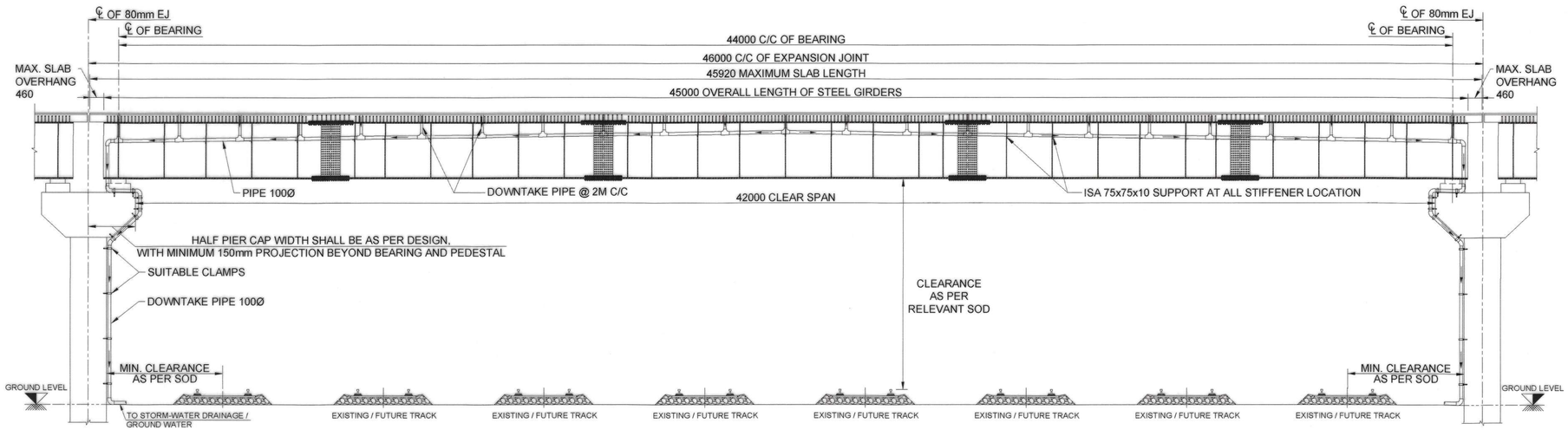
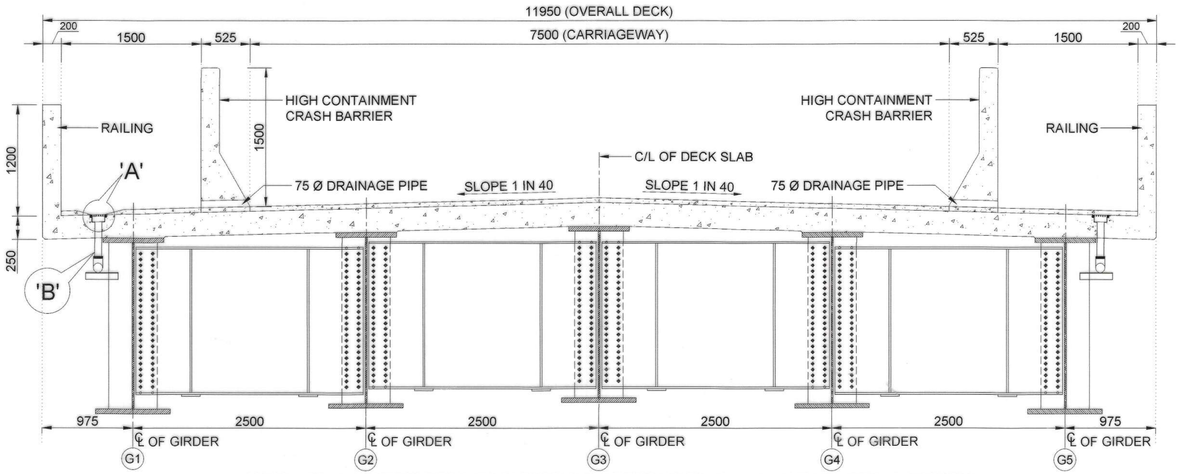
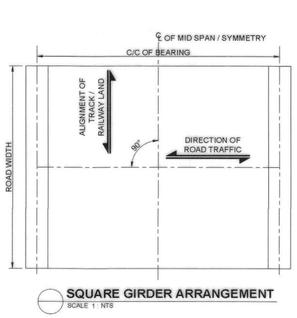


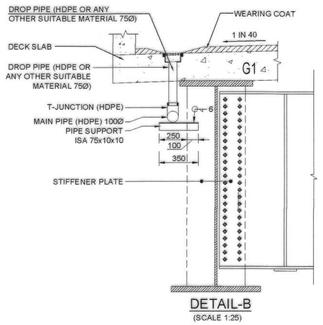
ELEVATION OF SQUARE ARRANGEMENT OVER EXISTING / FUTURE TRACKS
SCALE 1 : 80



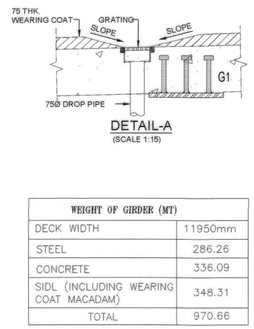
DECK ARRANGEMENT FOR 7.5M CARRIAGEWAY WITH BOTH SIDE FOOTPATH WITH 5 GIRDERS
SCALE 1 : 30



SQUARE GIRDER ARRANGEMENT
SCALE 1 : NTS



DETAIL-B
(SCALE 1:25)



DETAIL-A
(SCALE 1:15)

WEIGHT OF GIRDER (MT)	
DECK WIDTH	11950mm
STEEL	286.26
CONCRETE	336.09
SIDL (INCLUDING WEARING COAT MACADAM)	348.31
TOTAL	970.66

RELATED DRAWINGS

S.N.	DESCRIPTION	REFERENCE
1	GENERAL ARRANGEMENT DRAWING	RDSO/B-11782
2	DETAILS OF MAIN GIRDER, BENT GUSSETS & STUD SHEAR CONNECTOR	RDSO/B-11782/1
3	DETAIL OF SPLICE JOINT	RDSO/B-11782/2
4	DETAILS OF CAMBER DIAGRAM	RDSO/B-11782/3
5	GIRDER ARRANGEMENT PLAN	RDSO/B-11782/4
6	X- SECTIONAL DETAILS AT END DIAPHRAGM	RDSO/B-11782/5
7	X- SECTIONAL DETAILS AT INTERMEDIATE DIAPHRAGM	RDSO/B-11782/6
8	DETAILS OF POT-PTFE BEARING	RDSO/B-11782/7
9	POT - PTFE BEARING AND PEDASTAL LAYOUT PLAN	RDSO/B-11782/8
10	DETAILS OF R.C.C. DECK SLAB	RDSO/B-11782/9
11	DETAILS OF STAGING ARRANGEMENT FOR DECK SLAB AND WELDING SEQUENCE	RDSO/B-11782/10
12	ASSEMBLY DRAWING	RDSO/B-11782/11
13	PART LIST AND SHIPPING LIST	RDSO/B-11782/12
14	GENERAL NOTES	RDSO/B-11782/13
15	NOTES FOR USE OF HIGH STRENGTH FRICTION GRIP (HSFG) BOLTS IN BRIDGE	RDSO/B-11760/R1
16	INSPECTION ARRANGEMENT	CBS-0044

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. GRADE OF STEEL FOR ALL PLATE MEMBERS AND BRACING MEMBERS SHALL BE E-350 B0 CONFORMING TO IS : 2062-2011 WITH EXCEPTIONS PERMITTED AS PER CLAUSE 8 OF IRS B1.
3. 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(III)-2018 POT-PTFE BEARING, IS:3935-1966 (SHEAR CONNECTOR DESIGN CODE) & IS:4000-1982 (HSFG BOLTS).
4. DESIGN LOADINGS, TEMPERATURE EFFECTS, WIND LOADS AND SEISMIC LOAD HAVE BEEN TAKEN FROM IRC:6-2017.
5. THIS DRAWING IS SUITABLE FOR USE UP TO SEISMIC ZONE V. THE SEISMIC FORCE HAS BEEN CALCULATED IN ACCORDANCE WITH IRC:6-2017.
6. CENTRIFUGAL FORCES FOR 10 DEGREE CURVE (AT 75 KMPH SPEED) HAS BEEN CONSIDERED IN THE DESIGN.
7. THE DESIGNS HAVE BEEN DONE FOR 70R (WHEELED) AND A-CLASS LIVE LOADS AS PER IRC:6-2017 AND FOR SPECIAL 385T VEHICLE GIVEN IN IRC:6-2017.
8. CONGESTION FACTOR FOR VEHICULAR LIVE LOAD HAS BEEN CONSIDERED IN DESIGN AS PER IRC:6-2017.
9. SNOW LOADING HAS NOT BEEN CATERED FOR IN THE DESIGN.
10. GRADE OF CONCRETE FOR BED BLOCK WHERE THE BEARING RESTS SHALL BE MINIMUM M-50. FOR DETAILS OF SLAB REFER "DETAILS OF R.C.C. DECK SLAB" DRAWING.
11. CRASH BARRIER SHALL BE PROVIDED AS PER CLAUSE NO. 109.6 OF IRC:5-2015.
12. THIS DRAWING IS SUITABLE FOR STRAIGHT ARRANGEMENT ONLY. FOR SKEW ARRANGEMENT REFER SEPARATE DRAWINGS.
13. THIS DRAWING IS SUITABLE FOR STANDARD ROAD ARRANGEMENT SHOWN IN THIS DRAWING ONLY.
14. FABRICATION OF COMPONENTS OF ROB INCLUDING STUD SHEAR CONNECTOR TO BE DONE IN WORKSHOP.
15. 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.
16. 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.
17. FABRICATION OF STEEL WORKS SHALL BE DONE IN ACCORDANCE WITH IRS B1 AND RELEVANT CODES REFERRED IN.
18. 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.
19. 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.
20. WELDING MAY BE DONE IN ACCORDANCE WITH PROVISIONS OF IRS WELDED BRIDGE CODE OR THE SPECIFICATION/CODES REFERRED IN THIS SPECIFICATION FOR THIS PURPOSE.
21. 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.
22. 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.
23. THE METALLISING AND PAINTING SHALL BE DONE AS PER PARA 39.1 OF IRS B1.
24. ALL HOLES ARE 21.5 DIA. FOR 20 DIA. HSFG BOLTS OF PROPERTY CLASS 10.9 EXCEPT WHERE OTHERWISE SHOWN.
25. SURFACE PREPARATION FOR HSFG BOLTS SHALL BE AS PER RDSO STANDARD DRG. NO. RDSO/B-11760/R1 & BS-111 (LATEST REVISION).
26. THE TOP OF PEDESTALS SHALL BE CHECKED AFTER CASTING OF CONCRETE SUCH THAT THE TOLERANCES AS SPECIFIED IN PARA 9.3 OF IRC 83 (PART 11)-2015 CAN BE MET WITH DURING INSTALLATION. CHIPPING OF EXCESS CONCRETE, FILLING UP GAPS/DEPRESSIONS BY EPOXY MAY BE DONE TO RECTIFY THE PEDESTALS HOLES IN THE PIERS/PEDESTALS FOR HOLDING DOWN BOLTS CAN BE MADE BEFORE GIRDERS ARE PLACED OR DRILLED AFTERWARDS.
27. ALL THE MATERIAL SHOULD HAVE TEST CERTIFICATE(TC) OF THE MAIN PRODUCERS IF REQUIRED ALL THE STRUCTURAL STEEL SHALL BE TESTED FOR MECHANICAL AND CHEMICAL PROPERTIES AS PER VARIOUS CODES AS MAY BE APPLICABLE AND SHALL CONFIRM TO THE REQUIREMENTS SPECIFIED IN IS-2062:2011.
28. THE DRAINAGE ARRANGEMENT SHALL HAVE MINIMUM 1 IN 100 SLOPE AND SUITABLE GRATINGS TO PREVENT INGRESS IF DIRT/GARBAGE INTO THE PIPES.
29. 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.
30. SUITABLE UTILITY DUCT MAY BE PROVIDED WITHIN THE CRASH BARRIER TO CATER THE UTILITY SERVICE AS PER CLAUSE 109.1 OF IRC:5-2015.

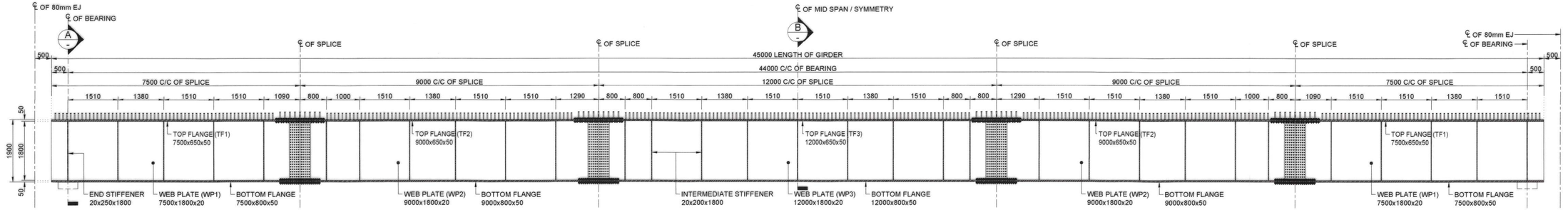
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	
FILLET WELD (BOTH SIDE)	
HOLE FOR HSFGHTS BOLT	○
HSFG BOLT	
SHEAR STUD	●

R. D. S. O.

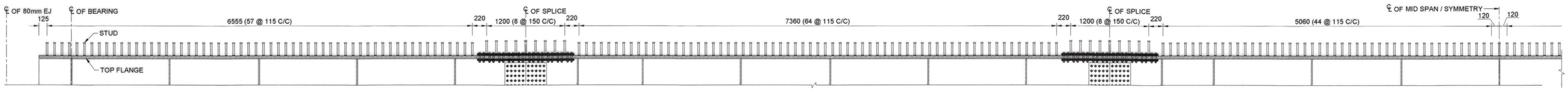
DESIGN REGISTER NO :-							
AUTOCAD FILE NO:-							
	SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S		
		REVISIONS / ALTERATIONS					

DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
DESIGN CHECKED BY:-	DRAWING CHECKED BY:-			
PRASHANT SRIVASTAVA (JE/D/B&S)	SONU (JE/D/B&S)			

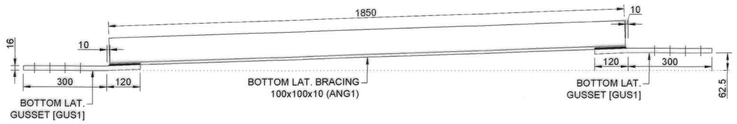
NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**	SHEET NO:- 01 OF 14
	SCALE:- AS SHOWN
	ORIGINAL SIZE:- A1
TITLE:- GENERAL ARRANGEMENT DRAWING	MAIN DRAWING NO:- **RDSO/B-11782**
DRAWING NO:- RDSO/B-11782	PROVISIONAL



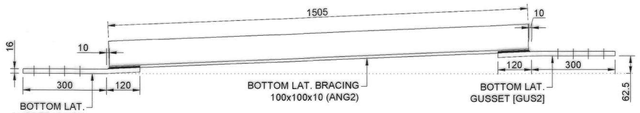
ELEVATION OF GIRDER
SCALE 1 : 60



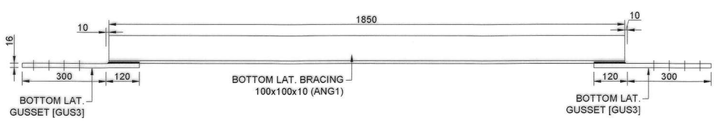
STUD ARRANGEMENT
SCALE 1 : 30



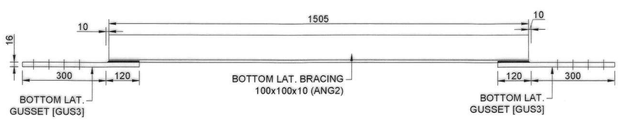
BOTTOM LATERAL BRACING WITH BENT GUSSETS ON EITHER END (BLB1)
SCALE 1 : 10



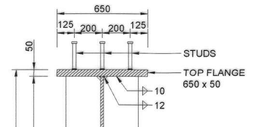
BOTTOM LATERAL BRACING WITH BENT GUSSETS ON EITHER END (BLB2)
SCALE 1 : 10



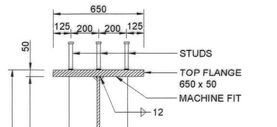
BOTTOM LATERAL BRACING WITH STRAIGHT GUSSETS ON EITHER END (BLB3)
SCALE 1 : 10



BOTTOM LATERAL BRACING WITH STRAIGHT GUSSETS ON EITHER END (BLB4)
SCALE 1 : 10

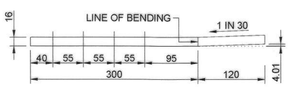


SECTION A
SCALE 1 : 20

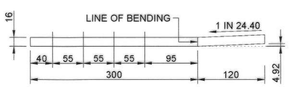


SECTION B
SCALE 1 : 20

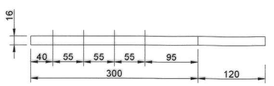
STUD DETAILS
SCALE 1 : 20



GUSSET (GUS1)
SCALE 1 : 5



GUSSET (GUS2)
SCALE 1 : 5



GUSSET (GUS3)
SCALE 1 : 5

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. FABRICATION OF STEEL WORK SHALL BE DONE AS PER IRS B-1 AND WELDED BRIDGE CODE.
3. 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.
4. 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.
5. ALL HOLES ARE 21.5 DIA. FOR 20 DIA. HSFG BOLTS OF PROPERTY CLASS 10.9 EXCEPT WHERE OTHERWISE SHOWN.
6. SURFACE PREPARATION FOR HSFG BOLTS SHALL BE AS PER RDSO STANDARD DRG. NO. RDSO/B-11760/R1.
7. END STIFFENERS SHALL BE CONNECTED TO WEB AND FLANGES BY 10 MM FILLET WELD ALL AROUND. 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 80 MM OF STIFFENER SHALL NOT BE WELDED TO WEB.
8. FOLLOWING PROPERTIES HAVE BEEN ASSUMED FOR STRUCTURAL STEEL IN DESIGN: (YOUNG'S MODULUS = 2 x 10^5/ MPA, POISSON'S RATIO = 0.30 & CO-EFF. OF THERMAL EXPANSION = 0.0000120/ C/UNIT LENGTH).
9. PRE CAMBER 190 MM NEEDS TO BE PROVIDED IN MAIN GIRDER AT THE TIME OF FABRICATION, FOR WHICH THE WEB NEEDS TO BE CUT IN PROFILE INDICATED IN RELEVANT DRAWING.
10. ALL EDGES SHALL BE MACHINE FINISHED IN SPLICES
11. RDSO REPORT NO. BS-115 (LATEST VERSION) MAY BE REFERRED FOR THE DETAILS RELATED TO STUD SHEAR CONNECTORS. QUALITY ASSURANCE PROVISIONS RELATED TO MATERIAL, PROCESS/MACHINE, EXECUTION etc. RELATED TO STUD SHEAR CONNECTOR IS GIVEN IN THIS BS REPORT. THIS SHOULD BE FOLLOWED WHILE PROVIDING STUD SHEAR CONNECTOR ON GIRDER.

