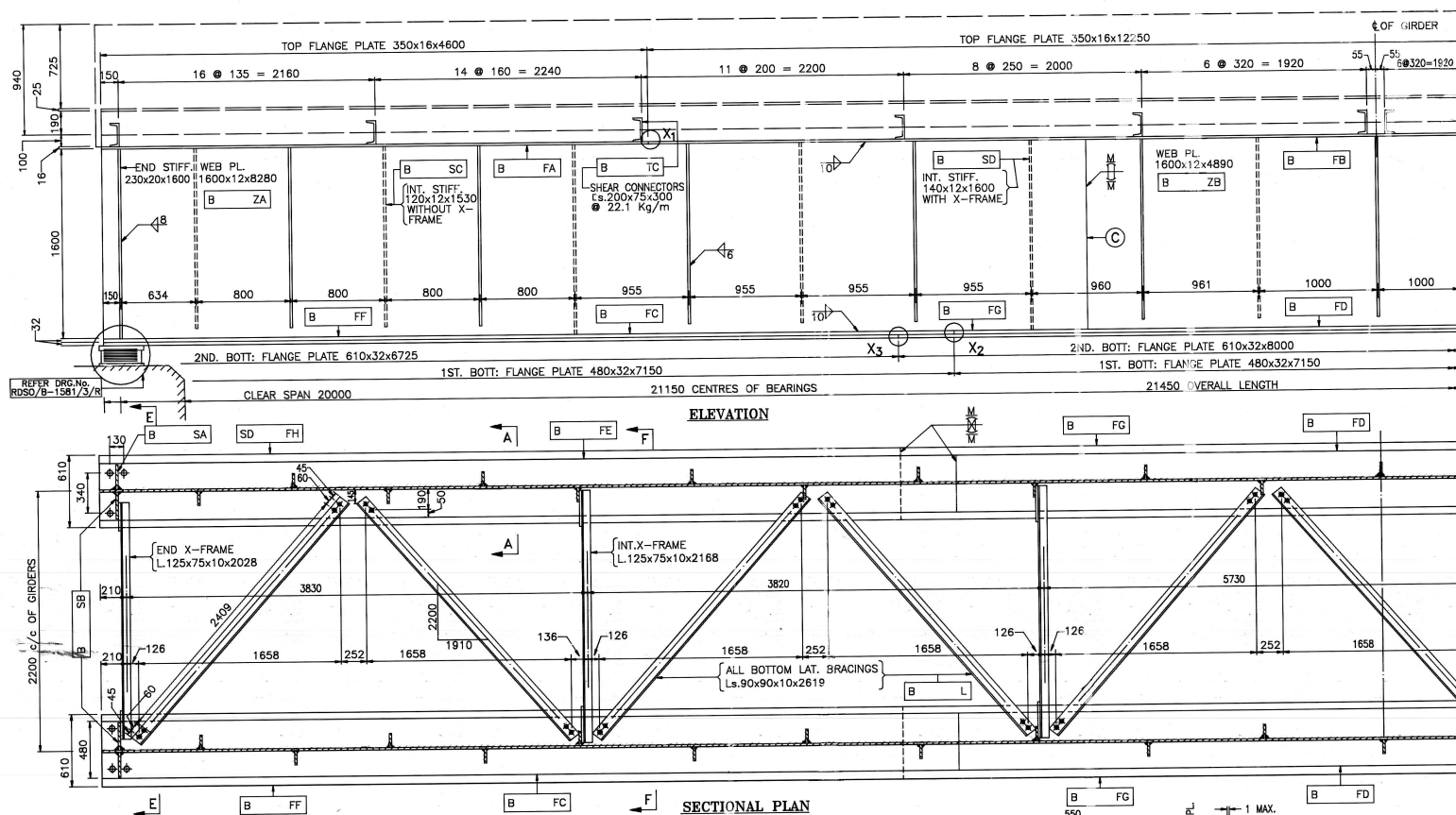


WELDED JOINT FOR WEB PLATE
DETAIL AT C

RELATED DRAWINGS

DESCRIPTION	REFERENCE
1. DETAILS OF DECK SLAB	RDSO/B-1581/1/R
2. DETAILS OF X-FRAME	RDSO/B-1581/2/R
3. DETAILS OF BEARING	RDSO/B-1581/3/R
4. ASSEMBLY DRG. PART & SHIPPING LIST	RDSO/B-1581/4/R
5. WELDING SEQUENCE	BA - 11087

