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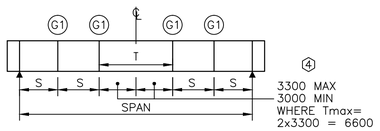
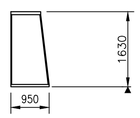
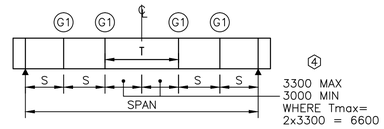
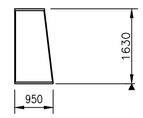
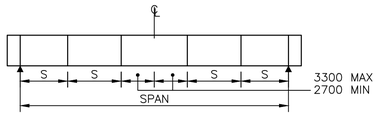
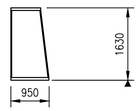
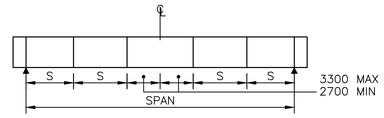
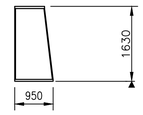
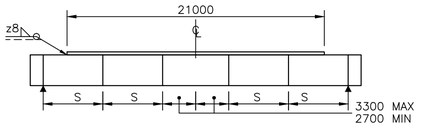
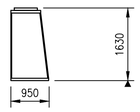
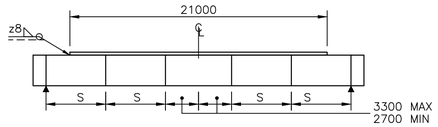
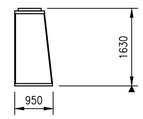
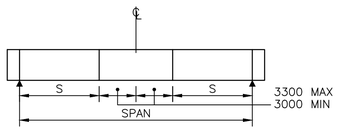
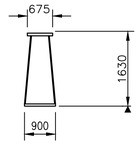
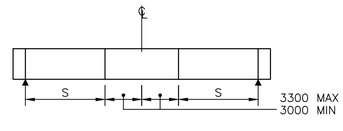
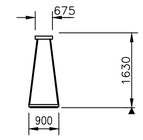
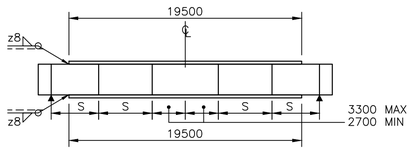
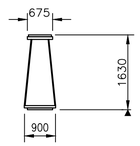
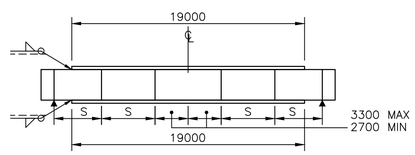
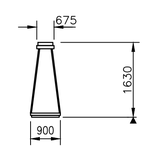
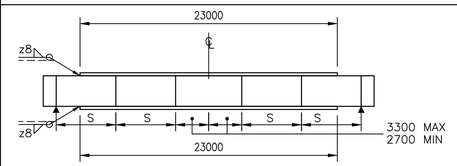
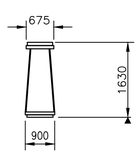
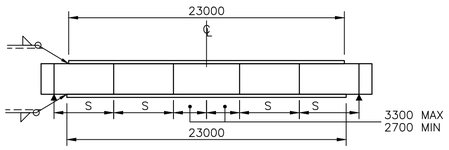
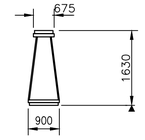
DRAWING No. NR/CIV/SD/1070