NOTES FOR BENT GUSSET & STUD CONNECTOR

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. THE STUD SHEAR CONNECTOR DESIGN IS BASED ON IRC:22-2015.
3. THE WELDING OF STUD SHEAR CONNECTORS SHALL BE DONE BY "DRAWN ARC STUD WELDING WITH CERAMIC FERRULE" TECHNIQUE.
4. THE STUD SHEAR CONNECTOR AND CERAMIC FERRULES SHALL CONFORM TO TYPE SD1/UF AS PER BS EN ISO 13918-2008. MECHANICAL PROPERTIES OF STUD SHEAR CONNECTORS SHALL BE AS PER ISO 6892/BS EN ISO 13918-2008.
5. SHAPE OF TIP OF STUD SHEAR CONNECTORS MAY BE CHOSEN BY MANUFACTURER. THE STUD TIP SHALL BE SUPPLIED WITH FLUX IN THE FORM OF PRESS FITTED ALUMINUM BALL OR ALUMINUM SPRAY COATING.
6. THE DIAMETER OF CERAMIC FERRULE D7 AS PER FIGURE 13/TABLE 18 OF BS EN ISO 13918-2008 SHALL BE 26 MM +/- 0.5 MM 0.0 MM
7. IN BAYS WHERE GIRDERS ARE HAVING 62.5 MM LEVEL DIFFERENCE, BOTTOM LATERAL BRACING WITH BENT GUSSETS SHALL BE PROVIDED. BOTTOM LATERAL BRACING WITH STRAIGHT GUSSETS SHALL BE PROVIDED IN BAYS HAVING GIRDER AT SAME LEVEL.
8. FOR BENDING THE GUSSET, A TEMPLATE SHALL BE PREPARED WITH DIMENSIONS AS SHOWN ABOVE. BENDING OF GUSSETS SHALL BE DONE BY COLD PRESSING ON THIS TEMPLATE. HEATING/HAMMERING OF GUSSET TO BEND THE SAME IS NOT PERMITTED. HOLES SHALL BE DRILLED ONLY AFTER THE GUSSET HAS BEEN BENT.

TESTING OF STUD SHEAR CONNECTOR

(A) APPEARANCE TEST

1. THE WELD TO A STUD SHEAR CONNECTOR SHOULD FROM A COMPLETE COLLAR AROUND THE SHANK AND FREE FROM CRACKS, EXCESSIVE SPLASHES OF WELD MATERIAL, FREE FROM INJURIOUS LAPS, FINS, SEAMS, TWIST, BENDS OR OTHER INJURIOUS DEFECTS.
2. WELD MATERIAL SHOULD HAVE A 'STEEL BLUE' APPEARANCE.

(B) TEST TO CHECK THE FIXING OF SHEAR STUDS

ALL STUDS NEED TO BE CHECKED BY A RING TEST.

1. RING TEST : INVOLVES STRIKING THE SIDE OF THE HEAD OF THE STUD WITH A 2 KG. HAMMER. A RINGING TONE ACHIEVED AFTER STRIKING INDICATES GOOD FUSION WHEREAS DULL TONE INDICATES A LACK OF FUSION (BS 5400 - 6).
2. BEND TEST : TEST REQUIRES THE HEAD OF A STUD TO BE DISPLACED LATERALLY BY APPROXIMATE 25% OF ITS HEIGHT USING A 6 KG. HAMMER.

- THE WELD SHOULD THEN BE CHECKED FOR SIGNS OF CRACKING OR LACK OF FUSION.
- STUD SHOULD NOT BE BENT BACK AS THIS IS LIKELY TO DAMAGE THE WELD.
- THE TESTING RATE SHOULD BE 1 IN 50 (BS 5400 - 6).

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

R. D. S. O.

DESIGN REGISTER NO :-

AUTOCAD FILE NO:-

SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S
	REVISIONS / ALTERATIONS			

DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
DESIGN CHECKED BY:-	DRAWING CHECKED BY:-			
PRASHANT SRIVASTAVA (JE/D/B&S)	SONU (JE/D/B&S)			

NAME OF WORK:- **"IRC-6 LOADING - 2017"**
42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS

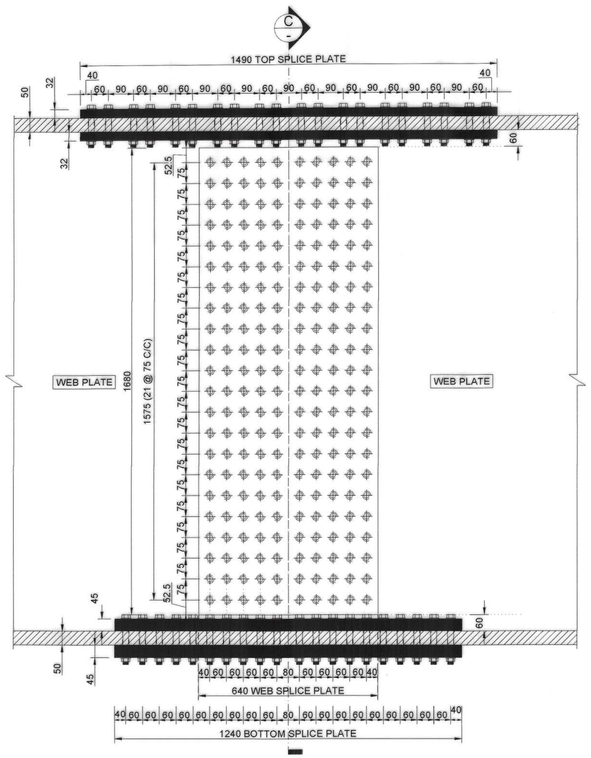
SHEET NO:-02 OF 14
SCALE:- AS SHOWN
ORIGINAL SIZE:- A1

TITLE:- DETAILS OF MAIN GIRDER, BENT GUSSETS & STUD SHEAR CONNECTOR

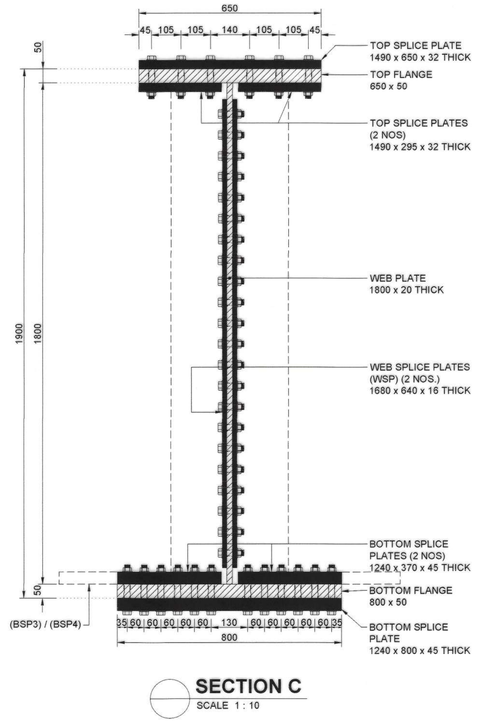
MAIN DRAWING NO:- **RDSO/B-11782**

DRAWING NO:- RDSO/B-11782/1

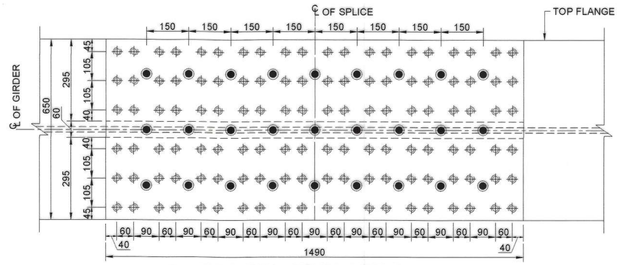
PROVISIONAL



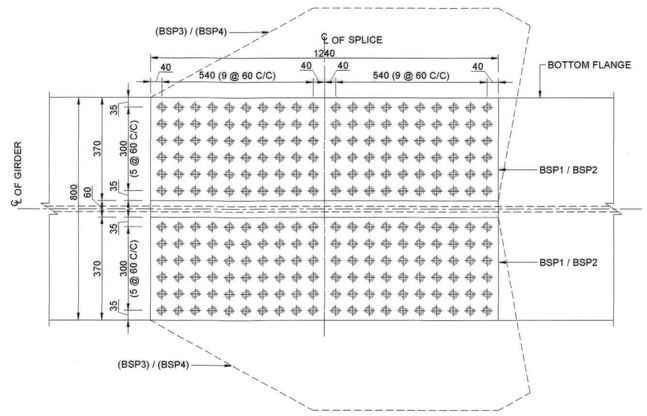
ELEVATION
SCALE 1 : 10



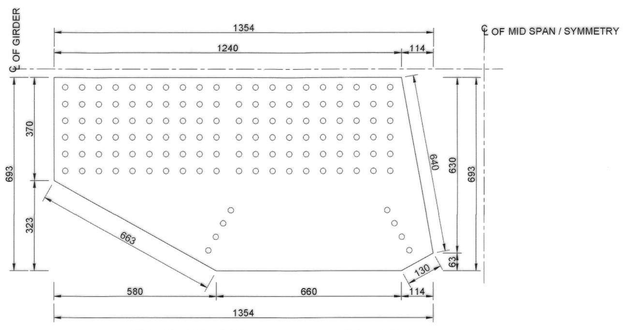
SECTION C
SCALE 1 : 10



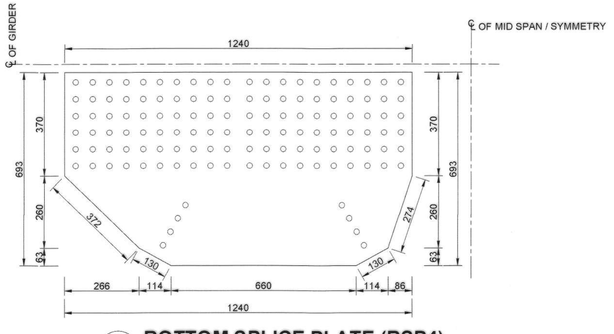
TOP SPLICE PLATE PLAN
SCALE 1 : 10



BOTTOM SPLICE PLATE PLAN
SCALE 1 : 10



BOTTOM SPLICE PLATE (BSP3)
SCALE 1 : 10



BOTTOM SPLICE PLATE (BSP4)
SCALE 1 : 10

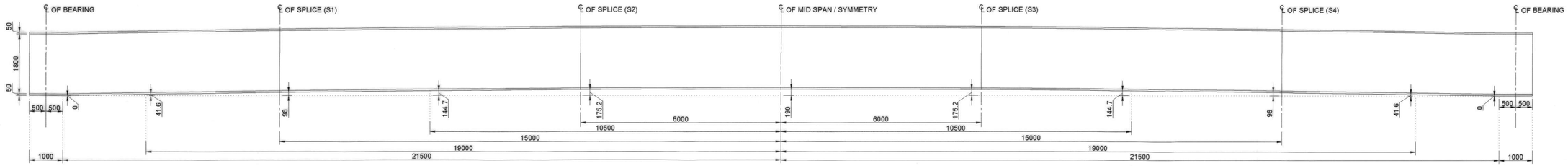
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	
FILLET WELD (BOTH SIDE)	
HOLE FOR HSFG/HTS BOLT	
HSFG BOLT	
SHEAR STUD	

R. D. S. O.

DESIGN REGISTER NO :-					
AUTOCAD FILE NO:-					
SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S	
	REVISIONS / ALTERATIONS				

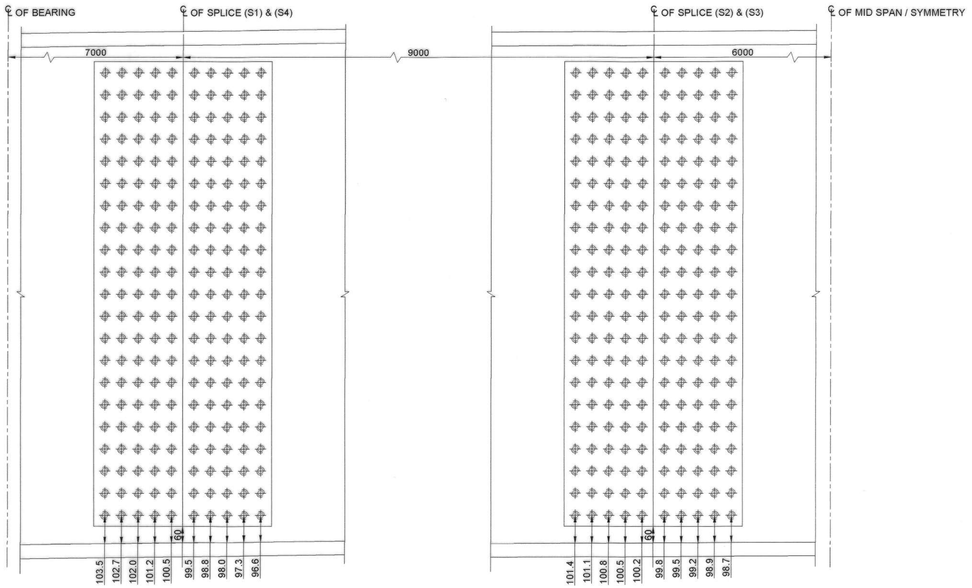
DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)			
DESIGN CHECKED BY:-	DRAWING CHECKED BY:-			
PRASHANT SRIVASTAVA (JE/D/B&S)	SONU (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)

NAME OF WORK:-	**"IRC-6 LOADING - 2017"** **42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**	SHEET NO:- 03 OF 14 SCALE:- AS SHOWN ORIGINAL SIZE:- A1
TITLE:-	DETAILS OF SPLICE JOINT	MAIN DRAWING NO:- **RDSO/B-11782**
DRAWING NO:- RDSO/B-11782/2		PROVISIONAL



CAMBER DIAGRAM

SCALE 1 : 60



DETAILS OF FIRST ROW OF HOLES FOR SPLICE (S1) & (S4) IN WEB PLATE

SCALE 1 : 10

DETAILS OF FIRST ROW OF HOLES FOR SPLICE (S2) & (S3) IN WEB PLATE

SCALE 1 : 10

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. CAMBER IS TO BE PROVIDED BY CUTTING WEB PLATE IN PROFILE AS PER DIMENSIONS INDICATED IN THIS DRAWING.
3. FLANGE SPLICE PLATES ARE TO BE BENT TO SUIT THE CAMBER PROFILE OF GIRDER. IT IS EXPECTED THAT PLATES WILL BEND DURING BOLT TIGHTENING. HOWEVER IF ANY PROBLEM EXPERIENCED, THE FLANGE SPLICE PLATES MAY BE PRE-BENT HYDRAULICALLY.
4. WEB SPLICE PLATE IS STRAIGHT AND HOLES IN THESE PLATES ARE AS PER SPLICE DETAILS GIVEN.
5. THE DISTANCE OF FIRST ROW OF HOLES IN WEB SPLICE FROM BOTTOM OF WEB ARE VARYING AS PER DETAILS GIVEN IN THIS DRAWING. THIS HAS BEEN DONE TO ENSURE THAT HOLES ARE IN HORIZONTAL LINE WHEREAS WEB IS CUT TO CAMBER PROFILE. WEB SPLICE PLATE AND THEIR HOLES ARE ALSO HORIZONTAL.
6. SURFACE PREPARATION FOR PROVISION OF HSFG BOLTS SHALL BE DONE TO ENSURE MINIMUM SLIP FACTOR OF 0.40.

DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	
FILLET WELD (BOTH SIDE)	
HOLE FOR HSFG/HTS BOLT	
HSFG BOLT	
SHEAR STUD	

R. D. S. O.

DESIGN REGISTER NO :-

AUTOCAD FILE NO:-

SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S

REVISIONS / ALTERATIONS

DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
DESIGN CHECKED BY:-	DRAWING CHECKED BY:-			
PRASHANT SRIVASTAVA (JE/D/B&S)	SONU (JE/D/B&S)			

NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**

SHEET NO:- 04 OF 14

SCALE:- AS SHOWN

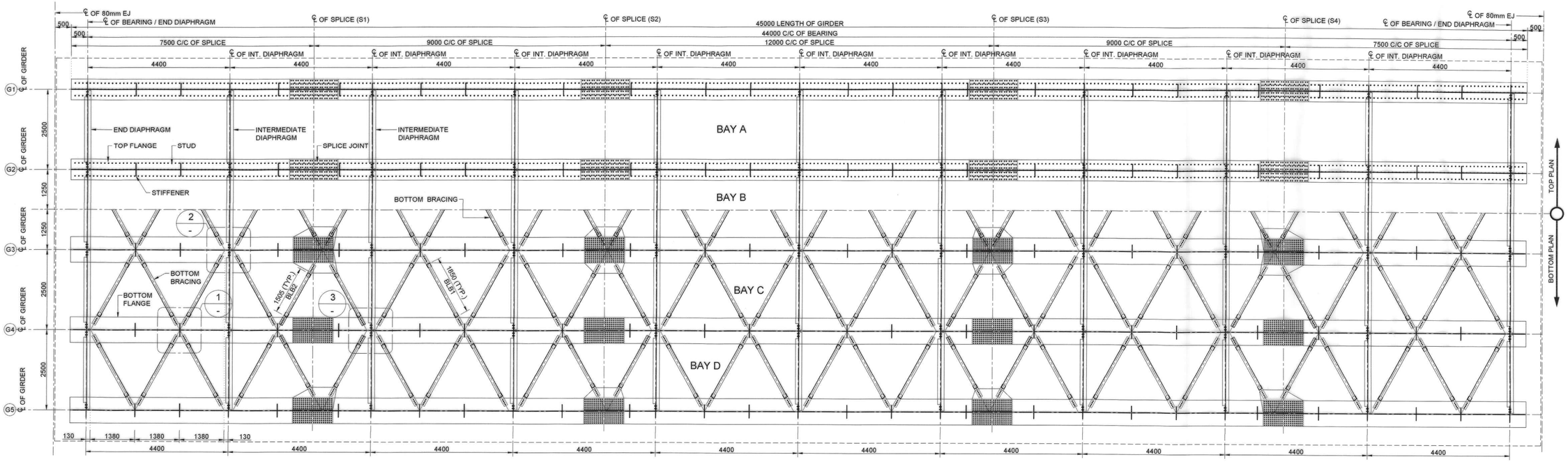
ORIGINAL SIZE:- A1

TITLE:- DETAILS OF CAMBER DIAGRAM

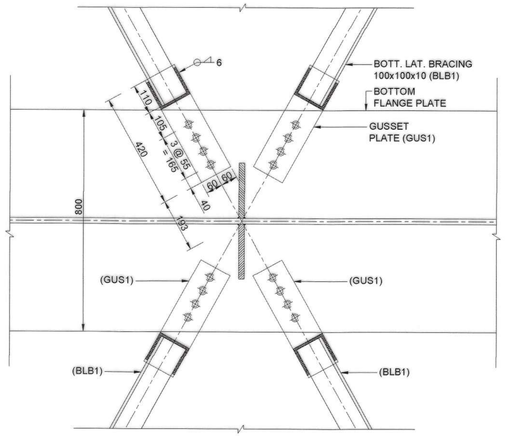
MAIN DRAWING NO:- **RDSO/B-11782**

DRAWING NO:- RDSO/B-11782/3

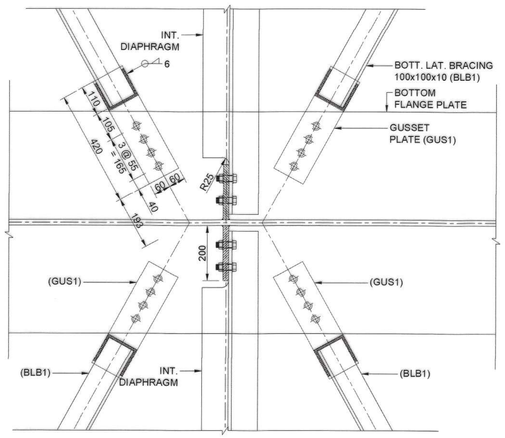
PROVISIONAL



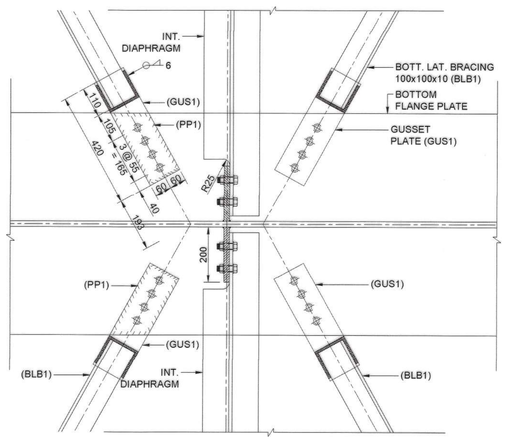
LAYOUT PLAN
SCALE 1 : 60



DETAIL 1
SCALE 1 : 10



DETAIL 2
SCALE 1 : 10



DETAIL 3
SCALE 1 : 10

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. FABRICATION OF STEEL WORK SHALL BE DONE AS PER IRS B-1 AND WELDED BRIDGE CODE.
3. THIS DRAWING GIVES DETAILS OF SQUARE ARRANGEMENT ONLY WITH PLAN OF FIVE GIRDER LEAVES .
4. ALL HOLES ARE 21.5 DIA. FOR 20 DIA. HSFG BOLTS OF PROPERTY CLASS 10.9 EXCEPT WHERE OTHERWISE SHOWN.
5. SURFACE PREPARATION FOR HSFG BOLTS SHALL BE AS PER RDSO STANDARD DRG. NO. RDSO/B-11760/R1.
6. THE GIRDER/BAY NUMBERING IS FOR ILLUSTRATION PURPOSE ONLY. NO OTHER INFERENCE MAY BE DRAWN FROM THESE.

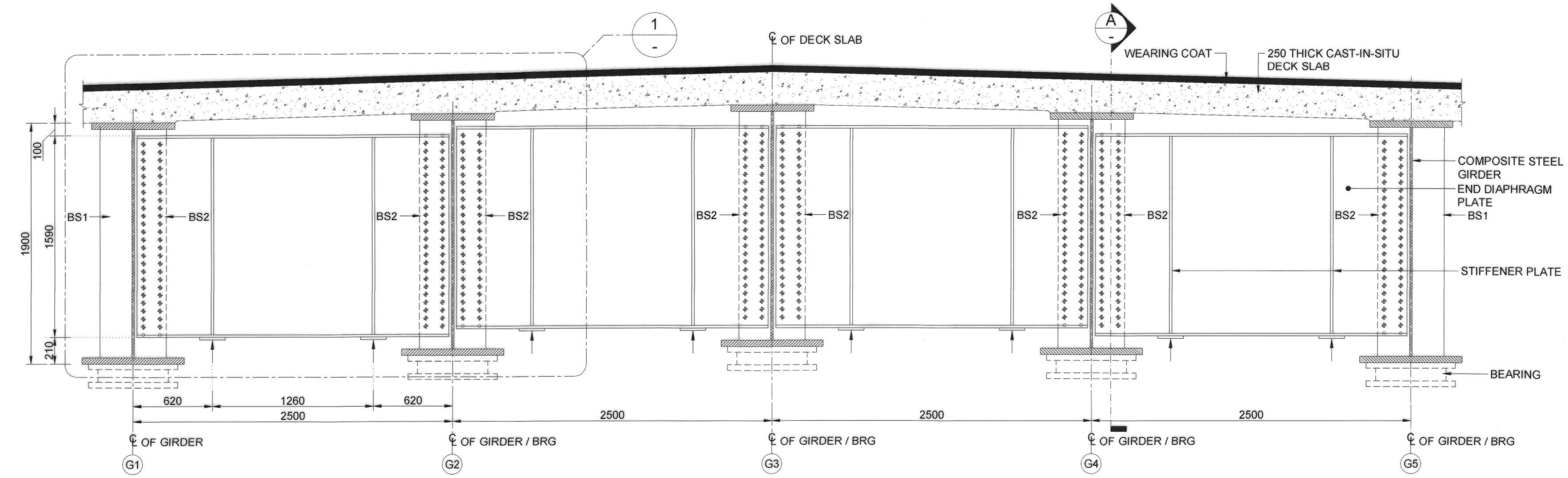
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	
FILLET WELD (BOTH SIDE)	
HOLE FOR HSFG/HTS BOLT	
HSFG BOLT	
SHEAR STUD	

R. D. S. O.

DESIGN REGISTER NO :-					
AUTOCAD FILE NO:-					
SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S	
REVISIONS / ALTERATIONS					

DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JE/D/B&S)	DRAWING CHECKED BY:- SONU (JE/D/B&S)			

NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**	SHEET NO:-05 OF 14
	SCALE:- AS SHOWN
	ORIGINAL SIZE:- A1
TITLE:- GIRDER ARRANGEMENT PLAN	MAIN DRAWING NO:- **RDSO/B-11782**
DRAWING NO:- RDSO/B-11782/4	PROVISIONAL

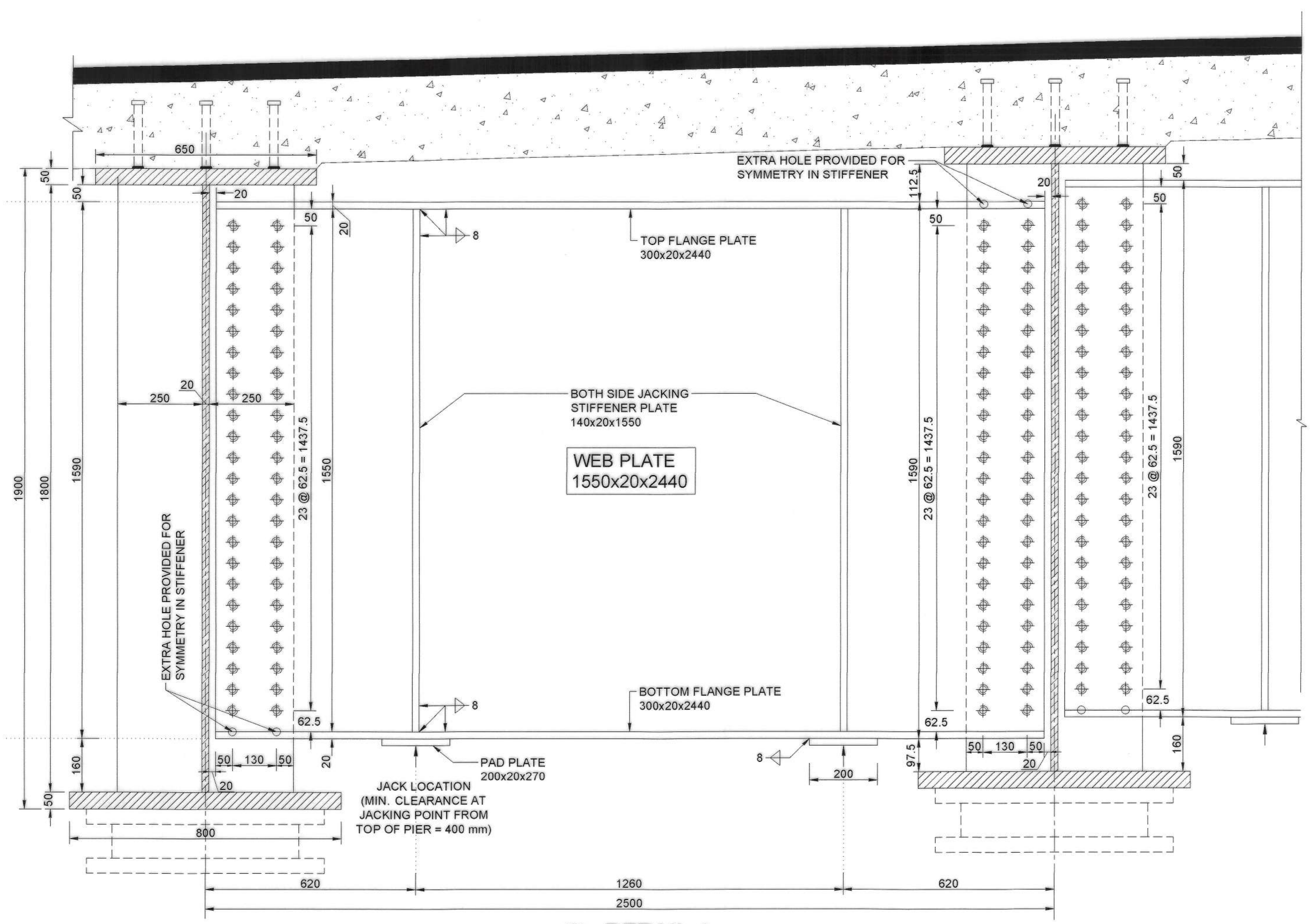


ELEVATION OF END DIAPHRAGM FOR 5 GIRDER LEAVES

SCALE 1 : 20

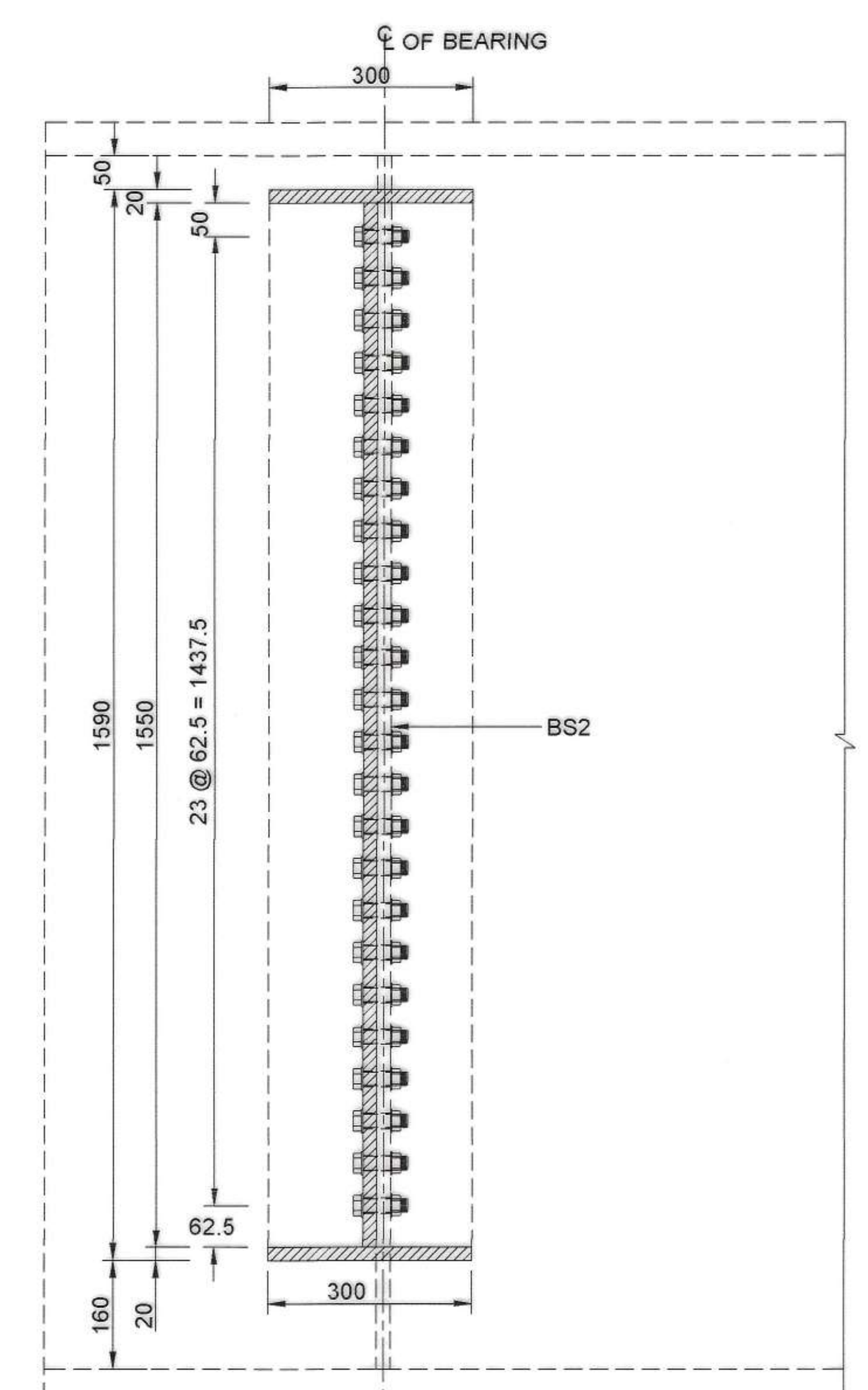
NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. ALL HOLES ARE 21.5 DIA. FOR 20 DIA. HSFG BOLTS OF PROPERTY CLASS 10.9 EXCEPT WHERE OTHERWISE SHOWN.
3. SURFACE PREPARATION FOR HSFG BOLTS SHALL BE AS PER RDSO STANDARD DRG. NO. RDSO/B-11760/R1.
4. CO2 WELDING SHALL BE PREFERRED OVER MANUAL METAL ARC WELDING FOR DIAPHRAGM FABRICATION.
5. 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.
6. THIS DRAWING GIVES DETAILS OF SQUARE ARRANGEMENT ONLY.
7. THE PEDESTALS ARE AT DIFFERENT LEVELS TO PROVIDE CROSS SLOPE 1:40 IN THE DECK SLAB/ROAD. THIS ASPECT MUST BE KEPT IN MIND WHILE PLANNING THE PIERS.
8. THE GIRDERS SHALL BE PLACED ON PEDESTALS PROPERLY FINISHED TO PROPER ALIGNMENT, LEVEL AND CROSS SLOPE ETC AS PER CLAUSE 9.3 OF IRC:83 PART II-2015. CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE PAINT MARKED IN LONGITUDINAL AS WELL AS TRANSVERSE DIRECTIONS. WHILE PLACING THE GIRDER. THE CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE MATCHED WITH THE MARKINGS ON THE PEDESTALS.
9. THE HOLES IN THE STIFFENERS OF GIRDERS ARE GIVEN SUCH THAT ANY CROSS FRAME/END DIAPHRAGM CAN BE PROVIDED IN ANY BAY WITH ONE ROW OF HOLES REMAINING BLANK. HOLES IN BEARING/INTERMEDIATE STIFFENERS, WHEREVER PROVIDED ARE IDENTICAL.
10. THIS DRAWING ONLY SHOW SOME PART OF SLAB. ARRANGEMENTS SUCH AS PATHWAY AND CRASH BARRIER HAVE NOT BEEN SHOWN. REFER SEPARATE DRAWING FOR SLAB DETAILS.
11. THE BEARINGS SHOWN IN THIS DRAWING ARE INDICATIVE ONLY. THE DIMENSIONS OF PEDESTALS SHALL BE AS GIVEN BY THE DESIGNER FOR SUB-STRUCTURE. THE PEDESTAL SHALL PROJECT AT LEAST 150 MM BEYOND BOTTOM BEARING PLATE. THE DIMENSION OF THE PEDESTALS SHALL NOT BE SCALED/ MEASURED FROM THIS DRAWING.
12. MINIMUM CLEARANCE AT JACKING POINT FROM TOP OF PIER SHALL BE 400 MM.