MEMBER	ACTUAL STRESS kg/mm ²	PERM. STRESSES kg/mm ²
TOP OF SLAB	0.71	0.85
TOP FLANGE PL.	13.19	15.40
BOTT. FLANGE PL.	12.90	14.20
WEB PLATE (SHEAR)	7.90	9.40
WEB PL. TIP OF INT. STIFF.	10.72	10.89

WEIGHT OF SPAN IN TONNES		
SPAN	BEARING	TOTAL
26.2	0.70	26.9

1. THE TOTAL WEIGHT OF SPAN INCLUDES WEIGHT OF RIVET HEADS AND WELDS @ 1%.
2. WEIGHT OF BEARINGS EXCLUDES WEIGHT OF ELASTOMERIC PAD.

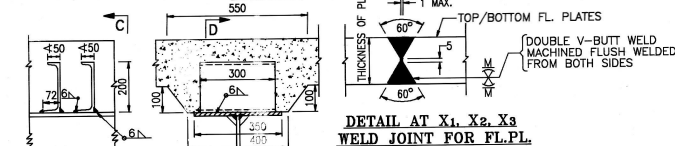
THIS DRAWING IS THE PROPERTY OF
RESEARCH DESIGNS AND STANDARDS ORGANISATION
(MINISTRY OF RAILWAYS)
LUCKNOW-226011 INDIA
AND SHALL NOT BE USED, COPIED OR REPRODUCED IN
PART OR WHOLE, WITHOUT PRIOR CONSENT IN WRITING.

R.D.S.O.

MODIFIED B.G. LOADING-1987
COMPOSITE GIRDER-WELDED TYPE
20.0m SPAN
(STRAIGHT TRACK)
DETAILS OF MAIN GIRDER

6-12-1990

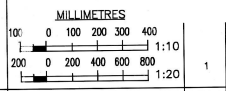
RDSO/B- 1581/R



SECTION ON DD. SECTION ON CC.
TYPICAL DETAIL OF FLEXIBLE
CHANNEL SHEAR CONNECTOR

STEEL FOR ALL
OTHER PARTS
IS:2062-1984 Gr.B
FULLY KILLED &
FULLY NORMALIZED
MATERIAL FOR LATERAL
BRACING X-FRAME Ls.
GUSSET
SCHEME OF SYMBOLS
FOR WELDING
MANUAL METAL ARC
WELDING
ELECTRODES
SUB-MERGED ARC
WELDING
WIRE FLUX COMBINATION
FOR SAW
FEDERATION & ERECTION-IRS. B1-1979

IS:2062-1984 Gr.B
FULLY KILLED &
FULLY NORMALIZED
IS:228-1975 OR
IS:2062-1984
Gr.A SEMI-KILLED
IS:813-1981
IS:9595-1980
IRS. M-28
IS:4353-1967
IRS. M-39
FOR SAW
FEDERATION & ERECTION-IRS. B1-1979



SPECIFICATION

SCALE

ALT.

DESCRIPTION

DATE

01.08.96

REDRAWN USING
AUTOCAD # 11.