TABLE OF MAIN GIRDER SIZES

SPAN LIMIT (M)	HEAVY GIRDERS ① ELEVATION	MID-SPAN SECTION	FLANGES TOP	FLANGES BOTTOM	FLANGES GRADE	WEBS OUTER	WEBS INNER	WEBS GRADE	CAMBER ②	SELF WEIGHT	WEIGHT T ③	LIGHT GIRDERS ① ELEVATION	MID-SPAN SECTION	FLANGES TOP	FLANGES BOTTOM	FLANGES GRADE	WEBS OUTER	WEBS INNER	WEBS GRADE	CAMBER ②	SELF WEIGHT	WEIGHT T ③	
21			–	–		18		S275J2+N	20	3	27.5			–	–		15		S275J2+N	23	3	23.0	SINGLE TRACK–2 GIRDERS DOUBLE TRACK–3 GIRDERS/OUTER GIRDER
			767 x 55		S275J2+N									764 x 45		S275J2+N							
			950 x 45		S275J2+N	20		S275J2+N						950 x 35		S275J2+N	18		S275J2+N				
			–	–										–	–								
24			–	–		18		S275J2+N	29	4	35.0			–	–		15		S275J2+N	30	4	31.5	
			769 x 65		S275J2+N									767 x 60		S275J2+N							
			950 x 55		S275J2+N	20		S275J2+N						950 x 50		S275J2+N	18		S275J2+N				
			–	–										–	–								
27			700 x 45		S275J2+N	18		S275J2+N	38	6	43.5			700 x 40		S275J2+N	15		S275J2+N	41	6	39.0	
			773 x 45		S275J2+N									772 x 40		S275J2+N							
			950 x 65		S275J2+N	20		S275J2+N						950 x 60		S275J2+N	18		S275J2+N				
			–	–										–	–								
21			–	–		20		S355J2+N	23	3	29.5			–	–		20		S355J2+N	25	3	27.5	DOUBLE TRACK – 3 GIRDERS – CENTRE GIRDER
			675 x 70		S355J2+N									675 x 60		S355J2+N							
			900 x 50		S355J2+N	20		S355J2+N						900 x 45		S355J2+N	20		S355J2+N				
			–	–										–	–								
24			625 x 40		S355J2+N	20		S355J2+N	33	4	37.0			625 x 40		S355J2+N	20		S355J2+N	34	4	36.0	
			675 x 50		S355J2+N									675 x 50		S355J2+N							
			900 x 40		S355J2+N	20		S355J2+N						900 x 40		S355J2+N	20		S355J2+N				
			600 x 40		S355J2+N									500 x 40		S355J2+N							
27			625 x 50		S355J2+N	20		S355J2+N	44	6	48.5			625 x 50		S355J2+N	20		S355J2+N	44	6	48.5	
			675 x 60		S355J2+N									675 x 60		S355J2+N							
			900 x 50		S355J2+N	20		S355J2+N						900 x 50		S355J2+N	20		S355J2+N				
			700 x 50		S355J2+N									700 x 50		S355J2+N							

KEY

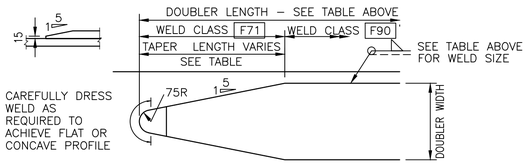
① SEE TABLE ON DRAWING NR/CIV/SD/1002 FOR SELECTION OF HEAVY GIRDERS AND LIGHT GIRDERS.

② MAIN GIRDER CAMBER IS BASED ON DEAD LOAD DEFLECTION PLUS HALF OF LIVE LOAD DEFLECTION. NO ALLOWANCE IS INCLUDED FOR ANY FABRICATION EFFECTS. GIRDER SELF WEIGHT DEFLECTION AS SHOWN.

③ WEIGHT IS AS FABRICATED UNIT FOR SQUARE SPAN WITH GIRDER EXTENDING 345 BEYOND CENTRE OF BEARINGS. ASSUMED 2% ALLOWANCE FOR WELDS ETC. INCLUDING: BEARING PLATES. EXCLUDING: INSPECTION UNITS.