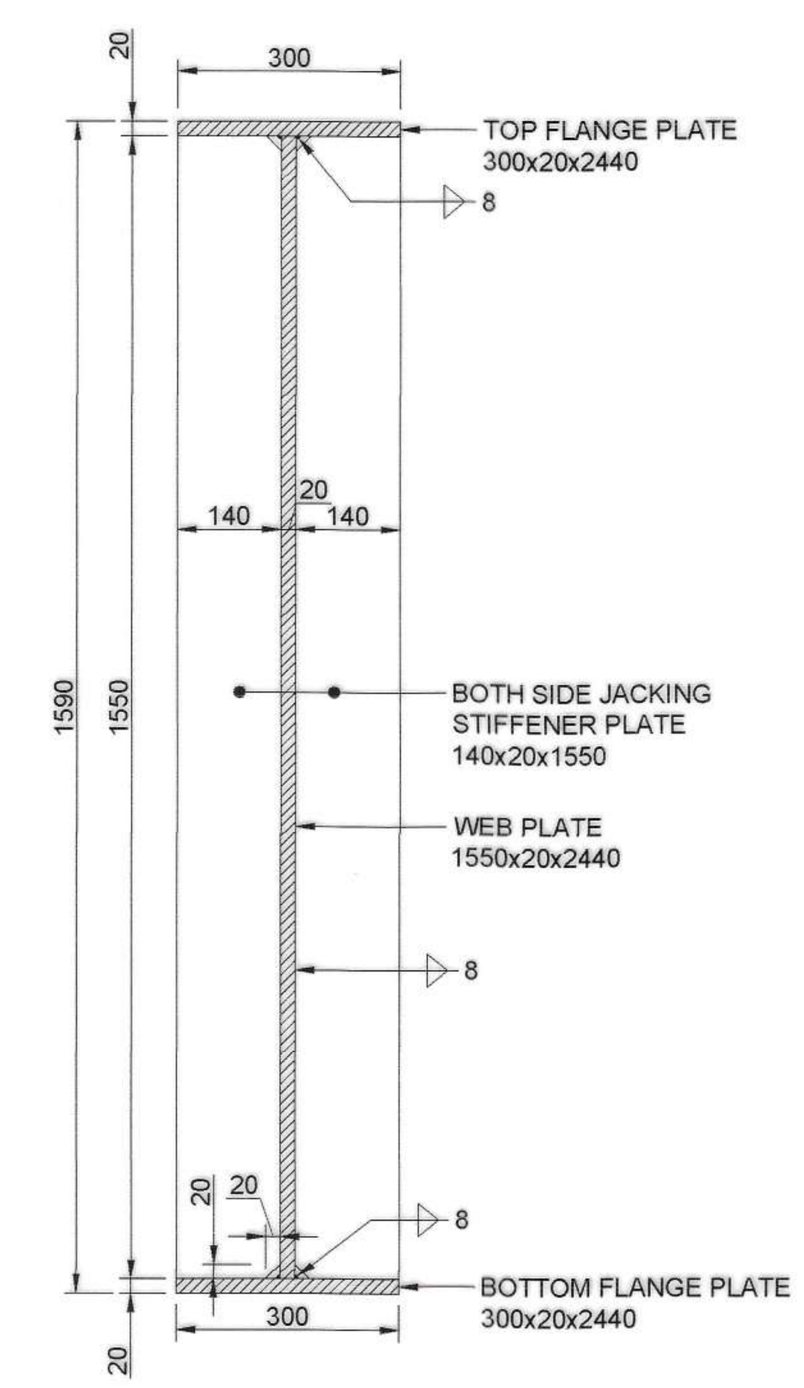
DETAIL 1

SCALE 1 : 10



SECTION A

SCALE 1 : 10



SECTION OF END DIAPHRAGM

SCALE 1 : 10

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

R. D. S. O.

DESIGN REGISTER NO :-

AUTOCAD FILE NO:-

SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S

REVISIONS / ALTERATIONS

DESIGNED BY:- SONU (JE/D/B&S)

DRAWN BY:- DURGESH KR. SHARMA (JE/D/B&S)

DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JE/D/B&S)

DRAWING CHECKED BY:- SONU (JE/D/B&S)

SCRUTINISED & CHECKED BY: B.K. MAHAUR (ADE/SB-II/B&S)

SCRUTINISED & RECOMMENDED BY: MANISH KUMAR (DIR.-VII/B&S)

APPROVED BY: RAJESH KUMAR SRIVASTAVA (ED/B&S)

NAME OF WORK:- "IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS

TITLE:- X- SECTIONAL DETAILS (END DIAPHRAGM)

DRAWING NO:- RDSO/B- 11782/5

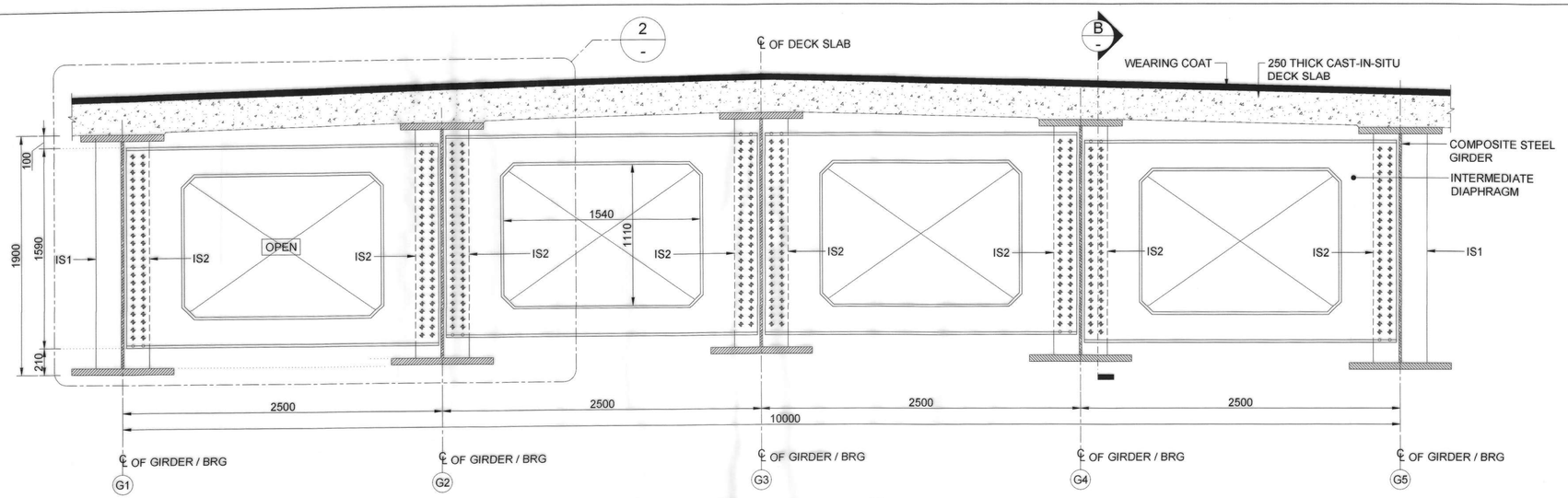
SHEET NO:- 06 OF 14

SCALE:- AS SHOWN

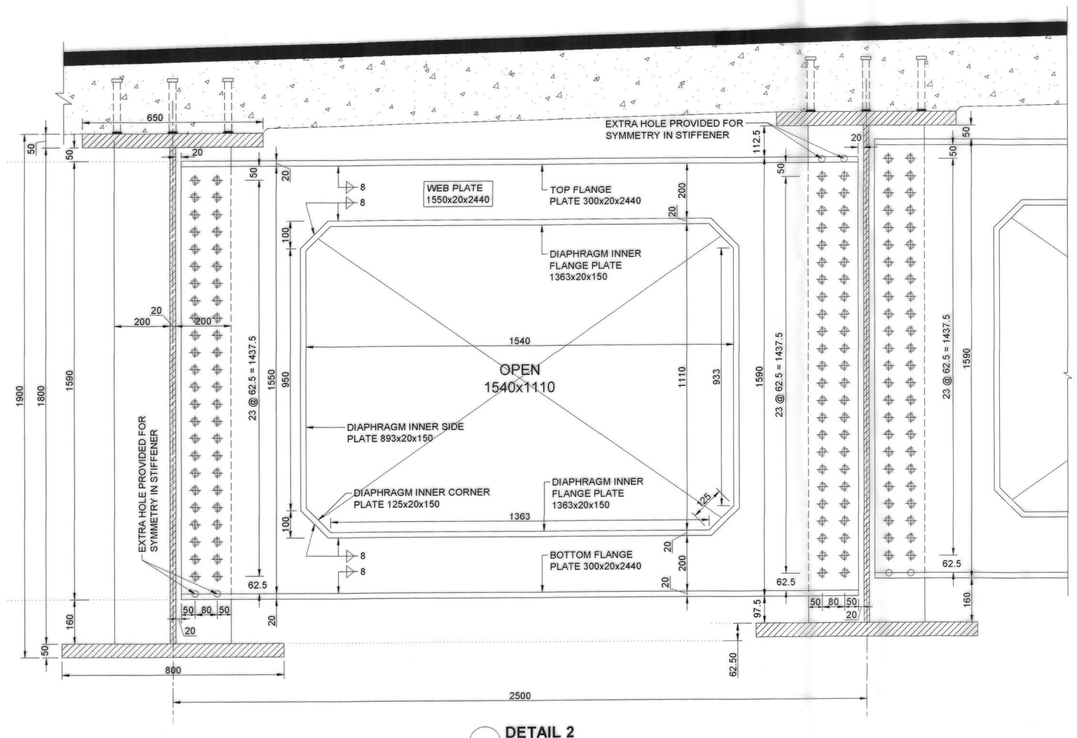
ORIGINAL SIZE:- A1

MAIN DRAWING NO:- RDSO/B-11782

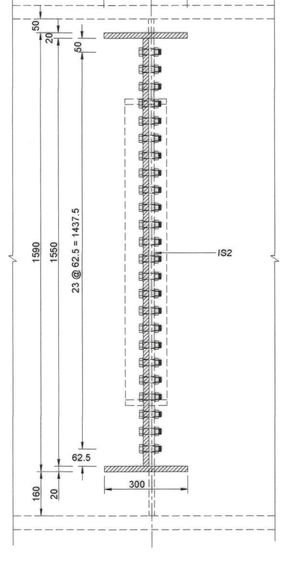
PROVISIONAL



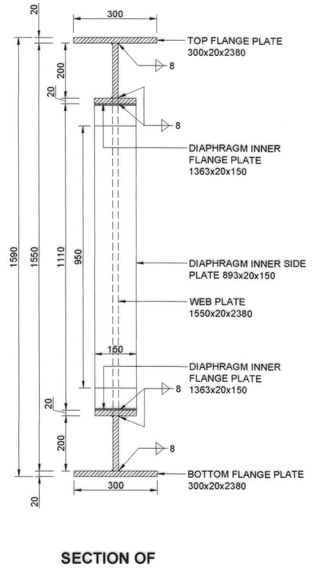
ELEVATION OF INTERMEDIATE DIAPHRAGM FOR 5 GIRDER LEAVES
SCALE 1 : 20



DETAIL 2
SCALE 1 : 10



SECTION B
SCALE 1 : 10



SECTION OF INTERMEDIATE DIAPHRAGM
SCALE 1 : 10

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. ALL HOLES ARE 21.5 DIA. FOR 20 DIA. HSFG BOLTS OF PROPERTY CLASS 10.9 EXCEPT WHERE OTHERWISE SHOWN.
3. SURFACE PREPARATION FOR HSFG BOLTS SHALL BE AS PER RDSO STANDARD DRG. NO. RDSO/B-11760/R1.
4. CO2 WELDING SHALL BE PREFERRED OVER MANUAL METAL ARC WELDING FOR DIAPHRAGM FABRICATION.
5. 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.
6. THIS DRAWING GIVES DETAILS OF SQUARE ARRANGEMENT ONLY.
7. THE PEDESTALS ARE AT DIFFERENT LEVELS TO PROVIDE CROSS SLOPE 1:40 IN THE DECK SLAB/ROAD. THIS ASPECT MUST BE KEPT IN MIND WHILE PLANNING THE PIERS.
8. THE GIRDERS SHALL BE PLACED ON PEDESTALS PROPERLY FINISHED TO PROPER ALIGNMENT, LEVEL AND CROSS SLOPE ETC AS PER CLAUSE 9.3 OF IRC:83 PART II-2015. CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE PAINT MARKED IN LONGITUDINAL AS WELL AS TRANSVERSE DIRECTIONS. WHILE PLACING THE GIRDER. THE CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE MATCHED WITH THE MARKINGS ON THE PEDESTALS.
9. THE HOLES IN THE STIFFENERS OF GIRDERS ARE GIVEN SUCH THAT ANY CROSS FRAME/END DIAPHRAGM CAN BE PROVIDED IN ANY BAY WITH ONE ROW OF HOLES REMAINING BLANK. HOLES IN BEARING/INTERMEDIATE STIFFENERS, WHEREVER PROVIDED ARE IDENTICAL.
10. THIS DRAWING ONLY SHOW SOME PART OF SLAB. ARRANGEMENTS SUCH AS PATHWAY AND CRASH BARRIER HAVE NOT BEEN SHOWN. REFER SEPARATE DRAWING FOR SLAB DETAILS.
11. THE BEARINGS SHOWN IN THIS DRAWING ARE INDICATIVE ONLY. THE DIMENSIONS OF PEDESTALS SHALL BE AS GIVEN BY THE DESIGNER FOR SUB-STRUCTURE. THE PEDESTAL SHALL PROJECT AT LEAST 150 MM BEYOND BOTTOM BEARING PLATE. THE DIMENSION OF THE PEDESTALS SHALL NOT BE SCALED/MEASURED FROM THIS DRAWING.
12. MINIMUM CLEARANCE AT JACKING POINT FROM TOP OF PIER SHALL BE 400 MM.