19. THIS SET OF DRAWINGS SUPERSEDES DRAWINGS RDSO/B-1581, 1581/1, 1581/2, 1581/3 & 1581/4.
18. SHUTTERING DETAILS FOR TEMPORARY STAGING ARE NOT SHOWN IN THIS DRAWING.
17. THE DESIGN IS NOT CHECKED FOR SEISMIC FORCES.
16. THE TOP FLANGE OF THE CHANNEL SHEAR CONNECTORS MAY BE CUT BY NOT MORE THAN 25 mm BEFORE WELDING FOR EASE OF CONCRETING, AS SHOWN IN SECTION ON DD.
15. THIS DESIGN IS SUITABLE ONLY FOR STRAIGHT TRACK.
14. FOR NOTES ON INTERMEDIATE STIFFENERS, REFER TO DRG. No. RDSO/B-1581/2/R.
13. ALL RIVETS ARE 22 DIA. IN 23.5 DIA. HOLE. ALL BOLTS IN LIFTING BEAM ARE OF 22 DIA. TURNED AND FITTED BOLTS TO IS:1367 PROPERTY CLASS 8.8.
12. END STIFFENERS SHALL BE CONNECTED TO THE FLANGES & WEB BY 8 mm FILLET WELD ALROUND.
11. THE BOTTOM FLANGE OF CHANNEL SHEAR CONNECTOR SHALL BE REDUCED BY CUTTING FROM 75 mm TO 72 mm FOR PROVIDING FILLET WELD IN ACCORDANCE WITH CL. 5.1.2.9 OF I.R.S. WELDED BRIDGE CODE -1972.
10. TRACK ON BRIDGE SHOULD BE PROVIDED WITH GUARD RAILS.
9. CHANNEL SHEAR CONNECTORS MAY BE WELDED TO TOP FL. PRIOR TO WELDING OF FLANGES TO WEB.
8. DESIGN IS SUITABLE FOR BALLAST CUSHION FROM 300 TO 400 mm.
7. ALL WELDS TO BE MADE USING APPROVED WELDING PROCEDURES AND BY QUALIFIED WELDERS.
6. BUTT WELDING IN FLANGE PLATES AS WELL AS WEB PLATES SHALL BE DONE PRIOR TO JOINING WEB & FLANGE. IN ADDITION, THE BUTT WELD SURFACES SHALL BE FULLY FLUSHED BOTH AT TOP & BOTTOM BY GRINDING/MACHINING. THE BUTT WELDS SHALL ALSO BE CHECKED BY RADIOGRAPHIC METHODS.
5. AUTOMATIC SUB MERGED ARC WELDING SHOULD BE EMPLOYED FOR BUTT WELDS IN FLANGES, WEB AND FLANGE TO WEB FILLET WELDS. OTHER WELDS ALSO TO BE MADE BY SUBMERGED ARC OR CO2 WELDING PROCESS TO THE MAXIMUM EXTENT POSSIBLE.
4. GIRDER HAS BEEN DESIGNED FOR UNPROTECTED CONSTRUCTION.
3. THIS DESIGN IS FOR 4 MILLION CYCLES OF LOADING FOR FATIGUE CONSIDERATIONS.
2. THE DESIGN IS IN ACCORDANCE WITH I.R.S. BRIDGE RULES - 1984, STEEL BRIDGE CODE - 1977, WELDED BRIDGE CODE - 1972 AND CONCRETE BRIDGE CODE WITH A & C SLIP TILL DEC. '89'.
1. ALL DIMENSIONS ARE IN MILLIMETRES.

NOTE

DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	
FILLET WELD (BOTH SIDES)	
SQUARE BUTT WELD	
DOUBLE V-BUTT WELD	
SHOP RIVETS	
FIELD RIVETS	
ANCHOR BOLTS	

CALCULATION REGISTER NO 66/89
PAGES DONE BY- AKHIL KHARE
CHECKED BY- T.R. SURENDRANATH

DRAWN BY- MOHD. AZHAR
TRACED BY- MOHD. AZHAR
CHECKED BY- P.S. KARDAM

T.R. SURENDRANATH
ADE/B&S

JOS/B&S M. SATHEESH

DRAWN BY-
(IN AUTOCAD)
COMPARED BY-

FLOPPY NO BSRF/0007

Floppy No. - BSRF/0007

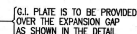
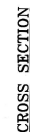


