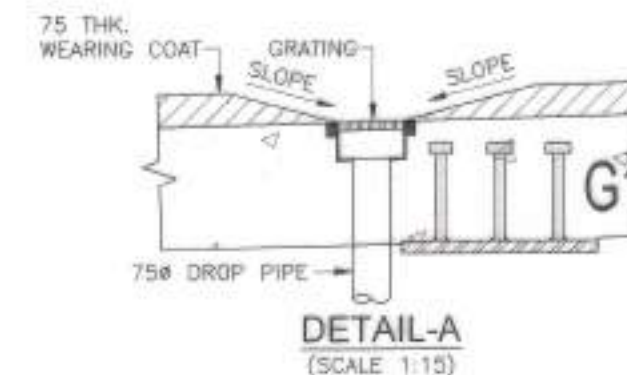
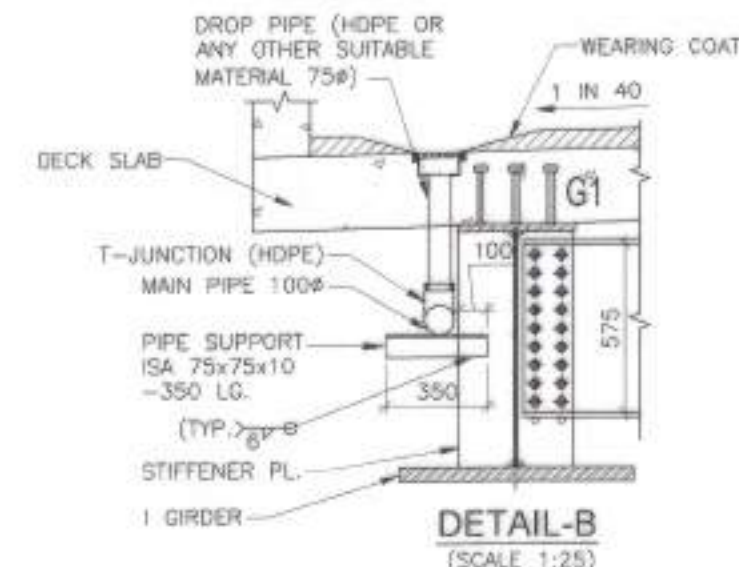


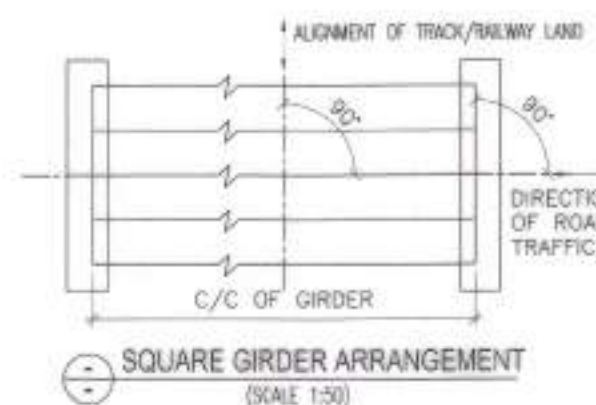
ELEVATION OF SQUARE ARRANGEMENT OVER 3 TRACKS (EXISTING/FUTURE)  
(SCALE 1:75)

### NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. NO DIMENSION SHOULD BE SCALED FROM THIS DRAWING.
- ALL STEEL FOR GIRDERS SHALL BE E350, GRADE B0 AS PER IS:2062-2011 WITH EXCEPTIONS PERMITTED AS PER CLAUSE 8 OF IRS B1.
- THE SLAB SHALL BE OF CONCRETE GRADE M-45. SLAB DETAILS ARE COMMON TO ALL SPANS AND DETAILS OF SLAB ARE AS PER DRAWINGS "DETAIL OF RCC DECK SLAB".
- THE DESIGN OF COMPOSITE I-GIRDER IS DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND CODE OF PRACTICE FOR ROAD BRIDGES: IRC:24-2010 (STEEL ROAD BRIDGES), IRC:112 - 2020 (CONCRETE ROAD BRIDGES), IRC:22-2015 (COMPOSITE CONSTRUCTION), IRC:83(I)-2018 NEOPRENE BEARINGS, IRC:83(II)-2018 METALLIC GUIDE BEARINGS, IS:3935-1966 (SHEAR CONNECTOR DESIGN CODE) & IS:4000-1982 (HSFG BOLTS).
- DESIGN LOADINGS, TEMPERATURE EFFECTS, WIND LOADS AND SEISMIC LOAD HAVE BEEN TAKEN FROM IRC:6-2017.
- THIS DRAWING IS SUITABLE FOR USE UPTO SEISMIC ZONE-V. THE SEISMIC FORCE HAS BEEN CALCULATED IN ACCORDANCE WITH IRC : 6-2017.
- CENTRIFUGAL FORCES FOR 10 DEGREE CURVE (AT 75 KM/H SPEED) HAS BEEN CONSIDERED IN THE DESIGN.
- THE DESIGNS HAVE BEEN DONE FOR 70R (WHEELED) AND A-CLASS LIVE LOADS WITH APPROPRIATE CONGESTION FACTOR AS PER IRC-6-2017 AND FOR SPECIAL 365T VEHICLE GIVEN IN IRC:6-2017.
- SNOW LOADING HAS NOT BEEN CATERED FOR IN THE DESIGN.
- GRADE OF CONCRETE FOR BED BLOCK/PIER CAP WHERE THE BEARING RESTS SHALL BE MINIMUM M-40.
- FABRICATION OF COMPONENTS OF ROB INCLUDING STUD SHEAR CONNECTOR TO BE DONE IN WORKSHOP.
- FEASIBILITY OF THIS STRUCTURE SHALL BE CHECKED AT SITE IN EVERY RESPECT BY ENGINEER IN-CHARGE BEFORE FABRICATION/ERECTION. IF THERE IS ANY CONFUSION/AMBIGUITY IN DIFFERENT DIMENSIONS PROVIDED IN THESE DRAWINGS, A FULL SCALE LAYOUT SHOULD BE PREPARED FOR THE VERIFICATIONS OF THE SAME BEFORE START OF EXECUTION OF THE WORK.
- BEFORE FABRICATION WORK IS TAKEN UP, GIRDER PIECES TO BE FABRICATED (ALONG WITH ITS EXACT DIMENSION) AND THEIR NUMBERS SHALL BE WORKED OUT. MOREOVER EXACT DIMENSIONS AND THEIR NUMBERS OF OTHER COMPONENTS SUCH AS BRACING, CROSS FRAMES, END DIAPHRAGM, BEARINGS, ETC. ALSO TO BE WORK OUT IN ORDER TO AVOID ANY PROBLEM AT LATER STAGE.
- FABRICATION OF STEEL WORKS SHALL BE DONE AS ACCORDANCE WITH IRS-B1 AND RELEVANT CODES REFERRED IN IT.
- ALL WELDS TO BE MADE BY USING APPROVED WELDING PROCEDURE AND BY QUALIFIED WELDERS AS PER PROVISIONS OF IRS WELDED BRIDGE CODE. WELDERS QUALIFIED FOR A PARTICULAR WELD POSITION, WELDING TECHNIQUE AND SIZE ONLY SHALL MAKE THE WELD.
- FOR GENERAL FEATURES OF DESIGN OF ROAD BRIDGES INCLUDING IMMEDIATE APPROACHES, THE RECOMMENDATIONS GIVEN IN IRC:5-2015 SHALL BE FOLLOWED.
- CRASH BARRIER SHALL BE PROVIDED AS PER CLAUSE NO. 109.6 OF IRC:5-2015.
- AUTOMATIC SUBMERGED ARC WELDING (SAW) SHOULD BE EMPLOYED FOR FILLET WELDS IN FLANGE TO WEB OF MAIN GIRDER. OTHER WELDS SHOULD ALSO BE DONE BY SUBMERGED ARC WELDING TO THE MAXIMUM EXTENT POSSIBLE. FCAW OR GMAW WELDING MAY BE DONE IN CASES WHERE SAW WELDING IS NOT POSSIBLE.
- METALLIC GUIDE BEARINGS ARE DESIGNED TO FUNCTION AS SEISMIC RESTRAINERS AND SHOULD BE PROVIDED ACCORDINGLY.
- WELDING MAY BE DONE IN ACCORDANCE WITH PROVISIONS OF IRS WELDED BRIDGE CODE OR THE SPECIFICATION/ CODES REFERRED IN THIS SPECIFICATION FOR THIS PURPOSE.
- RELEVANT PROVISIONS GIVEN IN LATEST REVISIONS OF RDSO REPORT NOS BS-102, BS-110, BS-111 AND BS-115 MAY BE REFERRED FOR GUIDANCE, IF REQUIRED.
- FASTENERS SUCH AS HSFG BOLTS, NUT AND WASHERS SHOULD BE IN ACCORDANCE WITH IRS B1 OR THE SPECIFICATION/CODES REFERRED IN THIS SPECIFICATION FOR THIS PURPOSE.
- THE METALLISING AND PAINTING SHALL BE DONE AS PER PARA 39.1 OF IRS B1.
- ALL HOLES ARE 23.5 DIA. FOR 22 DIA. HSFG BOLTS OF PROPERTY CLASS 8.8 EXCEPT WHERE OTHERWISE SHOWN.
- GUIDELINES REGARDING USE OF HIGH STRENGTH FRICTION GRIP(HSFG) BOLTING ASSEMBLIES ON BRIDGES ON INDIAN RAILWAYS VIDE REPORT NO. BS-111 (REVISION 7) ISSUED BY RESEARCH DESIGN & STANDARD ORGANIZATION(RDSO), LUCKNOW SHALL BE FOLLOWED.
- THE DRAINAGE ARRANGEMENT SHALL HAVE MINIMUM 1 IN 100 SLOPE AND SUITABLE GRATINGS TO PREVENT INGRESS OF DIRT/CARBAGE INTO THE PIPES.
- THE WATER COLLECTED IN DRAINAGE SYSTEM SHALL NOT BE LEAD TO TRACKS IN ANY CASE AND IT SHALL BE CONNECTED TO PROPER STORM WATER DRAINAGE OR PROPERLY GROUND WATER RECHARGE ARRANGEMENT.
- THIS DRAWING IS SUITABLE FOR STANDARD ROAD ARRANGEMENTS SHOWN IN THIS DRAWING ONLY.
- SUITABLE UTILITY DUCT MAY BE PROVIDED WITHIN THE CRASH BARRIER TO CATER THE UTILITY SERVICE AS PER CL. 109.1 OF IRC:5-2015.



RELATED DRAWINGS		
SR.NO.	DESCRIPTION	REFERENCE
1	DETAILS OF MAIN GIRDER, SPICE JOINT & LONGITUDINAL SEISMIC STOPPER	RDSO/B-11781/1
2	PLAN FOR 5-GIRDER ARRANGEMENT	RDSO/B-11781/2
3	X-SECTIONAL DETAILS FOR 5-GIRDER LEAVES	RDSO/B-11781/3
4	DETAILS OF BENT GUSSETS, STUD SHEAR CONNECTOR AND CAMBER DIAGRAM	RDSO/B-11781/4
5	DETAILS OF ELASTOMERIC BEARING	RDSO/B-11781/5
6	DETAILS OF METALLIC GUIDED BEARING	RDSO/B-11781/6
7	GENERAL LAYOUT PLAN OF BEARINGS AND PEDESTAL ARRANGEMENT	RDSO/B-11781/7
8	DETAILS OF RCC DECK SLAB	RDSO/B-11781/8
9	DETAILS OF RCC SEISMIC RESTRAINER	RDSO/B-11781/9
10	DETAILS OF STAGING FOR DECK SLAB AND WELDING SEQUENCE	RDSO/B-11781/10
11	ASSEMBLY DRAWING	RDSO/B-11781/11
12	PART AND SHIPPING LIST	RDSO/B-11781/12
13	GENERAL NOTES	RDSO/B-11781/13
14	NOTES FOR USE OF HSFG BOLT IN BRIDGES	RDSO/B-11781/R1
15	INSPECTION ARRANGEMENT	CBS-0044

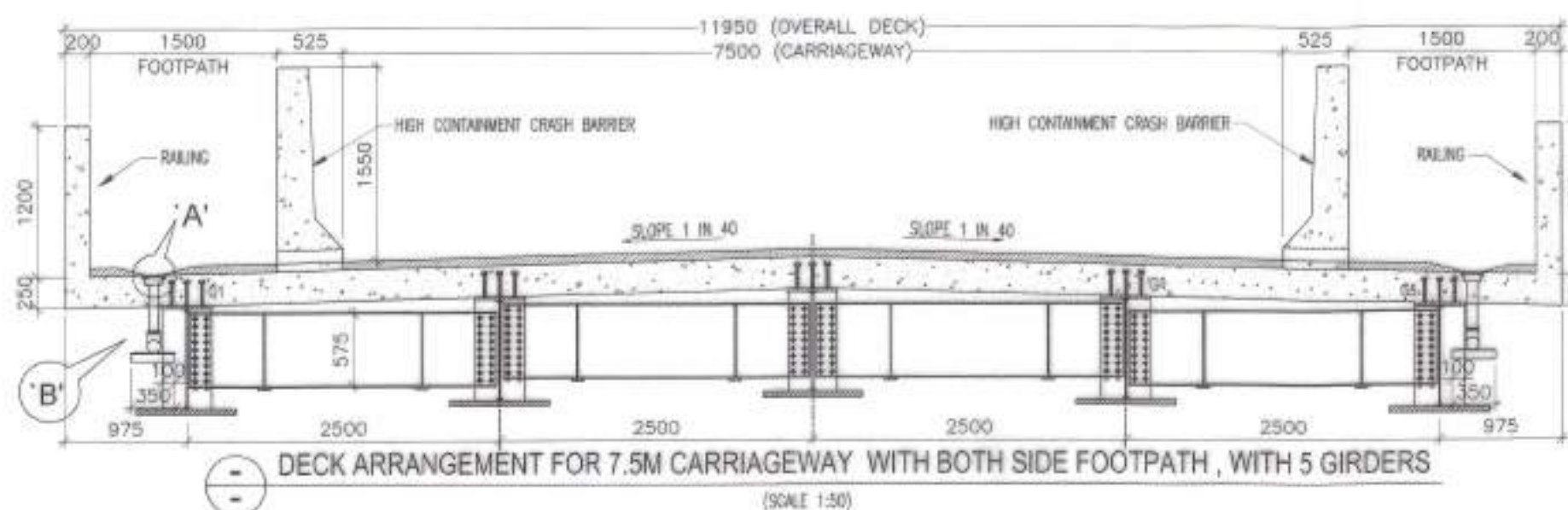


### UNFACTORED LOAD ON SPAN (FOR DESIGN OF SUBSTRUCTURE)

LOAD TYPE (IN T)	NON-SEISMIC CASE		SEISMIC CASE		SV
	DL	SIDL	LL	DL+SIDL	
VERTICAL	200.20	121.78	276.55	43.46	37.33
LATERAL	0	0	42.46*	86.93*	74.66*
LONGITUDINAL	0	0	22.65*	86.93*	74.66*

\* APPLIED AT 2395 MM ABOVE TOP OF BEARING.  
 ‡ APPLIED AT 709 MM ABOVE TOP OF BEARING.  
 @ LL INCLUDES IMPACT FACTOR AND CONGESTION FACTOR AS PER IRC:6-2017.

WEIGHT OF GIRDER (MT)	
DECK WIDTH	11950mm
STEEL	54.73
CONCRETE	144.65
SIDL (INCLUDING WEARING COAT MACADAM)	121.79
TOTAL	321.17



DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	○
HSFG BOLT	⊙
SHEAR STUD	●

DESIGN CONSULTANT :

**SPARSH ENGINEERING COMPANY PRIVATE LIMITED**  
H-55, Hamra Housing Colony, Near Nigam Park,  
Ranchi, Jharkhand - 834 002, PH- 0651-2340959

CLIENT :

**MAF**  
DEDICATED FREIGHT CORRIDOR  
CORPORATION OF INDIA LIMITED  
(A Govt. of India Enterprise)  
Ministry of Railway.

THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS & 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.