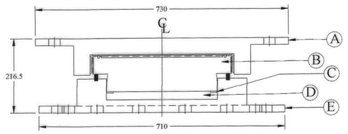
DESCRIPTION	SYMBOL
FILLET WELD (ONE SIDE)	
FILLET WELD (BOTH SIDE)	
HOLE FOR TURNED BOLT	○
HSFG BOLT	◎
SHEAR STUD	●

R. D. S. O.

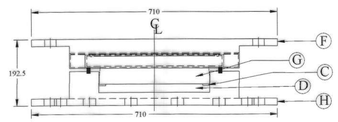
DESIGN REGISTER NO :-					DESIGNED BY:- SONU (JE/D/B&S)	DRAWN BY:- DURGESH KR. SHARMA (JE/D/B&S)	SCRUTINISED & CHECKED BY
AUTOCAD FILE NO:-					DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JE/D/B&S)	DRAWING CHECKED BY:- SONU (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)
	SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S		
		REVISIONS / ALTERATIONS					

SCRUTINISED & RECOMMENDED BY	APPROVED BY
MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S) 30/6/2025

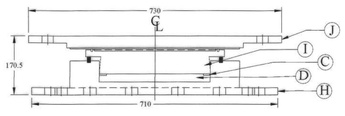
NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**		SHEET NO:- 07 OF 14
		SCALE:- AS SHOWN
		ORIGINAL SIZE:- A1
TITLE:- X- SECTIONAL DETAILS (INTERMEDIATE DIAPHRAGM)		MAIN DRAWING NO:- **RDSO/B-11782**
DRAWING NO:- RDSO/B-11782/6		PROVISIONAL



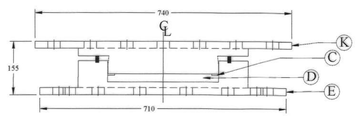
LONG.-GUIDE BEARING ASSEMBLY



TRANS.-GUIDE BEARING ASSEMBLY

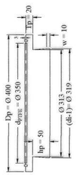


FREE - BEARING ASSEMBLY

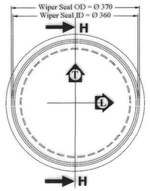


FIXED - BEARING ASSEMBLY

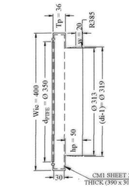
ACROSS LONGITUDINAL AXIS OF GIRDER
(CENTER LINE OF THE GIRDER COINCIDES WITH CENTER LINE OF BEARING SHOWN)



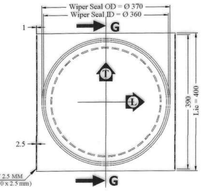
SECTIONAL
ELEVATION AT 'H-H'



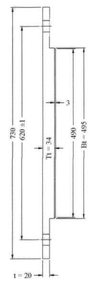
PLAN VIEW OF PISTON
PART I: FREE BEARINGS



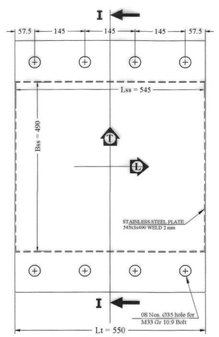
SECTIONAL
ELEVATION AT 'G-G'



PLAN VIEW OF PISTON
PART G:TRANS. SLIDING BEARINGS



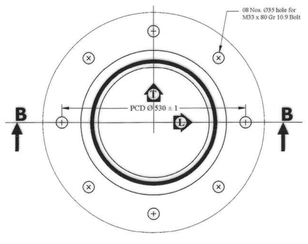
SECTIONAL
ELEVATION AT 'I-I'



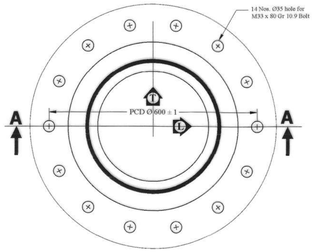
VIEW FROM TOP
PART J: TOP PLATE FOR
FREE BEARING

SECTIONAL
ELEVATION AT 'B-B'

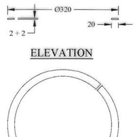
SECTIONAL
ELEVATION AT 'A-A'



PLAN VIEW OF POT FROM TOP
PART H: FREE /TRANS. SLIDING BEARINGS

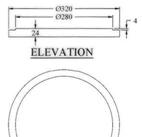


PLAN VIEW OF POT FROM TOP
PART E: FIX /LONG. SLIDING BEARINGS



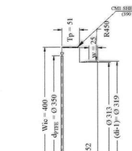
ELEVATION

VIEW FROM TOP
PART C: BRASS RINGS
FOR RETAINING
ELASTOMER IN POT

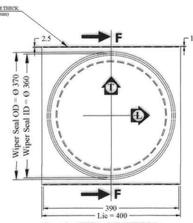


ELEVATION

PLAN VIEW FROM TOP
PART D: ELASTOMER PAD
FOR BEARING

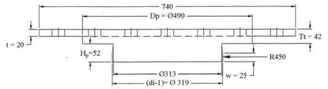


SECTIONAL
ELEVATION AT 'F-F'

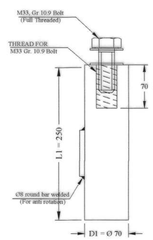


PLAN VIEW OF PISTON
PART B: LONG. SLIDING
BEARINGS

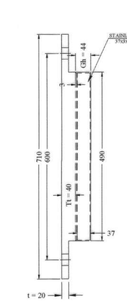
Detail "X"



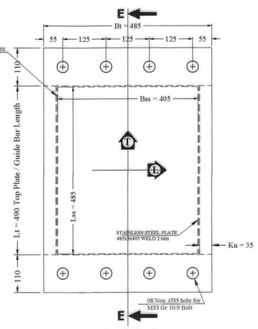
SECTIONAL
ELEVATION AT 'C-C'



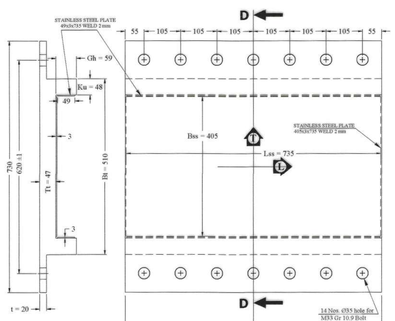
ANCHOR BOLT/ SLEEVE



SECTIONAL
ELEVATION AT 'E-E'

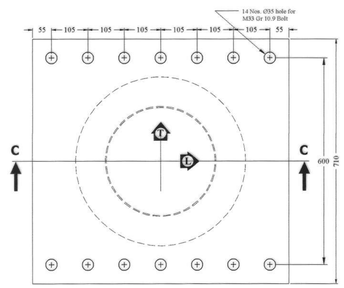


VIEW FROM TOP
PART F: TOP PLATE FOR
TRANSVERSE GUIDE



SECTIONAL
ELEVATION AT 'D-D'

PART A: TOP PLATE FOR
LONG. GUIDE VIEW FROM BOTTOM



VIEW FROM BOTTOM
PART K: PISTON FOR FIXED BEARING

NOTES:-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. THE DESIGN IS IN ACCORDANCE WITH IRC:83 (PART-III)-2018.
3. FOR EACH GIRDER SUITABLE BEARINGS SHALL BE FABRICATED & PROVIDED AS GIVEN LAYOUT NO. RDSO/B-11782/8. FIXED END MAY BE KEPT AS DECIDED BY THE DESIGNER WHO HAS DESIGNED THE SUBSTRUCTURE.
4. POT-PTFE BEARINGS ARE TO BE PROVIDED TO BEAR AND TRANSMIT THE VERTICAL FORCES AS WELL AS HORIZONTAL FORCES UP TO SEISMIC ZONE-V, DEPENDING ON TYPE OF BEARINGS.
5. POT-PTFE BEARINGS ARE TO BE INSTALLED UNDER THE BEARING STIFFENERS IN MAIN GIRDERS AS PER LAYOUT GIVEN.
6. THE CONCRETE IN BED BLOCK SHALL BE OF MIN M-50 GRADE.
7. BEARINGS SHALL BE PROVIDED BEFORE CONCRETING OF DECK SLAB IS TAKEN UP.
8. BEARINGS SHALL BE PROTECTED DURING CONCRETING OR PROVIDING HOLDING DOWN BOLTS OPERATIONS. ANY MORTAR OR FOREIGN MATERIAL CONTAMINATING THE BEARING SHALL BE COMPLETELY REMOVED.
9. MANUFACTURE & FINISHING OF BEARINGS SHALL BE AS PER CLAUSE 6.2 OF IRC:83 (PART-III)-2018.
10. MANUFACTURING TOLERANCES SHALL BE AS PER CLAUSE 6.1 OF IRC:83 (PART-III)-2018.
11. ACCEPTANCE OF BEARING SHALL BE AS PER CLAUSE 7.1 OF IRC:83 (PART-III)-2018.
12. MATERIAL TO BE USED FOR POT, PISTON AND TOP PLATE INCLUDING ALL GUIDES, LUGS ETC SHALL BE OF CAST STEEL TO IS 1030:1989 GRADE 340-570W AS PER CLAUSE 4.1.2 OF IRC:83 (PART-III)-2018.
13. ALL THE FLAME CUT, SAWN OR PLANED EDGES OF THE PLATES SHOULD BE MACHINED. ALL SHEARED CORNERS SHALL BE ROUNDED OFF WITH 2 MM RADIUS.
14. FOR WELDING STAINLESS STEEL SHEET, M 1 ELECTRODE TYPE WITH STAINLESS STEEL CORE WIRE AS PER IRS: M-28-2012 SHALL BE USED.
15. PTFE SHEET SHALL BE PURE POLY TETRA FLUORO ETHYLENE, AND THEIR PROPERTIES & THICKNESS SHALL BE AS PER TABLE 4.1 & TABLE 5.3 RESPECTIVELY OF IRC:83 (PART-III)-2018, HAVING EITHER DIMPLES (HOT PRESSED OR MOLDED) OR MODULES AS PER IRC:83 (PART-III)-2018 THESE SHALL BE PASTED IN RECESS 2.5 MM DEEP IN THE BEARING AND THE PEEL STRENGTH OF GLUE TO BE USED SHALL NOT BE LESS THAN 4 N/MM.
16. MATERIAL TO BE USED FOR WIPER SEAL AND DUST SEAL SHALL BE OF MICROCELLULAR POLYCHLOROPRENE RUBBER OR POLYTHENE FOAM & IT'S ADHESION TO METAL SHALL BE WITH POLYCHLOROPR ENE RUBBER BASED ADHESIVE DUNLOP S- 758, DENDRITE PC-65 OR ANY OTHER EQUIVALENT BRANDS.
17. ALL HOLES FOR ANCHOR BOLTS ARE 35 MM FOR 33 MM PROPERTY CLASS 10.9 HSFG BOLTS.
18. HOLES IN TOP PLATES ARE 35 MM FOR 33 MM NOMINAL DIA PROPERTY CLASS 10.9 HIGH STRENGTH BOLTS IN ALL BEARINGS.
19. ALL NON-WORKING SURFACES SHALL BE GIVEN PROTECTIVE COATING COMPRISING OF 2 COATS OF EPOXY PRIMER ENRICHED WITH METALLIC ZINC, ONE INTERMEDIATE COAT OF HIGH BUILD EPOXY PAINT REINFORCED WITH MIO (MICACEOUS IRON OXIDE) & ONE COAT OF HIGH PERFORMANCE EPOXY FINISH PAINT AS PER PARA 39.2.2 OF IRS B1.
20. ALL BEARINGS SHALL BE SENT BY MANUFACTURER DULY SET, MARKED WITH CENTER LINE OF BEARING ALONG THE GIRDER AND ACROSS IT, ALONG WITH THE SHIPPING MARK OF THE BEARING AND FITTED WITH TRANSPORTATION CLAMPS. IT IS PROHIBITED TO OPEN TRANSPORTATION CLAMPS BEFORE FINAL ASSEMBLY OF THE BEARING ON THE GIRDER WITHOUT THE PRESENCE OF BEARING MANUFACTURER REPRESENTATIVE.
21. AFTER THE GIRDERS ARE PROPERLY LEVELED/ ALIGNED AND BEARINGS TIED TO THE GIRDER USING PROPERTY CLASS-10.9 OF HSFG BOLTS, TRANSPORTATION CLAMPS SHALL BE OPENED AND ALL EXPANSION TYPE BEARING SHALL BE SET PROPERLY AS PER AMBIENT TEMPERATURE. THEREAFTER HOLES IN SUBSTRUCTURE ALREADY PROVIDED (SHALL BE DRILLED AT THIS STAGE IF NOT ALREADY PROVIDED), SHALL BE FILLED WITH HOLDING DOWN BOLTS AND QUICKLY GROUTED.
22. BEARINGS HAVE BEEN DESIGNED FOR MAX. ROTATION OF 0.02 RADIANS, LONGITUDINAL MOVEMENT OF 65 MM AND TRANSVERSE MOVEMENT OF 30 MM IN THE GIRDER, DEPENDING ON TYPE OF BEARINGS.
23. ANCHOR SLEEVE SHALL BE PROVIDED IN HOLES (MAX. DIA 75 MM) MADE IN PIER TOP/ PEDESTALS.
24. ANCHOR SLEEVE, BOLTS AND NUTS SHALL BE HOT DIP GALVANIZED 100 MICRON THICK, AS PER IS:4759.
25. AS PER IRC:83 (PART-III)-2018 CLAUSE 9.3.4 IF THE STRUCTURE IS OF STEEL, THE BEARINGS MAY BE BOLTED OR WELDED TO IT. PROPER CARE SHALL BE TAKEN TO ENSURE THAT THERE ARE NO MISMATCH IN THE BOLT HOLES OF THE STRUCTURE AND THE BEARING. IN CASE OF WELDING CARE SHOULD BETWEEN TO ASSESS AND AVOID DAMAGE OF BEARING OR IT'S COMPONENTS DUE TO HEAT OR DISTORTION.

R. D. S. O.

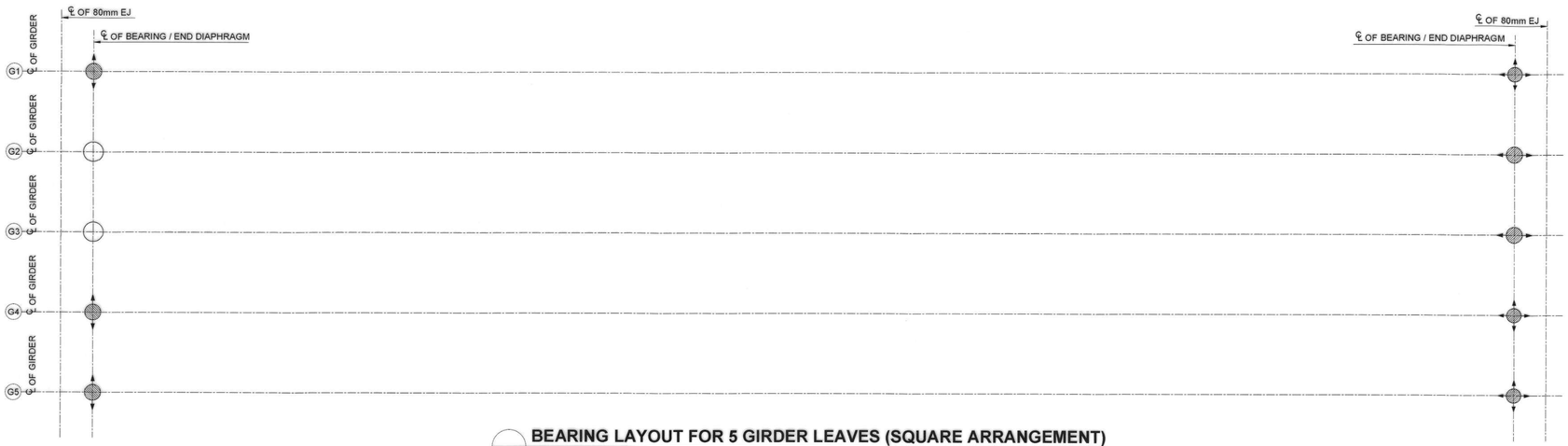
DESIGN REGISTER NO :-					DESIGNED BY:- SONU (JE/D/B&S)	DRAWN BY:- DURGESH KR. SHARMA (JE/D/B&S)	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
AUTOCAD FILE NO:-					DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JE/D/B&S)	DRAWING CHECKED BY:- SONU (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
	SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S				
		REVISIONS / ALTERATIONS							

NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**

TITLE:- DETAILS OF POT-PTFE BEARING

DRAWING NO:- RDSO/B-11782/7

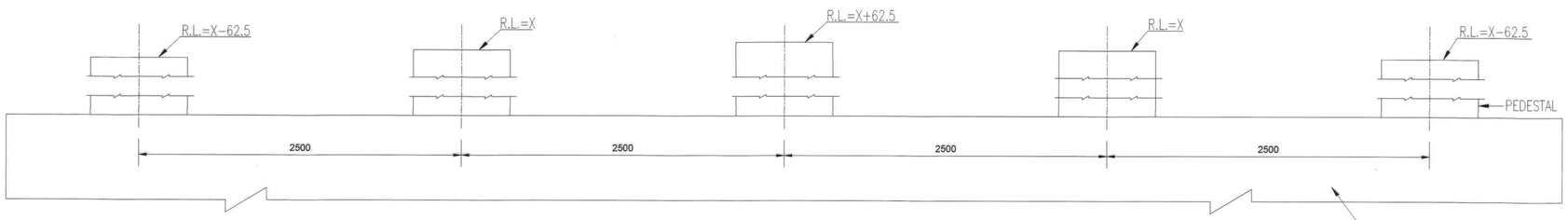
SHEET NO:-08 OF 14
SCALE:- AS SHOWN
ORIGINAL SIZE:- A1
MAIN DRAWING NO:- **RDSO/B-11782**
PROVISIONAL