Figure 10 consists of two cross-sectional diagrams of a ballast wall and cushion assembly. The left diagram shows a side view of the ballast wall, which is a trapezoidal structure. It is supported by a steel girder. A G.I. plate, 250 wide, is bolted to the top of the wall. The bolts are 12 mm diameter and spaced at suitable intervals. The ballast cushion is shown above the wall. Dimensions include 45 mm for the wall thickness at the top, 87.5 mm for the wall thickness at the base, and 150 mm for the base width. The right diagram shows a top-down view of the ballast wall and cushion. It shows the ballast cushion, ballast wall, and steel girder. A G.I. plate, 250 wide, is bolted to the top of the wall. The bolts are 12 mm diameter and spaced at suitable intervals. The ballast cushion is shown above the wall. Dimensions include 45 mm for the wall thickness at the top, 87.5 mm for the wall thickness at the base, and 150 mm for the base width. The right diagram also shows the R.C.C. slab and the dowel bar (DIA. 10 AT SUITABLE INTERVAL) connecting the ballast wall to the R.C.C. slab. The distance between the ballast wall and the R.C.C. slab is 100 mm. The total width of the ballast wall and cushion is 2115 mm. The width of the ballast wall is 150 mm. The width of the R.C.C. slab is 150 mm. The width of the steel girder is 2115 mm.

1 MILLIMETRES

1:20	1
------	---

01.08.96

RDS0/B-1581/1/R

BAR MARK	DIA OF BAR	SPACING OF BARS mm	LENGTH IN mm	TOTAL NO. REQD.	BENDING SHAPE DIMENSIONS SHOWN ARE OVER OUTER EDGES	WEIGHT PER METRE IN kg	TOTAL WEIGHT IN kg
a	16	300	7030	72		1.58	803.36
b	16	300	5160	72		1.58	587.04
c	16	300	6490	73		1.58	748.84
d	16	300	2850	71		1.58	319.70
e	16	300	2175	144		1.58	494.40
f	10	300	570	144		0.62	50.99
g	AS SHOWN IN DRAWING	21445	56		0.62	744.68	
h	12	AS SHOWN IN DRAWING (AVERAGE)	456	432		0.89	175.33
h'	12	AS SHOWN IN DRAWING (AVERAGE)	358	1008		0.89	321.20

DESCRIPTION	DECK SLAB
WEIGHT	81725.00 kg
CUBICAL QUANTITY	32.69 cu
NET WEIGHT OF BAR # 16	2953.40 kg
NET WEIGHT OF BAR # 12	496.50 kg
NET WEIGHT OF BAR # 10	795.50 kg
NET WEIGHT OF STEEL +10% WASTAGE	4670.00 kg

S. NO.	DESCRIPTION	DRAWING NO.
1	DETAILS OF MAIN GIRDER	RDSO/B-1581/R
2	DETAILS OF CROSS-FRAME	RDSO/B-1581/2/R
3	DETAILS OF BEARING	RDSO/B-1581/3/R
4	ASSEMBLY DRAWING, PART AND SHIPPING LIST	RDSO/B-1581/4/R

NOTE

ADE/B&S- T R S NATH

ADE / R&S - T R S NATH IDS / R&S - M SATHEESHI

DRAWN BY— (IN AUTOCAD) COMPARED BY—	
---	--

SPECIFICATION

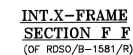
SCALE

ALT

DESCRIPTION

01.08.96

File No. ASRF/0007

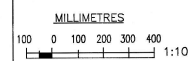


7. LIFTING SHOULD BE DONE SIMULTANEOUSLY AT THE TWO JACKING LOCATIONS AT ONE END OF SPAN.
8. IN PAD PLATE COUNTERSUNK BOLTS SHALL BE PROVIDED SO THAT THE HEAD OF BOLTS DO NOT PROJECT OUT OF PAD PLATE SURFACE AT BOTTOM.
9. LIFTING BEAMS ONLY ALL BOLTS ARE OF 22 DIA. TURNED AND FITTED BOLTS TO IS:1367-PROPERTY CLASS 6.6.
10. INTERMEDIATE STIFFENERS CONNECTED TO THE X-FRAME SHALL BE FITTED AGAINST THE BOTTOM FLANGE. THEY SHALL BE CONNECTED TO THE WEB BY 6mm CONTINUOUS FILLET WELD ON BOTH SIDES AND THE WELD SHALL BE TERMINATED 70mm TOP OF THE PAD PLATE. BOTTOM FLANGE SHALL BE WELDED TO THE TOP FLANGE BY 6mm CONTINUOUS FILLET WELD AROUND BUT NOT EXTENDED TO BOTTOM FLANGE.
11. INTERMEDIATE STIFFENERS OTHER THEN THOSE CONNECTED TO THE X-FRAME SHALL BE TERMINATED AT 70mm ABOVE THE TOP OF THE PAD PLATE. BOTTOM FLANGE SHALL BE WELDED TO THE TOP FLANGE BY 6mm CONTINUOUS FILLET WELD AROUND BUT NOT EXTENDED TO BOTTOM FLANGE.
12. RIVETS HOLE ARE 23.5 DIA. FOR 22 DIA. RIVETS.
13. ALL DIMENSIONS ARE IN MILLIMETRES.