DESIGN CHECKED BY -

PRASHANT SRIVASTAVA (JE/DB&S)

DRAWING CHECKED BY -

DURGESH KUMAR SHARMA (JE/DB&S)

SCRUTINISED & CHECKED BY

SANDEEP AGARWAL (ADE/SH-IB&S)

SCRUTINISED & RECOMMENDED BY

MANISH KUMAR (DBS-VIB&S)

APPROVED BY

RAJESH KUMAR SRIVASTAVA (ED/DB&S)

**R. D. S. O.**

NAME OF WORK - "IRC-6 LOADING - 2017"  
18 M SPAN COMPOSITE WELDED  
ROB GIRDERS

TITLE - GENERAL LAYOUT

DRAWING NO:- RDSO/B-11781

SHEET NO:- 1 OF 14

SCALE:- AS SHOWN

ORIGINAL SIZE:- A1

DATE:-

MAIN DRAWING NO: RDSO/B-11781

PROVISIONAL

DRAWN BY -

SANJOY BERA

DESIGNED BY -

RAVI PRASAD

CHECKED BY -

SUDHIR KUMAR

APPROVED BY -

SHIVANSHU BISWAS

APPROVED BY -

SOHVIK SENGUPTA

APPROVED BY -

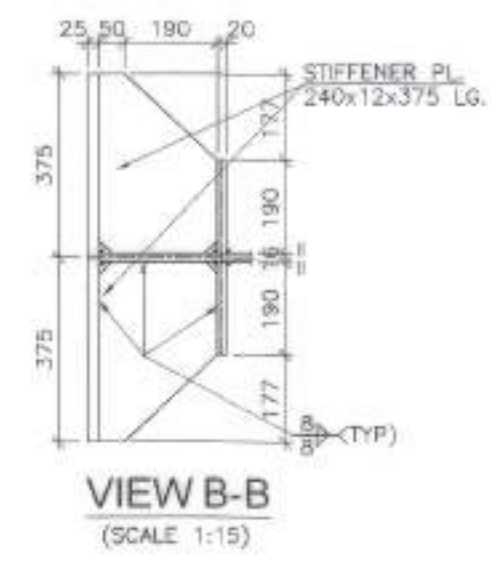
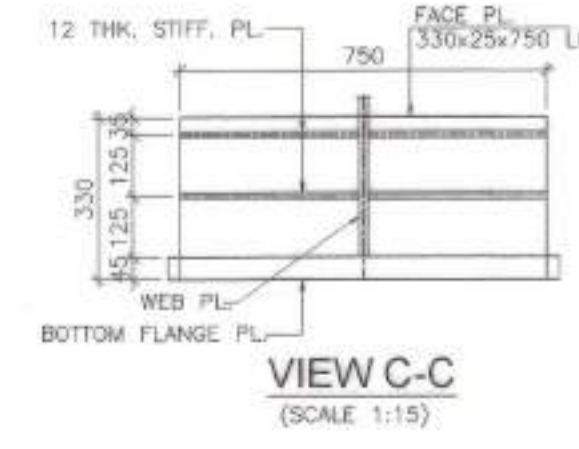
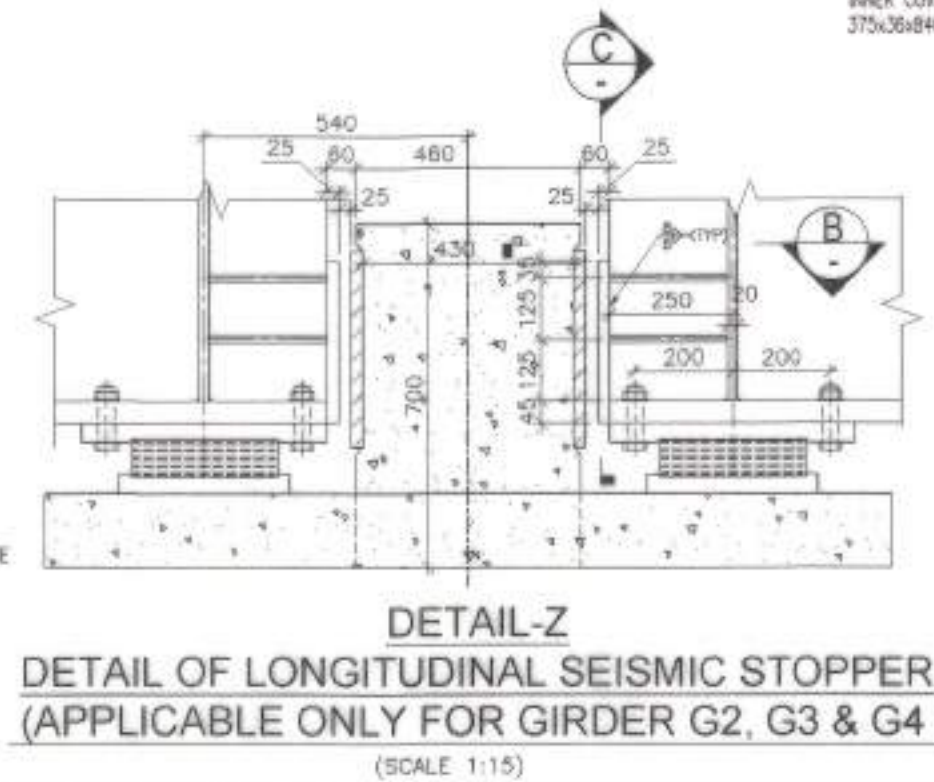
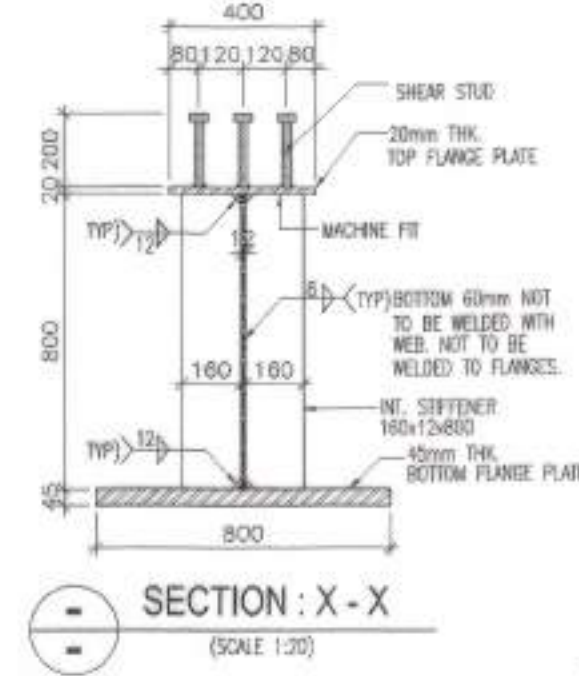
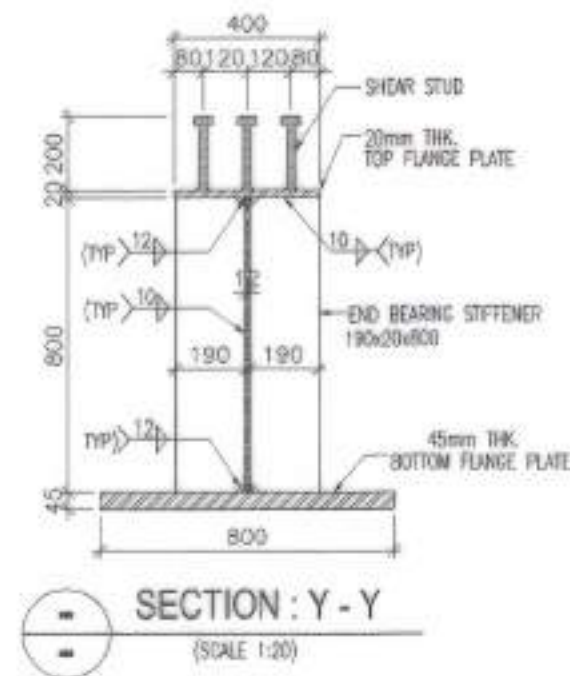
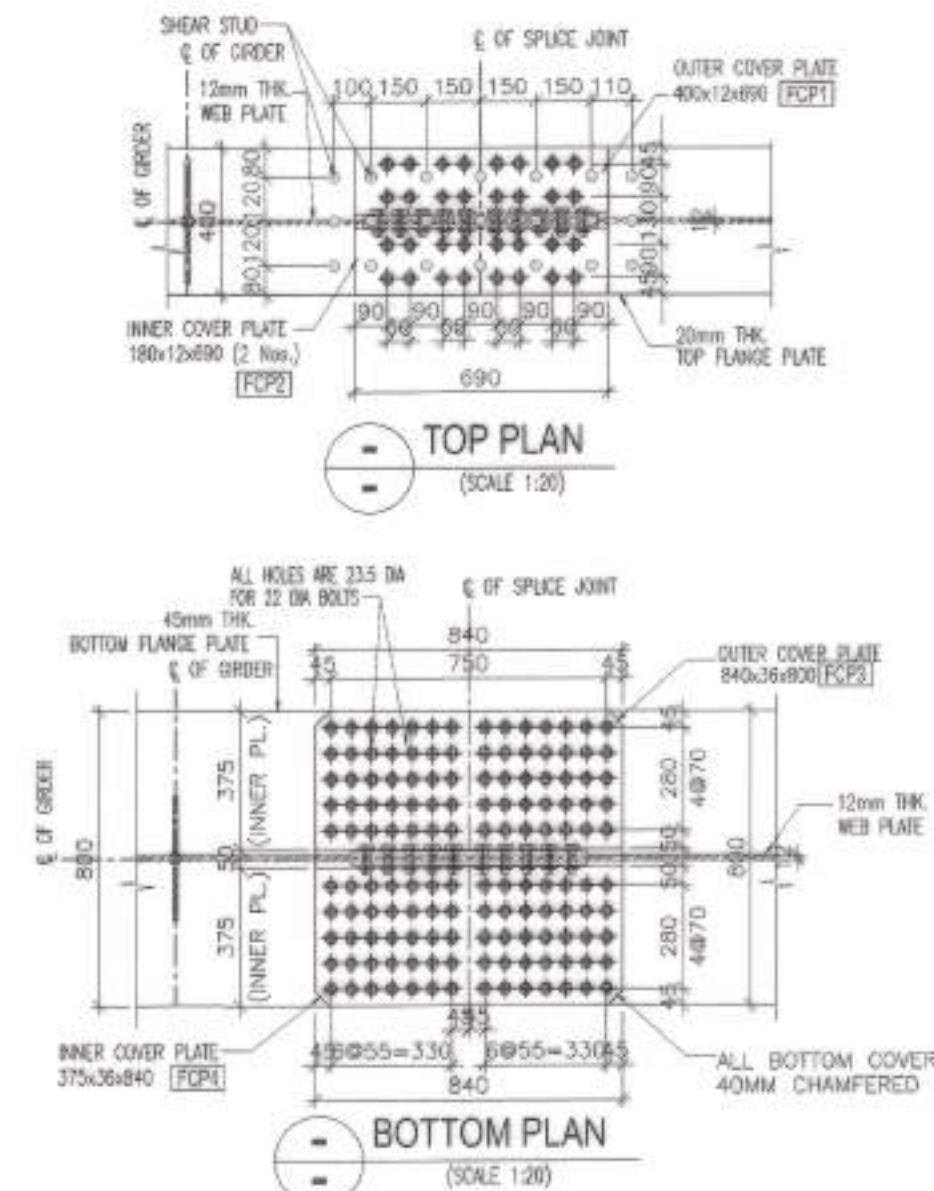
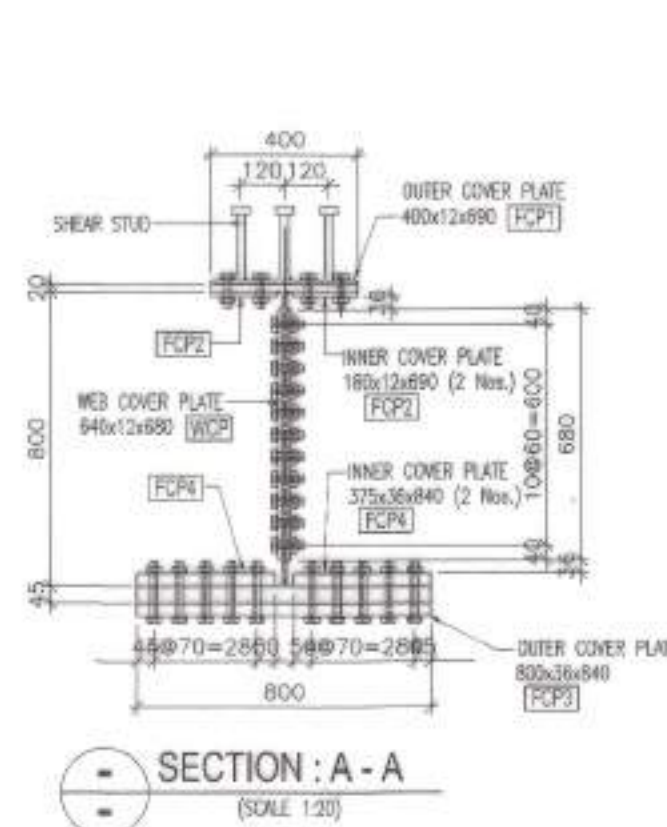
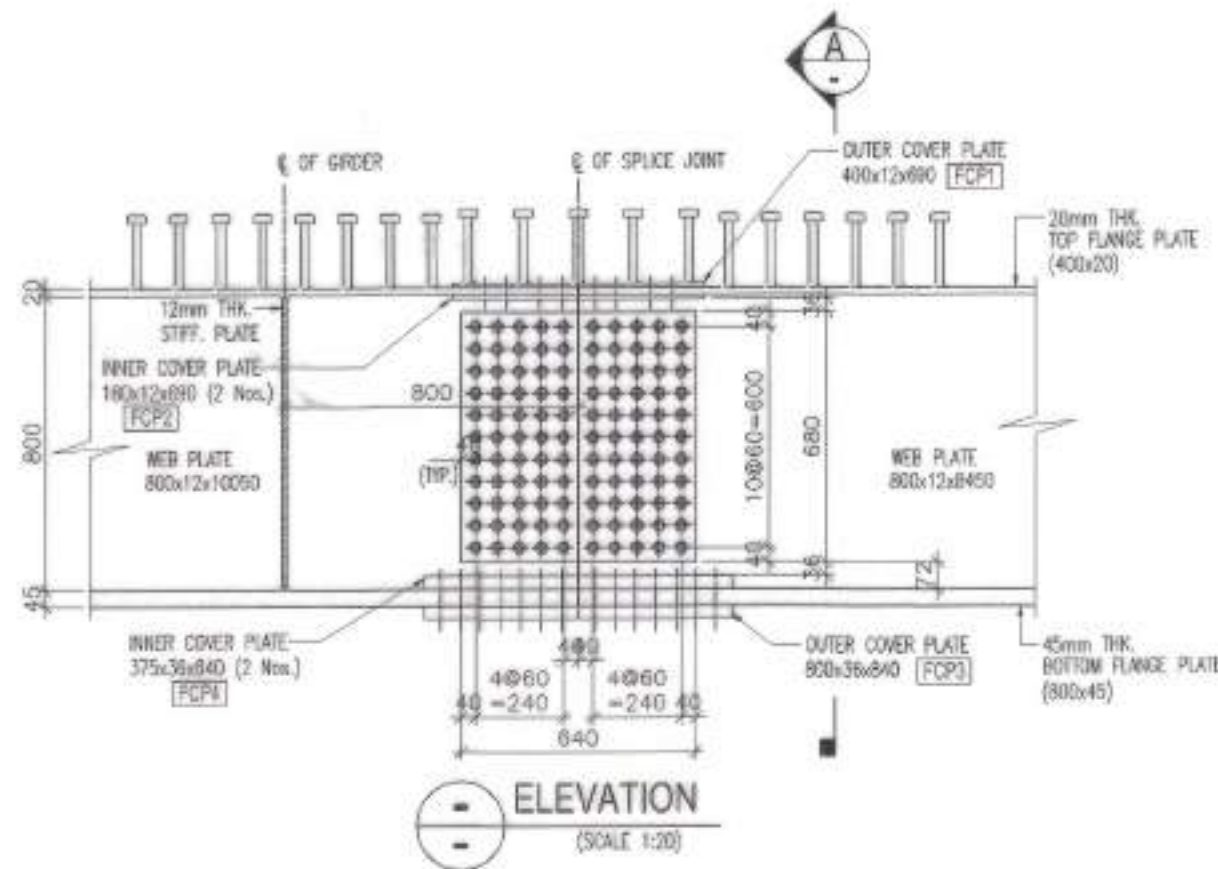
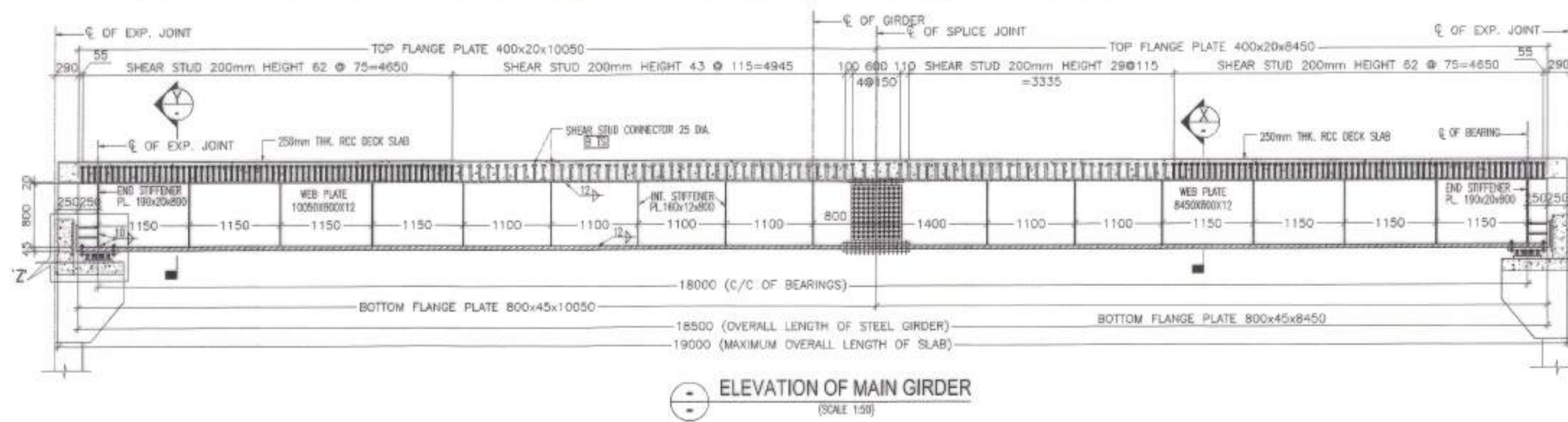
ADARSH KUMAR