BEARING LAYOUT FOR 5 GIRDER LEAVES (SQUARE ARRANGEMENT)

SCALE 1 : 80

TYPE OF BEARING				FIXED	L-GUIDED	T-GUIDED	FREE
NO OF BEARING (ONE SPAN)				2	2	3	3
DESIGN LOAD (T)	SLS (RARE)	VERTICAL	MAXIMUM	177	183	195	192
			PERMANENT	95	88	116	114
			MINIMUM	81	72	105	103
		LONGITUDINAL		13	0	13	0
		TRANSVERSE		35	35	0	0
	SLS (FREQUENT)	VERTICAL	MAXIMUM	161	165	182	179
			PERMANENT	95	88	116	114
			MINIMUM	87	78	106	104
		LONGITUDINAL	-	10	0	10	0
		TRANSVERSE		24	24	0	0
	ULS (BASIC)	VERTICAL	MAXIMUM	251	260	273	269
			MINIMUM	110	95	141	138
		LONGITUDINAL	-	19	0	19	0
		TRANSVERSE		53	53	0	0
	ULS (SEISMIC) LONGITUDINAL	VERTICAL	MAXIMUM	191	192	246	242
			MINIMUM	109	94	119	117
		LONGITUDINAL	-	162	0	162	0
		TRANSVERSE		65	65	0	0
	ULS (SEISMIC) TRANSVERSE	VERTICAL	MAXIMUM	221	222	298	294
			MINIMUM	102	87	76	74
		LONGITUDINAL	-	50	0	50	0
		TRANSVERSE		251	251	0	0
	ULS (SEISMIC) VERTICAL	VERTICAL	MAXIMUM	225	219	272	268
			MINIMUM	63	53	77	77
		LONGITUDINAL	-	48	0	48	0
		TRANSVERSE		62	62	0	0
DISPLACEMENT (mm)	SLS	LONGITUDINAL	EXPANSION	0	33	0	33
			CONTRACTION	0	33	0	33
		TRANSVERSE	-	0	0	2	2
	ULS	LONGITUDINAL	EXPANSION	0	45	0	45
			CONTRACTION	0	45	0	45
		TRANSVERSE	-	0	0	3	3
ROTATION (Radians)	SLS	-	-	0.015	0.015	0.015	0.015



PEDESTAL LAYOUT FOR 5 GIRDER LEAVES (SQUARE ARRANGEMENT)

SCALE 1 : 20

SYMBOL	LEGEND	SHIPPING LIST NO.
○	FIXED POT-PTFE BEARING	FIX
◈	FREE SLIDING POT-PTFE BEARING	FREE
◈	LONGITUDINAL GUIDED SLIDE POT-PTFE BEARING	LGS
◈	TRANSVERSE GUIDED SLIDE POT-PTFE BEARING	TGS

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. DIMENSIONS AS WRITTEN SHALL BE FOLLOWED AND SCALING OR MEASUREMENT OF DIMENSIONS IS NOT ALLOWED.
2. THIS DRAWING SHOWS THE BEARINGS FOR SQUARE ARRANGEMENT ONLY.
3. THE PEDESTALS ARE AT DIFFERENT LEVELS TO PROVIDE CROSS SLOPE 1:40 IN THE DECK SLAB/ROAD. THIS ASPECT MUST BE KEPT IN MIND WHILE PLANNING THE PIERS.
4. THE GIRDERS SHALL BE PLACED ON PEDESTALS PROPERLY FINISHED TO PROPER ALIGNMENT, LEVEL AND CROSS SLOPE ETC AS PER CLAUSE 9.3 OF IRC:83 (PART-III)-2018. CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE PAINT MARKED IN LONGITUDINAL AS WELL AS TRANSVERSE DIRECTIONS. WHILE PLACING THE GIRDER. THE CENTER LINE OF THE FINAL BEARING LOCATION SHALL BE MATCHED WITH THE MARKINGS ON THE PEDESTALS.
5. THE REDUCE LEVEL (R.L) OF THE TOP OF THE PEDESTAL FOR GIRDER G2 & G4 HAS BEEN TAKEN REFERENCE(X). THE LEVELS OF OTHER PEDESTAL HAS BEEN INDICATED IN REFERENCE TO THIS.
6. THE BEARINGS SHOWN IN THIS DRAWING ARE INDICATIVE ONLY. ACTUAL BEARING SHALL BE PROVIDED AS PER ORIGINAL DRAWING NAMELY "DETAILS OF POT-PTFE BEARING". THE DIMENSIONS OF PEDESTALS SHALL BE AS GIVEN BY THE DESIGNER FOR SUB-STRUCTURE. THE PEDESTAL SHALL PROJECT AT LEAST 150 MM BEYOND BOTTOM BEARING PLATE. THE DIMENSION OF THE PEDESTALS SHALL NOT BE SCALED/MEASURED FROM THIS DRAWING.

R. D. S. O.

DESIGN REGISTER NO :-

AUTOCAD FILE NO:-

SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S
	REVISIONS / ALTERATIONS			

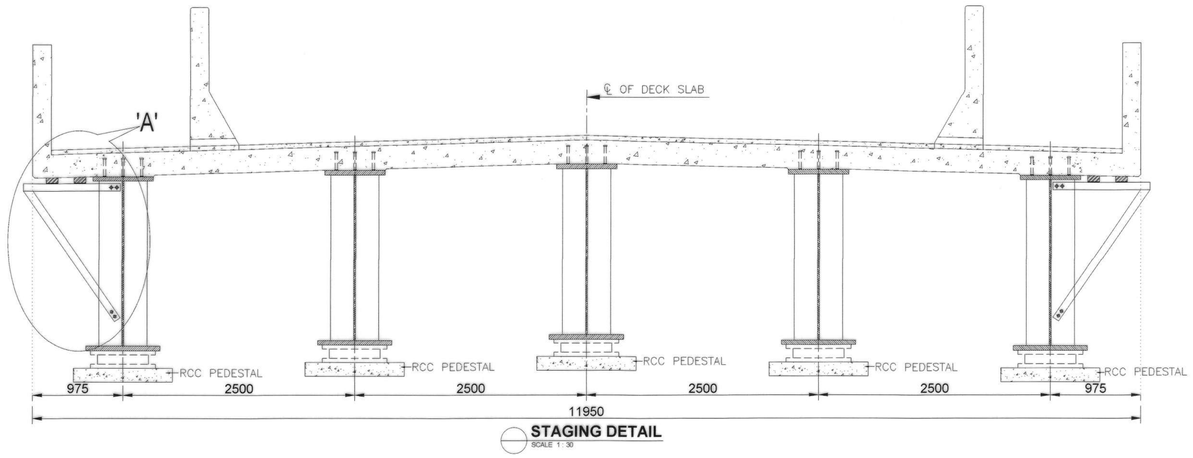
DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
DESIGN CHECKED BY:-	DRAWING CHECKED BY:-			
PRASHANT SRIVASTAVA (JE/D/B&S)	SONU (JE/D/B&S)			

NAME OF WORK:- **"IRC-6 LOADING - 2017"**
42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS

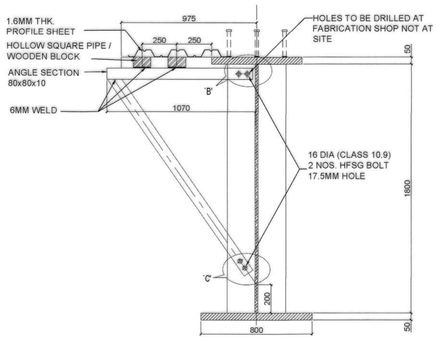
TITLE:- POT - PTFE BEARING AND PEDASTAL LAYOUT PLAN

DRAWING NO:- RDSO/B-11782/8

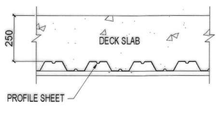
SHEET NO:- 9 OF 14
SCALE:- AS SHOWN
ORIGINAL SIZE:- A1
MAIN DRAWING NO:- **RDSO/B-11782**
PROVISIONAL



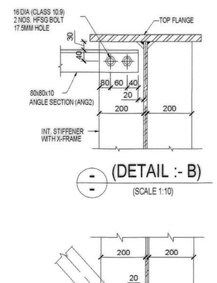
STAGING DETAIL
SCALE 1 : 30



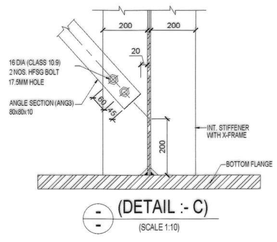
INTERMEDIATE STIFFENERS (DETAIL :- A)
(SCALE 1:20)



DETAILS FOR DECK DEPTH
(SCALE 1:5)



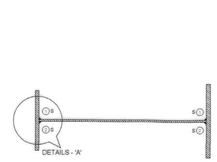
(DETAIL :- B)
(SCALE 1:10)



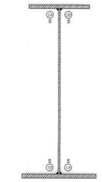
(DETAIL :- C)
(SCALE 1:10)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED. NO DIMENSION SHOULD BE SCALED FROM THIS DRAWING.
2. FABRICATION OF STEEL WORK SHALL BE DONE AS PER IRS B1 AND IRS WELDED BRIDGE CODE.
3. GRADE OF PROFILE SHEET SHALL BE E-350 AND FOR ANGLE SECTION E-250.
4. 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 PERMITTED OVER MANUAL METAL ARC WELDING.
5. ALL WELDS TO BE MADE BY USING APPROVED WELDING PROCEDURE AND BY QUALIFIED WELDERS ONLY AS PER PROVISIONS OF IS:9595.
6. ALL HOLES ARE 17.5 DIA. FOR 16 DIA. HSFG BOLTS OF PROPERTY CLASS 10.9 EXCEPT WHERE OTHERWISE SHOWN.
6. THE BEARINGS SHOWN IN THIS DRAWING ARE INDICATIVE ONLY. ACTUAL BEARING SHALL BE PROVIDED AS PER ORIGINAL DRAWING NAMELY "DETAILS OF POT-PTFE DRAWING".



APPLICATION OF DOUBLE HEAD MACHINE ON GIRDERS: LAID FLAT.



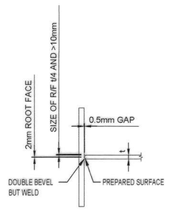
APPLICATION OF DOUBLE HEAD MACHINE ON GIRDERS ON VERTICAL POSITION.

APPLICATION OF SINGLE HEAD MACHINE

WELDING STAGE I :
SCALE 1: NTS

STUDS (IF ANY) TO BE WELDED AFTER COMPLETE FABRICATION OF GIRDER AT WORKSHOP OR SITE AS DESIRED

WELDING STAGE II :
SCALE 1 : NTS



DETAIL - A
EDGE PREPARATION IF DOUBLE BEVEL BUTT WELD TO BE GIVEN

NOTES:

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

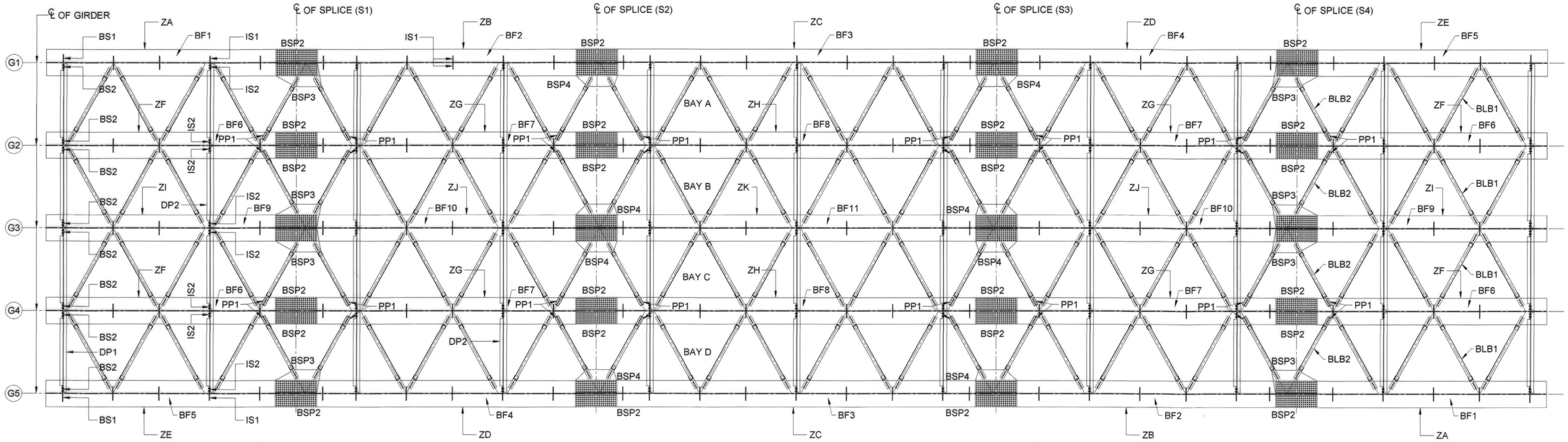
1. SEQUENCE AND POSITION OF WELDING.
   ALL THE WELDING IS TO BE DONE ENTIRELY IN DOWN HAND POSITION. S INDICATES SUBMERGED ARC WELDING. NOs. 1, 2, 3 ETC. NEXT TO ABOVE NOTATION INDICATE SEQUENCE BY WHICH THE WELDING IS TO BE PERFORMED. RUN-ON AND RUN-OFF PIECES SHALL BE PROVIDED.
2. APPLICATION OF SINGLE HEAD MACHINE.
   TO WELD GIRDERS WITH SINGLE HEAD MACHINE, FLANGES AND WEBS ARE TO BE SET IN FIXTURE AND TACKED.
3. 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.
4. 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.
5. 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)

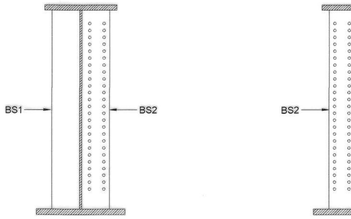
1. STUD WELDING SHALL BE DONE IN WORKSHOP.
2. IF GIRDERS ARE TO BE HANDLED AFTER WELDING OF STUD SHEAR CONNECTORS, THE STUDS SHALL BE PROTECTED SUITABLY TO ENSURE THAT THERE IS NO DAMAGE TO THEM.

R. D. S. O.

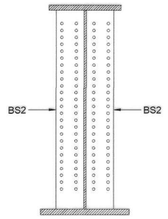
DESIGN REGISTER NO :-						DESIGNED BY:- SONU (JE/D/B&S)	DRAWN BY:- DURGESH KR. SHARMA (JE/D/B&S)	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY	NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**	SHEET NO:- 11 OF 14
AUTOCAD FILE NO:-						DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JE/D/B&S)	DRAWING CHECKED BY:- SONU (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)		SCALE:- AS SHOWN
	SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S							ORIGINAL SIZE:- A1
		REVISIONS / ALTERATIONS									TITLE:- DETAILS OF STAGING ARRANGEMENT FOR DECK SLAB AND WELDING SEQUENCE	MAIN DRAWING NO:- **RDSO/B-11782**
											DRAWING NO:- RDSO/B-11782/10	PROVISIONAL



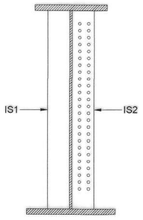
MAIN GIRDER PIECES (BOTTOM PLAN ARRANGEMENT 5-GIRDER LEAVES)
SCALE 1 : 60



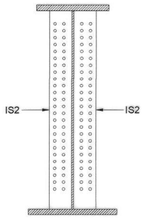
BEARING STIFFENER HOLE ARRANGEMENT FOR OUTER GIRDERS
SCALE 1 : 25



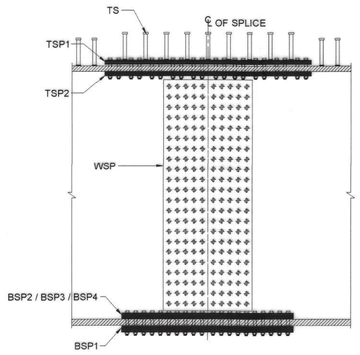
BEARING STIFFENER HOLE ARRANGEMENT FOR INNER GIRDERS
SCALE 1 : 25



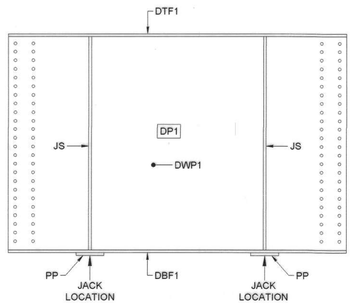
INTERMEDIATE STIFFENER HOLE ARRANGEMENT FOR OUTER GIRDERS
SCALE 1 : 25



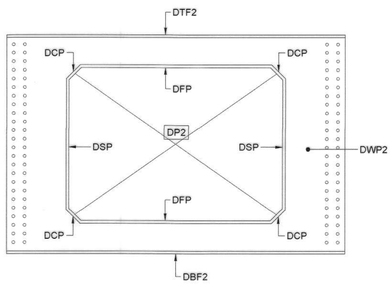
INTERMEDIATE STIFFENER HOLE ARRANGEMENT FOR INNER GIRDERS
SCALE 1 : 25



SPLICE JOINT
SCALE 1 : 20



END DIAPHRAGM
SCALE 1 : 20



INTERMEDIATE DIAPHRAGM
SCALE 1 : 20

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R. D. S. O.