NOTE

MATERIAL FOR ALL OTHER PARTS	IS:2062-1984 GR.B. FULLY KILLED & FULLY NORMALISED
MATERIAL FOR LATERAL BRACING X-FRAME LEG GUSSETS	IS:226-1975/ IS:2062-1984 Gr.A. SEMIKILLED
SCHEME OF SYMBOL FOR WELDING	IS:813-1961
MANUAL METAL ARC WELDING	IS:9595-1980
SUBMERGED ARC WELDING	IS:4353-1967
WIRE FLUX COMBINATION FOR SAW	IRS M-39
FABRICATION & ERECTION	IRS-B1-1979

SPECIFICATION



SCALE

ALT

D

REDRAWN USING
AUTOCAD # 11.

01.08.96

DATE

THIS DRAWING IS THE PROPERTY OF
RESEARCH DESIGNS AND STANDARDS ORGANISATION
(MINISTRY OF RAILWAYS)
LUCKNOW-226011, INDIA
AND SHALL NOT BE USED, COPIED OR REPRODUCED IN
PART OR WHOLE, WITHOUT PRIOR CONSENT IN WRITING.

R.D.S.O.

MODIFIED B.G. LOADING-1987
COMPOSITE GIRDER-WELDED TYPE
20.0m SPAN
(STRAIGHT TRACK)
DETAILS OF X-FRAME

6-12-1990

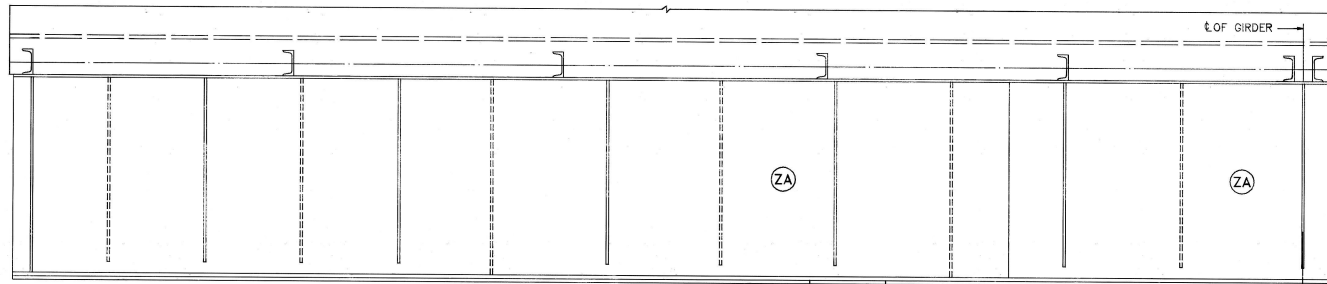
RDS0/B-1581/2/R

CALCULATION REGISTER No. 66/89		DRAWN BY:- S.K.SHARMA & R.H.SIRCAR		TRACED BY:- R.L. AGNIHOTRI			
PAGES	DONE BY- AKHIL KHARE	CHECKED BY- T.R. SURENDRANATH	CHECKED BY:- AKHIL KHARE	CHECKED BY- P.S. KARDAM	ADE/B&S - T.R. SURENDRANATH	JDS/B&S - M. SATHEESH	