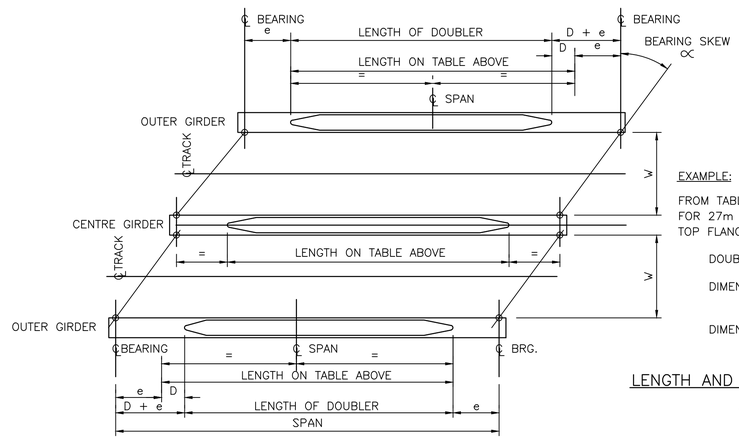
④ SPACING & NUMBER OF INTERMEDIATE DIAPHRAGMS MAY BE ADJUSTED TO SUIT DETAILS. THE SPACING 'S' SHALL NOT EXCEED THE MAXIMUM SHOWN AT MID SPAN 'T'.

(G1) DIAPHRAGM



DOUBLER FLANGE

DOUBLER WIDTH	LENGTH OF TAPER
500	950
550	1075
600	1200
625	1265
700	1450



BRIDGE SKEW ∝	DIMENSION D (mm)
0° – 20°	0
> 20° – 30°	150
> 30° – 40°	300
> 40° – 50°	400
> 50° – 55°	500

EXAMPLE: 25m SPAN. = ∝ 55°

FROM TABLE: D=500
FOR 27m SPAN.
TOP FLANGE: LENGTH OF DOUBLER = 23000 FOR 0° SKEW.

DOUBLER LENGTH = (23000–500) = 22500 } FOR 55° SKEW

DIMENSION $e = \frac{(27000-23000)}{2} = 2000$

DIMENSION D + e = 500 + 2000 = 2500

LENGTH AND LOCATION OF DOUBLER FLANGES TO OUTER GIRDERS

1. FOR SPANS INTERMEDIATE TO THOSE SHOWN, SIZES & DIMENSIONS FOR THE NEXT GREATER SPAN STATED SHALL BE USED.
2. GIRDERS SUITABLE FOR SINGLE TRACK DECKS (2750 – 3200). TRACK ECCENTRICITY 150. BALLAST DEPTH 400. (BELOW SLEEPER).
3. ANY ADDITIONAL WELDS NECESSARY TO MAKE UP LENGTH SHALL BE SUBJECT TO ENGINEERS WRITTEN APPROVAL UNDER THE CONTRACT. BUTT WELDS TO BE FULL PENETRATION WITH EDGES GROUND FLUSH. NO BUTT WELDS SHALL BE COINCIDENT OR WITHIN 75mm OF DIAPHRAGM POSITIONS OR OTHER WELDED ATTACHMENTS.
4. NO FLANGE OR WEB BUTT WELDS SHALL OCCUR BETWEEN THE TWO CENTRAL DIAPHRAGMS.
5. MATERIAL FOR WEBS, TOP FLANGE, INTERMEDIATE DIAPHRAGMS AND INTERMEDIATE STIFFENERS MAY BE SUBSTITUTED FOR STEEL WITH IMPROVED ATMOSPHERIC CORROSION RESISTANCE IF TOP WELDS ARE LAST TO BE MADE WHEN BOX IS ASSEMBLED.

Rev	Date	Description of revision	Design'd	C'kd
B	Dec 10	EUROCODE ISSUE	CH	MM
A	Dec 09	ORIGINAL ISSUE	CH	MM

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Approved	P Clark	Senior Programme Engineering Manager (Building & Civils)	P.C.	Dec–10
	Name	Position	Signature	Date

Master copy with original signatures held by Network Rail HQ CIVIL ENGINEERING STANDARD DESIGN

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STANDARD HALF THROUGH UNDERBRIDGES
BOX GIRDERS & TRANSVERSE RIBBED FLOORS

SINGLE TRACK – 2 GIRDERS & DOUBLE TRACK – 3 GIRDERS MAIN GIRDER SIZES

Scale	N.T.S.	
Drawing Number	NR/CIV/SD/1070	B

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