SR. NO.	DESCRIPTION OF WORK	AGE/BS	DR./BS	ED/BS
1	REVISION/ALTERATIONS			



# NOTES:

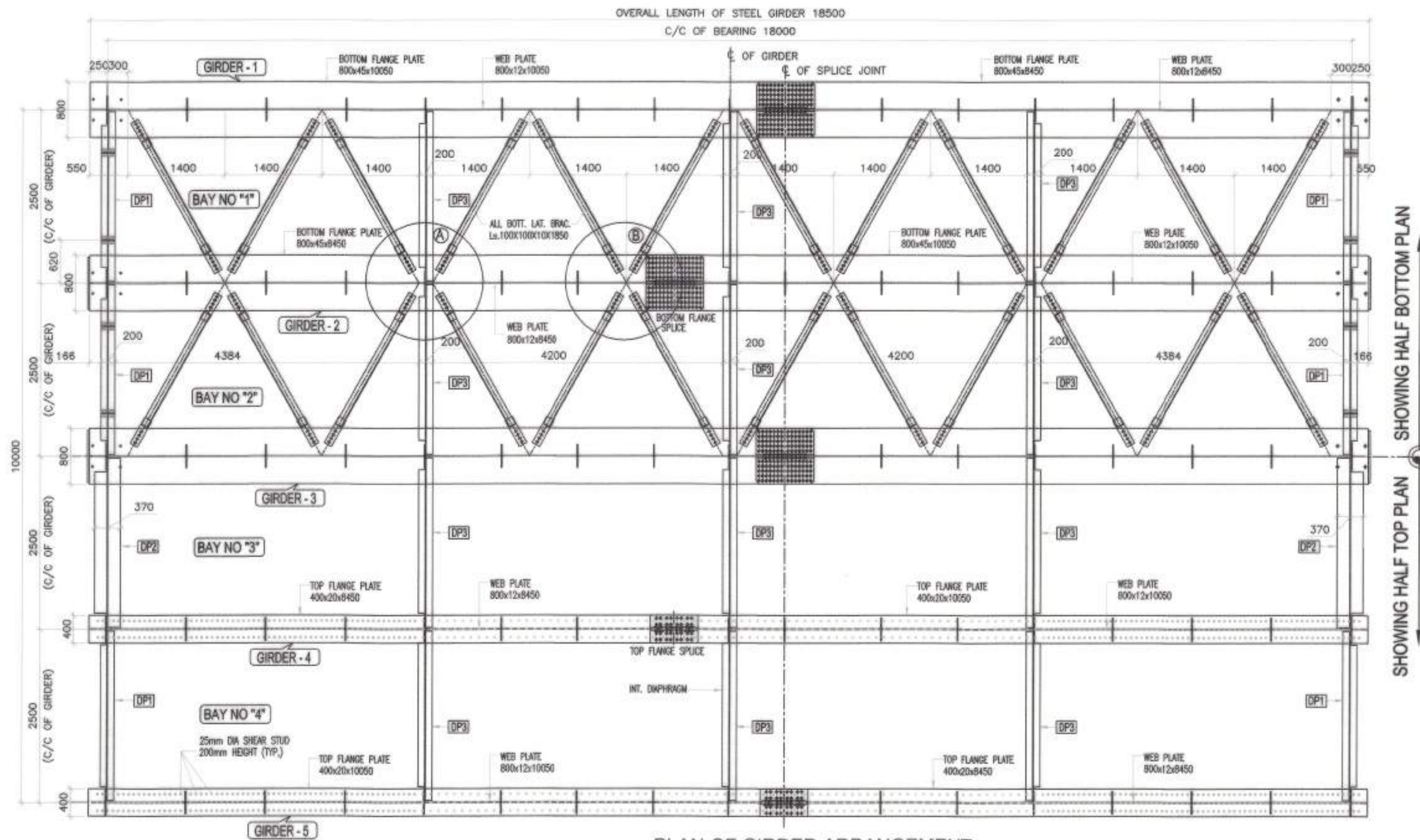
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. NO DIMENSION SHOULD BE SCALED FROM THIS DRAWING.
2. FABRICATION OF STEEL WORK SHALL BE DONE AS PER IS 8-1 AND IS 9595 WELDED BRIDGE CODE.
3. AUTOMATIC SUBMERGED ARC WELDING SHOULD BE EMPLOYED FOR FILLET WELDS IN FLANGES TO WEB. OTHER WELDS SHOULD ALSO BE DONE BY SUBMERGED ARC WELDING TO THE MAXIMUM EXTENT POSSIBLE. CO<sub>2</sub> WELDING SHALL BE PREFERRED OVER MANUAL METAL ARC WELDING.
4. ALL WELDS TO BE MADE BY USING APPROVED WELDING PROCEDURES AND BY QUALIFIED WELDERS ONLY AS PER PROVISIONS OF IS 9595.
5. ALL HOLES ARE 23.5 DIA. FOR 22 DIA. HSFG BOLTS OF PROPERTY CLASS 8.8 EXCEPT WHERE OTHERWISE SHOWN.
6. END STIFFENERS SHALL BE CONNECTED TO WEB AND FLANGES BY 10MM FILLET WELD ALL AROUND.
7. INTERMEDIATE STIFFENERS SHALL BE WELDED BY 8 MM SIZE WELDS ONLY TO THE WEB AND NOT TO THE FLANGES (THESE SHALL BE TIGHT FIT WITH FLANGES). THE BOTTOM BOMM OF STIFFENERS SHALL NOT BE WELDED TO WEB.
8. END STEEL PLATES ATTACHED TO THE GIRDER FOR SEISMIC STOPPER ALONG WITH ITS STIFFENER SHALL BE WELDED AT THE TIME OF GIRDER FABRICATION.
9. FOLLOWING PROPERTIES HAVE BEEN ASSUMED FOR STRUCTURAL STEEL IN DESIGN: (YOUNG'S MODULUS = 2.00 EDS MPA, POISSON'S RATIO = 0.30 & COEFF. OF THERMAL EXPANSION = 0.0000117/°C/UNIT LENGTH).
10. PART LIST NOS INDICATED THUS: □ AND SHIPPING LIST NOS INDICATED THUS: ○.
11. ALL EDGES SHALL BE MACHINE FINISHED IN SPLICES.



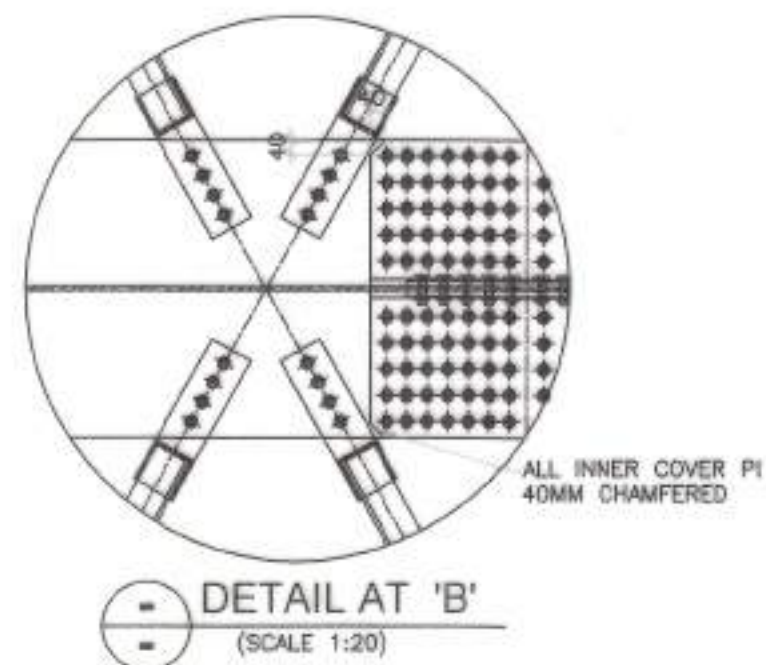
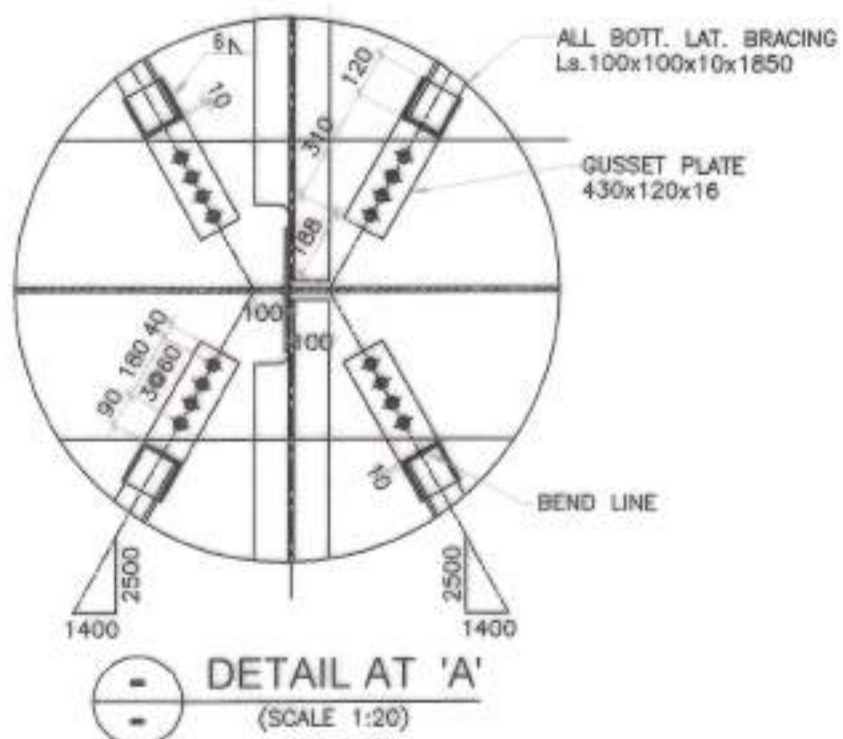
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	○
HSFG BOLT	⊙
SHEAR STUD	●

<b>DESIGN CONSULTANT</b> <b>SPARSH ENGINEERING COMPANY PRIVATE LIMITED</b> H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340659				<b>CLIENT</b> <b>DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED</b> (A Govt. of India Enterprise) Ministry of Railway.				<b>THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS &amp; 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.</b>				<b>R. D. S. O.</b> NAME OF WORK: "IRC-6 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS				SHEET NO.: 2 OF 14 SCALE: AS SHOWN ORIGINAL SIZE: A1 DATE:	
<b>DRAWN BY:</b> BANUJI BERA				<b>DESIGNED BY:</b> RAVI PRASAD				<b>CHECKED BY:</b> SUCHIR KUMAR				<b>TITLE:</b> DETAILS OF MAIN GIRDER, SPLICE JOINT & LONGITUDINAL SEISMIC STOPPER				MAIN DRAWING NO: RDSO/B-11781	
<b>SR. NO.</b> 1				<b>DESCRIPTION OF WORK</b> REVISIONAL/ALTERATIONS				<b>DESIGN CHECKED BY:</b> PRASHANT SRIVASTAVA (JED/BS)				<b>SCRUTINISED &amp; CHECKED BY:</b> SANDEEP AGARWAL (AO/BS-IBSS)				DRAWING NO: RDSO/B-11781/1	
<b>DESIGNED BY:</b> RAVI PRASAD				<b>CHECKED BY:</b> SUCHIR KUMAR				<b>SCRUTINISED &amp; CHECKED BY:</b> SANDEEP AGARWAL (AO/BS-IBSS)				<b>SCRUTINISED &amp; CHECKED BY:</b> MANISH KUMAR (DBS-VIIS&S)				PROVISIONAL	





PLAN OF GIRDER ARRANGEMENT  
(SCALE 1:50)



### NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. NO DIMENSION SHOULD BE SCALED FROM THIS DRAWING.
2. FABRICATION OF STEEL WORK SHALL BE DONE AS PER IRS: 8-1 AND IRS WELDED BRIDGE CODE.
3. FOR LATERAL BRACING ALL HOLES ARE 21.5 DIA. FOR 20 DIA. HSFG BOLTS OF PROPERTY CLASS 8.8 EXCEPT OTHERWISE SHOWN.
4. THIS DRAWING GIVES DETAILS OF SQUARE ARRANGEMENT ONLY.
5. THE END DIAPHRAGM DP2 IS TO BE PROVIDED ONLY IN SEISMIC ZONE IV AND V. FOR SEISMIC ZONES II AND III, THE DIAPHRAGM DP1 SHALL BE PROVIDED INSTEAD.
6. THE GIRDER/BAY NUMBERING IS FOR ILLUSTRATION PURPOSE ONLY. NO OTHER INFERENCE MAY BE DRAWN FROM THESE.
7. PART LIST NOS INDICATED THUS:  $\square$  AND SHIPPING LIST NOS INDICATED THUS:  $\circ$

DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	$\sim$
FILLET WELD (BOTH SIDE)	$\sim\sim$
HOLE FOR TURNED BOLT	$\circ$
HSFG BOLT	$\bullet$
SHEAR STUD	$\ast$

DESIGN CONSULTANT:

**SPARSH ENGINEERING COMPANY PRIVATE LIMITED**  
H-55, Hamu Housing Colony, Near Nigam Park,  
Ranchi, Jharkhand - 834 002, PH: 0651-2340659

CLIENT:

**DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED**  
(A Govt. of India Enterprise)  
Ministry of Railway.

THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS & 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.

DESIGN CHECKED BY:

PRASHANT SRIVASTAVA (JED/B&S)

DRAWING CHECKED BY:

DURGESH KUMAR SHARMA (JED/B&S)

SCRUTINISED & CHECKED BY:

SANDEEP AGARWAL (ADE/SS-II/B&S)

MANISH KUMAR (DSB-VI/B&S)

RAJESH KUMAR SRIVASTAVA (ED/B&S)

**R. D. S. O.**

NAME OF WORK: "IRC-6 LOADING - 2017"

18 M SPAN COMPOSITE WELDED ROB GIRDERS

TITLE: PLAN FOR 5-GIRDER ARRANGEMENT

DRAWING NO.: RDSO/B-11781/2

SHEET NO.: 3 OF 14

SCALE: AS SHOWN

ORIGINAL SIZE: A2

DATE: -

MAIN DRAWING NO: RDSO/B-11781

PROVISIONAL

DRAWN BY:

SANJOY BERA

DESIGNED BY:

RAVI PRASAD

CHECKED BY:

SUDHIR KUMAR

APPROVED BY:

KHOWINISH BISWAS DY CPW/KKK

APPROVED BY:

SOUVIK SENSUPTA GM/CIVIL/KKK

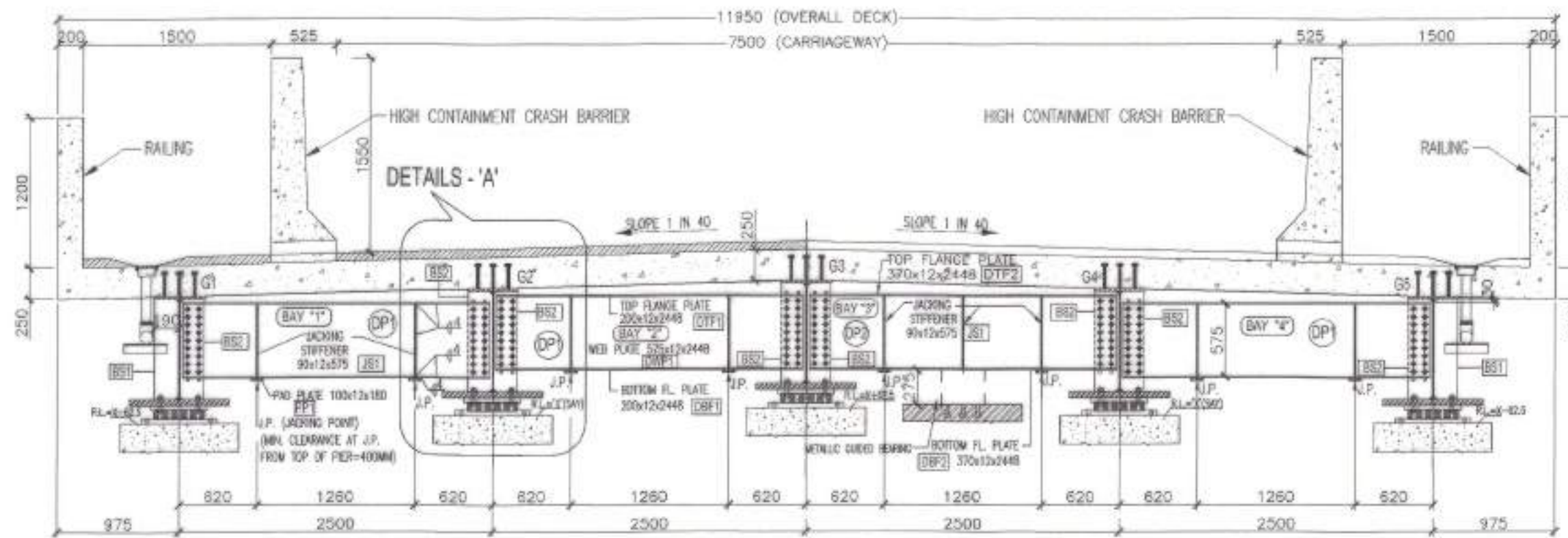
APPROVED BY:

AJAY KUMAR CGM/CIVIL/KKK

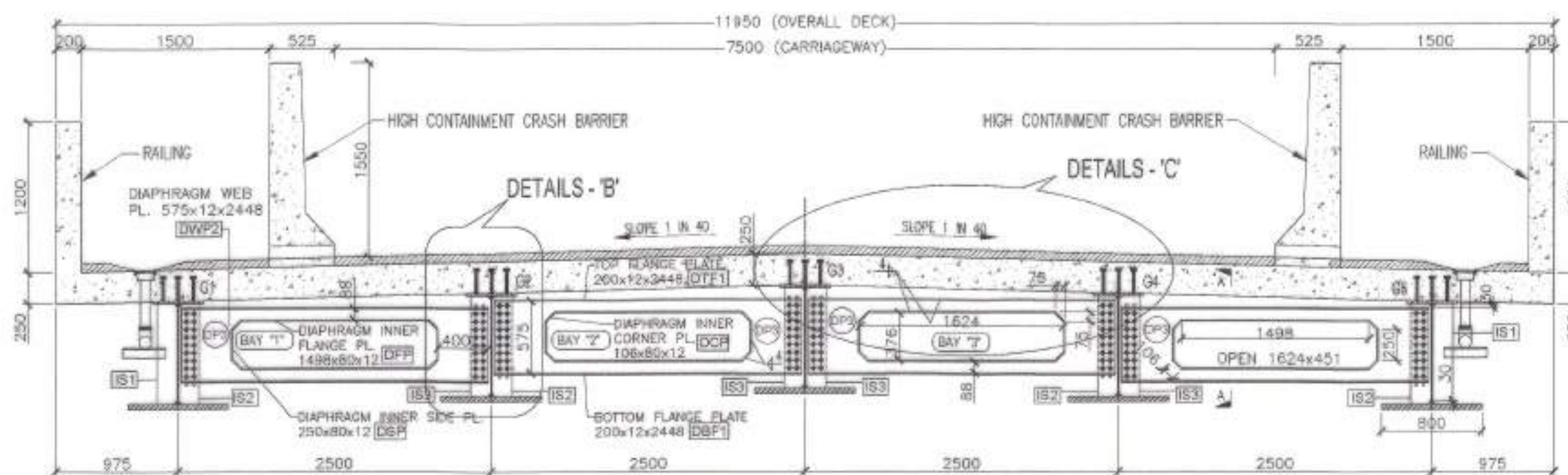
SR. NO.	DESCRIPTION OF WORK	DATE	ED/B&S
1	REVISION/ALTERATIONS		



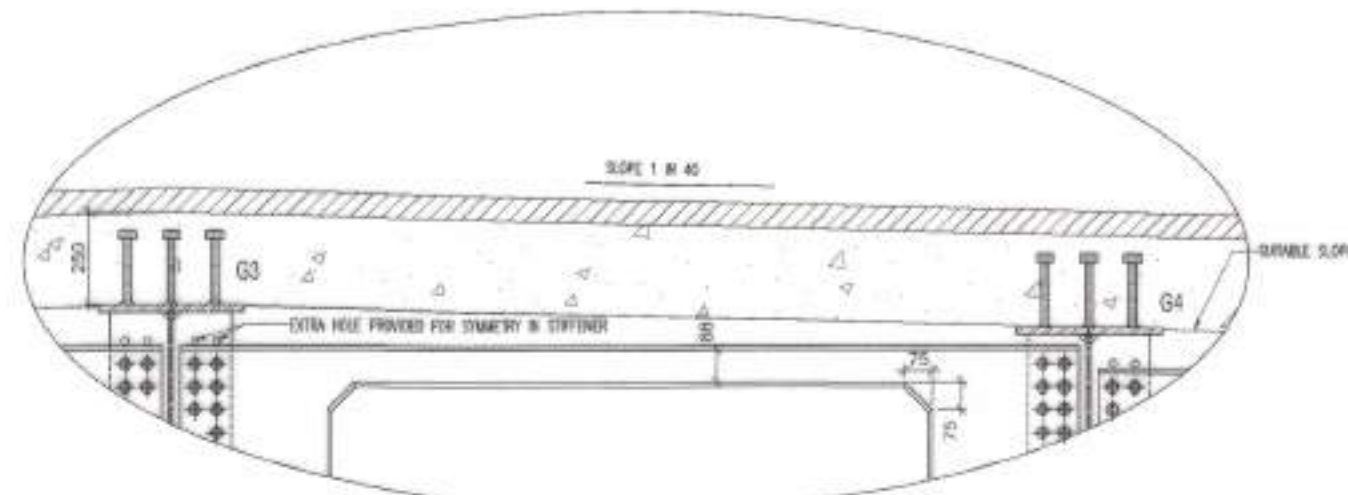
THIS DRAWING AND ANY INFORMATION OR DESCRIPTIVE MATTER SET OUT HEREON IS PROPERTY OF RDSO, MANAK NAGAR, LUCKNOW AND IS CONFIDENTIAL AND IS SUBJECT TO COPYRIGHT



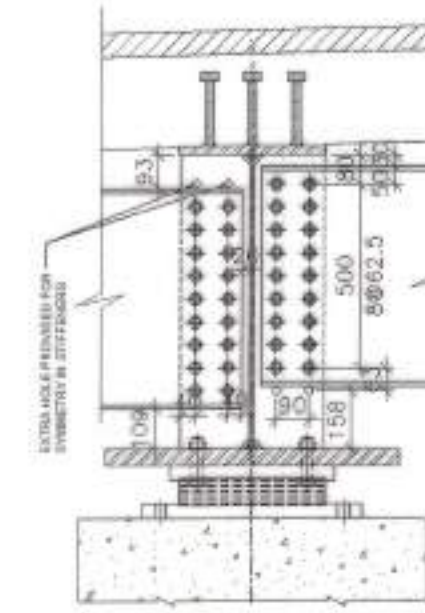
DETAILS OF END DIAPHRAGM  
(SCALE 1:40)



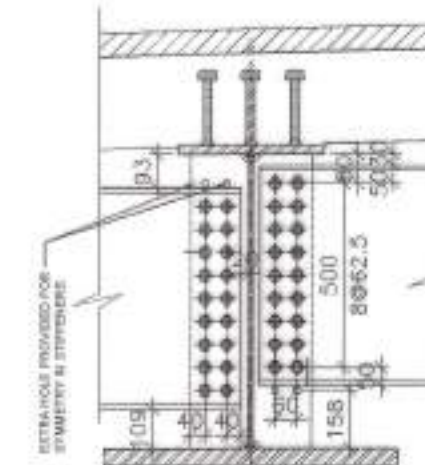
DETAILS OF INTERMEDIATE DIAPHRAGM  
(SCALE 1:40)



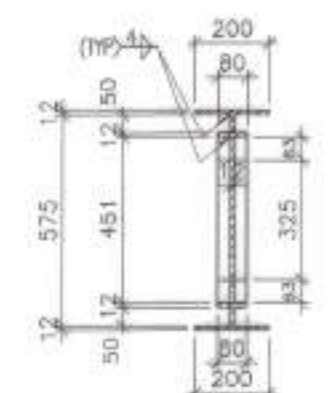
DETAILS - 'C'  
(SCALE 1:20)



DETAILS : 'A'  
(SCALE 1:20)



DETAILS : 'B'  
(SCALE 1:20)



SECTION A-A  
(SCALE 1:20)

## NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED. NO DIMENSION SHOULD BE SCALED FROM THIS DRAWING.
2. THIS DRAWING IS SUITABLE FOR USE UPTO SEISMIC ZONE-V.
3. THE GRADE OF REINFORCEMENT PROVIDED IN DECK SLAB SHALL BE OF Fe 500D.
4. ALL HOLES ARE 23.5 DIA. FOR 22 DIA. HSFG BOLTS.
5. AUTOMATIC SUBMERGED ARC WELDING SHOULD BE EMPLOYED FOR FILLET WELDS IN FLANGES TO WEB OTHER WELDS SHOULD ALSO BE DONE BY SUBMERGED ARC WELDING TO THE MAXIMUM EXTENT POSSIBLE CO2 WELDING SHALL BE PREFERRED OVER MANUAL METAL ARC WELDING.
6. ALL WELDS TO BE MADE BY USING APPROVED WELDING PROCEDURES AND BY QUALIFIED WELDERS ONLY AS PER PROVISIONS OF IS:9585.
7. CO2 WELDING SHALL BE PREFERRED OVER MANUAL METAL ARC WELDING FOR DIAPHRAGM FABRICATION.
8. THE GIRDERS SHALL BE PLACED ON PEDESTALS PROPERLY FINISHED TO PROPER ALIGNMENT, LEVEL AND CROSS SLOPE ETC AS PER CLAUSE 930 OF IRC:83 PART III. CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE PAINT MARKED IN LONGITUDINAL AS WELL AS TRANSVERSE DIRECTION WHILE PLACING THE GIRDER, THE CENTER LINE OF THE BEARING LOCATION SHALL BE MATCHED WITH THE MARKING ON THE PEDESTALS.
9. THE PEDESTAL ARE AT DIFFERENT LEVEL TO PROVIDED CROSS SLOPE OF 1:40 IN THE DECK SLAB/ROAD. THIS ASPECT MUST BE KEPT INTO MIND WHILE PLANNING THE PIERS.
10. THE REDUCE LEVEL (R.L.) OF THE TOP OF THE PEDESTAL FOR GIRDER G2 HAS BEEN TAKEN REFERENCE (X). THE LEVELS OF OTHER PEDESTAL HAS BEEN INDICATED IN REFERENCE TO THIS.
11. THE GIRDERS G3 ARE AT HIGHEST LEVEL DIFFERENCE OF LEVEL BETWEEN SUBSEQUENT GIRDERS IS 62.5 MM.
12. THE EXTRA HOLES IN THE STIFFENERS OF GIRDER ARE GIVEN SUCH THAT ANY CROSS FRAME/ANY END DIAPHRAGM CAN BE PROVIDED IN ANY BAY.
13. THE BEARINGS AND PEDESTAL SHOWN IN THIS DRAWING ARE INDICATIVE ONLY. ACTUAL BEARINGS SHALL BE PROVIDED AS PER DRAWING "DETAILS OF METALLIC GUIDED BEARING". THE DIMENSIONS SHALL BE AS GIVEN BY THE DESIGNER FOR SUB STRUCTURE. THE DIMENSIONS OF THE PEDESTAL SHALL NOT BE SCALED/MEASURED FROM THIS DRAWINGS.
14. MINIMUM CLEARANCE AT JACKING POINT FROM TOP OF PIER SHALL BE 400 MM.
15. PART LIST NOS. SHOWN THUS ○ SHIPPING LIST NOS. SHOWN THUS □.
16. THE PEDESTALS FOR THE SLIDE GUIDE BEARING SHALL BE PROVIDED ONLY IN SEISMIC ZONE IV AND V. THERE IS NO CROSS SLOPE IN ANY OF THE PEDESTALS IN STRAIGHT ALIGNMENT.
17. THIS DRAWING GIVES DETAILS OF ONLY SQUARE ARRANGEMENT.

DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	○
HSFG BOLT	⊙
SHEAR STUD	●

DESIGN CONSULTANT				CLIENT				THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS & 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.		SHEET NO.- 4 OF 14	
SPARSH ENGINEERING COMPANY PRIVATE LIMITED H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2342659				DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway.				DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JED/B&S)				NAME OF WORK:- "IRC-8 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS		SCALE:- AS SHOWN	
DRAWN BY:- SANJOY BERA				CHECKED BY:- SUCHR KUMAR				SCRUTINISED & CHECKED BY:- SANDEEP AGARWAL (ADESB-H&B&S)				TITLE:- X-SECTIONAL DETAILS FOR 5-GIRDER LEAVES		ORIGINAL SIZE:- A1	
DESIGNED BY:- RAVI PRASAD				APPROVED BY:- RAJESH KUMAR SRIVASTAVA (ED&B&S)				DRAWING NO:- RDSO/B-11781/3				DATE:-		MAIN DRAWING NO: RDSO/B-11781	
REVISION/ALTERATIONS				KHOVISH BISWAS DY OF MKKK				PROVISIONAL							

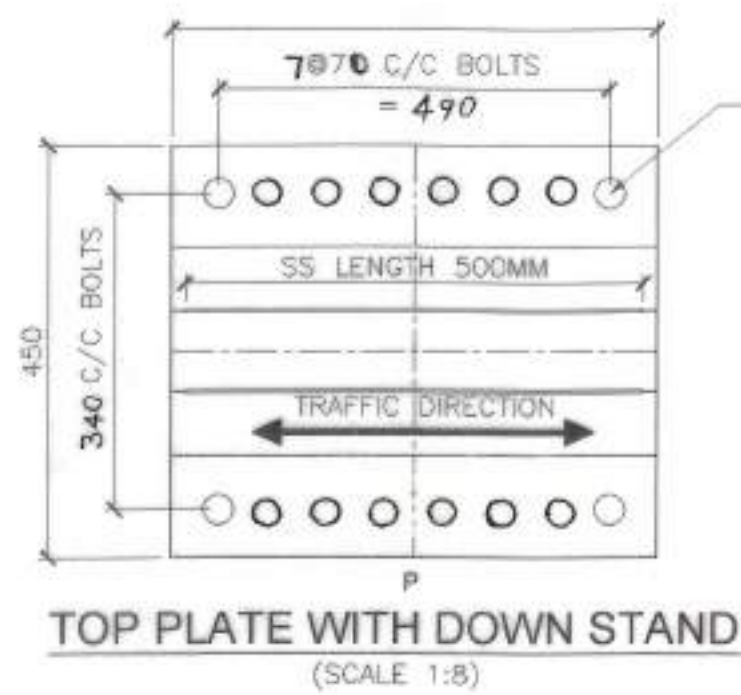
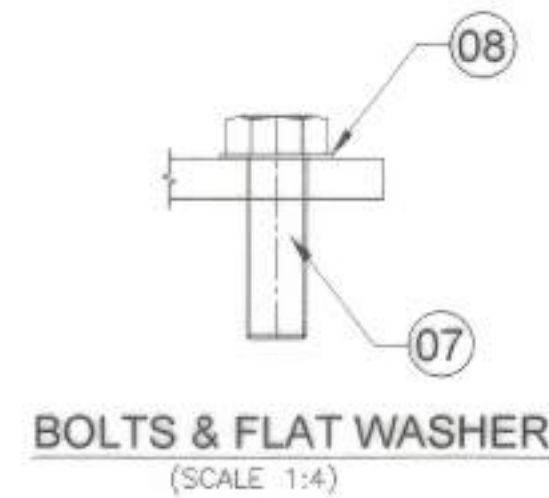
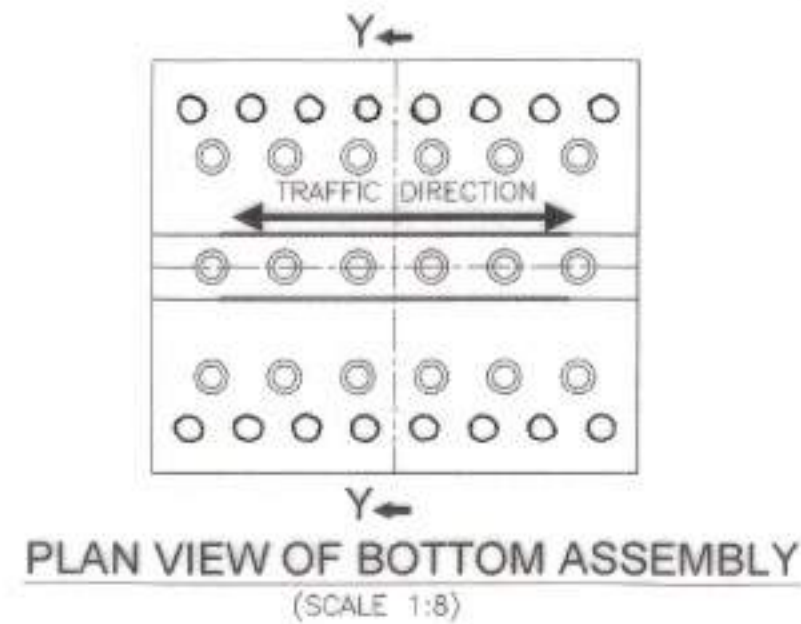
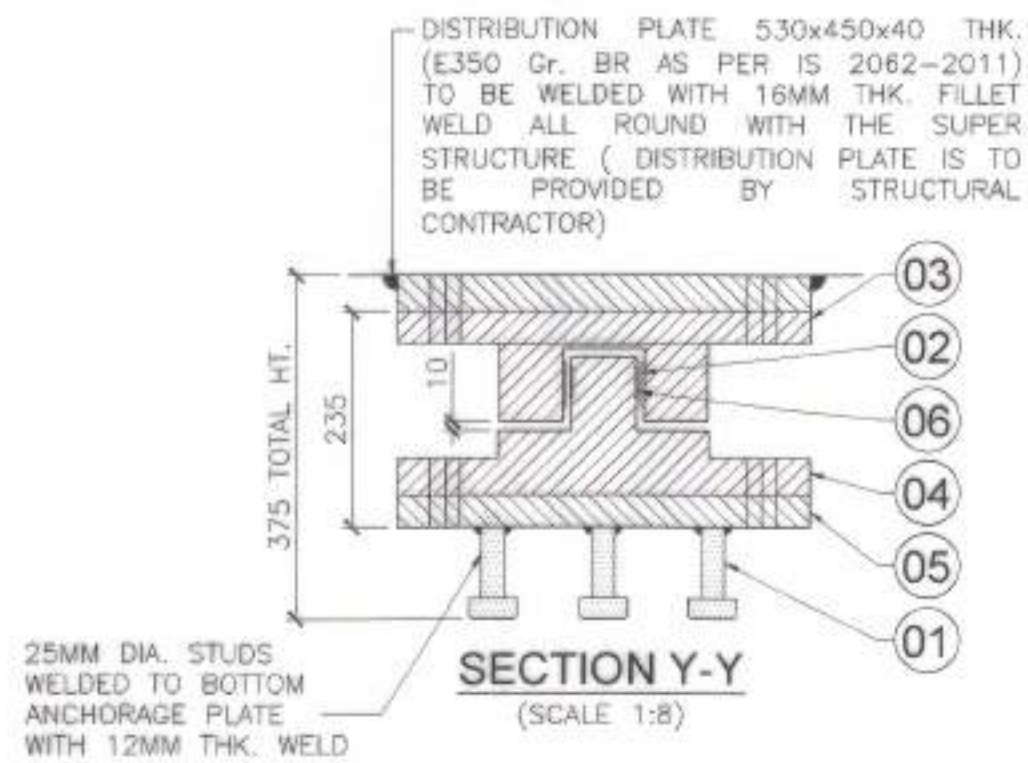