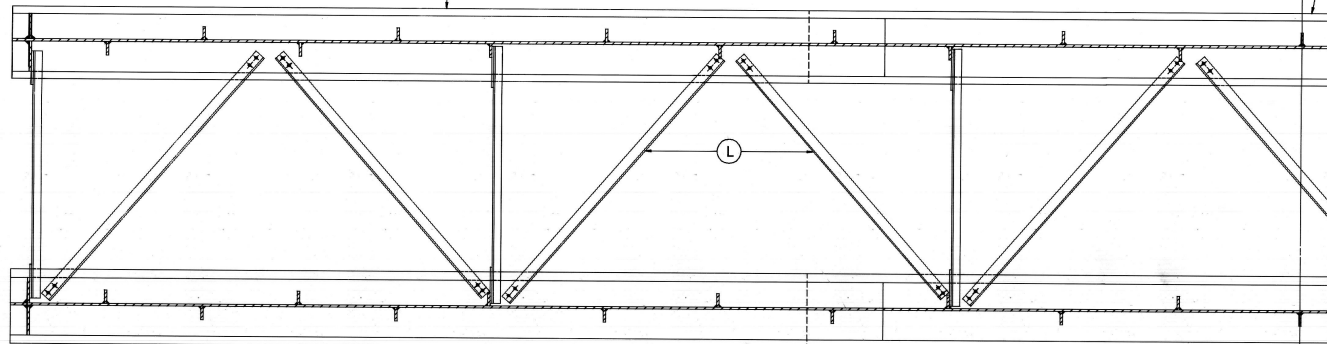
DRAWN BY—
(IN AUTOCAD)
COMPARED BY— *[Signature]*

FLOPPY No. BSRE/0012

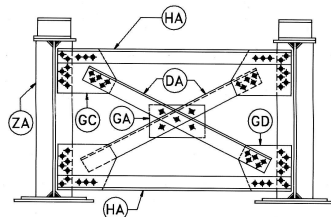
File No. BSRF/1012



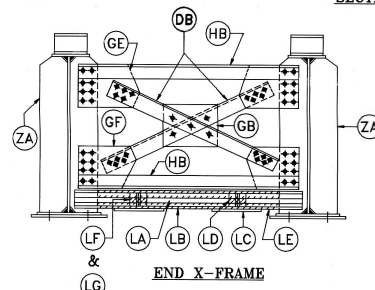
ELEVATION



SECTIONAL PLAN



INTERMEDIATE X-FRAME



END X-FRAME

SHIPPING LIST

NO. REQD.	DESCRIPTION	SIZE			SHIPPING MARK
		L	B	H	
2	GIRDER COMPLETE	21450	610	1880	(ZA)
11	LAT. BRACING L. 90 X 90 X 10	2619	—	—	(L)
8	X-FRAME HORIZ. (INT.) TOP & BOTTOM L.125 X 75 X 10	2168	—	—	(HA)
4	X-FRAME HORIZ. (END) TOP & BOTTOM L.125 X 75 X 10	2028	—	—	(HB)
8	X-FRAME DIAGONAL (INT.) L.125 X 75 X 10	2150	—	—	(DA)
4	X-FRAME DIAGONAL (END) L.125 X 75 X 10	1680	—	—	(DB)
4	INT. X-FRAME CENTRAL GUSSET	270	205	10	(GA)
2	END. X-FRAME CENTRAL GUSSET	345	270	10	(GB)
8	INT. X-FRAME TOP CORNER GUSSET	420	375	10	(GC)
8	INT. X-FRAME BOTTOM CORNER GUSSET	420	375	10	(GD)
4	END X-FRAME TOP CORNER GUSSET	485	350	10	(GE)
4	END X-FRAME BOTTOM CORNER GUSSET	485	350	10	(GF)
4	LIFTING BEAM WEB PLK.	2148	22	425	(LA)
4	" " TOP & BOT. L:150 X 150 X 16	2148	—	—	(LB)
4	" " PAD PLATES	450	364	16	(LC)
16	" " STIFFENERS L.90 X 90 X 10	393	—	—	(LD)
4	" " 20 TH. PACKING	1728	150	20	(LE)
8	" " 16 TH. PACKING	180	125	16	(LF)
4	" " 20 TH. PACKING	180	125	20	(LG)
4	BEARINGS				

