	325
60	195	207	213	241	249	257	285	292	300
65	185	196	201	225	232	239	263	269	276
70	174	184	188	210	216	222	242	247	253
75	164	172	176	195	200	205	223	226	231
80	154	161	165	181	186	190	204	208	212
85	144	151	154	168	172	175	188	190	194
90	135	141	144	156	159	162	173	175	178
95	126	131	134	144	147	150	159	161	163
100	118	123	125	134	137	139	147	148	150
105	111	115	117	125	127	129	136	137	139
110	104	107	109	116	118	120	126	127	128
115	97	101	102	108	110	111	117	118	119
120	91	94	96	101	103	104	108	109	111
125	86	89	90	95	96	97	101	102	103
130	81	83	84	89	90	91	94	95	96
135	76	78	79	83	84	85	88	89	90
140	72	74	75	78	79	80	83	84	84
145	68	70	71	74	75	75	78	79	79
150	64	66	67	70	70	71	73	74	75
155	61	62	63	66	66	67	69	70	70
160	58	59	60	62	63	63	65	66	66
165	55	56	57	59	60	60	62	62	63
170	52	53	54	56	56	57	59	59	59
175	50	51	51	53	54	54	56	56	56
180	47	48	49	51	51	51	53	53	53
185	45	46	46	48	49	49	50	50	51
190	43	44	44	46	46	47	48	48	48
195	41	42	42	44	44	44	46	46	46
200	39	40	40	42	42	42	43	44	44
210	36	37	37	38	39	39	40	40	40
220	33	34	34	35	35	36	36	37	37
230	31	31	31	32	33	33	33	34	34
240	29	29	29	30	30	30	31	31	31
250	27	27	27	28	28	28	29	29	29

Table 5.6 Effective length L_E for beams (BS 5950 Part 1 1990 Table 9)

Conditions of restraint at supports		Loading conditions Normal	Destabilizing
Compression flange laterally restrained Beam fully restrained against torsion	Both flanges fully restrained against rotation on plan	$0.7L$	$0.85L$
	Both flanges partially restrained against rotation on plan	$0.85L$	$1.0L$
	Both flanges free to rotate on plan	$1.0L$	$1.2L$
Compression flange laterally unrestrained Both flanges free to rotate on plan	Restraint against torsion provided only by positive connection of bottom flange to supports	$1.0L+2D$	$1.2L+2D$
	Restraint against torsion provided only by dead bearing of bottom flange on supports	$1.2L+2D$	$1.4L+2D$

D is the depth of the beam.
L is the span of the beam.

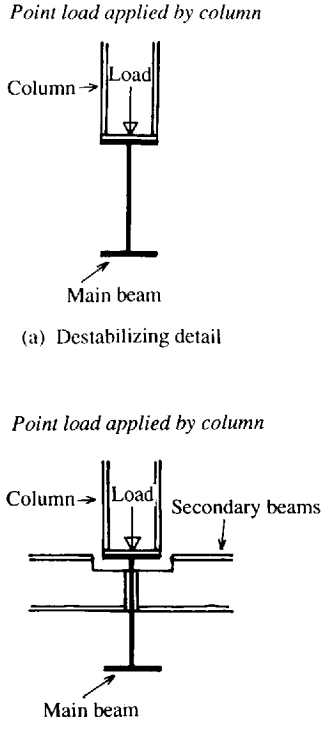

Figure 5.10 *Destabilizing load*

at the support. Therefore the effective length L_E should be taken as the mean of the value given by condition (b) and the value from Table 5.6 relating to the manner of restraint at the support. In both cases, L is taken as the distance between the restrain and the support.

The destabilizing load referred to in the table exists when the member applying the load to the compression flange can move laterally with the beam in question, as illustrated in Figure 5.10a. This may be avoided by the introduction of stabilizing members such as the secondary beams shown in Figure 5.10b.

The slenderness factor v is obtained from BS 5950 Table 14, reproduced here as Table 5.7, using N and λ/x, where λ is the slenderness, x is the torsional index of the section from section tables, and N is 0.5 for beams with equal flanges.

To check the adequacy of a particular steel beam section, the buckling moment M_b should be compared with the equivalent uniform moment $\bar{M}$:

$$\bar{M} \leqslant M_b$$

where $\bar{M} = mM_A$, m is the equivalent uniform moment factor from BS 5950, and M_A is the maximum moment on the member or portion of the member under consideration.