					DESIGN CONSULTANT:-  <b>SPARSH ENGINEERING COMPANY PRIVATE LIMITED</b> H-58, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340659		CLIENT:-  <b>DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED</b> (A Govt. of India Enterprise) Ministry of Railway.		<b>THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS &amp; 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.</b>				<b>R. D. S. O.</b> NAME OF WORK:- <b>"IRC-6 LOADING - 2017"</b> <b>18 M SPAN COMPOSITE WELDED ROB GIRDERS</b>		SHEET NO:- 5 OF 14 SCALE:- AS SHOWN ORIGINAL SIZE:- A1 DATE:-													
					DRAWN BY:-  <b>SANJOY BERA</b>		DESIGNED BY:-  <b>RAVI PRASAD</b>		CHECKED BY:-  <b>SUCHIR KUMAR</b>		 <b>19.03.2023</b> <b>KHUSHISH BISWAS</b> D.P. CMKKK		 <b>19.3.25</b> <b>SOUVIK SINGH GUPTA</b> GM/CIVIL/KKK		 <b>19-03-2025</b> <b>AJAY KUMAR</b> CGM/CIVIL/KKK		DESIGN CHECKED BY:-  <b>PRABHAT SRIVASTAVA (JC/CBS)</b>		SCRUTINISED & CHECKED BY  <b>SANDEEP AGARWAL</b> (ADE/SB-IBBS)		SCRUTINISED & RECOMMENDED BY  <b>MANISH KUMAR</b> (CBS-VIBBS)		APPROVED BY  <b>RAJESH KUMAR SRIVASTAVA</b> (EDBS)		TITLE:- <b>DETAILS OF BENT GUSSETS, STUD SHEAR CONNECTOR AND CAMBER DIAGRAM</b>		MAIN DRAWING NO: RDSO/B-11781	
SR NO					DESCRIPTION OF WORK					ADE/BS		DIR. BS		ED/BS		DRAWING NO:- RDSO/B-11781/4				PROVISIONAL								
REVISION/ALTERATIONS																												

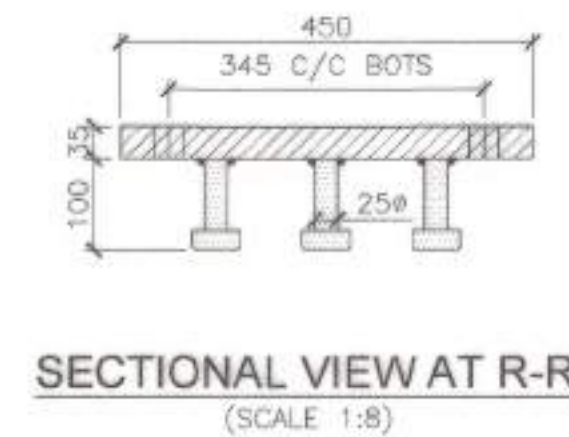
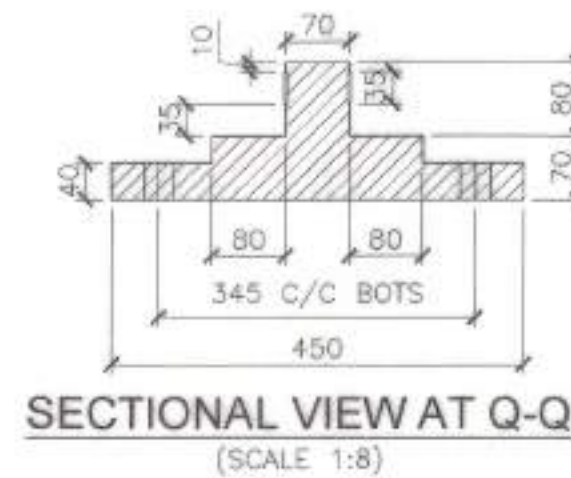
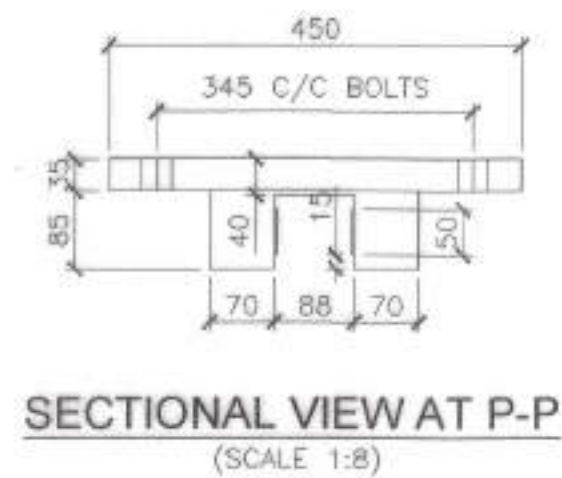
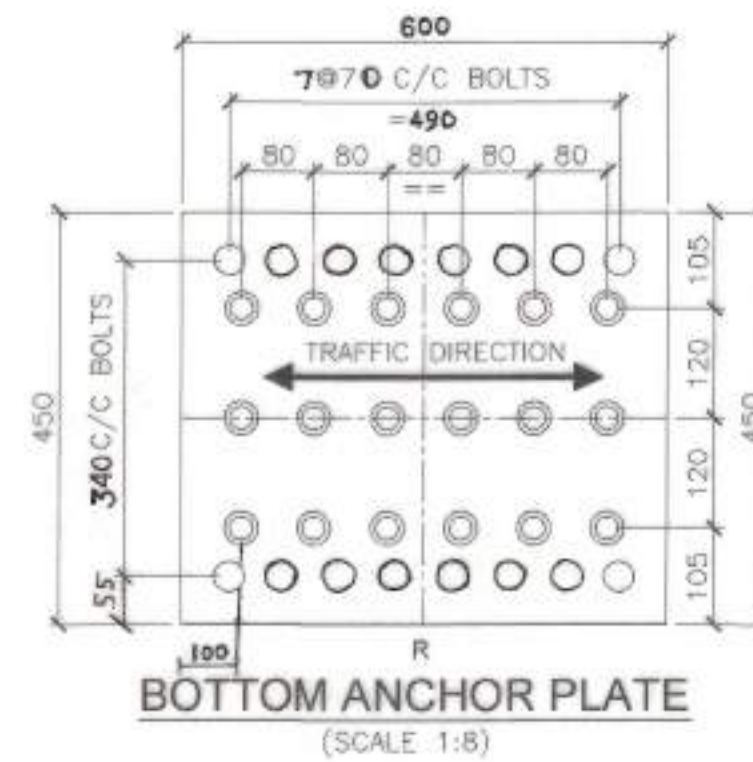
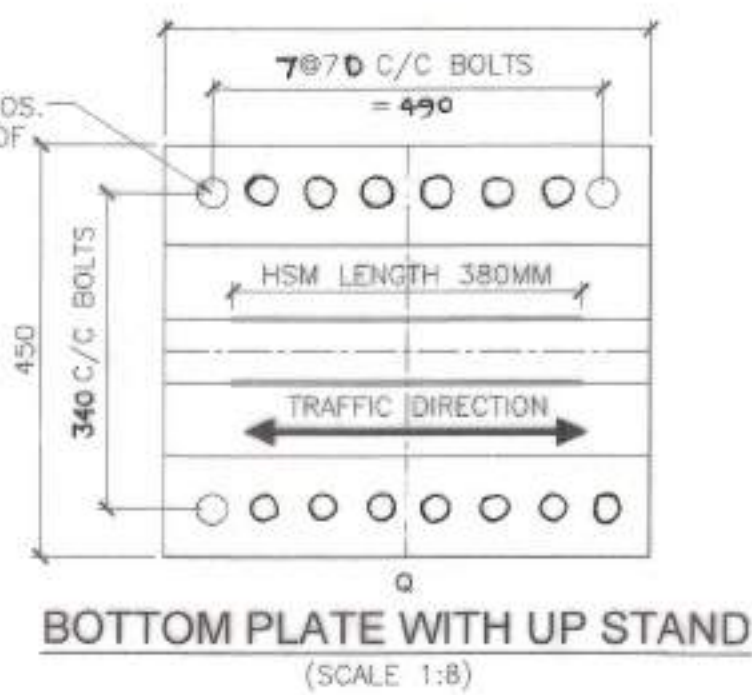


				DESIGN CONSULTANT:  <b>SPARSH ENGINEERING COMPANY PRIVATE LIMITED</b> H-85, Harmu Housing Colony, Near Ngam Park, Ranchi, Jharkhand - 834 002, PH- 0951-2340659		CLIENT:  <b>MRF</b> DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway.		THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS & 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.				<b>R. D. S. O.</b> SHEET NO:- 6 OF 14									
				DRAWN BY:-  <b>SANJOY BERA</b>		DESIGNED BY:-  <b>RAVI PRASAD</b>		CHECKED BY:-  <b>SUDHIR KUMAR</b>		DESIGN CHECKED BY:-  <b>PRASHANT SRIVASTAVA (E/D&amp;S)</b>		SCRUTINISED & CHECKED BY  <b>SANDEEP AGARWAL (ADE/SB-I/BS&amp;S)</b>		SCRUTINISED & RECOMMENDED BY  <b>MANISH KUMAR (CBS-V/BS&amp;S)</b>		APPROVED BY  <b>RAJESH KUMAR SRIVASTAVA (E/BS&amp;S)</b>		NAME OF WORK:- <b>"IRC-6 LOADING - 2017"</b> <b>18 M SPAN COMPOSITE WELDED</b> <b>ROB GIRDERS</b>		SCALE:- AS SHOWN ORIGINAL SIZE:- A2 DATE:-	
SR. NO. DESCRIPTION OF WORK ADE/BS&S CIR./BS&S EDB&S REVISIONAL NOTATIONS				TITLE:- <b>DETAILS OF ELASTOMERIC BEARING</b>		MAIN DRAWING NO: RDSO/B-11781		DRAWING NO:- RDSO/B-11781/5 PROVISIONAL													





DRILL HOLE 14/14 NOS.  
FOR M33x70 BOLTS OF  
GRADE 10.9



### NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS. LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS. UNLESS STATED OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE DESIGN IS BASED ON IRC:83 (Part-II)-2018.
- TOLERANCES:
  - PLAN DIMENSIONS : -0 TO +5MM
  - OVERALL LENGTH : -0 TO +5MM
  - HEIGHT OF ANY STEEL COMPONENT:-
    - MACHINED : -0 TO +1MM
    - UNMACHINED : CLASS 2 OF IS:4897.
- THE ELASTOMERIC PADS SHALL BE OF IRHD-60+5 AND SHALL CONFIRM TO THE SPECIFICATION Laid DOWN IN IRC:83 (Part-II)-2018.
- IT IS PREFERABLE THAT BEARING SHALL BE INSTALLED AT NEARLY MEAN TEMPERATURE.
- ALL STRUCTURAL STEEL SHALL CONFORM TO MILD STEEL IS: 2062-2011.
- THE ANCHOR BOLTS AND THEIR NUTS SHALL BE HOT DIP GALVANISED 100 MICRON THICK, AS PER IS:4759.
- ALL BOLTS, NUTS ETC SHALL BE OF PROPERTY CLASS 10.9 AND SHALL CONFORM TO PROVISIONS OF IS:1367.
- PEDESTALS, BED BLOCKS, SHALL PROJECT MINIMUM 150MM BEYOND THE BOTTOM PLATE.

### BILL OF QUANTITY

SR. NO.	DESCRIPTION	MATERIAL	QTY.	SPECIFICATION
1.	SHEAR HEADED STUDS Ø 25 X 100	MILD STEEL	18	IS : 2062, GRADE - E 250
2.	STAINLESS STEEL SHEET (3MM THK.)	S.S	02	AISI : 316L
3.	TOP PLATE WITH DOWN STAND	CAST STEEL	01	IS:1030, GRADE - 340-570W
4.	BOTTOM PLATE WITH UP STAND	CAST STEEL	01	IS:1030, GRADE - 340-570W
5.	BOTTOM ANCHORAGE PLATE	MILD STEEL	01	IS:2062, GRADE - E 250
6.	DIMPLED HSM(08MM THK.)	HSM	2	EN : 1337 - 2 : 2004
7.	BOLT - M33 X 70 (TOP)	Gr.-10.9 HT	16	IS : 1367
	BOLT - M33 X 70 (BOTTOM)	Gr.-10.9 HT	16	IS : 1367
8.	FLAT WASHER	MILD STEEL	32	IS : 2062

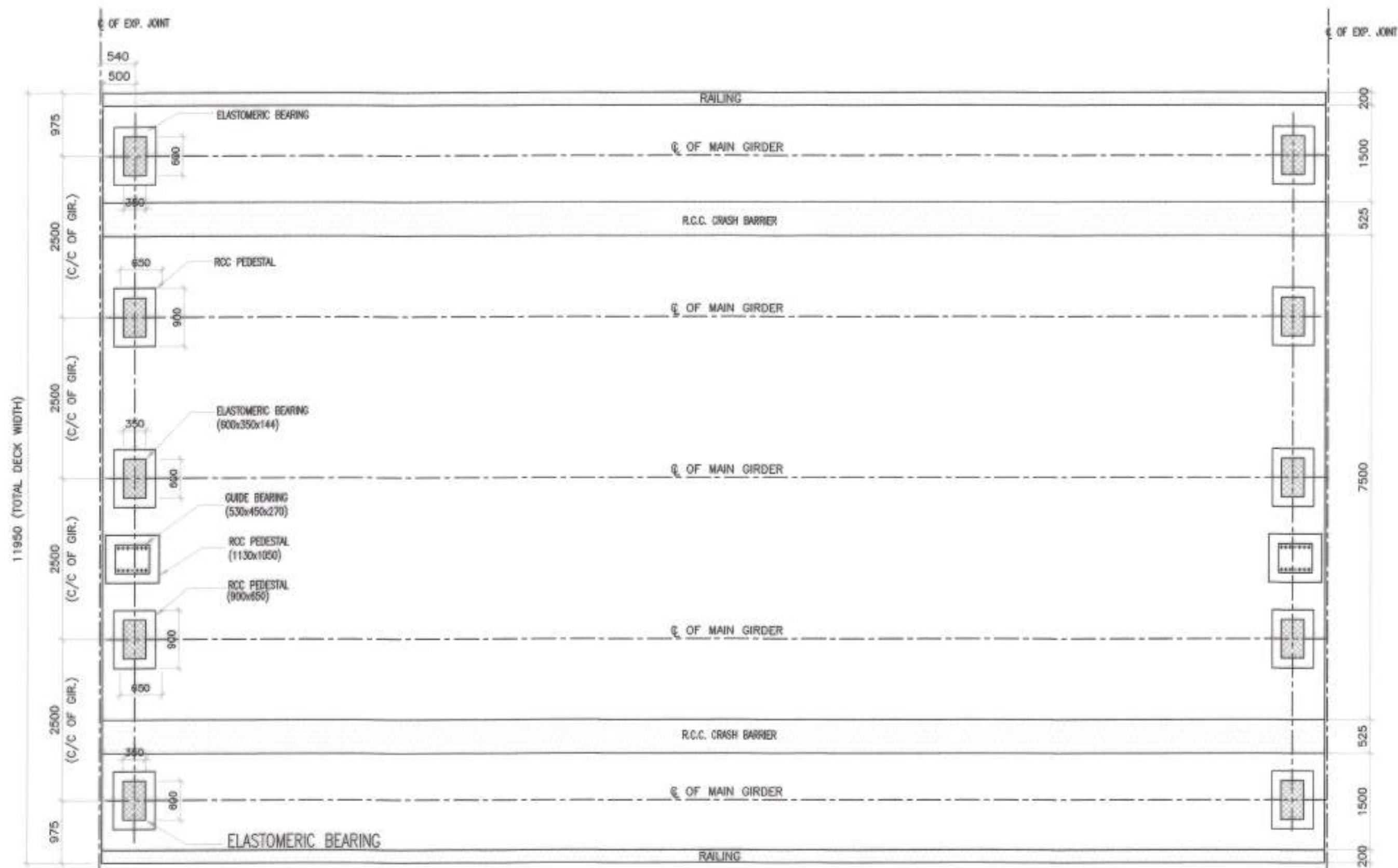
### DISPLACEMENT (mm)