DESIGN REGISTER NO :-					DESIGNED BY:- SONU (JE/D/B&S)	DRAWN BY:- DURGESH KR. SHARMA (JE/D/B&S)	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
AUTOCAD FILE NO:-					DESIGN CHECKED BY:- PRASHANT SRIVASTAVA (JE/D/B&S)	DRAWING CHECKED BY:- SONU (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
	SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S				
		REVISIONS / ALTERATIONS							

NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**	SHEET NO:-12 OF 14
	SCALE:- AS SHOWN
	ORIGINAL SIZE:- A1
TITLE:- ASSEMBLY DRAWING	MAIN DRAWING NO:- **RDSO/B-11782**
DRAWING NO:- RDSO/B-11782/11	PROVISIONAL

SR. NO.	DIMENSIONS (IN MM)			PART LIST / PART NAME	NOS PER SHIPPING MARK	SHIPPING MARK /NAME	DIMENSION (IN MM)	TOTAL NOS PAR SPAN ARRANGEMENT	WEIGHT OF 5-GIRDER LEAVES (IN TONNE)
	LENGTH	WIDTH	THICKNESS						
1.1	7500	650	50	TF1 /TOP FLANGE	1	ZA/GIRDER COMPLETE	7500*800*1900	2	3.827
1.2	7500	800	50	BF1/BOTTOM FLANGE	1				4.710
1.3	7500	1800	20	WP1/WEB PLATE	1				4.239
1.4	1800	250	20	BS1/ BEARING STIFFENER	1				0.141
1.5	1800	250	20	BS2/BEARING STIFFENER	1				0.141
1.6	1800	200	20	IS1/INTERMEDIATE STIFFENER	7				0.791
1.7	1800	200	20	IS2/INTERMEDIATE STIFFENR	1				0.113
1.8			200x25	TS/SHEAR SHUD	174				0.268
2.1	9000	650	50	TF2 /TOP FLANGE	1	ZB/GIRDER COMPLETE	9000*800*1900	2	4.592
2.2	9000	800	50	BF2/BOTTOM FLANGE	1				5.652
2.3	9000	1800	20	WP2/WEB PLATE	1				5.087
2.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	10				1.130
2.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	2				0.226
2.6			200x25	TS/SHEAR SHUD	195				0.301
3.1	12000	650	50	TF3 /TOP FLANGE	1	ZC/GIRDER COMPLETE	12000*800*1900	2	6.123
3.2	12000	800	50	BF3/BOTTOM FLANGE	1				7.536
3.3	12000	1800	20	WP3/WEB PLATE	1				6.782
3.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	15				1.696
3.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	3				0.339
3.6			200x25	TS/SHEAR SHUD	273				0.421
4.1	9000	650	50	TF2 /TOP FLANGE	1	ZD/GIRDER COMPLETE	9000*800*1900	2	4.592
4.2	9000	800	50	BF4/BOTTOM FLANGE	1				5.652
4.3	9000	1800	20	WP2/WEB PLATE	1				5.087
4.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	10				1.130
4.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	2				0.226
4.6			200x25	TS/SHEAR SHUD	195				0.301
5.1	7500	650	50	TF2 /TOP FLANGE	1	ZE/GIRDER COMPLETE	7500*800*1900	2	3.827
5.2	7500	800	50	BF5/BOTTOM FLANGE	1				4.710
5.3	7500	1800	20	WP2/WEB PLATE	1				4.239
5.4	1800	250	20	BS1/ BEARING STIFFENER	1				0.141
5.5	1800	250	20	BS2/BEARING STIFFENER	1				0.141
5.6	1800	200	20	IS1/INTERMEDIATE STIFFENR	7				0.791
5.7	1800	200	20	IS2/INTERMEDIATE STIFFENR	1				0.113
5.8			200x25	TS/SHEAR SHUD	174				0.268
6.1	7500	650	50	TF1 /TOP FLANGE	1	ZF/GIRDER COMPLETE	7500*800*1900	4	7.654
6.2	7500	800	50	BF6/BOTTOM FLANGE	1				9.420
6.3	7500	1800	20	WP1/WEB PLATE	1				8.478
6.4	1800	250	20	BS2/ BEARING STIFFENER	1				0.141
6.5	1800	250	20	BS2/BEARING STIFFENER	1				0.141
6.6	1800	200	20	IS1/INTERMEDIATE STIFFENER	7				1.583
6.7	1800	200	20	IS2/INTERMEDIATE STIFFENR	1				0.226
6.8			200x25	TS/SHEAR SHUD	174				0.536
7.1	9000	650	50	TF2 /TOP FLANGE	1	ZG/GIRDER COMPLETE	9000*800*1900	4	9.185
7.2	9000	800	50	BF7/BOTTOM FLANGE	1				11.304
7.3	9000	1800	20	WP2/WEB PLATE	1				10.174
7.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	10				2.261
7.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	2				0.452
7.6			200x25	TS/SHEAR SHUD	195				0.601
8.1	12000	650	50	TF3/TOP FLANGE	1	ZH/GIRDER COMPLETE	12000*800*1900	2	6.123
8.2	12000	800	50	BF8/BOTTOM FLANGE	1				7.536
8.3	12000	1800	20	WP3/WEB PLATE	1				6.782
8.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	15				1.696
8.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	3				0.339
8.6			200x25	TS/SHEAR SHUD	273				0.421
9.1	7500	650	50	TF1 /TOP FLANGE	1	ZI/GIRDER COMPLETE	7500*800*1900	2	3.827
9.2	7500	800	50	BF9/BOTTOM FLANGE	1				4.710
9.3	7500	1800	20	WP1/WEB PLATE	1				4.239
9.4	1800	250	20	BS2/ BEARING STIFFENER	1				0.141
9.5	1800	250	20	BS2/BEARING STIFFENER	1				0.141
9.6	1800	200	20	IS1/INTERMEDIATE STIFFENR	7				0.791
9.7	1800	200	20	IS2/INTERMEDIATE STIFFENR	1				0.113
9.8			200x25	TS/SHEAR SHUD	174				0.268
10.1	9000	650	50	TF2 /TOP FLANGE	1	ZJ/GIRDER COMPLETE	9000*800*1900	2	4.592
10.2	9000	800	50	BF10/BOTTOM FLANGE	1				5.652
10.3	9000	1800	20	WP2/WEB PLATE	1				5.087
10.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	10				1.130
10.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	2				0.226
10.6			200x25	TS/SHEAR SHUD	195				0.301
11.1	12000	650	50	TF3/TOP FLANGE	1	ZK/GIRDER COMPLETE	12000*800*1900	1	3.062
11.2	12000	800	50	BF11/BOTTOM FLANGE	1				3.768
11.3	12000	1800	20	WP3/WEB PLATE	1				3.391
11.4	1800	200	20	IS1/INTERMEDIATE STIFFENR	15				0.848
11.5	1800	200	20	IS2/INTERMEDIATE STIFFENR	3				0.170
11.6			200x25	TS/SHEAR SHUD	273				0.210

SR. NO.	DIMENSIONS (IN MM)			PART LIST / PART NAME	NOS PER SHIPPING MARK	SHIPPING MARK /NAME	DIMENSION (IN MM)	TOTAL NOS PAR SPAN ARRANGEMENT	WEIGHT OF 5-GIRDER LEAVES (IN TONNE)
	LENGTH	WIDTH	THICKNESS						
12.1	2440	300	20	DTF1/ DIAPHRAGM TOP FLANGE	1	DP1/END DIAPHRAGM	2440*300*1610	8	0.919
12.2	2440	300	20	DBF1/DIAPHRAGM BOTTOM FLANGE	1				0.919
12.3	2440	1550	20	DWP1/ DIAPHRAGM WEB PLATE	1				4.750
12.4	1550	140	20	JS/JACKING STIFFENER	4				1.090
12.5	200	270	20	PP/PAD PALTE	2				0.136
13.1	2440	300	20	DTF2/ DIAPHRAGM TOP FLANGE	1	DP2/INTERMEDIATE DIAPHRAGM	2440*300*1590	36	4.137
13.2	2440	300	20	DBF2/DIAPHRAGM BOTTOM FLANGE	1				4.137
13.3	2440	1550	20	DWP2/DIAPHRAGM WEB PLATE	1				21.376
13.4	1580	1150	20	DEDUCT (OPEN WEB PLATE)	1				-10.270
13.5	1363	150	20	DFP/DIAPHRAGM INNER FLANGE PLATE	2				2.311
13.6	893	150	20	DSP/DIAPHRAGM SIDE PLATE	2				1.514
13.7	125	150	20	DCP/DIAPHRAGM INNERCORNER PLATE	4				0.424
14.1	1850	-	ISA 100*10	ANG1/BOTTOM LATERAL BRACING	1	BLB1/ BOTTOM LATERAL BRACING	1850*(100*100*10)	88	2.426
14.2	420	120	16	GUS1/BENT GUSSET	2				1.114
15.1	1505	-	ISA 100*10	ANG2/BOTTOM LATERAL BRACING	1	BLB2/ BOTTOM LATERAL BRACING	1505*(100*100*10)	32	0.718
15.2	420	120	16	GUS2/BENT GUSSET	2				0.405
15.3	300	120	45	PP1/PACKING PLATE	1				0.407
16.1	1490	650	32	TSP1/TOP SPLICE PLATE	1	SPLICE COVER PLATE	1490*650*32	20	4.866
16.2			200x25	TS/SHEAR SHUD	27				0.416
16.3	1490	295	32	TSP2/TOP SPLICE PLATE	2		1490*295*32	20	4.417
16.4	1240	800	45	BSP1/BOTTOM SPLICE PLATE	1		1240*800*45	20	7.008
16.5	1240	370	45	BSP2/BOTTOM SPLICE PLATE	1		1240*370*45	24	3.890
16.6	1354	693	45	BSP3/BOTTOM SPLICE PLATE	1		1354*693*45	8	2.652
16.7	1240	693	45	BSP4/BOTTOM SPLICE PLATE	1		1240*693*45	8	2.428
16.8	1680	640	16	WCP/WEB COVER PLATE	2		1680*640*16	20	5.402
17.1	1050	ISA 80x80x10		ANG3/ANGLE	2	STAGING ASSEMBLY	1050*80*80*10	31	0.768
17.2	1705	ISA 80x80x10		ANG4/ANGLE			1705*80*80*10		1.247
18.0				LONG. - GUIDE BERING ASSEMBLY	1	LGS	-	2	-
18.1				TRANS. - GUIDE BERING ASSEMBLY	1	TGS	-	3	-
18.2				FREE - BERING ASSEMBLY	1	FREE	-	3	-
18.3				FIXED - BERING ASSEMBLY	1	FIX	-	2	-
19.0				ACNHOR BOLTS (33MM DIA OF PROPERTY CLASS 10.9)	-	HOLDING DOWN BOLT	-	104	-
19.1				HIGH STRENGTH BOLTS (33MM DIA OF PROPERTY CLASS 10.9)	-	HIGH STRENGTH BOLT		104	-
19.2				HSFG BOLTS (20 MM DIA PROPERTY CLASS 10.9)	-	HSFG BOLTS	-	16784	-
19.3				HSFG BOLTS (16 MM DIA PROPERTY CLASS 10.9)	-	HSFG BOLTS	-	248	-
						WEIGHT OF STEEL PORTION (T)			280.648
						ADD 2% FOR BOLTS/ WELDS (T)			5.613
						TOTAL WEIGHT OF STEEL PORTION (T)			**286.261**

NOTES :-

1. PART LIST NO. OF ALL STIFFENERS MUST BE MARKED ON COMPLETED GIRDER TO HELP SITE ENGINEERS IN CORRECT ORIENTATION OF THE GIRDER PIECES DURING ASSEMBLY OF THE GIRDERS.
2. SHIPPING LIST NOS MUST BE PAINTED ON ALL ASSEMBLY PARTS, AT LEAST 100 MM HIGH OR AS HIGH AS THE PART WELL PERMIT.

R. D. S. O.

DESIGN REGISTER NO :-

AUTOCAD FILE NO:-

SR.NO.	DESCRIPTION OF WORK	ADE/B&S	DIR./B&S	ED/B&S
	REVISIONS / ALTERATIONS			

DESIGNED BY:-	DRAWN BY:-	SCRUTINISED & CHECKED BY	SCRUTINISED & RECOMMENDED BY	APPROVED BY
SONU (JE/D/B&S)	DURGESH KR. SHARMA (JE/D/B&S)	B.K. MAHAUR (ADE/SB-II/B&S)	MANISH KUMAR (DIR.-VII/B&S)	RAJESH KUMAR SRIVASTAVA (ED/B&S)
DESIGN CHECKED BY:-	DRAWING CHECKED BY:-			
PRASHANT SRIVASTAVA (JE/D/B&S)	SONU (JE/D/B&S)			

NAME OF WORK:- **"IRC-6 LOADING - 2017"**
42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS

TITLE:- PART AND SHIPPING LIST

DRAWING NO:- RDSO/B-11782/12

SHEET NO:- 13 OF 14
SCALE:- AS SHOWN
ORIGINAL SIZE:- A1
MAIN DRAWING NO:- **RDSO/B-11782**
PROVISIONAL

SUGGESTED SEQUENCE FOR FABRICATION/ERECTION OF GIRDERS

STEP I:- FABRICATION OF GIRDERS: THIS DRAWING SET IS FOR SPANS WITH 5-GIRDER LEAVES ONLY. BEFORE STARTING THE FABRICATION OF GIRDERS, THE DRAWINGS SHALL BE STUDIED CAREFULLY INCLUDING THE NOTES AND THE ACTUAL FABRICATION REQUIREMENTS SHALL BE FINALIZED. TO AVOID CONFUSION, DRAWINGS HAVE BEEN KEPT TO MINIMUM POSSIBLE AND OTHER ASPECTS HAVE BEEN COVERED IN NOTES. THE GIRDERS OF SAME LENGTHS ARE IDENTICAL IN SECTION BUT DIFFER IN HOLES FOR BRACING/CROSS-FRAMES. **AFTER HOLES ARE DRILLED, THESE MEMBERS SHALL BE MARKED SUITABLY TO IDENTIFY THEM DISTINCTLY AS PER SHIPPING LIST.**GIRDERS ARE HAVING CAMBER AND THE WEB PLATES ARE REQUIRED TO BE CUT IN PROFILE. THIS ASPECT MUST BE KEPT IN MIND DURING FABRICATION. SUITABLE CUTTING/ SAW WELDING ARRANGEMENTS SHALL BE AVAILABLE FOR FABRICATING THESE GIRDERS.

STEP II:- SITE FOR STORAGE AND ASSEMBLY: THE SITE FOR STORAGE/ASSEMBLY CHOSEN SHALL BE FIRM LEVEL GROUND WITH GOOD DRAINAGE ARRANGEMENT AND ALL GIRDER PARTS SHALL BE PROPERLY STACKED ON WOODEN BLOCKS ETC, LEAVING SUFFICIENT AREA FOR ASSEMBLY. GIRDER PIECES SHALL BE KEPT IN VERTICAL I-SECTION POSITION WITH SUITABLE RESTRAINTS ON SIDES IF VIBRATIONS ETC ARE LIKELY TO COME. THE SMALLER MEMBERS SHALL BE STACKED SUCH AS TO ENSURE THAT NONE OF THE MEMBERS SUFFERS ANY DAMAGE.

STEP III:- TRANSPORTATION AND STORAGE: FABRICATED GIRDER PIECES AS PER SHIPPING LIST SHALL BE TRANSPORTED TO SITE ASSEMBLY YARD. THE SMALL PARTS LIKE BOLTS, HSFG BOLTS, BEARINGS ETC MUST BE STORED PROPERLY AWAY FROM SUN, DUST, DIRT, MOISTURE AND ANY OTHER DELETERIOUS CIRCUMSTANCES AS ADVISED BY MANUFACTURER OR CODAL PROVISIONS. PROPER VENTILATION OF THE STORAGE LOCATION IS A MUST. STACKING MUST BE DONE IN SUCH A MANNER AS NOT TO OVERSTRESS/ DAMAGE ANY COMPONENT.

