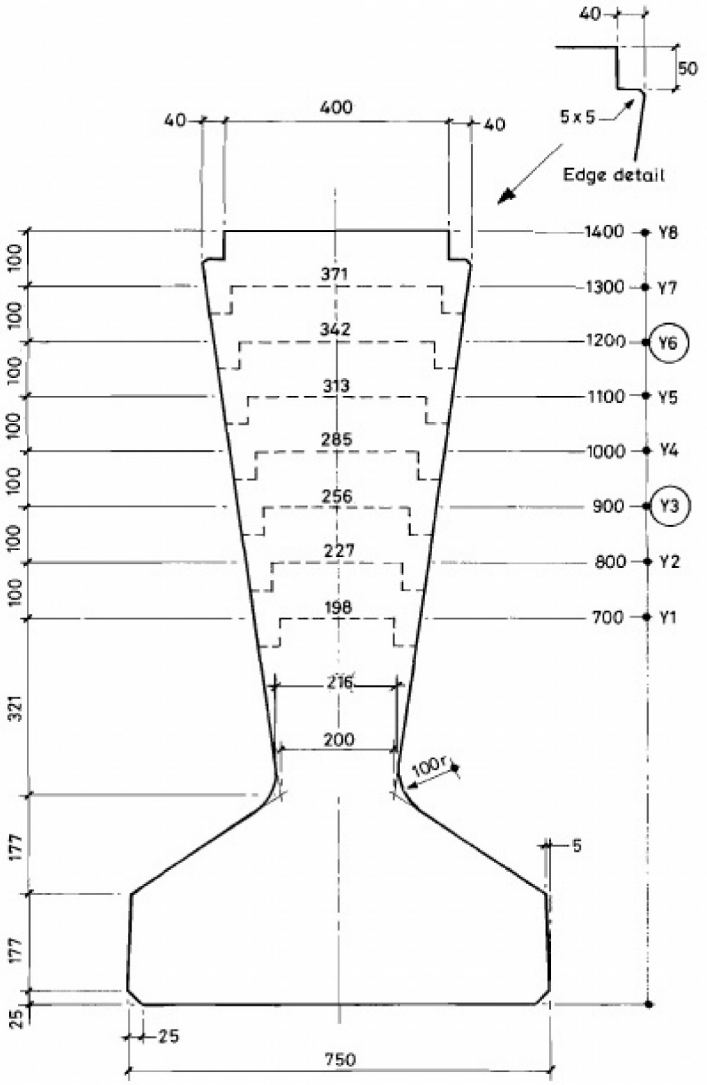
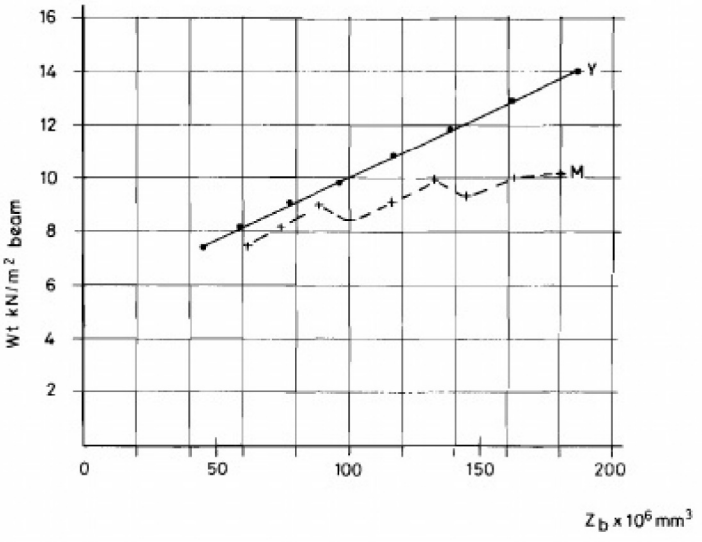


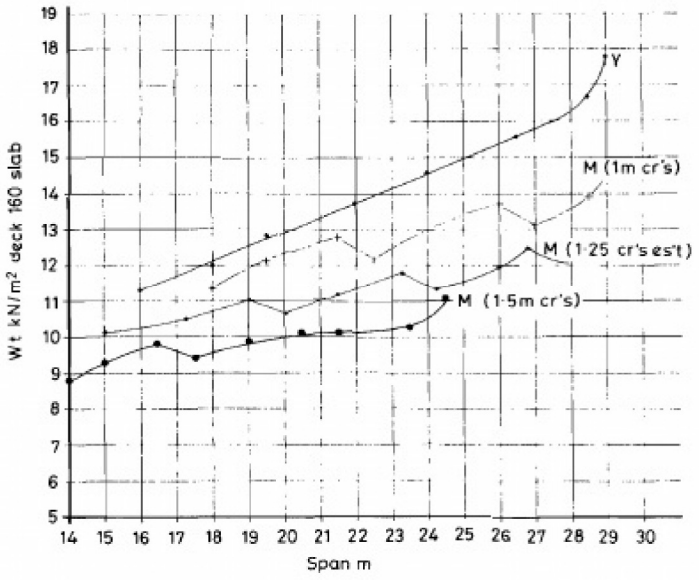
Standard sections Y1 to Y8

Fig 6.



Beam weight - bottom fibre modulus relationship

Fig 7.



Deck weight - span relationship

Fig 8.

(vi) The beam should ideally not have a discrete top flange in order to eliminate the need for such a top flange to be provided with a set of small torsion links, as is increasingly the case with M-beams.
(vii) The beam should have a top flange that would allow it to have an end cross-diaphragm which is not the full depth of the deck. This configuration is common in standard U-beam bridges and allows access for jacks for bearing maintenance and replacement.

The Y-beam

The shape of the new beam came from the preceding logic and is shown in Fig 6. The section properties are shown in Table 1.

The beam is designed to have only one set of mould sides for all depths but does produce a heavier beam than the similar M-beam at its greatest depth. This was not thought to be a great disadvantage, as the M-beam is not the most popular for spans over 27 m, U and box beams being more often used instead.

TABLE 1 — Y-beam section properties

Section	Depth (mm)	Area (mm^2)	Height of centroid above bottom fibre (mm Yb)	Section modulus $mm^3 \times 10^6$		Approximate self-weight (kN/m)
				Top fibre (Z_t)	Bottom fibre (Z_b)	
Y1	700	309202	255·24	24·85	43·40	7·42
Y2	800	339882	298·68	35·02	58·78	8·14
Y3	900	373444	347·12	47·88	76·27	8·95
Y4	1000	409890	399·71	63·53	95·41	9·82
Y5	1100	449220	455·72	82·06	116·02	10·78
Y6	1200	491433	514·50	103·58	138·00	11·78
Y7	1300	536530	575·54	128·15	161·31	12·86
Y8	1400	584708	638·54	155·98	186·01	14·02