1.	IN TRAFFIC DIRECTION (LONG.)	+50.00
2.	IN TRAFFIC DIRECTION (TRANS.)	+00.00
3.	ROTATION (RADIAN)	0.025
4.	CONCRETE GRADE FOR PEDESTAL	M40
5.	STEEL GRADE FOR SUPERSTRUCTURE	E 350

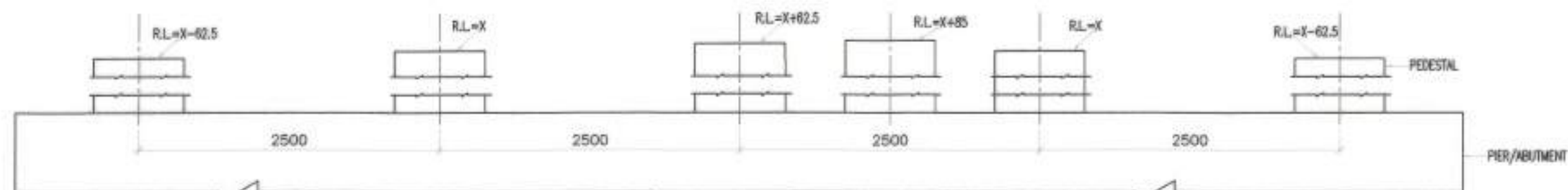
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	○
HSPG BOLT	⊗
SHEAR STUD	●

				DESIGN CONSULTANT		CLIENT		THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS & 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.		SHEET NO:- 7 OF 14													
				 SPARSH ENGINEERING COMPANY PRIVATE LIMITED H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340669		 DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway.						NAME OF WORK:- "IRC-6 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS		SCALE:- AS SHOWN ORIGINAL SIZE:- A1 DATE:-													
				DRAWN BY:-  SANJOY BERA		DESIGNED BY:-  RAM PRASAD		CHECKED BY:-  SUDHIR KUMAR		 KHOMUSH BISWAS DY.CPM/IKK		 SOVIK BENGUPTA GM/CVIL/IKK		 ALJAY KUMAR CGM/CVIL/IKK		 DURGESH KUMAR SHARMA (JC/D/S&S)		 SANDEEP AGARWAL (JDC/SB-H/S&S)		 MANISH KUMAR (DBS-V/S&S)		 RAJESH KUMAR SRIVASTAVA (JC/S&S)		TITLE:- DETAILS OF METALLIC GUIDED BEARING DRAWING NO:- RDSO/B-11781/6 PROVISIONAL		MAIN DRAWING NO: RDSO/B-11781	
SR. NO.				DESCRIPTION OF WORK				ADE/S&S				DIR./S&S				EC/S&S											
				REVISION/ALTERATIONS																							





⊖ LAYOUT PLAN OF ELASTOMERIC BEARINGS AND METALLIC GUIDE BEARINGS  
(SCALE 1:60)



⊖ DETAILS OF PEDESTALS FOR FIVE - GIRDER ARRANGEMENT ON STRAIGHT ALIGNMENT  
(SCALE 1:40)

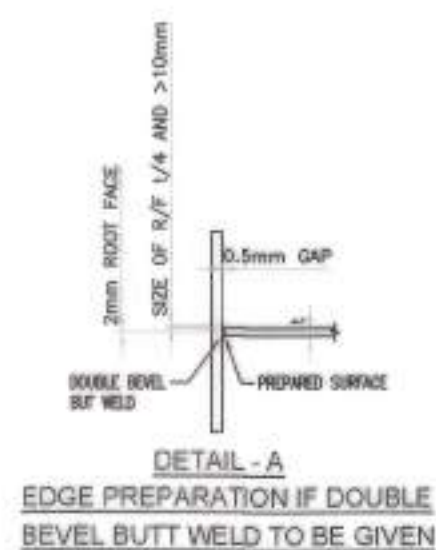
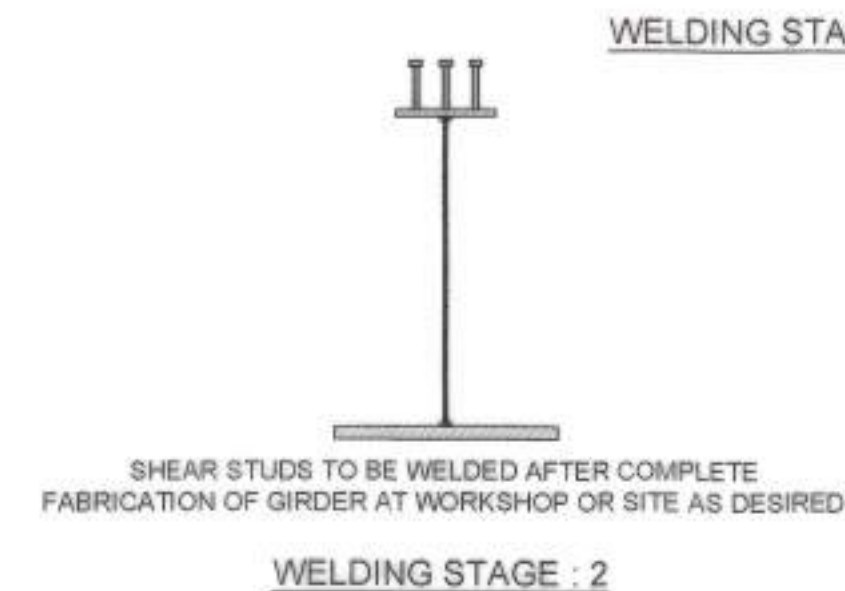
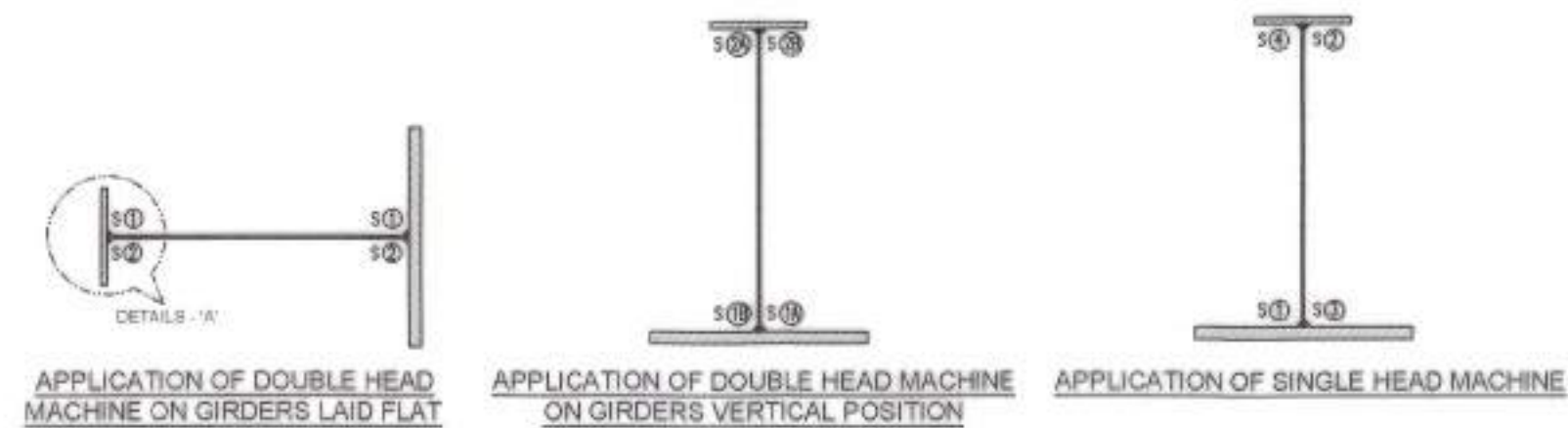
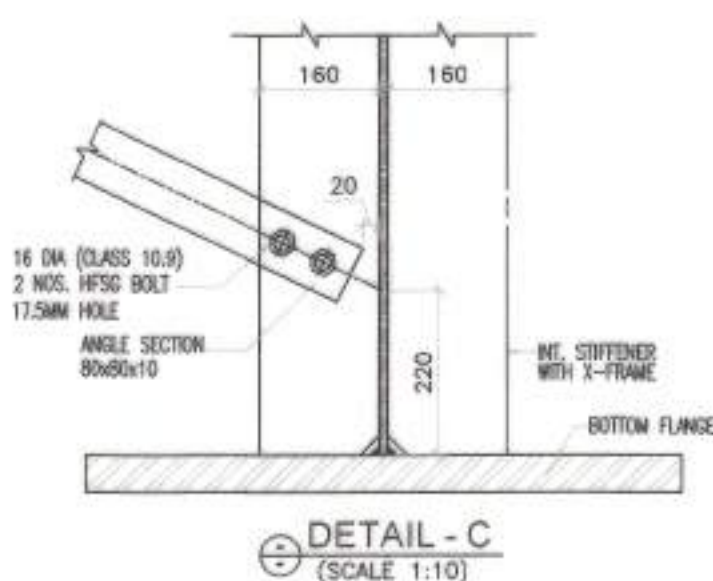
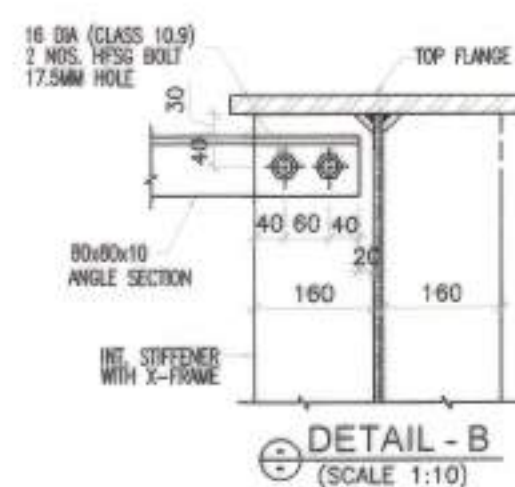
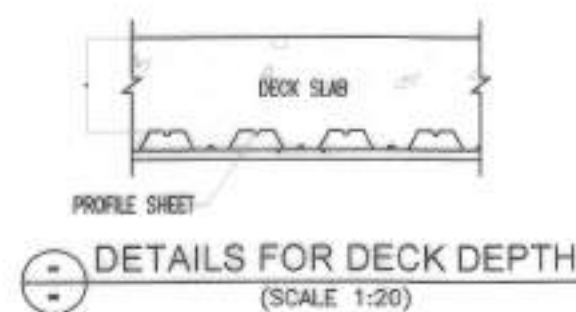
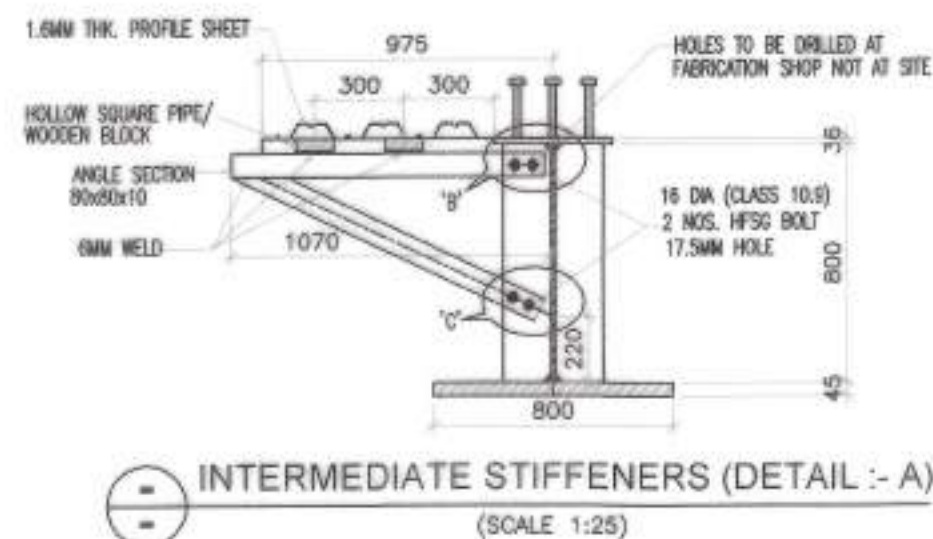
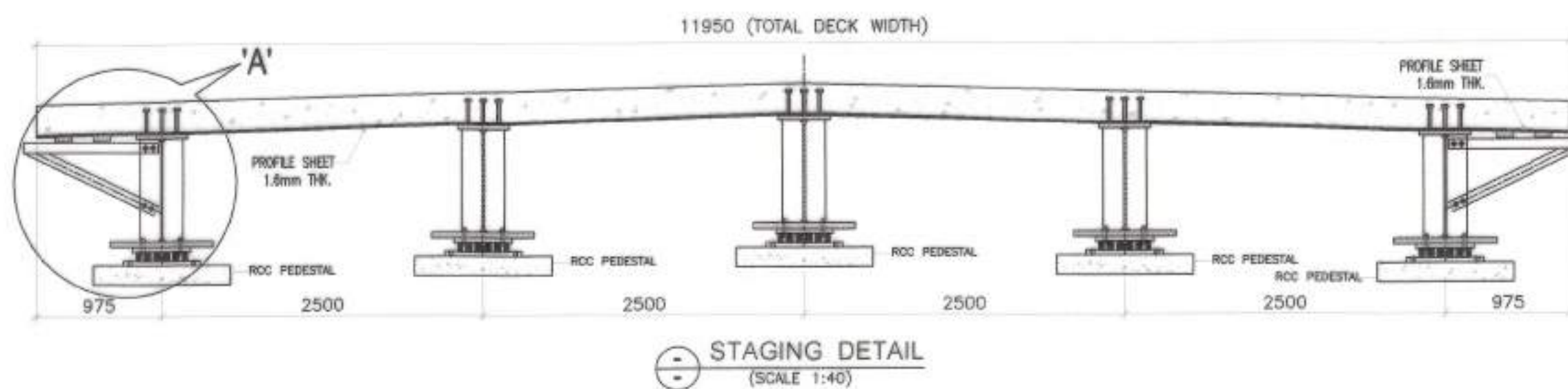
### NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS. LEVELS ARE IN METERS & CHAINAGES ARE IN KILOMETERS. UNLESS STATED OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
2. SEISMIC ZONE : V
3. AUTOMATIC SUBMERGED ARC WELDING SHOULD BE EMPLOYED FOR FILLET WELDS IN FLANGES TO WEB OTHER WELDS SHOULD ALSO BE DONE BY SUBMERGED ARC WELDING TO THE MAXIMUM EXTENT POSSIBLE CO2 WELDING SHALL BE PREFERRED OVER MANUAL METAL ARC WELDING.
4. THE GIRDERS SHALL BE PLACED ON PEDESTALS PROPERLY FINISHED TO PROPER ALIGNMENT, LEVEL AND CROSS SLOPE ETC AS PER CLAUSE 930 OF IRC:83 PART III. CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE PAINT MARKED IN LONGITUDINAL AS WELL AS TRANSVERSE DIRECTION WHILE PLACING THE GIRDER, THE CENTER LINE OF THE BEARING LOCATION SHALL BE MATCHED WITH THE MARKING ON THE PEDESTALS.
5. THE PEDESTAL ARE AT DIFFERENT LEVEL TO PROVIDED CROSS SLOPE OF 1:40 IN THE DECK SLAB/ROAD. THIS ASPECT MUST BE KEPT INTO MIND WHILE PLANNING THE PIERS.
6. THE REDUCE LEVEL (R.L.) OF THE TOP OF THE PEDESTAL FOR GIRDER G2 HAS BEEN TAKEN REFERENCE (X). THE LEVELS OF OTHER PEDESTAL HAS BEEN INDICATED IN REFERENCE TO THIS.
7. THE BEARINGS AND PEDESTAL SHOWN IN THIS DRAWING ARE INDICATIVE ONLY. ACTUAL BEARINGS SHALL BE PROVIDED AS PER MAIN DRAWING. THE DIMENSIONS SHALL BE AS GIVEN BY THE DESIGNER FOR SUB STRUCTURE. THE DIMENSIONS OF THE PEDESTAL SHALL NOT BE SCALED/MEASURED FROM THIS DRAWINGS.
8. THE PEDESTALS FOR THE SLIDE GUIDE BEARING SHALL BE PROVIDED ONLY IN SEISMIC ZONE V. THERE IS NO CROSS SLOPE IN ANY OF THE PEDESTALS IN STRAIGHT ALIGNMENT.
9. THIS DRAWING GIVES DETAILS OF ONLY SQUARE ARRANGEMENT.

DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	○
HSFG BOLT	⊙
SHEAR STUD	•

				DESIGN CONSULTANT :				CLIENT :				THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS & 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.				SHEET NO. - 8 OF 14	
				SPARSH ENGINEERING COMPANY PRIVATE LIMITED H-55, Harmu Housing Colony, Near Tilgum Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340669				DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway				NAME OF WORK : "IRC-6 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS				SCALE : AS SHOWN				ORIGINAL SIZE : A2	
				DRAWN BY : SANJIV BERA				DESIGNED BY : RAVI PRASAD				CHECKED BY : SUDHIR KUMAR				TITLE : GENERAL LAYOUT PLAN OF BEARINGS AND PEDESTAL ARRANGEMENT				DATE : -	
				REVISION/ALTERATIONS				KHOVISH BISWAS DY. CPM/KKK				SCOUK SANGUPTA GM/CIVIL/KKK				DRAWING NO. : RDSO/B-11781/7				MAIN DRAWING NO: RDSO/B-11781	
								AJAY KUMAR CGM/CIVIL/KKK				DURGESH KUMAR SHARMA (ED/B&S)				APPROVED BY : RAJESH KUMAR SRIVASTVA (ED/B&S)				PROVISIONAL	
								SANDHEEP AGARWAL (ADE/BB-I/BS)				MANISH KUMAR (DBS-VI/BS)									





#### NOTES:-

##### WELDING STAGE I: (WELDING OF WEB WITH FLANGE PLATES)

- SEQUENCE AND POSITION OF WELDING.**  
ALL THE WELDING IS TO BE DONE ENTIRELY IN DOWN HAND POSITION. S INDICATES SUBMERGED ARC WELDING. NOS. 1, 2, 3 ETC. NEXT TO ABOVE NOTATION INDICATE SEQUENCE BY WHICH THE WELDING IS TO BE PERFORMED. RUN-ON AND RUN-OFF PIECES SHALL BE PROVIDED.
- APPLICATION OF SINGLE HEAD MACHINE.**  
TO WELD GIRDERS WITH SINGLE HEAD MACHINE, FLANGES AND WEBS ARE TO BE SET IN FIXTURE AND TACKED.
- APPLICATION OF DOUBLE HEAD MACHINE ON GIRDERS LAID FLAT.**  
TWO WELDS ARE DEPOSITED ON ONE FACE OF WEB AT A TIME. THIS ARRANGEMENT DOES NOT REQUIRE REMOVAL OF THE ASSEMBLY FROM THE FIXTURE AFTER TACKING. THE FLANGE PLATES ARE SET AGAINST THE WEB IN THE FIXTURE AND TACKED MAIN WELDS, EACH JOINING FLANGE WITH THE WEB, ARE TO BE LAID WHILE ASSEMBLY IS STILL IN THE FIXTURE, AFTER COMPLETION OF FIRST FACE WELDING OF WEB, THE ASSEMBLY IS TO BE TURNED OVER AND WELDING OF THE SECOND FACE DONE.
- APPLICATION OF DOUBLE HEAD MACHINE ON GIRDERS IN VERTICAL POSITION.**  
IN THIS CASE TWO WELDS ARE LAID JOINING EACH FLANGE WITH THE WEB AT A TIME. THIS WILL REQUIRE TACKING OF THE FLANGES WITH THE WEB, WHICH ARE PREVIOUSLY SET IN FIXTURE SPECIALLY MADE FOR THE PURPOSE, THE ASSEMBLY IS TO BE REMOVED FROM THE FIXTURE AFTER TACKING IS COMPLETED AND POSITIONED IN A MANIPULATOR, THE TWO WELDING HEADS ARE OPERATED IN SUCH A WAY ONE HEAD WILL BE AWAY BY 600 MM, BOTH THE HEADS TRAVELING AT THE SAME SPEED. IT IS ADVISABLE TO LIMIT THE SINGLE RUN WELD TO 6 MM SIZE.
- AFTER EACH RUN OF WELDING, THE FABRICATED ARTICLE SHALL BE CHECKED FOR ANY DEFORMATION. IN CASE OF DEFORMATION BEYOND PERMISSIBLE LIMITS, THE SAME SHALL BE RECTIFIED BEFORE NEXT STAGE WELDING IS TAKEN UP.

##### WELDING STAGE II: (PROVIDING STUD SHEAR CONNECTORS)

- STUD WELDING SHALL BE DONE IN WORKSHOP.
- IF GIRDERS ARE TO BE HANDLED AFTER WELDING OF STUD SHEAR CONNECTORS, THE STUDS SHALL BE PROTECTED SUITABLY TO ENSURE THAT THERE IS NO DAMAGE TO THEM.

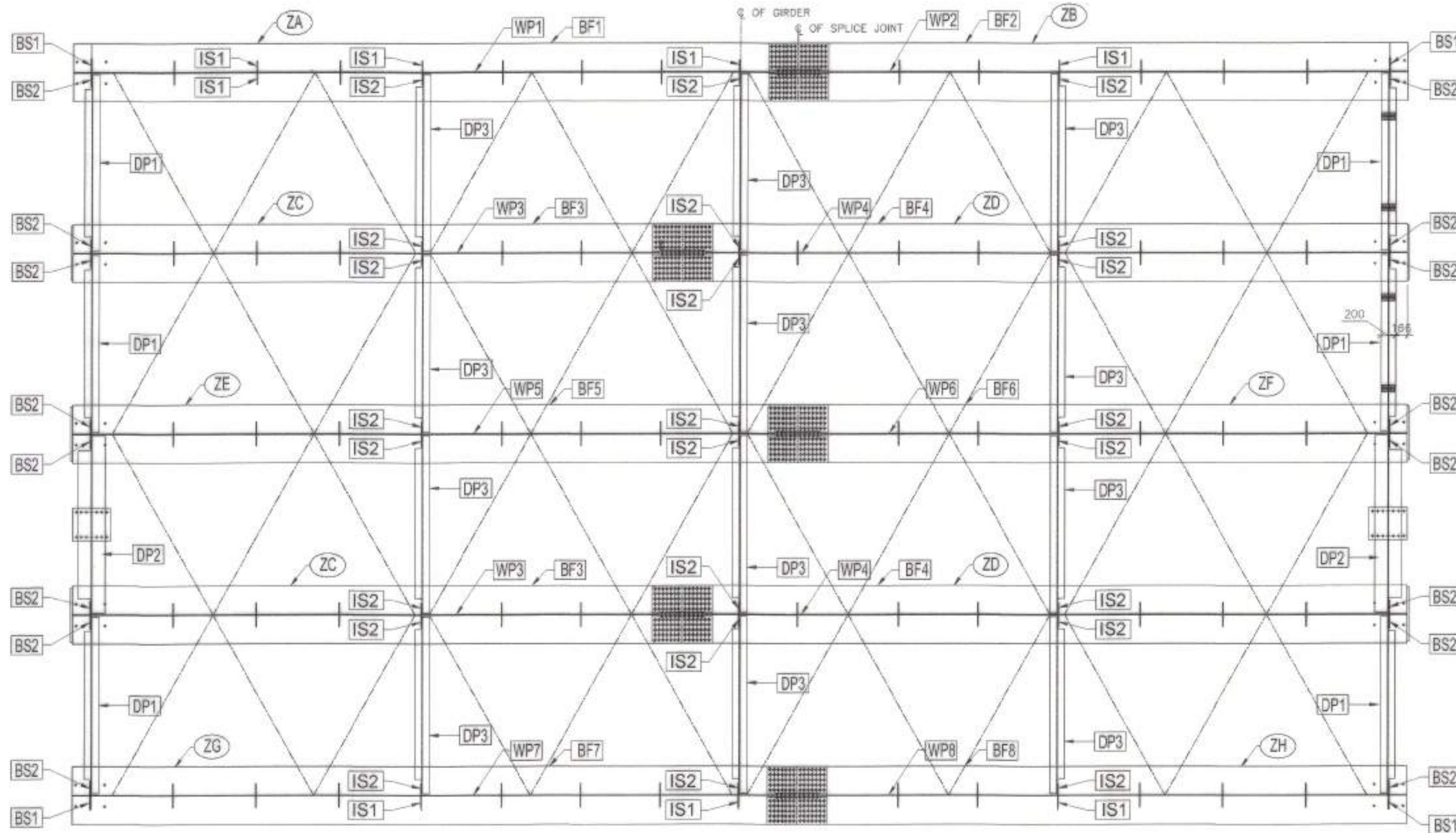
#### NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- GRADE OF PROFILE SHEET SHALL BE E350 AND FOR ANGLE SECTION E250.
- ALL STRUCTURAL STEEL SHALL CONFORM TO IS: 2062-2011.
- THE ANCHOR BOLTS AND THEIR NUTS SHALL BE HOT DIP GALVANISED 100 MICRON THICK, AS PER IS:4759.
- ALL BOLTS, NUTS ETC SHALL BE OF PROPERTY CLASS 10.9 AND SHALL CONFORM TO PROVISIONS OF IS:1367.

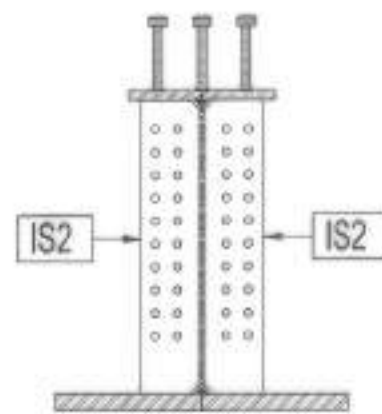
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	○
HPSG BOLT	●
SHEAR STUD	•

<b>DESIGN CONSULTANT:</b>  SPARSH ENGINEERING COMPANY PRIVATE LIMITED H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340699				<b>CLIENT:</b>  DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway.				<b>THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS &amp; 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.</b>				<b>R. D. S. O.</b>		SHEET NO- 11 OF 14
<b>DRAWN BY:-</b>  SANJOY BERA				<b>DESIGNED BY:-</b>  RAVI PRASAD				<b>CHECKED BY:-</b>  SUDHIR KUMAR				<b>NAME OF WORK:</b> "IRC-6 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS		SCALE:- AS SHOWN ORIGINAL SIZE:- A2 DATE:-
<b>SR. NO.</b> REVISION/ALTERATIONS				<b>DESIGN CHECKED BY:-</b>  PRASHANT SRIVASTAVA (JED/BS)				<b>DRAWING CHECKED BY:-</b>  SANDEEP AGARWAL (ADE/SS-IBS)				<b>TITLE:</b> DETAILS OF STAGING FOR DECK SLAB AND WELDING SEQUENCE		MAIN DRAWING NO: RDSO/B-11781
				<b>SCRUTINISED &amp; CHECKED BY:</b>  MANISH KUMAR (DBS-VIIBS)				<b>SCRUTINISED &amp; RECOMMENDED BY:</b>  RAJESH KUMAR SRIVASTAVA (ED/BS)				DRAWING NO:- RDSO/B-11781/10		PROVISIONAL

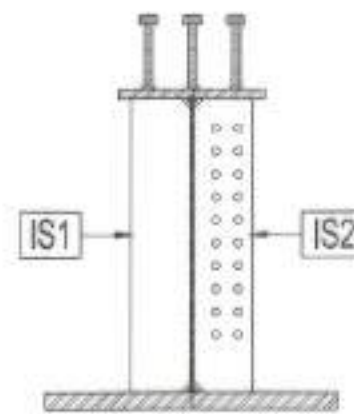




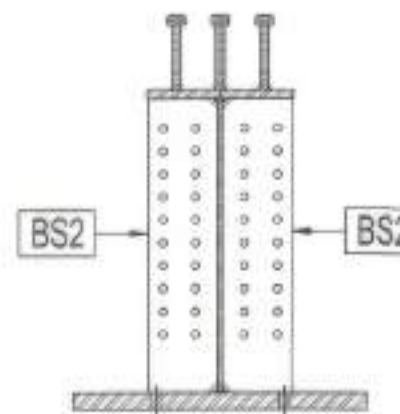
MAIN GIRDER PIECES ( BOTTOM PLAN ARRANGEMENT FOR 5 - GIRDER LEAVES )  
(SCALE 1:50)



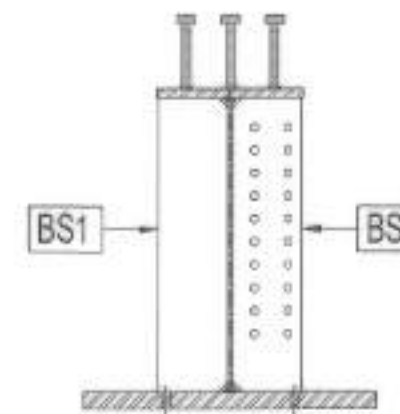
INTERMEDIATE STIFFENER HOLE  
ARRANGEMENT FOR INNER GIRDER  
(SCALE 1:20)



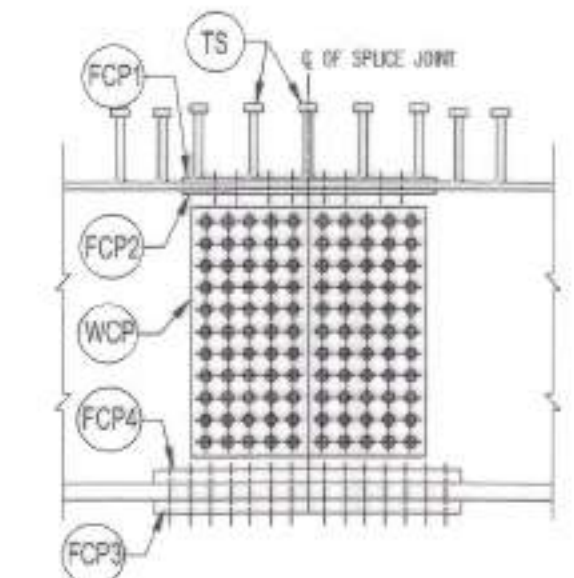
INTERMEDIATE STIFFENER HOLE  
ARRANGEMENT FOR OUTER GIRDER  
(SCALE 1:20)



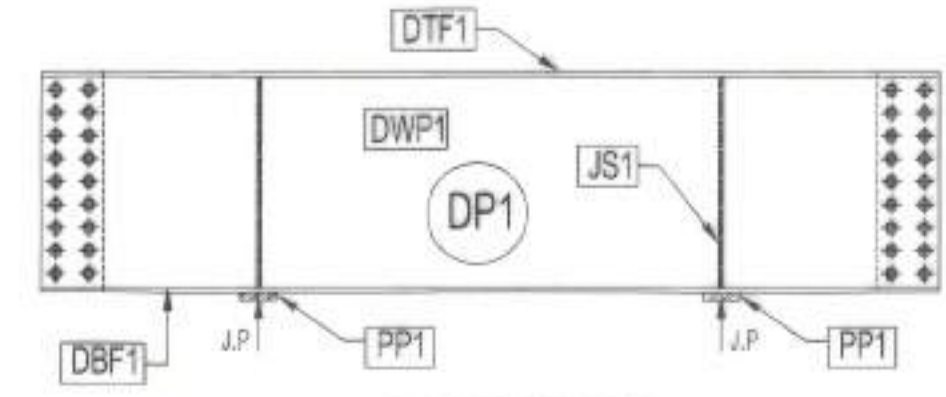
BEARING STIFFENER HOLE  
ARRANGEMENT FOR INNER GIRDER  
(SCALE 1:20)



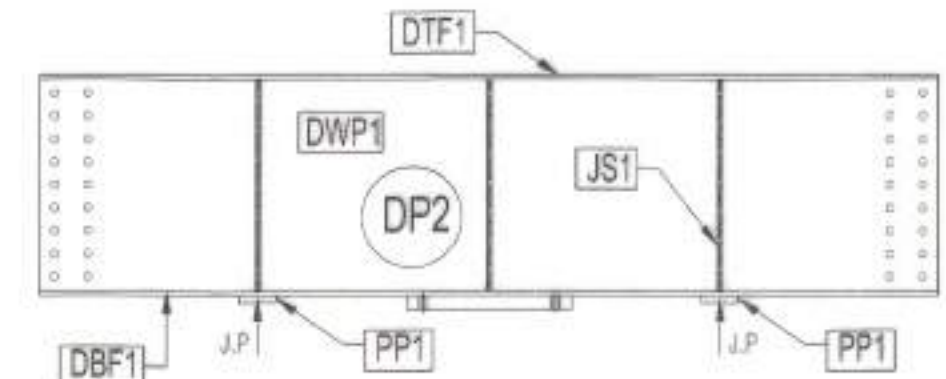
BEARING STIFFENER HOLE  
ARRANGEMENT FOR OUTER GIRDER  
(SCALE 1:20)



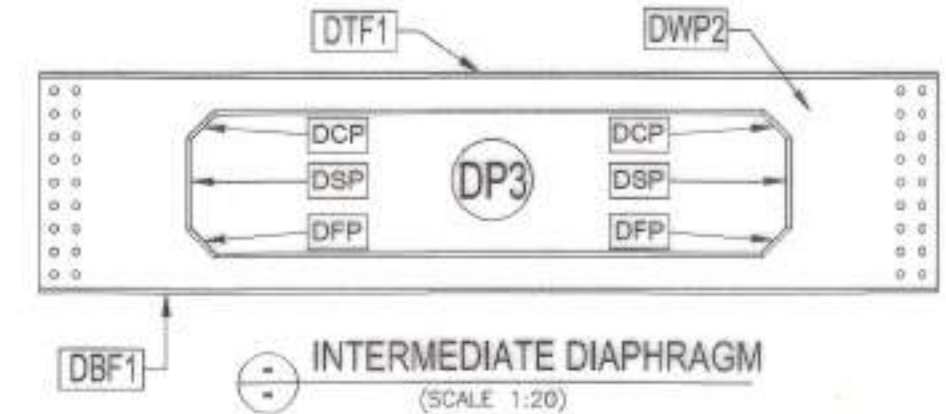
HOLES ARRANGEMENT FOR  
SPLICE JOINT LOCATION  
(SCALE 1:20)



END DIAPHRAGM  
(SCALE 1:20)



END DIAPHRAGM  
(ONLY FOR SEISMIC ZONE IV AND V)  
(SCALE 1:20)



INTERMEDIATE DIAPHRAGM  
(SCALE 1:20)

DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	—
FILLET WELD (BOTH SIDE)	—
HOLE FOR TURNED BOLT	o
HSFG BOLT	⊙
SHEAR STUD	•