STEP IV:- COMMENCEMENT OF ASSEMBLY: WHEN REQUISITE PARTS FOR ONE GIRDER ARE AVAILABLE, THE SAME SHALL BE VERIFIED USING THE PART/SHIPPING LIST. ALL PARTS SHALL BE INSPECTED FOR ANY DAMAGE DURING TRANSPORTATION/ STORAGE ETC. ANY BENT/ BADLY CORRODED MEMBERS SHALL NOT BE USED FOR ASSEMBLY. ANY STUD SHEAR CONNECTORS BENT DURING TRANSPORTATION SHALL BE EXAMINED FOR DAMAGE. GIRDER LEAVES WITH EXCESSIVELY DAMAGED STUD SHEAR CONNECTORS SHALL NOT BE USED FOR FURTHER ASSEMBLY. IF THE DAMAGE IS NOT EXCESSIVE, THE SAME MAY BE ALLOWED BY THE ENGINEER IN CHARGE OF WORK. IN NO CASE SHALL THE BENT STUD SHEAR CONNECTORS (INCLUDING THOSE BENT AS PART OF BEND TEST) SHALL BE STRAIGHTENED **THE GIRDERS ARE NOT SYMMETRICAL ESPECIALLY THE OUTER GIRDERS WHICH HAVE NO HOLES ON THE OUTSIDE. THE FABRICATOR SHALL MARK THE PART LIST NO OF THE STIFFENERS ON THE COMPLETE GIRDERS WHICH SHALL BE REFERRED DURING ASSEMBLY. IF THESE PART LIST NOS ARE NOT MARKED/VISIBLE, HOLE DISTANCES SHALL BE MEASURED AS PER DRAWING AND PART LIST NOS SHALL BE MARKED BEFORE START OF ASSEMBLY. THE HOLE SPACING HAS BEEN KEPT 62.5 MM SO THAT SAME HOLE DIMENSION CAN BE USED IN ALL GIRDERS. THIS ASPECT REQUIRES CARE IN FABRICATION AS WELL AS ASSEMBLY.** IT IS ADVISED THAT THE INDIVIDUAL PIECES BE ROTATED IN PROPER DIRECTION BEFORE THE START OF ASSEMBLY WORK.

STEP V:- METALLISING IN SHOP: THE GIRDER PARTS EXCEPT TOP FLANGE AND SHEAR CONNECTORS COMPLETELY READY AFTER FABRICATION INCLUDING ALL WELDING, HOLE DRILLING AND GRINDING EDGES ETC SHALL BE METALLISED EITHER AT SITE OR IN WORKSHOP AS PER CONVENIENCE. THE METALLISING AND PAINTING SHALL BE DONE AS PER PARA 39.1 OF IRS B1. IF THE METALLISING IS BEING DONE IN SHOP, THE SECOND COAT OF ALUMINIUM PAINT SHALL BE LEFT TO BE APPLIED IN FIELD AFTER ERECTION IS COMPLETE. TOP FLANGE AND SHEAR CONNECTORS SHALL NOT BE METALLISED/PAINTED AS THIS CAN REDUCE THE BOND STRENGTH WITH CONCRETE. MASKING TAPE MAY BE PROVIDED ON SUCH SURFACES DURING PAINTING.

STEP VI:- PRELIMINARY ASSEMBLY OF GIRDERS: IF THE METALLISING IS PAINTED BY MISTAKE, THE PARTS WHICH ARE TO BE AT THE INTERFACE OF MEMBERS TO BE JOINED BY HSFG BOLTS SHALL BE LIGHT SAND BLASTED TO REMOVE THE PAINT LAYER (S) ONLY (i.e. THE METALLISING LAYER MUST BE LEFT INTACT). THIS TREATMENT IS REQUIRED TO BE DONE AT SPLICE, STIFFENERS AND BOTTOM LATERAL BRACING LOCATIONS IN MAIN GIRDERS AND IN ALL THE SECONDARY MEMBERS. IF METALLISING WORK AND ASSEMBLY WORK ARE PROCEEDING SIMULTANEOUSLY, THE INTERFACE LOCATIONS WHERE THE HSFG BOLTS ARE TO BE PROVIDED SHALL NOT BE PAINTED AND LEFT AS IT IS. **IN EITHER CASE, BEFORE THE MEMBERS ARE ASSEMBLED FOR PROVISION OF HSFG BOLTS, IT MUST BE CERTIFIED BY SITE IN-CHARGE THAT THE INTERFACE IS METALLISED AND FREE FROM ANY OVERCOAT ON THE SAME.** THE GIRDER LEAVES SHALL BE BROUGHT TO VERTICAL UPRIGHT POSITION USING CRANES, DERRICKS ETC. THE LEAVES SHALL BE BROUGHT TO ONE LINE AND LEVEL AND THE SPLICE MEMBERS SHALL BE ASSEMBLED USING SERVICE BOLTS/DRIFTS ETC.

STEP VII:-CHECKING CONSTRUCTION OF SUB STRUCTURE: THE SUB STRUCTURE SHALL BE COMPLETELY READY WITH SUFFICIENT TIME BEING GIVEN FOR THE CONCRETE TO ATTAIN ITS STRENGTH ASSUMED IN DESIGN BY THE TIME LAUNCHING STARTS. THE SUB STRUCTURE CAN BE WITH PEDESTAL OR WITHOUT IT AS PER DESIGN (DUE CARE BEING TAKEN THAT ADEQUATE SPACE FOR JACKING IS AVAILABLE). WIDTH OF THE SUB STRUCTURE FOR PROVIDING THE GIRDER SHALL BE AS PER THE CHOSEN OVERHANG OF THE CONCRETE SLAB. THE PEDESTAL OR PIER TOP SHALL HAVE SUFFICIENT SPACE FOR PROVISION OF HOLDING DOWN BOLTS FOR THE BEARINGS. THE HOLDING DOWN BOLTS CAN BE PROVIDED IN HOLES DRILLED IN CONCRETE OR CAN BE PROVIDED IN THE HOLES LEFT IN CONCRETE DURING CASTING. IN EITHER CASE, CARE SHALL BE TAKEN THAT THE BOLTS ARE IN PROPER POSITION MATCHING THE HOLES PROVIDED IN BEARINGS. **A STEEL TEMPLATE WITH HOLESAT CORRECT LOCATION FOR DIFFERENT TYPES OF BEARINGS SHALL BE USED TO CHECK PROPER POSITIONING OF THE HOLES IN SUB STRUCTURE OR FOR MARKING THE LOCATION OF BOLTS.** FURTHER, DIMENSIONS OF THE GIRDER SUPPORT POINTS SHALL BE CHECKED FOR POSITION, SLOPE AND SURFACE FINISH. **THE CENTER TO CENTER DISTANCES LONGITUDINALLY AND TRANSVERSALLY AS WELL AS DIAGONALLY SHALL BE CHECKED AND SHALL BE WITHIN TOLERANCES SPECIFIED IN RELEVANT PARA OF IRC 83 PART II.** SIMILARLY THE SURFACE FINISH, SLOPE OF THE SURFACE AND OTHER PARAMETERS SHALL BE VERIFIED.

STEP VIII:- PREPARATION OF SUB STRUCTURE FOR LAUNCHING OF GIRDERS: IF ANY DEFECTS ARE FOUND, THE SAME SHALL BE RECTIFIED WELL BEFORE THE START OF LAUNCHING OPERATIONS. **THE FINAL HEIGHT OF THE PEDESTALS VARIES FROM GIRDER TO GIRDER FOR PROVIDING THE CROSS SLOPE IN DECK AND THE SAME SHALL BE VERIFIED BEFORE LAUNCHING IS PLANNED.** THE CENTER LINE OF THE PROPOSED BEARINGS SHALL BE MARKED IN LONGITUDINAL AS WELL AS TRANSVERSE DIRECTIONS ON THE PIER/ PEDESTAL TOP, EXTENDING WELL OUTSIDE THE DIMENSIONS OF THE BEARINGS. THE MARKINGS SHALL BE SUCH THAT THESE CAN BE SEEN DURING THE ENTIRE CONSTRUCTION PHASE. THE CENTER OF BEARINGS SHALL BE MARKED AT A TEMPERATURE NEAR MEAN TEMPERATURE OF THE LOCATION AND THE SAME SHALL BE NOTED.

STEP IX:- FINAL ASSEMBLY OF GIRDERS: THE GEOMETRY OF THE GIRDER, ITS LINE/LEVEL AND LENGTH ETC SHALL BE CHECKED AS PER DRAWINGS. IF THE SAME ARE WITHIN TOLERANCES FOR PLATE GIRDERS SPECIFIED IN PARA 13 OF IRS B1 AS APPLICABLE FOR PLATE GIRDERS, THE PRELIMINARY ASSEMBLY SHALL BE APPROVED. **THE MIDDLE PIECES OF THE GIRDER ARE HIGHER THAN THE END PIECES BY THE AMOUNT OF CAMBER. SO, THE ASSEMBLY OF THE GIRDERS SHALL BE DONE BY KEEPING THE MIDDLE PIECE RAISED ON SUITABLE WOODEN PACKING. THE END PIECES SHALL BE SUPPORTED IN INCLINED POSITION AS PER THE CAMBER IN THE GIRDERS.** FINAL ASSEMBLY SHALL COMMENCE FROM ONE SIDE AND THE PROCEDURE FOR PROVIDING THE HSFG BOLTS AS PER IRS B1/ DRAWING NO RDSO/B-11760/R1 SHALL BE FOLLOWED. BEFORE STARTING THE FIXING OF HSFG BOLTS, IT SHALL BE ENSURED THAT THE MIDDLE PIECE IS AT SUITABLE LEVEL WITH RESPECT TO THE SUPPORTS.

STEP X:- PROVIDING BEARINGS: IF IT IS PLANNED TO PROVIDE THE NEOPRENE BEARINGS BEFORE LAUNCHING OF GIRDERS, THE BEARINGS SHALL BE FITTED ON GIRDERS LEAVES DURING LAUNCHING. THE CENTER LINE MARKINGS PROVIDED BY MANUFACTURER ON BEARINGS SHALL BE PROPERLY MATCHED WITH THE CENTER LINE MARKED ON THE PIER/PEDESTAL TOP IN STEP IX IN EITHER DIRECTION GIVING DUE ALLOWANCE FOR ANY EXPANSION/ CONTRACTION OF THE GIRDER DUE TO CHANGE IN TEMPERATURE AT THE TIME OF ACTUALLY PROVIDING THE BEARINGS VIS-À-VIS THE INITIAL MARKING TEMPERATURE. **EXTRA CARE IS REQUIRED TO BE EXERCISED IN PROVIDING THE BEARING IN CORRECT ORIENTATION AS PER DRG.** THE HOLDING DOWN BOLTS SHALL NOT BE PROVIDED AT THIS STAGE.

STEP XI:- LAUNCHING OF GIRDERS: ONCE SUFFICIENT NUMBER OF GIRDERS ARE ASSEMBLED AND THE SUB STRUCTURE HAS BEEN CERTIFIED TO BE READY, LAUNCHING OF GIRDERS SHALL BE TAKEN UP. THE SCHEME FOR LAUNCHING SHALL BE APPROVED BEFOREHAND BY DESIGN OFFICE AND ANY STATUTORY CLEARANCES SUCH AS CRS SANCTION MUST BE OBTAINED. LAUNCHING CAN BE DONE BY ANY OF THE VARIOUS METHODS SUCH AS USING SINGLE CRANE, USING MULTIPLE CRANES, END LAUNCHING OR USING DERRICKS.

STEP XII:- PROTECTION OF GIRDERS AFTER LAUNCHING: IMMEDIATELY AFTER LAUNCHING, BEFORE THE BLOCK IS CLEARED OR THE LAUNCHING ARRANGEMENT IS REMOVED, THE GIRDER SHALL BE SECURED AGAINST TOPPLING OVER BY PROVIDING EITHER END DIAPHRAGM WITH THE ADJOINING GIRDER OR ADDITIONAL STEEL MEMBER (S) ON EITHER SIDE OF THE GIRDER. IF THE BEARINGS HAVE BEEN PROVIDED BEFORE LAUNCHING OF GIRDER, BOLTS SHALL ALSO BE PROVIDED IN THE BOTTOM FLANGE OF GIRDER TO SECURE THE SAME AGAINST TOPPLING OVER.

STEP XIII:- PROVISION OF BRACING MEMBERS: THE END DIAPHRAGMS, INTERMEDIATE CROSS FRAMES AND THE BOTTOM LATERAL BRACING SHALL BE PROVIDED ON DRIFTS/ SERVICE BOLTS. IF REQUIRED, THE GIRDERS MAY BE SHIFTED USING JACKS/CRANES. ONCE THE GIRDERS ARE IN PROPER ALIGNMENT, THE SERVICE BOLTS AND DRIFTS SHALL BE REMOVED AND HSFG BOLTS SHALL BE PROVIDED AND THE JOINTS FINISHED ONE BY ONE USING PROCEDURE GIVEN IN IRS B1/ DRAWING FOR HSFG BOLT TIGHTENING.

STEP XIV:- PROVIDING THE BEARINGS: IN CASE THE BEARINGS ARE TO BE PROVIDED AFTER THE GIRDER WORK IS OVER, THE BEARINGS SHALL BE BROUGHT TO SITE. THE CENTER LINE MARKINGS PROVIDED BY MANUFACTURER ON BEARINGS SHALL BE PROPERLY MATCHED WITH THE CENTER LINE MARKED ON THE PIER/PEDESTAL TOP IN STEP IX IN EITHER DIRECTION GIVING DUE ALLOWANCE FOR ANY EXPANSION/ CONTRACTION OF THE GIRDER DUE TO CHANGE IN TEMPERATURE AT THE TIME OF ACTUALLY PROVIDING THE BEARINGS VIS-À-VIS THE INITIAL MARKING TEMPERATURE. **EXTRA CARE IS REQUIRED TO BE EXERCISED IN PROVIDING THE BEARING AT CORRECT ORIENTATION.**

STEP XV:- PROVIDING HOLDING DOWN BOLTS: THE HOLDING DOWN BOLTS SHALL BE EPOXY GROUTED IN THE HOLES ALREADY PROVIDED IN SUB STRUCTURE OR DRILLED AFTER PLACING THE BEARING IN POSITION. AFTER GIVING SUFFICIENT TIME FOR THE EPOXY TO SET, THE BEARING SHALL BE CONNECTED TO THE GIRDER WITH BOLTS AS PER DESIGN.

STEP XVI:- SHUTTERING: AFTER THE STEEL GIRDER IS ASSEMBLED COMPLETELY IN ALL RESPECTS, THE SHUTTERING AND OTHER ACTIVITIES FOR CONCRETING SHALL COMMENCE AS PER DRAWING. SHUTTERING SHALL BE PROVIDED AS PER IRC-87 TO PRODUCE CONCRETE PROFILE AS PER DRAWING. THE CROSS SLOPE IN THE DECK SLAB AND PROPER LONGITUDINAL PROFILE INCLUDING CAMBER PROVISIONS (IF ANY) SHALL BE TAKEN CARE OF IN THE SHUTTERING. GOOD QUALITY LEAK PROOF SHUTTERING SHALL BE PROVIDED. SHUTTERING CAN BE SUPPORTED ON GIRDER BOTTOM FLANGE. **IF REQUIRED, HOLES UPTO 20 MM DIAMETER CAN BE DRILLED (NOT GAS CUT) IN THE INTERMEDIATE STIFFENER** FOR SUPPORTING THE SHUTTERING. **IT SHALL BE ENSURED THAT NO WELDING GAS CUTTING IS DONE IN ANY PART OF THE GIRDERS IN FIELD.**

STEP XVII:- PROVIDING REINFORCEMENT: REINFORCEMENT SHALL BE PROVIDED AS PER THE DRAWING, TAKING THE APPROPRIATE SPAN LENGTH AND ROAD WIDTH CONFIGURATION. BAR BENDING SCHEDULE SHALL BE CAREFULLY WORKED OUT FROM THE TABLE GIVEN IN THE DRAWING. EXTRA CARE SHALL BE TAKEN TO ENSURE PROPER PLACEMENT OF BARS, PROPER COVER TO THE REINFORCEMENT. LAPS HAVE NOT BEEN INDICATED IN THE DRAWING AND SHALL BE DECIDED AT SITE AS PER PROVISIONS FOLLOWED IN THE RAILWAY.

STEP XVIII:- CONCRETING OF SLAB: CONCRETING SHALL BE DONE AFTER THE REINFORCEMENT IS PROVIDED AND CHECKED TO BE AS PER THE DRAWING BY THE SITE IN CHARGE. THE CONCRETING SHALL BE DONE AS PER THE POUR SEQUENCE GIVEN IN THE DRAWING. DURING CONCRETING, PROPER LONGITUDINAL AND LATERAL PROFILES OF THE FINISHED SLAB SURFACE MUST BE ENSURED.REINFORCEMENT FOR PATHWAY/RAILING/ CRASH BARRIER ETC SHALL PROJECT ABOVE THE FINISHED SLAB.

STEP XIX:- CONCRETING OF OTHER MEMBERS: AFTER THE DECK SLAB HAS BEEN CURED TO GAIN SUFFICIENT STRENGTH, THE WEARING COAT, PATHWAY, RAILING ETC SHALL BE CONCRETED. TRAFFIC SHALL BE ALLOWED ONLY AFTER THE CONCRETE HAS GAINED SUFFICIENT STRENGTH

R. D. S. O.

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NAME OF WORK:- **"IRC-6 LOADING - 2017" 42 M CLEAR SPAN COMPOSITE WELDED ROB GIRDERS**		SHEET NO:- 14 OF 14
		SCALE:- AS SHOWN
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