5. THE SHIPPING LIST SHOWN IS FOR SINGLE SPAN ONLY.
 4. MEMBERS REQUIRED FOR TEMPORARY STAGING HAVE NOT BEEN INCLUDED IN THE PART LIST.
 3. FIELD RIVETS ARE SHOWN THUS — LIFTING ARRANGEMENT CONNECTED BY BOLTS.(SEE DRG NO. RDSO/B-1581/2-R)
 2. WHILE TRANSPORTING PROPER CARE SHOULD BE TAKEN TO SEE THAT THE SHEAR CONNECTORS ARE NOT DAMAGED.
 1. SHIPPING MARKS ARE TO BE PAINTED IN WHITE LETTERS 100 mm HIGH (AS LARGE AS THE MEMBER WILL PERMIT) ON EACH MEMBER BEFORE DESPATCH FROM THE WORKS THUS— (H)

NOTE

SPECIFICATION

NIL

SCALE

ALT.

DESCRIPTION

01.08.96

DATE

6-12-1990
 RDSO/B-1581/4/R

PART LIST

NO. REQD.	DESCRIPTION	PART OR TEMPLATE NO.
4	WEB PLATES	B ZA
2	WEB PLATES	B ZB
4	TOP FLANGE PLATES	B FA
2	" " "	B FB
2	1ST BOTTOM FLANGE PLATES	B FC
2	" " " "	B FD
2	" " " "	B FE
2	2ND BOTTOM FLANGE PLATES	B FF
2	" " " "	B FG
2	" " " "	B FH
4	STIFFENERS END	B SA
4	" " "	B SB
38	STIFFENERS INTERMEDIATE	B SC
8	" " WITH X-FRAME	B SD
8	INTERMEDIATE X-FRAME TOP & BOT. HORIZ.	B HA
4	END X-FRAME TOP & BOT. HORIZONTAL	B HB
8	INTERMEDIATE X-FRAME DIAGONAL	B DA
4	END X-FRAME DIAGONAL	B DB
4	INTERMEDIATE X-FRAME CENTRAL GUSSET	B GA
8	" " TOP CORNER GUSSET	B GC
8	" " BOT. " "	B GD
2	END X-FRAME CENTRAL GUSSET	B GB
4	" " TOP CORNER GUSSET	B GE
4	" " BOT. " "	B GF
11	LATERAL BRACINGS	B L
224	CHANNEL SHEAR CONNECTORS	B TC
4	LIFTING BEAM WEB PLATES	B LA
4	" " TOP & BOTTOM ANGLES	B LB
4	" " PAD PLATES	B LC
16	" " STIFFENERS	B LD
4	" " 20 TH. PACKING	B LE
8	" " 16 TH. PACKING	B LF
4	" " 20 TH. PACKING	B LG
4	BEARINGS	

RELATED DRAWINGS

DESCRIPTION	REFERENCE
DETAILS OF MAIN GIRDER	RDSO/B-1581/R
DETAILS OF DECK SLAB	RDSO/B-1581/1/R
DETAILS OF CROSS FRAME	RDSO/B-1581/2/R
DETAILS OF BEARING	RDSO/B-1581/3/R

THIS DRAWING IS THE PROPERTY OF
 RESEARCH DESIGNS AND STANDARDS ORGANISATION
 (MINISTRY OF RAILWAYS)
 LUCKNOW-226011 INDIA
 AND SHALL NOT BE USED, COPIED OR REPRODUCED IN
 PART OR WHOLE, WITHOUT PRIOR CONSENT IN WRITING.

R.D.S.O.

MODIFIED B.G. LOADING - 1987
 COMPOSITE GIRDER-WELDED TYPE
 20.0m SPAN
 (STRAIGHT TRACK)
 ASSEMBLY DRG., PART & SHIPPING LIST

CALCULATION REGISTER NO. 66/89
 PAGES DONE BY- AKHIL KHARE
 CHECKED BY- T.R. SURENDRANATH

DRAWN BY- R.L. AGNIHOTR
 TRACED BY- MOHD. AZHAR
 CHECKED BY- AKHIL KHARE
 CHECKED BY- PADAM SINGH
 ADE/B&S- T.R. SURENDRANATH
 JDS/B&S- M. SATHEESH

DRAWN BY-
 (IN AUTOCAD)
 COMPARED BY-
 FLOPPY NO. BSRR/0008

FLOPPY NO. BSRR/0008