<b>DESIGN CONSULTANT</b>  SPARSH ENGINEERING COMPANY PRIVATE LIMITED H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340659				<b>CLIENT</b>  DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway,				<b>THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS &amp; STANDARDS ORGANISATION (MINISTRY OF RAILWAYS) LUCKNOW - 228011 (INDIA) AND SHALL NOT BE USED, COPIED OR REPRODUCED IN PART OR WHOLE WITHOUT PRIOR CONSENT IN WRITING.</b>				<b>R. D. S. O.</b>		SHEET NO:- 12 OF 14
<b>DESIGN CHECKED BY:-</b> PRASHANT SRIVASTAVA (JE/DSS&S)				<b>SCRUTINISED &amp; CHECKED BY:-</b> SANDEEP AGARWAL (JCE/SB-IB&S)				<b>SCRUTINISED &amp; RECOMMENDED BY:-</b> MANISH KUMAR (DSS-VIIB&S)				NAME OF WORK:- "IRC-6 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS		SCALE:- AS SHOWN ORIGINAL SIZE:- A1
<b>DRAWING CHECKED BY:-</b> DURGESH KUMAR SHARMA (JCE/DSS&S)				<b>APPROVED BY:-</b> RAJESH KUMAR SRIVASTAVA (ED/IB&S)				TITLE:- ASSEMBLY DRAWING				DRAWING NO:- RDSO/B-11781/11		DATE:- MAIN DRAWING NO. RDSO/B-11781
<b>REVISION/ALTERATIONS</b>				DRAWN BY:- SANJOY BERA DESIGNED BY:- RAVI PRASAD CHECKED BY:- SUDHIR KUMAR				KHOWNISH BISWAS (DY CPM/KKK) SOUVEN KUMAR GUPTA (GM/CIVIL/KKK) KUNY KUMAR (GM/CIVIL/KKK)				PROVISIONAL		



THIS DRAWING AND ANY INFORMATION OR DESCRIPTIVE MATTER SET OUT HEREON IS PROPERTY OF RDSO, MANAK NAGAR, LUCKNOW AND IS CONFIDENTIAL AND SUBJECT TO COPYRIGHT

SL. NO.	DIMENSIONS (IN MM)			PART LIST / PART NAME	NOS. PER SHIPPING MARK	SHIPPING MARK / NAME	DIMENSIONS (LxWxH) mm x mm x mm	TOTAL NOS. PAR SPAN ARANGEMENT	WEIGHT OF S-GIRDER LEAVES (IN TONNE)
	LENGTH	WIDTH	THICKNESS						
1.1	10050	400	20	TF1/TOP FLANGE	1	ZA/GIRDER COMPLETE	10050x800x865	1	0.631
1.2	10050	800	45	BF1/BOTTOM FLANGE	1				2.840
1.3	10050	800	12	WP1/WEB PLATE	1				0.757
1.4	800	190	20	BS1/BEARING STIFFENER	1				0.024
1.5	800	190	20	BS2/BEARING STIFFENER	1				0.024
1.6	800	160	12	IS1/INTERMEDIATE STIFFENER	14				0.169
1.7	800	160	12	IS2/INTERMEDIATE STIFFENER	2	ZB/GIRDER COMPLETE	8450x800x865	1	0.024
1.8		200 x 25		TS/SHEAR STUD	315				0.243
2.1	8450	400	20	TF2/TOP FLANGE	1				0.531
2.2	8450	800	45	BF2/BOTTOM FLANGE	1				2.388
2.3	8450	800	12	WP2/WEB PLATE	1				0.637
2.4	800	190	20	BS1/BEARING STIFFENER	1				0.024
2.5	800	190	20	BS2/BEARING STIFFENER	1	ZC/GIRDER COMPLETE	8425x800x865	2	0.024
2.6	800	160	12	IS1/INTERMEDIATE STIFFENER	11				0.133
2.7	800	160	12	IS2/INTERMEDIATE STIFFENER	1				0.012
2.8		200 x 25		TS/SHEAR STUD	273				0.211
3.1	8450	400	20	TF3/TOP FLANGE	1				1.061
3.2	8450	800	45	BF3/BOTTOM FLANGE	1				4.776
3.3	8450	800	12	WP3/WEB PLATE	1	ZD/GIRDER COMPLETE	10025x800x865	2	1.274
3.4	800	190	20	BS2/BEARING STIFFENER	2				0.095
3.5	890	160	12	IS1/INTERMEDIATE STIFFENER	10				0.241
3.6	800	160	12	IS2/INTERMEDIATE STIFFENER	2				0.048
3.7	369	190	12	SEISMIC STOPPER STIFFENER PL	4				0.053
3.8	750	330	25	SEISMIC STOPPER FACE PL	1				0.097
3.9		200 x 25		TS/SHEAR STUD	273	ZE/GIRDER COMPLETE	10025x800x865	1	0.421
4.1	10050	400	20	TF4/TOP FLANGE	1				1.262
4.2	10050	800	45	BF4/BOTTOM FLANGE	1				5.680
4.3	10050	800	12	WP4/WEB PLATE	1				1.515
4.4	800	190	20	BS2/BEARING STIFFENER	2				0.095
4.5	800	160	12	IS1/INTERMEDIATE STIFFENER	12				0.289
4.6	800	160	12	IS2/INTERMEDIATE STIFFENER	4	ZF/GIRDER COMPLETE	8425x800x865	1	0.096
4.7	369	190	12	SEISMIC STOPPER STIFFENER PL	4				0.053
4.8	750	330	25	SEISMIC STOPPER FACE PL	1				0.097
4.9		200 x 25		TS/SHEAR STUD	315				0.486
5.1	10050	400	20	TF5/TOP FLANGE	1				0.631
5.2	10050	800	45	BF5/BOTTOM FLANGE	1	ZG/GIRDER COMPLETE	10150x800x865	1	2.840
5.3	10050	800	12	WP5/WEB PLATE	1				0.757
5.4	800	190	20	BS2/BEARING STIFFENER	2				0.048
5.5	800	160	12	IS1/INTERMEDIATE STIFFENER	12				0.145
5.6	800	160	12	IS2/INTERMEDIATE STIFFENER	4				0.048
5.7	369	190	12	SEISMIC STOPPER STIFFENER PL	4				0.026
5.8	750	330	25	SEISMIC STOPPER FACE PL	1	ZH/GIRDER COMPLETE	8550x800x865	1	0.049
5.9		200 x 25		TS/SHEAR STUD	315				0.243
6.1	8450	400	20	TF6/TOP FLANGE	1				0.531
6.2	8450	800	45	BF6/BOTTOM FLANGE	1				2.388
6.3	8450	800	12	WP6/WEB PLATE	1				0.637
6.4	800	190	20	BS2/BEARING STIFFENER	2				0.048
6.5	800	160	12	IS1/INTERMEDIATE STIFFENER	10	ZI/GIRDER COMPLETE	8425x800x865	1	0.121
6.6	800	160	12	IS2/INTERMEDIATE STIFFENER	2				0.024
6.7	369	190	12	SEISMIC STOPPER STIFFENER PL	4				0.026
6.8	750	330	25	SEISMIC STOPPER FACE PL	1				0.049
6.9		200 x 25		TS/SHEAR STUD	273				0.211
7.1	10050	400	20	TF7/TOP FLANGE	1	ZJ/GIRDER COMPLETE	10150x800x865	1	0.631
7.2	10050	800	45	BF7/BOTTOM FLANGE	1				2.840
7.3	10050	800	12	WP7/WEB PLATE	1				0.757
7.4	800	190	20	BS1/BEARING STIFFENER	1				0.024
7.5	800	190	20	BS2/BEARING STIFFENER	1				0.024
7.6	800	160	12	IS1/INTERMEDIATE STIFFENER	14				0.169
7.7	800	160	12	IS2/INTERMEDIATE STIFFENER	2	ZK/GIRDER COMPLETE	10150x800x865	1	0.024
7.8		200 x 25		TS/SHEAR STUD	315				0.243



SL. NO.	DIMENSIONS (IN MM)			PART LIST / PART NAME	NOS. PER SHIPPING MARK	SHIPPING MARK / NAME	DIMENSIONS (LxWxH) mm x mm x mm	TOTAL NOS. PAR SPAN ARANGEMENT	WEIGHT OF S-GIRDER LEAVES (IN TONNE)
	LENGTH	WIDTH	THICKNESS						
8.1	8450	400	20	TF8/TOP FLANGE	1	ZH/GIRDER COMPLETE	8550x800x865	1	0.531
8.2	8450	800	45	BF8/BOTTOM FLANGE	1				2.388
8.3	8450	800	12	WP8/WEB PLATE	1				0.637
8.4	800	190	20	BS1/BEARING STIFFENER	1				0.024
8.5	800	190	20	BS2/BEARING STIFFENER	1				0.024
8.6	800	160	12	IS1/INTERMEDIATE STIFFENER	11				0.133
8.7	800	160	12	IS2/INTERMEDIATE STIFFENER	1	DP1/END DIAPHRAGM	2448x200x611	5	0.012
8.8		200 x 25		TS/SHEAR STUD	273				0.211
9.1	2448	200	12	DTF1/DIAPHRAGM TOP FLANGE	1				0.277
9.2	2448	200	12	DBF1/DIAPHRAGM BOTTOM FLANGE	1				0.277
9.3	2448	575	12	DWP1/DIAPHRAGM WEB FLANGE	1				0.796
9.4	575	90	12	IS1/JACKING STIFFENER	4				0.116
9.5	180	100	12	PP1/PAD PLATE	2	DP2/END DIAPHRAGM	2448x370x611	2	0.020
10.1	2448	200	12	DTF2/DIAPHRAGM TOP FLANGE	1				0.092
10.2	2448	370	12	DBF2/DIAPHRAGM BOTTOM FLANGE	1				0.171
10.3	2448	575	12	DWP1/DIAPHRAGM WEB FLANGE	1				0.265
10.4	575	90	12	IS1/JACKING STIFFENER	6				0.060
10.5	180	100	12	PP1/PAD PLATE	2	DP3/ INTERMEDIATE DIAPHRAGM	2448x200x599	12	0.006
11.1	2448	200	12	DTF1/DIAPHRAGM TOP FLANGE	1				0.553
11.2	2448	200	12	DBF1/DIAPHRAGM BOTTOM FLANGE	1				0.553
11.3	2448	575	12	DWP1/DIAPHRAGM WEB FLANGE	1				1.591
11.4	AREA = 0.648 (IN M <sup>2</sup> SQR)			DEDUCT (OPENING IN WEB)	1				-0.732
11.5	1498	80	12	DFF/DIAPHRAGM INNER FLANGE PLATE	2				0.270
11.6	250	80	12	DSP/DIAPHRAGM INNER SIDE PLATE	2	SP1/SPLICE JOINT	1440x640x104	5	0.046
11.7	106	80	12	DCP/DIAPHRAGM INNER CORNER PLATE	4				0.040
12.1	690	400	12	FCP1/TOP FLANGE OUTER COVER PLATE	1				0.130
12.2	690	180	12	FCP2/TOP FLANGE INNER COVER PLATE	2				0.116
12.3	680	640	12	WCP/WEB COVER PLATE	2				0.410
12.4	840	800	36	FCP3/BOTTOM FLANGE OUTER COVER PLATE	1				0.950
12.5	840	375	36	FCP4/BOTTOM FLANGE INNER COVER PLATE	2	BLB1/BLB2/ BOTTOM LATERAL BRACING	1850X100x100x10	60	0.890
12.6		200 x 25		TS/SHEAR STUD	15				0.058
13.1	1850	ISA 100x100x10		ANG1/ANGLE	1				1.654
13.2	430	120	16	GUS1/GUS2 BENT GUSSET	2				0.778
14.1	1050	ISA 80x80x10		ANG2/ANGLE	2	STAGING ASSEMBLY	1050X80X80X10	16	0.396
14.2	1125	ISA 80x80x10		ANG3/ANGLE					0.425
15	-	-	-	ELASTOMERIC BEARING ASSEMBLY	1	ELASTOMERIC BEARING	-	10	-
16	-	-	-	METALLIC GUIDE BEARING ASSEMBLY	1	METALLIC GUIDE BEARING	-	2	-
17.1	-	-	-	ANCHOR BOLT (ON ELASTOMERIC BEARING)	1	30MM DIA OF PROPERTY CLASS 8.8 AS PER IS:1364	-	40	-
17.2	-	-	-	HTS BOLTS (ON ELASTOMERIC BEARING)	1		-	40	-
18.1	-	-	-	HSFG BOLTS (ON SPLICE JOINT)	1	HSFG BOLTS (22MM DIA OF PROPERTY CLASS 8.8 AS PER IS:4000)	-	2130	-
18.2	-	-	-	HSFG BOLTS (ON END AND INT. DIAPHRAGM)			-	-	-
19	-	-	-	HSFG BOLTS (ON BOTTOM LATERAL BRACING)	1	HSFG BOLTS (20MM DIA OF PROPERTY CLASS 8.8 AS PER IS:4000)	-	384	-
20	-	-	-	HSFG BOLTS (ON STAGING ASSEMBLY)	4	HSFG BOLTS (16MM DIA OF PROPERTY CLASS 10.9 AS PER IS:4000)	-	128	-
WEIGHT OF STEEL PORTION (T) =									54.013
ADD 2% FOR BOLTS / WELDS (T) =									1.080
TOTAL WEIGHT OF STEEL PORTION (T) =									55.093

## NOTES

- PART LIST NO. OF ALL STIFFENERS MUST BE MARKED ON COMPLETE GIRDERS TO HELP THE ENGINEERS IN CORRECT ORIENTATION OF THE GIRDER PIECES DURING ASSEMBLY OF THE GIRDERS.
- SHIPPING LIST NOS MUST BE PAINTED ON ALL ASSEMBLED PARTS, AT LEAST 100mm HIGH OR AS HIGH AS THE PART WILL PERMIT.

					<div>DESIGN CONSULTANT</div> <div><div>SPARSH ENGINEERING COMPANY PRIVATE LIMITED H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0851-2340889</div></div>		<div>CLIENT</div> <div><div>DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED (A Govt. of India Enterprise) Ministry of Railway.</div></div>		<div>THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS &amp; 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.</div>				<div>R. D. S. O.</div>		SHEET NO:- 13 OF 14							
									<div>NAME OF WORK:-</div> <div>"IRC-8 LOADING - 2017" 18 M SPAN COMPOSITE WELDED ROB GIRDERS</div>		SCALE:- AS SHOWN											
											ORIGINAL SIZE - A1											
											DATE:-											
					<div>DRAWN BY:-</div> <div> SANJOY BERA</div>		<div>DESIGNED BY:-</div> <div> RAVI PRASAD</div>		<div>CHECKED BY:-</div> <div> SUDHIR KUMAR</div>		<div>DESIGN CHECKED BY:-</div> <div> PRASHANT SRIVASTAVA (JE/D/S&amp;S)</div>		<div>SCRUTINISED &amp; CHECKED BY</div> <div> SANDEEP AGARWAL (JCE/SS-IB/S&amp;S)</div>		<div>SCRUTINISED &amp; RECOMMENDED BY</div> <div> MANISH KUMAR (DBS-VI/S&amp;S)</div>		<div>APPROVED BY</div> <div> RAJESH KUMAR SRIVASTAVA (ED/S&amp;S)</div>		<div>TITLE -</div> <div>PART AND SHIPPING LIST</div>		MAIN DRAWING NO: RDSO/B-11781	
<div>BR NO</div> <div>DESCRIPTION OF WORK</div> <div>ADDERSS</div> <div>CIR 8885</div> <div>ED/S&amp;S</div>																						
REVISION/ALTERATIONS																						



				DESIGN CONSULTANT :  <b>SPARSH ENGINEERING COMPANY PRIVATE LIMITED</b> H-55, Harmu Housing Colony, Near Nigam Park, Ranchi, Jharkhand - 834 002, PH- 0651-2340659		CLIENT :  <b>DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED</b> (A Govt. of India Enterprise) Ministry of Railway.		<b>THIS DRAWING IS THE PROPERTY OF RESEARCH DESIGNS &amp; STANDARDS ORGANISATION (MINISTRY OF RAILWAYS) LUCKNOW - 226011 (INDIA)</b> <b>AND SHALL NOT BE USED, COPIED OR REPRODUCED IN PART OR WHOLE WITHOUT PRIOR CONSENT IN WRITING.</b>				<b>R. D. S. O.</b> SHEET NO.- 14 OF 14			
								DESIGN CHECKED BY :  PRASHANT SRIVASTAVA (JED/BS)		SCRUTINISED & CHECKED BY :  SANDEEP AGARWAL (JDES-IB/BS)		SCRUTINISED & RECOMMENDED BY :  MANISH KUMAR (JDS-VI/BS)		APPROVED BY :  RAJESH KUMAR SRIVASTAVA (ED/BS)	
NAME OF WORK : <b>"IRC-6 LOADING - 2017"</b> <b>18 M SPAN COMPOSITE WELDED ROB GIRDERS</b>										TITLE : <b>GENERAL NOTES</b>		MAIN DRAWING NO: <b>RDSO/B-11781</b>			
DRAWN BY :  SANJOY BERA				DESIGNED BY :  RAVI PRASAD		CHECKED BY :  SUDHIR KUMAR		KHUSHNISH BISWAS DY CPW/IKK		SOUMIK SENGUPTA GWC/VIL/IKK		AJAY KUMAR CGWC/VIL/IKK			
DESCRIPTION OF WORK : <b>REVISION/ALTERATIONS</b>								DURGESH KUMAR SHARMA (JED/BS)		DRAWING NO.- <b>RDSO/B-11781/13</b>		PROVISIONAL			